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Director of Infrastructure Projects
Planning Services
Department of Planning and Environment
Application SSI 6788
GPO Box 39
Sydney NSW 2001

Dear Madam/Sir,

Submission to the WestConnex New M5 Environmental Impact Statement

The City has reviewed the New M5 Environmental Impact Statement. Please see the attached submission and appendices. These appendices include:

- WestConnex Stage 2 EIS – Review of Strategic Alternatives and Socio-economic Impacts, SGS Economics and Planning
- New M5 and St Peters Interchange Environmental Impact Statement – Review of Biodiversity Assessment
- Stage 2 EIS – Review of Traffic, Transport and Modelling

The City's submission is critical of the assessment process. The EIS fails to properly and fully assess the impacts of the project as required by the Secretary's Environmental Assessment Requirements (SEARs). The EIS does not make a strong evidentiary case why the project should proceed. The traffic modelling is inadequate and shows that the New M5 is unlikely to carry enough traffic to make it worthwhile, yet will deliver massive increases of traffic on to local streets.

The City strongly opposes the WestConnex project and in particular the New M5 and St Peters Interchange. This project will have considerable and numerous impacts on the City of Sydney. These impacts include the loss of sections of Sydney Park, including a large number of mature trees, reduced air quality, increased noise and particulate pollution and increased traffic flows through a large part of southern Sydney. The project has very limited benefits as demonstrated in the WestConnex Updated Business Case (November 2015) and they do not outweigh the considerable cost to the residential and business communities impacted.

WestConnex does not support the growth of the Sydney CBD or the wider metropolitan area, it does not support the Department's plan for a poly-centric city or support the growth of western Sydney.

The separation of the WestConnex projects, despite their critical interdependence, means it is difficult to make a meaningful assessment of the impact of each project on its own. This is even more important given all stages of WestConnex and associated projects are not fully funded.

Sydney2030/Green/Global/Connected

The project, as part of WestConnex, lacks the appropriate governance and assurance to ensure the wise investment of public funds is being conducted.

Should you wish to speak with a Council officer about the City's submission, please contact Bryony Cooper, Executive Manager City Access and Transport on 9265 9333 or at bcooper@cityofsydney.nsw.gov.au.

Yours sincerely

Monica Barone
Chief Executive Officer

Encl.

WestConnex New M5 Environmental Impact Statement

City of Sydney
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456 Kent Street
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City of Sydney submission to the Department of Planning and Environment

Sydney2030/Green/Global/Connected
city of villages

CITY OF SYDNEY 2030

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Executive Summary

The City of Sydney strongly objects to the WestConnex project. The strategic justification for the New M5 is weak and inconsistent with the NSW Government's strategic planning and policy framework, despite its inclusion in the 2012 *State Infrastructure Strategy* and the *Long Term Transport Master Plan*. The project as proposed in this Environmental Impact Statement (EIS) does not deliver the broader objectives of WestConnex as stated in the *Updated Strategic Business Case* (November 2015).

It should be recognised that **the current iteration of the WestConnex project is significantly different from the proposal in the 2012 *State Infrastructure Strategy*** which could potentially deliver the type of benefits to connectivity and generate urban renewal which it was intended to do. This has also **resulted in a cost increase from the original proposal of $6.8 billion, or 68 percent**. It should also be noted that these costs are strategic (i.e. at P50) and do not offer appropriate certainty of the Total Out-turn Cost.

WestConnex, if completed, will be Australia's largest ever motorway and toll-road project. The City has significant concerns that the cost of this project has grown to $16.8 billion which is not wholly funded, and presents a significant opportunity cost. This level of investment could deliver other projects of significant economic and social value to the state which would benefit a greater number of people and businesses.

There has been **no compelling case made for why WestConnex should be built,** and it is the City's view that **the project should not receive approval and not proceed.** The New M5 Environmental Impact Statement (EIS) and the *Updated Strategic Business Case* are clear that the **benefits accruing from Stage 2 do not outweigh the costs**. Benefits are shown to come once the whole WestConnex project is built according to the *Updated Strategic Business Case*, and that no benefits exist until all three Stages are delivered (WestConnex Full Scheme: Economic Appraisal, KPMG, 19 November 2015). It would therefore be reasonable to assume that **both the M4 East and New M5 provide *dis*benefits to society as standalone projects**. This is particularly concerning given there is a significant risk that Stage 3 will not be built.

The evidence shows **that around 90% of people who live in western and south-western Sydney and work in the CBD use public transport**, and that demand is rising (SGS Economics and Planning, 2015). There is only cursory consideration of the future delivery of the second Sydney airport and no consideration of the expected – or potential – transfer of jobs from the east to the west as a result.

An independent review of the WestConnex *Updated Strategic Business Case* by SGS Economics and Planning demonstrates that the BCR of 1.74 appears to be miscalculated and is potentially over-stated, based on the evidence in the business case. **It is unclear why the NSW Government would proceed with this project given this level of uncertainty.**

In terms of project integrity, the project has only progressed to the strategic business case stage which is intended to provide justification for the project – not provide the basis to proceed with delivery. It is unclear how the other WestConnex business cases relate to the existing program, and what basis the Government has to proceed with delivery given the lack of detailed planning or rigorous assurance. **The project should at least pass through all required Infrastructure NSW and NSW Treasury Gateways before**

proceeding to delivery. This lack of program assurance and confused business case staging signals significant governance flaws that cannot be ignored.

The City is very concerned that environmental assessments are being done on individual stages in a way that does not consider the full impacts of the entire proposed project. **The outcome from the delivery of Stage 1 and Stage 2 of WestConnex is likely to be a legacy program of infrastructure that does not and cannot respond flexibly to the intended land use outcomes of Government.**

Impacts on the City of Sydney

The delivery of the New M5 and in particular the St Peters Interchange, will have a significant impact on residents and businesses located in the City of Sydney. The increased traffic resulting from this project will impact on urban amenity and will limit the ability for public transport services to operate efficiently due to increased local road congestion.

The New M5 EIS assumes that by 2031 the full WestConnex project will be complete. This includes the M4-M5 Link (Stage 3), which will have additional significant impacts on residents and businesses in the City of Sydney LGA, including the eastern end of Parramatta Road and Broadway, the University of Sydney campus and adjacent residential, health and business precincts. **Nowhere in the EIS are these impacts considered, nor information given to the public to fully consider or understand the implications of the whole WestConnex program.**

The **increase in road capacity** on Euston Road from four lanes to between six and eight, and Campbell Road from two lanes to six will have noise impacts on people living in the area and using Sydney Park.

Similarly, the EIS demonstrates that **air quality, even at existing levels, is close to the allowable limits, and will only get worse** with a major interchange, road upgrades and ventilation stacks implemented at the St Peters Interchange and surrounds. If new air quality standards as proposed by the Council of Australian Governments (COAG) in 2012 are implemented, **the New M5 would well exceed allowable air pollution levels**.

The proposed project will have **impacts on the amenity of Sydney Park, an important open space** resource for **a** growing number of residents and visitors. The project proposes to **take land on the eastern side of the park** to deliver the upgrade of Euston Road, and **take land on the southern boundary for a construction compound**.

The development of the project would also see the **removal of mature trees on the boundary of Sydney Park** to widen Euston Road. While these trees would be reinstated, it will take decades to achieve the level of canopy that exists.

The EIS fails to appropriately provide for active transport connectivity, with significant concerns raised by the City regarding connectivity and safety. The proposal, especially for the raised pedestrian and cycle bridge over Campbell Road, **does not provide infrastructure to cater for the needs of different user groups** such as recreational walkers and commuter cyclists. **The City has concerns about how safety will be managed on the proposed bridge**, including access by emergency services. **Infrastructure for active transport has been designed to minimum standards** as opposed to traffic lanes which are not.

Failure to assess the project

The EIS lacks rigour and sound analysis, despite the huge volume of documentation. This lack of rigour and analysis is consistent across all chapters and appendices. The **project objectives are biased towards a motorway solution**, so that any proposed alternative falls short of the proposed solution. Similarly, the work undertaken in the EIS is highly compliance driven, and fails to take into account opportunities or strategic impacts, and **the assessment of cumulative impacts is almost negligent**.

The New M5 project has only been assessed to 2031, which does not take into account the 45 year concession period for the asset as stated in the *WestConnex Updated Strategic Business Case*. The assessment does not account for future events that may radically change travel demands or behaviours.

The land use policy of Government in *A Plan for Growing Sydney* (DP&E 2014) articulates a desire to re-orient Sydney to the west; creating employment lands for jobs and growth areas for residential and supporting facilities development. **It is not clear why, given this land use planning, the Government's key major investment is in a project that supports the transport task to the east.**

The EIS does not adequately consider the potential impact or opportunities presented by the future development of the Western Sydney Airport or the Moorebank Intermodal Terminal. These two defining changes in land use will play a critical role in reallocating jobs that traditionally have been located in Eastern Sydney to Western Sydney. This reallocation will fundamentally change people's travel behaviour, particularly as the data shows that the majority of people living in Western Sydney are employed in industries that will be supported by the new airport and intermodal terminal. It does not make sense why these two major changes are not appropriately considered in the EIS.

The evidence provided by the EIS in support of the New M5 is incomplete and unbalanced, selectively including and excluding impacts from subsequent planned stages of the WestConnex project. **The analysis of strategic alternatives in the EIS is cursory and fails to demonstrate the New M5 extension is the best option to meet the needs of a growing Sydney population**. The EIS also does not take into consideration the travel patterns of residents and businesses in western or south-western Sydney that the New M5 is intended to serve, nor the wider impacts on inner-Sydney communities affected by the WestConnex program.

Traffic on the existing M5 East exceeded capacity "within months" of opening (New M5 Project Overview, November 2015), including recent road widening. This lack of capacity is, in part, the rationale for the construction of the New M5. **The City contends that managing demand on the M5 East and providing high quality public transport alternatives for those who can change mode would be a more effective long term solution that simply a 'predict and provide' approach.**

Strategic justification for the project

WestConnex is presented as a 'transformational' infrastructure project, however, the EIS is not clear on what transformation it will achieve. **There is no demonstration that WestConnex delivers transformation in terms of social or economic improvement, or better land use outcomes**. ***To the contrary, WestConnex will deliver a piece of***

***infrastructure that increases traffic on local roads, does not enable value capture or urban renewal, and is not consistent with the government's land use priorities or the proposal in the 2012* State Infrastructure Strategy.**

The assessment in each area of the EIS broadly lacks rigour, and has taken a compliance approach to the SEARs rather than more strategically engaging with stakeholders to leverage knowledge, or to investigate opportunities to deliver better outcomes for communities. **The EIS fails to demonstrate the true impact of the proposal especially from an operational perspective, and does not identify and articulate any benefits.**

The EIS for the New M5 makes it clear that this project is predicated on "*other WestConnex projects"* including the Southern Gateway, Southern Extension and the Western Harbour Crossing**. The New M5, as with the M4 Widening and M4 East will lock Sydney into a multi-billion dollar road building future rather than providing much-needed public transport infrastructure** on the heavy rail system, or connecting Sydney's communities through sustainable transport services and facilities. The EIS refers to the additional stages of WestConnex in terms of the benefits they deliver in the context of the New M5 assessment, but does not consider the negative impacts.

The alternatives that have been considered by the project are poorly considered, and poorly assessed. The objectives of the New M5 in the EIS (p. iii) are clearly focused on the delivery of a motorway solution. Like all road projects that have come before it, **this project is focused on the movement of vehicles rather than the efficient movement of people and goods**, and shows disregard for place in terms of integration with land use. The functionality of existing places are not considered in the design, rather**, the project objectives to deliver a motorway solution are brutally inflicted upon existing communities** without consideration of the character of place or the most appropriate priority of movement in that place.

Legacy implications of the project

A larger question raised by the proposed New M5 project is **what happens if capacity on this motorway is reached?** The existing M5 East has proven that a new motorway can easily reach or exceed capacity within a 15 year timeframe. If that outcome is realised for the New M5, **Sydney will be left with a transport legacy that cannot support the jobs growth in the west** consistent with Government policy. Sydney needs to manage demand for existing road assets **to maximise economically productive use and deliver sustainable transport** as a real alternative to car travel. International cities such as Los Angeles are moving away from their dominant car-based culture to invest in public transport in order to build the sustainability and attractiveness of their city for residents, businesses and visitors alike.

The EIS for the **New M5 fails to take into account the whole-of-life asset impacts** of the motorway on both amenity (particularly in the city centre and urban renewal areas such as Ashmore, Green Square and Mascot) and traffic congestion. All assessments have a maximum horizon of 15 years which is not consistent with the proposed concession of 45 years that is stated in the *Updated Strategic Business Case.* **This demonstrates a failure of the project to forecast its impact or usefulness during its operation**. This creates risk and uncertainty. This risk is exacerbated for two reasons; first, is that the Government is the bearer of the financial risk for the entire WestConnex program which places taxpayers at risk. Second is that the *Updated Strategic Business Case* demonstrates negative benefits for Stage 1 (M4 East) and Stage 2 (New M5) unless Stage 3 is built.

A missed strategic opportunity

The government has **missed a significant strategic opportunity to be innovative and truly integrated in its approach** to developing a solution for the growing needs of south-western and western Sydney.

The statement that the New M5 project is an integrated transport project is false and misleading. It is a motorway that does not provide for improved public transport connections and has not fully considered the active transport component in line with government policy. The City's view is that the **government could have delivered a better outcome by focusing on ways to "improve access" that is modally agnostic and more consistent with government's land use policies.**

A better outcome may have been achieved through **a needs-based assessment to understand the transport task at hand**, and then to determine **the right mix of options to meet that task and support's the Government's strategic land use objectives**. This would likely have resulted in a multi-modal strategy rather than a motorway outcome.

Additionally, **freight connectivity may have been improved through improved pricing on the existing M5 East** (noting that people are likely to find alternative routes once a toll is introduced – and this is confirmed in the New M5 documentation). This toll effect will release capacity on the M5 East to better service the freight connections to the Port/Airport.

Conclusion

The inadequacy of the New M5 EIS is so profound that the **City of Sydney does not believe it can be used as the basis for a Ministerial determination** to approve the project.

Despite this government's excellent track record of delivery, "making it happen", this should not be at the expense of delivering the right outcome.

Chapter 1: Introduction

Project benefits

The benefits of the New M5 are summarised in the EIS in Section 1.4 (Volume 1A, p1-9). The benefits are limited to just two bullet points.

The EIS states the first key benefit as;

> "*The New M5 will offer quicker, more reliable trips between Western Sydney and the Sydney Airport / Port Botany precinct… by providing additional motorway capacity within the M5 corridor*".

This benefit is questionable. The New M5 does not provide direct and efficient access between south-western Sydney and the Sydney Airport / Port Botany precinct as the Sydney Gateway connection is not provided (and is still subject to design, costing and approvals). Even assuming the Sydney Gateway is delivered, the M5 East provides for much more direct access between Western Sydney and the Port and Airport. The original intention of the WestConnex project was to develop this connection from the M5 East to the Airport/Port rather than to build an entirely new motorway.

The argument that the New M5 is required to relieve the M5 East allowing for more efficient freight movement on the existing motorway falls away as tolls are applied to the M5 East. Tolling this currently free route is likely to result in toll avoidance and therefore reduced traffic on the M5 East to the extent that congestion is reduced with resultant improvements in the efficient movement of freight. The impacts of the toll on the M5 East and resultant toll avoidance is referenced in the *WestConnex Updated Strategic Business Case* Technical Paper 1 Traffic Report, p52.

Using price mechanisms to manage motorway demand in preference to the costs of new road building would appear to be an equally valid and effective mechanism to improve freight access between south-western Sydney and the Sydney Airport / Port Botany precinct.

The second key benefit of the New M5 described in the EIS relates to;

> "*Improvements to connections between employment and population centres along the M5 Motorway corridor… this would generally include a direct connection to employment zones within Sydney's global economic corridor generally, and specifically near Sydney Airport and Port Botany via the St Peters Interchange*".

As discussed, the New M5 does not directly serve the Sydney Airport and Port Botany precinct. **The existing M5 East provides a more direct connection to and from employment and population centres along the M5 Motorway corridor.**

It is noted that one of the rationale for WestConnex is the need to meet dispersed trips, that is, non-centre based employment (*WestConnex Updated Strategic Business Case*, p27). This is at odds with the statement in the EIS that the New M5 will connect population and employment centres.

The City of Sydney acknowledges that trip types are diverse, and that not all trips can be serviced by public transport. However, the objective of the Government in creating a truly integrated transport network should be to release road capacity on existing roads through a mix of demand management (especially for short trips) and public transport. After all, if the trip types really were as diverse as is stated in the Environmental Impact Statement for the New M5, **then there would not be a sufficient aggregation of demand to service the corridor.** This would indicate that the proponent has not performed its Due Diligence by assessing alternative options within a truly integrated (and constrained) transport system.

Throughout the Sydney Motorway Corporation's (and previously with WestConnex Delivery Authority) engagement with the City of Sydney, assertions have been made that the intention of the New M5 is not to deliver traffic into the Sydney CBD. However, given this stated benefit of the project and the city centre being the centre of the Global Economic Corridor, it would seem false to make this claim. There are similar inconsistencies throughout the EIS.

The New M5 project appears to enable long distance trips between the south-west and the east/Sydney CBD, yet the modelling does not support this; nor does the *Updated Strategic Business Case*. **Investing billions of dollars to enable these types of trips is not consistent with the land use policy of the Government's *A Plan for Growing Sydney* (specifically, Direction 1.7 Grow strategic centres – providing more jobs closer to home).**

The limited benefit of the New M5 as described in the EIS is supported by the economic analysis presented in the WestConnex *Updated Strategic Business Case* (November 2015) which **clearly shows that there are no benefits accruing from Stages 1 and 2 of WestConnex** (*WestConnex Full Scheme: Economic Appraisal,* KPMG, 19 November 2015, p43). If considered independently, the New M5 would not have a positive cost-benefit ratio; that is, the costs would outweigh the benefits of the project. More people will suffer a negative impact as a result of the project, than would benefit from it.

Chapter 2: Assessment Process

The EIS lacks rigour and sound analysis, despite the huge volume of documentation. This lack of rigour and analysis is consistent across all chapters and appendices. The **project objectives are biased towards a motorway solution**, so that any proposed alternative falls short of the proposed solution. Similarly, the work undertaken in the EIS is highly compliance driven, and fails to take into account opportunities or strategic impacts, and **the assessment of cumulative impacts is almost negligent**.

The New M5 project has only been assessed to 2031, which does not take into account the 45 year concession period for the asset as stated in the *WestConnex Updated Strategic Business Case*. The assessment does not account for future events that may radically change travel demands or behaviours Including major land use changes and opportunities such as the development of the new Western Sydney Airport at Badgerys Creek, and freight intermodal terminals.

Traffic on the existing M5 East exceeded capacity "within months" of opening (New M5 Project Overview, November 2015), including recent road widening. This lack of capacity is, in part, the rationale for the construction of the New M5. **The City contends that managing demand on the M5 East and providing high quality public transport alternatives for those who can change mode would be a more effective long term solution that simply a 'predict and provide' approach.**

The separate environmental approvals for each part of WestConnex makes assessment of the project, or of each individual stage difficult. **The nexus between the three core stages is strong, so it is difficult to assess each individual stage separately.** Although the proponent has attempted to show the impacts of the entire program in the traffic modelling, there are dangers in its limitations and assumptions. First, the study area and time horizons are not appropriate to understand the spatial or temporal impact of the project; second, the assumption that all stages will be built, including the extensions of the Sydney Gateway, Western Harbour Tunnel and Southern Extension is aspirational at this stage, given funding has not been secured and investigations are still underway. Thirdly, **attempting to de-couple each stage from the program means it is difficult to assess each project on its merits alone**, which is what is being asked. Fourthly, the project does not assess the cumulative operational impacts in any meaningful way to understand how each stage or the whole of WestConnex will affect the transport system, including strategic bus corridors.

Chapter 3: Strategic context and project need

The EIS claims the WestConnex is an integrated transport solution, yet this has not been demonstrated. The design of the project integrates a number of motorways, but does not integrate with multiple modes of transport to enable multi-modal trips.

The primary intention of this motorway is to carry private vehicles and this user group accounts for ~90% of the traffic. As a toll road, private cars are the desirable users of this facility. Without them, there is insufficient revenue generation to support the viability of the project.

Currently, the only real lever the government has to influence the location of jobs is to move government jobs into 'regions' such as western Sydney, but this does not send a signal to the broader private market that opportunities exist to make different choices. Despite the attractiveness of Sydney Harbour and Sydney CBD to multi-nationals, space for growth in limited and rents will always be at a premium. I**t is not until government transport infrastructure investment focuses on access to strategic growth areas in western Sydney that business will consider the government has made legitimate efforts to service those markets.**

The development of the Western Sydney Airport at Badgerys Creek and the Moorebank Intermodal Terminal is also likely to shift activity and jobs currently focused on the Airport Port and surrounding areas, to the west **nullifying the alleged demand for a motorway to the east.**

The identified key user groups in the EIS do not include people travelling to work from the west to the east, despite getting people to jobs in the east being a key driver for the project. **This demonstrates an inconsistent narrative throughout the documentation which lessens the legitimacy of the proposal.**

Project objectives (Section 3.5)

The stated project objectives are not related to the broader WestConnex objectives, and as such, there is no assessment of the validity of the New M5 objectives. **There is no information or statements in the EIS explaining the rationale for the project objectives**.

The New M5 EIS fails to demonstrate how the project objectives are met by the proposal. For example, traffic modelling is not provided to support objectives such as:

- *Support Sydney's long term economic growth through improved motorway access and connections linking Sydney's international gateways and Western Sydney and places of business across the city.*
- *Cater for the diverse travel demands along these corridors that are best met by road infrastructure.*

Strategic planning and policy framework (Section 3.1)

The EIS does not align with the Government's land use objectives in *A Plan for Growing Sydney* (DP&E 2014). The intention of that plan is to increase liveability by creating centres of economy to enable people to work close to where they live. **Rather than supporting emerging land use changes such as the Western Sydney Employment Lands, the proposed delivery of WestConnex is contradictory to the Government's own policy objectives**. Coupled with the future delivery of the Western Sydney Airport, it is unclear why the Government would invest in road infrastructure to take people to the east when the intention is to support and grow the Western Sydney economy. **This is a deep contradiction in the Government's public message that WestConnex is for the west.** Certainly the investment could be better used to support and grow the Western Sydney economy.

Another consideration is that the EIS states that the WestConnex program will "*Complete the orbital motorway network"*. **This is a misnomer as the orbital network was completed when the M7 opened in 2005.**

The view that "*WestConnex would facilitate urban renewal and improve the ability of communities to utilise space more efficiently"*, is repeated in the EIS (Volume 1A, p3-10). The EIS goes on to state; "*Reducing congestion and through traffic in a number of communities would enable road space to be reallocated to public transport and has the potential to improve air quality in these areas"*.

The EIS contains no proposals to reallocate road space to public transport or to protect local communities from increased traffic and resultant deteriorations in air quality. It fails to recognise that increased traffic flows will reduce air quality and increase community severance. Maintaining car dependency will, over time, increase the space required for parking and roads reducing the ability of communities to effectively and efficiently utilise scarce space in the future.

The EIS makes multiple references throughout the documentation to the *NSW 2021: A Plan to make NSW number one*. **This plan has been superseded by the Premier's Priorities and the State Priorities** (https://www.nsw.gov.au/making-it-happen). There are two relevant priorities to note in relation to this project.

First, is the priority, "*Improving road travel reliability*". This priority has the performance measure; "*90% of peak travel on key road routes is on time*". There is a clear link between the objectives of the New M5 to meet this performance indicator. However, the focus on "key road routes" indicates roads under the control of the Roads and Maritime Services. Given the epithet 'what matters is what is measured', this would imply **that the intention is to keep key motorways and state roads moving, potentially to the detriment of local roads.**

The second key priority interface is, "*Ensure on-time running for public transport"* with the performance measure, "***Maintain or improve reliability of public transport services over the next four years"*** being applied. Public transport relies on the local road network to provide an accessible service network to people. Given the EIS demonstrates an increase in local road traffic on streets that are already congested, it is difficult to see how the project contributes to this priority. **The need for public transport in this area is growing, and any impedance to the running of services will be detrimental to the Government's aims**. The EIS is silent on future public transport, and this is inconsistent with the growing demand for rail and bus services across Sydney.

The New M5 Environmental Impact Statement is silent on how buses will integrate and benefit from the New M5 construction except for mentioning that bus priority may be something to investigate. The EIS does not identify any dedicated public transport infrastructure or provide an assessment of needs and opportunities. This again indicates that the intention of the design is not for an integrated transport solution. There is no integration with heavy or light rail.

Sydney City Centre Access Strategy (Section 3.1.5)

The EIS suggests;

"WestConnex, including the project, would support the City Centre Access Strategy by:

- *Reducing the volume of extraneous (through) traffic using the CBD's surface road network*
- *Reducing congestion within the CBD, through encouraging motorists to use bypass routes and avoid the city centre road network."*

The EIS provides no evidence to support this assertion. It is difficult to comprehend how the New M5 will reduce the proportion of existing through-traffic using surface roads in the CBD. **Perhaps with a different design this may have been possible.** The Cross City Tunnel is underutilised and failed to reach its potential of reducing through-traffic choosing surface roads. Traffic on the existing M5 East would currently be expected to use the Eastern Distributor and Cross City Tunnel or Harbour Tunnel to effectively bypass the Sydney CBD. The tolls that would be applied to make this journey are likely unpalatable for many road users and would result in under-used infrastructure and further saturation of traffic on surface road networks.

It is noted that the New M5 EIS denies the New M5 is intended to be used to access the Sydney CBD. The City finds this contention questionable. Contrary to these assertions in the EIS, the New M5 and St Peters Interchange with widening of the Euston Road corridor, will increase traffic flowing into the Sydney CBD. The difference will be that traffic will use roads in the inner-south rather than the inner-west to make this journey, and **travel through suburbs that are undergoing rapid residential intensification and accommodate multiple industrial and business land uses**.

The NSW Government has articulated a view, through the *Tomorrow's Sydney* campaign**, to reduce peak period traffic and bus numbers in the Sydney CBD recognising road capacity in the CBD is constrained and will become more so** through the implementation of the Sydney CBD South East Light Rail project.

In the M4 East Submissions Report (page 4-290), it is stated: "*The project is not intended to enable more private vehicles to enter the Sydney CBD".* Yet, the overall WestConnex objectives include:

> *"Relieve road congestion to improve the speed, reliability and safety of travel in the M4, M5 and **Central Business District (CBD)**/ airport/ port corridors, including parallel arterial corridors".*

(WestConnex *Updated Strategic Business Case*, p23)

The *Updated Strategic Business* Case states that, "*Improving the speed, reliability and safety of any travel mode will increase its attractiveness, and therefore use".* It is difficult to reconcile the view that neither the M4 East nor New M5 are intended to increase traffic accessing the CBD given the project objectives. **The design of each Stage of WestConnex delivers connections to the Sydney CBD via local roads, yet the impacts of these connections have been excluded from the impact assessments.** If neither the M4 East nor New M5 will contribute to this overall WestConnex objective with respect to traffic travelling to/from the CBD, then the objective will not be met by the WestConnex project.

There are multiple statements in the New M5 EIS which strongly imply or explicitly state the project is designed to improve access to the Sydney CBD, which will increase the attractiveness of vehicular travel to access the Sydney CBD. For example:

> [In reference to demand on the M5 East] "*Congestion occurs mainly during the morning and evening peak hours when many people are commuting to and from work. This congestion is concentrated on the main arterial roads leading to employment centres"*. (Volume 1A, p 3-14)

and

> *"There is still a need to provide a link between Western Sydney and other centres in Sydney, such as the Sydney CBD, Sydney airport and Port Botany. These connections are required to allow not only for the flow of workers…"* (Volume 1A, p3-15)

and

> *"…the Transport Master Plan indicates about 500,000 people access Sydney's CBD and 100,000 passengers travel through Sydney Airport each day. These statistics indicate a strong growth in demand for road travel…"* (Volume 1A, p3-15)

Road safety

National Road Safety Strategy for Australia 2011-2020 (Section 3.2.4)

The EIS suggests that;

> *"By relieving road congestion (and thereby improving the speed, reliability and safety of travel along the M5 Motorway corridor), the delivery of the project is consistent with the overarching road safety directions identified in the Road Safety Strategy".*

It is difficult to understand how increasing traffic speeds will improve safety. The Roads and Maritime Service in the factsheet*, How does speeding increase the chances and severity of a crash?* States;

> *"As a vehicle's speed increases so does the distance travelled during the driver's reaction time (reaction distance) and the distance needed to stop (braking distance). Also the higher the speed, the greater the amount of kinetic (moving) energy that must be absorbed by the impact in the crash"*

and

> *"Speed is a major contributory factor to the severity of a crash".*

The factsheet presents evidence that lowering speed limits helps decrease the risk and severity of crashes.

When considering the injury risk based on vehicle impact, the factsheet makes it clear that:

> *"In addition to speed greatly increasing the risk of severe or fatal injury, a number of studies show that side impact or 't-bone' crashes are only survivable by passengers at much lower speeds than frontal crashes. This means that controlling speed at intersections is critical, to reducing crashes and casualties in areas where this type of conflict may occur".*

This supports the request by the City of Sydney for design changes to proposed intersections associated with road widening in the St Peters area and the removal of slip lanes, facilitating increased speeds of turning vehicles at intersections.

Reduced vehicle speeds on local roads and at intersections will also protect pedestrians. As the factsheet makes clear; "*reductions in vehicle speed will significantly reduce the severity of outcomes for pedestrians in the event of a crash"*.

Why the project is needed (section 3.3)

The EIS is clear that the rational for WestConnex is based on a 'predict and provide' approach to road building:

> *"Sydney's population is expected to increase by more than 1.6 million people by 2031 and without major investment in the road network infrastructure this growth would result in worsening road congestion. This congestion would in turn affect Sydney's economic competitiveness as a global city. To meet these challenges, the NSW Government is proposing to provide additional traffic capacity…"* (Volume 1A, p3-13)

To suggest that urban road building will resolve current and future traffic congestion is disingenuous. Sydney will continue to grow beyond 2031. The 'predict and provide' approach suggests that the Government is prepared to continue adding additional road infrastructure to meet current and future demand while also striving to attain a 'congestion free' urban road network. The natural conclusion is a city overtaken with the land consumption demands of roads, interchanges and parking to the extent that economically productive activities and residential neighbourhoods can no longer be accommodated.

WestConnex will not deliver long-term benefits to the economic growth of NSW or Australia, rather it will consume valuable public resources, locking people into long car commutes on expensive toll roads.

Freight, commercial and business services

Section 3.3.5 considers freight, commercial and business services. The EIS makes assertions regarding the proposed Western Sydney Airport and its potential implications for the movement of freight around Sydney, concluding that:

> "*Overall, the movement of freight around Sydney is not considered to be significantly altered by the introduction of the new airport, for the following reasons:*
>
> - *The operation of the of the proposed Western Sydney Airport would be staged, ramping up over time, with initial operations only commencing in the mid-2020s (a minimum of five years after the completion of the project)*
> - *Freight arriving at the new airport would still have destinations across wider Sydney*

- *Port Botany and Sydney Airport would still be key freight entry and exit points, with the new airport to complement the existing airport".* (Volume 1, page 3-16)

The City considers these justifications to be weak. The recently released *Western Sydney Airport Environmental Impact Statement* indicates: 'Sydney Airport has limited ability to handle further passenger growth due to the physical constraints at the existing site. The limitations of existing infrastructure are becoming apparent at peak times and are expected to become more pronounced over the coming decades.' (Western Sydney Airport EIS, Executive Summary, page 7)

The existing M5 East provides a direct link between Western Sydney and the Port/Airport precinct. **With the implementation of a toll on this corridor traffic will reduce, increasing the available capacity for economically important freight.** Further the M4-M5 Link and Sydney Gateway connect the M4 East with Port Botany and Sydney Airport and will be completed much later than the M4 East and St Peters Interchange. Until these connections are in place the existing M5 East offers the most direct and viable connection between Western Sydney and Port Botany and Sydney Airport.

The reference to a minimum of five years between the completion of WestConnex and the commencement of operations at Western Sydney Airport is incorrect; the actual gap is much less and may not exist at all.

Freight arriving at the new airport will have very different movement patterns from the freight arriving at Sydney Airport, given the considerable difference in origin/destination locations. Freight travelling to and from the Western Sydney Airport will mostly be concentrated on the roads serving the new airport. The EIS states: "*heavy freight activity precincts are concentrated in Western Sydney"*. (Volume 1A, p3-16).

Given the very recent release of a draft EIS for the Western Sydney Airport and recognising the airport will operate without a curfew, **the assumption that the role of the new airport will be limited appears premature.**

The proposed New M5 project states that a key function is to carry people from the growing south-west to jobs in the east, particularly the Airport and Port. **This is not consistent with government policy to develop a polycentric city that creates jobs close to where people live.** It is also not consistent with existing travel behaviour trends that show for these origin and destination pairs, the demand is for public transport (heavy rail in particular), not motorways. **Continuing with the traditional approach of connecting people in the west with jobs in the east by car will not support the timely or appropriate development of jobs in the west across multiple industries.** In this regard, WestConnex is an expensive and short-sighted program of works.

An identified key user group for the New M5 project is people travelling to the Airport. This clearly promotes further car travel to the Airport which will create greater congestion, rather than promoting more sustainable alternatives such as heavy rail.

Even though the proposed project states it will connect people to the Port or Airport, it really does neither. The project does not offer people travelling from the south-west direct access to either the Port or the Airport. Instead, **people are required to exit at the proposed St Peters interchange onto Gardeners Road then approach the Airport and Port on local roads.** The cynical view of this is that the proponent is seeking to force people to travel further and as a result, pay higher tolls given they will be charged on a per kilometre basis.

An example of this is how people in the Mascot and Waterloo/Beaconsfield areas will access the Airport and Port via Sydney Gateway. As the location of key employment lands (including freight logistics companies), it would seem logical that infrastructure at the scale and with the stated importance of WestConnex would improve access to these destinations. Instead, **the design of the St Peters Interchange does not allow traffic entering from either Euston Road or Gardeners Road to connect with the future Sydney Gateway.** This shows the intention that traffic in these areas, which already experiences significant traffic congestion at key intersections, will continue to access the Port and Airport via local roads, in particular through Mascot Town Centre. This will worsen congestion on these streets, particularly given the local traffic increases that result directly from the construction of the New M5, including through induced demand and toll avoidance on the combined M5 corridor.

Similarly, early designs indicate **vehicles travelling on the proposed Southern Extension will only be able to head eastbound on the New M5, there will be no ability to head west.** There is no rationale why this is the case or what alternate path people travelling west from the south, or south from the west, would need to take.

The EIS demonstrates that the Project does not actually service key destinations such as the Port and Airport. The project is pushing larger volumes of traffic onto already congested local roads (for example, Gardeners Road where the intersections with Botany Road and O'Riordan Street are already exceeding capacity) without comprehensive traffic modelling to understand the impact. The existing M5 East provides a more direct connection between south west Sydney and both the Port and Airport, and **it is unlikely that freight vehicles will choose a circuitous route such as the New M5 over a more direct route; especially given capacity is released on the M5 East as a result of tolls being introduced.**

The summary of this EIS chapter states that the project will "*provide access to jobs in Sydney's east and CBD*" (p. 3-21). **This clearly demonstrates an objective of this project is to connect people to the Sydney CBD**, despite this being actively denied during consultation with the City of Sydney and being denied through the modelling approach. The City of Sydney recognises that with growing congestion, there is decreasing road space for inefficient transport modes such as the private car. Building car-based infrastructure to the city centre is not consistent with supporting the government's own investments in active and public transport, nor its land use policies.

Regional impacts

The Secretary's Environmental Assessment Requirements mandate the proponent to, "[take] *into account infrastructure and services within the adjoining subregions*". **This has not been adequately completed.**

To fulfil this requirement, the proponent would need to broaden the scope of its impact assessment to include impacts of traffic on major renewal sites such as Mascot (which is not adequately considered), Green Square (which is not considered at all), and the Ashmore precinct (not considered, and is in close proximity to Euston Road/ Sydney park Road intersection) particularly from an urban amenity perspective. **The City also has significant concerns on the impact of the project on access to employment lands in Rosebery and Mascot in particular.**

Section 3.4 of the Environmental Impact Statement states that an indirect benefits of the New M5 motorway includes benefits to other transport users, which really means transferring people from public or active transport to car trips. This is contrary to the long-term outcomes sought by government to increase public transport use.

Another indirect benefit is stated as reducing congestion on surrounding road links, but this has not been adequately modelled and the documentation **in the EIS demonstrates that in many cases, is simply untrue** (see section 10.3.2.2, Table 99). Although the modelling shows there is a significant reduction in traffic on some roads (for example, the Princes Highway), **this is because this traffic is being deliberately funnelled elsewhere**. The impacts of this diversion have not been adequately tested in the modelling, and there has not been adequate consideration of potential alternate routes as a result of higher traffic on local streets (for example, traffic using Mitchell Road rather than Euston Road – they currently function as a parallel set).

Where traffic flows are reduced, such as along Princes Highway, **the roadspace must be reallocated to alternative transport users** (public transport and active transport) and to improve local amenity (widened footpaths) as an integral part of the WestConnex project. This will avoid future additional traffic being induced to use the road network as increased capacity becomes available.

There is potential for a rat-run to King Street that will emerge as a result of the changes to local roads. These potential rat runs have not been adequately identified due to the limitations of the traffic model study area, and the trip assignment that has been built into the model (for example, Mitchell Road is showing a decrease in traffic but in the view of our independent reviewers, the trip assignment has not taken into consideration that people will use Mitchell Road to avoid Euston Road. These two roads already function as a pair.

The toll avoidance effect

The New M5 EIS is clear that toll avoidance will occur. This is consistent with the M4 Widening and M4 East EIS documents, and consistent with Sydney experience with the Cross City Tunnel, the Lane Cove Tunnel and removal of the toll on the M4. Toll avoidance, particularly where traffic is forecast to leave the M5 East and use local roads, is of considerable concern to the City.

The Government's current policy of maintaining free surface alternatives despite huge investment in new roads is not acceptable. Local roads through local residential and business communities must not be expected to take additional traffic that results from toll avoidance. In adopting this policy, the most significant potential benefit of any new road building is lost, that is the opportunity to significantly reduce traffic in local residential and business precincts.

The New M5 EIS recognises that with the introduction of a toll, some drivers using the M5 East will choose alternate routes, as is shown by the large forecast traffic increases on Stoney Creek Road and King Georges Road amongst others. While these roads are not within the boundaries of the City of Sydney, it highlights a broader concern about the merits of the project and its justification in the EIS and *Updated Strategic Business Case*.

One of the core transport objectives of WestConnex is to "*relieve road congestion to improve the speed, reliability and safety of travel in the M5 Motorway corridor, including parallel arterial roads"*. Given future traffic volumes on Stoney Creek Road will rise considerably following delivery of the New M5 project as a result of toll avoidance, **it can be argued that the project does not meet this transport objective.**

The *WestConnex Updated Strategic Business Case* sets out the proposed tolling regime for WestConnex (Chapter 9, p190). **While tolls will be distance-based, they will not be varied according to time of day and therefore will not respond to the actual travel time saved which will vary based on the broader road network conditions.** Simply, travel time saved through use of WestConnex will be greatest at peak times when the road network is relatively congested, despite the EIS attempting to assert the opposite in Chapter 9 and Appendix G. As congestion on the adjacent surface road network reduces through inter and off peak periods, so the actual travel time saved by using WestConnex in comparison to the surface road network will reduce as will the willingness to pay the toll. **The effects of toll avoidance will be greatest during inter and off peak periods, the times when residents typically enjoy relatively reduced traffic levels on local streets.**

This impact is recognised in the EIS (Volume 1B, p9-131):

> *"It is expected that traffic switching to parallel arterial roads may be partly a result of the introduction of tolls onto the M5 East Motorway. This is likely to occur outside of peak traffic periods to avoid the proposed tolls. This is not expected to have an impact from a traffic perspective in terms of congestion, as there is generally spare capacity across the network in off-peak periods".*

It is of concern that traffic volumes in local streets are likely to increase and because this increase is expected to occur during the relatively uncongested off-peak periods it is also likely vehicle speeds will be relatively high. This detrimental impact on local amenity and safety is not recognised or assessed in the EIS.

Should project approval be forthcoming there must be a requirement placed on the proponent and RMS to reduce local road capacity and access to levels commensurate with the needs of the local community before the New M5 is operational.

In addition to the toll avoidance identified in the New M5 EIS, the reliance placed on tolls and the introduction of tolls on previously un-tolled roads raises concerns that have been supported by University of Sydney research (http://www.smh.com.au/nsw/sydney-motorists-unwilling-to-pay-for-more-toll-roads-study-20151110-gkv5b3.html); **that people will reach the limit of their financial capacity to pay tolls**, further resulting in the use of local roads that are not tolled. Neither the *Updated Strategic Business Case* of the New M5 EIS explore the potential social, economic or environmental impacts of substantially reduced willingness to pay tolls in the future.

WestConnex: enabler or disabler?

The assertion that WestConnex will enable the Bays precinct and Parramatta Road revitalisation is tenuous, and **no evidence is provided how this proposal contributes to the realisation of those outcomes**. Rather, the proposal as it stands, with no allocated funding for Stage 3 or any extension, including the Western Harbour Tunnel, further diminishes this assertion.

The project objectives state that the project will "*cater for diverse travel demands… best met by road infrastructure*" however, there has been **no assessment of whether the needs of western and south-western Sydney are actually best met by road infrastructure**.

Chapter 4: Project development and alternatives

The Strategic Alternatives fail to fully canvas and explore the potential of strategic alternatives in terms of an integrated approach. Each alternative is treated in isolation from the others when in reality a holistic future strategy would encompass elements of each 'alternative'. As stated in the independent SGS Economics and Planning review, "*Strategic Alternatives 2, 3 and 4 present mechanisms which have the potential to reduce demand for road usage. However, these have been scoped in a way which makes it difficult to assess them as being legitimate alternatives to the New M5. Strategic Alternatives which 'bundle' different elements of the alternatives are not presented*" (SGS Economics and Planning, 2016).

Demand management combined with investment in public transport could be particularly effective in reducing peak period commuter road use, freeing up road capacity for delivery and service vehicles. **This improved use of existing road infrastructure by economically important traffic should be fully explored prior to pursuing a major program of road building at a high cost to taxpayers in NSW and across Australia.**

The opportunities to expand rail freight do not appear to be fully considered given the development of the Moorebank Intermodal Terminal and the recently announced Asciano plan to build a $100 million terminal at St Marys. There is excess rail capacity to move containerised freight to and from Port Botany and the viability of doing so will be enhanced by these new intermodal facilities in the future.

The identified Strategic Alternatives are assessed against the stated project objectives, including, "*Support Sydney's long-term economic growth through improved motorway access and connections…"* (page 4-19). **This objective is specific in its outcome and excludes consideration of non-motorway transport alternatives that may also support Sydney's long-term economic growth.**

The analysis of the alternatives against the stated objectives appears flawed and subjective. For example; investment in public transport and rail freight improvements will relieve road congestion, improving the speed, reliability and safety of travel in the M5 corridor. It will do this through providing alternative options for those passenger and freight trips that can utilise public transport and rail freight, thus reducing competition for valuable road space and freeing up capacity for those trips which need to use the road. This is essentially demand management across modal options. Demand management is considered to meet this particular objective.

It is also unclear why no alternative other than construction of the New M5 meets the objective, "*Optimise user pays contributions to support funding in an affordable and equitable way"*. **Tolls can be introduced on to the existing M5 East, public transport fares can be applied to new rail infrastructure and services**. This can be done in an affordable and equitable manner and avoids considerable Government expense through the more efficient use of road infrastructure and the construction of high capacity rail integrated with a high quality bus network. Moreover, as demonstrated through recent Government announcements, Metro Rail has the capacity to support increased residential and commercial development in a way motorways cannot.

Program governance and assurance

The Sydney Motorway Corporation has followed a process that engages the market early to develop the solution in order to reduce cost uncertainty, and as a result has identified a preferred tenderer. This is a questionable approach in terms of delivering an outcome that is in the best public interest, given that the preferred tenderer now has a significant financial interest in the project proceeding. **This creates a conflict of interest and indicates a level of market and government certainty for the project to proceed**. It also raises significant concerns regarding the treatment of legitimate project scope changes that may be required as an outcome of the community consultation and assessment through the EIS process.

It is difficult to have confidence in the assessment of a project that, through its procurement strategy and announcement of a preferred tenderer, has been implicit that approval from the Department of Planning and Environment will be forthcoming. **The fact that the EIS and all community updates state that construction will begin in mid-2016 indicates that there is no intention to refuse the project, and delivery will proceed.**

The NSW Auditor-General's report to the NSW Government on WestConnex, *WestConnex Assurance to Government* (18 December 2014), raised significant concerns about **embedded deficiencies in the WestConnex program development and the lack of independent assurance**. Independent assurance is critical to the development of a program, especially of this scale, and best practice should be followed. Currently, the program sits in the final stages of Government assurance processes without the actual intervention of those processes taking place.

The Government-approved Gateway Review process is shown below. The intention of this process is to ensure that the Government is given assurance to proceed with its investment at key stages. This process seeks to ensure investment decisions are based on sound and comprehensive information. **A project should not proceed if it cannot clear through each Gate.**

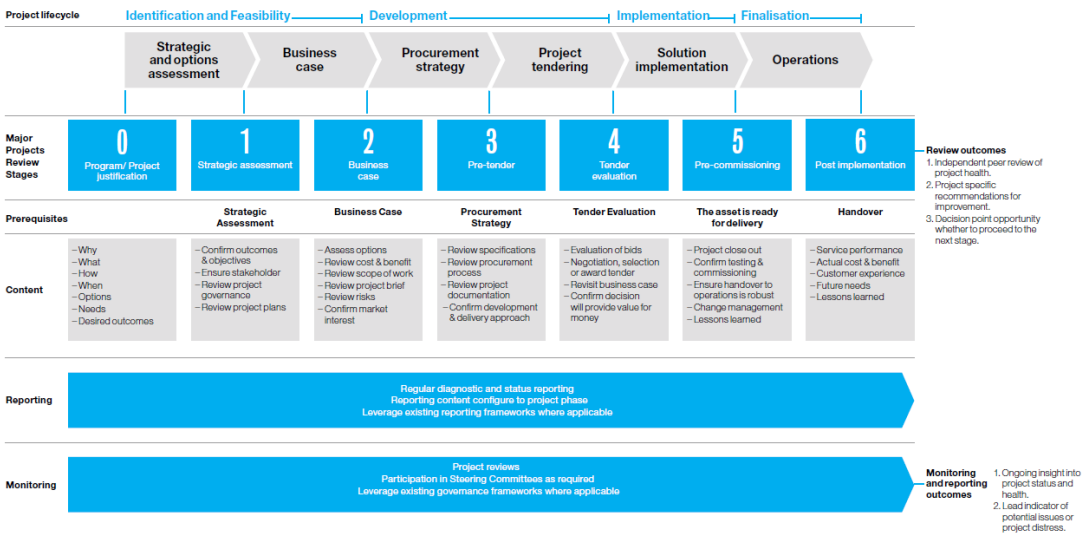
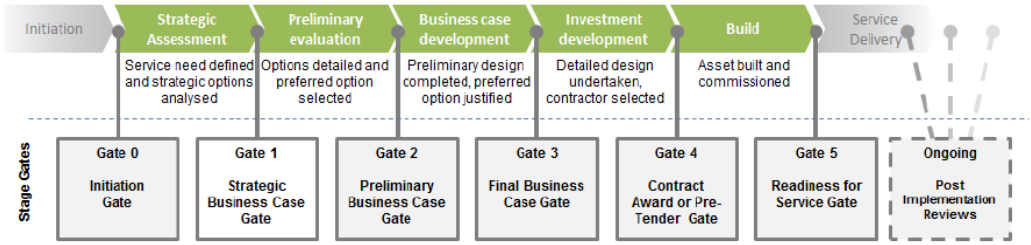


Figure 1 - NSW Government's Major Projects Assurance Framework

The diagram below gives context as to the correct sequence for business case development, as per Transport for NSW's Assurance System.



It should be noted, with concern, that in 2013 the first independent Gateway review of WestConnex was conducted of a Preliminary Business Case. A Preliminary Business Case aligns with Gate 2 of both Transport for NSW's Assurance System, and the Government's own Framework.

In its report, the review panel stated "*due to lack of key information presented for the review, the Gateway Review Panel was not able to form a view on whether the project is a worthwhile and prudent investment (both economically and financially viable) for the NSW Government"* (NSW AO 2013). There was no option to place WestConnex on hold and work carried on to develop a Final Business Case.

In November 2015, the Sydney Motorway Corporation released the *Updated Strategic Business Case* for WestConnex. **It is unclear why the proponent has delivered a Strategic Business Case (Gate 1), despite already having delivered a Preliminary and Final business case**, and the project currently sitting at Gate 4. Based on information in the EIS, the project is ready to proceed to Gate 5 – Build/Pre-Commissioning within six months, despite no detailed design being released for public consideration. **This raises concerns about the strategic merit of the program, and the lack of detailed design would indicate that WestConnex cannot proceed to Gate 3.**

Assessment Methodology

The City's review of the modelling and its assumptions has found some key flaws around the methodology applied, such as;

- The extent of the study area for the traffic model is not sufficient and does not take into account the sub-regional impacts of the project, as required by the SEARs;
- The timing of traffic counts;
- The inclusion/exclusion of major land use changes; and
- The application of Level of Service as the core measure of impact.

The City has commissioned an independent review of the Strategic Alternatives and Socio-economic Impacts by SGS Economics and Planning and a full independent review of the Traffic and Transport components of the New M5 EIS by TTM Consulting. See Appendices A and C, respectively).

Key findings of the TTM independent review are:

- Forecast traffic volumes for the New M5 are very low, and by comparison, are lower than the Cross City Tunnel;

- The tolling regime for WestConnex will result in toll avoidance, impacting local streets;
- The inclusion of uncommitted projects (i.e. Stage 3, Sydney Gateway, Western Harbour Tunnel) in the assessment of the New M5 is questionable;
- The effects of the toll on the existing M5 East need to be considered independently from the New M5 to understand its effect;
- The strategic traffic modelling is inconsistent with excessively high average weekday traffic forecasts;
- The upgrade of Campbell Road/Euston Road results in significant diversions from Princes Highway/Sydney Park Road without the implications being addressed in the EIS and the proposed scope of works;
- The EIS has used high Convert Factors for traffic demand which may distort the results; and
- The assumptions around route choice built into the traffic model are questionable and likely to result in distorted outcomes.

During the exhibition period, Sydney Motorway Corporation held workshops with senior staff from City of Sydney, Marrickville and Botany Bay Councils. At these workshops, staff requested further information on the traffic modelling, including data missing from the EIS pertaining to impacts on the City of Sydney local government area; and select link analyses on roads outside of the very limited EIS Traffic and Transport Study Area, as shown in Figure 1.

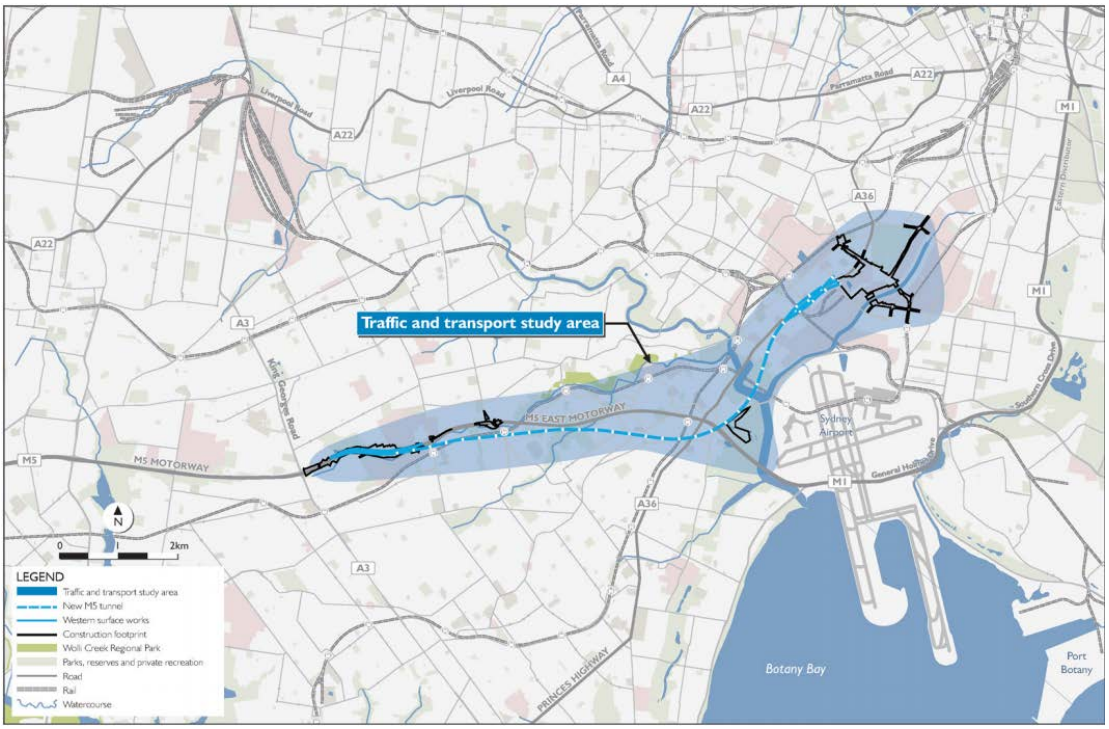


Figure 2 - New M5 EIS - Traffic and Transport study area

The select links were intended to inform the City's understanding of the project's impact on areas such as Erskineville, Alexandria, Green Square and the Ashmore precinct, which were omitted from the EIS. TTM Consulting undertook a robust analysis of the data provided and the following key points can be made:

- A small volume of traffic is using the New M5 which indicates the motorway is not needed and the apparent demand could be met in other less costly ways;
- The New M5 results in changes to and increased capacity on local roads which induces local demand, adding to induced demand resulting from the New M5 itself;

- A very small proportion of vehicles are using the St Peters Interchange to access the Port and Airport, which means most Port / Airport traffic is using the existing M5 East due to its more direct connection and as a result of released capacity through tolling; and
- The impact on local roads is significant, particularly Euston Road, and the dispersion of traffic across the local network will have a significant impact on local streets.

These findings are not consistent with the interpretation of the proponent, who suggests that the New M5 will not impact local streets as the traffic that is induced from the motorway is dispersed onto local streets. **However**, **the proponent's interpretation does not take into account the induced local demand as a result of local road upgrades associated with the project, nor does it consider the compounding effects of regional land use changes such as Green Square and their cumulative impact on the St Peters Interchange area.**

Development of the WestConnex Road Traffic Model (WRTM) states that it accommodated, "*other transport improvements across the Sydney region*". It would be beneficial to understand what these "improvements" are; particularly **whether the Moorebank Intermodal Freight Terminal, the Western Sydney Airport and Western Sydney Employment Area were included.** Our understanding from conversations with the Sydney Motorway Corporation is that it was included, but that its relevance was discounted due to those projects being built after WestConnex. **This is not an appropriate position given the clear nexus between future land use, travel demand and employment hubs; or that WestConnex has only considered its impact to 2031.**

WRTM **used travel time surveys from December 2012 for calibration** – given travel patterns in December are significantly altered with generally lower-than-average road use due to the holiday period; this is not a preferred or appropriate time period for calibration purposes. It would be beneficial to understand where and when these surveys were conducted.

The WRTM also used toll plaza transaction data for many of the toll roads in Sydney for calibration. It is interesting that data from the Cross City Tunnel (CCT) is excluded from the analysis. **The inclusion of data from a failed motorway project would provide a robust sensitivity analysis when predicting future demand for the WestConnex program, particularly given the data shows traffic volumes on the New M5 are similar to those on the Cross City Tunnel.**

Land use projections for zones surrounding the St Peters Interchange were extracted from the Sydney Strategic Transport Model (STM). It would be beneficial to review the demand matrices for the Southern Employment Lands to make sure they are consistent with the City's projections for the precinct. **If the STM overestimates the development potential of the precinct, the WRTM may comprise unrealistic traffic volumes passing through the St Peters Interchange.**

The EIS states, "*the extent of the modelling covers areas forecast to be impacted by the project and was agreed in advance with Roads and Maritime Services (RMS)*" (section 4.1.3.1). Given the Paramics model built for the St Peters Interchange did not extend north of Sydney Park Road, **it is difficult to have confidence that the modelling can clearly quantify the impact of local roads in St Peters, Alexandria, Erskineville and Newtown.**

The EIS states, "*the base models were submitted for review by RMS*" (section 4.1.3.2). **Other than RMS, the Paramics models for WestConnex need to be reviewed and verified by a third-party independent consultant** to comply with Section 5.8 of the *RMS Traffic Modelling Guidelines* states that "*all models require a peer review or model audit*".

Alternative 1 – Base case or 'do nothing'/ 'do minimum'

There is no detail on the scope of the works that constitute the 'minor improvements' such as:

- The nature of the works proposed;
- The location of the works;
- The timeframe or trigger points for undertaking the upgrades;
- How much capacity these works would add to the corridor; and
- There is also no information on the cost of undertaking these improvements.

Alternative 2 – Optimising the performance of existing infrastructure

Alternative 2 also has very limited detail, but more than Alternative 1. Despite this, there are significant gaps that make a comparable assessment of the alternatives obsolete.

Alternative 3 – Investment only in public transport and freight rail improvements

Alternative 3 considers investment in public transport and rail freight. **This alternative option has been poorly considered, although its inclusion is supported.** Yet, the confusing issue here is that consideration of this alternative is not consistent with the objectives of the project itself.

This option does not consider what is possible from the transport network, but rather what exists. **Alternative 3 is not a strategic alternative as it just identifies initiatives already detailed in existing planning documents. No new projects, or changes to timing are identified to address the issues seeking to be solved**. This lacks strategic insight from the government for such a long-term project.

The key rationale in the EIS to dismiss this alternative is that trips from the south-west to the east are dispersed. However, dispersed trips types can be met by non-car modes. As stated earlier, **there is deemed sufficient aggregated demand to create consideration of the New M5 corridor, therefore there is potential to meet this demand through a modern, integrated transport approach.** The government has been developing its transport system to require greater interchange as a means to achieve greater frequency, and there is no reason why this approach could not be taken here to service the demands along the corridor.

It would be better use of a constrained urban environment to make improved use of existing road infrastructure by enhancing priority for more economically productive trips (i.e. freight through tolling out other road users, or having dedicated capacity) and high-demand modes (i.e. public transport). The counter-argument to this approach is likely to be that a significant proportion of trips on the corridor are all-day, business trips that are best met through private car use. However, this is limited by current thinking and does not look to the future or the potential to incentivise businesses' corporate sustainability agendas and incentivise behaviour change through demand management.

The $16.8 billion currently estimated to fund the WestConnex project (these are strategic, not detailed costs) could deliver significant public transport – both capital and operational. Alternative 3 discusses the existing congestion on the rail and bus networks, yet the funding allocated for WestConnex could deliver new infrastructure for public transport modes, or delivering priority public transport measures. **There is also no consideration in this alternative of what modes could potentially service the demand apart from a motorway.** The level of capital funding that is being allocated to this project could be invested in new rail infrastructure and contribute significantly towards operating costs for many years. Rail is used as an example in this submission as it is the most capital intensive and expensive mode to operate.

Similarly, there is no consideration of what priority measures could be investigated or implemented for freight. It is not feasible to transfer all goods to rail freight, as it is not suitable and the market is unlikely to respond favourably; especially for time-sensitive or perishable goods.

Transporting freight to the Airport and Port is stated as a primary objective of the project, yet the project does not deliver this outcome. Instead, freight is required to join the (already congested) road network at St Peters Interchange to navigate its way to the Airport/Port. There is no evidence in the Environmental Impact Statement to suggest that freight will be the primary user or will obtain the most benefit. The primary users if the New M5 will need to be private car users, accounting for ~90% of traffic, and generating the required toll income to make the project feasible. **The EIS appears to have grossly underestimated the willingness or capacity of Sydneysiders to pay for additional tolls** and the effect that this will have in terms of pushing traffic from motorways onto local roads.

The summary for Alternative 3 discusses active and public transport being viable only in terms of the commute task. This is not correct and is a narrow view. Transport planning is generally built around the commute task as this defines the required assets, however the majority of trips are not for commuting purposes which means networks need to be developed to meet multiple needs. **As work practices change, travel demand is likely to change too. Similarly, the transport network can change work practices**, such as spreading the traditional peak as services reach capacity (both public transport and road transport) which influences mode choice and time of day for travel.

There are opportunities with the introduction of the *Passenger Transport Act* in 2014 to **leverage more flexible and demand-responsive service types within the transport mix to service dispersed origins and destinations to feed into a trunk routes.** Technology is a significant enabler of this type of travel and behaviour. Flexible service planning is not usual in Sydney, but has the ability to maximise utility on existing services and create opportunities for meaningful public transport in western and south-west Sydney.

Alternative 4 – Demand Management

This alternative has been very poorly considered. This alternative also lacks detail about what aspects of demand management have been considered, where they might be implemented, what they might cost or what the impact/outcome of the intervention might be.

Page vii in the EIS Executive Summary states, "*Traffic would either choose to travel at different times of the day, if possible, seek alternative routes or modes to their destinations or choose not to travel at all*". **Peak spreading, modal shift and working from home are all efficient forms of demand management. They are not disincentives.** The congestion on the existing motorways could be viewed as an opportunity to change Sydney's travel patterns for the better. Especially if different choices are positioned and made more attractive to potential users.

The literature on demand management tells us that behaviour change needs a catalyst, which is why disruption is often the best time to affect behaviour change. If road capacity is constrained, people will make other choices. The EIS states, "*a network and corridor optimisation approach to manage delay and queuing impacts at critical intersections*" (Executive Summary, px). If this approach can be adopted to manage traffic demand post-WestConnex, then if the project is approved, **it should be a condition of consent to be implemented as part of the detailed design and project delivery.**

Similarly, the Executive Summary also states, "*In the St Peters road network, forecast growth in traffic would cause further congestion, with the network unable to accommodate the future traffic demands*". Given modelling indicates that 1,000 vehicles during the AM peak-hour are unreleased even with the full WestConnex, Sydney Gateway and the Southern Extension, **it is clear that the future demands estimated in the model will either never materialise or there will be a need for demand management even after investing at least $16.8 billion in WestConnex**.

Alternative 5 – Construction of the New M5 as part of the WestConnex program of works

On its own, there are concerns about the stated benefits and negative impacts of the New M5. The WestConnex program of works is not funded past Stage 2. This raises significant concerns about the long-term legacy impact of this project, **especially if the remainder of WestConnex is unfunded and not delivered, which is possible.**

It would have been more useful to also understand the impact of the New M5 without the rest of WestConnex, and the legacy this will leave on regional amenity and freight access. This is important from a project integrity point of view given a criteria for assessment of these alternatives was to "*provide for integration with other WestConnex projects while not significantly impacting on the surrounding environment in the interim period*".

Project Objectives

The project objectives as shown in Table 4-2 are intended to exclude non-motorway alternatives. A modally agnostic view would likely have delivered a more complex but useful and long-lasting solution than a motorway. The process and rationale for choosing these objectives is not explained. The objectives do not appear to be linked to Government's strategic planning goals. **It would be useful to understand the methodology for assessment including weightings (if any) that were applied to the criteria, how it was assessed, and by whom**. It is unlikely and it would be unusual that all these criteria are considered equal. If all criteria are equally weighted, then this is a poor methodology and therefore a poor outcome.

There is no consideration in the project objectives about maintaining Sydney's sense of place, particularly in areas that have significant cultural value such as Newtown.

Section 4.4.1 states that an objective of choosing an interchange location was to "*maximise connectivity with the local road network and nearby areas of urban growth including connections to areas of predicted population growth in inner south-west Sydney, such as Green Square and Mascot*". If this is the case, then **the traffic assessment methodology is inherently flawed as it omits these areas completely. This also demonstrates that the proponent is aware of the spatial and social relationship between the St Peters area and the urban renewal areas of Green Square and Mascot.**

Similarly, section 4.4.4 gives a rationale as to why Euston Road was chosen, and again, it was to connect to places such as Green Square.

Chapter 5: Project Description

Section 5.1 (WestConnex and the New M5) provides an outline of the WestConnex proposal in its entirety and the current status of the various components of the project. The current status of the Western Harbour Tunnel, Sydney Gateway to Port Botany and Sydney Airport, and the Southern Extension are omitted.

This is an omission, yet the assessment of traffic and transport impacts (Appendix G) assumes these projects are in place by 2031.

Euston Road

Section 5.7.1 discusses the parking arrangements on Euston Road following construction. The documentation states that Euston Road will become a clearway during peak periods. However, this does not take into account a couple of key features; first, that **Euston Road is particularly congested on the weekend**, with the area frequented by shopping tour buses and other vehicles as well as through traffic. Secondly, that there has not been consideration of the impact of the New M5 project on Euston Road and McEvoy Street north of Maddox Street when the road returns to its existing configuration. The modelling in Appendix G shows (Table 108) that **there is unreleased demand of an additional 114% northbound in the AM peak on Euston Road** with full WestConnex in 2031 compared to without WestConnex. This is unacceptable to the City.

Project design

The project description and the diagrams do not adequately state the width of footpaths and cycleways. It is necessary to design adequately for bike and foot traffic as per Austroads requirements. At present, the road infrastructure is provided at above minimum levels, whereas the pedestrian and cycle infrastructure is at minimums or less. **It would be wise for the Government to consider and engage with its own policy to adequately provide for these growing road user groups.**

The Government's cycling policy, *Sydney's Cycling Future*, promises "*bicycles will be incorporated into the delivery of transport projects*" and "*Bicycle facilities will be identified and delivered parallel to major transport corridors*", yet this project has only included bicycle facilities at each end, not along the length of the corridor. **The project should be required to fulfil Government policy to deliver a parallel active transport corridor**, just as previous projects, such as the M7 and the Lane Cove Tunnel, did.

The use of slip lanes at intersections throughout the project is pervasive. The City is not supportive of slip lanes at intersections as they generally encourage traffic to travel through intersections at faster speeds. Slip lanes require pedestrians and bicycle riders to cross the road in at least two crossing movements, which is undesirable and can leave people vulnerable where traffic volumes and/or speeds are high. Slip lanes also increase the land take for upgraded intersections and this is significant at the Campbell Road / Euston Road and the Euston Road / Sydney Park Road intersections where additional areas of Sydney Park are taken for the intersections.

The documentation states that the "*existing on-road cycleway will be retained*". While this is supported, the description as an "*on-road cycleway*" could imply a shoulder lane or in-lane cycleway; it is a separated cycleway and needs to be described as such.

With the reconfigured Bourke Road/ Gardeners Road intersection, there is no continuity of the separated cycleway with the project design. It is not clear how bike riders are meant to transfer from Bourke Street (south) to Bourke Road (north) without needing to complete a turning movement on Gardeners Road, or move onto the footpath (which is illegal unless the area becomes a shared path); in which case the "on-road" continuity of the cycleway is not maintained. Should the project proceed to detailed design phase, the proponent will need to resolve this matter and maintain a dedicated, separated cycleway along Bourke Street/Road from Mascot to its terminus at Woolloomooloo. **It is recommended that the proponent complete this design in collaboration with the City of Sydney, Botany Bay Council and the Transport cluster's active transport teams.**

The cycleway along the extension of Campbell Road over the Alexandra Canal must have a safe ramp connection to the cycleway along the eastern side of the canal and have provision for connection to the future cycleway on the western side of the canal.

The diagrams at Figure 5-34 and 5-37 do not match in terms of road configuration, and do not give details regarding intended widths for traffic lanes and the pedestrian and cycling facilities. The proponent must advise which is the correct diagram and the widths of traffic lanes and the walking and cycling facilities and state how the design complies with Austroads. As with road design pedestrian and cycle facilities should be designed for growth and functionality rather than to the minimum requirement.

Table 5-7 indicates that in some locations, the design speed is higher than the signposted speed. No rationale is provided for this. Areas of concern for the City are Bourke Road between Gardeners Road and Campbell Road due to the high volume of bike riders and other vulnerable road user groups, which are likely to increase over time with the ongoing development of Mascot Town Centre.

In section 5.8.6 it is stated that all signage will be clear and unambiguous for motorists. Not all road users are contained within a vehicle, and **road signage must cater for all road users, including pedestrians and bike riders**. Signage will be especially important in helping riders to navigate regional cycling routes, especially as new routes are introduced.

This section also states that directional signage will send traffic heading to the City and Randwick via Euston Road. However, it is not clear what the intended paths of travel are on Euston Road toward the city centre. It should be expected, given desire lines, that city-bound traffic would head along Euston Road/McEvoy Street then north on Wyndham Street or Botany Road. Roads and Maritime Services is already aware of the significant congestion along this route in the AM and PM peaks. **This confirms the City's concerns that the New M5 is intended to service the city and the east, and inadequate traffic modelling has been done to fully understand the impacts of the New M5.** For traffic heading towards Randwick, the two paths are either via Lachlan Street (which is already congested, particularly on weekends) or O'Dea Avenue via Bourke Road (also significantly congested, particularly at weekends).

There is also a lack of clarity about what other paths of travel the unreleased demand as identified in the traffic model output will take. It is highly likely that this traffic will disperse onto local streets such as Mitchell Road or potentially Bourke Road via Huntley Street.

Chapter 6: Construction work

The proponent will need to work with Councils and the Transport cluster's active transport teams to identify how bike riders will be serviced during construction, particularly along the Bourke Road cycleway.

The City's position is that bicycles are human-powered and more vulnerable road users, therefore they need to retain their existing path of travel during construction. This usually takes the form of dedicating the traffic lane that would otherwise be used by motorised traffic to bike riders. Vehicles that are motorised are to be diverted instead as the impact of a detour is less significant. The City has followed this approach during construction projects for many years.

This cycle route has built strong ridership and use continues to grow, particularly as Mascot Town Centre is built; and this ridership needs to be maintained safely, throughout the construction period.

This submission contains other comments with regard to construction impacts and mitigation measures that either should be investigated or made a condition of consent should approval be granted.

Chapter 7: Consultation

The proponent was required through the SEARs to consult broadly in the development of the EIS, including with City of Sydney.

Council Reference Group

The City was invited, in January 2015, to participate in a Council Reference Group which also included representatives of Marrickville and City of Botany Bay councils. Terms of Reference were agreed by WestConnex Delivery Authority (now Sydney Motorway Corporation [SMC]) and the organisation responsible for delivery on behalf of the proponent) and all three councils. The Terms of Reference included the agreed objectives of the CRG:

- *Seeking early feedback on aspects the St Peters Interchange design.*
- *Seeking input into the transport and urban design challenges and opportunities arising from the project.*
- *Seeking input into the traffic challenges and opportunities arising from the project, including local road changes or upgrades (WDA initiated, within the New M5 EIS study area) and associated early traffic modelling outputs.*
- *Keeping local councils informed throughout the development of the St Peters Interchange project in the lead up to the EIS exhibition, late 2015.*

The Terms of Reference also noted that, "*The CRG will commence meetings in January 2015 and cease late 2015, upon display of the WestConnex New M5 Environmental Impact Statement (EIS*)" and, "*The CRG meetings will be held monthly"*

(St Peters, Alexandria, Mascot Council Reference Group for WestConnex Terms of Reference, http://www.westconnex.com.au/documents/terms_of_reference_council_reference_group.pdf, accessed 30 December 2015).

It is also noted that the consultation objectives set out in the EIS (Volume 1A, p7-4) include:

- *Ensure the views of the community are taken into account during preparation of the EIS and project design.*
- *Ensure community concerns regarding environmental and community impacts are considered and addressed where possible.*

Given councils are the representatives of the local community with a focus on local issues it would seem reasonable that the CRG process could have been expected to contribute significantly to meeting these objectives.

The City participated in the Council Reference Group in good faith, making senior staff available and contributing considerable time and effort to the consultative process beyond meeting attendance.

The City, along with Marrickville and Botany Bay councils, provided feedback on the St Peters Interchange design, **including the implications of new connections and road widening on the local traffic network** and entered into discussions on how opportunities may be realised to **establish a coherent road hierarchy that would protect local residential and business communities from through traffic**.

Despite this, all opportunities discussed have been excluded from the EIS. Local residents and businesses will not benefit from opportunities to reduce through traffic in local areas and instead will be vulnerable to increasing levels of traffic in the future with the operation of the New M5 and completion of the St Peters Interchange and associated road widening.

CRG meetings were held monthly up to and including June 2015. A further meeting was held in September 2015 at the request of the councils. While detailed traffic discussions did occur intermittently during this hiatus they did not offer a comparable forum for the discussion of broader issues, and ultimately were ineffective given the exclusion of all proposals discussed from the EIS**.**

Despite an explicit request that a further CRG meeting to include RMS representatives be convened prior to the exhibition of the EIS specifically to resolve the local road network impacts and opportunities, a further meeting was not convened by the SMC.

The consultation report in the EIS broadly outlines topics discussed at meetings with the City and as part of the Council Reference Group. **However, an ongoing frustration of the City is the lack of action of many of these issues, or the inability of Sydney Motorway Corporation to adequately address questions at briefings**.

Should project approval be forthcoming, there must be a requirement placed on the proponent and SMC to maintain an effective and meaningful dialogue with local councils with the aim of reducing local road traffic capacity and vehicle access to levels commensurate with the needs of the local community.

Further, should project approval be forthcoming, the conditions of consent must require the measures as put forward through the CRG, to be included in the scope of the WestConnex works and to be delivered before the New M5 is operational.

Exhibition timeframe

A core issue in terms of consultation is the timeframe given by the Government to respond to this Environmental Impact Statement. **The Government, in deciding to seek submissions over the Christmas/New Year period, has not acted in good faith.**

It is common practice in Government if a proposal (especially of this scale) is put on public exhibition over the holiday period that submissions are made due toward the end of February at the earliest. This enables governance mechanisms such as Council meetings to take their course. **The Government has not allowed Councils and community groups time to consider the full information contained in the documentation**, or for staff at the Sydney Motorway Corporation to respond in a timely manner to requests for further information in order to make a well-informed submissions. This is poor practice from the Government, and a poor engagement strategy.

A key criticism of the Project in many parts of this submission is broadly the ‘bare minimum’ or compliance approach to conducting the EIS. **There have been many opportunities missed by the proponent in terms of genuinely collaborating with the City and other local Councils to achieve the best outcomes, for people in the local community**.

Chapter 8: Overview of environmental issues

No comments.

Chapter 9: Traffic and Transport

The project documentation has not adequately addressed the Secretary's requirements. The traffic and transport modelling and approach has not appropriately considered:

- Sensitive land uses, future housing, employment lands and public transport needs;
- An assessment of local and regional impacts, including on urban renewal and as a result of toll avoidance;
- Induced traffic and operational implications for public transport; and
- Impacts of on-street parking loss to residents and business.

The EIS has taken a cursory approach to the traffic and transport assessment, with many of the impacts either not considered or dismissed without appropriate analysis or evidence.

The City also considers it unreasonable that the most significant proportion of the documentation is associated with the construction component of the project, with **little consideration of the long-term operational impacts of the project.** This is not acceptable and shows a disregard for affected communities and businesses. This is also concerning as so much of the analysis of other impacts relies on the traffic and transport assessment. The traffic and transport assessment as presented does not provide a sound basis for the EIS.

Chapter 9 and Appendix G in the EIS are muddled and show inconsistent information, particularly for the data output tables (9-7 to 9-11). This is compounded by the general lack of information in the EIS. This has two key implications; first, it prohibits stakeholders and the community from making a full and accurate assessment of the proposal, instead placing reliance on general and unsubstantiated conclusions in the EIS or making assumptions that may be incorrect. Secondly, it demonstrates a lack of rigour in the assessment and this creates valid concern about the level of assurance especially given the magnitude of investment. Regardless, the EIS fails to quantify and therefore assess the impacts of the Project.

Given one of the core transport objectives of WestConnex is to support improved motorway access between Sydney Airport, Port Botany and Western Sydney – essentially already provided by the Eastern Distributor (M1) -M5-M7-M2 Loop – **no analysis is presented that considers the future and potential impact of the Moorebank Intermodal Freight Terminal, the Western Sydney Airport and Western Sydney Employment Area on freight demand** in terms of trip distribution and modal choice; It is expected that all three projects would significantly alter future demand between Western Sydney and both Sydney Airport and Port Botany.

The EIS is not clear about when additional capacity built into the project from the outset will be required, and what the potential impacts will be when this capacity is released. This includes the additional capacity built into Euston Road and the New M5 between St Peters and Arncliffe.

The extension of Campbell Road to Gardeners Road will create an east-west connection between Stanmore Road/Enmore Road and Gardeners Road. The extension does not serve traffic accessing or egressing St Peters Interchange, with all traffic to/from the east using the Gardeners Road connection. The extension of Campbell Road and the creation of an east-west link is not the purpose of WestConnex and should not be included in the project scope. It will lead to additional traffic impacts through the Inner West. This link should be removed from the project or at the very least significantly downgraded reducing local area traffic impacts.

The City must be given the opportunity to review and critically assess the Construction Traffic Management Plan (CTMP) for the St Peters Interchange.

The Executive Summary of the EIS states, "*An operational traffic review would be undertaken to confirm the operational traffic impacts of the project on surrounding arterial roads and major intersections 12 months after the commencement of operation of the project*". **This review should be extended to include the impact on local roads surrounding the St Peters Interchange,** particularly in the suburbs of St Peters, Alexandria, Erskineville and Newtown; all affected Councils should be involved in the review (the City, Marrickville, Botany) and **any additional treatments required must be fully funded by the NSW Government and implemented no later than 24 months after the commencement of operation of the project.**

While the commitment to review operational impacts is welcomed, the timeframe will allow new driving routes to form, particularly where toll avoidance is a factor. **Impacts can be anticipated and changes must be made at the outset to prevent undesirable behaviours forming and the resultant impacts.** Previous experience, such as the Cross City Tunnel, have shown that it can be difficult to remove road space where drivers consider themselves to be 'funnelled' into a toll road.

The City is also concerned that the RMS has fundamentally different objectives to local residential and business communities. The RMS is and will be, focused on the minimisation of vehicle delay and the broad reduction in congestion. The City and local communities are concerned with local amenity, safety for walkers and cyclists and effective and efficient public transport. Guiding principles should be set out by the Department.

Assessment methodology (section 9.1)

The traffic and transport assessment study area does not have sufficient scope around the St Peters Interchange to include the sub-regional impacts of the New M5 proposal. The assessment area does not include the Green Square urban renewal area and other residential suburbs likely to experience increased traffic as a result of the New M5, St Peters Interchange and local road widening.

The project is also likely to impact the recently announced Waterloo Metro urban renewal area (although this forms part of the Central to Eveleigh corridor). Again there is no consideration of cumulative impacts.

The project and modelling also fails to take into account the potential cumulative impacts of the Central to Eveleigh urban renewal led by Urban Growth. Central to Eveleigh proposes a massive intensification of land use near the interchange that will have an obvious effect on the road network that will see additional traffic through the WestConnex project. Failing to assess these impacts could be considered remiss of government.

In section 9.1.2, there is been no consideration of bus loadings, travel times or delays in the data collected. This is despite some of Sydney's worst-performing bus services in terms of on-time running being affected by the Project.

Section 9.2 – Existing environment

The EIS states, on page 9-39:

> *"High traffic volumes around the St Peters Interchange and local road upgrades generally flow eastbound and northbound towards the Sydney CBD and Sydney Airport/ Port Botany in the AM peak and the opposite direction in the PM peak".*

This statement confirms that the exit of the St Peters Interchange will be used to deliver traffic towards the CBD using Euston Road. During engagement, this has been denied and the EIS has failed to model the impact of this in the documentation. Euston Road and McEvoy Streets contain important linking intersections into the CBD that have not been assessed. These intersections are already struggling to cope with the demand of this growing residential area, as well as significant industrial/logistics/freight land uses in the area.

Section 9.3 – Future impacts

The EIS states that **during construction of the St Peters Interchange, between 617 and 671 parking spaces will be lost.** This loss will mostly affect businesses. The EIS tries to justify this by saying that the businesses along Euston Road have sufficient off-street parking, however, it is unclear whether the proponent has undertaken any consultation with these local businesses to determine the level of hardship (if any) that will be experienced.

With operation of the St Peters Interchange**, there will be a loss of 322 parking spaces permanently.** This is a net sum and does not include the 60 new spaces, of which 24 will be off-street at St Peters primary school and are be assumed to be inaccessible to the general public.

Section 8.3 – Operational Performance – St Peters & Surrounds – Without WestConnex

Analysis indicates that the network does not have sufficient capacity to accommodate the forecast demand in the 2021 without WestConnex scenario. **In reality, if the network remained in its current layout, this future demand would never materialise**. People would alter their travel behaviour (e.g. either travel earlier or later, switch transport modes or defer travel altogether) which is the basis of demand management, which was dismissed as an alternative.

Table 76 indicates that the intersection of Campbell and Euston Roads would operate at a Level of Service (LoS) F in the '2031 without WestConnex'/ 'do minimum' scenario. Given that without WestConnex, both Euston and Campbell Roads would remain single lane roads providing local access, it is not clear how this intersection reaches capacity; **this has to be an error in the modelling or reporting of results.**

Tables 77, 78 indicate that in the '2031 without WestConnex' scenario, the average travel time between King Street, Newtown and the Sydney Airport Domestic Terminal (a distance of only 4.8 kilometres) in the AM and PM peak-hours is 44:30 mins and 45:00 mins respectively. **These estimates are large and unrealistic, the City does not consider them to be accurate.**

On page 219 the EIS states that without WestConnex there will be, *"longer travel times for rail passengers travelling to and from the St Peters and Mascot train stations by car, due to an increase in traffic volumes, slower travel speeds and increased intersection delays*". **Given on-street parking in the streets surrounding both St Peters and Mascot Rail Stations is restricted and fully occupied, there is no commuter parking and both stations serve a largely 'walk up' catchment, the number of passengers driving to either station to catch the train would be so small to be negligible.** This should not be used as a rationale for the project.

Section 10.3 – Operational Performance – St Peters and Surrounds – With WestConnex

Table 98-108 provides a comparison of the '2031 without WestConnex' scenario and '2031 with full WestConnex', Sydney Gateway and the Southern Extension scenario but excludes the 2031 with New M5 only scenario. **To ensure a robust analysis, the results from the 2031 with New M5 only scenario should also be included to enable a clear comparison of the options.**

The proposed road geometry for Euston Road between Campbell Road and Sydney Park Road comprises three lanes in each direction and a central turning lane for access to properties fronting Euston Road. Given turning movements across three lanes would be difficult, and potentially unsafe; **a road safety audit should be completed on the designs, construction plans and post-implementation** (should the project go ahead). From the City's perspective, **it would be better to remove this central turning lane altogether** and use the spare space for footpath improvements on either side of the corridor or to return parkland to Sydney Park. Access to properties fronting Euston Road can be provided from Burrows Road (for through properties) or left in/left out from Euston Road via Burrows Road.

The EIS notes that under the 2031 with WestConnex scenario, "*there is a significant increase in local trip generation which needs to be accommodated in the network*". **Before proceeding to detailed design, this increase should be quantified and interrogated so the data can be compared with traffic estimates the City has for nearby urban renewal precincts (primarily Ashmore).**

The EIS states, "*Paramics modelling suggests that only about 80 per cent of the traffic demand in the 2031 'with project' scenario could be accommodated in the network*". This statement would indicate to the City that the project will not meet its objectives or worse; **it will provide the Government with the rationale to add new road projects, like the widening of Euston Road and McEvoy Street to six lanes, to resolve future demand.**

Chapter 10: Air quality

High PM10 and PM2.5 levels – Adoption of near-future AAQ standards not considered

This EIS is based on the current Air NEPM standards. In 2012 the Council of Australian Governments (COAG) decided to review the National Ambient Air Quality particle standards and the proposed changes are as mentioned in the below table. The Current standards are in bold.

Table ES3: Options and sub-options – air quality standards

Action	Options	Sub-option[a]	Standard[b]
Particle standards	PM_{10} annual mean	$A20PM_{10}$	20 µg/m³
		$A16PM_{10}$	16 µg/m³
		$A12PM_{10}$	12 µg/m³
	PM_{10} 24-hour mean	$D50PM_{10}$	**50** µg/m³
		$D40PM_{10}$	40 µg/m³
		$D30PM_{10}$	30 µg/m³
	$PM_{2.5}$ annual mean	$A10PM_{2.5}$	10 µg/m³
		$A08PM_{2.5}$	**8** µg/m³
		$A06PM_{2.5}$	6 µg/m³
	$PM_{2.5}$ 24-hour mean	$D25PM_{2.5}$	**25** µg/m³
		$D20PM_{2.5}$	20 µg/m³
		$D15PM_{2.5}$	15 µg/m³

(a) A = annual mean; D=daily mean
(b) Current standards are shown in bold

Source:http://www.environment.gov.au/system/files/pages/dfe7ed5d-1eaf-4ff2-bfe7-dbb7ebaf21a9/files/aaq-nepm-draft-variation-impact-statement.pdf

The charts on p 178 and p196 respectively (Volume 2C), indicate the **PM10 and PM2.5 levels at all receptor locations are very close to the existing Air NEPM standard limits. Both PM10 and PM2.5 levels will very well exceed allowable levels if the new AAQ standards are adopted by the Council of Australian Governments.**

Debatable Zero Portal emission claim

There is no mention of portal emission management in the EIS. This EIS claims "*The assessment has been conducted assuming zero emissions from the tunnel portals*" (Volume 2C, p216, Table 9-34 *Summary of key assumptions and implications for conservatism*), but with estimated increases in traffic along Princes Highway over the next decade, congestion at the portals, especially at peak traffic hours, will most likely form concentrated zones of vehicular exhaust emissions.

Facilities included in the assessment

A number of specific facilities, 'community receivers' (schools, child care, aged care, hospitals) and aggregate 'Residential, workplace and recreational' (RWR) receivers are assessed. This second category includes a few 'receivers' in Sydney Park. However, there is no consideration of individual parks, specifically Sydney Park and the St Peters Interchange in the 'community receivers' section. **The combination of different users (including children), forms of activity (physical exercise, farming) in the parkland and resulting exposure which is likely to occur, appear not to have been considered.**

There is no mention of whether the generic air quality standards cover the diversity of use types associated with a multi-functional regional park. While this may not typically be included in a standardised methodology/guidelines for this type of assessment, given the close proximity of the interchange and associated road widening to such a significant open space, its inclusion would be reasonable.

The EIS should include a specific assessment of the impact on different uses and users within the park, noting:

- For most pollutants, the levels resulting from the project are well below the recommended standards – **with the exception of fine particles**.
- The existing community receivers may be able to stand as proxies, but no assessment is given as to whether this method is appropriate for assessing the unique impacts relating to parkland as noted above.

Concerns about air quality limiting the use of the parkland

Providing a clear assessment of the impact of air quality on parkland is important, as the risk of high exposure may act as a disincentive for some people (for example, parents and children) to use the park, or to use it for certain activities (such as intensive physical activity). This would have a negative impact on the parkland's value and accessibility.

One **possible mitigation measure for this impact may be posting air quality monitoring results in prominent places**; for example, signage on the footbridge or in the park, which show the level of pollutants relative to standards. If pollutant levels are below these standards, as the EIS predicts, this could allay fears of adverse health impacts of using the park.

Alexandria Landfill Site – Landfill Closure Management Plan: Dust and Odour Impact Assessment

A dust and odour assessment has been undertaken in relation to the closure of the landfill site which is contained in Part 8 of the WestConnex Air Quality Assessment report at Appendix H of the EIS.

Odours

Due to their complexity and nature, odours are generally difficult to accurately assess and predict.

The NSW Environment Protection Authority (EPA) have published a technical framework *Assessment and Management of odour from stationary sources in NSW* (November 2006), which provides a policy framework for assessing and managing point and diffuse source activities that emit odour, and offers guidance on dealing with odour impacts.

The *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales*, published by the NSW EPA, introduces "ground level odour assessment criteria" which are concerned with controlling odours to ensure offensive odour impacts will be effectively managed (but are not intended to achieve 'no odour').

The EPA guidance defines impact assessment criteria for a defined population (sensitive receptors) for complex mixture of odorous air pollutants expressed as odour units (OU). One odour unit is the theoretical minimum concentration that produces an olfactory response or sensation. An odour criterion of less than one OU would theoretically result in no odour impact being experienced. **Receptors that have larger populations, in which there will be a greater range of sensitivities to odour (and a higher number of more sensitive individuals), have an acceptable odour defined as two OU**.

Total source odour emission rates (expressed as odour units per metre cubed) were calculated from the likely odours associated with three main decommissioning activities to be conducted at the landfill site. These included;

- The excavation and disturbance of non-putrescible waste located on the site; and
- Leachate contained in open sequencing batch reactor tanks and odours from the dewatered sludge bin.

Measurements were taken at the tipping face of a landfill which received both putrescible and non-putrescible solid waste and also directly at leachate ponds. Taking into account local meteorology, odour concentrations were then predicted using dispersion modelling (AERMOD).

The results predicted that associated odour concentrations at most of the nearest receptors were below one OU, which is the theoretical level of detection. For all but one of the off-site receptors the acceptable odour criterion of two OU was not predicted to be exceeded. **The report states that there is a chance that some industrial receptors located at the southern boundary may experience levels of up to seven OU, which may cause annoyance.** However, it is stated that the modelling has assumed that large areas of the whole site will be exposed continuously which will not be the case. Covers will be applied to exposed areas on a daily basis as part of the Odour Management Plan, which will significantly reduce impacts, particularly close to the site and the site does not contain any putrescible waste.

Dust

An assessment has been conducted of activities likely to generate dust on the site during the closure and remediation of the site such as; the excavation and exhuming of waste, hauling cut and fill material on unsealed roads and the operation of plant and machinery such as bull dozers and excavators. Relevant criteria for particulates PM10, PM2.5, deposited dust and total suspended particulates have been taken from the NSW EPA *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales* (August 2005).

Off-site PM concentrations and dust deposition levels due to the landfill closure and remediation activities were predicted using the dispersion model AERMOD which is not one of the models specifically approved by the NSW EPA. The report states that AERMOD is the United States EPA's recommended steady-state plume dispersion model for regulatory purposes, and it is widely used in Australia. Subsequent discussions with the NSW EPA Air Branch confirmed that they had no adverse comments in relation to the use of AERMOD in this application.

Modelling referred to an emissions inventory for the landfill site in 2014 for Total Suspended Particulates (TSP), PM10 and PM2.5 which included an estimation of emissions associated with the dust generating activities likely to be undertaken at the site. These referred to emission factors developed by the US EPA which the report states are considered to be the most reliable, contemporary methods for determining dust generation rates from certain activities. Meteorological data was also obtained from Sydney Airport for 2014.

The model predictions incorporate dust mitigation measures including watering of unsealed haul routes, keeping travel routes moist for bulldozers and graders on-site, and watering of exposed areas that are likely to be prone to wind erosion such as unseeded temporary stockpiles.

The report concludes that predicted levels (24 hour/average and annual average) due to the closure works are low, and even when added to existing concentrations **will remain below the relevant air quality criteria**. It is concluded that it is unlikely that any further dust mitigation measures would be required, other than those referred to in Chapter 9 of the Landfill Closure Management Plan.

Recommendation

A site specific landfill closure Environmental Management Plan should be prepared to manage the excavation of parts of the landfill during construction to address the identified environmental impacts outlined in Chapter 30 – Summary of Environmental Impacts (Table 30-1) which forms part of the New M5 EIS.

The management plan should include, but not be limited to mitigation measures to:

- Contain and treat landfill gas emissions from excavations
- Treat offensive odours produced by leachate and landfill gas
- Contain, extract and treat leachate within excavations
- Protect workers and off-site receptors from exposure to potential biological, chemical and physical hazards encountered during the exhumation of landfill waste.
- Manage asbestos contaminated wastes
- Unexpected finds and hazardous materials procedure

- Dust and odour management from demolition, excavation and construction activities
- Proactive dust monitoring
- Tracking of material on roads
- Management of stockpiles and earthworks
- Emissions management of construction plant and machinery
- Cumulative impacts from dust generating activities conducted on site
- Community complaints handling, response and management
- Community liaison

Chapter 11: Human health

Methodology

The Human Health Assessment (HHA) includes a number of guidelines it has referred to in its assessment methodology, however some basic steps in those Guidelines appear not to have been followed. For example, the NSW Health Impact Assessment Guidelines (NHIAG) includes a range of steps as follows.

Scoping and screening

This aspect is envisaged as a participatory multi-stakeholders process using multiple methods, however **the EIS's HHA appears to have limited itself to a technical assessment against regulatory standards**. There is no justification as to why this less participatory and narrow approach has been taken, particularly relative to the scale of the proposal.

Importantly, the NHIAG includes an 'equity assessment' as part of this phase, where impacts on various groups are assessed. While the HHA does include a range of population groups (primarily based on age) in the assessment of risk, for example, for particulate pollution; **no other affected groups or uses have been defined**. **The EIS should also include various groups of users of Sydney Park and types of activities.**

Assessment of impacts

The section, "11.2.2 Assessment of social impacts on health" does not include a systematic assessment of the impacts as the NHIAG suggest. **In many cases simply stating the proposed works without any assessment or a very general statement about what the concerns may be – rather than a systematic assessment against defined criteria.** For example, for traffic impact (p11-33) no description of impact or assessment is provided. There also appears to be no assessment of the potential for altered risk of road accidents as a result of increased traffic on local roads in the City of Sydney. This is of particular importance for children and families, and older people.

Chapter 12: Noise and vibration

The noise report in the EIS assesses that there will be a **considerable environmental noise impact which exceeds the relevant criteria by varying degrees** (low to high exceedances) associated with the Construction and Operational (Road Traffic Noise) aspects of The Project. The Industrial noise impact associated with the project is expected to meet or be below / within the requirements of performance criteria.

Mitigation measures are suggested, but are not binding and this reduces their efficacy. **A metric that binds the proponent and allows meaningful measurement and performance standards should be applied**. For example, rewording: "*If the traffic noise levels are above the predicted levels and above applicable criteria, ~~consideration of additional feasible and~~ reasonable mitigation measures will be undertaken such as…*".

Given the scale of this proposal and the fact that noise is predicted to be substantially above the applicable criteria, **a clearer assessment of the costs and benefits of this mitigation measure need to be provided**.

Construction noise and vibration impacts that exceed EPA metrics associated with the project as reported are summarised as follows:

- **The impact of construction noise is predicted to exceed EPA day, night and sleep disturbance criteria** by a considerable degree. Sleep disturbance thresholds may be under established, further consideration of this is recommended. Ground-borne noise is likely to exceed criteria.
- Vibration associated with the project is summarised as follows:
    - Surface works are to be objective managed to criteria through onsite management and control;
    - Tunnelling works are likely to exceed preferable human response criteria at 163 residents, but comply with maximum recommended criteria at all locations. Typically, vibration would be perceptible for a week; and
    - Blasting is recommended for further higher level consulting assessment and objective test blasting to establish propagation characteristics of the local environment. The assessment indicatively provides that criteria can be achieved.

Operational road traffic noise impacts that exceed EPA metrics associated with the project as reported are summarised as follows:

- **Operational road traffic noise impact is expected breach EPA criteria, by in excess of 5 dB in some instances**. In the City's Local Government Area, it is recommended that architectural modifications be made to properties to ameliorate noise emissions.

Broad areas of concern

One of the unknowns associated with this project is the greater operational Noise Impact of this project across the wider area north east of the project beyond the assessment area, but within the City of Sydney Local Government Area. For instance, the St Peter's Interchange will facilitate large volumes of traffic to the southern boundary of the City's LGA. While some of this traffic may go to the Airport and other destinations, to the road upgrades and connections to the local road network indicates traffic is expected to disperse into the City's Local Government Area; e.g. Euston Road.

Keeping the above in mind, the report has been completed in accordance with the SEARs. Thus the report is in accordance with both the NSW EPA *Road Noise Policy* and the Roads and Maritime Service's (RMS) *Noise Criteria Guideline*.

Whilst the consultant has assessed the report to the Secretary's requirements, the report demonstrates that existing levels are liable to change with the impact of additional traffic on Euston Road. **The road traffic noise effect of high daily vehicle volumes carried up Euston Park to Sydney Park Road, and then Mitchell Road, and across Huntley Street to Bourke Road would not necessarily be represented by existing noise levels.** The noise impact of this aspect associated with the project is a known unknown which **we recommend be evaluated and dismissed or the impact dealt through reasonable and feasible mitigation treatments to any affected properties**.

Section 3 - Existing Ambient Noise Environment

It is noted that unattended monitoring was conducted at the following reference locations within or adjacent to the City of Sydney's LGA, being:

- NL1 – 400 Sydney Park Road, Alexandria,
- NL2 – 108 Campbell Road, St Peters,
- NL3 – 18 Campbell Road, St Peters, and
- NL4 – 506-518 Gardeners Road, Alexandria.

The results of unattended monitoring are presented in *Table 13* of The Report, we note the existing high ambient LAeq period levels of up to 69 dB.

Existing ambient road traffic noise levels at the above locations range from LAeq, 15 Hour 64 to 68 dB during the day period and LAeq 9 hour 58 to 64 in the night period respectfully, **at or above relevant EPA noise criteria prior to commencement of the project.**

Section 4 - Assessment Criteria

Construction noise management levels

Construction noise management levels have been determined in accordance with NSW EPA Policy on the basis of the existing ambient noise levels outlined above to range from 44 to 67 dB LAeq pending day, evening and night time period and location.

Given the noise monitoring is by the roadside which may unduly influence road traffic noise levels**, it will be important when verifying noise levels that spot background checks are completed to vet that the noise management levels are representative of the receiver** as they may not account for barrier shielding which may permit lower background noise levels.

Offices and retail outlets noise allowances given are 70 dB(A) $L_{Aeq\ 15\ minute}$. In the City's view, though these noise levels reflect Section 4.1.3 of the NSW EPA *Interim Construction Noise Guideline*, **offices environments are typically more sensitive to noise then this degree of amenity affords.**

Sleep disturbance

External criteria for awakenings are derived from via the consultant assumed flat loss of 10dB will be realised through noise passing from outside to inside a sleeping room through an open window.

To give some background on this, we understand that Australian noise consultants paid some reference to the original World Health Organisation *Community Noise Guidelines* in determining a rule of thumb for façade noise reduction through a façade. Specifically, ***Section 4.3.1 – Dwellings,*** provides the following advice, relevant aspect underlined for emphasis:

> *At night, sound pressure levels at the outside façades of the living spaces should not exceed 45 dB LAeq and 60 dB LAmax, so that people may sleep with bedroom windows open. <u>These values have been obtained by assuming that the noise reduction from outside to inside with the window partly open is 15 dB.</u>*

In applying a reduction to account for façade noise shielding, we are aware it is best practice in to allow for a 10 decibel reduction through a <u>partly open window</u>. We empirically understand that the 15 decibel reduction was not determined on the basis of Australian conditions, and that it is normal industry practice by Australian consultants to assume 10 decibels as is the case with the Report.

However it must be kept in mind that this is for a partly open window. Notwithstanding whatever uptake of reverse cycle A/C systems has occurred within the local population, it has historically been common place in Sydney for buildings to be built with natural ventilation in mind. Within Sydney's temperate climate, a partly open window may not suffice for the majority of people. Thus, given the criteria is based on 10 dB year round, **the threshold may under protect residents' health from a sleep disturbance perspective in the Spring and Summer months.**

- **We advise a stricter interpretation** of *Section 5.4 Sleep Disturbance* of the NSW EPA *Road Noise Policy* be used which stipulates maximum internal LAnight, noise levels of 50 to 55 dB max be achieved. It is noted that:The Policy does not provide for a methodology to reduce external noise levels to inside. If this is to be acceptable to the reviewer we recommend this may only reflect winter and autumn conditions where people are likely to have windows partly open or closed.
- The sleep disturbance assessment methodology prescribed by the *Road Noise Policy* is recommended in the other EPA Noise Policy / Guideline documentation.

We ask that this be more thoroughly reviewed and further consideration be given to an engineering justification of the position of a 10 dB reduction as above in all cases at all times or that the thresholds are revised.

Section 5 - Construction Noise & Vibration Assessment

The computational modelling of construction noise impacts only takes into account neutral weather conditions. Over medium to long distances, weather conditions can influence how noise is yielded at a location, i.e. amplify, attenuate or have neutral affect. Typically, stable night atmospheric weather conditions are most cohesive towards noise propagation, with Sydney experiencing in my view at least some amplification. The Report has modelled the operational noise impact this way, and it is recommended that, given the construction period; the proponent should use the model to predict the real world noise impact.

For the Tunnelling Operation Overview – Ground borne noise, the proponent must:

- Provide size and type and number of road headers considered in the noise, e.g. Drum rotor. Smaller units than those used in the predictions available would lessen impacts noting evening and night ground borne noise criteria predictions exceed criteria.
- Provide the actual degree of noise criteria exceedances. Given these are to occur in the evening and night period, the magnitude of the predictions must be presented and dissected in greater detail in the public interest.

It is recommended that test blasts be conducted to **determine real objective noise and vibration impacts** due to variability.

Section 6 – Operational (Road Traffic) Noise Assessment

Study Area Limitations

The report notes that the study is limited to 600m from the furthest point of any road affected by "the works" associated with the project. No analytical consideration was found in the report of the environment effect of additional traffic brought to the parts of the following roads outside the study area:

- Euston Road;
- McEvoy Street;
- Bourke Road;
- Botany Road;
- O'Riordan Street;
- Gardeners Road;
- Sydney Park Road;
- Mitchell Road; and
- Fountain Street.

Under relevant aspects of the EPA criteria, this was however done for parts of Euston Road, Campbell Road /Street that were affected by project works to a 600m maximum radius from the St Peters Interchange.

Maximum operational noise level assessment

With further reference to ***Figure 4***, page 163 and ***Table 95,*** the report presents an average maximum noise level of 97 dB following implementation of The Project with up to 126 events with causing noise impact with a range of 65 to 126.

Though the report provides that the logger was positioned only 6m from the road which has contributed to the magnitude of the exceedances. It is suggested that if the logger was to be moved back, and that the vehicle causing the event is to be considered as point source, there is only a 6dB loss given per doubling of distance. That is, moving the logger back 12m or even 24m from the road lane would only reduce the magnitude of exceedance reported to approximately 6 to 12 dB considering all other assumptions and contributing factors remain the same. It is further considered that in an urban environment, achieving bulging façade setback distances of greater than 6m from a road is not always achievable, the reported results may be more realistic an interpretation than that afforded in the report.

The City is in possession of independently obtained road traffic noise monitoring data from Gardeners Road during the year 2013, of which noise emissions affect both residents of the City of Sydney and Botany Local Government Areas. The report associated with this data provides that on average, approximately 1750 noise levels exceed the EPA sleep disturbance screening criteria, up to 104 dB but ranging from 53 to 86 dB in magnitude occur during a given night time period.

As traffic flow conditions are not expected to have meaningfully declined from the year 2013 to present, **the City recommends the study area to be expanded to meaningfully assess the impact on the existing road network that additional traffic flow will bring.**

Chapter 13: Land use and property

Chapter 13 of the EIS describes the existing and proposed land uses on the corridor, and the impacts of property acquisition.

Around the St Peters Interchange, a number of properties are being acquired along Campbell Street to enable the widening of that street from two lanes to six lanes. These acquisitions include some residential buildings and buildings with light industrial uses. A number of streets and laneways are also being permanently closed.

The project will permanently utilise a portion of the eastern edge of Sydney Park for its full length. This land is subject to an existing road reservation, however **implementing it as a roadway will result in a reduction in parkland and the removal of mature trees.**

Recently, the City has received applications for permanent land acquisitions for the construction compound at Sydney Park. This property is marked for temporary acquisition on Figure 13-9. **The City will not release this parcel of land permanently. Prior to the exhibition of the EIS, SMC gave the City a clear and explicit commitment that, other than the strip of land along Euston Road, there would be no net loss of land from Sydney Park.**

If the project is approved the proponent must be required to make good on this undertaking, minimising the impact on the parklands. The City is of the view that any attempt to offset impacts on Sydney Park through the creation of additional open space at St Peters Interchange is unacceptable. The Interchange will not provide equivalent open space.

A permanent acquisition request has also been lodged for lands along the Alexandra Canal for the purpose of constructing the Campbell Road bridge. These lands were acquired by the City for the purpose of building the Alexandra Canal cycleway and which is partially constructed. This cycle corridor must be preserved, and the City will not release this land permanently. **The City will consider arrangements to provide access to the land to enable the bridge to be constructed and maintained and the cycleway to be built.** It is noted that the Campbell Road extension and bridge does not serve WestConnex traffic or provide access/egress to the St Peters Interchange and as such should not be included in the project scope. If it is retained it should be significantly reduced in scale to accommodate local traffic movements only, reducing the necessary land take.

The City has significant concerns for the amenity of residents in the retained properties on Campbell Road. These properties will be adjacent to a six lane arterial road, a major motorway interchange and will be overlooked by a pedestrian and cycle overpass. **There will be significant amenity, noise and air quality impacts on these properties and their residents.** These properties will be surrounded by construction on three frontages for a period of around two years.

The widening of Euston Road north of Sydney Park Road using an existing road reservation, is likely to result in the widening of Euston Road through to McEvoy Street. This is likely to have a detrimental impact on the growing suburbs of Alexandria, Erskineville and Waterloo. This will exacerbate as the land use changes resulting from Waterloo Metro come on board. **This is not consistent with the intended renewal of these areas.**

Chapter 14: Visual impacts and urban design

Aspects of the proposed New M5 discussed here are:

- The urban and landscape design within the new five way motorway intersection at St Peters;
- Urban design works required in surrounding streets due to increased traffic induced by the New M5 and anticipated further WestConnex sub-projects;
- Open Space provision;
- Safety;
- Works on surrounding streets;
- Functionality and design of proposed cycle and pedestrian infrastructure; and
- Visual impacts on Sydney Park.

The urban design response is generalised and should be read in conjunction with other parts of this submission, in particular, those parts that deal with landscape, ecology, heritage, active transport and traffic.

Opportunity cost of St Peters Interchange

This intersection occupies approximately 27 hectares of land. **This represents an enormous opportunity cost to the City's productivity.**

At similar densities to those achieved at Green Square Town Centre, this would accommodate more than 13,000 people and workplaces for a similar number of jobs. If the density proposed by UrbanGrowth at Waterloo were used as a comparator, this would be more than twice the population and less provision for jobs.

It could also represent another Sydney Park providing much needed recreation space for nearby residents. The open space to be created around the interchange is not considered to be comparable to Sydney Park and the potential of open space not blighted by major road infrastructure.

We note that these opportunity costs are not accounted for in the business case for WestConnex.

Given these lost opportunities, it is important that if the project were to go ahead, the space made available around the intersection is used to its maximum potential.

The primary urban design task is to maximise the usable area around the intersection.

Deciding the best use for the new park areas

The City of Sydney manages a large park and recreation system and continues to create new parks and indoor recreation facilities in existing and new growth areas. It has the skills in creating and maintaining parks and facilities and understands community needs for parks and facilities and **it is likely that much of the accessible new parkland and facilities will be best managed by the City of Sydney.**

The use of land left over by the intersection works must be designed to positively contribute to the City's open space and sports facilities network. **To ensure the best outcome for these spaces, it is strongly recommended that a Working Group consisting of Sydney Motorway Corporation, City of Sydney and Marrickville Council be established to oversee the design and implementation of the area around the intersection.**

In order to ascertain the most appropriate use of the new open spaces, a detailed air quality study should be undertaken to determine the human health impacts of a motorway through parkland.

In the urban design consultation session with WestConnex and Botany, Marrickville and the City of Sydney councils it was discussed that currently, space for formal active recreation within the City is undersupplied, and subject to confirmation of suitable air quality and noise impacts; any new large areas of accessible, level open space could be used for sports fields or ball courts, and associated buildings (toilet blocks, kiosks, administration building).

There are no regulated air pollution standards that the City is aware of for construction of sports facilities close to major highways and motorway interchanges. **Various studies conclude that sports facilities should not be located any closer than 200m and ideally 500m from busy roads, especially highways with over 50,000 vehicles a day.**

Close proximity of sports facilities to traffic tunnels/highways impacts young athletes in particular because their lungs are still maturing and their immune system is still in the development stage.

The results from air quality monitoring in the WestConnex EIS indicate that the current pollution levels are close to the permissible limit of the existing Air NEPM standards, and will most likely exceed this with increase in vehicular traffic in the future decades.

Depending on the distance of the sports facility from an interchange/highway, a decision needs to be taken regarding the type and duration of the sport, taking into consideration that higher the rate of inhalation during athletic activity, more pollutants settle into the respiratory system. **Given both Campbell Road and Euston Road are predicted to reach and exceed these thresholds; the ability to supply open space playing fields is unlikely.**

The City of Sydney also requires indoor recreation courts and may face a shortfall in these facilities during the implementation period of this project. Large indoor recreation facilities are difficult to locate. The land around the intersection could potentially be used for this purpose. **It is likely that indoor recreation facility with up to 16 multipurpose courts could be positioned on this land.**

If air quality does not meet safe standards once the motorway is fully operational, accessible open space should be given over to biodiverse bushland and habitat, in support of the City's Urban Ecology Strategic Action Plan, and urban canopy targets defined by the Greening Sydney Plan. A minimum of 50% canopy coverage should be achieved at 10 years after completion, in all areas not covered by buildings.

Motorway Operations and Canal Road complexes

The design and siting of the buildings aims to minimise their presence through setbacks and landscaping. In suburban areas of Sydney this may be an appropriate response. In inner Sydney this is out of context and extraneous. **Buildings should be located within the interchange site in such a way that functional, contiguous areas of accessible open space are maximised.**

To fit the urban context and to maximise usable landscape area, **the two building complexes should be consolidated** to more closely respond to the Secretary's Environmental Assessment Requirements, "*Identification of opportunities to utilise surplus or residual land, and utilise key structures (such as stacks) for multiple uses i.e. integration with other structures*".

The most appropriate placement of the combined building would be on the Princes Highway and above the New M5 tunnel portal. The buildings should address the highway with minimal setback and appropriate height. This aligns with the Roads and Maritime Services (RMS) *Beyond the Pavement* guideline, particularly section 3.2.5 - Design road boundaries in response to local character.

The design of the building should **incorporate the conserved 'Dynamo' building.** This aligns with the RMS *Beyond the Pavement* guideline, section 3.6.2 - Adaptively re-use heritage infrastructure in projects.

This location is also the closest place to a rail station, with Sydenham Station approximately one kilometre (about a 15 minute) walk away, **providing public transport access for employees and visitors to these buildings.** This may reduce the need for or amount of car-parking on site.

The proposed landscape in this area fronting the Princes Highway is inappropriate in character. The noise and air pollution, and its isolation from residential areas render it unsuitable for recreational use. Open space in this location does not fit with the existing or desired future character of the area. The Princes Highway has continuous frontage commercial uses with zero setback in this area. This will continue to be the desired character into the future. **The proposed motorway buildings would be complimentary in this part of the highway, if built continuously to the street alignment with concealed car parking.**

Relocation of Motorway operations from Campbell Street creates additional usable open space on the corner of Burrows and Campbell Roads which could be put to better use as an indoor recreation facility.

Future M4-M5 Link facilities

The built form for the future M4-M5 Link facilities should be a cut and cover structure over an extended portal like the Canal Road Complex rather than be placed within the open space area.

This would release a significant amount of land for purposes that are useful to the community, such as an indoor recreation centre. This is particularly important given the lack of these in the City of Sydney and Marrickville local government areas. **The availability of this land provides an enormous opportunity, and also provides opportunities to integrate sustainable water management features that have otherwise not been considered.**

Landform

It is unclear how the landform will work on the site without a contour plan. The overshadowing studies in the Landscape and Visual Assessment show a 3D model with shadows that indicates proposed landform. However, this is not clearly linked with some of the other information. For example, a building within the northern open space is missing and some batters seem much steeper than indicated on the plans.

Requests for a CAD plan were not forthcoming during the EIS exhibition period to enable the City to undertake a robust assessment of these factors.

Edges
Edges to open spaces should be formed to balance:

- Provision of sight lines into publicly accessible spaces;
- Minimise views of road infrastructure; and
- Manage noise

Safety

The proposed arrangement of the interchange site includes many hidden spaces than may attract anti-social behaviour and/or become attractive places for crime.

Safety in publicly accessible areas must be supported by open sight lines from public roads. Most if not all of any publicly accessible open space areas must be visible from a public road. All publicly accessible open spaces should be well surveyed from adjoining buildings or streets.

There are a number of places of concern, including:

- Hidden spaces between large, raised mounds and the roadways;
- Undercroft spaces resulting from elevated roadways
- Immediately north ‘behind’ the deluge tanks;
- Immediately south of the Gardeners road bridge connection; and
- The large strip of land west of the motorway and east ‘behind’ a group of industrial buildings that face the Princes Highway.

Further work, including a CPTED report, should be completed as part of the EIS process. This may require reconfiguring of these areas, the introduction of new uses, restriction of public access or additional land purchase.

Program of works - open space

The documentation shows that the largest portion of new public open space, to the south of Campbell Road, is not a part of this application and will be deferred to Stage 3. While its use as a construction yard for Stage 3 is justified, there is not sufficient certainty around the timing of Stage 3. This is a key concern, as **the area may remain unused and residual for some time if Stage 3 is delayed – representing a significant opportunity cost for open space, recreational and community space.**

Project documentation which has been used as the basis for public consultation (New M5 St Peters Interchange – Community Update (p5)) shows that all this area will be dedicated for public open space (with a small portion being used as an exhaust stack). A rough measurement of this deferred area (as per on p81) shows that it is 3.5-4 hectares, however the 'New M5 - Project Overview' (p10) notes that the area to be dedicated to parkland is only 2.4 hectares. More detail is required on the size and timings of the use of this section of the interchange area, and if possible bringing forward its use as parkland or temporary community accessible space until Stage 3 commences. **Following stage 3 this area should be used for an indoor recreation centre.**

Works in surrounding streets

On the streets surrounding the motorway, the additional traffic induced by WestConnex will add to congestion, cause noise and air pollution, and decrease pedestrian comfort and safety.

Noise and air pollution are population health risks. Studies have shown that people living near noise caused by busy roads have increased incidence of cardio-vascular disease and lower life expectancy. **The presence of busy roads discourages development and lowers development yield.** In addition further road works, for example the widening of McEvoy Street, are considered to be brought forward. These factors undermine the productivity of the area or add to infrastructure costs diverting funds from other areas of need. **Taken together these are significant costs that have not been considered as part of this EIS (in the socio-economic section), or the *Updated Strategic Business Case*.**

The works in the surrounding streets required as part of WestConnex are various. Concise comments follow in relation to individual elements.

Campbell Road pedestrian and cycle bridge to Sydney Park

It is appreciated that this cycleway is intended to provide a fully separated path connecting Sydney Park to the Bourke Road cycleway and Mascot Town Centre. However, an elevated shared facility on a regional cycle route may not be the optimal design.

As stated in the EIS: ***"At approximately 540m, the bridge would become one of the longest pedestrian bridges in NSW".*** (Appendix L (Urban Design Report) p104)
The bridge would be just 4m wide between the '*integrated pedestrian handrails and throw screen…*' the bridge will allow for a 1.5m footpath and 2.5m separated bi-directional cycleway, not allowing for clearances to vertical structures (hand rails, throw screens) or a separator between cyclists and pedestrians. **There is no indication in the EIS text or accompanying images of the bridge, that any shade, weather protection, rest areas, seating or intermediate access/egress will be provided**.

A 4m wide separated pedestrian and cycle facility does not meet the requirements in *Austroads: Cycling Aspects* of Austroads Guides (2011) which indicates a separated two-way path should not be less than 4.5m in width (*Austroads: Cycling Aspects* of Austroads Guides (2011) Table 7.7, p89). The document also states: "*It is important for safe operation that adequate clearance is provided between the cyclist operating spaces and potential hazards beside paths…"* The City of Sydney considers there is a need to provide additional clearance adjacent to vertical structures such as pedestrian handrails and throw screens, and passing pedestrians, including a separator between the pedestrian and cycle paths.

A pedestrian path of just 1.5m width does not allow two wheelchairs or a wheelchair and a double pushchair to pass comfortably. Where pedestrian volumes are expected to be high, Austroads recommends a footpath width of at least 2.4m (*Austroads Part 13 Pedestrians*, Table 2.1, p18). If the proponent considers the bridge design to meet the prevailing Australian requirements then references should be provided.

The bridge should include wider areas to allow for resting, including seating and weather protection. Given the length of the bridge and personal safety issues, consideration should be given the inclusion of intermediate access/egress points.

In discussions, the WestConnex design team has indicated that there is an intent to provide a regional cycle route catering for experienced longer distance recreational riders and commuters. There appears to have been little consideration of how these groups will interact with people walking or biking between the high density residential development at Mascot Town Centre and Sydney Park. **It is unclear how these various user groups will be able to use the narrow paths safely, even in the short term. This will impact the attractiveness of the bridge to users and undermine its purpose.** There is no consideration as to how the bridge, apparently built to minimum standards, will cater for future growth as Sydney's population increases by a further 1.6 million people.

Regional cycle routes enjoy strong patronage in the morning and afternoon peaks, with commuter riders often travelling at speed. **This type of functionality for bike riders needs to be designed in, as a road design would for vehicle drivers and their functional needs (such as clearways in the peaks).**

The bridge structure and associated access/egress paths must be designed to CPTED (Crime Prevention through Environmental Design) principles. **At over 500m long the City has significant concerns for personal safety of bridge users**. It is also unclear how emergency services would be able to access the bridge deck in the event of an incident or accident.

The EIS does not address issues of future ownership, maintenance and management of the bridge. For example, given the span and width, there appears to be no consideration of cleaning and maintaining the bridge deck.

Should the project be approved, requirements should be placed on the proponent to address all concerns prior to further acceptance of bridge design and commencement of construction.

As designed, the bridge will not encourage use and **it is likely a large proportion of cyclists and pedestrians will look to walk/ride at grade**. If the bridge is retained full provision for pedestrians and cyclists must be made at grade including separated cycle paths, pedestrian and cycle crossings of all arms at intersections with the provision of adequate crossing time and the ability to cross each arm in one movements.

The City considers the provision of the grade separated bridge to be a poor solution which has not been adequately thought through even at the concept design level.

Options for better outcomes may be:

- **Provide a separated at-grade cycleway on the northern side of Campbell Road** (connecting with the already proposed facility alongside Campbell Street), with footpaths on both sides of the Campbell Road/Street corridor; or
- Sink the roadway so that cycle and pedestrian facilities can be separated and maintained at the existing elevation with a land bridge linking the north and south sides of Campbell Road and Sydney Park; or
- Raise the sloping grassed open space area to the north of the interchange to the same height at the proposed bridge structure (also creating a useable playing field space); or
- A combination of the above.

Any options that have an interface with intersections are contingent on the ability to provide appropriate and adequate traffic control signal cycle and green time, and crossings in one movement.

Regional cycle routes should be designed as separated to enable their functionality. For safety purposes, they should be separated on highly trafficked roads. A shared facility designed to minimum widths is not the appropriate design or starting point. **The design should be revisited prior to any approvals in collaboration with the Transport cluster's active transport teams, Marrickville Council, Botany Bay Council and the City of Sydney.**

The bridge crossing between the St Peters Interchange and Sydney Park has a dramatic design and will link Sydney Park to new parkland to the south for pedestrians and bike riders. However it is clear that there are multiple conflict points that require resolution and ultimately the separation/combination of cyclists and pedestrians maybe problematic for reasons stated above. This will need to be resolved.

A better solution for this crossing would be a land bridge. This would provide a better and safer connection for all users. Another alternative would be to provide an at-grade signalised crossing. This would avoid profligacy and provide a reasonable level of service and significantly, reduce the project's requirement for temporary use and permanent acquisition of Sydney Park land in this location, allowing both parkland and existing trees to be retained. A landmark could be created through public art or the function of the place as a regional sports facility.

Pedestrian and cycle paths generally

The EIS does not provide path widths and/or references to Austroads (or similar) standards applied in determining these widths. The EIS should be revised to include this information.

It appears that all pedestrian and cycle paths have been sized to minimum standards. This does not necessarily respond to expected levels of use or recognise future growth in use. All vehicle lane widths are designed to exceed minimum standards and indeed the New M5, as part of WestConnex, is apparently required to respond to population growth. A similar approach must be taken to the design and provision of pedestrian and cycle infrastructure.

Pedestrian comfort should be considered in line with a pedestrian comfort tool like Transport for London's Pedestrian Comfort Guidance appropriately adjusted for Australian conditions. **The path widths should allow clearance on each side for obstructions as poles and the like are commonplace in verges and near paths, in line with Australian design standards.** Separated cycle facilities should be provided where the functionality is provided, and appropriate connectivity between cycle routes at other times. The City of Sydney's *Street Design Manual* provides guidance for these elements and should be a reference document for the project.

Streets beyond the motorway

New street works including Euston Road, Campbell Road, Sydney Park Road have been designed with higher traffic speeds and wider lanes than required. There is no rationale given for these choices. These should be revised to a 50 km/hr design speed. As discussed above, vehicle speed is a major determinant in injury severity in the incident of a collision. Speed limits are an important contributor to road safety and must be self-enforcing through roadway design as far as is possible.

Reductions in lane widths will reduce the land take for these roads which will reduce pedestrian crossing distances (with associated benefits in reducing vehicle delay at intersections) and decrease the loss of area to Sydney Park. This aligns with the RMS *Beyond the Pavement* guideline section 3.2.1 - *Keep the road footprint to the minimum possible to achieve a good design outcome*.

Intersections beyond the motorway

In a similar way the intersections beyond the motorway appear to be designed to a higher speed design than is preferred. **Consideration of all users is required at all intersections, including pedestrians, bike riders and vehicle drivers.** This would ensure that pedestrian crossing can be undertaken in a single motion, not three; and, slip lanes would be eliminated where they are not essential.

Campbell Road Bridge

Differing versions of the Campbell Road Bridge (over the Alexandra Canal) are shown in the EIS. This connection does not seem to be required by WestConnex as its function for WestConnex is duplicated further south with a second new bridge across Alexandra Canal and directly connecting to Gardeners Road.

The Campbell Road Bridge should be removed from the project. Further, access to the proposed Campbell Road Bridge (eastbound) from the St Peters Interchange is prohibited, with no right turn allowed. **This indicates that the purpose of the Campbell Road Bridge is to create an east-west connection from the suburbs of Stanmore, Enmore and Petersham through to the Port/Airport**, or to enhance resilience or capacity in the RMS network; or potentially all of these combined.

If the bridge is removed, then the proponent will need to resolve the issue of an active transport crossing over the Alexandra Canal to link into the regional cycleway network.

If the bridge remains and the elevated cycleway is reconsidered, a separated cycleway should be integrated with the bridge, preferably on the north side to provide an easier connection to the Bourke Road cycleway, Sydney Park and residential land uses. Pedestrian footpaths should be provided on both sides.

If retained, the bridge must include adequate clearance, horizontally and vertically, over the proposed Alexandra Canal shared paths (both east and west sides of the canal). The bridge paths must also provide (included as part of the project) direct connections to the Alexandra Canal path on the eastern side and allow for future connections on the western side.

King Street Gateway

WestConnex project proponents have made clear public statements that there is no intention to increase traffic or extend clearway hours through King Street. **The City believes the only way to ensure this commitment is guaranteed is to permanently remove capacity from King Street through intersection redesign and physical measures limiting the extent to which kerbside lanes can be used for through traffic in the future.**

It is necessary to include the redesign of the intersection of King Street and Sydney Park Road and **implement the intersection changes as an integral part of the New M5 project**. Not doing so risks increasing congestion in King Street and would not be in line with Ministerial public statements in relation to this issue.

Chapter 15: Social and economic

Study area issues

An independent assessment of the EIS by SGS Economics and Planning has stated that although the Social and Economic study area complies with the SEARs, yet ***"fails to account for the city-shaping impact of WestConnex Stage 2"***. It is also not feasible to separate each element from the broader WestConnex, as the projects are interdependent. SGS states that major infrastructure project such as WestConnex, "*can, quite literally, re-sculpt the pattern of metropolitan development…as the resulting shifts in accessibility change the location choices of firms and households setting in place a new geography of land values*".

The review goes further to say, "*major transport investments are powerful and, perhaps, the pre-eminent policy lever, for determining metropolitan structure".* With regard to this comment, WestConnex or any other major investment needs to support land use and the broad policy objectives of Government. It remains unclear what role WestConnex will have in achieving these objectives.

Another issue with the study area is that it is not consistent with the traffic and transport study area. The traffic and transport study informs all other aspects of the impact assessment for this project. More detail can be found in Appendix A.

Impacts on different groups in the community

The EIS gives no consideration of different groups within the community, and how they would be impacted differently. **This is a standard matter for consideration in a social impact assessment should be included in the EIS.**

Social Impacts of increased traffic on local roads

As the SGS report notes, **the impact of increased traffic on local roads in the City of Sydney has not been adequately considered.** There is generic discussion of the impacts of increased traffic from the project as a whole, and discussion of the impacts on directly adjacent roads that are part of the project. However, **there is no assessment of the social and economic impacts on the local road network in the City of Sydney**. This includes the reduced accessibility within and between precincts such as Alexandria, Green Square, Newtown, Beaconsfield, Rosebery, and between these areas and the CBD. There are also **likely to be negative impacts on accessibility between the southern industrial area and the CBD**. This may have a negative impact on CBD retail which rely on just-in-time delivery.

The SGS report also makes an important point that WestConnex does not address congestion in King Street, Newtown. Although the traffic modelling shows that the impact of the New M5 and WestConnex on King Street is not severe, given it already functions at capacity in the peak; WestConnex will not improve its function, either.

See Appendix A and C for more information.

Impact on Sydney Park and City Farm

The development of the St Peters Interchange will have impacts on Sydney Park which is a regional attractor. Apart from the land loss that is discussed in comments on Chapter 13, another major impact will be on the City Farm. The City Farm is located to the south of Sydney Park and will incorporate many functions including growing food. It is intended that this food will be sold back to the community through Farmer's Markets. The City Farm will also run around 300 education and training programs each year, including to school children. Construction of the City Farm is due to commence early this year, with programs commencing in the middle of 2016.

Concerns raised in consultation

A range of concerns raised by stakeholders are identified (pp. 15-25 and 15-26) however are not individually assessed/addressed.

Chapter 16: Soil and water quality

Non-Potable Water Supply Potential – Section 16.3

Reviewing point 16.3.2, the project has identified that the collected ground water from the tunnels (during standard operations) is to be drained to the water treatment plant at the Arncliffe motorway operations complex (MOC3).

The collected ground water from the eastern and western tunnels is expected to have different levels of contamination. The proposed treatment is outlined on page 16-49. **It is proposed to reuse the water in the motorway and landscaping where possible.**

The operational water treatment plant would discharge at a predicted maximum rate of around 20.1 litres per second into the Cooks River at the Marsh Street Bridge. Water will be treated to ANZECC Water Quality Guidelines.

Non Potable Water supply from the Treated Stormwater from the St Peter Interchange

The St Peters Interchange will produce polluted stormwater and this will need to be treated on site. There is minimal details of how the operator intends to do this. **There is the opportunity to get the treated water pumped to the Sydney Park Stormwater Harvesting Scheme.** This will improve the water supply security and received additional treatment through our treatment system.

The non-potable water can then be used through an expanded non potable water network.

Quality of the Water in the Alexandra Canal

The EIS aims to demonstrate the water quality in the Cooks River and Alexandra Canal is very poor. **The proponent is using this to reduce the quality of the water that discharged in to the river.** This is not an appropriate outcome, and the proponent should be taking the initiative to show leadership and work to improve the quality of the water in the Canal, rather than maintain the status quo.

Water Quality Improvement Standards

The proponent has proposed to apply the Botany Bay Water Quality Improvement Plans (BBWQIP) water quality targets to the project. On page 16-54, the proposed pollution reduction targets are applied to the additional impervious areas. **The targets need to be applied to the whole site so the pollution generated from the sites is less than the original sites.** This will mean the quoted pollution removal volumes will need to increase.

No details of WSUD on upgraded roads and intersections

There are no details of how the upgraded roads and intersections will comply with the BBWQIP targets. There is no Water Sustainability Urban Design (WSUD) details.

These details will need to be included in the detailed design should the project proceed, and it is recommended that this is worked through in collaboration with the City and Marrickville Council staff to ensure fine-grained local knowledge is incorporated into the design.

New Pipelines drain to Alexandra Canal

On page 16-50 it is proposed in Alexandra Canal, to have two new discharge outlets that would convey stormwater into the Canal as follows:

- A 3300 x 2400 millimetre open channel discharging immediately to the south west of Gardeners Road Bridge; and
- A 525 millimetre reinforced concrete pipe discharging immediately to the south east of Gardeners Road Bridge.

The detail of these outlets, including discharge velocities and scour protection measures, would need to be confirmed during detailed design.

The large culvert has the potential to cause scour of the canal sediments and resuspend the highly polluted sediment.

Chapter 17: Contamination

The St Peters interchange site covers an area with diverse characteristics and includes areas of land that are affected by potentially contaminating commercial/industrial land uses including; petrol service stations, dry cleaners, the Alexandria Landfill facility and a former metal smelter site at 5/5A Canal Road, St Peters.

In addition there are also areas of "made up" land that incorporate imported fill materials of unknown origin that typically are affected by some form of residual contamination, particularly hydrocarbons and lead. Deep excavations associated with tunnelling are likely to encounter groundwater, forming part of the Botany Sands Aquifer which is known to be potentially contaminated and is subject to management controls set by the Department of Primary Industries and Water.

The proposed land use associated with the project also varies from a contamination risk perspective, to less sensitive roadways and buildings which will encapsulate any contamination existing at a particular site, to more sensitive parks and open landscaped areas which provide potential direct exposure pathways to any residual contamination to the public using those areas as well as persons involved in maintaining those areas.

Under State Environmental Planning Policy (SEPP) 55 – Remediation of Land it is a general requirement that **a consent authority must be satisfied that the land is suitable in its contaminated state (or will be suitable, after remediation) for the purpose for which the development is proposed to be carried out**. If land requires remediation to be made suitable for the purpose for which the development is proposed to be carried out, the consent authority must be satisfied that the land will be remediated before consent is given and the land used for that purpose. **This SEPP applies in the use of the interchange for passive or active recreation.**

The environmental assessment requirements for the project issued by the Secretary for the NSW Department of Planning and Environment (SEARS) states that the Environmental Impact Statement (EIS) must address key issues which include contaminated sites. These requirements are outlined in Section 1.9 of the report and include;

- That an assessment of contaminated sites must be undertaken in accordance with relevant guidelines made or approved by the NSW EPA under section 105 of the Contaminated Land Management Act 1997; status of site contamination and suitability of the site for the proposal;
- Status of site contamination and suitability of the site for the proposal, including the suitability of the Alexandria landfill site for the St Peters interchange;
- An assessment of the potential disturbance of contaminated bed sediments in the Alexandra Canal, and interception of contaminated water from the Botany Sand Beds aquifer; and
- Having reference to the assessments conducted in satisfaction of the above, consideration of whether or not a site auditor, accredited under the Contaminated Land Management Act 1997, has or will be engaged to issue a site audit statement to certify on the suitability of the current or proposed uses.

The *Technical Working Paper – Contamination* prepared by AECOM and contained at Appendix O of the EIS confirms that a Phase 1 Preliminary Environmental Site Investigation (PESI) has been undertaken for the project. The PESI concentrated on five main and defined Project Areas where exposure to potentially contaminated soil and groundwater is considered most likely to occur. The report refers to the relevant SEARS in section 1.9. Only one project area (project area 5) concerns land located in the City of Sydney LGA within which the construction of the St Peters interchange and local road upgrades are proposed. AECOM have also reviewed previous environmental reports from properties located within the Project Area 5 footprint and also sediments within the Alexandria Canal that will be disturbed by the construction of bridge crossings associated with the project which are detailed within the report.

The PESI confirms that, from a review of historical records; EPA, Work Cover Authority and Local Council searches, that **there are numerous sites within the development area that are subject to significant contaminating activities and which would require further investigation.**

The PESI concludes that a Phase 2 Detailed Environmental Site Investigation involving Intrusive soil, fill, groundwater, leachate and ground gas investigations should be undertaken in these areas to further evaluate and manage the presence and extent of contamination in areas that will be disturbed by the proposed construction works. These investigations should be undertaken prior to disturbance of these areas to minimise the potential for identifying unexpected finds and project delays during construction. **Depending upon the extent and nature of any contamination, a Remediation Action Plan or Environmental Management Plan will then be developed to ensure relevant sites can be made suitable for the proposed use.** An environmental management plan incorporating an unexpected finds procedure/ should also be in place to manage potentially contaminated materials which may be encountered in areas not identified/anticipated as part of the PESI.

The PESI confirms that a NSW EPA Accredited Site Auditor will be engaged to ensure that additional site investigations undertaken at both the Alexandria Landfill and the previous smelter site at Canal Road have been undertaken in accordance with relevant guidelines of the NSW EPA and the *National Environmental Protection (Assessment of Site Contamination) Measure 1999 – Revised 2013.* Subject to the identification of future intrusive site investigations, remediation and validation requirements which may arise during the land acquisition and development process for the project, a site auditor may also be required to certify the suitability of the land for the current or proposed land use.

Alexandria landfill Site – Landfill Closure Management Plan (Appendix F EIS)

The main known source of contamination within the footprint of the proposed St Peters interchange is the Alexandria Landfill site located at 10-16 Albert Street, St Peters.

This 16 Hectare site is subject to Environmental Protection Licencing administered by the NSW EPA which is in the process of being transferred to Roads and Maritime Services. **The site has consent to operate as a non-putrescible landfill and waste recycling and storage facility, but is currently non-operational and is in the process of being decommissioned**. The final land use of the site associated with this project comprises of the St Peters Interchange with associated ancillary facilities and open space.

AECOM has been engaged by the Roads and Maritime Services to prepare a Landfill Closure Management Plan (LCMP) for Alexandria Landfill located in St Peters, the draft of which is contained at Appendix F of the EIS. The LCMP provides guidance on the proposed landfill closure activities that will be undertaken at the site, and aims to ensure that adequate landfill closure and rehabilitation measures are implemented and monitoring procedures continue as necessary following closure. The LCMP incorporates and makes reference to key legislation and guidance including the NSW EPA (2015) *Draft Environmental Guidelines: Solid Waste Landfills*, *Protection of the Environment Operations* Act 1997 and the existing Environmental Protection Licences issued by the NSW EPA under the *Protection of the Environment Operations Act* 1997.

The EPA as the Appropriate Regulatory Authority for the site were consulted on an earlier draft of the LCMP and their comments/ advice on where these have been addressed are incorporated into the plan at Section 1.5.

A Phase 1 - Preliminary Environmental Site Assessment and a Phase 2 - Detailed Environmental Site Assessment has been undertaken of the site by AECOM which identified certain contaminants of concern that are randomly distributed within the landfill material. **These contaminants exceeded the adopted human-health and ecological based assessment criteria for future open space and commercial/industrial land use.** These included lead, carcinogenic polycyclic aromatic hydrocarbons, total recoverable hydrocarbons and asbestos. Contamination exceeding the adopted criteria was not detected in the underlying natural soils. Sources of contamination include above and below ground diesel storage tanks, chemical storage facilities, land fill materials and recycling stockpiles as well as off-site migration of contaminants from the former smelting and waste recycling plant located between Canal Road and the site.

The site is within Zone 2 of the Botany Groundwater Management Zone within which there is currently an embargo on the use of groundwater for domestic purposes.

Leachate from the site is currently pumped to Sydney Water Sewer via a trade waste agreement (TWA). Before discharging to sewer it is subject to treatment to remove ammonia and to meet effluent standards set by Sydney Water under the TWA. The existing leachate treatment system is currently being upgraded in accordance with an effluent improvement program agreed with Sydney Water which wais scheduled to be operational by the end of 2015.

The St Peters interchange has been designed to incorporate landfill closure considerations as set out within the Landfill Closure Management Plan including capping, leachate and landfill gas management, monitoring of noise and management of dust and odours.

A dust and odour impact assessment has also been undertaken in relation to the closure of the landfill site which is contained in Part 8 of the WestConnex Air Quality Assessment report contained at Appendix H of the EIS. This is discussed in the Air Quality section (Chapter10) of this submission.

Potential contaminating activities

Works and activities associated with the St Peters Interchange development have the potential to cause localised contamination. These include earthworks, demolition of buildings containing hazardous building materials and chemical / fuel spills from plant and machinery. **These should be assessed and relevant mitigation measures outlined in a Construction Environmental Management Plan to be prepared for the development**.

Acid Sulfate Soils

The risk of acid sulfate soils occurring within the Project Areas have been assessed and identified in Chapter 5.0 of the EIS Contamination Report and which will require Acid Sulfate Soil Management Plans (ASSMPs):

These documents must be prepared in accordance with the Acid Sulfate Soils Management Advisory Committee (ASSMAC) (1998) *Acid Sulfate Soils Assessment Guidelines.* The ASSMPs should include protocols for the offsite disposal of acid sulfate soils and potential acid sulfate soils in accordance with the NSW EPA (2014) *Waste Classification Guidelines*: *Part 4; Acid sulfate soils*.

Recommendation

Prior to any intrusive ground works commencing, a Phase 2 Detailed Environmental Site Investigations (DESI) should be undertaken on sites subject to historic contaminating activities and those specifically referred to in the Phase 1 Preliminary Environmental Site Investigation previously carried out by AECOM. **Detailed site investigations should also occur on any land where a more sensitive land use is proposed such as open landscaped areas where direct exposure pathways will exist to any potential existing contamination** such as contaminated fill materials by the public accessing these areas or personnel engaged in maintenance.

The DESI should confirm that the site is suitable for the proposed land use or requires remediation/ongoing environmental management in order to make it suitable.

A NSW EPA Accredited Site Auditor should be engaged to ensure that these additional site investigations and any required remediation action plans/environmental management plans have been conducted in accordance with relevant NSW EPA Guidelines and the National Environmental Protection (Assessment of Site Contamination) Measure 1999 (Revised 2013). **The Auditor should confirm either by a letter of interim advice or a Site Audit Statement that these sites are suitable or will be made suitable following implementation of the proposed remediation strategy for the intended use.**

On completion of any site specific remediation**, site validation reports must be prepared, submitted to, reviewed and approved by the Site Auditor and a Section A Site Audit Statement issued by the Auditor confirming the specific site is suitable for the proposed use.**

Where future site suitability is dependent upon an ongoing Environmental Management Plan to manage any residual contamination that may exist and remain on site, **this must be discussed and approved by the relevant authority that will be responsible for owning and/or maintaining those areas**.

Any new information which comes to light during remediation, demolition or construction works which has the potential to alter previous conclusions about site contamination should immediately be notified to the appointed Site Auditor in accordance with procedures set out in the Construction Environmental Management Plan to be developed for the project.

Excavated materials requiring off-site disposal must be classified in accordance with the NSW EPA (2014) *Waste Classification Guidelines*; or as an applicable resource recovery exemption and order under the *Protection of the Environment Operation (Waste) Regulation* 2014

Chapter 18: Flooding and drainage

Water

Discharge of water into Alexandra Canal during construction, operation, or as a result of overflow in a major storm event has a major potential environmental impact. **Both the quality and quantity of water entering Alexandra Canal as a result of this project should be considered when assessing the impact.**

Any water discharged into Alexandra Canal must meet Botany Bay catchment water quality standards. These water quality standards should also be met during construction.

Water Sustainable Urban Design (WSUD)

Roadside bioswales should be considered along the edges of the road where space allows to reduce impact of increased stormwater run-off into Alexandra Canal.

Relocation of the bio-retention pond on the Euston Road edge of the St Peters Interchange site should be considered to free up that land for active recreation uses, should air quality considerations allow.

Surface water from the site, and tunnel water, should be reused on site for construction and operational demands. Water that is collected on site and surplus to the capacity of the water detention pond, or the operational demand of the motorway, **should be pumped into the Sydney Park reticulation system or distributed locally for use by other parties, to prevent unnecessary discharge into Alexandra Canal.**

Chapter 19: Groundwater

Chapter 19 of the Environmental Impact Statement (EIS) and Appendix Q provides an assessment of the impact of this development to Groundwater and also covers mitigation and treatment of leachate from the Alexandria Landfill site and provides recommendations for mitigation measures within Section 8.

The information provided within the assessment is satisfactory **with exception of the proposed discharge of groundwater emanating from this site to the Alexandria Canal and Cooks River during construction and long term operations.**

The report recommends for groundwater to be collected, treated and discharged in accordance with the Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000 (ANZECC 2000) for a highly disturbed ecosystem. ANZECC 2000 states that:

> "*A reduced level of protection may be appropriate as a pragmatic short-term goal, with the aim of eventually restoring it to the status of a 'slightly to moderately disturbed'. However, it is not acceptable to allow poor environmental management or water pollution, simply because a waterway is currently degraded*".

The project involves long term discharge of ground water during both construction and operational stages **for which a reduced level of protection as a short term goal does not appear to be appropriate.**

Further clarification should be obtained on the proposed level of treatment in relation to ANZECC 2000 and protection of the Alexandria Canal and Cooks River over the long term.

Mitigation and management measures

The mitigation and management measures as set out within Section 8 of Appendix Q of the Environmental Impact Statement (EIS) should be adopted during construction and operation of the project to reduce or eliminate the risks posed to the existing groundwater regime.

8.1 Construction

To mitigate and manage the potential impacts during construction, **the following measures must form part of the consent conditions, should the project be approved**:

- A tunnelling waterproofing procedure that outlines the methodology to determine when and what type of waterproofing is required to be installed during construction;
- Appropriate waterproofing measures shall be implemented to permanently reduce the inflow to an acceptable quantity where the project alignment passes close to watercourses and/or where higher than expected inflows are experienced;

- Pre-excavation pressure grouting shall be used in locations that could produce substantial inflows to reduce groundwater inflows to an acceptable level. Post-excavation grouting may also be required to further reduce groundwater inflows, and would occur shortly following the excavation of that area;
- Additional rock support shall be installed where saturated faults and fractures are intersected by the project to ensure tunnel stability; and
- A Construction Soil and Water Quality Management Plan shall be implemented during construction, which would also manage groundwater impacts during construction due to disturbances at the surface. This is to include:
    - An acid sulfate soil management plan, which shall be prepared prior to the commencement of bulk earth works where potential acid sulfate soils are expected. The plan should include the types of treatment required for acid sulfate soils, bunding and requirement for treatment ponds; and
    - Management measures for the storage and stockpiling of materials, fuel and wastes during construction.

Spill prevention and response procedures

The **following should also be included as conditions of consent**, should approval be granted:

- A protocol to address unexpected contaminated finds or unforeseen contamination issues during surface works and tunnelling shall be devised prior to commencement of the works. This would include approaches to remove the source of contamination by excavation, or an engineering solution to prevent the migration of contaminated groundwater into the tunnels;
- Shallow perched groundwater within Alexandria Landfill or Botany Sands shall be directed to the leachate treatment plant or the construction water treatment plant prior to discharge, depending on the characteristics of this groundwater. Elsewhere, collection and treatment options should be considered and releases made under relevant discharge criteria;
- Treated waste water should be stored and re-used for project purposes wherever possible. Groundwater reuse shall be in accordance with the policies of sustainable water use of the Department of Primary Industries (Water), such as dust suppression and earthworks;
- A groundwater soil and salinity report shall be prepared detailing the outcomes of geotechnical investigations to determine the presence, extent and severity of soil salinity along the alignment. The report is to be prepared in consultation with Office of Environment and Heritage and NSW Department of Primary Industries (Water). Measures would be outlined to minimise impacts on groundwater systems and other receiving environments;
- A groundwater monitoring program shall be prepared and implemented to monitor groundwater impacts during construction on groundwater quality. The program shall be developed in consultation with the Department of Primary Industries (Water) and relevant councils including the City of Sydney. If adverse impacts to groundwater quality are identified by the monitoring program due to construction activity, strategies would to be developed and implemented to reduce the impacts;

- Contingency measures to address leachate management at the Alexandria Landfill during construction and prior to the commissioning of the leachate treatment plant shall be explored during detailed design. Identified measures should be detailed in the Construction Environmental Management Plan and implemented during construction;
- Contingency measures shall be implemented in the event that of interaction with contaminated groundwater during construction within the Alexandria Landfill;
- Building materials that are resistant to aggressive groundwater conditions should be selected; and
- In the event that the drawdown in a water supply bore or irrigation bore exceeds two metres (in accordance with the Aquifer Interference Policy) measures shall be taken to 'make good' the impact by restoring the water supply to pre-development levels. The measures taken will be dependent upon the location of the impacted bore but could include, deepening the bore, providing a new bore or providing an alternative water supply.

Operation

Following construction and implementation of mitigation strategies, there could be residual impacts to groundwater throughout the long term operational phase. **Operational environmental measures should be prepared as part of the Operational Environmental Management Plan (OEMP), which contain response plans to manage on-going monitoring and reporting requirements, spillages or incidents**.

Chapter 20: Non-Aboriginal heritage

Non-Aboriginal Heritage is canvassed in EIS Vol. 1C, Chapter 20. This chapter essentially summarises the more detailed *Technical Working Paper - Non-Aboriginal Heritage (TWP-NAH)* in EIS Vol. 2G Appendix R. For consistency, the review below will cross reference to EIS Chapter 20 and will only cite Appendix R if further details are relevant to the discussion.

The response below only covers heritage places and issues within or near the City of Sydney LGA and so focusses on the St Peters Interchange site and related works.

The report identifies one State Heritage Register (SHR) item, five locally listed items, one Heritage Conservation Area and two proposed local listings within the affected area of the Sydney LGA (*EIS* Ch. 20, pp. 20-8 and 20-9). It summarises the heritage significance of these places (pp. 20-28 and 20-29) and the projected impacts of the project on these places (pp. 20-32 to 20-42). The St Peters Brick Pit Geological Site is a non-statutory listed item and is partially within the Sydney LGA.

Key issues of concern

The EIS indicates:

- **The heritage item Rudder's Bond Store would be demolished**. It is locally listed as item I1405 in schedule 5 of the Sydney LEP but is attributed with State significance.

- The **proposed bridges over the Alexandra Canal** have the potential to generate a number of impacts on the heritage significance of this SHR item including physical and visual impacts and the possibility of structural damage due to vibration (p. 20-32).

- The proposed **pedestrian/cycle overbridge to Campbell Road** would overbear the adjacent heritage listed terrace houses I12 at **2-34 Campbell Road** and disrupt their setting and amenity.

- The **St Peters Brick Pit Geological Site** would be lost.

- Risks of **construction vibration** to heritage items not otherwise directly affected by the project (e.g. Water Board Pump House I18 and the Frank G Spurway building I20). In addition a number of places will be subject to direct impacts from vibration, settlement or groundwater drawdown (p. 20-43).

Impact on the City of these concerns

The environmental management measures proposed for the amelioration of negative heritage impacts and risks are summarised in Table 20-7. The table itemises and numbers the impacts and these numbers will be referred to in the discussion below.

Rudder's Bond Store

The project requires demolition of this heritage item (NAH 07). The Statement of Significance states, among other things, that the *"Rudders Bond Store is of State historical, associative, aesthetic, technical and rarity significance. Historically, the store demonstrates the innovative building techniques developed in response to a lack of materials during World War Two and in the immediate decades following the war*" (*EIS* Vol. 2G Appendix R p. 113). **Its demolition would result in loss of significant fabric and, in particular, the Ralph Symonds laminated timber structural system and is not supported.**

The environmental management measures (EIS p. 20-53) require that consideration be given to reusing the laminated timber structures elsewhere within the St Peters interchange or the local area. This is very open ended and, based on other precedents, may result in the salvaged fabric being stored and then lost, or used in a perfunctory or piecemeal fashion. If the building is to be demolished, the salvage and reuse of the significant laminated timber fabric must be actively built into the St Peters Interchange project.

Alexandra Canal

New bridges over the Alexandra Canal (NAH 16) have a potentially acceptable heritage impact provided the amelioration measures recommended in the EIS, together with the additional measures recommended below, are followed. **It is crucial that these major works are carried out to a high standard of engineering, architectural aesthetics and build quality** as, in the long term, they will be passed under by pedestrians, cyclists and waterway users of the Alexandra Canal corridor.

2-34 Campbell Road terraces

In addition to the Campbell Road Terrace House group I12, the EIS identifies that up to 57 heritage items may be eligible for at-property acoustic upgrades due to the widening of local roads in connection with the project and the resulting increase in traffic intensity.

Poorly conceived and designed acoustic treatment of heritage buildings can cause serious damage to heritage fabric and significance including the loss of original external joinery and internal lining and finishes.

St Peters Brickpit Geological Site

The loss of this important, and readily accessible, geological teaching resource is unfortunate (NAH18 and NAH 19, St Peters Brickpit Geological Site). The current design of the project appears to remove or bury the salient geological features, and it **is unlikely to retain any scientific or teaching value**. Even if the geological elements survive the construction process, they are likely to be within the operational area of the St Peters Interchange and would not be readily accessible.

Vibration, settlement and groundwater drawdown have the potential to affect both heritage and non-heritage properties in the City of Sydney LGA and **is a major construction risk issue**. There are precedents in Sydney for the damage and loss of buildings due to subsidence and or vibration from road tunnel projects and **these must be anticipated and prevented**.

Other impacts

Heritage impacts numbered in Table 20-7 but not discussed above are regarded as acceptable if the environmental management measures recommended to ameliorate their impacts are carried out in full. .

Suggestions for mitigation

The environmental management measures proposed for the amelioration of negative heritage impacts and risks discussed above are summarised in Table 20-7. The table itemises and numbers the impacts and measures and these numbers will be referred to in the discussion below. The measures are generally supported unless otherwise noted and additional measures are recommended as follows.

Rudder's Bond Store

If the City of Sydney's objection to the demolition of this heritage item is not sustained the following comments apply.

In addition to the environmental management measures proposed in the EIS (p. 20-53), an effective way of conserving the significant laminated timber structure of this building would be to incorporate them into new buildings required for the project. A number of buildings required for the St Peters Interchange appear to require long span structures and the long term conservation of the trusses would be guaranteed if they served a functional purpose in a working building. **This would provide a certain conservation outcome, allow interpretation of the structures and deliver a better ESD outcome by re-using structures and lowering the embodied energy of the project.**

Another potential use for the trusses would be **incorporation into a large span recreation facility** such as a gymnasium. This would allow public access and heritage interpretation of the structures.

There are very good precedents for the reuse of trusses in conservation projects in Sydney and elsewhere (for example, the Gantry project in Camperdown by Bates Smart).

Potential for direct impacts due to vibration associated with surface construction

In addition to the measures included in the EIS p. 20-54, **it is recommended that detailed dilapidation surveys, including the installation of structural 'tell tales,' be carried at all properties listed under NAH10**.

NAH 12 Acoustic Impacts (Includes 2-34 Campbell Road Terraces)

In addition to the measures included in the EIS (pp 20-38), the negative impacts of the proposed Campbell Road pedestrian/cycle bridge on could be ameliorated **by moving the bridge further west (depending on connectivity outcomes) and reducing the width of the bridge without reducing the functionality or width required for its pedestrian/bike rider connectivity**. This would also reduce the risk of damage from construction vibration.

Any at-property acoustic upgrading for the terraces must be designed in collaboration with an appropriately qualified and experience heritage architect to ensure that loss of original fabric is minimised and that the heritage significance of the place is not adversely affected.

Alexandra Canal

In addition to the amelioration measures proposed in the EIS (pp20-56) the areas of the canal embankments subject to direct physical disturbance and/or vibration impacts **should be accurately surveyed prior to the commencement of works**. In addition to the suggested archival photography, **a 3D scan of the site should be carried out**. This would facilitate the conservation of the site, including the **incorporation of sandstone blocks disturbed by the work into the repair and restoration of affected areas of the embankment.** The engineering and architectural design of the new bridges must ensure that they provide good amenity to users passing beneath them on land or water.

Heritage Interpretation

In addition to the environmental management measures listed a p. 20-56**, the brief for the public art, and the design of conspicuous built elements of the project should be informed by the heritage of the places affected or adjacent to the route** (NAH 17). This approach has been successfully applied to other major road projects in NSW (for example, the Gore Hill Freeway incorporates interpretation of Aboriginal rock carvings in its sound walls and retaining walls).

Interpretation of the St Peters Brickpit Geological Site into both the interpretation plan and the public art brief is recommended.

St Peters Brickpit Geological Site

Given that the project entails the substantial removal of this geological resource, the **project budget and program must include provision for a scientifically supervised excavation of the site** if palaeontologists believe that the site has potential to yield further specimens of scientific interest.

Chapter 21: Biodiversity

The City strongly recommends further assessment and mitigation measures to reduce impacts to biodiversity.

The City strongly recommends that all mitigation measures and opportunities identified in the report in Appendix B of this submission are considered and implemented.

EIS Volume 1C, Chapter 21 and Volume 2H, Appendices S – T do not adequately assess the biodiversity values of the project area as required under the Secretary's Environmental Assessment Requirements (SEARs), Threatened Species Conservation Act (TSCA), and the Office of Environment and Heritage's (OEH) Framework for Biodiversity Assessment (FBA). It does not appropriately consider the potential and cumulative impacts on the biodiversity of the project area in the local government area, and this creates weak and poorly designed mitigating and offset measures. **The proposal will have a significant impact on the local biodiversity and be detrimental to the City's efforts to conserve and enhance it.**

Biological Assessment Review is inadequate

Section 21.1 makes reference to the assessment being made in accordance to the NSW Biodiversity Offsets Policy for Major Projects and the FBA. The Biological Assessment Review (BAR) focuses on threatened species, populations and ecological communities, as does the FBA. However, the introductory SEARs statement and the *Threatened Species Conservation Act 1995* definition of biodiversity values suggests more consideration should have been given to biodiversity more generally, including species and sites of local conservation significance within the City of Sydney, and the numerous initiatives that have been implemented to conserve and enhance habitat for/at them. **The City is concerned that the assessment is not adequate or complete, specifically in regards to the biodiversity values at the St Peters Interchange** and surrounds detailed in Section 21.2. The BAR is flawed and does not address the requirements of the SEARs. The following issues are of concern in relation to the SEARs requirements and how the FBA was applied in preparation for the BAR:

Section 21.1.3 makes reference to "*Existing information about the biodiversity study area has been obtained from a range of sources including threatened species databases, aerial photographs, and previous studies relevant to the project corridor.*" **No consideration was given to ecological reports and data held by the City of Sydney in preparation of the BAR**, including the City's Urban Ecology Strategic Action Plan (UESAP) and recent records of threatened and migratory species, despite sections of the FBA that state such information can or should be considered (Section 2.2.2.1, 4.1.1.2.3, 5.2.1.3, and 6.1.1.2 of the FBA).

Important habitat features, including local wetlands and native vegetation in Sydney Park, were either not mapped or not mapped adequately or otherwise identified in the BAR (Figure 21-7 p 27). This is despite requirements in the FBA for such features to be mapped (Section 4.1.1.12 and 5.2.1.1 of the FBA). Section 21.2.2 (p 19) notes that "*Areas of planted native, introduced and exotic species (urban native and exotic vegetation) have been mapped within parklands and areas of open space adjacent to the M5 East Motorway*." As mentioned, the mapping is not adequate. Although outside of the development footprint, some local wetlands and native vegetation are adjacent to it and could be impacted. **It is considered that identifying the vegetation at these sites through mapping would assist in identifying impacts and ensuring they are mitigated.**

Section 21.2.2 (p 19) and Section 4.2.1 of Appendix S (p 34) defines vegetation in Sydney Park and Alexandria Landfill as Urban native and exotic i.e. "*Urban native and exotic vegetation within parklands including playground and maintained sports fields generally comprises large established trees with no shrub layer or evidence of regenerating overstorey species. Vegetated areas adjacent to the M5 East Motorway mapped as urban native and exotic vegetation primarily consists of regenerating canopy species above a shrub layer but with no large established trees."* **This does not adequately describe the vegetation at these sites and is misleading in reference to vegetation within Sydney Park and the Alexandria Landfill** which has also only partially been mapped.

The field surveys and database searches, as highlighted, are weak and inconsistent. Section 2.2.1 of Appendix S (p 16) states that '*If a threatened species absence from the study area could not be confirmed, then a precautionary approach was adopted, whereby the presence of the species was assumed*.' This is not appropriate, as **no surveys were undertaken for most threatened species, including several known to occur in the area**, yet the BAR later states there is no suitable habitat for these species, and they are not otherwise considered.

No 'precautionary approach' has been adopted. Fauna surveys were opportunistic only; no targeted surveys were undertaken apart from migratory waders at Eve St Wetland, which is outside (but close to) the development footprint. No surveys were undertaken at Sydney Park or Alexandria Landfill despite being within the footprint and having threatened species records and/or potential for threatened species, as well as priority/target species (refer to point ix. below). The development footprint extends to within a few metres of Sydney Park's wetlands.

Threatened species, populations and communities in the City of Sydney LGA were not correctly identified. The Eastern Bent-wing Bat and (possibly) the Southern Myotis, the endangered Long-nosed Bandicoot population, the endangered Coastal Saltmarsh community, and migratory species including the Great Egret, Cattle Egret, Sharp-tailed Sandpiper, Latham's Snipe and Rufous Fantail have all recently been recorded in the City of Sydney, but as noted above were not identified or adequately considered in the BAR, despite potential for the project to impact upon them.

The list of candidate 'species credit species' in the BAR does not include several species that have recently been recorded in the vicinity, and/or for which suitable habitat (as described on the OEH Threatened Species Profile Database) is present within the development footprint, particularly at the Alexandria Landfill site where clearing has already commenced, and adjoining industrial and vacant land. These include the Eastern Bent-wing Bat, and Southern Myotis, and the endangered inner west population of the Long-nosed Bandicoot. It appears these species have been incorrectly excluded from further consideration in application of the FBA, and that they should have been addressed further in the BAR in accordance with the requirements of Sections 6-12 of the FBA.

Section 21.2.3 (p 31) of the BAR states that there is no suitable habitat for the threatened species within the St Peters Interchange and surrounds, which is clearly not the case as evidenced by reports and data held by the City. As previously mentioned and as described on the OEH Threatened Species Profile Database the above threatened species do exist in areas such as those within the St Peters Interchange.

The Long-nosed Bandicoot population was also identified by the OEH as requiring further consideration in accordance with Section 9.2 of the FBA, but no further consideration was given to it, despite the SEARs stating that specific surveys were required.

The BAR also does not contain any reference to or consideration of the significant initiatives by the City of Sydney and their respective community members in recent years to conserve and enhance habitats to promote biodiversity. These initiatives are guided by the City of Sydney's Urban Ecology Strategic Action Plan (UESAP). This document outlines 'priority' or 'target' species of local conservation significance within the City, along with 'priority' habitat sites and actual or potential habitat linkages/connectivity between them, as well as between sites in adjoining LGAs. Priority/target species are referred to in the report in Appendix B.

Despite comprising highly modified and/or constructed habitats, priority sites in the City provide important habitat for the priority/target fauna species in this highly urbanised context. **For instance, in Sydney Park, at least 62 native fauna species have been recorded since 2010.**

The dense weeds, mature trees, rock crevices, sandstone boulders, piles of debris and other ground-level features at the Alexandria Landfill site are also of habitat value for priority species and potentially threatened species. The landfill contributes to local habitat connectivity between Sydney Park and Tempe Reserve and other sites on the Cooks River. The banks of Alexandra Canal are also important with regard to local habitat connectivity, with the UESAP recognising their potential for future habitat enhancement, particularly due to the presence of the scattered Coastal Saltmarsh species and the presence of priority fauna species.

Section 2.2.5 of Appendix S (p 20) identifies some limitations to the field survey. Note that in reference to hollow bearing trees, it should be acknowledged that it is difficult to accurately locate all hollows suitable for microbats using the methodology described.

While not necessarily required by the FBA, it is disappointing that there is no recognition of any of the above in the BAR, despite the development footprint for the St Peters interchange and local road upgrades extending from Alexandra Canal across the Alexandria Landfill and into Sydney Park, with a construction compound and other works immediately adjacent to the park's habitats.

A more detailed list of the sections of the FBA that appear to have been overlooked in the BAR are referred to in the report in Appendix B.

Section 21.3 considers the potential impacts of the project based on a flawed assessment. Furthermore, while the potential impacts of the project are discussed in general terms in the BAR, it does not describe or address in detail all of the potential impacts of the project on the previously mentioned species and sites during construction and operation, and thus impacts on some threatened species are unknown.

A more comprehensive discussion of all impacts, including site-specific details, should be included in the BAR. Major concerns the City refers to include;

- Mortality of fauna,
- Reduction in habitat extent, damage to/removal of vegetation;
- Noise, dust, light, shade and other visual disturbance;
- Potential removal/disturbance to endangered Coastal Saltmarsh;
- Sedimentation and pollution; and the alteration of hydrological regimes.

Refer to Section 3.4 of the report in Appendix B for further detail.

Environmental Management measures

Section 21.4 outlines environmental management measures. Those measures outlined in the BAR are not considered adequate in terms of ensuring minimisation of impacts to biodiversity values in the City of Sydney. Given that the nature of actual or potential impacts to threatened species, populations and communities that will result from the development are unknown due to the perceived shortcomings in application of the FBA outlined in Section 3.1 **further assessment is considered necessary in accordance with Sections 6-12 of the FBA**, with the BAR updated based on the results.

Additionally, the fact **that impacts to threatened species, populations and communities and to priority/target species were not specified in the BAR suggests these species may be overlooked in the Flora and Fauna Management Plan (FFMP)** that is to be prepared for the project. This is of concern, particularly as application of the Roads and Maritime Services (RMS) Biodiversity Guidelines which the BAR states will form the basis of the FFMP, is partly reliant on information in the environmental assessment documents. Refer to Section 3.4 and 3.5 of the report (Appendix B) that details additional potential impacts and cumulative impacts of the project. **Note that no cumulative impacts of the project were described in the BAR, which the City finds concerning considering the extent and nature of the project.**

More detailed measures are therefore recommended for addition to the BAR and FFMP along with/instead of others already specified. Any additional mitigation measures identified through the recommended further assessment recommended in Section 6.5.1 of the report in Appendix B, and any identified for similar species/sites in other LGAs. Site-specific mitigation measures should be outlined, notably for St Peters Interchange, Alexandria Canal, the proposed construction compound in Sydney Park, and the removal of trees along Campbell and Euston Rd for example. Refer to Section 3.6.2 of the report in Appendix B for more detailed environmental management measures requirements and mitigation opportunities to offset the impacts of the project.

Opportunities for habitat creation

The BAR does not recognise or discuss any of the opportunities presented by the development to create substantial new habitats through site landscaping in and around the proposed open space adjoining the St Peters Interchange, and along Alexandra Canal. While this might not be considered a particular requirement of the FBA, such opportunities have the potential to compensate for some of the adverse impacts and should therefore be documented.

It is noted that the Urban Design report and Landscape and Visual Impact Assessment prepared for the EIS identify some opportunities in this regard, but these focus mainly on establishing heavily treed areas which are unlikely to support many of the priority/target species, but rather to encourage the species that are well-adapted to urban environments and that are very common as a result. The overview of the Species Selection identified in EIS Volume 2E Appendix L Section 6.4 (p114) is removed from any intention to mitigate the habitat loss and reduced connectivity that the project will result in.

Volume 2E Appendix D of Appendix L (p145) indicates a very limited and inappropriate landscape concept plan for the St Peters Interchange and is not locally relevant. **It is strongly recommended that the landscape plans are revised and made in consultation with and ecologist and the City's Urban Ecology Coordinator.**

There are many more possibilities for habitat creation and the City believes that these should be incorporated into the BAR, and/or the Urban Design report and Landscape and Visual Assessment, and further developed with reference to the City of Sydney's UESAP and Marrickville Council's Biodiversity Strategy and Biodiversity Action Plan, and in consultation with the City of Sydney's Urban Ecology Coordinator and Marrickville Council's Team Leader, Biodiversity. Examples of opportunities as described in Section 3.6 of the report in Appendix B have the potential, over time to contribute to biodiversity values through enhancement of habitats and connectivity in the area.

Chapter 22: Greenhouse gas

A key concern for the City in this EIS is that operational omissions have only been extrapolated to 2031. This is due to the traffic modelling timeframe which was the primary data input, but in the same vein is totally inadequate for an asset with a concession life of 45 years. Whist it is likely that the margin of error would increase if a longer period were to be modelled, to only consider emissions for a 18 year period for such an extensive and heavily polluting piece of infrastructure is at odds with the globally recognised and nationally endorsed need to reduce the emission of greenhouse gases. **Any other major emitting infrastructure would model well beyond 18 years – for the term of the assets life ideally, so to limit to this timeframe is poor.**

The EIS notes that emission savings will reduce over time "as traffic volumes" increase. This recognition is welcome as it is well known around the world that when cities build more road it eventually results in more car usage. **A question this raises is whether this is an appropriate strategy for Australia's global city.**

Considering the concession period of this road, it is disingenuous to claim the project's modelled short-term emission savings as a project benefit especially when it fails to model beyond this timeframe. It is recommended that prior to any approvals, the proponent extrapolates operational emissions as long as the concession period of 45 years to understand the longer term impact.

Flooding

Although recorded as one of the most significant climate change risks, it is very poor that the project team did not involve each council in the flood studies considering the local knowledge available. Involving councils would have greatly improved the assessment outcomes.

To assert that as there is no new hard stand that the motorway will not impact on localised flooding fails to address that localised flooding will impact the motorway. If its exit ramps back up because local streets near the canal are flooded (which they often are in times of heavy rain) then the impact will be very real.

Gas from landfill - 22.3.2 Emissions associated with the Alexandria Landfill

"*It is anticipated that collected gas will be treated through flaring, but other control measures, such as use of biological treatment to convert methane to carbon dioxide, would be considered as part of the detailed design*." Flaring should not be considered an appropriate modern solution. **If the volume of methane is likely to be too small of on-site polishing and reuse, it should be stored for treatment and re-use elsewhere.**

Use of renewable energy

Impact no. OpGHG 3 – "At least six per cent of energy required for the project would be sourced from an accredited GreenPower energy supplier, where possible."

Although in line with the *Transport Environment and Sustainability Policy Framework*, this is an inadequate target in a post-Paris COP21 context and **should be revised by the proponent**. Page 3 of the same policy framework references *NSW 2021: A Plan to Make NSW Number One* and its **target of 20% renewable by 2020.** So the project target should at least aim at this higher percentage of renewable energy.

The City of Sydney procures 100 per cent accredited Green Power for its operations and strongly encourages other government entities to match this standard. Other NSW Government transport projects have set the target for 100 per cent GreenPower, such as the North West Rail Link.

It would be prudent for the proponents of the largest motorway project in Australia to demonstrate leadership by procuring 100% GreenPower; particularly when other Transport cluster project is doing so.

Chapter 23: Aboriginal heritage

No comments.

Chapter 24: Resource use and waste minimisation

On-site reuse of construction spoil is to be commended. This is good practice and common sense.

Use of recycled materials to off-set use of virgin materials is a big opportunity to reduce the environmental impact of major construction works, but it is not addressed in Section 24.

Yet Section 28, Table 28-3 Sustainability refers readers to Section 24 to gain details on plans on resource use and waste minimisation. Table 28-3 sets a target to "optimise the amount of cement replacement material (Measured by mass) used in concrete". This is more an aspiration than a target as there is no measurable quantity set. **A metric needs to be attached to make the approach meaningful and applicable.** The "optimal" outcome must balance engineering, cost and environmental outcomes (not just cost) and has been successfully achieved on other major infrastructure projects. For instance, the Anzac Bridge pylons used 65% waste industrial product to offset use of Portland cement. SMC should also commit to using recycled content in steel where available and assuming that it does not compromise structural requirements.

The aspiration to collect and re-use water on site for operational needs is to be commended. However the detail is lacking and this is not worded as a commitment. Again**, a metric needs to be applied to make the aspiration meaningful and achievable.**

A circular reference is found when addressing "*Operation resource consumption*" on p24-17, where sustainability initiatives to reduce water consumption are discussed in Chapter 28 (Sustainability), but the targets on p28-10 are qualitative rather than setting a measurable quantity.

Chapter 25: Climate change risk and adaptation

Methodology

The methodology outlined is overly simplistic and the scope too narrow. By not involving stakeholders in the risk identification process there is a significant likelihood that risks will have been overlooked. By not undertaking any interdependency analysis the study will, by definition, have failed to identify knock-on impacts to and from the new road infrastructure and surrounding assets and infrastructure such as; energy, water, ICT, other roads and so on. **A more holistic view should be taken of the impacts of climate change on infrastructure.**

Extreme sea level

It is encouraging to see that a NSW Government project recognises Sea Level Rise (SLR) for Representative Concentration Pathways (RCP) 8.5 of up to 0.89 meters. **The City encourages the Government to re-instate its policy position (as set out in 2009 NSW Sea Level Rise Policy Statement that was rescinded in 2012) recognising a consistent SLR framework for the entire NSW coastline.**

Following on from this, and in recognition that RCP 8.5 approximates the world's current emissions trajectory, the need for Government to lead in the adoption of 100% renewable energy usage targets is clear.

Section 25.3.2 refers to a "*subsequent detailed risk assessment to be undertaken during detailed design*". **The City recommends the proponent incorporates stakeholder participation and an interdependency analysis** as part of this detailed assessment to ensure local expert knowledge is incorporated in detailed design, should the project be approved.

Adaptation omission

There is no measure to coordinate adaptation planning or response within Table 25-6 with other infrastructure operators and assets.

Other NSW Government agencies are developing the Adapt Infrastructure tool (lead by the Office of Environment and Heritage and Sydney Water) to coordinate the cross-agency management of climate adaptation. Such an adaptation tool would help the proponent move beyond the current siloed approach that that treats the tollway as a standalone piece of infrastructure, which it is not. **The WestConnex tollway does not operate in isolation from other roads, other modes of transport, power sources, information communication technology (ICT), and water infrastructure** and so on. The interdependency with these other infrastructure types and operating organisations should be factored into adaptation planning.

Chapter 26: Hazard and risk

No comments.

Chapter 27: Cumulative impacts

This chapter is very weak and of significant concern to the City. The assessment fails to include considerable land use changes such as the Ashmore Estate and the Central to Eveleigh corridor including the significant redevelopment at Waterloo. The assessment also fails to consider the operational impacts of the project in any depth or detail. The focus is primarily on the construction impacts.

The considerable additional traffic that will be delivered onto the local road network has essentially been dismissed. There is no consideration of this in terms of the growth in population and the demand for road space which will require a more efficient allocation; not necessarily more capacity. This is unacceptable.

The cumulative impacts of the entire WestConnex project must be considered and assessed, including the M4-M5 Link (including the traffic to/from the Camperdown Portals and impacts on Parramatta Road) and the Southern Extension (including utilisation of the additional capacity of the New M5 between St Peters Interchange and Arncliffe). These projects will have impacts on the southern Sydney road network.

Chapter 28: Sustainability

WestConnex sustainability strategy

It is encouraging that the sustainability strategy is seen as a "*framework to implement sustainability objectives and targets through the project's contract requirements…"* **Holding the proponent and the successful tenderers to these contractual requirements or conditions of consent will be crucial to see good intent converted into delivered actions.**

Seeking an "excellent" rating under the ISCA framework is also a worthy goal which the proponent must be held to account.

Materials

The sustainability targets set out in Table 28-3: are worthy goals but the wording is brief and does not make strong commitments, for instance in the second bullet; "*Maximise the use of all timber products from either recycled timber products from either reused/recycled timber or from sustainably managed forests that have obtained Forest Management Certification*" – although this has merit, there is no indication as to what basis "maximise" should be measured**. There needs to be a metric attached to this to give some assurance about the level applied**. For example, the London Olympic Games committed to 100% recycled or FSC timbers in construction up to 2012. The proponent would again do well to show environmental leadership in such a major infrastructure project.

The comment that alternative concrete "*would be considered"* uses wording that does not imply any market research or sounding (despite a preferred contractor being named) has occurred, or that there is any commitment to using this material. Similar to other elements of this EIS, it demonstrates a compliance-driven approach with little innovation or consideration of the needs of future generations.

Energy and carbon: as mentioned above, the six per cent renewable energy target for construction and operations is too low and weak. The North West Rail Link project has set a target of 100 per cent renewable energy (or offset) and the Sydney Light Rail project is currently working towards a similar commitment. The City of Sydney also has a 100 per cent renewable energy commitment and off sets all other emissions to meet our carbon neutral status.

Maximise equitable training and employment opportunities

These aspirations are admirable and is a long-held practice of the Roads and Maritime Authority.

The proponent may wish to engage with the City's economic strategy team with reference to the Aboriginal Economic Development Plan which addresses much common material.

Project-specific sustainability initiatives

All listed initiatives are admirable, with the exception of the six per cent (6%) GreenPower target as discussed above. This is very poor and does not demonstrate an adequate commitment from the Government to support or invest in renewable energy.

Intergeneration equity

The document states that intergeneration equity has been considered in terms of emissions, among other areas, however; the emissions modelling only runs until 2031. **This 16-year period represents half of one future generation only. This does not address the meaning or intent of the concept to provide equity for future generations**.

Peak oil

The focus on peak oil rather than emissions is rapidly becoming out of date. In a post-Paris COP 21 policy environment, developed economies will have to leave oil in the ground rather than worry about reserves running out. **The proponent should be considering how peak carbon will impact its asset rather than peak oil**.

Improved valuation and pricing of environmental resources

The toll mechanism discussed in this section could be used to more effectively implement a “polluter pays” mechanism. **The proponent should consider a toll structure based on environmental impact rather than by vehicle classifications.** That is, using vehicle emission classification akin to the London congestion charge as the basis for setting the toll. The number of vehicle occupants should also be a factor, to encourage efficient use of emission-efficient vehicles.

Chapter 29: Environmental risk analysis

This chapter considers risk across the scope of the project. **The EIS does not include any type of risk rating or how risks were assessed.**

See the relevant chapter comments for responses to this section and to raise risks identified by the City.

Chapter 30: Summary of environmental management measures

This chapter considers the environmental management measure to be implemented across the project.

See the relevant chapter comments for responses to this section and to raise management measure that should be included, as identified by the City.

If the project is approved, a condition of consent must be that all relevant City of Sydney policies must be complied with during the construction and operation phases.

Chapter 31: Project justification and conclusion

The basis of this project's justification is meeting its own objectives. This is unfortunate, given **the project objectives are openly biased towards a motorway solution**. The project claims that it will "*deliver significant long-term benefits to the economic growth and development of NSW and Australia" (section 31.1.1).* This, **and the statement that the New M5 and WestConnex will support growing Sydney are tenuous, and the EIS does not support these statements with compelling evidence.**

The statement that the New M5 is consistent with the state's planning and policy documents (section 31.1.2) is untrue. The clear disassociation of this project with the objectives of the Government's land use policy (notwithstanding its inclusion in that document's mapping) is clear, and has **potentially damaging legacy implications on a Greater Sydney scale**.

The only real justification for this project is to build resilience in the motorway system. Rather than the proponent considering how to develop an integrated transport response to the challenges faced by growing Sydney, it is moving forward with a program of works that is significantly altered from its original intent, and **will not support the shaping of a sustainable or resilient Sydney.**

The nature of the assessments in the EIS are consistently compliance focused and lack any real consideration of the communities that it will affect. The Government, through supporting WestConnex in its current iteration is actively working against itself by continuing to link the west and the east rather than develop the west through appropriate transport infrastructure.

The City would argue that from an economic perspective, creating the New M5 and WestConnex is not the highest and best use for land, and **the Government has not appropriately considered the opportunity costs of this project, nor the WestConnex program.**

The City strongly objects to the New M5 proposal.

Appendices

Appendix A – *WestConnex Stage 2 EIS review – Review of Strategic Alternatives and Socio-economic impacts* (SGS Economics)

Appendix B – *New M5 and St Peters Interchange Environmental Impact Statement – Review of Biodiversity Assessment* (Katherine Oxenham)

Appendix C – *WestConnex Stage 2 EIS – Review of Traffic, Transport and Modelling* (TTM Consulting)

WestConnex Stage 2 EIS – Review of Strategic Alternatives and Socio-economic Impacts

Final Report

City of Sydney

January 2016

SGS Economics & Planning

Independent insight.

This report has been prepared for City of Sydney. SGS Economics and Planning has taken all due care in the preparation of this report. However, SGS and its associated consultants are not liable to any person or entity for any damage or loss that has occurred, or may occur, in relation to that person or entity taking or not taking action in respect of any representation, statement, opinion or advice referred to herein.

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EXECUTIVE SUMMARY

First announced in 2012, WestConnex is a suite of projects, including the M4 Widening, the M4 East, the New M5, a M4-M5 Link, a Western Harbour Tunnel, the Southern Gateway (a link to the Illawarra), and the Sydney Gateway (a link to the port and airport). Should all stages of WestConnex be completed it would be the largest continuous motorway in Australia.

The Environmental Impact Statement (EIS) for WestConnex Stage 2 was released on the 27 November 2015. The purpose of the EIS is to identify comprehensive mitigation and management measures that would be implemented to avoid, manage, mitigate, offset and/or monitor impacts during construction and operation of the project.

The WestConnex Stage 2 (New M5) EIS followed the release of the M4 Widening EIS in August 2014, the Stage 1 (M4 East) EIS in September 2015 and the Updated Strategic Business Case in November 2015. These documents and the Strategic Review and Transport Modelling of WestConnex prepared by SGS Economics and Planning and Veitch Lister Consulting comprise the only detailed public information on the potential impacts of WestConnex.

The purpose of this report is to review the Strategic Alternatives and the Social and Economic Impact Assessment chapters of the WestConnex Stage 2 EIS.

Five Strategic Alternatives are identified in the EIS, however, there are a number of significant issues with the information presented, including:

- No detail on how the alternatives were developed
- A lack of sufficient detail on the scope, timing and cost of each alternative
- No integrated solution considered, which combines road, public transport, land use management and demand management projects.

The approach to assessment of these alternatives also lacks rigour as:

- Each alternative is only assessed against WestConnex Stage 2 project objectives rather than by a more rigorous Cost Benefit Analysis or Multi Criteria Analysis
- The project objectives themselves effectively prevent any non-road based solution from being assessed positively.

This assessment of socio-economic impacts is limited by methodological flaws, particularly:

- The mismatch of the Study Areas used by the Social and Economic Impact Assessment and the Traffic and Transport assessment
- The lack of consideration of the city shaping impact of such a project
- The limited timeframe of assessment in the EIS.

This means the full extent of the social and economic impacts has not been considered in the EIS. In addition to issues with the methodology, analysis of the assessment raised the following issues:

- WestConnex Stage 2 does not connect people to areas with jobs growth and high value jobs in Global Sydney, a key priority for the Central Subregion in A Plan for Growing Sydney
- The impact on Sydney Park has not been fully addressed
- The impact on the urban renewal at Green Square and Ashmore has not been adequately addressed
- The impact to congestion in King Street, Newtown has not been adequately addressed.

A number of further issues were also identified in the EIS review including:

- The assumption that all sections of WestConnex would be completed by 2031
- Inconsistent reporting of transport modelling with limited assessment of WestConnex Stage 2 in 2031 as a singular piece of infrastructure rather than as part of the full WestConnex project.
- Induced traffic is incompletely and inflexibly treated, so that impacts on public transport patronage and active transport volumes are not fully examined
- Inconsistencies in technical aspects of the reporting.

The information contained in the EIS does not reduce any of the concerns around the adverse impacts previously raised in the Strategic Review and Transport Modelling of WestConnex prepared by SGS Economics and Planning and Veitch Lister Consulting. That is, WestConnex will not address the transport challenges being faced by Sydney in the future.

1 INTRODUCTION

1.1 About WestConnex Stage 2 – New M5

The WestConnex Stage 2 - New M5 Beverly Hills to St Peters (WestConnex Stage 2) Environmental Impact Statement (EIS) was released on 27 November 2015. WestConnex Stage 2 includes a new, tolled multi-lane road link between the M5 East Motorway at Kingsgrove and St Peters, an interchange at St Peters and connections to the existing road network (see Figure 1).

FIGURE 1 WESTCONNEX STAGES AND INDICATIVE TIMING

Source: WestConnex Delivery Authority, 2014
Note: Figure refers to King Georges Interchange, however, this is not mentioned in the project description and there is assumed to no longer part of stage 2.

Stage 2 of WestConnex is a complex road project. The EIS describes it as including:

- Twin motorway tunnels between the existing M5 East Motorway (between King Georges Road and Bexley Road) and St Peters. Each tunnel would be around nine kilometres in length and would be configured as follows:
  - Between the western portals and Arncliffe, the tunnels would be built to be three lanes wide but marked for two lanes as part of the project. Any change from two lanes to three lanes would be subject to future environmental assessment and approval
  - Between Arncliffe and St Peters, the tunnels would be built to be five lanes wide but marked for two lanes as part of the project. Any change from two lanes to any of three, four or five lanes would be subject to future environmental assessment and approval
- Tunnel stubs to allow for a potential future connection to Stage 3 of the WestConnex program of works (the M4-M5 Link) and a potential future connection to southern Sydney (known as the Southern extension) at Arncliffe

- Surface road widening works along the M5 East Motorway between east of King Georges Road and the new tunnel portal at Kingsgrove
- A new road interchange at St Peters, which would initially provide road connections from the main alignment tunnels to Campbell Road and Euston Road, St Peters and to a new bridge crossing Alexandra Canal and joining to Gardeners Road
- A second new road bridge across Alexandra Canal, linking Campbell Road, St Peters with Gardeners Road and Bourke Road, Mascot
- Closure and remediation of the Alexandria Landfill site, to enable the construction and operation of the new St Peters interchange
- Works to enhance and upgrade local streets and intersections near the St Peters interchange
- Temporary construction facilities and temporary works to facilitate the construction of the project
- Tolling infrastructure for electronic tolling on the existing M5 East Motorway
- Surface road upgrade works within the corridor of the M5 South West Motorway and M5 East Motorway

WestConnex Stage 2 will also interact with a number of other proposed projects, including a new M4 East (WestConnex Stage 1), a M4-M5 Link (WestConnex Stage 3), the Southern Gateway (a link to the Illawarra),the Sydney Gateway (a link to the port and airport), and the Western Harbour Tunnel.

1.2 Project brief

The City of Sydney has commissioned SGS Economics and Planning (SGS) to undertake a peer review of the EIS and its:

- Strategic alternatives to WestConnex
  - The extent to which alternatives to WestConnex have been adequately explored within the EIS.
  - Critical analysis of the alternatives identified within the EIS.
  - Identification of further alternatives that may exist.
- Socio-economic impacts, local, regional and metropolitan
  - Economic impacts on the Sydney CBD.
- Other related issues that may be identified.

The Project Brief also called for the review to consider the program of road building proposed by the Government and the impacts of interim stages in the long term, for example:

- New M5 (Stage 2) complete, no further extension (M4-M5 link, Sydney Gateway)
- New M5 (Stage 2) and M4-M5 link (Stage 3), no further extension (Sydney Gateway).

This review focuses on the southern parts of the City of Sydney LGA, including Sydney Park, urban renewal areas of Ashmore and Green Square, King Street (Newtown) and the Sydney CBD.

1.3 Secretary's Environmental Assessment Requirements (SEARs)

The EIS is prepared as per the provisions made for environmental assessment of State Significant Infrastructure projects under Part 5.1 of the *Environmental Planning and Assessment Act* 1979. The Act stipulates that the EIS be prepared to provide assessment of all potential environmental issues identified during the planning and assessment of the project. The public exhibition of the EIS commenced on the 27 November 2015 and ends 29 January 2016.

The intent of an Environmental Impact Assessment (EIA) is to collect, assess and account for the potential environmental effects of a development proposal to enable the Department to decide whether it should be approved.

For State significant infrastructure, Part 5.1 of *the Environmental Planning and Assessment Act 1979 No 203* (the Act) Act notes that '*When an application is made for the Minister's approval for State significant infrastructure, the Secretary is to prepare environmental assessment requirements in respect of the infrastructure'* (Section 115Y of the Act).

The EIS identifies that WestConnex Stage 2 is of state significance. The Secretary's Environmental Assessment Requirements (SEARs) issued on 26 August 2015 outline the general requirements of the EIS and a range of key issues which the EIS must address. In broad terms an EIS must include:

- A description of the project
- The main effect(s) the proposal is likely to have on the environment
- A description of measures envisaged to avoid, reduce or remedy significant environmental effects, and
- An outline of the main alternatives studied by the proponent.

The SEARs provide for a range of requirements. Pertinent to the focus of this peer review, the following requirements for the EIS are noted:

An analysis of feasible alternatives to the carrying out of the proposal and proposal justification, including:

- *an analysis of alternatives/options considered, having regard to the proposal objectives (including an assessment of the environmental costs and benefits of the proposal relative to alternatives and the consequences of not carrying out the proposal), and whether or not the proposal is in the public interest.*

Land Use, Social and Economic — including, but not limited to:

- *a description of the existing socio-economic environment;*
- *impacts on directly affected properties and land uses, including impacts related to access, land use, settlement and subsidence associated with tunnel excavation, property acquisition (including relocations and expenses for those properties acquired) and amenity related changes;*
- *social and economic impacts to businesses and the community within the vicinity of the proposal, with associated property acquisition, traffic, access, property, public domain and open space, and amenity and health related changes (including the broader regional impacts associated with the closure of the Alexandria landfill site should this be part of the proposal);*
- *opportunities for local centre and street revitalisation near the St Peters interchange*.

Source: Revised Secretary's Environmental Assessment Requirements[1]

The Stage 2 EIS is one of a number of EIS documents produced to date to obtain approval for the overall WestConnex project. The M4 Widening EIS was released 13 August 2014. The New M5 King Georges Road Interchange Upgrade EIS was released 22 October 2014. The Stage 1 (M4 East) EIS was released 1 September 2015. No date has been announced for the release of EIS documentation for subsequent stages. The Updated Strategic Business Case for WestConnex was released 20 November 2015 and relates to Stages 1, 2 and 3 of the project, providing justification for the project.

1.4 Report Purpose and Outline

The focus of this review is on the strategic alternatives and socio-economic impacts described in the WestConnex Stage 2 EIS specifically. Where relevant, the overall project planning process is referred to but it is not the purpose of this review to examine the project as a whole. SGS has previously undertaken a Strategic Review of the WestConnex Proposal[2] and the M4 East EIS[3] for the City of Sydney.

1 Issued 26 August 2015 and available at:
https://majorprojects.affinitylive.com/public/c7a3ea21009138a018a0542800cf1f22/WestConnex%20New%20M5%20-%20Revised%20SEARs.pdf

2 http://www.cityofsydney.nsw.gov.au/__data/assets/pdf_file/0008/227690/140511-Final-Report_150409.pdf

3 http://www.cityofsydney.nsw.gov.au/__data/assets/pdf_file/0008/245780/Report-150344-M4-East-EIS-Review-Final-Report.pdf

This review is structured as follows:

- Section 2 analyses the Strategic Alternatives presented and assessed in the EIS
- Section 3 examines the Socio-Economic Impacts described
- Section 4 presents other issues identified through the review.

2 STRATEGIC ALTERNATIVES TO WESTCONNEX STAGE 2

2.1 Introduction

The Secretary's Environmental Assessment Requirements (SEARs) for WestConnex Stage 2 include the following requirement for the assessment of Strategic Alternatives:

- An analysis of alternatives / options considered, having regards to the proposal objectives (including an assessment of the environmental costs and benefits of the proposal relative to the alternatives and the consequences of not carrying out the proposal), and whether or not the proposal is in the public interest (EIS, p. 4-1).

This chapter examines the Strategic Alternatives presented in the EIS and provides:

- An assessment of the extent to which alternatives to WestConnex have been adequately explored within the EIS.
- A critical analysis of the alternatives identified within the EIS.
- Identification of further alternatives that may exist.

2.2 Strategic Alternatives identified in the EIS

The Strategic Alternatives identified in the EIS are as follows:

- Alternative 1 – The base case or 'do nothing / do minimum'
- Alternative 2 – Optimising the performance of existing infrastructure
- Alternative 3 – Investment only in public transport and rail freight improvements
- Alternative 4 – Demand management
- Alternative 5 – Construction of the New M5 as part of the WestConnex program of works.

These are described further in the following table.

TABLE 1 STRATEGIC ALTERNATIVES TO WESTCONNEX STAGE 2 PRESENTED IN THE EIS

Strategic Alternative	Summary
1. Do nothing	The M5 East Motorway would retain its existing arrangement with only minor improvements provided over time to improve capacity in addition to ongoing maintenance activities.
2. Optimising existing infrastructure	Could potentially include undertaking improvements to the existing arterial network and to the existing M5 East Motorway by widening the surface sections of the motorway and/or providing additional capacity within the existing tunnels.
3. Public transport and rail freight improvements	Public transport improvements are focused on passenger rail and buses. Opportunities for rail upgrades are identified as those in the *State Infrastructure Strategy* and the *State Infrastructure Strategy Update* and include:

	– Progressing Stage 2 of Sydney's Rail Future including introducing simpler timetables and automatic train operations, transition to dedicated fleet types for some lines, enhancing track infrastructure, redesign of platforms and completion of the South West Rail Link, station upgrades and the Rail Clearways Program – Progressing the planning and development of the Sydney rapid transit network (now Sydney Metro). Bus improvements include the opportunities identified in *Sydney's Bus Future* and the *State Infrastructure Strategy*[4]. *Sydney's Bus Future* proposes the redesign of Sydney's bus network by providing rapid service routes to connect major centres along transport routes with mass transit demand. Suburban and local service routes would build on the foundation of the rapid routes to improve access to local, neighbourhood destinations. The *State Infrastructure Strategy* includes the Bus Priority Infrastructure Program which is a rolling program of infrastructure and traffic management works to improve network reliability and travel speeds. Rail freight improvements are those outlined in the *Long Term Transport Master Plan* and include: – Road upgrades and improved rail operations at Port Botany – Development of intermodal terminals at Enfield and Moorebank – Completion of the Southern Sydney Freight Line – A Western Sydney Freight Line and terminal project.
4. Demand management	Demand management initiatives include: – Land use planning policies which promote urban consolidation and the establishment of town centres to reduce the need for travel – Policies restricting parking provision in new developments to encourage alternative modes of transport – Intelligent transport systems to improve public transport operation, management of clearways and transit lanes and to provide greater priority over general traffic – Pricing transport operations to reduce travel demand such as demand based tolling or transport pricing to discourage discretional travel by private vehicles for trips that can be catered by public transport.
5. Construction of new M5	A new, tolled multilane road link between the existing M5 East Motorway, east of King Georges Road, and St Peters.

Source: EIS p. 4-8.

The following sub sections focus on how the Strategic Alternatives were developed, and the manner in which they are assessed in the EIS.

2.3 Development of Strategic Alternatives

There is a lack of detail presented on Strategic Alternatives

The level of detail presented on the Strategic Alternatives varies and is generally at a high level. Whilst options to alleviate congestion along the M5 were first considered back in 2009 as part of the *M5 Transport Corridor Feasibility Study* very little detail on each alternative is presented in this EIS. This lack of detail prevents a rigorous assessment of the Alternatives. The alternatives are also presented as mutually exclusive options and do not take an integrated approach. That is, a combined package of road improvements, demand management, public transport and road investments as a solution to the challenges within the WestConnex Stage 2 corridor is not considered.

[4] It is unclear from the EIS whether this refers to the State Infrastructure Strategy or the State Infrastructure Strategy Update.

Alternative 1 – The base case or 'do nothing / do minimum'

There is no detail on the scope of the works that constitute the 'minor improvements' such as:

- The nature of the works proposed
- The location of the works
- The timeframe or trigger points for undertaking the upgrades
- How much capacity these works would add to the corridor
- There is also no information on the cost of undertaking these improvements.

Alternative 2 – Optimising the performance of existing infrastructure

Again, there is very limited detail on the scope and impact of the works that constitute this alternative. The description states that improvements to the surrounding arterial road network would potentially relieve road congestion in the short term but provides no detail on the type of work proposed, the location of these improvements and by how much these works would reduce congestion and over what time period.

There is more detail on the scope of works involved to improve the existing M5 East Motorway. Surface road works involve widening the road way but this would have limited impact on the speed and reliability of the M5 Motorway. Tunnel works could include either widening the outer sides of the tunnels to provide an additional lane or excavating the existing tunnel ceilings to provide a double decker arrangement. The EIS concludes that this would increase the capacity of the tunnels and reduce congestion in the tunnels and provide some capacity within the tunnels to cater for the future growth in transport demand. These works, however, "would be costly and highly disruptive to existing traffic during construction" (p. 4-10). Despite this description significant gaps still remain in the information provided including:

- By how much the existing M5 East Motorway would be widened and the impact this would have on capacity
- The extent to which tunnel works would reduce congestion and whether this reduction would meet the project requirements
- The cost of surface road and tunnel works, the timeframe of the construction period and what this means for the surrounding road network.

Alternative 3 – Investment only in public transport and rail freight improvements

Alternative 3 is not a strategic alternative as it just identifies initiatives already detailed in existing planning documents. No new projects, or changes to timing are identified to address the issues seeking to be solved. What is provided is a list of initiatives that constitute Stage 2 of *Sydney's Rail Future* and a statement that this alternative also includes the opportunity to progress the planning and development of the Sydney bus rapid transit network. Beyond these statements, detail is limited. For example there is no information on:

- The scope and location of works:
  - For the rail network this includes for which rail routes simpler timetables would be introduced, which stations would be upgraded and the scope of other work that constitutes the Rail Clearways Program
  - For the bus network this includes where rapid service routes will be provided and which centres they will connect, the changes to suburban and local service routes, or the scope and location of infrastructure and traffic management works
  - For the rail freight network this includes detail on what constitutes "road upgrades and improved rail operations" at Port Botany, what the development of intermodal terminals at Enfield and Moorebank and the completion of the Southern Sydney Freight Line means for both shifting freight to rail and what the resulting demand for road transport from Port Botany and therefore the impact on surrounding roads
- The timeframe of works
- How these works would affect mode shares of different transport options and therefore what this alternative means for capacity and congestion on the road network
- The cost of undertaking this work.

Alternative 4 – Demand management

The EIS lists measures including land use planning policies, parking restrictions in new development, intelligent transport systems and pricing transport options. Again, detail is limited with no information provided on:

- where these measures would be implemented
- when these measures would be implemented
- what the impact on road use or congestion would be
- whether each measure was assessed in isolation or in combination
- the cost of implementing these measures.

Alternative 5 – Construction of the New M5 as part of the WestConnex program of works

Alternative 5 is the preferred alternative which is assessed in the EIS. Chapter 4.2, which details the Strategic Alternatives, has no information on the scope of works that make up the New M5. This chapter discusses this alternative only as a key component of strategic planning and transport documents and as forming part of a broader integrated transport solution. Subsequent sections of Chapter 4 detail the motorway options considered including duplication of the M5 East, a Southern alignment option, Central alignment option, and a Northern alignment option.

The Strategic Alternatives do not consider an integrated option

The process for how Strategic Alternatives were formulated is not explained in the EIS. History around WestConnex's inception and evolution as a project is detailed prior to the presentation of the Alternatives. An objectives-led, first principles approach to development of options is absent. This contributes to existing uncertainty that WestConnex is the best transport solution to meet the needs of a growing Sydney.

At the same time, it is noted that the focus of an EIS is on managing the impact of a project, rather than questioning its merits. To this extent, the purpose of the SEARs including an assessment of the Strategic Alternatives is redundant. Notwithstanding this issue, the approach to developing the Strategic Alternatives presented appears to be a missed opportunity to consider an integrated solution, which combines road, public transport, land use management and demand management projects.

Strategic Alternatives 2, 3 and 4 present mechanisms which have the potential to reduce demand for road usage. However, these have been scoped in a way which makes it difficult to assess them as being legitimate alternatives to the New M5. Strategic Alternatives which 'bundle' different elements of the alternatives are not presented.

For example, a Strategic Alternative which looks to improve public transport and rail freight, optimising existing road infrastructure and introduce demand management mechanisms has not been explored. A holistic, integrated transport solution is not presented. The EIS does point to the potential value of doing so, but stops short of describing and assessing such options:

> *Although the introduction of demand management measures would contribute to relieving congestion and would create opportunities for improved public transport initiatives, the implementation of these measures alone would not satisfy the project objectives.* (EIS, p. 4-17).

Holistic approaches – Case studies

The value of holistic, integrated approaches to meeting transport demands is recognised in a number of global cities. Following are four case studies from cities that have used a combination of measures to address congestion on the road network.

Vancouver

Transportation 2040 Plan includes a number of actions, in addition to road infrastructure projects, that are aimed at reducing congestion. This includes mechanisms to increase public transport usage such as include altering fare structures, introducing a smartcard system with distance and time-based elements, discounted fares in off-peak periods and increase user convenience. It also includes mechanisms to increase public transport usage such as optimisation of the road network through improved coordination of signal timing, monitoring of traffic volumes and peak-hour parking regulations (reducing congestion through appropriate pricing). Other demand management tools identified within the plan are aimed at businesses to encourage workers to use public transport through increasing the cost of parking and using the funds generated by this to provide workers with transit passes. A congestion charge policy is being further investigated as a long term initiative.

Rome

The *Sustainable Urban Mobility Plan* divides Rome into zones based on distance from the city centre with restrictions on traffic within each zone applied. A 'Zona a Traffico Limitato' (limited traffic zone) has been introduced within the centre of the city. Any vehicles entering this zone require a permit and must pay for this permit. Within the other zones, various restrictions have been implemented which seek to reduce emissions, vehicles, tourist vehicles and alter parking restrictions. Public transport usage is encouraged through expansion of the cycling and public transport networks and promotion of car sharing.

San Francisco

The *San Francisco Transportation Plan 2040* introduces a number of mechanisms to address congestion. The Plan identifies the need to continue to develop pricing approaches to congestion, such as a peak-period congestion charge would reduce vehicle delay in the north-east cordon by 21 percent. Congestion is also proposed to be managed through direct regulation of journey to work vehicle trips including employer outreach and incentives (e.g. transit promotion and ride sharing) and partnerships with private sector and community-based organisations (e.g. shuttles to existing public transport stops).

2.4 Analysis of Strategic Alternatives

Inadequate assessment of project alternatives

Notwithstanding the lack of detail around Strategic Alternatives presented and the manner in which these have been developed, the approach to assessment lacks rigour. The Strategic Alternatives are assessed, in text, against the New M5's strategic objectives in Table 4-2 of the EIS (see Figure 2).

FIGURE 2 SUMMARY ASSESSMENT OF STRATEGIC ALTERNATIVES – TABLE 4-2 OF EIS

Project objective	Alternative 1 Base case or do nothing	Alternative 2 Optimising the performance of existing infrastructure	Alternative 3 Investment in public transport and rail freight improvements	Alternative 4 Demand management	Alternative 5 Construction of the New M5
Support Sydney's long-term economic growth through improved motorway access and connections linking Sydney's international gateways and Western Sydney and places of business across the city	×	×	×	×	✓
Relieve road congestion so as to improve the speed, reliability and safety of travel in the M5 Motorway corridor, including parallel arterial roads	×	✓	×	✓	✓
Cater for the diverse travel demands along these corridors that are best met by road infrastructure	×	✓	×	×	✓
Enhance the productivity of commercial and freight generating land uses strategically located near transport infrastructure	×	×	✓	×	✓
Fit within the financial capacity of the State and Federal Governments, in partnership with the private sector	✓	✓	✓	✓	✓
Optimise user pays contributions to support funding in an affordable and equitable way	×	×	×	×	✓
Provide for integration with other WestConnex projects while not significantly impacting on the surrounding environment in the interim period	×	✓	✓	✓	✓

The SEARs require that 'environmental costs and benefits of the proposal relative to alternatives' are assessed. However, the method by which this assessment of alternatives occurs is not prescribed.

The project objectives are biased towards the construction of a motorway. This is discussed in the following section. Also some of the outcomes seem to be counter intuitive. Under the assessment, Alternative 4 Demand Management fails to meet the project objective of '*cater for the diverse travel demands along these corridors*' and '*optimise user pays contributions'*, which given international experience (as described in the previous section), appears an unjustified assessment.

A 'checklist' approach against project objectives does not take into account any broader benefits or costs generated by the Strategic Alternatives, and does not consider the environmental costs and benefits of the proposal relative to alternatives or the fact that some aspects of the Project Objectives may be more important than others.

NSW Government Guidelines for Economic Appraisal provide NSW Treasury's established requirements for the evaluation of capital works. Whilst these guidelines are adhered to in business cases, they are not only for this purpose. The preface of the *Guidelines* notes: "*In general, an economic appraisal is required for all individual projects with a total cost in excess of $1 million".*

Further to this, the Guidelines state: "*The purpose of an economic appraisal is not to validate a specific proposal, but to help choose the best means to satisfy a specified objective, and to rank competing proposals when resources are limited. All capital works and programs are provided as a means to an end".*

The Guidelines describe major economic appraisal techniques. Cost Benefit Analysis is the most commonly applied evaluation technique for transport projects. It considers benefits and costs of alternatives, translating outcomes of options into comparable terms (such as Net Present Value and Cost Benefit Ratio) to enable evaluation and decision making. Assessments of transport projects typically consider:

- Capital costs
- Operational costs
- Environmental externalities (e.g. CO2 emissions)
- Road safety improvements (e.g. number of accidents), and
- Travel time improvements.

The EIS does not consider any of these parameters when assessing the Strategic Alternatives to Stage 2 of WestConnex. As a Cost Benefit Analysis of Strategic Alternatives is not prescribed by SEARs, a less onerous yet useful assessment approach may be a multi-criteria analysis. The assessment of Strategic Alternatives against project objectives does this in some part, but the project objectives themselves effectively prevent any non-road based solution from being assessed positively.

Project objectives can only be met by a road solution

The objectives-led assessment of Strategic Alternatives prevent a non-road based solution from being preferred.

The project objectives are:

- Support Sydney's long-term economic growth through improved motorway access and connections linking Sydney's international gateways and Western Sydney and places of business across the city.
- Relieve road congestion so as to improve the speed, reliability and safety of travel in the M5 motorway corridor, including parallel arterial roads
- Cater for the diverse travel demands along these corridors that are best met by road infrastructure
- Enhance the productivity of commercial and freight generating land uses strategically located near transport infrastructure

- Fit within the financial capacity of the State and Federal Governments, in partnership with the private sector
- Optimise user pays contributions to support funding in an affordable and equitable way
- Provide for integration with other WestConnex projects while not significantly impacting on the surrounding environment in the interim period.

These objectives explicitly refer to achieving economic growth through improved motorway access and meeting travel demand through road infrastructure. All Strategic Alternatives assessed, except for the New M5, would therefore fall short.

State transport objectives

Broader transport objectives for Sydney and New South Wales, however, are outlined in state transport and planning strategies. These are focused on reducing congestion and improving accessibility and include:

Premier's Priorities and State Priorities

There are 12 Premier's priorities including:

- Creating jobs with an aim of 150,000 new jobs by 2019
- Building infrastructure with an infrastructure program to support 40 percent more train trips, 30 percent more car trips and 31 percent more households

There are five State priorities including:

- Strong budget and economy, to be achieved partly through encouraging business investment and accelerating major project assessment
- Building infrastructure, to be achieved through improving road travel reliability and increasing housing supply
- Better services, to be partly achieved through ensuring on-time running for public transport

A Plan for Growing Sydney (2014)

The Plan sets out four goals and associated directions which include:

- Goal 1: A competitive economy with world-class services and transport
  - Direction 1.1: Grow a more internationally competitive Sydney CBD
  - Direction 1.4: Transform the productivity of Western Sydney through growth and investment
  - Direction 1.5: Enhance capacity at Sydney's gateways and freight networks
  - Direction 1.6: Expand the Global Economic Corridor
  - Direction 1.7: Grow strategic centres - providing more jobs closer to home
  - Direction 1.11: Deliver infrastructure
- Goal 2: A city of housing choice, with homes that meet our needs and lifestyles
  - Direction 2.2: Accelerate urban renewal across Sydney – providing homes closer to jobs.

The Plan also identifies priorities for the Central Subregion which includes central Sydney, the eastern suburbs and the inner west. The priorities include:

- A competitive economy, to be achieved partly through preserving a corridor for Sydney Rapid Transit and enabling delivery of key transport projects to facilitate better connections to Global Sydney
- Accelerate housing supply, choice and affordability and build great places to live
- Facilitating the delivery of the UrbanGrowth NSW project for Green Square Town Centre.

NSW Long Term Transport Master Plan (2012)

The Master Plan identifies a number of transport challenges and proposes a range of objectives and actions to address these. Eight transport objectives have been identified:

- Improve quality of service
- Improve liveability
- Support economic growth and productivity
- Support regional development
- Improve safety and security

- Reduce social disadvantage
- Improve sustainability
- Strengthen transport planning processes

The Master Plan identifies four types of actions: integrating transport services, modernising the system, growing networks to meet future demand and maintaining road and public transport assets.

NSW State Infrastructure Strategy (2012)
The Strategy comprises recommendations for investment in specific major projects as well as wider policy and market reforms to improve how infrastructure is planned, procured and delivered. This Strategy is where the WestConnex program of works was first introduced, although with different alignments and staging to the current EIS scope of works. The Strategy is underpinned by three principles:

- Incremental improvement to address infrastructure problems more quickly and cost effectively than one-off major projects, and should be considered first to resolve problems.
- Investing in NSW's strengths. The priority is the sectors of the economy with the highest growth potential, which are constrained by inadequate infrastructure capacity.
- Rigorous prioritisation of infrastructure investment to ensure projects and reforms recommended deliver strong positive economic return to NSW.

For Global Sydney, the Strategy identifies infrastructure priorities including:

- Infrastructure that supports growing the economy including improving public transport access to and through the CBD and adjoining centres.
- Infrastructure that supports the growth of Global Sydney and its international gateways, particularly through ensuring efficient landside transportation; relieving congestion on the road network in the short term through targeted pinch point investment and greater use of public transport to Sydney Airport and, in the medium term, through upgrades to the capacity and connectivity of motorways that support the gateways; and investment in rail and intermodal infrastructure to shift rail freight more viable.

If the Strategic Alternatives had sufficient detail and were assessed against these broader transport and planning objectives, a road solution is unlikely to be the preferred solution. In fact, a road project may in fact compromise the realisation of some of these objectives such as growing a more competitive CBD or facilitating renewal in Green Square (discussed further in Chapter 3).

2.5 Unexplored issues

One of the project objectives for Stage 2 of WestConnex is to support Sydney's long-term economic growth through improved motorway access and connections linking Sydney's international gateways. However, the assessment only considers access to Sydney Airport and Port Botany and the demand these locations generate. The impact of a second airport at Badgerys Creek has not been adequately considered.

The opening of a second airport in approximately ten years would likely have significant implications for the movement of people, particularly in western Sydney, and for the distribution of employment.

Between 2026 and 2041, operation at the Western Sydney Airport will ramp up (see Table 2). This will likely impact the use of arterial roads servicing Sydney Airport.

TABLE 2 AIRPORT PASSENGERS PER YEAR

Airport	2021	2026	2041
Sydney Airport	43,000,000	52,000,000	78,000,000
Future Western Sydney Airport	-	1,000,000	12,709,000

Deloitte, 2012

Considering the EIS identifies Sydney Airport as one of the main generators of traffic for WestConnex Stage 2 the impact the second airport needs to be considered.

The fact that the New M5 does not connect with Sydney Airport has also not been adequately considered in the assessment of options. From the information available, it appears that without the Southern Gateway there is no direct connection between WestConnex Stage 2 and Sydney Airport. Vehicles travelling from western Sydney will need to travel past the airport and exit at the St Peters Interchange and then double back to the airport. The existing M5 East has a more direct connection and therefore may continue to be the preferred route for journeys from western Sydney to the airport.

3 ASSESSMENT OF SOCIO-ECONOMIC IMPACTS

3.1 Introduction

The Secretary's Environmental Assessment Requirements (SEARs) for the Social and Economic Impact Assessment are:

- Look at impacts to businesses within the vicinity of the proposal (property acquisition, traffic, access, property, public domain and open space and amenity and health related changes). Broader regional impacts associated with the closure of the Alexandria landfill site.
- Assess the impact of the proposal on community facilities, including profiling current use of existing facilities, options/opportunities for relocation and/or reconfiguration during construction and operation (Appendix M, p. 4).

Appendix M of the WestConnex EIS is the Social and Economic Impact Assessment. Its focus is entirely on the preferred Strategic Alternative of the new M5 and the preferred alignment. This Chapter examines the methodology and conclusions of this assessment.

The following sub sections focus on the approach used in the socio-economic assessment and the issues that are identified.

3.2 Methodology for the Social and Economic Impact Assessment

The Social and Economic Impact Assessment is focused on localised effects. The existing environment (demographic, workforce, business and freight) is profiled along with existing travel patterns for road, public transport and active transport. Community values are then profiled prior to the impact assessment from a social and economic perspective for the construction and operation of WestConnex Stage 2.

Study Area does not capture the full extent of the impact

City shaping impacts

The study focuses its profiling of existing characteristics and impact analysis on a set of LGAs which it defines as being in the vicinity of the project (the Study Area):

- Canterbury
- Hurstville
- Rockdale
- Marrickville
- Botany Bay
- Sydney

To this end, the Study Area meets the SEARs directive of focusing on the vicinity of the proposal. However, this approach fails to account for the city shaping impact of WestConnex Stage 2.

Previous research (Eddington, 2009; Graham, 2006) has shown that major infrastructure projects can, quite literally, re-sculpt the pattern of metropolitan development. They are city shaping projects whose impacts are felt across the metropolitan area, and sometimes beyond, as the resulting shifts in

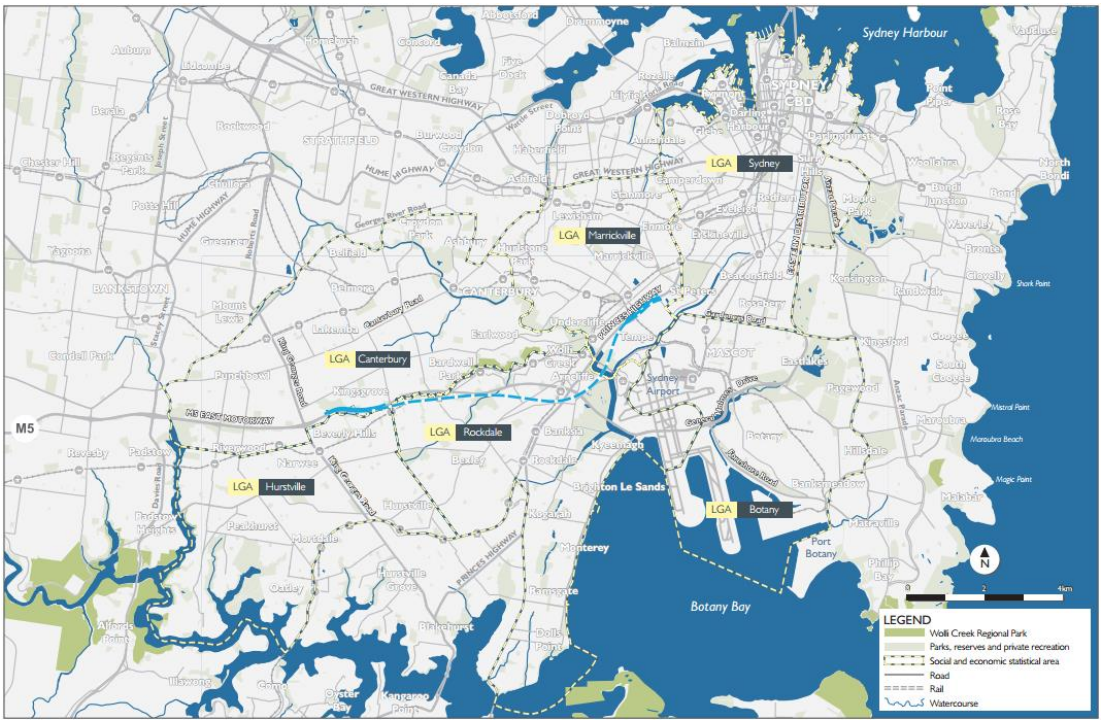
accessibility change the location choices of firms and households setting in place a new geography of land values. The outcome is a shift in the amount and distribution of land uses across the City and their connectivity and accessibility. This can have significant impacts on household and business location and investment decisions.

Previous work by SGS (2012) has found that major transport investments are a powerful and, perhaps, the pre-eminent policy lever, for determining metropolitan structure. The study area therefore needs to be expanded to the metropolitan area to capture the city shaping impact of the project. This further emphasises the need for the WestConnex Stage 2 project objectives to align to broader planning, land use and transport policy objectives set for Sydney by the NSW Government.

Mismatched study areas

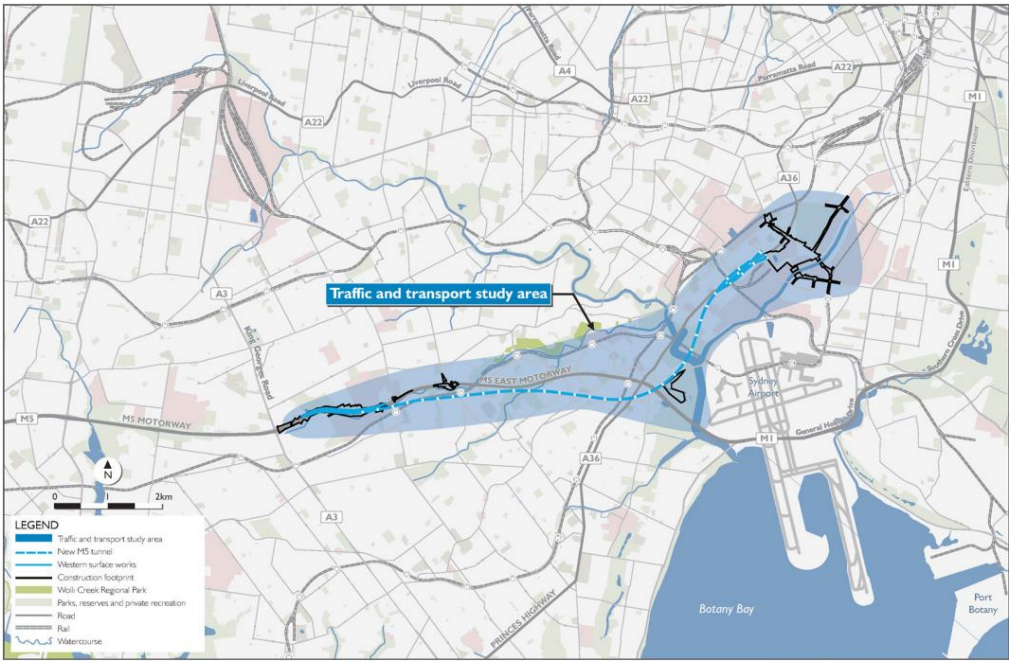
Whilst the social and economic impact assessment study area includes the full extent of the surrounding LGAs, the study area for the transport assessment is much more limited only covering the construction area but not where the road users are located. For a comparison of study areas see Figure 3 and Figure 4.

FIGURE 3 SOCIAL AND ECONOMIC IMPACT ASSESSMENT STUDY AREA



Source: Aecom 2015

FIGURE 4 TRAFFIC AND TRANSPORT STUDY AREA



Source: Aecom 2015

This mismatch in the study areas means an understanding of how the operation of WestConnex Stage 2 will affect traffic volumes on many of the local roads in each LGA has not informed the assessment of social and economic impacts.

The Strategic Review and Transport Modelling of WestConnex undertaken by SGS and Veitch Lister Consulting (VLC) shows there are risks that WestConnex Stage 2 will generate additional traffic that will only be addressed by other sections of WestConnex (see Figure 5). This shows WestConnex Stage 2 will likely make congestion worse on many local roads in the City of Sydney which has the potential to cause significant social and economic impacts.

FIGURE 5 VOLUME CAPACITY RATIO 2026 (PROJECT STAGE 1 & 2)

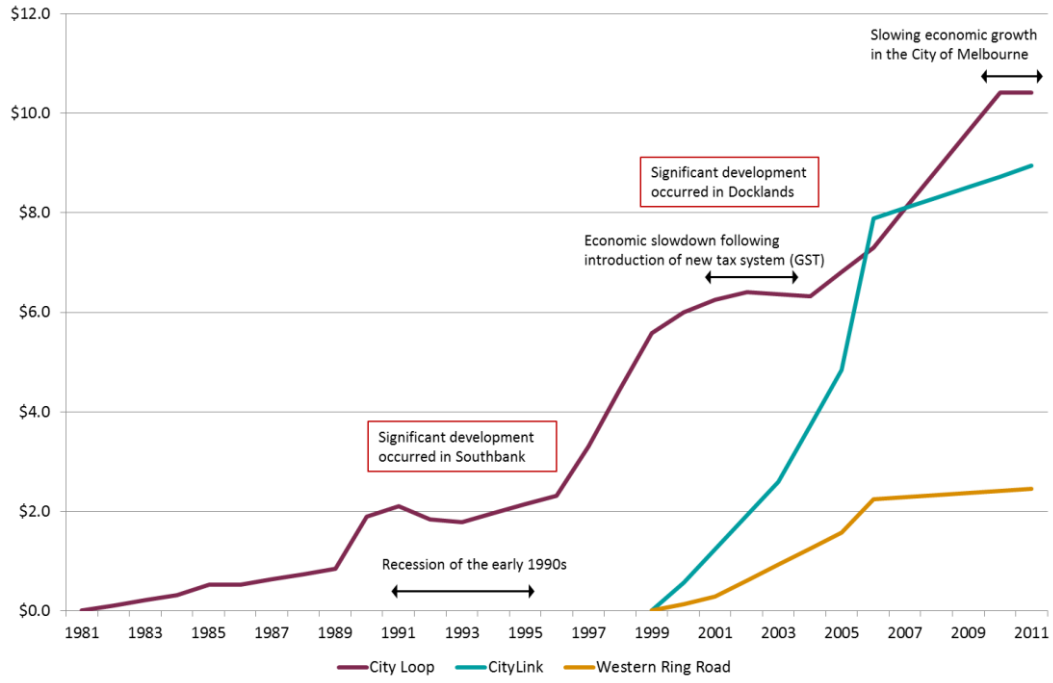
Source: Veitch Lister Consulting 2014

Timeframe of analysis does not reflect long-term nature of project

The absence of long term modelling (for example to 2041) in the WestConnex Stage 2 EIS means that any longer term traffic or socio-economic impacts from the operation of WestConnex Stage 2 are not being identified, mitigated or monitored.

Previous work by SGS (2012) has shown that the impacts of large infrastructure projects can extend in excess of 30 years. For example, the benefit stream for the City Loop[5] climbed to be approximately $10 billion/per annum 30 years after it was constructed (see Figure 6).

FIGURE 6 BENEFIT STREAM ACROSS TIME, $BILLION



Source: SGS Economics and Planning 2012

Analysis from VLC shows the impacts of WestConnex Stage 2 will continue to at least 2041. Table 3 and Table 4 shows traffic along the corridor increases significantly (in some cases over 10,000 additional trips) between 2026 and 2041.

TABLE 3 EASTBOUND DAILY TRAFFIC VOLUMES (CLOCKWISE[6])

Section	2026 base	2026 S123	2026 S123 % diff	2041 S123
M5 exit - Bexley Road and Kingsgrove Road	52,300	66,800	28%	79,900
Bexley Road and Kingsgrove Road - King Georges Road	70,400	80,800	15%	94,200
M5 Fairford Road	6,300	7,000	11%	7,600
M5 Henry Lawson Drive	6,000	5,900	-2%	6,700
M5 Main Toll Plaza	64,400	64,300	0%	72,900

Source: Veitch Lister Consulting

[5] The City Loop is a largely underground rail loop in Melbourne's CBD opened between 1981 and 1985.

[6] A journey starting at the western end of the M4 and travelling to the southwestern end of M5 along WestConnex

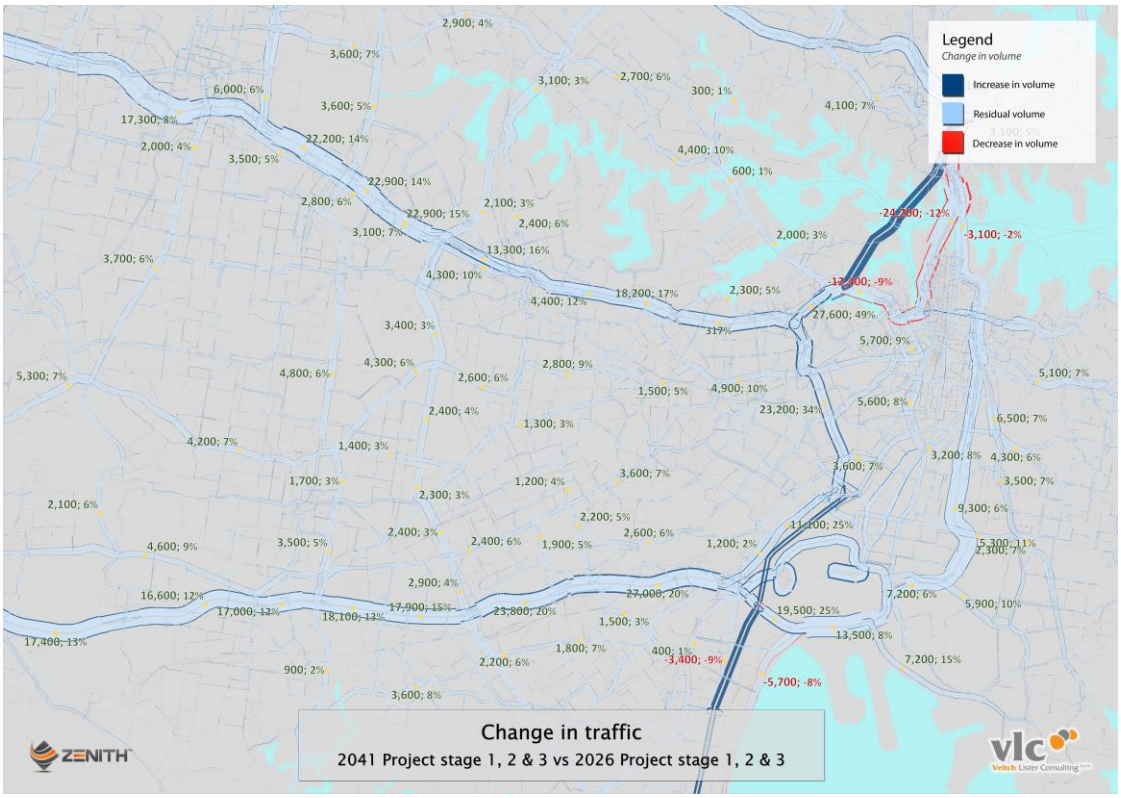
TABLE 4 WESTBOUND DAILY TRAFFIC VOLUMES (COUNTERCLOCKWISE[7])

Section	2026 base	2026 S123	2026 S123 % diff	2041 S123
M5 exit - Bexley Road and Kingsgrove Road	53,400	68,500	28%	82,500
Bexley Road and Kingsgrove Road - King Georges Road	71,500	83,000	16%	96,800
M5 Fairford Road	5,800	6,700	16%	7,300
M5 Henry Lawson Drive	5,300	5,500	4%	6,200
M5 Main Toll Plaza	70,700	70,800	0%	79,700

Source: Veitch Lister Consulting

Figure 7 maps these changes for the project case from 2026 to 2041. It shows that traffic volumes will continue to grow beyond 2031. In particular, there will be substantial growth on the M4 and M5 corridors as well as on the corridor to the south, on the Princes Highway.

FIGURE 7 CHANGE IN VOLUMES FROM 2026 TO 2041 (STAGE 1, 2 AND 3)



Source: VLC 2016

3.3 Issues identified in the Social and Economic Impact Assessment

WestConnex Stage 2 does not connect people to high value jobs

A key justification for WestConnex Stage 2 is that it improves access to Sydney Airport and Port Botany. Employment in these centres is anticipated to grow between 2016 and 2041 with Port Botany and environs anticipated to add 3,610 jobs over this period and Sydney Airport and Environs forecast to add 8,946 jobs (see Table 5). WestConnex Stage 2 may improve access to employment in these locations for people living in the city's South West. However, compared to other centres, and particularly those in

[7] A journey starting at the southwestern end of M5 and travelling to the western end of the M4 along WestConnex

Global Sydney[8], growth in these locations is minimal. Sydney CBD is projected to be the fastest growing centre with 9.6 percent of all employment growth in metropolitan Sydney between 2016 and 2041. Port Botany and Sydney Airport are only anticipated to account for 0.3 percent and 0.8 percent of growth respectively.

The Sydney CBD is anticipated to be the fastest growing centre between 2016 and 2041 with an additional 105,200 jobs anticipated. The EIS also identifies that, of the 527,700 people who worked in the study area in 2011, 75 percent were employed in Sydney LGA. Sydney CBD is the location of the majority of high value financial and insurance and professional, scientific and technical service jobs. At present, very few people travel by car from the South West to the CBD for work. For example, 7 per cent of workers living in South West Sydney work in the CBD and 88 per cent of these travel by public transport[9]. Notwithstanding the low proportion of commuters travelling by car to the CBD, the M5 ends at the St Peters Interchange, essentially delivering people from South West Sydney to a midway point on the corridor to the Sydney CBD.

TABLE 5 EMPLOYMENT GROWTH, SELECTED CENTRES

Centre type	Centre name	2016	2041	16-41 Change	Proportion of total growth 16-41
Global Sydney	Sydney CBD	339,300	444,500	105,200	9.6%
Specialised Precinct	Port Botany and Environs	14,000	17,600	3,600	0.3%
	Sydney Airport and Environs	41,000	50,000	9,000	0.8%

Source: BTS 2011
Note: Figures rounded to the nearest hundred.

Analysis by SGS and VLC shows the termination of WestConnex Stage 2 at St Peters is anticipated to increase congestion on local roads in the south of the City of Sydney. This increased local congestion will make it harder for people living in these areas to access the employment, services, recreation and education on offer across the Sydney CBD by bus, private vehicle or by cycling.

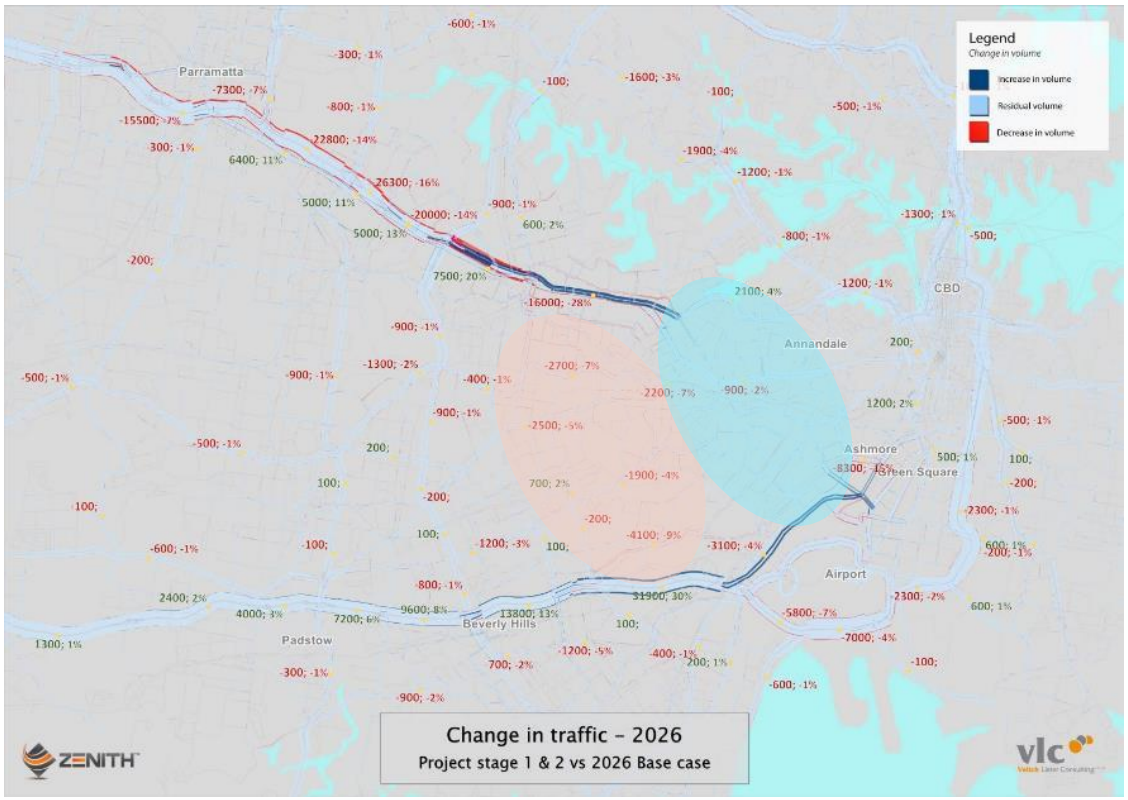
Figure 8 shows that WestConnex stage 1 and 2 will create two distinct areas of impact on the local network:

- The first area (in red) is where the traffic volumes generally decrease by a small amount;
- The second area (in light blue), between Haberfield and St Peters precincts, traffic volumes generally increase. Most of this area is outside of the traffic and transport study area.

[8] City East-Central Sydney, Education and Health Precinct – Central Sydney North Sydney, Redfern-Central Sydney, Sydney CBD, U&ltimo-Pyrmont-Central Sydney

[9] Source: Analysis of Australian Bureau of Statistics Census 2011

FIGURE 8 CHANGE IN VOLUMES 2026 (STAGE 1 & 2 VS BASE)



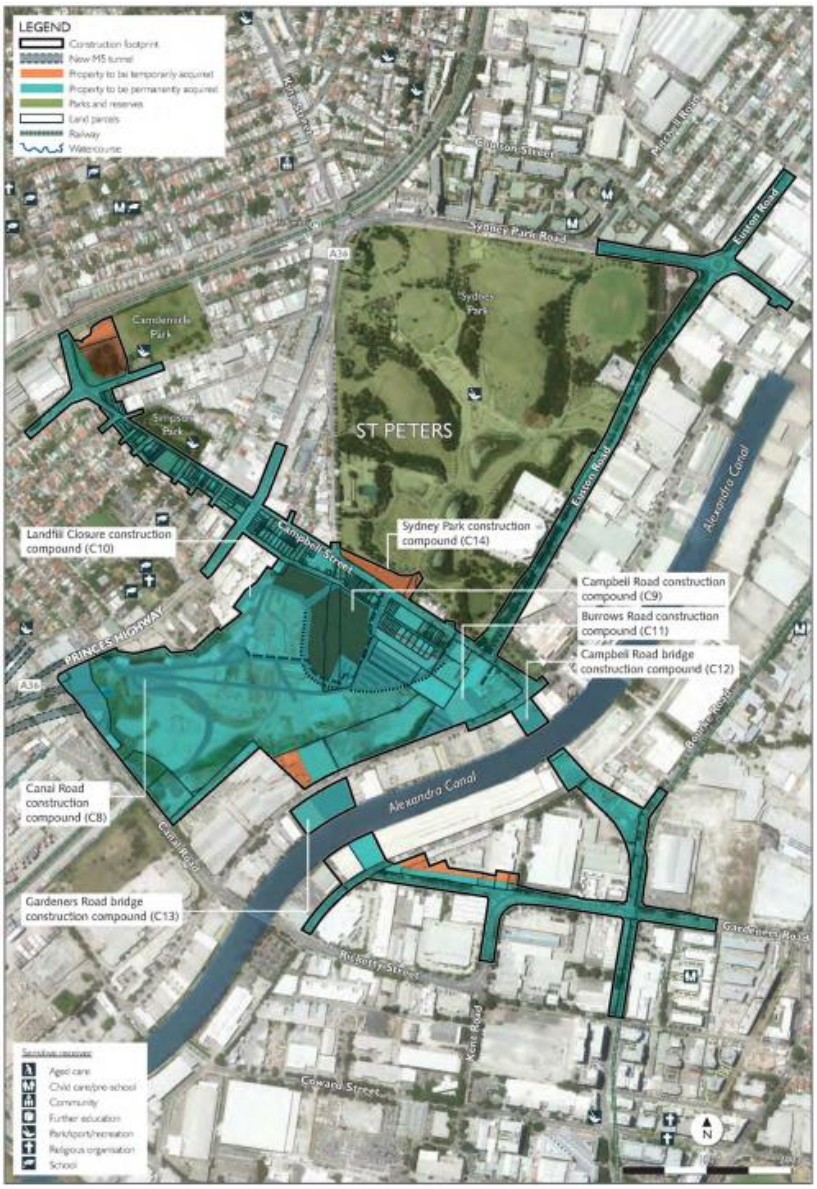
Source: Veitch Lister Consulting 2014

The impact on Sydney Park not fully addressed

The Social and Economic Impact Assessment describes Sydney Park has having regional importance. It provides both passive and active open space with walking and cycle paths, playing fields and playgrounds and is home to a number of sporting and community clubs. Sydney Park also has significant ecological value in terms of biodiversity and habitat generation.

Based on the EIS, during construction approximately 0.2 hectares of Sydney Park, will be temporarily acquired to accommodate a construction compound. A small area will also be permanently acquired for road widening. The southern boundary of the Park also abuts a significant construction site with works continuing along Euston Road at the Park's eastern boundary and part of Sydney Park Road along the northern boundary. See Figure 9.

FIGURE 9 WORKS IN VICINITY OF SYDNEY PARK



Source: Aecom 2015

The EIS details many of the impacts to Sydney Park including that the location of the construction compound and surrounding works, including the construction of the pedestrian overpass and widening of Campbell and Euston Roads, will change the character of the park and affect the visual amenity. The widening of Euston Road would also change the character of the edge of Sydney Park as a number of entrances to the park are along Euston Road. The assessment concludes that these impacts may negatively affect park users' sense of place and the perceived identity of the surrounding community, however, as only a small part of the park will be occupied, impact should be limited. Users are also expected to be impacted by construction noise but only when in close proximity to construction compounds and works.

However, the Social and Economic Impact Assessment does not consider the direct impact the construction compound will have on the City Farm development which includes the growing of food.

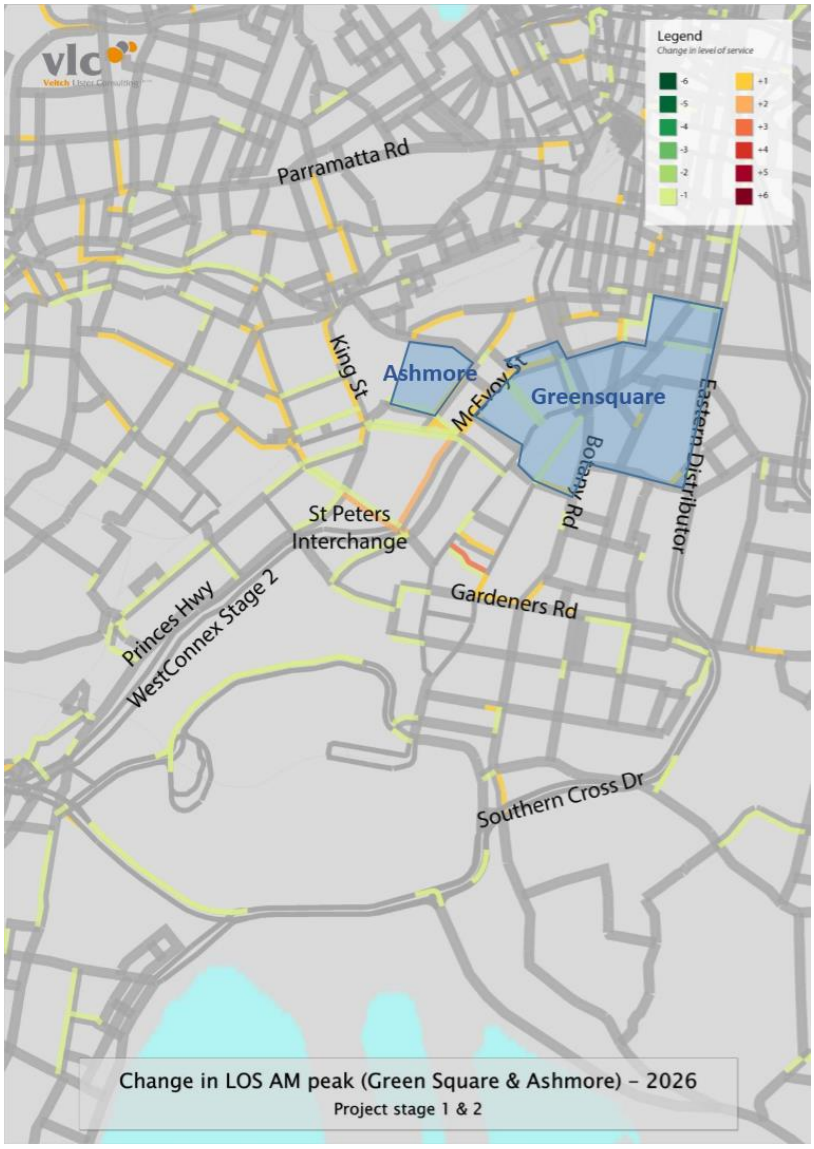
Given population forecasts in the area surrounding Sydney Park are high, it could be expected that usage of the park will increase over time. Furthermore, the developed nature of St Peters and surrounds limits the capacity for additional open space to be provided in the future. This increases the importance of

Sydney Park as a recreational resource for residents, exacerbating any construction period impacts and net loss of open space.

Impact on Urban Renewal in Ashmore and Green Square not adequately addressed

Urban revitalisation is critical for Sydney considering its rapid population growth. Infill development is essential to the functioning of a growing city. Sustainable Sydney 2030 identifies that Green Square will have close to 40,000 residents and 22,000 workers by 2030 and that Ashmore will be revitalised as a new residential neighbourhood. As a result, these locations are expected to see significant increases in transport demand and needs. The EIS shows that, as a result of WestConnex Stage 2, the Green Square urban renewal area will see an increase in traffic in some areas. The increase is especially pronounced prior to the construction of Stage 3, as visible in Figure 10. Roads which have their level of service (LOS) improved (e.g. from B to A) are coloured in green, while roads where the level of service gets worse (e.g. from B to C) are coloured in yellow and red. The impact from the decline in the level of service on these local roads will decrease the amenity in this area and may have the impact of reducing the yield or delaying development. As Green Square is now an established apartment market, developers are more likely to be able to deal (in terms of gaining finance and marketing the product to buyers) with the adverse impact than Ashmore which is yet to mature as an apartment market.

FIGURE 10 CHANGE IN LOS 2026 (STAGE 1 & 2 VS BASE)



Source: Veitch Lister Consulting

Congestion in King Street, Newtown is not addressed

King Street is located in Newtown towards the south-west of the City of Sydney LGA, and spans the suburbs of Newtown, Camperdown, Erskineville and Alexandria. Its economy is driven by small businesses with food and drink, retail and personal services, and higher education and research as the top three employing industries (City of Sydney, 2015).

Transport modelling undertaken by VLC found that King Street, Newtown is at capacity under the base case. As the road is already at capacity, the introduction of WestConnex Stage 2 does not significantly impact on congestion levels and therefore does not have an adverse impact, however, it does not resolve the congestion issue either.

4 FURTHER ISSUES

This section presents a number of further issues identified, but not directly related to the assessment of Strategic Alternatives or the Social and Economic Impact Assessment. Whilst these are outside of the Project Brief, they are significant considerations which the EIS does not adequately address.

Assumptions that all sections of WestConnex completed by 2031

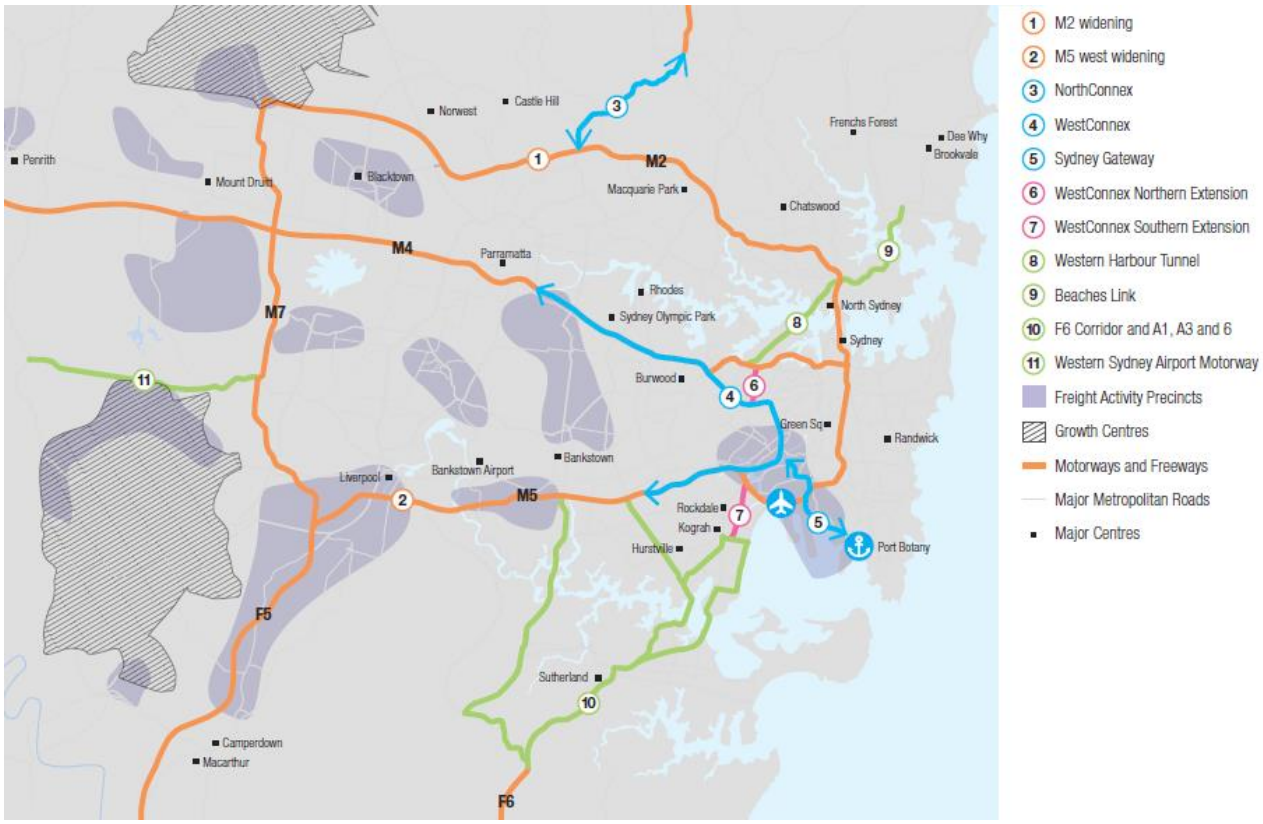
This issue was previously discussed in the SGS review of the M4 East EIS, however, is repeated here as the assumption also underpins the transport modelling presented in the WestConnex Stage 2 EIS.

The transport modelling at 2031 assumes all of WestConnex and other associated road links will be approved, accepted and completed by 2031. Future motorway extensions related to WestConnex (namely the Western Harbour Tunnel, Sydney Gateway and the Southern Gateway) are shown in Figure 10 and are all subject to separate approval processes, most of which are yet to begin.

WestConnex Stage 1 – M4 East
The first stage of the WestConnex project includes the widening and realignment of the M4 between Homebush Bay Drive and Underwood Road at Homebush and the construction of two 5.5 km three-lane tunnels extending from west of Underwood Road at Homebush to near Alt Street at Haberfield. Access to the existing M4 to Concord Road would be maintained via Sydney Street and interchange at Wattle Street (City West Link) at Haberfield. An EIS has been prepared for this Stage. Approval is still pending but construction is anticipated to commence mid-2016.

WestConnex Stage 3 – M4 to M5 Link
The third stage of the WestConnex project is a link between Stages 1 and 2 of WestConnex. WestConnex Stage 3 features in the *State Infrastructure Strategy Update* (the *Strategy Update* 2014) and *A Plan for Growing Sydney* (2014) but as yet there have been no detailed arrangements made for funding or construction of the project and only broad indications of the location of interchanges and connections with other parts of the road network.

FIGURE 11 VISION FOR SYDNEY'S MOTORWAY NETWORK



Source: INSW, 2014 (adapted from TfNSW 2012)

Western Harbour Tunnel

The *State Infrastructure Strategy Update* identifies a third Sydney Harbour road crossing is under investigation by the State Government as part of its strategic motorway planning program. There is currently no design or costing for this project, however, investigation of the viability of the project is currently underway, with the *Strategy Update* identifying that a business case should be prepared to assess the project in conjunction with, or immediately after, the delivery of the WestConnex Stage 3.

Southern Gateway

The *Strategy Update* identifies that an investigation into the potential options for providing increased connectivity to the Sutherland Shire and Illawarra Regions via the A1 (Princes Highway), A3 (King Georges Road), A6 (Alfords Point Road) and F6 Corridors is being undertaken by government. At this stage the investigative study is yet to be completed and there is no design or costing for this project, however, the *Strategy Update* notes that substantial upgrades to these corridors are likely to be very expensive and within constrained urban environments.

Sydney Gateway

The Sydney Gateway was identified in the 2012 *NSW Long Term Transport Master Plan* as a potential alignment to be investigated for "enhanced Port Botany links" but with no detailed description provided. The project was again identified in the *Strategy Update* with an indicative alignment for which further investigation is required. There is currently no design or costing for this project.

The design and timing of Sydney Gateway will have a significant impact on WestConnex Stage 2 as the Airport is a major generator of passenger traffic and the Port is a major generator of freight traffic. The EIS is very unclear around the access to Sydney Airport via the Sydney Gateway.

Figure 12 shows the WestConnex volumes and trip origins in the project Stages 1 and 2. The size of the 'pies' are proportional to the number of trips on WestConnex originating in the travel zones. The larger the pie, the more trips on WestConnex are generated in that travel zone. The colour of the pie indicates

the direction of trips. Trips made on WestConnex in a clockwise direction are coloured in shades of blue depending on the WestConnex section they access first; anticlockwise trips are coloured in shades of purple. The bandwidths on WestConnex Stage 1 (M4 / M4 East) and Stage 2 (New M5) show the expected volume of traffic along WestConnex travelling in each direction. The bandwidth decreases as traffic volumes decrease. The various colours can be interpreted as follows:

Clockwise

- Trips accessing WestConnex Stage 1 and travelling east are coloured dark blue
- Trips accessing WestConnex Stage 2 and travelling west are coloured light blue

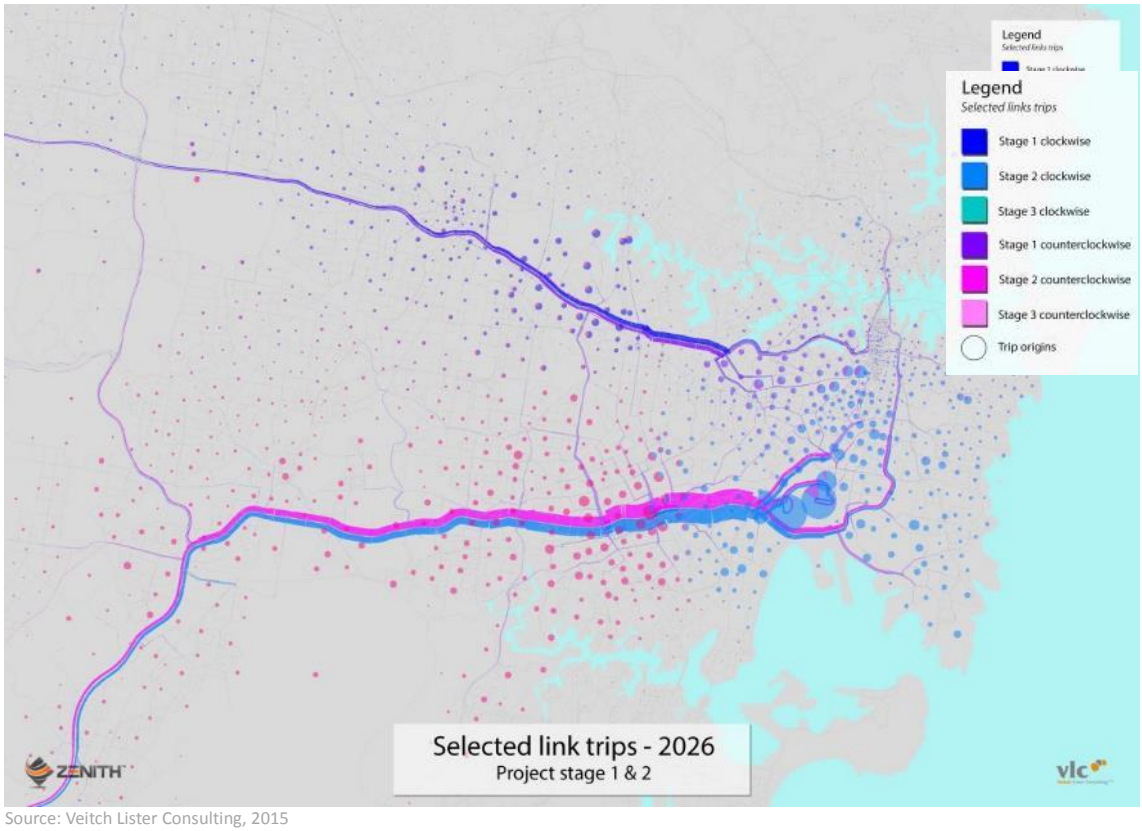
Anticlockwise

- Trips accessing WestConnex Stage 1 and travelling WB are coloured dark purple
- Trips accessing WestConnex Stage 2 and travelling EB are coloured light purple

Figure 12 makes clear that Stages 1 and 2 serve different markets. Stage 1 provides access to Parramatta and Haberfield, with vehicles at the end of Stage 1 at Frederick Street dispersing across the local network. Stage 2 serves mainly Sydney airport, Green Square and the eastern suburbs. It is the middle ring suburbs that are forecast to be the main users of Stage 1 and 2 of WestConnex, not the Western and South Western suburbs.

If WestConnex Stage 2 is built without the Sydney Gateway option which is superior (in terms of travel times) to the existing M5 then the traffic forecasts for WestConnex Stage 2 are questionable.

FIGURE 12 WESTCONNEX CATCHMENT 2026 (PROJECT STAGE 1 & 2)



Source: Veitch Lister Consulting, 2015

The Impact of WestConnex Stage 2 is not assessed

The data presented in tables 9-41 to 9-43 of Volume 1B of the EIS shows that the full program of WestConnex projects, including the Southern Extension, provides significant improvements in traffic conditions in 2031 compared to the WestConnex Stage 2 project on its own. However, as discussed

above, there is no certainty that the full WestConnex project will be completed by this time. It is therefore possible WestConnex Stage 2 will continue to operate beyond 2021 without all other components constructed, yet the impact of this is not analysed in the EIS.

Impacts on the performance of the road network in 2031 are examined in the document for three scenarios – without WestConnex Stage 2[10], with WestConnex Stage 2[11] and with the Full WestConnex project including the Southern Extension[12]. Table 9-47 shows that WestConnex Stage 2 will increase traffic significantly in 2031 (in the region of 15,000 more trips in each direction). However, from Table 9-48 to Table 9-54, the "with project" scenario is omitted from all evaluations for 2031. All results for 2031 are presented as a comparison of "without the project" and "full WestConnex program of works and the southern extension". These tables show average travel time (in minutes), comparison of the road network performance, intersection performance, mid-block traffic flows on routes adjacent to the study area, and forecast crash statistics.

Underestimate of induced traffic overestimates benefits

The definition of induced demand in the EIS is unclear and does not appear to include an assessment of the full range of ways a road project might induce demand.

The Victorian Auditor-General (2011) summarised the various ways demand might be induced as:

- Changing route – drivers make the same journeys but use the improved route
- Changing destination—drivers decide to travel to more distant destinations because the improvement makes the journey time acceptable
- Changing mode—public transport passengers switch to car because the improvement makes road travel more attractive than rail
- Changing time of travel—drivers decide to travel in the commuting peak period because the improvement reduces journey times to an acceptable level
- Making additional journeys—people are willing to make additional car journeys because of the improvement
- Relocated trip—people and businesses relocate to take advantage of the improvement and so make journeys that are new to the area

The Auditor-General concludes that, whilst changing route is likely to be the overriding traffic impact, road improvements are likely to generate significant additional traffic where:

- roads around the project are already congested in peak periods and further traffic growth is expected with or without the project going ahead
- the project is expected to significantly cut journey times
- an improvement is likely to stimulate residential and business development

These circumstances arise where major road improvements are in urban areas with sustained population and economic growth. Failure to apply models that can estimate these more diverse impacts will significantly underestimate traffic and overestimate economic benefits (Auditor General's Office, 2011).

In the WestConnex Stage 2 EIS induced demand is briefly defined in section 9.1.4 of Volume 1B and in section 4.1.1.5 of Volume 2B. In these sections, induced demand is defined as only comprising:

- regional growth in trips resulting from population growth and expanded economic activity
- trips attracted from competing routes or modes as a result of improved travel times
- induced traffic as a result of improved travel times between homes and destinations

[10] Assumes the King Georges Road Interchange upgrade and future M4 Widening projects are complete, but the remainder of the WestConnex program of works has not been built.

[11] Assumes the New M5 is complete and open to traffic without the M4 East (WestConnex Stage 1) or the future M4-M5 Link components of the WestConnex program of works.

[12] Assumes components of the WestConnex program of works and the future Southern extension completed.

The third category is particularly unclear as it seems to assume that induced demand is related to latent trip-making that is released by faster travel times. However, it does not include the additional and important category of long-term induced trips that includes destination choice (or trip distribution) changes and land use responses to significant transport infrastructure.

Neither Volume 1B nor Volume 2B of the EIS describes the methodology used to account for induced demand. It is assumed the methodology is the same as described in the WestConnex *Updated Strategic Business Case* in that a do-nothing (or do-minimum) future is forecast using Sydney Strategic Traffic Model (STM) and then induced trips are added to the future trip matrices using travel time elasticities of travel demand in accordance with New Zealand economic evaluation guidelines contained in *Economic Evaluation Manual*, New Zealand Transport Agency, 2013. If this is the case, the forecasts have not included the additional trip making in the corridor that may arise from changes in destinations and changes in land use, both of which may contribute significant additional volumes.

This definition and methodology do not cover many of the categories highlighted by the Auditor-General and therefore traffic may be underestimated and economic benefits overestimated.

Confusion in technical aspects of the reporting

There are a number of inconsistencies throughout the report. Some examples follow.

1. Contradictions in level of service assessments

On page 9-25 of Volume 1B of the EIS, the fifth paragraph states:
"The motorway operates between a level of service B and C in both directions during the AM and PM peak, which is considered to be an acceptable level of service. However, it should be noted the surveyed demand could be representative of a suppressed demand due to congestion along the M5 East Motorway within the tunnels."

The meaning behind this statement is not clear as LOS B and C do not indicate congestion. To attribute 'suppressed demand' to congestion therefore appears unfounded.

Table 9-9, 'M5 East Motorway mid-block traffic and volumes and level of service (2014)' contradicts the statement, reporting observed levels of service during the peak periods in both directions as being LOS C to E.

2. Inconsistencies in Tables 9-7 to 9-11

Table 9-7 presents counted, peak period, mid-block flows and average weekday traffic on the M5 taken in late 2014/early 2015. There are several issues with this table. Firstly, the text suggests that the traffic was counted in "late 2014/early 2015", which in turn suggests December/ January, a time when traffic engineers try to avoid counting due to the impacts of the holiday period and school/university vacation periods. Secondly, the AM and PM volumes listed in table 9-7 for 2014/2015 are precisely the same as those listed for 2012 (existing case) in Table 9-11.

To complicate matters further, the mid-block traffic volumes reported in Table 9-9 are different again to the volumes presented in tables 9-7 and 9-11. Furthermore, the estimation of level of service presented in Table 9-9 appears to have several discrepancies. The table's footnote states "the mid-block capacity adopted for the M5 East Motorway is 2,250 passenger car units (PCU) per hour per lane based on a freeway speed of 90 kph…". Table 6 summarises these issues.

TABLE 6 INCONSISTENCIES IN VOLUMES LISTED IN TABLES 9-7, 9-9 AND 9-11

		AM Peak			PM Peak		
		Table 9-7 (2014/2015)	Table 9-9 (2014)	Table 9-11 (2012 (existing))	Table 9-7 (2014/2015	Table 9-9 (2014)	Table 9-11 (2012 (existing))
M5 East Motorway, East of King Georges Road	Eastbound	2,380	3,312	2,380	3,499	3,482	3,499
	Westbound	3,505	3,307	3,505	3,564	3,727	3,564
M5 East Motorway East of Bexley Road (in tunnel)	Eastbound	3,539	3,786	3,539	3,500	3,508	3,500
	Westbound	2,586	2,869	2,586	2,937	3,065	2,937
M5 East Motorway at Cook River	Eastbound	2,773	2,773	2,773	2,518	2,502	2,518
	Westbound	2,566	2,566	2,566	2,439	2,474	2,439

The capacity has then been implemented for two lanes as 4,300 PCU per hour rather than 4,500 PCU per hour. While this reduction amounts to only 4.5 percent, it is unexplained and it is significant given that the table reports volume/capacity ratios (v/c) to 2 decimal places. Indeed, we have not been able to replicate the v/c results, even when using 4,300 PCU per hour as a capacity, to the same degree of precision. The differences are small and will not change the outcome of the report, but the implications of unreported differences are a concern.

TABLE 7 CALCULATION OF V/C RATIO IN TABLE 9-9

Calculation of v/c Ratio in table 9-9

		AM Peak			PM Peak		
		v/c	Re-estimated v/c	v/c with 4,500 sat flow	v/c	Re-estimated v/c	v/c with 4,500 sat flow
M5 East Motorway, East of King Georges Road	Eastbound	0.86	0.85	0.81	0.86	0.85	0.82
	Westbound	0.86	0.85	0.81	0.96	0.95	0.91
M5 East Motorway East of Bexley Road (in tunnel)	Eastbound	0.99	0.97	0.93	0.87	0.86	0.82
	Westbound	0.77	0.75	0.72	0.78	0.77	0.73
M5 East Motorway at Cook River	Eastbound	0.74	0.72	0.69	0.62	0.61	0.59
	Westbound	0.67	0.66	0.63	0.64	0.63	0.60

3. Capacity assessments

The second paragraph on page 9-33, under the heading Network Performance, begins "The volume / capacity ratios show the motorway operates at or close to capacity during the AM and PM peak". Most of the calculated levels of service are LOS C and D. We would argue that these are not at or close to capacity. While Roads and Maritime Services generally identifies LOS D as being an indicator for a need to begin planning traffic capacity increases, LOS D itself does not imply operation at capacity.

The paragraph then continues:
"The level of service presented in Table 9-9 represents the operational performance of the M5 East Motorway based on the surveyed demand. It is recognised that the actual level of service may be lower than the surveyed level of service, which could be supressed as a result of congestion at other sections of the M5 Motorway corridor, causing variations to travel times and speeds."

It is not clear why the actual level of service may be lower than surveyed and no evidence for this is presented. It is also not clear what is suppressed. If the level of service is affected by congestion upstream of the sections being studied then it is inappropriate to use v/c as a measure of LOS and other methods should be used.

The issue with v/c as a measure of level of service is first that there are no specific standards that relate v/c values to level of service. Secondly, it is a measure that relies strongly on capacity, which is a highly abstract concept that is imprecisely defined, especially in strategic transport models. Most problematic

is that, in reality, on roads where demand exceeds capacity, queues will limit volumes for considerable lengths upstream. Strategic models do not replicate these queues. As a result, v/c measures on some links where v/c might be low, queues from bottlenecks will restrict their operation.

To avoid the problem of understating, (or suppressing) level of service, it should be possible to use:

- A comparison of free flow speed and actual travel speed along a route. Speed flow relationships in strategic models usually reduce speeds where demand exceeds capacity to almost zero. As a result, where the model underestimates speeds on some links, it will overestimate on capacity restricted links.
- The density per lane per kilometre on links, which can be calculated using speeds and flows or volumes and link length.

Construction traffic and impacts

The impact of construction traffic is modelled in detail using microsimulation of the areas impacted. While this is an acceptable and accepted methodology of evaluating impact, it is inherently limiting; all impacts are reduced to those at intersections and the impacts themselves are reduced to Levels of Service changes.

Impacts on users of public transport, including those who walk to bus stops or stations are not evaluated, despite measures for pedestrian facilities being listed. The impact on patronage and the choice of walking or driving (and the resulting increase in traffic) has not been addressed in the consideration of the impact of construction traffic.

Given the inconsistency of the current traffic volumes (exemplified in tables 9-7, 9-9 and 9-11) it is not clear that the volumes used for the micro-simulation have been adequately estimated. In addition, it appears that sensitivity testing was not carried out and potential variations of travel times, queues and delays have not been assessed.

5 CONCLUSION

The purpose of the WestConnex Stage 2 EIS is to identify comprehensive mitigation and management measures that would be implemented to avoid, manage, mitigate, offset and/or monitor impacts during construction and operation of the project. SGS has undertaken a review of the Strategic Alternatives and the Social and Economic Impact Assessment of the WestConnex Stage 2 EIS. This review has identified a number of issues.

For the Strategic Alternatives, the issues of most concern are:

- No detail on how the strategic alternatives were developed
- A lack of sufficient detail on the scope, timing and cost of each alternative
- No consideration of an integrated solution
- A lack of rigour in the assessment of these alternatives identified
- The project objectives effectively prevent any non-road based solution from being assessed positively.

For the Social and Economic Impact Assessment the issues of most concern are:

- Methodological issues that mean the full extent of the social and economic impacts has not been considered in the EIS
- The city shaping impacts have not been considered
- WestConnex Stage 2 does not connect people to areas with jobs growth and high value jobs
- The amenity at Sydney Park will be impacted
- The impact on the urban renewal at Green Square and Ashmore has not been adequately addressed
- The impact to congestion in King Street, Newtown not adequately addressed.

A number of further issues were also identified in the EIS review including:

- The assumption that all sections of WestConnex would be completed by 2031 with limited assessment of WestConnex Stage 2 in 2031 as a standalone project as part of the full WestConnex project
- Induced traffic is incompletely and inflexibly treated, so that impacts on public transport patronage and active transport volumes are not fully examined
- Inconsistencies in technical aspects of the reporting.

As previously stated, the information contained in the EIS does not reduce any of the concerns around the adverse impacts previously raised in the Strategic Review and Transport Modelling of WestConnex prepared by SGS Economics and Planning and Veitch Lister Consulting. That is, WestConnex will not address the transport challenges being faced by Sydney in the future.

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APPENDIX MODEL COMPARISON

The Zenith model was used by VLC to interpret results of the transport modelling used in the WestConnex Stage 2 EIS. This section presents a technical comparison of the various assumptions, inputs and outputs from the two transport models. This is a technical comparison between the models and not part of the review of the EIS itself.

While there are a range of differences, the models appear to be producing a broadly consistent picture of traffic travelling along WestConnex Stage 2 and the M5 East. In comparing the difference between the WestConnex and VLC models, there are some general observations to be made on the structure of the two modelling processes. These are discussed below.

The Modelling Process

The WRTM modelling has:

a) Extracted a base case road traffic trip matrix from STM;
b) Refined the trip matrix through matrix estimation;
c) Project these matrices into the future using growth of traffic generators in zones;
d) Introduced induced trips into the project case using elasticities travel time elasticities of demand for travel by car;
e) The WRTM, a purely traffic assignment model, is used to assign the resulting trip matrices to the road network. This provides more detailed toll choice modelling than the STM is capable of producing;
f) Forecast detailed volumes and turning movements where required by applying growth calculated from the difference in base year and future year to the base year values.

The WRTM process, while acceptable, includes many implicit assumptions and does not take any account of public transport or active transport. Because the WRTM does not include public transport assignment, active transport or even public transport demand forecasting, the EIS provides no information about the impact of WestConnex on public transport demand.

Zenith, on the other hand, is a multi-modal, 4-step model and, in the modelling of WestConnex, has implemented all four steps within a single model. It models active transport and public transport explicitly and assigns trips to networks representing links and services for those modes.

We have identified several differences in the assumptions contained in the two models and the procedures that were used to provide forecasts of traffic demand. These are itemised below.

Extent of Model

The Zenith WestConnex Model (ZWM) includes the Sydney Metropolitan area, the Illawarra Region, the Central Coast and the Hunter Region. The STM, which provided the base case trip matrix, has roughly the same coverage as ZWM. The WRTM, however, includes the Sydney Metropolitan area only.
The major issue with the limited coverage is that WRTM has no mechanism to include route shifting between corridors. The most significant of these are the choice of route for travel between:

- Sydney Metropolitan Area and the Illawarra Region, where there is a choice between the Hume Highway and the F6
- Sydney Metropolitan Area and northern areas of Central Coast and the Hunter Region, where there is the choice between the Pacific Highway and the M2/Pennant Hills Road.

The former has connections to the WestConnex stage 2 corridor, and the project has the potential to impact significantly on the choice route for access into the Sydney area from the south.

Network Coding
The alignment of WestConnex Stage 2: In the WRTM, WestConnex Stage 2 is located south of the existing M5 East. In ZWM it is coded on the same alignment as the existing M5 East. This is unlikely to produce significantly different outputs as the lengths of road links are not significant.

ZWM does not include some of the detailed turning movement control changes that are mentioned in the document, but these are not likely to impact the forecasts of traffic significantly.

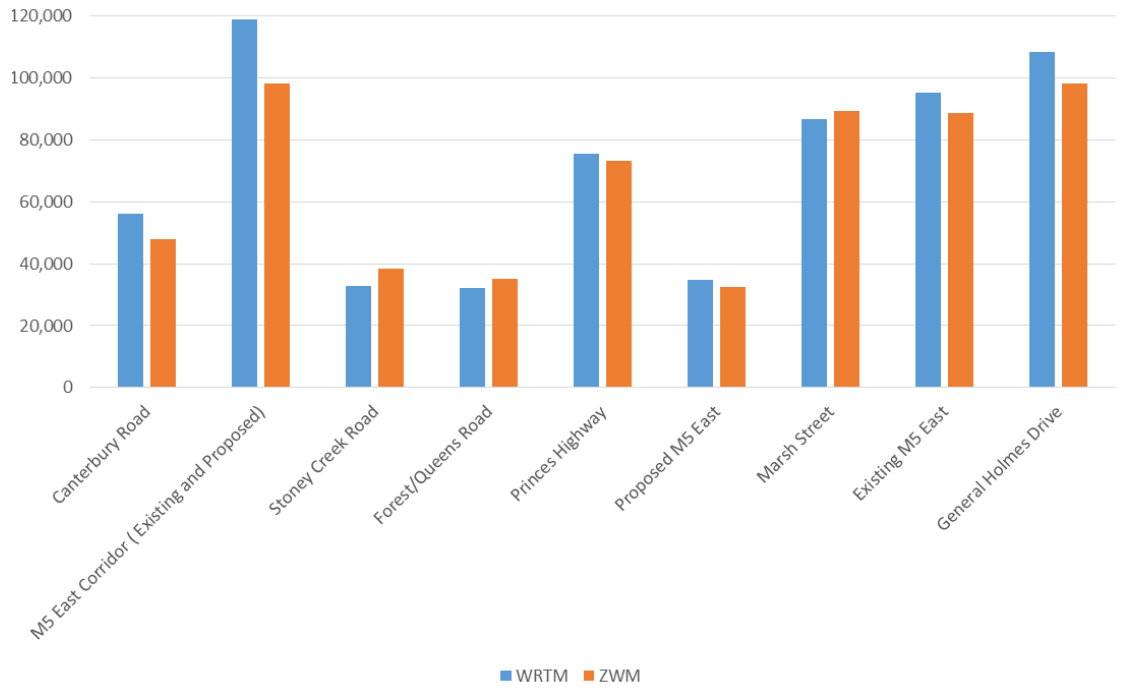
Demographics
It is unlikely that the demographics input to the models are the same. The WRTM forecasts to 2031, while the Zenith modelling study called for forecasts to 2026. In general, the Zenith road volume forecasts should therefore be slightly lower than the WRTM. However, we do not have enough detail about the WRTM demographics to make a full comparison of the demographic inputs into the two models.

Mode choice
EIS uses elasticities to calculate induced traffic, which includes the shift from public transport to cars. ZWM estimates mode choices within the model.

Tolls and Toll Strategy
The EIS does not explain how tolls and their perception changes into the future. We understand from other sources that there is an assumption that income increases in real terms by 1% per year. ZWM does take into account changes in perceptions of tolls and willingness to pay.

Direct Comparisons
The following figure compares the volumes across the four screenlines out of the two models. The two sets of results are remarkably similar.

FIGURE 13 COMPARISON OF DAILY 2-WAY VOLUMES CROSSING SCREENLINES



In general the chart shows that the ZWM forecasts are slightly lower than those of the WRTM, as expected. However, the forecasts from the two models are consistent.

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New M5 and St Peters Interchange Environmental Impact Statement – Review of Biodiversity Assessment

Report prepared for
the City of Sydney and Marrickville Councils
December 2015

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EXECUTIVE SUMMARY

The City of Sydney and Marrickville Councils commissioned a review of the Biodiversity Assessment Report (BAR) prepared by Eco Logical Australia Pty Ltd for the proposed new M5, including the St Peters interchange, due to concerns about the impact of the project on biodiversity in these two local government areas (LGAs). The following sections present an overview of the issues identified during the review .

Validity of the biodiversity assessment

The BAR was required to be prepared in accordance with the SEARs issued for the project, one of which specifies that it must be undertaken in accordance with the NSW Office of Environment and Heritage's (OEH) Framework for Biodiversity Assessment (FBA), including further consideration of impacts on species, populations and ecological communities identified by the OEH.

The following issues are of concern in relation to the SEAR requirements, and how the FBA was applied in preparation of the BAR:

- The BAR focuses on threatened species, populations and ecological communities, as does the FBA. However, the introductory SEAR statement and *Threatened Species Conservation Act 1995* definition of biodiversity values suggests more consideration should have been given to biodiversity more generally, including species and sites of local conservation significance within the City of Sydney and Marrickville Council LGAs, and the numerous initiatives that have been implemented to conserve and enhance habitat for/at them.
- No consideration was given to ecological reports and data held by the City of Sydney or Marrickville Councils in preparation of the BAR, including each Council's respective biodiversity strategies and recent records of threatened and migratory species, despite sections of the FBA that state such information can or should be considered.
- Important habitat features, including local wetlands and native vegetation in Sydney Park, Tempe Reserve, and Tempe Lands, were not mapped or otherwise identified in the BAR, despite requirements in the FBA for such features to be mapped. Although outside of the development footprint, some local wetlands and native vegetation are immediately adjacent to it and could be impacted. Identification of habitat features such as these through mapping would assist in identifying impacts and ensuring they are mitigated.
- It is not clear whether some of the above native vegetation should have been identified as Plant Community Types (PCTs) in accordance with the FBA as it appears to have been dismissed as 'urban exotic and native' without being carefully considered.
- The list of candidate 'species credit species' in the BAR does not include several such species that have recently been recorded in the vicinity, and/or for which suitable habitat (as described on the OEH Threatened Species Profile Database) is present within the development footprint, particularly at the Alexandria Landfill site where clearing has already commenced, and adjoining industrial and vacant land. These include the Eastern Bent-wing Bat, (possibly) the Southern Myotis, and the endangered inner west population of the Long-nosed Bandicoot. It appears these species have been incorrectly excluded from further consideration in application of the FBA, and that they should have been addressed further in the BAR in accordance with the requirements of Sections 6-12 of the FBA.
- The Long-nosed Bandicoot population was also identified by the OEH as requiring further consideration in accordance with Section 9.2 of the FBA, but no further consideration was given, despite the SEARs stating that specific surveys were required.
- The discussion of impacts to biodiversity values and proposed mitigation in the BAR is considered insufficiently detailed, and cumulative impacts to biodiversity are not mentioned despite being a requirement of the FBA.

Threatened species, populations and communities in the City of Sydney and Marrickville LGAs

The threatened Eastern Bent-wing Bat and (possibly) the Southern Myotis, the endangered Long-nosed Bandicoot population, the endangered Coastal Saltmarsh community, and migratory species including the Great Egret, Cattle Egret, Sharp-tailed Sandpiper, Latham's Snipe and Rufous Fantail have all recently been

recorded in the City of Sydney and/or Marrickville LGAs, but as noted above were not identified or adequately considered in the BAR, despite potential for the project to impact upon them.

Relationship to Council initiatives

The initiatives that have been implemented by the City of Sydney and Marrickville Councils and their respective community members to conserve and enhance habitats to promote biodiversity were not identified or otherwise considered in preparation of the BAR. These initiatives are guided by the City of Sydney's Urban Ecology Strategic Action Plan (UESAP) and Marrickville Council's Biodiversity Strategy 2011-2021 (BS) and Biodiversity Action Plan 2011-2015 (BAP). These documents outline 'priority' or 'target' species of local conservation significance in each LGA, along with 'priority' habitat sites and actual or potential habitat linkages/connectivity between them, as well as between sites in adjoining LGAs.

Priority/target species identified in both LGAs include:

- frogs such as the threatened Green and Golden Bell Frog (GGBF) (which is addressed in the BAR), Dwarf Eastern Tree Frog and Peron's Tree Frog;
- reptiles such as the Eastern Blue-tongue, Bar-sided Skink and Eastern Water Skink;
- small birds such as the Superb Fairy Wren, New Holland Honeyeater, Red-browed Finch, Grey Fantail, Silvereye and rainforest migrants including the Rufous Fantail and Spectacled Monarch;
- freshwater wetland birds such as the Australasian Reed Warbler, Black-fronted Dotterel, Black-winged Stilt, Buff-banded Rail and Royal Spoonbill;
- microbats including Gould's Wattled Bat and the threatened species previously mentioned;
- the Long-nosed Bandicoot; and
- the threatened Grey-headed Flying-fox (which is addressed in the BAR).

Despite comprising highly modified and/or constructed habitats, priority sites in the LGAs provide important habitat for the priority/target fauna species in this highly urbanised context, and include:

- Sydney Park, where at least 62 native fauna species have been recorded since 2010, including priority species such as the Superb Fairy Wren, New Holland Honeyeater, White-plumed Honeyeater, Australasian Reed Warbler, Rufous Fantail, Black-winged Stilt, Black-fronted Dotterel, Royal Spoonbill, Eastern Blue-tongue and Dwarf Eastern Tree Frog.
- Tempe Reserve, incorporating Tempe Lands, and the lower stretch of Alexandra Canal. 93 native bird species recorded have been recorded at this site in the past four years, including target species such as the Yellow Thornbill, White-browed Scrub Wren, Yellow-faced Honeyeater, White-plumed Honeyeater, White-naped Honeyeater, Spotted Pardalote, Brown Gerygone, Red-browed Finch, Silvereye, Superb Fairy-wren, Golden Whistler, Grey Fantail, and Australasian Reed Warbler. An additional eight target reptile and frog species have been recorded at this site, and there have been two recent confirmed records of the Short-beaked Echidna.

The dense weeds, mature trees, rock crevices, sandstone boulders, piles of debris and other ground-level features at the Alexandria Landfill site are also of habitat value for priority species. The landfill contributes to local habitat connectivity between Sydney Park and Tempe Reserve and other sites on the Cooks River. The banks of Alexandra Canal are also important with regard to local habitat connectivity, with the UESAP, BS and BAP all recognising their potential for future habitat enhancement.

The City of Sydney and Marrickville Councils are both members of the Cooks River Alliance, a partnership of Councils working together with communities for a healthy Cooks River catchment. There have been substantial efforts through the alliance to improve water quality and re-establish native vegetation along the river to promote biodiversity and restore local and regional habitat connectivity.

While not necessarily required by the FBA, it is disappointing that there is no recognition of any of the above in the BAR, despite the development footprint for the St Peters interchange and local road upgrades extending from Alexandra Canal across the Alexandria Landfill and into Sydney Park, with a construction compound and

other works immediately adjacent to the park's habitats, and the location of Tempe Lands, Tempe Reserve and the Cooks River along the alignment of the proposed M5 tunnel.

Impacts on threatened and other priority/target species and priority sites

While the potential impacts of the project are discussed in general terms in the BAR, it does not describe or address in detail all of the potential impacts of the project on the above species and sites during construction and operation, and as mentioned impacts to some threatened species are unknown. A more comprehensive discussion of all impacts, including site-specific details, should be included in the BAR.

Cumulative impacts of the project on biodiversity

This project is likely to exacerbate the reductions in biodiversity values that have resulted from past development in the City of Sydney, Marrickville and surrounding LGAs, and there are likely to be further cumulative impacts from numerous current and proposed future developments in the area. Potential cumulative impacts to biodiversity are not identified or discussed in the BAR, despite being a requirement of the FBA as previously mentioned.

Recommendations for further assessment and mitigation measures to reduce impacts to biodiversity

Further assessment

It is considered that further assessment is necessary in relation to:

- threatened species, populations and communities, in accordance with Sections 6-12 of the FBA;
- priority/target species and priority sites in both the City of Sydney and Marrickville LGAs; and
- similar species/sites that may be impacted in other LGAs.

Further assessment should also be undertaken in relation to any changes to the project that arise during the detailed design phase.

Mitigation measures

The mitigation measures outlined in the BAR are not considered adequate in terms of ensuring minimisation of impacts to biodiversity values in the City of Sydney and Marrickville LGAs. The fact that impacts to threatened species, populations and communities and to priority/target species were not specified in the BAR suggests these species etc may be overlooked in the Flora and Fauna Management Plan (FFMP) that is to be prepared for the project, particularly since application of the RMS Biodiversity Guidelines, which as described in the BAR will form the basis of the FFMP, is partly reliant on information in the environmental assessment documents.

More detailed measures are therefore recommended for addition to the BAR and FFMP along with/instead of others already specified, as well any additional mitigation measures identified through the recommended further assessment, and any identified for similar species/sites in other LGAs.

Opportunities for habitat creation/restoration

The BAR does not recognise or discuss any of the opportunities presented by the development to create new habitats through site landscaping etc. While this might not be considered a particular requirement of the FBA, such opportunities have the potential to compensate for some of the adverse impacts and should therefore be documented.

While the Urban Design report and Landscape and Visual Impact Assessment prepared for the EIS identify some opportunities in this regard, there are many more possibilities that should be explored and developed with reference to the City of Sydney's UESAP and Marrickville Council's BS and BAP, and in consultation with the City of Sydney's Urban Ecology Coordinator and Marrickville Council's Team Leader, Biodiversity.

1. INTRODUCTION

This report is based on a review of the Biodiversity Assessment Report (BAR) prepared by Eco Logical Australia Pty Ltd (ELA) as part of the Environmental Impact Statement (EIS) for the proposed new M5 roadworks. This review was commissioned by the City of Sydney and Marrickville Council due to concerns about the impacts of the proposed development on biodiversity, particularly given significant efforts in recent years by both councils and community members to conserve and enhance it in these highly urbanised local government areas (LGAs). The review, and this report, therefore focuses on issues impacting on these two LGAs.

2. METHODOLOGY

The methodology employed in undertaking the review involved the following:

- Meetings with the City's Urban Ecology Coordinator and Acting Team Leader, Biodiversity at Marrickville Council, to discuss the scope of work and particular areas of concern in each LGA. These meetings also provided an opportunity for the council representatives to provide all relevant documents and data, and to discuss and agree on the format of this report.
- A thorough review of all relevant documents, including:
  - the Secretary of the NSW Department of Planning and Environment's Environmental Assessment Requirements (SEARs) for the EIS relating to the BAR;
  - the Framework for Biodiversity Assessment (FBA) prepared by the NSW Office of Environment and Heritage (OEH);
  - the BAR;
  - the Urban Design and Landscape and Visual Impact Assessment reports prepared for the EIS;
  - Biodiversity Guidelines: Protecting and Managing Biodiversity on Roads and Traffic Authority projects (hereafter referred to as RMS Biodiversity Guidelines);
  - the City of Sydney's Urban Ecology Strategic Action Plan;
  - Marrickville Council's Biodiversity Strategy 2011-2021;
  - Marrickville Council's Biodiversity Action Plan 2011-2015;
  - biodiversity-related data held by both Councils; and
  - other relevant documents provided by both councils.
- Preparation of this draft report following the review, with a view to it being incorporated with the broader submissions of both Councils. The report provides commentary on:
  - the validity of the biodiversity assessment;
  - impacts on threatened and priority species and priority sites, with particular consideration for Sydney Park, Tempe Lands, Tempe Reserve and Alexandra Canal and nearby sites with known or potential habitat for threatened/priority species;
  - cumulative impacts of the project on biodiversity;
  - recommendations for further assessment and mitigation measures to reduce impacts to biodiversity; and
  - identification of opportunities to restore/create habitat features through the project.

Upon receipt, comments from the City of Sydney and Marrickville Council on a draft were incorporated into this final report.

3. COMMENTARY ON THE BIODIVERSITY ASSESSMENT

3.1 Validity of the Biodiversity Assessment Report

The BAR was required to be prepared in accordance with the SEARs issued for the biodiversity impact assessment, one of which specifies that it must be undertaken in accordance with the FBA, including further consideration of impacts on species, populations and ecological communities identified by the OEH.

However, the following issues are of concern in relation to the SEAR requirements, and how the FBA was applied in preparation of the BAR:

- The SEARs state that the BAR should be 'An assessment of the potential ecological impacts of the proposal', and FBA Section 2.1.1.3 states the FBA must be used by a proponent to assess all biodiversity values on the development site for a Major Project. The FBA states that the definition of 'biodiversity values' is the same as that under the NSW *Threatened Species Conservation Act 1995* (TSC Act), i.e. it 'includes the composition, structure and function of ecosystems, and includes (but is not limited to) threatened species, populations and ecological communities, and their habitats.' It is furthermore noted that the EIS states that one of the objectives of the project is to 'Minimise impacts on natural systems including biodiversity'.
  Comment: The BAR focuses on threatened species, populations and ecological communities, as does the FBA. However, the SEAR statement, TSC Act definition of biodiversity values and stated objective of the project suggests more consideration should have been given to biodiversity more generally. There are species and sites that are considered to be of local conservation significance within the City of Sydney and Marrickville Council areas, and numerous initiatives have been implemented to conserve and enhance habitat for/at them (refer Sections 3.2 and 3.3 of this report), but these have not been identified in the BAR.

- FBA Section 2.2.2.1 states that when preparing a BAR, an assessor is generally required to make use of databases maintained by the OEH. Section 2.2.2.4 however states that 'Local data may be used if the consent authority, in consultation with OEH, is of the opinion that it more accurately reflects local environmental conditions than the data in the databases.'
- **Comment**: No consideration was given to local data held by the City of Sydney or Marrickville Councils. It is not clear why this was the case. Threatened species records held by both Councils are discussed in Section 3.2 of this report, as well as records of migratory species listed under the Commonwealth *Environment Protection & Biodiversity Conservation Act 1999* (EPBC Act).

- FBA Section 4.1.1.2 requires that both the Site Map and Location Map in the BAR should show local wetlands and the extent of native vegetation in the outer assessment circle or the buffer area surrounding the development footprint.
  Comment: The wetlands and the majority of fringing native vegetation in Sydney Park, and scattered plants of the endangered Coastal Saltmarsh community along Alexandra Canal are not indicated on these or any other maps in the BAR. Similarly, native vegetation including Coastal Saltmarsh and Grey Mangroves at Tempe Reserve are not indicated on any maps, despite being within the outer assessment circle. Finally, the wetlands and native vegetation at Tempe Lands are not indicated on any other maps. Although this site is outside of the outer assessment circle, it is close to the tunnel alignment, suggesting it could be impacted and therefore should have been included.

- FBA Section 4.1.1.12 states that 'Any other important and local wetlands that are adjacent to or downstream from the development site and within the outer assessment circle must be identified and shown on the Location Map.
  Comment: Local wetlands in Sydney Park, immediately adjacent to the development site, and Tempe Lands are not shown on any maps.

- FBA Section 5.2.1.1 requires the assessor to identify and map the distribution of plant community types (PCTs) on a development site according to the NSW PCT classification as described in the VIS Classification database.
  Comment: It is not clear whether the vegetation at Sydney Park, Tempe Reserve and Tempe Lands should have been identified as PCTs, despite having been planted (with the exception of Grey Mangroves). It appears this vegetation was dismissed as 'urban exotic and native', without being carefully considered, as illustrated by the fact that no vegetation at all was mapped in Sydney Park on Figure 9 of the BAR, or in Tempe Reserve on Figure 8. It is understood this vegetation is not within the development footprint, but in the case of Sydney Park it is immediately adjacent to it, and as mentioned above, Tempe Reserve is within the outer assessment circle and Tempe Lands, although outside of the outer assessment circle, could be impacted. It is considered that identifying the vegetation at these sites through mapping would assist in identifying impacts and ensuring they are mitigated.

- FBA Section 5.2.1.3 states that the assessor should review any existing data and information that is currently available on native vegetation relevant to the development site and land in the outer assessment circle, including existing maps of native vegetation in the area such as those held by a local government authority, or existing data or information in ecological reports, soil surveys or previous native vegetation surveys that are relevant to the development site.
  Comment: Both the City of Sydney and Marrickville Council have prepared biodiversity strategies including vegetation mapping relevant to the study area, as discussed further in Section 3.3, but neither these or associated reports or data were reviewed for or otherwise referenced in the BAR.

- FBA Section 6.1.1.2 states that 'An assessor may use more appropriate local data instead of data from the Threatened Species Profile Database (TSPD) for the purpose of obtaining the information required at Paragraph 6.1.1.1, if: (a) in the opinion of the assessor, the local data more accurately reflects the local environmental conditions of the development site, and (b) the Secretary of DP&E, in consultation with the Chief Executive of OEH, approves the use of that data as more appropriate local data.
  Comment: As mentioned previously, no local data held by the City of Sydney or Marrickville Councils was sourced or otherwise considered in preparation of the BAR. Recent records of threatened species held by both Councils that are relevant to the development are discussed further in Section 3.2 of this report.

- FBA Section 6.5 outlines the steps that must be followed in relation to identifying 'species credit species' on a development site. FBA Section 6.5.1.2 states "Using data from the TSPD, the assessor must identify a threatened species as a candidate species for the development site if: (a) the species is identified as a species credit species in the TSPD, and (b) the geographic distribution of the species is known or predicted to include the IBRA subregion in which the development site is located, and (c) the development site contains habitat features or components associated with the species, as identified in the TSPD, OR (d) past surveys undertaken at the development site indicate that the species is present."
  Comment: It is unclear how the list of candidate species credit species (Table 15 of the BAR) was generated. The list does not include several species credit species (as identified on the TSPD) that have been recorded in the vicinity of the development site in recent surveys, and/or for which suitable habitat (as described on the TSPD) is present on the development site. These include the Eastern Bent-wing Bat and (possibly) Southern Myotis, and the endangered inner west population of the Long-nosed Bandicoot (refer Section 3.2 for more detail). All of these species are listed in Appendix A of the BAR as having been identified for consideration in relation to the development from database searches, along with statements that there is no suitable habitat present within the development site. This is incorrect as, according to the information provided on the TPSD, there is suitable habitat for all of them, particularly at the Alexandria Landfill and adjoining industrial sites, where clearing has already commenced. The TSPD states that the Long-nosed Bandicoot population occurs within 'Highly disturbed areas with no or limited native vegetation', and that the Southern Myotis is also associated with this type of habitat. Furthermore, the Southern Myotis and other microbats are known to roost in buildings, under bridges, and/or in stormwater drains. It appears that these species have been incorrectly excluded from further consideration in application of the FBA, and that they should have been addressed further in the BAR in accordance with the requirements of Sections 6-12 of the FBA. The Long-nosed Bandicoot population was also identified by the OEH as requiring further consideration in accordance with Section 9.2 of the FBA, but no further consideration was given, despite the SEARs stating that specific surveys were required for the species that OEH identified. Table 25 of the BAR states that the Long-nosed Bandicoot population does not occur within the development site, but this cannot be known since no surveys were undertaken.

- FBA Section 8 requires the BAR to include an assessment of the direct and indirect impacts of the project on biodiversity values, and to document the measures that will be implemented to avoid and minimise these impacts, including cumulative impacts (Section 8.3.1.8 (c)).
  Comment: It is felt that the discussion of impacts to biodiversity values and proposed mitigation in the BAR is insufficiently detailed, and cumulative impacts to biodiversity are not discussed at all. It is felt that more detail should be provided, including site-specific information relating to Sydney Park, Alexandra Canal, Tempe Reserve, Tempe Lands and the Cooks River (as discussed further in Sections 3.4, 3.5, 3.6 and 3.7 of this report), including of course in relation to any further assessment undertaken for the threatened species and population mentioned above.

3.2 Threatened species, populations and communities in the City of Sydney and Marrickville LGAs

The BAR discusses impacts to the threatened Green and Golden Bell Frog and Grey-headed Flying-fox, but as mentioned in Section 3.1, threatened microbats, the endangered population of the Long-nosed Bandicoot in inner western Sydney, the endangered Coastal Saltmarsh community, and a number of migratory species listed under the EPBC Act, were not identified or adequately considered in the BAR. This is despite confirmed recent records of:

- the threatened Eastern Bent-wing Bat (plus unconfirmed records of the threatened Southern Myotis) at Sydney Park adjacent to the proposed St Peters interchange, as well as at Tempe Lands, Tempe Reserve and elsewhere along the Cooks River in the Marrickville LGA, and the presence of suitable roosting habitat for these and other threatened microbats within the proposed development footprint – particularly the roof and/or wall cavities of many of the industrial buildings that are to be demolished for the works, the mature trees that will be removed, the bridge over Alexandra Canal that is to be demolished, and potentially any stormwater channels that are to be demolished.
- the Long-nosed Bandicoot at Alexandria, and suitable habitat present for this species within the weed-infested Alexandria Landfill site, which is to be cleared for the St Peters interchange (with clearing already commenced), as well as possibly adjoining industrial sites that will also be developed for the interchange;
- scattered Coastal Saltmarsh plants occurring along Alexandra Canal, potentially in the vicinity of the bridge/s that require demolition and the proposed new bridges, and a patch of Coastal Saltmarsh at Tempe Reserve; and
- migratory species at Sydney Park, including the Great Egret, Cattle Egret, Sharp-tailed Sandpiper, Latham's Snipe, and Rufous Fantail, the latter of which also potentially occurs periodically in association with the weed infestations on the Alexandria Landfill site.

3.3 Relationship to Council initiatives

Both the City of Sydney and Marrickville Councils and their respective community members have implemented numerous initiatives in recent years to conserve and enhance habitats to promote biodiversity to the extent possible in these highly urbanised areas. These initiatives are guided by:

- the City of Sydney's Urban Ecology Strategic Action Plan (UESAP);
- Marrickville Council's Biodiversity Strategy 2011-2021 (BS); and
- Marrickville Council's Biodiversity Action Plan 2011-2015 (BAP).

These documents outline the 'priority' or 'target' species for conservation in each LGA, along with 'priority' sites for biodiversity conservation and actual or potential habitat linkages/connectivity between them, as well as between sites in adjoining LGAs. As mentioned in Section 3.1, these and other ecological reports and data held by both Councils were not reviewed or otherwise considered in preparation of the BAR.

Biodiversity has obviously drastically reduced from its original state within both LGAs. Many of the species present today have adapted well to urbanisation and are abundant and widespread. However, a number of other species that have declined in urban areas generally are still present in small numbers in both LGAs. Most of these species are dependent on particular habitat features that are limited within both LGAs and many other urban areas, such as dense shrubby vegetation, tree hollows, rock crevices, ground-level features such as sandstone boulders and logs, and freshwater wetlands. These species have been identified as 'priority' species in the City of Sydney's UESAP, and 'target' species in Marrickville's BS & BAP, and include:

- frogs such as the threatened Green and Golden Bell Frog (GGBF), a small population of which occurs at Rosebery, the Dwarf Eastern Tree Frog and Peron's Tree Frog;
- reptiles such as the Eastern Blue-tongue, Bar-sided Skink and Eastern Water Skink;
- small birds such as the Superb Fairy Wren, New Holland Honeyeater, Red-browed Finch, Grey Fantail, Silvereye and rainforest migrants including the Rufous Fantail and Spectacled Monarch;
- freshwater wetland birds such as the Australasian Reed Warbler, Black-fronted Dotterel, Black-winged Stilt, Buff-banded Rail and Royal Spoonbill;
- microbats including Gould's Wattled Bat and the threatened species previously mentioned;

- the Long-nosed Bandicoot; and
- the threatened Grey-headed Flying-fox.

While the majority of these are not threatened and are common in large bushland areas around Sydney, they are considered to be of local conservation significance. There have been significant efforts to protect and enhance habitats for them, particularly at priority sites, and to enhance connectivity between these sites.

One of the priority sites identified by the City of Sydney's UESAP is Sydney Park (refer Appendix A for site photos). At least 62 native fauna species have been recorded at the park since 2010, including priority species such as the Superb Fairy Wren, New Holland Honeyeater, White-plumed Honeyeater, Australasian Reed Warbler, Rufous Fantail, Black-winged Stilt, Black-fronted Dotterel, Royal Spoonbill, Eastern Blue-tongue and Dwarf Eastern Tree Frog. Its habitats include:

- constructed freshwater wetlands at which there have been significant habitat enhancement works undertaken in recent years, with the most recent works completed as part of a stormwater harvesting scheme earlier in 2015;
- bush restoration sites established and maintained in accordance with a Bush Restoration Management Plan (BRMP) by:
  - the City of Sydney, including small patches planted with species characteristic of the endangered Eastern Suburbs Banksia Scrub (ESBS) and Sydney Turpentine Ironbark Forest (STIF) communities, both of which are thought to have originally occurred in the area prior to development; and
  - Conservation Volunteers Australia (CVA) and a local community group known as 'I HEART Sydney Park', through which hundreds of inner city residents have volunteered their time over the past two years to restore, maintain and gradually expand small pockets of native vegetation that also incorporate other habitat features; and
- substantial ground-level habitat features such as sandstone boulders and logs.

The dense weeds, mature trees, rock crevices, sandstone boulders, piles of debris and other ground-level features at the Alexandria Landfill (refer Appendix A for site photos), which straddles the border of the City of Sydney and Marrickville LGAs adjacent to Sydney Park, is also of habitat value for priority species, particularly small birds and reptiles, and as mentioned in Section 3.1, potentially microbats and the Long-nosed Bandicoot. The landfill contributes to local habitat connectivity between Sydney Park and Tempe Reserve and other sites on the Cooks River in the Marrickville LGA.

The banks of Alexandra Canal are also important with regard to local habitat connectivity, with the UESAP, BS and BAP all recognising their potential for future habitat enhancement.

Tempe Reserve, incorporating Tempe Lands, and the lower stretch of Alexandra Canal (refer Appendix A for site photos) are identified as the highest priority sites in the Marrickville LGA according to the BS and BAP, and comprise part of a designated wildlife corridor in the Marrickville Local Environmental Plan 2010. Monthly bird surveys have been undertaken at Tempe Reserve and Tempe Lands for over four years by a committed group of community members, the 'Tempe Birdos', with a total of 93 native bird species recorded, including target species such as (in the last two years) the Yellow Thornbill, White-browed Scrub Wren, Yellow-faced Honeyeater, White-plumed Honeyeater, White-naped Honeyeater, Spotted Pardalote, Brown Gerygone, Red-browed Finch, Silvereye, Superb Fairy-wren, Golden Whistler, Grey Fantail, and Australasian Reed Warbler. An additional eight target reptile and frog species have been recorded at this site, and there have been two recent confirmed records of the Short-beaked Echidna. The habitats of this priority site include:

- constructed freshwater wetlands at Tempe Lands, which form a loose chain with those in Sydney Park to the north, and to freshwater wetlands in the Rockdale LGA to the south;
- a large patch of Coastal Saltmarsh adjoining the Cooks River in Tempe Reserve, constructed in 2005-2006 and now considered representative of the endangered ecological community;
- patches of Grey Mangroves and Coastal Saltmarsh along the Cooks River adjoining Tempe Reserve;
- large garden beds planted with species characteristic of the endangered Swamp Oak Floodplain Forest and STIF communities, and sandstone heath; and
- the Cooks River Valley Garden, established to demonstrate local native species of the area.

The City of Sydney and Marrickville Councils are also both members of the Cooks River Alliance, a partnership of eight Councils who are working together with their communities for a healthy Cooks River catchment. There have been substantial efforts through the alliance to improve water quality and re-establish native vegetation along the river to promote biodiversity and restore local and regional habitat connectivity.

While not necessarily required by the FBA, it is nevertheless disappointing to note that there is no recognition of any of the above in the BAR, despite the development footprint for the St Peters interchange and local road upgrades extending from Alexandra Canal across the Alexandria Landfill and into Sydney Park, with a construction compound and other works immediately adjacent to two of the park's wetlands and bush restoration sites, and the location of Tempe Lands, Tempe Reserve and the Cooks River along the alignment of the proposed M5 tunnel.

Although not directly referred to in the BAR, these priority sites have apparently been dismissed as 'urban native and exotic' vegetation, but the reality is that despite being modified environments they provide important habitat for fauna species in this highly urbanised context, as demonstrated by the priority/targeted species that have been recorded at them. The project should not detract from efforts to conserve and enhance their habitat values.

3.4 Impacts on threatened and priority/target species and priority sites

While the potential impacts of the project are discussed in general terms in the BAR, it does not describe or address in detail all of the potential impacts of the project on the above species and each site during construction and operation. These include:

- Mortality of fauna during clearing of dense weeds, mature trees, sandstone boulders and other rocks and ground-level features, particularly at:
  - the Alexandria Landfill and surrounding industrial and vacant sites (which as previously mentioned provide suitable habitat for threatened microbats, the endangered Long-nosed Bandicoot population, small birds, Eastern Blue-tongues and other lizards – and as previously noted, clearing has already commenced at the landfill site);
  - the site of the construction compound in Sydney Park, along Campbell Rd (where sandstone boulders are likely to shelter Eastern Blue-tongues and other lizards as well as frogs).
- Reduction in habitat extent and local habitat connectivity as a result of the above clearing, plus reduced potential for future enhancement of this connectivity between Sydney Park and Tempe Lands, Tempe Reserve and other sites on the Cooks River.
- Damage to/removal of vegetation in bush restoration sites in Sydney Park, including adjacent to the Sydney Park construction compound, and a small patch planted with species characteristic of the endangered STIF community adjacent to Euston Road.
- Noise, dust, light, shade and other visual disturbance to the Sydney Park wetlands, including bioretention swales, and Sydney Park bush restoration sites, to Alexandra Canal, and potentially to Tempe Lands wetlands and Tempe Reserve during both construction and operation, with resultant decrease in habitat value.
- Potential removal/disturbance to endangered Coastal Saltmarsh and its habitat along Alexandra Canal during demolition of the existing bridge and construction of new bridges.
- Sedimentation and pollution of the Sydney Park wetlands, Alexandra Canal, the Cooks River, and potentially Tempe Lands wetlands, reducing water quality and potentially including severe contamination, with adverse impacts to aquatic habitats as a result of:
  - earthworks, and particularly excavation of contaminated soils at Alexandra Landfill and Sydney Park (it is assumed that excavation will be required for the proposed construction compound at the latter due to the current slope of land at this site);
  - storage of spoil at the Alexandra Landfill site;
  - demolition of existing bridges and new bridge construction across Alexandra Canal; and
  - construction and/or earthworks that may affect Tempe Lands wetlands (note while no surface works are proposed in the vicinity of these wetlands, it is unclear whether stormwater flows will be impacted).

- Alteration of hydrological regimes to the Sydney Park wetlands, Alexandra Canal, the Cooks River, and potentially Tempe Lands wetlands through increased surface run-off and dewatering and discharge of groundwater with potential impacts to aquatic habitats, bioretention swales and fringing vegetation at Sydney Park and Tempe Lands, as well as aquatic habitats in, and Coastal Saltmarsh and Grey Mangroves adjoining, the Cooks River and Alexandra Canal. The BAR does not clearly describe the proposed stormwater detention mechanisms or where surface flows will be directed (for example, it is not clear whether there will be changes to current flows from Campbell Road to the Sydney Park wetlands), and it is noted that Sections 6.3.5, 6.3.6 and 6.4.7 of the BAR, which relate to hydrology, aquatic habitat and disturbance to waterways are not completely consistent with each other.

It is considered that the nature and ; extent of a number of the above potential impacts, particularly those with potential to affect threatened microbats and the endangered Long-nosed Bandicoot population, are unknown due to the perceived shortcomings in application of the FBA outlined in Section 3.1.

3.5 Cumulative impacts of the project on biodiversity

This project is likely to exacerbate the reductions in biodiversity values discussed in Section 3.3 of this report that have resulted from past developments in the City of Sydney, Marrickville and surrounding LGAs, and there are likely to be further cumulative impacts from the following current and proposed future developments in the area:

- numerous large-scale, high-rise residential and mixed use developments in the locality, for example at Green Square, Alexandria, and Wolli Creek;
- additional WestConnex roadworks such as the M4-M5 Link – Haberfield to St Peters and the Sydney Gateway;
- other roadworks such as the widening of Marsh St in Arncliffe for the Airport West Precinct;
- the Sydney Metro – Sydenham to Bankstown rail corridor development; and
- numerous residential developments along the light rail corridor.

Potential cumulative impacts to biodiversity are not identified or discussed in the BAR, although they are very briefly, but not comprehensively, addressed in Chapter 27 of the EIS. They include:

- further decreases in habitat extent and quality, and local habitat connectivity, with associated declines in species diversity;
- ongoing disturbance to the Sydney Park wetlands and bush restoration sites, particularly as a result of the construction compound that will remain adjacent to the park on Campbell Rd for the construction of the M4-M5 Link;
- further increases in traffic, noise, dust, light, shade and other visual disturbance;
- further potential for impacts to water quality, hydrology etc of the Sydney Park and Tempe Lands wetlands, Alexandra Canal and Cooks River;
- increased pressure on open space for recreational use from increased residential development removing existing habitat, including existing bush regeneration sites, and/or potential habitat;
- increased disturbance to existing habitats from increased human activity; and
- increased predation and other disturbance from pets as a result of the above.

It is noted that the project will also directly impact on the endangered GGBF. Although impacts to this species will occur outside of the City of Sydney and Marrickville LGAs, and are addressed in detail in the BAR, both Councils are nevertheless concerned, particularly given the cumulative impact of this project in relation to past developments that have also adversely affected the habitats of this species, including not just the existing M5 but a development that resulted in destruction of habitat at Rosebery in the City of Sydney LGA, where the population is consequently restricted to a small residential backyard on private property and is at high risk of extinction.

It is further noted that the project will directly impact the vulnerable GHFF, through removal of approximately 10.8 hectares of potential foraging habitat, including an estimated 200 GHFF feed trees in or adjacent to Sydney Park, in addition to the removal of a substantial number of trees for other stages of the WestConnex

project, and for the many other developments in this and other parts of Sydney. Both the City of Sydney and Marrickville Councils are concerned about the cumulative impacts of these developments on the GHFF, which are not acknowledged in the BAR.

Conversely to the potential for cumulative adverse impacts to biodiversity, if appropriate, site-specific mitigation measures are applied and opportunities for habitat creation/restoration are realised through site landscaping and other measures (such as those outlined in Section 3.6), there is potential for impacts associated with this project to be reduced, and for it to over time to contribute somewhat to biodiversity values through enhancement of habitats and connectivity in the area.

3.6 Recommendations for further assessment and mitigation measures to reduce impacts to biodiversity

3.6.1 Further assessment

As mentioned in Section 3.4, the nature of actual or potential impacts to threatened species, populations and communities that will result from the development are unknown due to the perceived shortcomings in application of the FBA outlined in Section 3.1. Further assessment is therefore considered necessary in accordance with Sections 6-12 of the FBA, with the BAR updated based on the results.

As also outlined in Section 3.4, impacts to other priority/target species and priority sites in both LGAs have not been specifically identified or assessed; the BAR should be updated with this information as well.

Further assessment is also recommended in relation to similar species/sites that may be impacted in other LGAs.

Further assessment should also be undertaken in relation to any changes to the project that arise during the detailed design phase.

3.6.2 Mitigation measures

The mitigation measures outlined in the BAR are quite general and are not considered adequate in terms of ensuring minimisation of impacts to the biodiversity values of the City of Sydney and Marrickville LGAs that have been highlighted in this report, along with similar biodiversity values that may occur in other affected LGAs.

The BAR states that ecological impacts will be mitigated through adherence to the RMS Biodiversity Guidelines, and that it is anticipated that requirements will be incorporated into a Flora and Fauna Management Plan (FFMP), to be implemented during construction and operation. However, the fact that many of the impacts described in Section 3.4 were not identified in the BAR suggests they may be overlooked in the FFMP, particularly since the RMS Guidelines specify that the environmental assessment documents should be referred to as a guide when applying them, but also because the RMS Guidelines appear to focus mainly on bushland areas and naturally-occurring habitat features, which presents a risk that habitats in highly urbanised areas may be overlooked.

It is also of concern that clearance has commenced at the Alexandria Landfill, as previously mentioned, and it is not clear whether an FFMP is being implemented in relation to the works that are currently taking place.

The more detailed measures outlined below are therefore recommended for addition to the BAR and FFMP along with/instead of others already specified, as well any additional mitigation measures identified through the further assessment recommended in Section 3.5.1, and any identified for similar species/sites in other LGAs and/or by the Cooks River Alliance:

- The development footprint should be clearly delineated prior to clearance of vegetation and other habitat features to ensure clearance is kept to the absolute minimum necessary, particularly at and around:
  - The proposed St Peters interchange site

  - the Sydney Park construction compound
- Removal of dense weed infestations and other vegetation at the Alexandria Landfill site should cease until the results of further assessment recommended in Section 3.5.1 are obtained, or at the very least weed removal should be undertaken in gradual stages, with complete removal delayed as much as possible.
- Building demolition works at the Alexandria Landfill site and surrounding industrial sites, and clearance of hollow-bearing trees should also be delayed until the results of further assessment recommended in Section 3.5.1 are obtained, or at the very least should be timed to avoid the breeding season of microbat species.
- The trunks and branches of large trees that are removed should be stored and re-used in site landscaping, for example as ground level habitat features and/or as stags in the water at Tempe Lands and/or Sydney Park wetlands.
- Where possible, tree hollows that are removed should be stored and re-used by attaching them to trees that remain.
- Clearance of sandstone boulders and other ground-level habitat features at Alexandria Landfill and Sydney Park (sandstone boulders along Campbell Road), as well as mature trees in this vicinity should be undertaken carefully and supervised by an ecologist, with any animals found to be relocated to suitable habitat in Sydney Park and/or an alternate location such as Tempe Lands (subject to appropriate licences under the *National Parks and Wildlife Act 1974*).
- Sandstone boulders and other ground-level habitat features should be stored and re-used in site landscaping.
- Frog and reptile exclusion fencing (shadecloth or similar) should be attached to construction site fencing to prevent access by frogs and reptiles at the Sydney Park construction compound and elsewhere around the St Peters interchange site during construction.
- Site landscaping incorporating appropriate soils/other growing media such as crushed sandstone, and maximising locally native shrubs, grasses and groundcover species that will provide similar habitat to the dense weeds removed (i.e. not just trees, and preferably incorporating tree-free areas to discourage aggressive species such as the Noisy Miner) should be commenced as soon as possible, prior to or immediately after each stage of weed removal, to maximise the time available for it to develop some value as replacement habitat.
- Dense infill planting of shrubs, grasses and groundcover species should also be undertaken as soon as possible to further develop habitats at Sydney Park, Tempe Lands and Tempe Reserve, to compensate for those removed at the Alexandria Landfill site.
- The species to be planted should be selected to create/enhance habitat for priority/target species, and should based on specialist ecological advice.
- Vegetation should be fenced after planting and subject to intensive, specialist bush regeneration maintenance practices, including watering, weeding, and infill planting to replace plant failures etc, to both ensure its establishment and maximise its habitat value.
- Regular watering should be undertaken suppress dust in the vicinity of Sydney Park, Alexandria Canal, Tempe Reserve, and Tempe Lands.
- Appropriate, site-specific measures to prevent sedimentation and pollution of the Sydney Park wetlands, Alexandra Canal, Tempe Lands wetlands and the Cooks River should be incorporated during both construction and operation, including in relation to earthworks, storage of spoil, and bridge demolition and construction, to prevent any adverse impacts to water quality.
- Appropriate, site-specific measures should be incorporated to prevent flow of contaminants to the above habitats from landfill excavated at Alexandria Landfill and Sydney Park, during construction and operation.
- Appropriate, site-specific measures should be incorporated to minimise both release of contaminants that may be accumulated in instream sediments, and instream turbidity during demolition and construction of bridges across Alexandria Canal.
- Appropriate, site-specific measures (appropriate drainage structures, stormwater detention basins etc) should be incorporated to ensure maintenance of appropriate hydrological regimes at the Sydney Park wetlands, Tempe Lands wetlands, Alexandra Canal and the Cooks River.
- Stormwater drainage should not exacerbate, but rather should be designed to resolve existing problems associated with drainage carrying gross pollutants and high sediment loads from Campbell Road to the bioretention swale at Wetland 4 in Sydney Park.

- Appropriate measures should be incorporated to ensure groundwater is treated to an appropriate standard before discharge to Alexandra Canal and the Cooks River, and to ensure that discharge volumes do not adversely impact the hydrology/geomorphology of these receiving waters.
- Low sodium and/or directional lighting should be used to avoid light spill into the Sydney Park wetlands and other habitats in Sydney Park and around the St Peters interchange, and Tempe Reserve and Tempe Lands if impacted, during both construction and operation, including at all construction compounds.
- Noise barriers, batters and/or other physical barriers (preferably vegetated) should be incorporated adjacent to Sydney Park and Alexandra Canal, including at construction compounds and in relation to cycleways and pedestrian paths, and Tempe Lands and Tempe Reserve if impacted, to minimise noise as well as visual disturbance from vehicle, personnel movements etc, and to prevent/reduce access by fauna during both construction and operation.
- The Sydney Park construction compound should be designed and situated to ensure that access for volunteers to the adjoining bush restoration site is not restricted and their safety not compromised.
- The on-ramp to the shared cycleway/pedestrian bridge across Campbell Road should be realigned to avoid disturbance to the bioretention swale at Wetland 4, and the adjoining bush restoration site. It would be preferable for this on-ramp to be located away from these habitat areas.
- Fauna underpasses for frogs and reptiles should be established in new culverts or similar, incorporating rocks and thick grasses/sedges at each end. The number of underpasses should be maximised to the extent feasible, due to the imitations the interchange will place on the movement of these and other less mobile fauna species.
- Culverts or other drainage structures should be left ungated to allow access for roosting microbats.
- One or more fauna overpasses incorporating dense native shrubs should be established for birds, potentially as part of cycleway/pedestrian bridges. Such overpasses should provide continuous connectivity to other habitat areas in Sydney Park and other site landscaping that has been designed to provide habitat,
- Feed trees for the Grey-headed Flying-fox should be incorporated into site landscaping to replace those that will be removed around Sydney Park.
- Landscape plans should be developed with specialist ecological advice, with reference to the City of Sydney's UESAP and Marrickville Council's BS and BAP, and in consultation with the City of Sydney's Urban Ecology Coordinator and Marrickville Council's Team Leader, Biodiversity.
- All mitigation measures should be included in the Flora and Fauna Management Plan (FFMP) for the project, including specific details of the affected species and sites to/at which the RMS guidelines will be applied.
- The FFMP should be expanded to incorporate opportunities for habitat creation/restoration, as discussed in Section 3.5.3.
- The draft FFMP should be provided to all stakeholders for review and comment prior to finalisation.
- Any changes to the nature/extent of surface works that arise during the detailed design phase should be subject to further assessment, and the FFMP updated with additional mitigation measures if necessary.

3.5.3 Opportunities for habitat creation/restoration

Finally, the BAR does not recognise or discuss any of the opportunities presented by the development to create substantial new habitats through landscaping etc in and around the proposed open space adjoining the St Peters interchange and along Alexandra Canal. While this might not be considered a particular requirement of the FBA, such opportunities would compensate for some of the adverse impacts of the project to biodiversity and should therefore be explored.

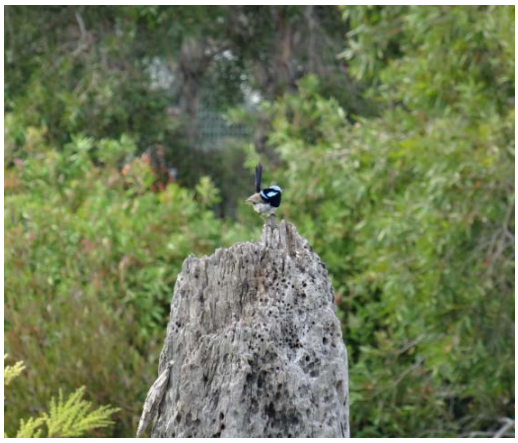
It is noted that the Urban Design report and Landscape and Visual Impact Assessment prepared for the EIS identify some opportunities in this regard, but these focus mainly on establishing heavily treed areas which are unlikely to support many of the priority/target species, but rather to encourage the species that are well-adapted to urban environments and that are very common as a result. Additionally, Appendix L of the Volume 2E Urban Design Report Part 8 indicates a very limited and inappropriate landscape concept plan for the St Peters Interchange. A species list is to be created in consultation with ecologists and the City's Urban Ecology Coordinator, to largely focus on Eastern Suburbs Banksia Scrub (ESBS) species so as to enhance and maximize habitat potential for priority and target species. Bioretention plantings should also consist of a diversity of locally native grasses, sedges and reeds and not the species identified for mass plantings in the concept.

There are many more possibilities and it is considered that these should be incorporated into the BAR, and/or the Urban Design report and Landscape and Visual Assessment, and further developed with reference to the City of Sydney's UESAP and Marrickville Council's BS and BAP, and in consultation with the City of Sydney's Urban Ecology Coordinator and Marrickville Council's Team Leader, Biodiversity. They include the potential to:

- Incorporate dense reed beds and sedges and potentially bioretention swales to maximise the habitat value of stormwater detention basins, whilst also maximising their effectiveness in treating road run-off.
- Incorporate additional ponds if feasible to maximise freshwater wetland habitat.
- Incorporate fine mesh structures if feasible over stormwater inlets to prevent access by the Mosquito Fish (*Gambusia holbrooki*), which preys on tadpoles.
- Incorporate fences around stormwater detention basins/other ponds, to restrict access by dogs and people.
- Create habitat for the endangered GGBF through the above ponds/wetlands as part of offsetting impacts to this species at Arncliffe (in addition to the mitigation described for the GGBF in the BAR), to which tadpoles from the captive breeding program described in the BAR could potentially be released. As mentioned in Section 3.6, a large GGBF population once occurred at Rosebery, but as a result of past development the population is now restricted to one residential backyard and is at high risk of extinction. Creation of habitat at St Peters could be a means of restoring a population to this locality and assisting to ensure the conservation of the Cooks River Key Population.
- Re-establish vegetation representative of the endangered ESBS community, which was also widespread in the locality prior to development, in sunny areas around the interchange (potentially adjoining but set back from the above wetland areas) (refer Appendix B).
- Establish shade-tolerant/rainforest vegetation in shaded areas around the interchange to provide habitat for small, migratory rainforest species.
- Create new habitat features for reptiles, such as dry-pack sandstone retaining walls.
- Incorporate scuppers in the design of new bridges to provide roosting habitat for microbats.
- Create a substantial fauna overpass vegetated with shrubs, grasses and groundcovers across part/all of the interchange that would also contribute to additional open space (refer Appendix B for an example), and could potentially link to Alexandria Canal where there are likely to be future opportunities to enhance connectivity to Tempe Reserve and other sites along the Cooks River.
- Implement large scale offset native habitat planting at Tempe Reserve.
- Construct habitat for the endangered Coastal Saltmarsh community along Alexandra Canal as part of landscaping adjacent to the new bridges, in consultation/collaboration with Sydney Water, who are currently doing this at the mouth of the canal in Tempe Reserve.
- Install sections of trunks from trees that have been removed in Alexandra Canal and/or the Cooks River, as snags with cut-in habitat boxes.
- Engage community volunteers in planting associated with site landscaping, and in subsequent maintenance.
- Provide funds for a combined Council monitoring initiative (over 5-10 years) to monitor changes to biodiversity over time as a result of the project.
- Provide funds, or a pathway to funds, to offset ongoing ecological impacts that are highlighted by monitoring.
- Establish a community native plant nursery, seed orchard and Community Environmental Education Centre at Tempe Reserve/elsewhere.

Bioretention swale vegetated with native species at Wetland 4 in Sydney Park. The wetland provides habitat for a range of small birds, freshwater wetland birds, reptiles, frogs and microbats. The construction compound in Sydney Park will be immediately adjacent to this important habitat.

Additional bioretention swales at Wetland 4 – recently constructed as part of a stormwater harvesting scheme, they incorporate native vegetation and other habitat features.



Sydney Park's wetlands provide habitat for priority species including the migratory Latham's Snipe and the Superb Fairy Wren (photographed on December 15, 2015 when a total of three snipe were recorded in a brief inspection).

Bush restoration site (vegetated area at right), maintained by community volunteers, immediately adjacent to the construction compound site in Sydney Park.

Sandstone boulders at the Sydney Park construction compound site provide habitat for reptiles and frogs

Wetland 5 at Sydney Park, located near the corner of Campbell Road and Euston Road, immediately adjoining proposed roadworks. Although difficult to see, Black-winged Stilts are foraging in the shallows.

Vegetation characteristic of the endangered Sydney Turpentine Ironbark Forest, recently planted at Sydney Park and incorporating other habitat features, is situated within a few metres of the proposed roadworks on Euston Road.

One of three wetlands at Tempe Lands which provide important habitat for small birds, freshwater wetland birds, reptiles, frogs, and microbats, with two recent records of the Short-beaked Echidna. The alignment of the new M5 tunnel is close to this site**.**

Endangered Coastal Saltmarsh at Tempe Reserve, adjoining the Cooks River near the alignment of the new M5 tunnel.

Native vegetation at Tempe Reserve, including Grey Mangroves at left, in the intertidal zone on the Cooks River

Current Sydney Water works to create habitat for endangered Coastal Saltmarsh near the mouth of Alexandra Canal. There is potential for similar works associated with the new bridges over the canal.

Dense infestations of Lantana and other weeds with mature canopy trees at the Alexandria Landfill site provide important habitat for small birds, and possibly microbats and the endangered inner west Long-nosed Bandicoot population. Rocky features provide habitat for reptiles.

Further illustration of the dense weed infestations at the Alexandria Landfill site.

Buildings such as this that are within the development footprint of the St Peters interchange may provide roost sites for microbats, potentially including threatened species. Construction materials and debris in the adjoining yard provide habitat for reptiles such as the Eastern Blue-tongue.

Further illustration of potential reptile habitat within the footprint of the St Peters interchange: a vacant site with piles of sandstone blocks, polypipe and other construction materials.

Eastern Suburbs Banksia Scrub vegetation, which provides excellent habitat for a range of priority/target species and could be incorporated into landscaping around the St Peters interchange

Example of vegetated fauna overpasses in northern NSW. While overpasses of this extent may not be feasible at St Peters, smaller versions could potentially be incorporated with proposed cycle/pedestrian bridges.

WestConnex Stage 2 EIS
Review of Traffic, Transport, and Modelling

City of Sydney

Reference: 15SYT0149
28 January 2016

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5					

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Executive Summary

This report has been prepared by TTM Consulting for the City of Sydney. It provides independent advice to the city for its consideration of the Environmental Impact Statement (EIS) for the "New M5". The New M5 is the main component of Stage 2 of the WestConnex Project.

It is our advice to the City of Sydney that the traffic forecasts for the New M5 do not support completion of the project at this stage. Whilst the reasons are multitude they can be summarised as:

1. The proposed tolling regime results in traffic avoiding the motorway system and diverting to local roads.
2. The forecast traffic volumes for the New M5 are very low. By comparison, they are lower than for the Sydney Cross City Tunnel.

There are areas of particular concern where we advise that the EIS does not satisfy the Secretary's Environmental Assessment Requirements. These include:

1. The strategic traffic modelling is inconsistent. In particular, the traffic forecasts for average weekday traffic in the New M5 are excessively high when compared to the morning peak period flows. These overly high daily forecasts adversely affect the economic and financial assessment of the project.
2. The traffic forecasts appear to include the assumption that the M5 East is tolled. This is an un-tolled road and is not part of the project presented to the government. The toll assumed for the M5 East has not been stated in the EIS report.
3. The upgrade of Campbell Road/Street and Euston Road results in significant diversions of traffic from the Princes Highway to Euston Road. The implications of this have not been addressed in the EIS.

We advise that the implications of induced demand have not been adequately assessed and that the forecasts in turn are not reliable for economic or financial assessment.

Should the project proceed in its current form there remain a number of construction and operational issues which need to be addressed.

The modelling indicates that there will be significant diversions from Euston Road to surrounding local streets with just the New M5 and also with the fully completed WestConnex. Traffic management measures will be required to address this intrusion into local residential precincts. Regardless, residents of this area will experience significant impacts on their local amenity both with the New M5 and with the completion of the full WestConnex.

1. Introduction

TTM Consulting was engaged by the City of Sydney to prepare a report for Council's consideration in response to the traffic related components of the Environmental Impact Statement (EIS) for Stage 2 of the WestConnex Project, referred to as the New M5. This report assesses both the construction and operation phases of the proposal.

This report assesses the traffic and transport information provided in Chapter 9 of the main report, parts of Chapter 6 Construction Work, and parts of Chapter 27 Cumulative Impacts of the main report and the Traffic and Transport Assessment contained in Appendix G.

This report essentially addresses three issues. They are:

1. A review of the traffic forecasts and the strategic implications for the provision of transport related infrastructure within the Sydney metropolitan area.
2. An assessment of construction related activity should the project proceed.
3. An assessment of traffic conditions post construction should the project proceed.

In undertaking this assessment, we have considered:

- The modelling scenarios and validity in assessment of project of this size and scale. This includes non-project works in future scenarios, and assumptions.
- The planning horizons in considering a project of this magnitude.
- Transport-related impacts through the wider southern Sydney area and in the local vicinity.
- Future conditions for various stakeholder groups, including residents, cyclists, pedestrians and businesses.
- Mitigation measures to manage transport impacts of WestConnex on adjacent streets and intersections, particularly in the suburbs of Alexandria, Erskineville, St Peters and Newtown.

In the process of preparing this advice we have taken into consideration information from a number of documents including the New M5 EIS, the WestConnex Updated Strategic Business Case, the M4 East, and the Sydney Metro Project Overview. Additional information has been supplied by the Sydney Motorway Corporation.

The report is structured as follows:

- Chapter 2 presents an overview of the project.
- Chapter 3 advises on compliance of the EIS with the Secretary's Environmental Assessment Requirements (SEARs).
- Chapter 4 presents the forecast traffic flows.
- Chapter 5 provides a critique of the forecast flows.
- Chapter 6 addresses the strategic traffic related aspects of the project.
- Chapter 7 examines traffic related issues during the construction phase.
- Chapter 8 examines traffic related issues during the operational phase.
- Chapter 9 presents the key issues and recommendations.

2. Overview of the Project

2.1. WestConnex

Figure 2-1 presents a general schematic of the WestConnex project. It is being delivered in three stages which have developed over time. A description of each of the components of the project is presented in Table 2-1.

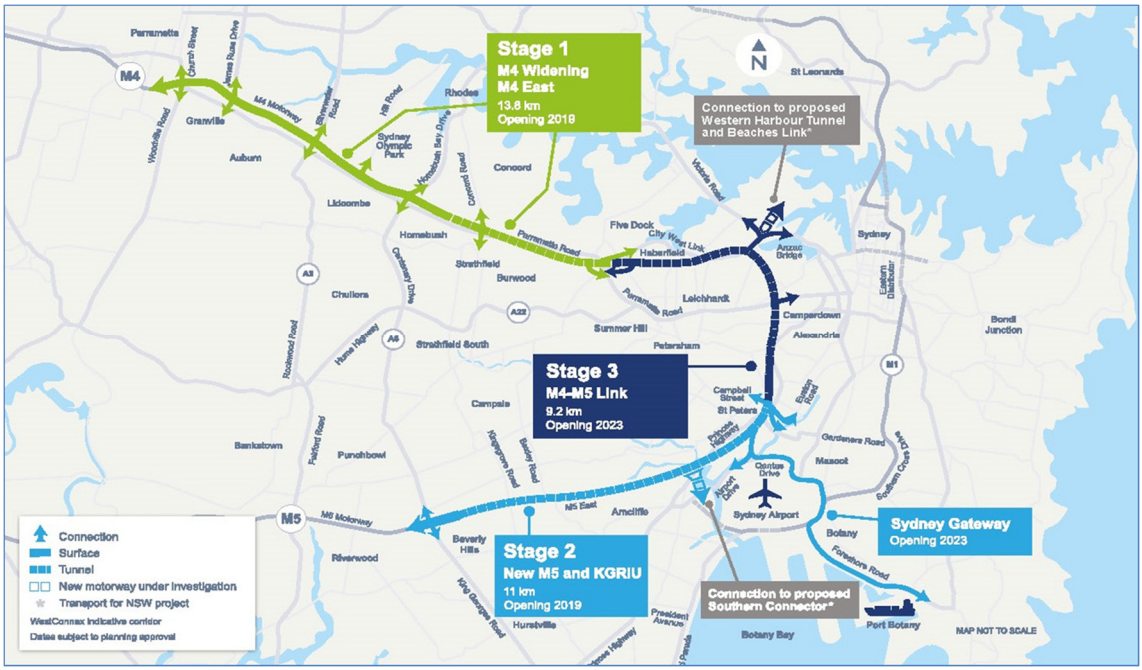


Figure 2-1: WestConnex Staging

Table 2-1: WestConnex Components[1]

Component	Linking / Location	Description
Stage 1		
Stage 1A - M4 Widening	Parramatta to Homebush	Widening the existing M4 Motorway from Parramatta to Homebush.
Stage 1B - M4 East	Homebush to Haberfield	Extending the M4 Motorway in tunnels between Homebush and Haberfield via Concord. Includes provision for the future connection to M4 – M5 Link.
Stage 2		
New M5	Beverly Hills to St Peters	Duplicating the M5 East from King Georges Road in Beverly Hills with tunnels from Kingsgrove to a new interchange at St Peters. The St Peters Interchange allows for connections to the Sydney Gateway. The New M5 tunnels include provision for a future connection to the proposed Southern Connector (part of Gateway to the South) and the M4 – M5 Link.
King Georges Road Interchange Upgrade	Beverly Hills	Upgrade of the King Georges Road Interchange between the newly widened M5 West and the M5 East at Beverly Hills, in preparation for the New M5.
Sydney Gateway	St Peters to Sydney Airport and Port Botany	A high-quality, high-capacity connection between the new St Peters Interchange and the Sydney Airport and Port Botany precinct.
Stage 3		
M4 – M5 Link	Haberfield to St Peters	Tunnels connecting to the M4 East and New M5 via Rozelle and Camperdown. Includes ramps connecting to the St Peters Interchange and an interchange at Rozelle with provision for a future connection to the Western Harbour Tunnel and Beaches Link.

The widening of the M4 commenced in March 2015. Work has commenced on delivery and upgrade of the M5 / King Georges Road interchange as part of Stage 2. The timing forecast for the remainder of the projects is presented in Figure 2-2.

[1] Source: WestConnex Updated Strategic Business Case (November 2015)

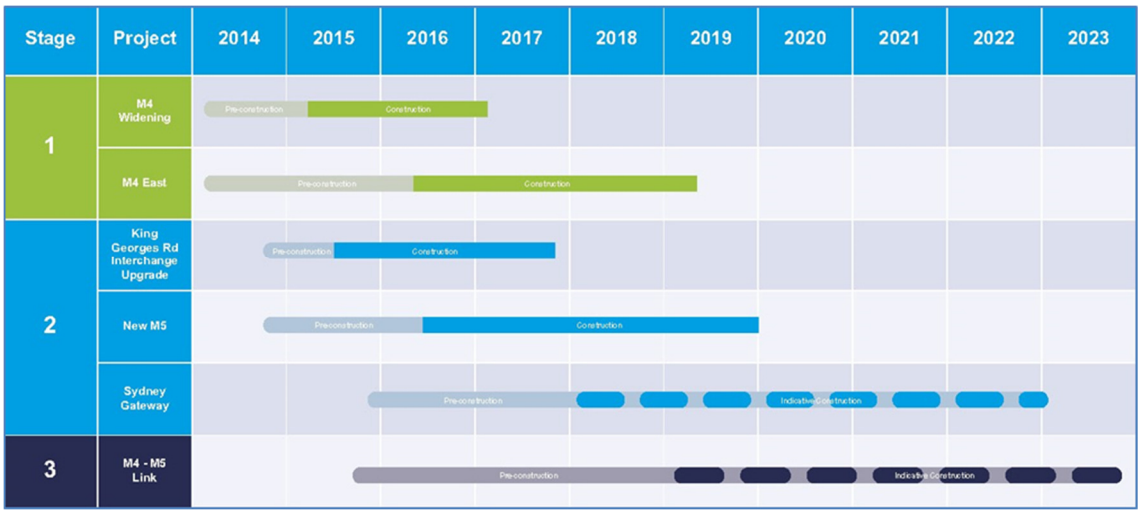


Figure 2-2: WestConnex Timing[2]

The WestConnex Updated Strategic Business Case states that "Sydney Gateway delivery timeframe is marked 'Indicative Construction'. It is dependent on further development work, so timeframes may change. At the latest, it will open by 2023."

Running parallel with Stage 1 is the Parramatta Road Urban Renewal program which is looking at opportunities to take advantage of reduced traffic flows on Parramatta Road due to diversions to WestConnex. The EIS for the M4 East reports a forecast 53% decrease in traffic on Parramatta Road west of Haberfield in 2021 with just the M4 East and a forecast 45% decrease on completion of the full WestConnex project in 2031.

A potential "Southern Extension" from Arncliffe to Kogarah is currently being investigated by Transport for NSW. It would connect the New M5 to the southern and bayside suburbs of Sydney, and the proposed F6 extension. It is understood that the traffic forecasts for the full WestConnex project in 2031 include the Southern Extension connecting to President Avenue.

It should be noted that whilst Stage 1 and 2 (excluding Sydney Gateway) of WestConnex are committed projects there is no guarantee about the timing or eventual completion of Sydney Gateway or Stage 3. There is also no guarantee that the potential Southern Extension and F6 extension will occur in the foreseeable future (if at all). These projects have been considered as part of the traffic assessment of the EIS. The appropriateness of including these uncommitted projects in the traffic assessment is not apparent.

2.2. New M5

The subject of this report is the New M5 which is the construction of a new tunnel from the existing M5 at Beverly Hills to St Peters. The St Peters interchange connects to Canal Road with northbound traffic directed to Euston Road, westbound traffic directed to Edgeware Road and eastbound traffic linked to Gardeners Road and Bourke Road (See Figure 2-3). The new link to Bourke Road is referred to as the Campbell Road Bridge in the EIS.

[2] Source: WestConnex Updated Strategic Business Case (November 2015)

Provision is also made for connections to the proposed Sydney Gateway and a future connection to the proposed Southern Connector (part of Gateway to the South) and the M4 – M5 Link.

The St Peters interchange also includes provision for pedestrians and cyclists some of which are identified in Figure 2-4. A detailed assessment of the proposed bicycle infrastructure is being undertaken separately by Council.

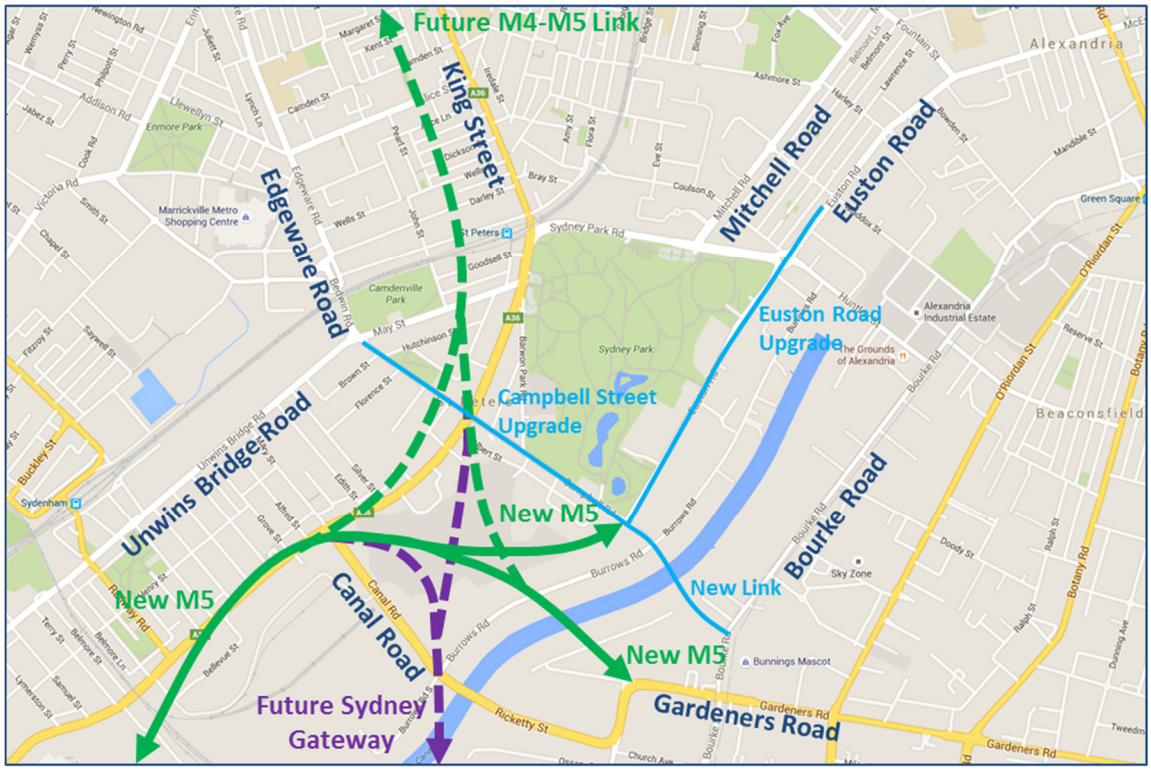


Figure 2-3: St Peters Interchange Connections and Road Upgrades

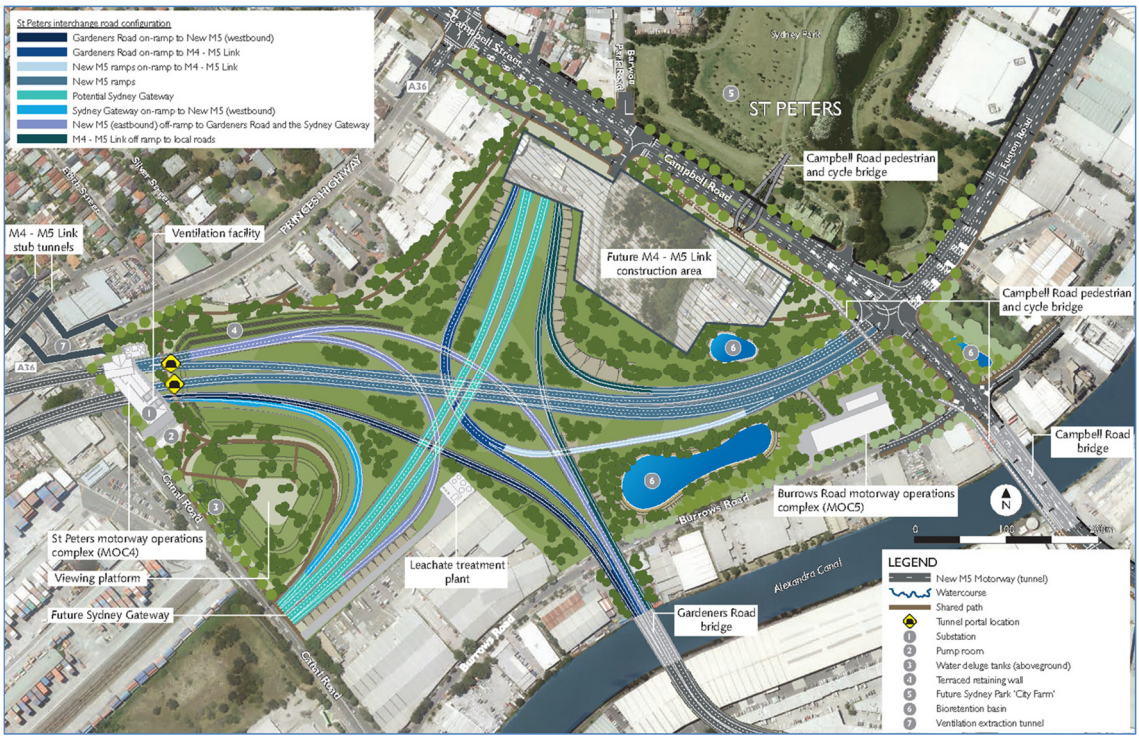


Figure 2-4: St Peters Interchange Layout

Whilst not explicit in the project description the right turn from the New M5 to the new Campbell Road Bridge will be banned. Traffic northbound on the New M5 accessing the Botany area would use the link to Gardeners Road instead. Traffic in the reverse direction would be able to use the Campbell Road Bridge to access the New M5 southbound.[3]

TTM have also been advised that the modelling for the New M5 has assumed banning of the right turn from Mitchell into Sydney Park Rd, and a bus only right turn from Euston into Sydney Park Road.

2.3. Tolling Regime

The will have a capped distance-based tolling system, similar to the M7. Table 2-2 presents the tolling regime as report in the WestConnex Updated Strategic Business Case.

Table 2-2: Tolling Regime[4]

Component	**2013**	**2015**
Flagfall	$1.04	$1.12
Toll per km	$0.38	$0.42
Toll cap	**$7.35**	**$7.95**
Truck multiplier	3x	
Escalation	Max of 4% or CPI whichever is greater	
Concession term	To 2060	

[3] Source: New M5 EIS_Vol 1A, Page 5-72
[4] Source: WestConnex Updated Strategic Business Case

The WestConnex Updated Strategic Business Case states that "Once operational, toll indexation will be consistent for all three stages with a maximum of four per cent or CPI, whichever is greater for the first 20-years, reverting to CPI thereafter". This escalation is similar to agreements for other tolled roads in Sydney.

Table 2-3 presents indicative tolls for the sections of the WestConnex project.

Table 2-3: Indicative Tolls (cars)[5]

WestConnex Stage	Indicative min/max toll ($2015 incl GST)
M4 Widening (Parramatta to Homebush)	Min: $1.50 Max: $3.90
M4 East (Homebush to Haberfield)	Min: $2.00 Max: $3.60
Stage 2 - New M5 (Beverly Hills to St Peters)	Min: $1.70 Max: $4.80
Stage 3 - M4-M5 Link (Haberfield to St Peters)	Min: $1.80 Max: $4.10
WestConnex total	Min: $1.50
	Max: $7.35 (capped)

It is not made clear in the EIS but it appears that the modelling includes tolling of the existing M5 East Motorway. If this is the case the EIS needs to assess the effects of this new toll separate to the New M5.

2.4. Other Projects – Sydney Metro

When considering the impacts of the New M5 one must be cognisant of other projects in the vicinity. As noted earlier, investigations are currently underway for the Sydney Gateway and Southern Extension. In addition to this, the Sydney Metro project is in the final stages of design.

Figure 2-5 shows the route of the proposed Sydney Metro. The Sydney Metro is a major rail project linking the Sydney Metro Northwest (currently under construction) to Sydenham via Chatswood. This section of the projects will have 15 kilometres of tunnels which run under Sydney Harbour and through Sydney's CBD. An additional 13.5 kilometres of rail track will be upgraded to extend the metro from Sydenham to Bankstown Station.

The service will be stand-alone. That is the rail tracks will not be shared with other services. As a result, it will not be subject to delays caused by other trains. It will have the capacity to increase the number of trains entering the CBD from 120 to about 200 in peak hours. This is equivalent to approximately 100,000 train passengers in peak hours.

[5] Source: WestConnex website (20 January 2015)

Figure 2-5: Sydney Metro

Construction is programmed to commence in 2017 with the first tunnel boring activities commencing in 2018. The Sydney Metro section from Chatswood to Sydenham would be operational from 2024.

It is anticipated that Tunnel Boring Machines (TBMs) would be launched from three sites:

1. Chatswood dive site (northern).
2. Barangaroo Station – this site is proposed to support a specialised TBM for the Sydney Harbour crossing (to be confirmed with further industry consultation).
3. Marrickville dive site (southern).

These three sites would provide support for the tunnelling operations including spoil storage and removal, power supply to the TBMs, tunnel ventilation, grout batching, water treatment and disposal, material storage as well as site office facilities, worker amenities and parking.

3. Compliance with the Secretary's Environmental Assessment Requirements

The Secretary's Environmental Assessment Requirements dated 16 June 2015 have the following requirements in relation to traffic and transport:

- details of how the proposal meets the objectives of the overall WestConnex program;
- details of how the traffic and transport objectives of the proposal, and service and infrastructure responses, take into account: adjacent sensitive land uses; future housing and employment growth areas; existing town, employment and industrial centres; approved and proposed infrastructure proposals; and broader transport needs (including public transport, cyclist and pedestrian requirements and facilities); including with specific reference to:
    - the preferred alignment and design,
    - the proposed interchanges and connections to the surrounding road network, and
    - associated road and related transport infrastructure facilities;
- an assessment and modelling of operational traffic and transport impacts on the local and regional road network (in consultation with affected councils), and the Sydney motorway network, including the consideration of planning proposals, major urban renewal and development, the potential cumulative impacts of Stage 3 – M4 South (Haberfield to St Peters), and the impacts of potential shifts of traffic movements to alternative routes outside the proposal area (including as a result of tolls);
- induced traffic and operational implications for public transport (particularly with respect to strategic bus corridors and bus routes) and future public transport opportunities;
- impacts on property and business access and on street parking provision, including permanent and temporary (construction) changes to access and parking, and traffic management measures such as clearways;
- impacts on cyclists and pedestrian access and safety and consideration of opportunities to integrate cycleway and pedestrian elements with surrounding networks;
- construction traffic and transport impacts of the proposal (including ancillary facilities) and associated management measures, in particular:
    - impacts on the road network (including safety and level of service, parking, pedestrian and cyclist access, and disruption to public transport services and access to properties),
    - route identification and suitability for heavy vehicles, and scheduling of transport movements, particularly movements outside standard construction hours,
    - the number, frequency and size of construction related vehicles (both light and heavy vehicles),

- the nature of existing traffic on construction access routes (including consideration of peak traffic times),
- the need to close, divert or otherwise reconfigure elements of the road network associated with construction of the proposal,
- having reference to the cumulative construction impacts of other infrastructure preparing for or commencing construction.

There are areas of particular concern where we advise that the EIS does not satisfy these requirements. These include:

- The strategic traffic modelling is inconsistent. In particular, the traffic forecasts for average weekday traffic in the New M5 are excessively high when compared to the morning peak period flows. These overly high daily forecasts adversely affect the economic and financial assessment of the project.
- The traffic forecasts appear to include the assumption that the M5 East is tolled. This is an un-tolled road and is not part of the project presented to the government. The toll assumed for the M5 East has not been stated in the EIS report.
- The upgrade of Campbell Road/Street and Euston Road results in significant diversions of traffic from the Princes Highway to Euston Road. The implications of this have not been addressed in the EIS.

This and other issues are discussed later in this report.

4. Forecast Traffic Flows

This chapter presents the forecast traffic flows from the EIS relevant to the City of Sydney. Chapter 5 presents a critique of the forecasts.

Forecasts of average weekday and peak period flows have been reported in the EIS. The Sydney Motorway Corporation has provided additional information in relation to flows in the vicinity of the St Peters interchange.

The following scenarios are reported:

- Year 2021 without the New M5.
- Year 2021 with the New M5.
- Year 2031 without the New M5.
- Year 2031 with the New M5.
- Year 2031 with the New M5 plus the completion of Stage 3 of WestConnex plus the Sydney Gateway and the Southern Extension.

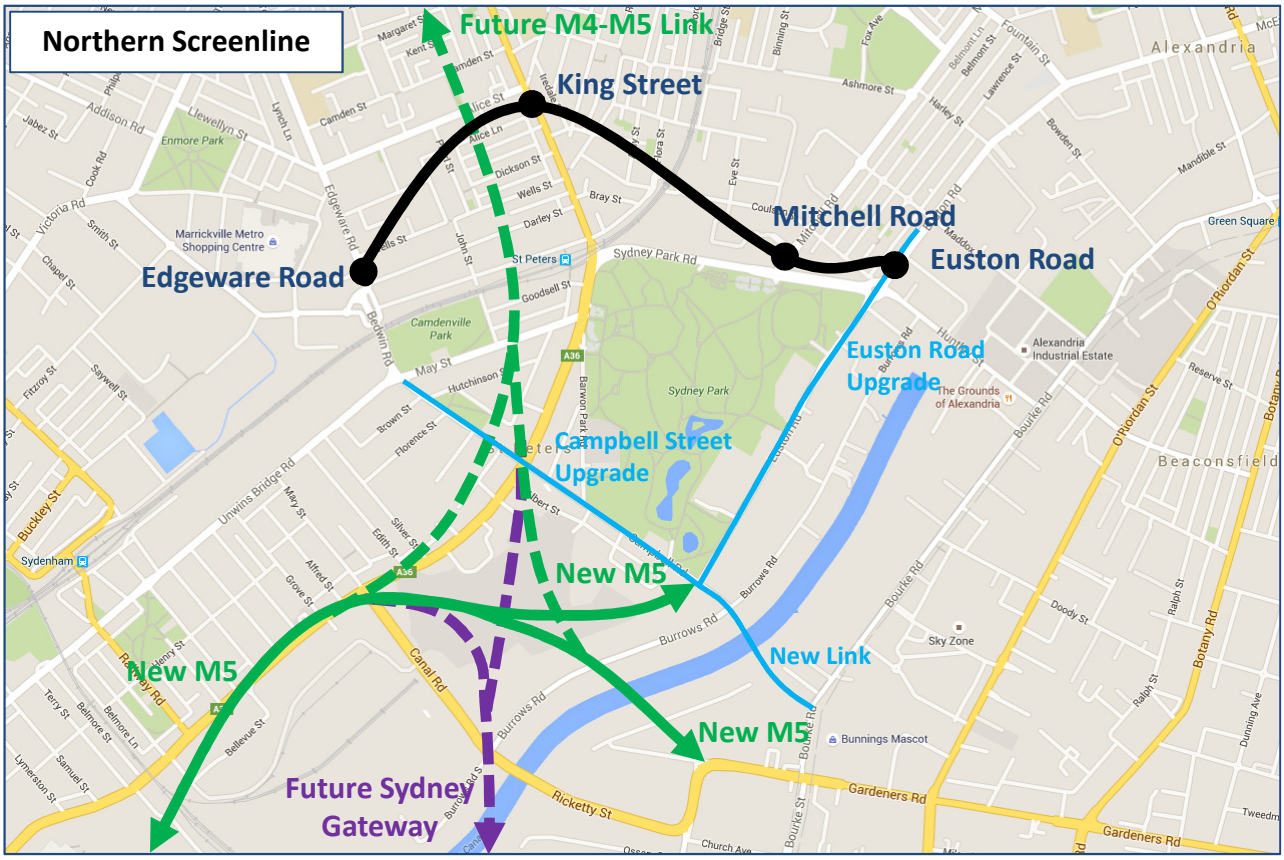
The Southern Extension in the last scenario is not part of the WestConnex project at this stage. For ease of understanding we refer to this scenario with the addition of the WestConnex Stage 3, Sydney Gateway and Southern Extension from the New M5 as "WestConnex-Plus".

4.1. Screenlines

Traffic flows have been collated for two screenlines relevant to the City of Sydney local government area. The screenlines are shown in Figure 4-1. They include the following roads:

- Northern Screenline:
    - Edgeware Road, west of Edinburgh Road
    - King Street, south of Alice Street
    - Mitchell Road, north of Sydney Park Road
    - Euston Road, north of Sydney Park Road

- Eastern Screenline:
    - Princes Highway
    - New M5
    - Marsh Street
    - M5 East Motorway
    - General Holmes Drive



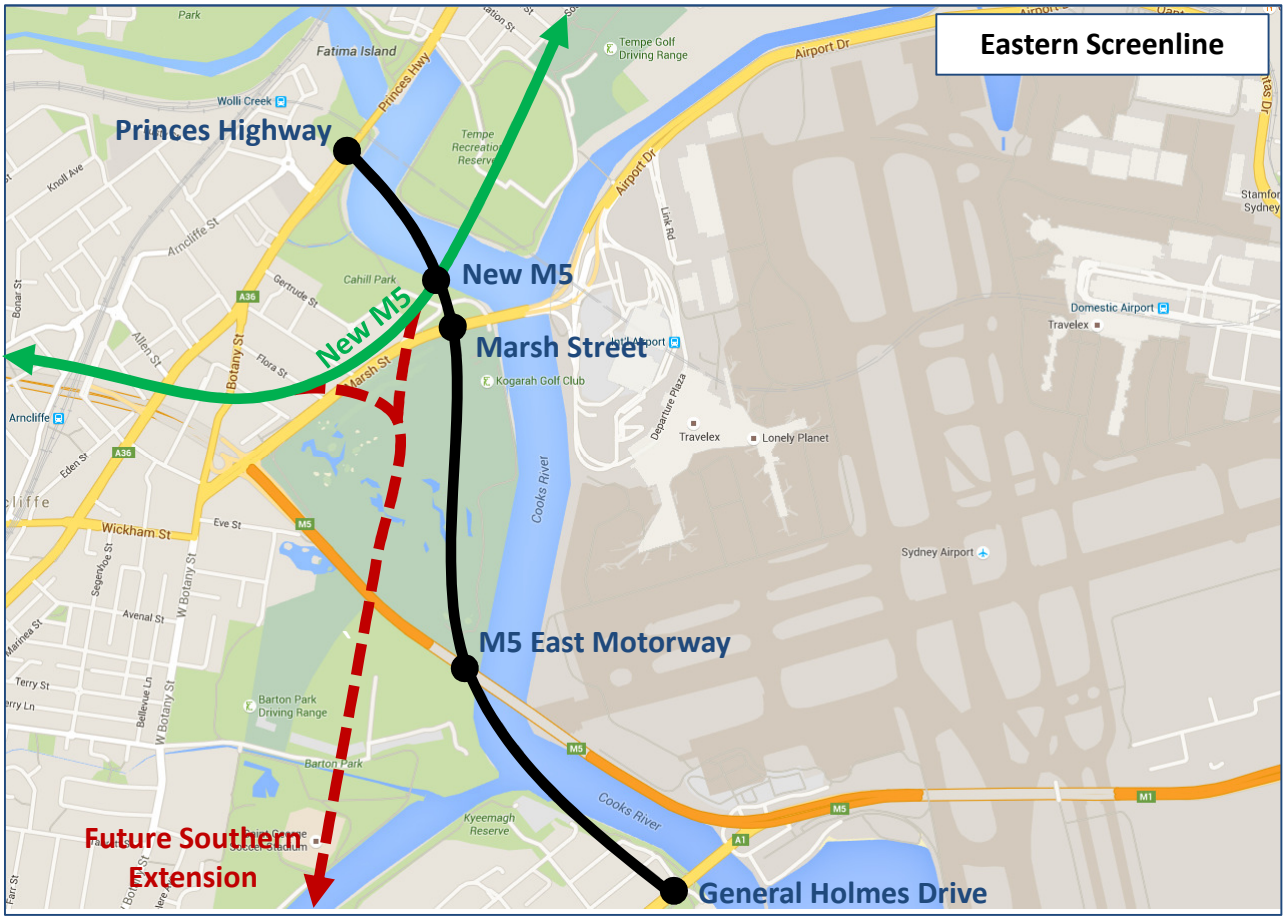


Figure 4-1: Screenlines

Table 4-1, Table 4-2, and Table 4-3 present the forecast morning, evening, and average weekday traffic flows for 2021 and 2031 for the two screenlines. The forecasts are presented graphically in the following pages as follows:

- Figure 4-2: Year 2014/15 Traffic Volumes (2-Way)
- Figure 4-3: Year 2021 Forecast Average Weekday Traffic (2-Way)
- Figure 4-4: Year 2031 Forecast Average Weekday Traffic with New M5 only (2-Way)
- Figure 4-5: Year 2031 Forecast Average Weekday Traffic with all Projects (2-Way)

Additional figures showing forecast morning and evening peak hour traffic flows are contained in Appendix A.

Screenline / Road Location	Direction	2014/15 AM Peak	2021 AM Peak			2031 AM Peak		
			Without New M5	With New M5 Only	Change	Without New M5	With full Westconnex and Southern Extension	Change
			veh/hr	veh/hr	%	veh/hr	veh/hr	%
Northern Screenline								
Edgeware Road, west of Edinburgh Road	N/B	670	720	780	8%	760	820	8%
	S/B	730	770	910	18%	830	920	11%
King Street, south of Alice Street	N/B	1019	880	800	-9%	1,100	870	-21%
	S/B	781	560	620	11%	450	730	62%
Mitchell Road, north of Sydney Park Road	N/B	706	395	488	24%	506	578	14%
	S/B	394	417	484	16%	600	425	-29%
Euston Road, north of Sydney Park Road	N/B	1220	1,050	1,950	86%	990	2,120	114%
	S/B	503	790	1,110	41%	970	1,580	63%
Total	**N/B**	**3,615**	**3,045**	**4,018**	**32%**	**3,356**	**4,388**	**31%**
	S/B	**2,408**	**2,537**	**3,124**	**23%**	**2,850**	**3,655**	**28%**
Eastern Screenline								
Princes Highway, south of the Cooks River	E/B	2740	2,910	2,880	-1%	3,010	2,545	-15%
	W/B	1150	1,570	1,400	-11%	1,880	693	-63%
New M5, at the Cooks River	E/B	0	0	1,270	n.a.	0	3,537	n.a.
	W/B	0	0	510	n.a.	0	2,016	n.a.
Marsh Street, at the Cooks River	E/B	3000	3,650	3,390	-7%	3,820	3,363	-12%
	W/B	1790	2,020	1,980	-2%	2,320	2,461	6%
M5 East, at the Cooks River	E/B	3110	3,220	2,660	-17%	3,190	3,488	9%
	W/B	1910	2,440	1,820	-25%	2,690	2,358	-12%
General Holmes Drive, at the Cooks River	E/B	4400	4,660	4,670	0%	4,890	4,932	1%
	W/B	1470	1,740	1,900	9%	2,130	2,404	13%
Total	**N/B**	**10,510**	**11,530**	**11,990**	**4%**	**11,900**	**15,320**	**29%**
	S/B	**5,170**	**6,200**	**6,210**	**0%**	**7,140**	**9,239**	**29%**

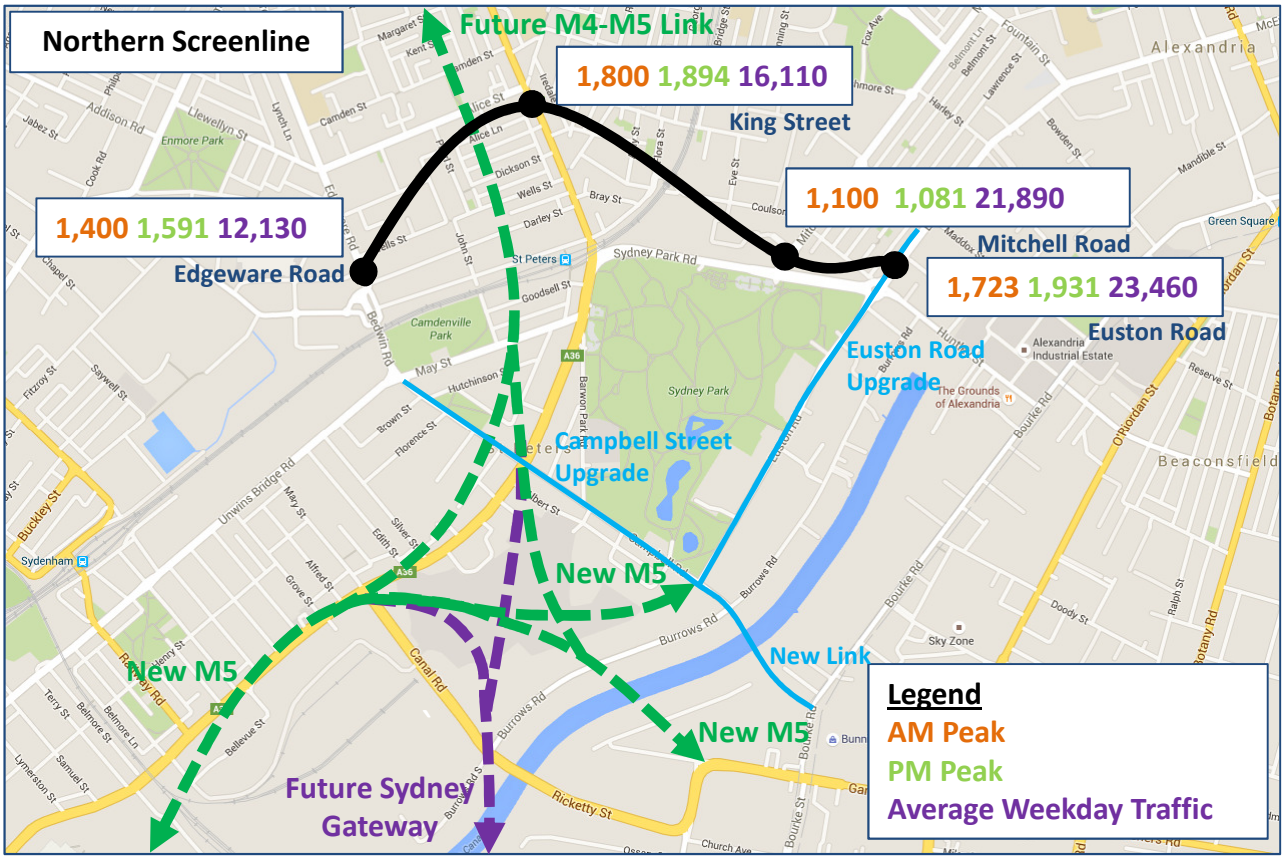
Table 4-1: Morning Peak Hour Traffic Forecasts

Screenline / Road Location	Direction	2014/15 PM Peak	2021 PM Peak			2031 PM Peak		
			Without New M5	With New M5 Only	Change	Without New M5	With full Westconnex and Southern Extension	Change
Northern Screenline			**veh/hr**	**veh/hr**	**%**	**veh/hr**	**veh/hr**	**%**
Edgeware Road, west of Edinburgh Road	N/B	814	1,060	1,090	3%	1,030	1,110	8%
	S/B	777	830	1,030	24%	730	1,040	42%
King Street, south of Alice Street	N/B	953	830	910	10%	890	940	6%
	S/B	941	1,030	1,010	-2%	980	1,210	23%
Mitchell Road, north of Sydney Park Road	N/B	504	681	645	-5%	736	864	17%
	S/B	577	446	421	-6%	396	303	-23%
Euston Road, north of Sydney Park Road	N/B	597	820	1,280	56%	780	1,530	96%
	S/B	1334	1,340	1,940	45%	1,500	2,160	44%
Total	**N/B**	**2,868**	**3,391**	**3,925**	**16%**	**3,436**	**4,444**	**29%**
	S/B	**3,629**	**3,646**	**4,401**	**21%**	**3,606**	**4,713**	**31%**
Eastern Screenline								
Princes Highway, south of the Cooks River	E/B	1770	2,150	2,140	0%	2,490	1,012	-59%
	W/B	2740	3,100	3,050	-2%	3,300	2,436	-26%
New M5, at the Cooks River	E/B	0	0	750	n.a.	0	2,002	n.a.
	W/B	0	0	1,380	n.a.	0	5,146	n.a.
Marsh Street, at the Cooks River	E/B	1590	1,970	1,590	-19%	2,450	2,665	9%
	W/B	2130	2,760	2,550	-8%	3,070	3,003	-2%
M5 East, at the Cooks River	E/B	2580	2,960	2,630	-11%	3,410	3,483	2%
	W/B	3230	3,450	2,780	-19%	3,510	2,574	-27%
General Holmes Drive, at the Cooks River	E/B	2030	2,350	2,390	2%	2,610	2,801	7%
	W/B	4130	4,310	4,370	1%	4,520	4,430	-2%
Total	**N/B**	**6,200**	**7,280**	**7,360**	**1%**	**8,470**	**10,950**	**29%**
	S/B	**9,490**	**10,520**	**11,080**	**5%**	**11,100**	**15,153**	**37%**

Table 4-2: Evening Peak Hour Traffic Forecasts

	2014/15 AWT	2021 AWT			2031 AWT				
Screenline / Road Location	**Existing**	**Without New M5**	**With New M5 Only**	**Change**	**Without New M5**	**With New M5 Only**	**Change**	**With full WestConnex and Southern Extension**	**Change**
Northern Screenline									
Edgeware Road, west of Edinburgh Road	12,130	12,810	13,380	4%	13,230	13760	4%	13600	3%
King Street, south of Alice Street	16,110	21,310	21,980	3%	26,920	27080	1%	26420	-2%
Mitchell Road, north of Sydney Park Road	21,890	26,790	15,310	-43%	30,300	19230	-37%	20430	-33%
Euston Road, north of Sydney Park Road	23,460	29,110	50,520	74%	32,380	54820	69%	58390	80%
Total	**73,590**	**90,020**	**101,190**	12%	**102,830**	**114,890**	12%	**118,840**	16%
Eastern Screenline									
Princes Highway, south of the Cooks River	75,500	72,415	68,388	-6%	79,085	75,628	-4%	24,950	-68%
New M5, at the Cooks River	–	0	29,339	n.a.	–	34,748	n.a.	81,739	n.a.
Marsh Street, at the Cooks River	64,500	75,979	66,723	-12%	92,805	86,501	-7%	97,563	5%
M5 East, at the Cooks River	79,000	101,554	80,775	-20%	109,634	95,208	-13%	86,763	-21%
General Holmes Drive, at the Cooks River	85,500	95,018	99,706	5%	104,804	108,233	3%	101,722	-3%
Total	**304,500**	**344,966**	**344,931**	0%	**386,328**	**400,318**	4%	**392,737**	2%

Table 4-3: Average Weekday Traffic Forecasts



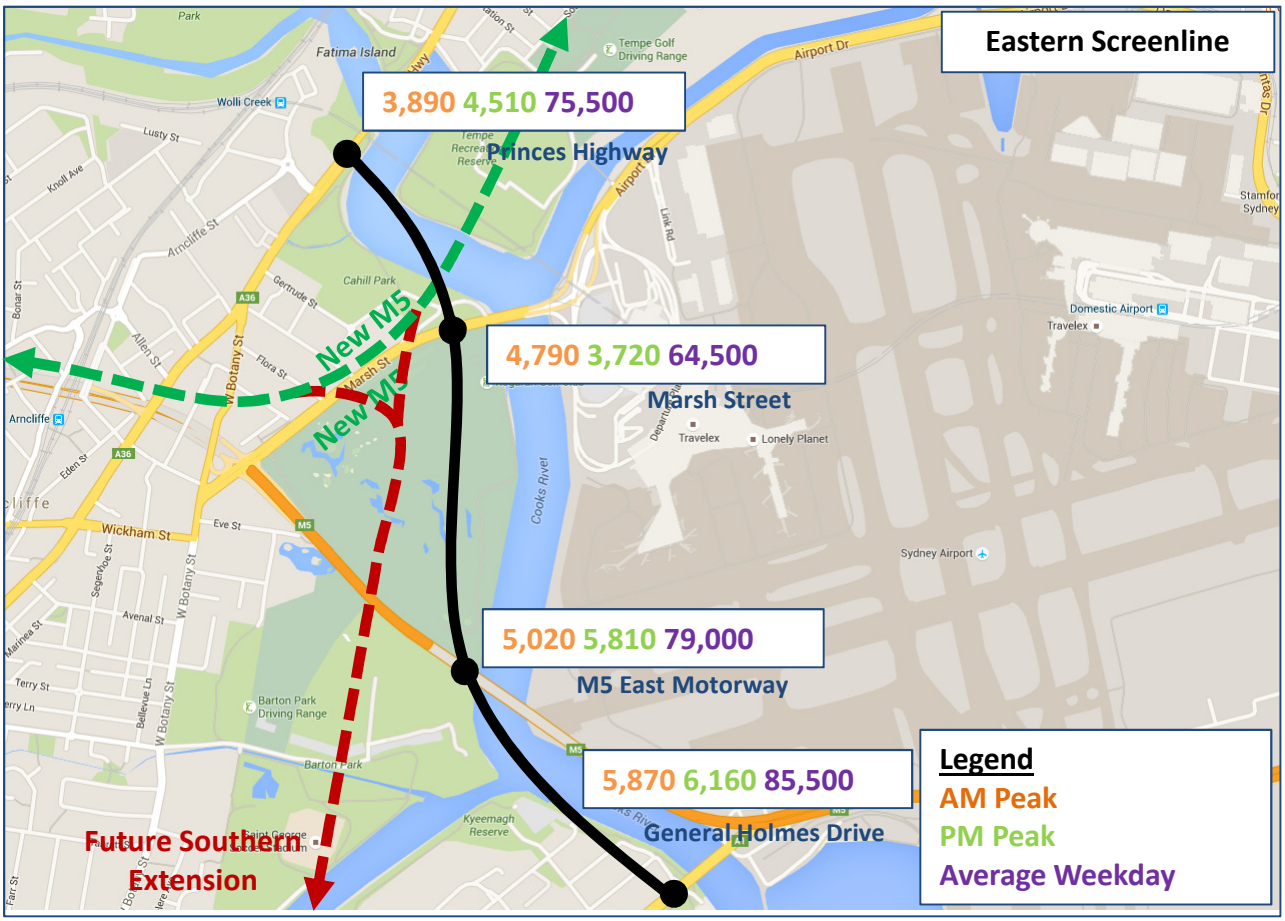
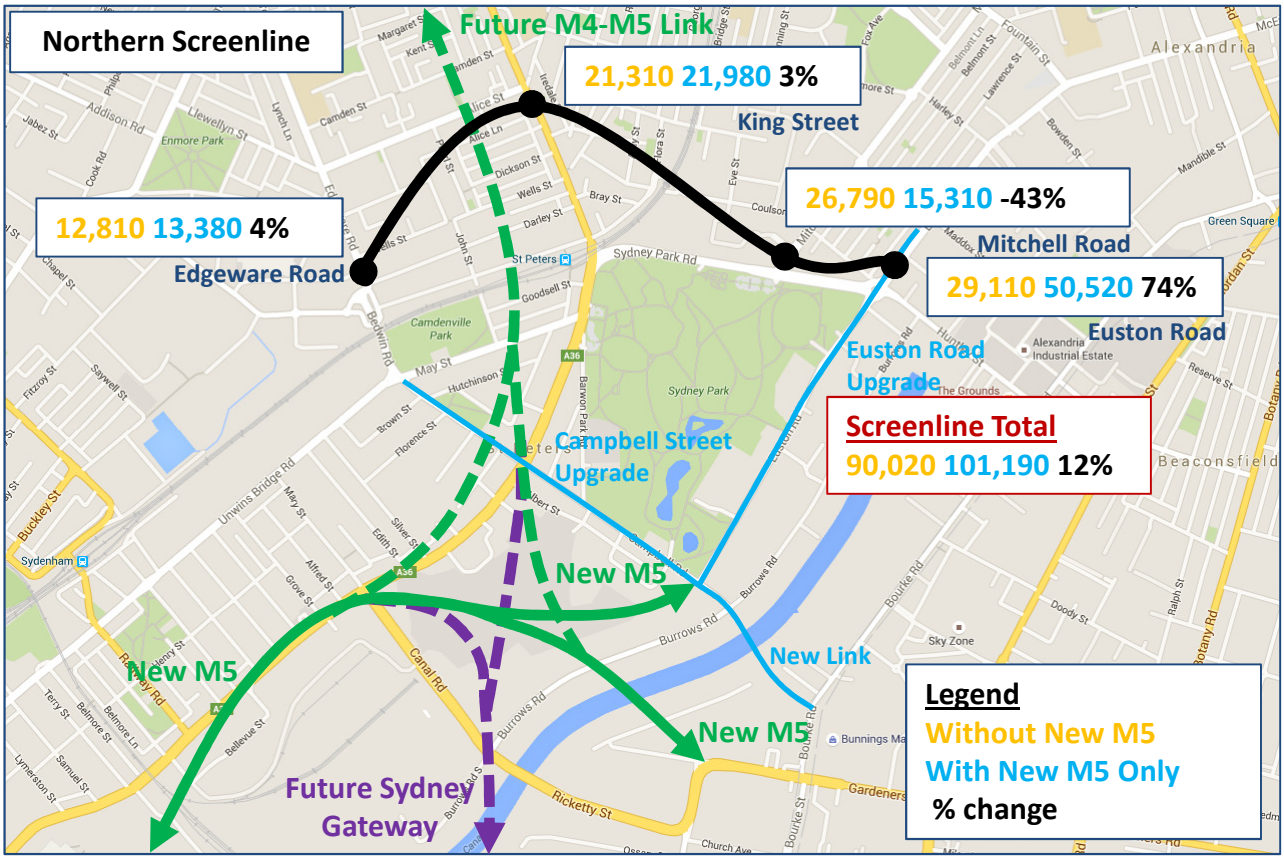


Figure 4-2: Year 2014/15 Traffic Volumes (2-Way)



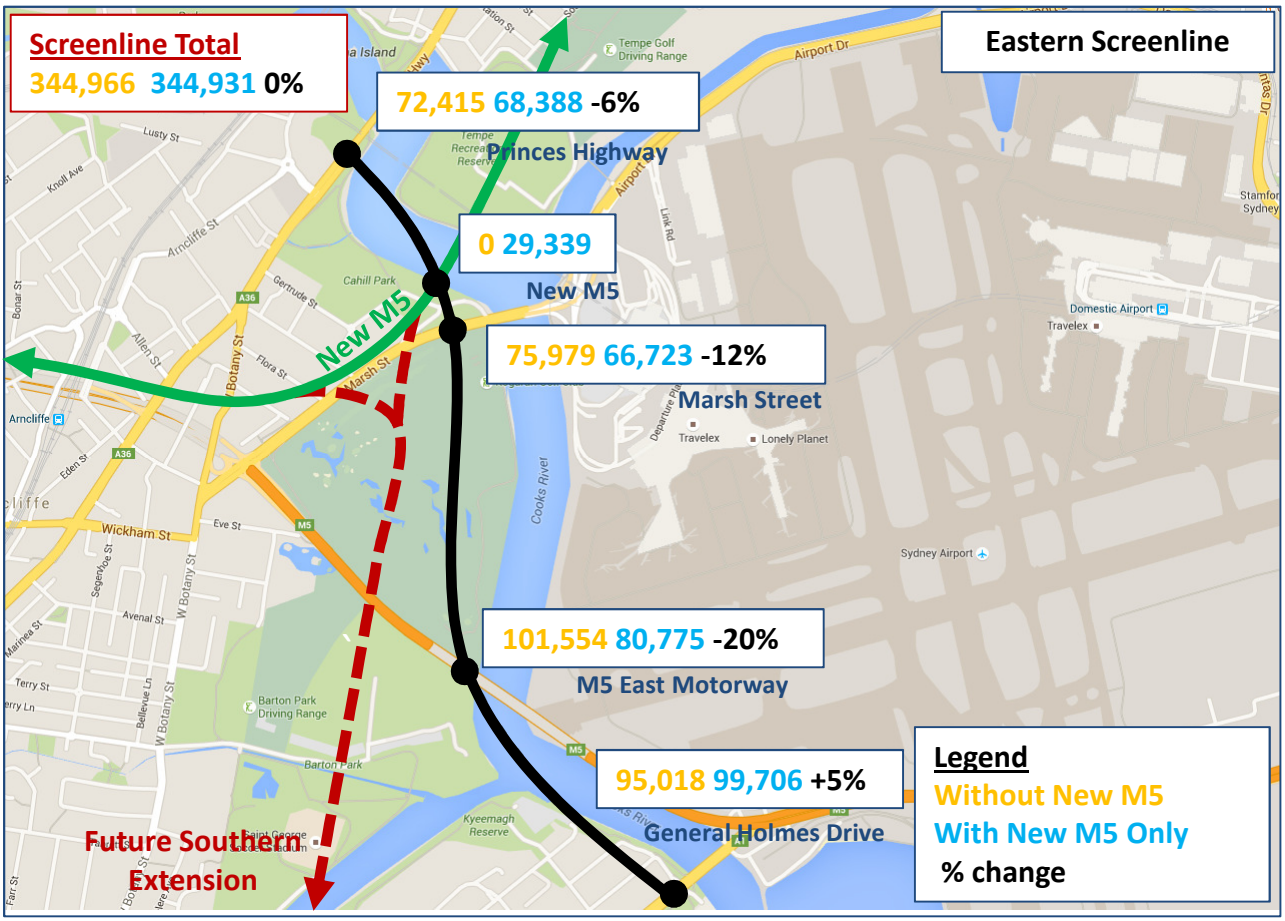
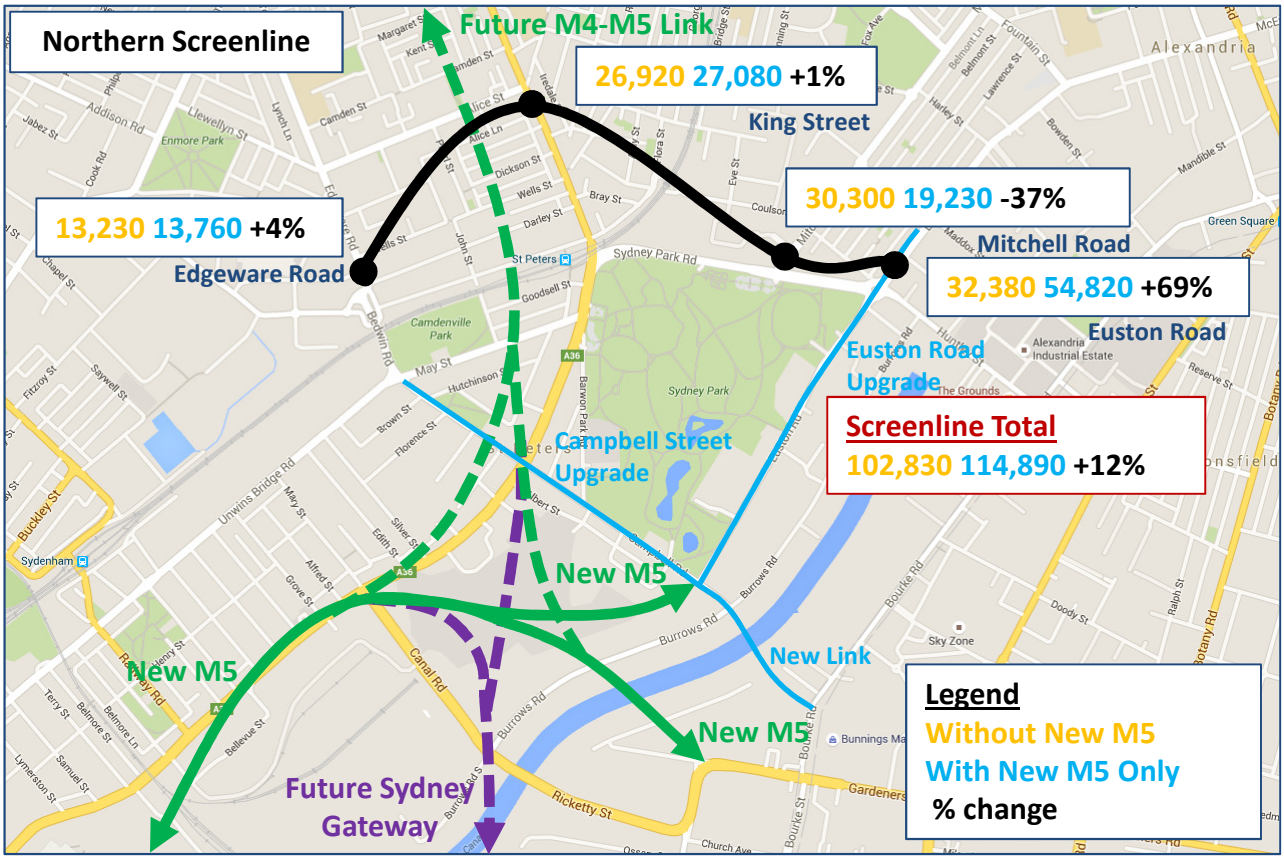


Figure 4-3: Year 2021 Forecast Average Weekday Traffic (2-Way)



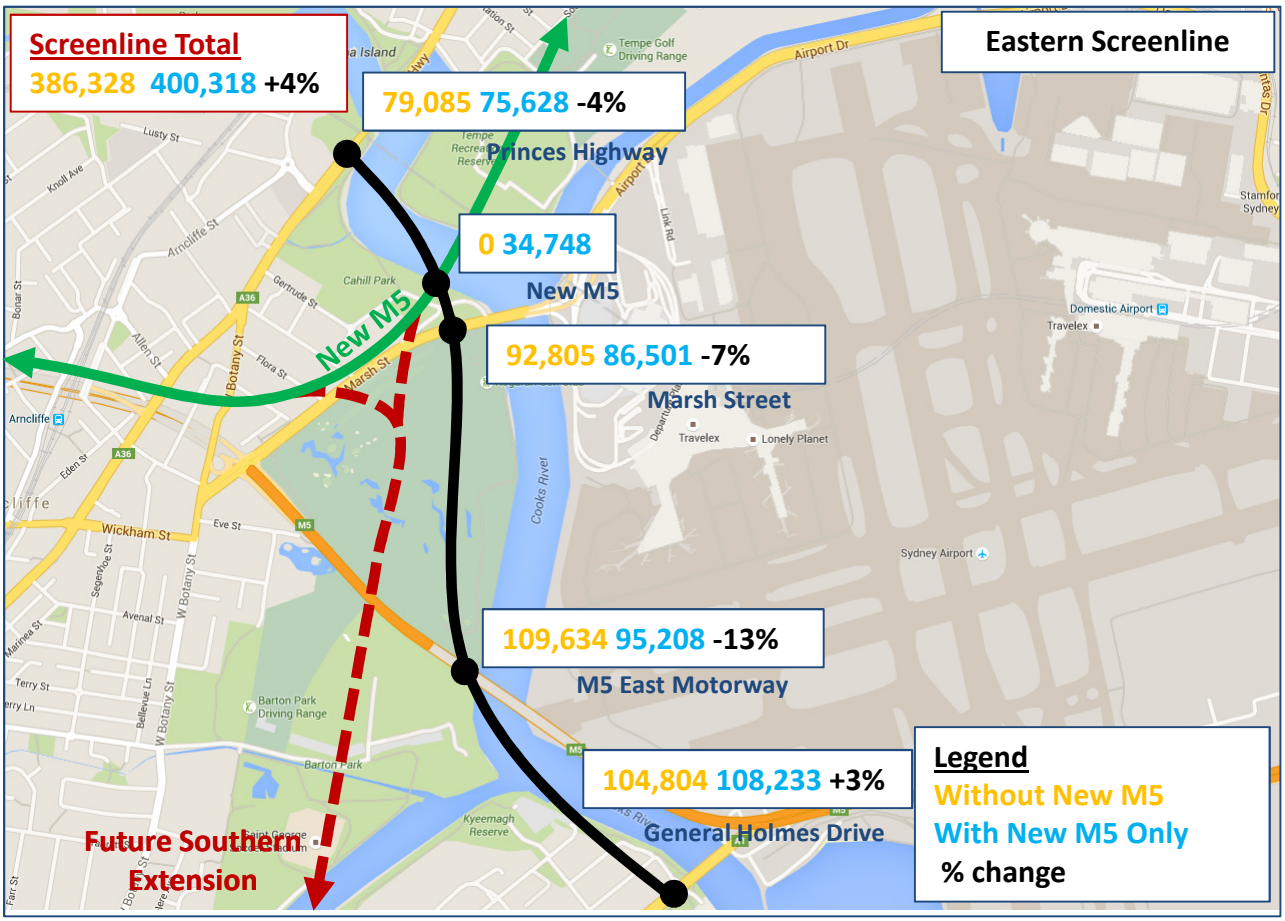
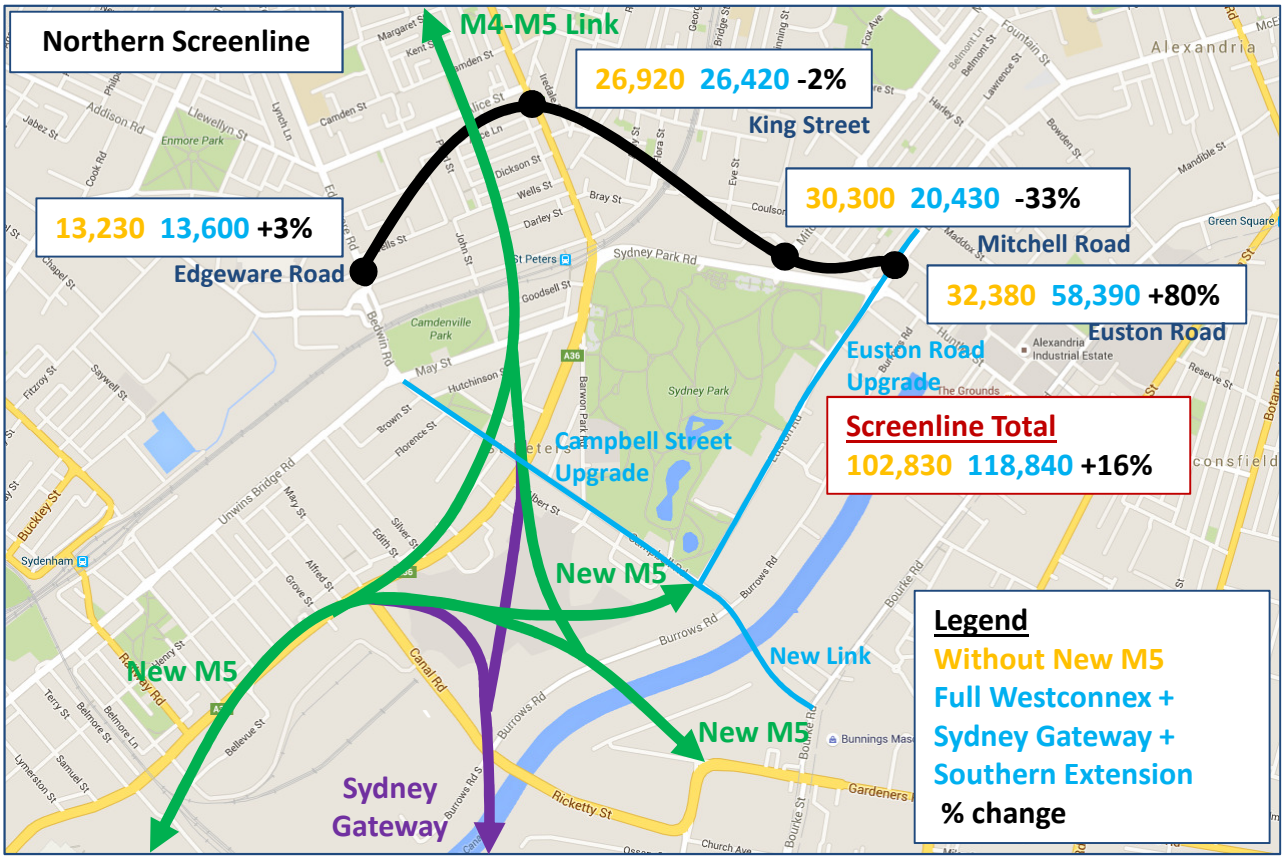


Figure 4-4: Year 2031 Forecast Average Weekday Traffic with New M5 only (2-Way)



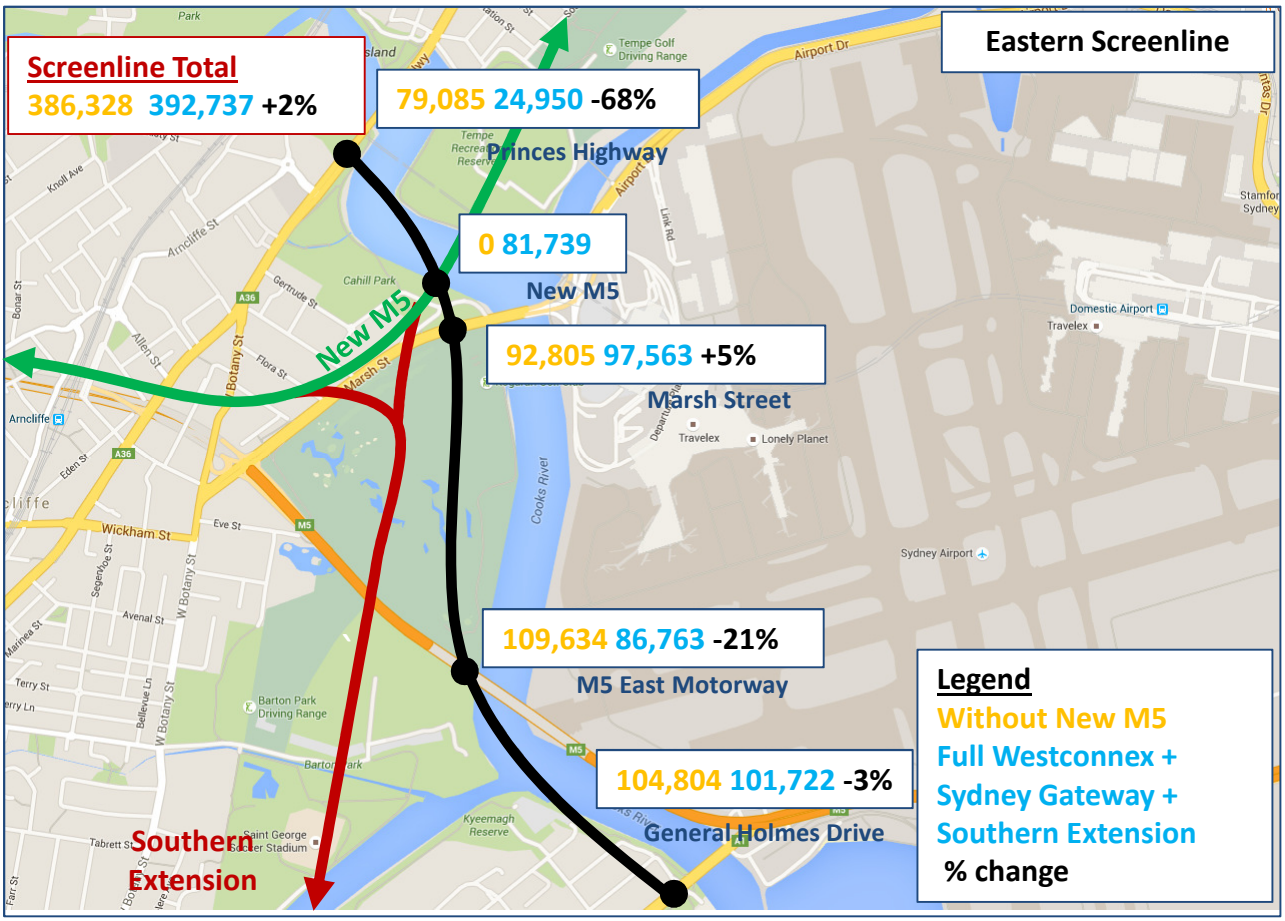


Figure 4-5: Year 2031 Forecast Average Weekday Traffic with WestConnex-Plus (2-Way)

4.2. Traffic Flows on Specific Roads

The following tables present the forecast traffic flows on Euston Road, King Street, and Mitchell Road.

Table 4-4: Forecast Traffic Flows on Euston Road, north of Sydney Park Road

Scenario	Direction	Morning Peak Hour	Evening Peak Hour	Average Weekday Traffic	AWT vs. 2014
Current (2014)	Northbound	1,220	597	-	n.a.
	Southbound	503	1,334	-	n.a.
	Two way	1,723	1,931	23,460	n.a.
2021 without New M5	Northbound	1,050	820	-	-
	Southbound	790	1,340	-	-
	Two way	1,840	2,160	29,110	24%
2021 with New M5	Northbound	1,950	1,280	-	-
	Southbound	1,110	1,940	-	-
	Two way	3,060	3,220	50,520	115%
2031 without New M5	Northbound	990	780	-	-
	Southbound	970	1,500	-	-
	Two way	1,960	2,280	32,380	38%
2031 with full WestConnex	Northbound	2,120	1,530	-	-
plus Southern Extension	Southbound	1,580	2,160	-	-
	Two way	3,700	3,690	58,390	149%

Table 4-5: Forecast Traffic Flows on King Street, south of Alice Street

Scenario	Direction	Morning Peak Hour	Evening Peak Hour	Average Weekday Traffic	AWT vs. 2014
Current (2014)	Northbound	1,019	953	-	n.a.
	Southbound	781	941	-	n.a.
	Two way	1,800	1,894	16,110	n.a.
2021 without New M5	Northbound	880	830	-	-
	Southbound	560	1,030	-	-
	Two way	1,440	1,860	21,310	32%
2021 with New M5	Northbound	800	910	-	-
	Southbound	620	1,010	-	-
	Two way	1,420	1,920	21,980	36%
2031 without New M5	Northbound	1,100	890	-	-
	Southbound	450	980	-	-
	Two way	1,550	1,870	13,230	-18%
2031 with full WestConnex	Northbound	870	940	-	-
plus Southern Extension	Southbound	730	1,210	-	-
	Two way	1,600	2,150	13,760	-15%

Table 4-6: Forecast Traffic Flows on Mitchell Road, north of Sydney Park Road

Scenario	Direction	Morning Peak Hour	Evening Peak Hour	Average Weekday Traffic	AWT vs. 2014
Current (2014)	Northbound	706	504	-	n.a.
	Southbound	394	577	-	n.a.
	Two way	1,100	1,081	21,890	n.a.
2021 without New M5	Northbound	395	681	-	-
	Southbound	417	446	-	-
	Two way	812	1,127	26,790	22%
2021 with New M5	Northbound	488	645	-	-
	Southbound	484	421	-	-
	Two way	972	1,066	15,310	-30%
2031 without New M5	Northbound	506	736	-	-
	Southbound	600	396	-	-
	Two way	1,106	1,132	30,300	38%
2031 with full WestConnex	Northbound	578	864	-	-
plus Southern Extension	Southbound	425	303	-	-
	Two way	1,003	1,167	20,430	-7%

4.3. Select Link Flows

The Sydney Motorway Authority has provided Councils with plots of "select link flows" for the morning and evening peaks. Select link plots show where the traffic is coming from and going to for a particular location. Figure 4-6 to Figure 4-9 present the traffic forecast to be using Euston Road north of Sydney Park Road and the New M5 in 2021 during the morning and evening peak hours.

Cautionary Note: The percentages shown in the figures are indicative only. They have been scaled from plots supplied by the Sydney Motorway Corporation.

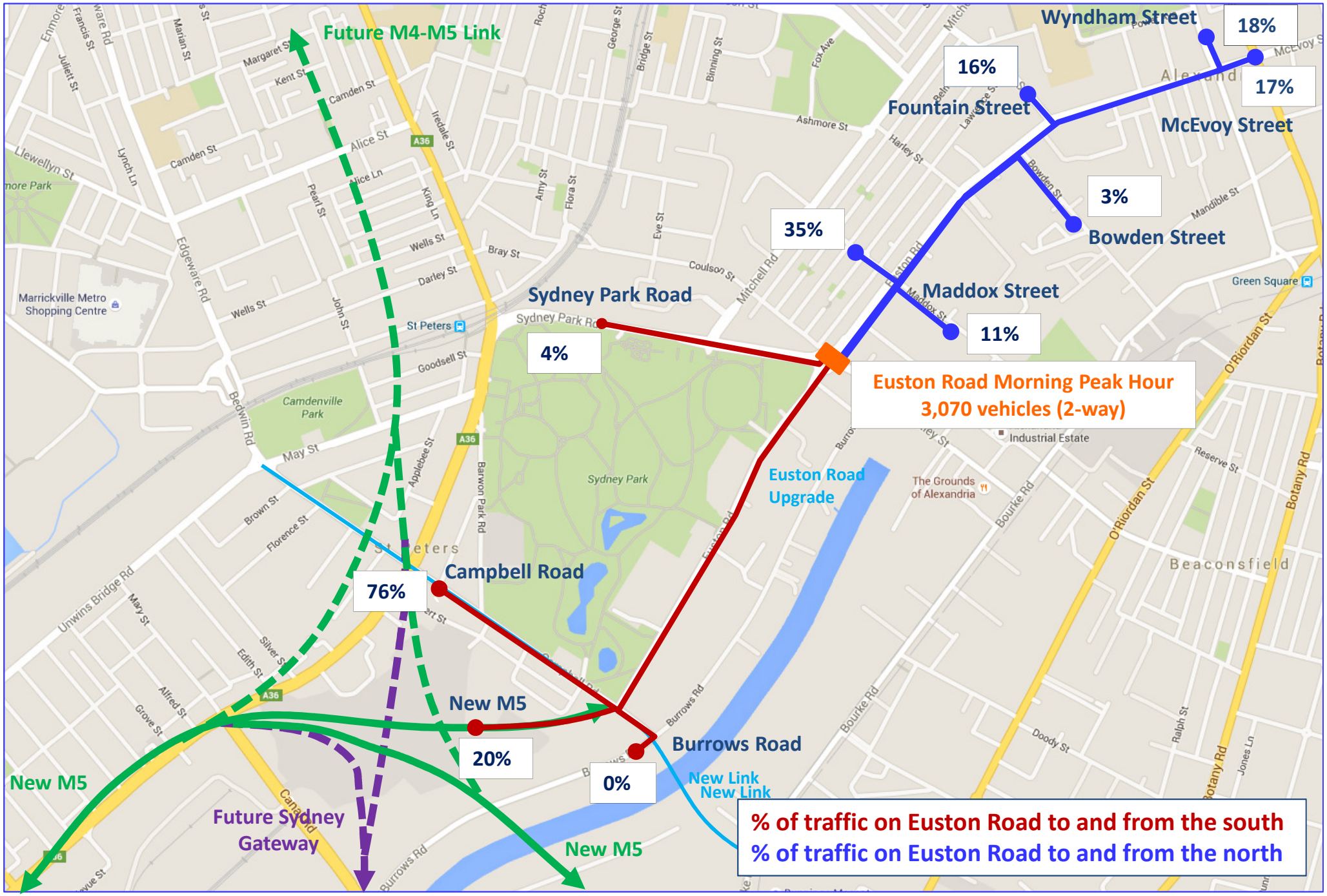


Figure 4-6: Select Link – Euston Road 2021 AM Peak Flows (two-way)

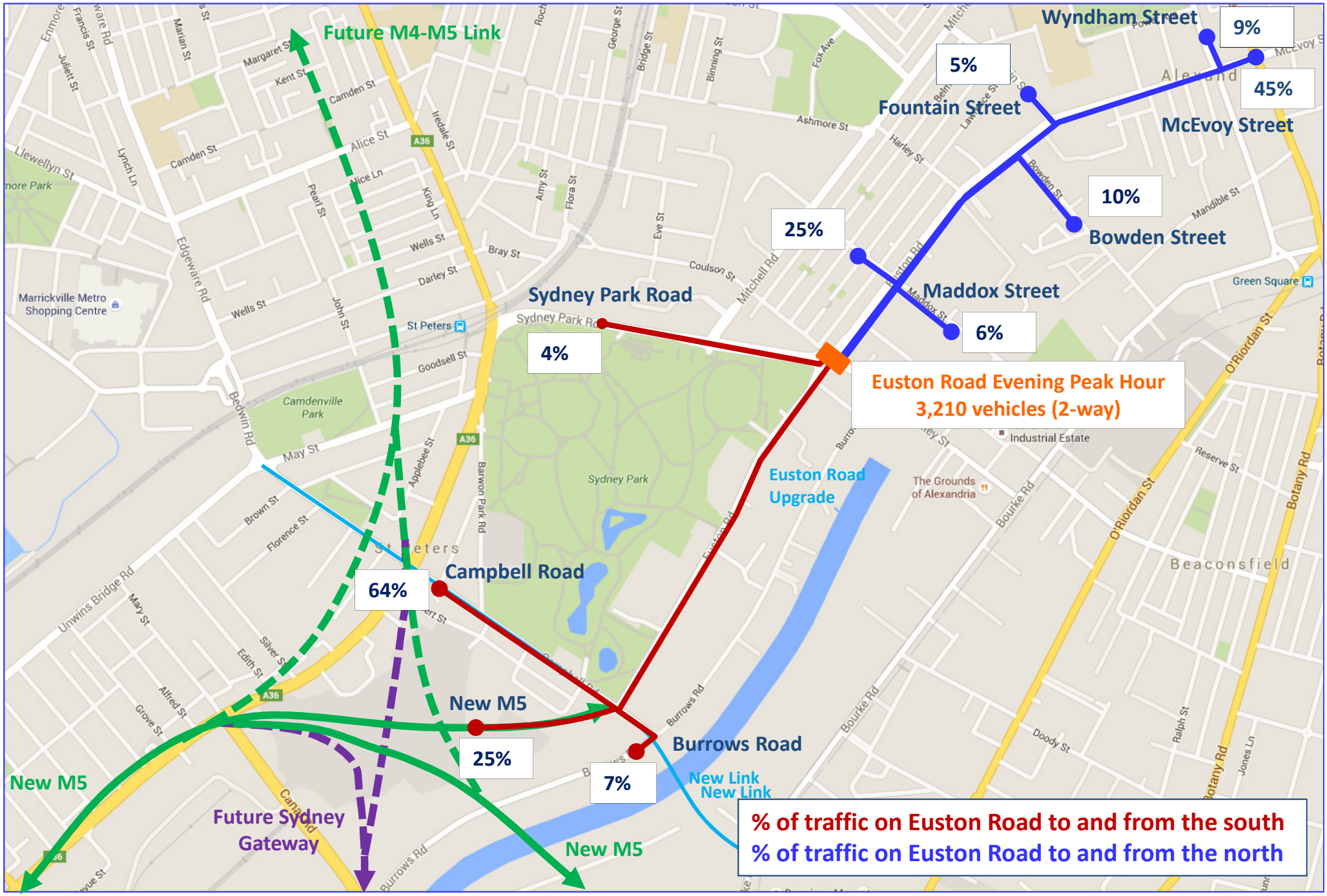


Figure 4-7: Select Link – Euston Road 2021 PM Peak Flows (two-way)

Figure 4-8: Select Link – New M5 2021 AM Peak Flows (two-way)

Figure 4-9: Select Link – New M5 2021 PM Peak Flows (two-way)

4.4. Peak to Daily Convert Factors

Comparison of morning peak to daily convert factors are a useful tool to determine the stability of the traffic model and to ensure that one can have confidence in daily forecasts which are used for revenue models. Morning peak forecasts are the most stable aspect of traffic forecasting as they are primarily based on solid data from the Australian Census plus data from the NSW Bureau of Transport Statistics. Traffic forecasts for other times of the day are more difficult to produce as travel patterns differ considerably by day or week and time. The morning peak to daily factor does not vary significantly for similar types of roads. Tolled roads tend to have a lower daily factor as diversions to alternate routes are higher outside of peak periods. That is, there is a lower tendency to use tolled roads outside of peak periods. Table 4-7 presents peak to daily convert factors associated with the forecasts in the EIS.

Table 4-7: Forecast Peak to Daily Factors

Screenline / Road Location	AM Peak to AWT Factor		
	Existing	2021 Without New M5	2021 With New M5 Only
Northern Screenline			
Edgeware Road, west of Edinburgh Road	8.7	8.6	7.9
King Street, south of Alice Street	9.0	14.8	15.5
Mitchell Road, north of Sydney Park Road	19.9	33.0	15.8
Euston Road, north of Sydney Park Road	13.6	15.8	16.5
Total	**12.2**	**16.1**	**14.2**
Eastern Screenline			
Princes Highway, south of the Cooks River	19.4	16.2	16.0
New M5, at the Cooks River	n.a.	n.a.	16.5
Marsh Street, at the Cooks River	13.5	13.4	12.4
M5 East, at the Cooks River	15.7	17.9	18.0
General Holmes Drive, at the Cooks River	14.6	14.8	15.2
Total	**15.6**	**15.5**	**15.3**

5. Critique of Traffic Forecasts

5.1. General Comments

There are inconsistencies within the forecasts which should be addressed. In relation to the assessment of impacts on the City of Sydney examples of these inconsistencies are:

1. Morning peak hour traffic on King Street is forecast to fall between 2014/15 and 2021 without the New M5 (Table 4-1).
2. Northbound morning peak hour traffic across the northern screenline is forecast to fall between 2014/15 and 2021 without the New M5 (Table 4-1).

The peak to daily convert factors for the screenlines in in Table 4-7 range from 12.2 to 16.1. By way of comparison Roads and Traffic Authority (RTA) counts conducted in 2006 are presented below in Table 5-1. The 2006 counts are presented as they include traffic flows on the M4 Motorway when it was tolled.

Table 5-1: Historical Peak to Daily Factors

Location	Peak (8am-9am)	Daily	daily/peak
City Road, South of Cleveland Street	2,995	41,486	13.9
Princess Highway, South of Yelverton Street	4,673	58,043	12.4
Princess Highway at Cooks River	10,619	66,929	6.3
King Street, South of Enmore Road	1,592	23,029	14.5
General Holmes Drive, Northern end of Tunnel	11,867	155,708	13.1
Marsh Street at Cooks River	4,219	55,448	13.1
M4 Motorway at Salesyard Channel Bridge	6,542	89,115	13.6

From the above table it can be seen that peak to average weekday traffic factors are around 12 to 14. The factors from the EIS (Table 4-7) range from around 8 to 20. This indicates that the model forecasts for daily traffic are not stable.

Of particular concern is the factor for the New M5 which is 16.5 in 2021. This is well in excess of what is experienced on other motorways. The M4 at its peak had a factor of 13.6 as seen in the table above. The implications of this are that the daily forecasts for the New M5 are likely to be excessively high. This in turn will affect the financial assessment of the motorway.

It is not made clear in the EIS but it appears that the modelling includes tolling of the existing M5 East Motorway. If this is the case the EIS needs to assess the effects of this new toll separate to the New M5.

The above (and other illogical changes in traffic flows) brings into question the validity of the forecasts in relation to route choice and how growth is handled in the models. Nevertheless, it is accepted that there can be discrepancies in models that do not affect the overall picture when planning for major roads. The critique below is based on acceptance of the general trends in the forecasts but not necessarily the route choices.

5.2. Year 2021 with and without the New M5

The forecasts indicate the following changes in daily traffic flows:

- The total daily traffic travelling between the north and south across the northern screenline increases by 12% (11,170 vehicles).
- The total daily traffic travelling between the north and south across the eastern screenline decreases by an insignificant amount.

In relation to the eastern screenline:

- Daily traffic flows on Marsh Street fall by 12% (9,256 vehicles).
- Daily traffic flows on The Princes Highway fall by 6% (4,027 vehicles).
- Daily traffic flows on the existing M5 fall by 20% (20,779 vehicles).
- Daily traffic flows on General Holmes Drive rise by 5% (4,688 vehicles).

The reduction in traffic flows on Marsh Street, The Princes Highway, and the existing M5 East amounts to around 34,000 vehicles of which around 29,500 are now using the new M5 and being directed to and from Euston Road and other nearby streets.

The increase in traffic on General Holmes Drive is difficult to understand. It may simply be a modelling discrepancy over-compensating for congestion somewhere further south.

In relation to the northern screenline the new M5:

- Daily traffic flows on King Street increase by 3% (610 vehicles).
- Daily traffic flows on Mitchell Road fall by 43% (11,480 vehicles).
- Daily traffic flows on Euston Road increase by 74% (21,410 vehicles).

Morning and evening traffic flows on Euston Road north of Sydney Park Road are forecast to increase significantly in the peak directions. An additional 900 vehicles per hour northbound in the morning and 600 southbound in the evening are forecast. Mitchell Road is forecast to have an additional 93 vehicles northbound in the morning but a reduction of 25 vehicles in the evening. Peak direction traffic flows on King Street are forecast to fall slightly.

The traffic demands forecast for Euston Road will disperse to other streets. Whilst Euston Road is proposed to be upgraded this upgrade is only to just north of Sydney Park Road. Traffic would have to disperse prior to and shortly after this point. The main alternative routes are Mitchell Road and King Street. It is our opinion that the modelled route choices have not accurately split the traffic between Euston Road, Mitchell Road, and King Street.

The select link plots for Euston Road (Figure 4-6 and Figure 4-7) indicate that the main demand for Euston Road is traffic to and from Campbell Road east of the Princes Highway (76 % AM, 62% PM) with most of the remainder being to and from the New M5 (20 % AM, 25% PM). Some of this traffic may already be accessing Euston Road via Canal Road and Burrows Road or Sydney Park Road. It appears that the upgrade of Campbell Road and Euston Road are effectively providing a new route into the CBD. Traffic on King Street reduces as a result. However, as seen in Figure 4-6 and Figure 4-7, local streets carry significant increase in traffic. Maddox, Fountain,

and Bowden Streets are particular examples (shown in blue). This distribution of additional traffic is of concern. Maddox Street feeds to Mitchell Street and Bourke Road. Fountain Street feeds to Swanson Street and Erskineville Road onto King Street and Enmore Rd. Bowden Street is a feeder to Bourke Road and also to Mandible Street.

It is our advice that the EIS for the New M5 does not address these issues. It is clear that local area traffic management measures will be required in the streets surrounding Euston Road should the New M5 project proceed.

The select link plots for the New M5 (Figure 4-8 and Figure 4-9) indicate that around 60% of the New M5 traffic uses Euston Road. Whilst this is a high proportion the amount of traffic associated with the New M5 is dwarfed by the diversions that occur from other roads to Euston Road.

5.3. Year 2031 with and without the new M5

5.3.1. 2031 With New M5 Only

The forecasts for 2031 with the New M5 only (no WestConnex Stage 3, Sydney Gateway or Southern Extension) show:

- The total daily traffic travelling across the northern screenline increases by 14% between 2021 and 2031 without the New M5.
- An additional 13% increase (compared to 2021 with no New M5) is forecast across the screenline with the New M5.
- The total daily traffic across the eastern screenline increases by 12% without the New M5 and 16% with only the New M5 The differences are not significant.

Traffic forecast for King Street increases by 26% without the New M5 and by 23% with the New M5. The differences are not significant. However, they do indicate that the New M5 does not provide significant relief to traffic growth on King Street.

Traffic flows Mitchell Road increase by 13% without the New M5 and by 26% with the New M5. This indicates that traffic congestion on Euston Road is resulting in diversions to Mitchell Road via Sydney Park Road. This highlights the need for a comprehensive traffic management program should the New M5 proceed.

5.3.2. 2031 with WestConnex-Plus

The addition of the WestConnex Stage 3, Sydney Gateway and Southern Extension to the New M5 results in a major change in traffic flows. We refer to this combination of projects below as “WestConnex-Plus”. It results in significant changes in traffic flows. Table 5-2 presents the relative changes in traffic flows that are forecasts to occur in 2031 with the New M5 and with WestConnex-Plus.

Table 5-2: Year 2031 WestConnex Impacts (Changes in daily traffic flows vs. no New M5)

Screenline / Road Location	With New M5 Only	With WestConnex - Plus
Northern Screenline		
Edgeware Road, west of Edinburgh Road	4%	3%
King Street, south of Alice Street	1%	-2%
Mitchell Road, north of Sydney Park Road	-37%	-33%
Euston Road, north of Sydney Park Road	69%	80%
Total	**12%**	**16%**
Eastern Screenline		
Princes Highway, south of the Cooks River	-4%	-68%
New M5, at the Cooks River	n.a.	n.a.
Marsh Street, at the Cooks River	-7%	5%
M5 East, at the Cooks River	-13%	-21%
General Holmes Drive, at the Cooks River	3%	-3%
Total	**4%**	**2%**

Some items to note:

- The total daily traffic travelling between the north and south across the northern screenline increases by 16% (16,010 vehicles) compared to the no New M5 scenario.
- The total daily traffic travelling between the north and south across the eastern screenline compared to the no New M5 scenario increases but by an insignificant amount.

In relation to the eastern screenline (compared to the no New M5 scenario):

- Daily traffic flows on Marsh Street rise by 5% (4,758 vehicles).
- Daily traffic flows on The Princes Highway fall by 68% (54,135 vehicles).
- Daily traffic flows on the existing M5 fall by 21% (22,871 vehicles).
- Daily traffic flows on General Holmes Drive fall by 3% (3,082 vehicles).

In relation to the northern screenline WestConnex-Plus (compared to the no New M5 scenario):

- Daily traffic flows on King Street decrease by 2% (500 vehicles).
- Daily traffic flows on Mitchell Road decrease by 33% (9,870 vehicles).
- Daily traffic flows on Euston Road increase by 80% (26,010 vehicles). This is greater than the scenario with just the New M5.

Changes across the eastern screenline in total are not significant. However, there is a major shift of traffic from the Princes Highway to the Southern Extension and the New M5. Traffic flows for the Princes Highway are forecast to fall to around 25,000 vehicles on weekdays. This is similar to what King Street is currently accommodating. It indicates that the Princes Highway could "in theory" be downgraded to 4 lanes with peak period clearways.

On the eastern screenline average weekday traffic on the New M5 is predicted to be increase by 47,000 vehicles with the completion of WestConnex-Plus. It is apparent that the Southern

Connection is required if the New M5 is to attract significant traffic flows. The New M5 EIS reports that weekday volumes on the Princes Highway are currently 75,500 vehicles and that this would rise to 79,085 vehicles by 2031 without the New M5. The increase is relatively low. It is difficult to see the logic that justifies the Southern Connection given that it simply takes traffic away from a route designed to accommodate this demand.

Overall, it is our opinion that the creation of the WestConnex-Plus network needs more investigation. In particular, justification of the New M5, the future role of the Princes Highway, and traffic impacts on Euston Road and the surrounding streets needs to be clearly established.

5.4. Induced Demand

Induced demand is the additional traffic generated as a result of providing more road space for travel. However, it could also be interpreted as releasing suppressed demand due to opening of travel opportunities through providing more road space. Nevertheless, the relationship between providing more road space for travel and the need to minimise excessive road use is controversial.

The New M5 EIS makes reference to induced demand in relation to public transport. However, it does no quantify induced demand. We have drawn on information from the EIS for the M4 East EIS in order to advise on the affects pf induced demand. This report contained the following statement for that project:

> *To calculate this induced travel demand, an elasticity approach was used to determine the number of new users and the number of public transport users who shift to car. The methodology used has been based on the New Zealand Transport Agency Economic Evaluation Manual (EEM) which contains a clear summary of the methods for applying an elasticity method for induced demand on a fixed matrix.*
>
> *Induced travel demand increases 2031 future year traffic volumes using WestConnex between two per cent and seven per cent, with the specific value varying across different sections of the project.*
>
> *This indicates that the majority of the induced travel demand is related to changes in trip distribution (the pattern of origin-destination combinations) within the assigned trip matrices.*

Similar information does not appear to be included in the New M5 EIS report. Nevertheless, it is apparent that the same procedure has been applied in the assessment of the New M5. The New Zealand Transport Agency Economic Evaluation Manual referred to above applies elasticities originally published in the “UK Design Manual for Roads and Bridges (1997)”. It is our view that these elasticities are outdated and not representative of conditions applicable to the proposed New M5.

It is our understanding that the forecasts used in the economic assessment incorporate the above assumptions in relation to induced demand. We advise that the implications of induced

demand have not been adequately assessed and that the forecasts in turn are not reliable for economic or financial assessment.

6. Strategic Issues

A good indicator of the viability of the New M5 is by comparison with other motorways. Figure 6-1 presents a comparison of the traffic flows forecast for the New M5 in 2021 against published average daily traffic using the Sydney Cross City Tunnel over the first two years after opening (note the Cross City Tunnel average includes weekend traffic). It shows that the New M5 is forecast to operate with similar if not lower traffic volumes.

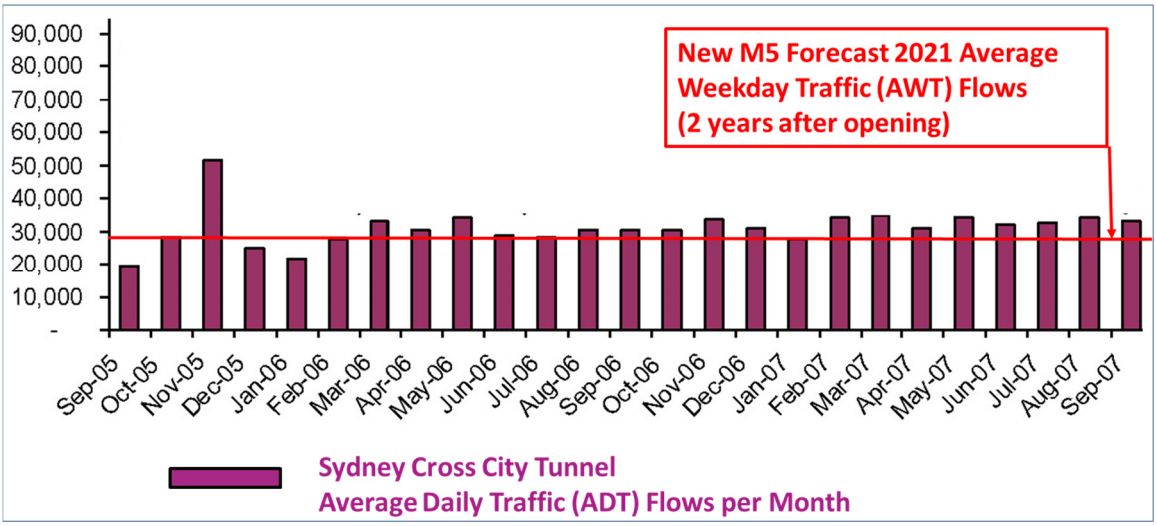
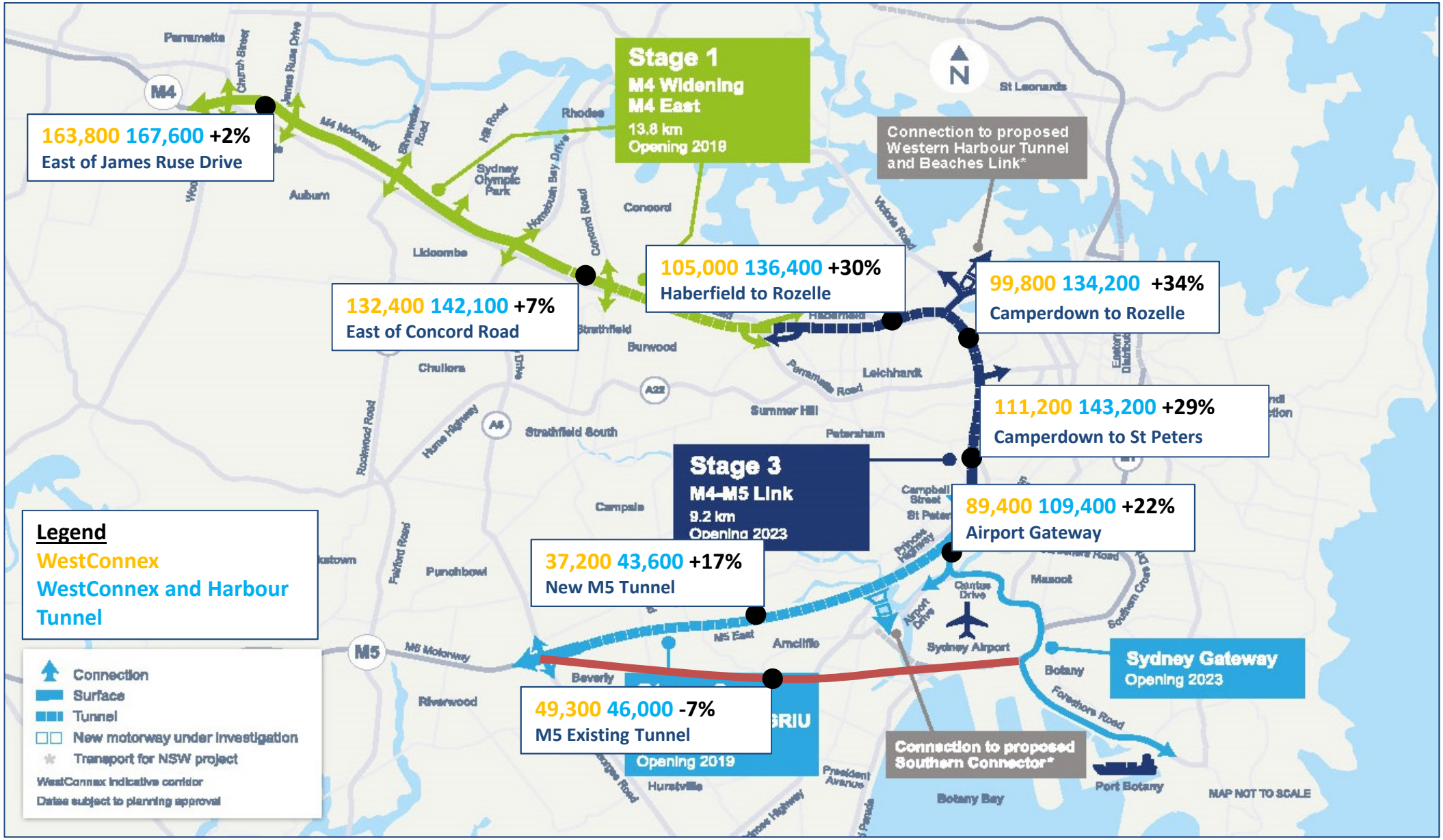


Figure 6-1: Comparison of 2021 AWT forecasts vs. Sydney Cross City Tunnel ADT

Transurban purchased the Cross City Tunnel in June 2014 for around $475 million. The Cross City Tunnel is a 2.1km motorway. Car toll charges effective 1 October 2015 were $5.27 for the main tunnel and $2.49 for the Sir John Young Crescent exit. Heavy vehicle tolls are double the car toll.

The New M5 is 11 km long. At $0.42/km the toll for cars using just the New M5 would be $4.62. The Updated Strategic Business Case states that the cost of constructing the New M5 is estimated to be $4,335 million. This is considerably more than the valuation of the Cross City Tunnel and brings into doubt the value of the new M5.

The Updated Strategic Business Case for WestConnex presents traffic flows on full completion and with an additional scenario with a "Western Harbour Crossing" (Figure 6-2). With WestConnex fully completed weekday traffic flows on the New M5 are forecast to rise to 37,200 vehicles by 2031. With the addition of a new cross harbour tunnel the weekday flows are forecast to rise to 43,600 vehicles. These flows are still very low when compared to the comparative cost of constructing the New M5.



Source: Westconnex Updated Strategic Business Case, Table 7-2 Technical Paper 1

Figure 6-2: Year 2031 Forecast Average Weekday Traffic in the Mainline Tunnels with all of WestConnex completed plus the Western Harbour Tunnel

It can be seen from the forecasts that the New M5 is the weak link in the proposed WestConnex project. It is also apparent from the EIS and other documentation that there is little prospect for this link to be justified. Having considered the relevant information, it is our opinion that the WestConnex concept should be re-visited.

7. Construction Phase

This chapter presents an overview of the construction phase should the project proceed.

7.1. Construction Compounds

The construction activities are expected to commence in late 2016 and conclude in 2019. The compounds required to support construction activities within in the vicinity of the proposed St Peters interchange are shown in Figure 7-1. It is noted that there are inconsistencies in the diagrams of Canal Road Construction Compound (C8) of the New M5 EIS. A mechanic workshop currently located at the corner of Canal Road and the Princess Highway is included in the area of the construction compound in some figures and not in others. It is understood that the mechanic workshop is to be resumed as part of the project.

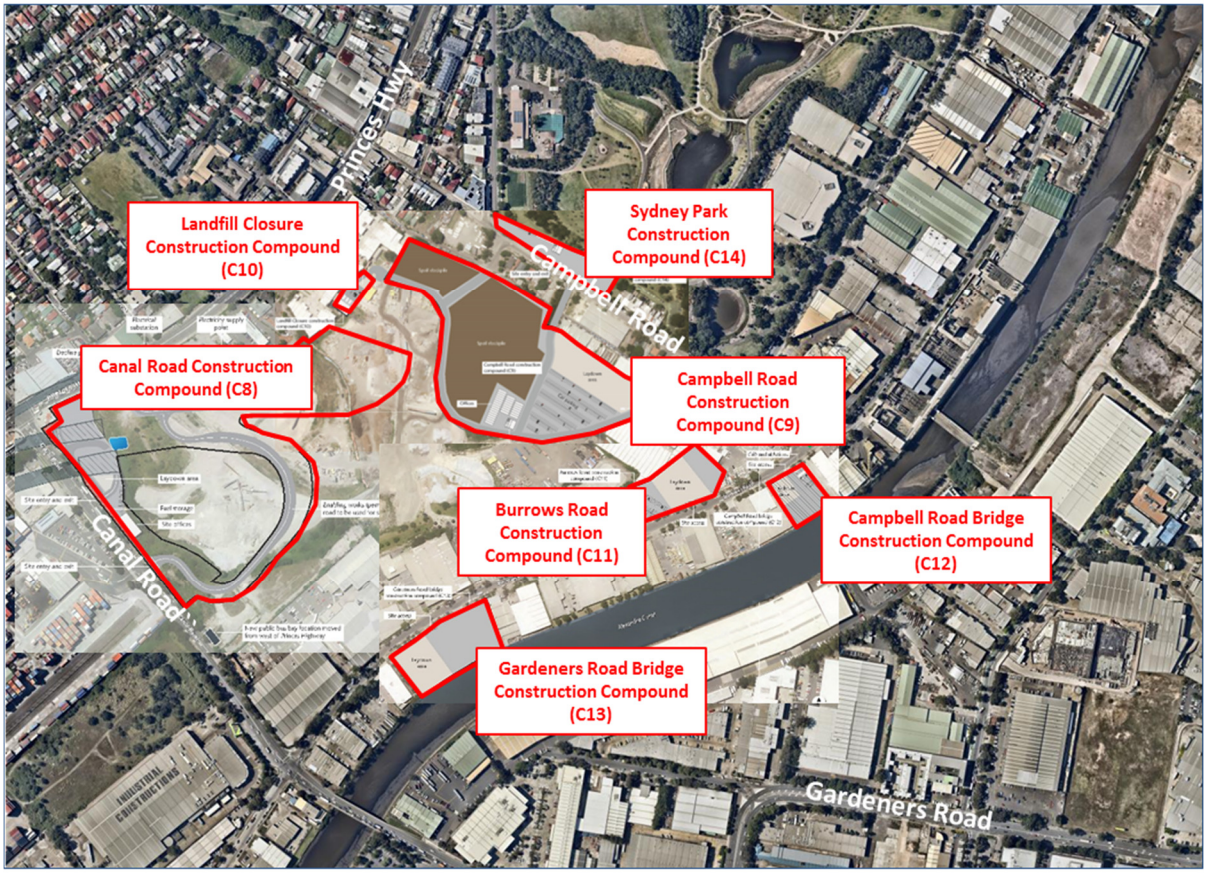


Figure 7-1 Construction compounds in the vicinity of the St Peters Interchange (C8-C14)

7.2. Construction Traffic Generation

The construction compounds around the St Peters interchange and tunnel works are predicted to generate a maximum of about 125 heavy vehicles in addition to 155 light vehicles per hour in the AM and PM peak hours spread over seven construction compounds. The access points and the routes that the construction vehicles will take around the compound are shown in Figure

7-2. Compound C10 is accessed via Compound C9. The Sydney Park Construction Compound (C14) will be accessed via Campbell Road however the exact location has not been specified.

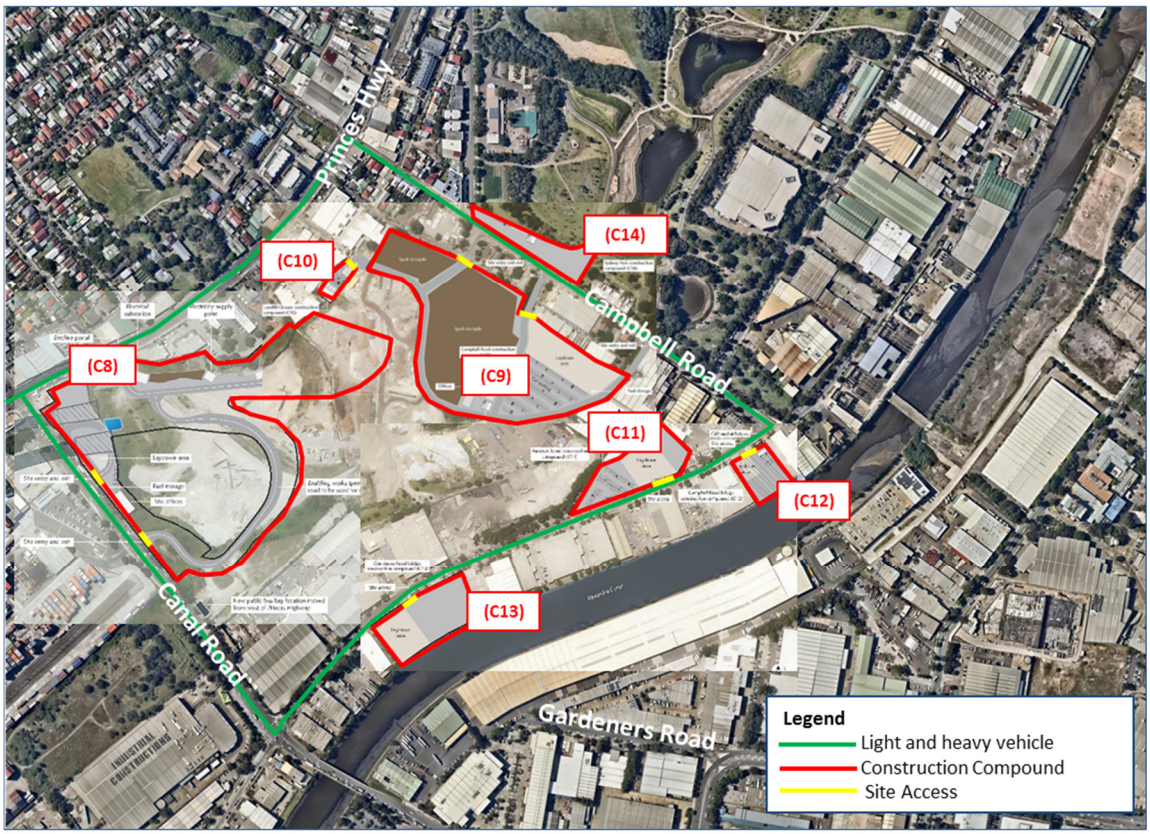


Figure 7-2 Construction compound vehicle access and routes

The project includes an upgrade of the intersection of Campbell Street and the Princes Highway. It is essential that this occurs prior to major works as this intersection will be used by trucks. Current turn restrictions prevent the proposed compound access routes from being viable.

7.3. Site Parking

Table 7-1 presents the estimates of the peak construction workforce and associated parking as published in the New M5 EIS.

Table 7-1 Indicative construction compound light vehicle parking provisions[6]

Construction Compound	Indicative Number of Parking	Peak construction workforce
St Peters Interchange[1]	290	320[2]
Campbell Road bridge	10	15
Gardeners Road bridge	10	10

[6] Source: New M5 EIS Vol 1A – Table 6-23

1 St Peters interchange includes the Canal Road (C8), Campbell Road (C9), Landfill Closure (C10), Burrows Road (C11) and Sydney Park (C14) construction compounds
2 Includes shift work

The figures above do not correlate with figures elsewhere in the EIS. Table 7-2 presents the forecast peak construction workforce and the number of parking spaces proposed at each of the construction compounds (as opposed to the aggregated figures above). The breakdown of the number of parking spaces for most of the compounds has been determined from the published diagrams in the EIS.

Table 7-2 Peak Construction workforce estimates and indicative number of parking spaces [7]

Construction compound	Estimated peak construction workforce	Parking	Source of Parking Numbers
Canal Road (C8)	193	13	From Diagrams
Campbell Road (C9)	215	271	From Diagrams
Landfill Closure (C10)	30	12	From Diagrams
Burrows Road (C11)	40	77	From Diagrams
Campbell Road bridge (C12)	35	15	From Report Table
Gardeners Road bridge (C13)	45	10	From Report Table
Sydney Park (C14)	25	10	From Diagrams

From Table 7-2 it can be seen that there are significant differences in parking supply and peak workforces estimates for the various compounds.

The above indicates the need for a shuttle service between compounds if parking is to be accessible for workers. There is also a need to provide adequate accessibility between the compounds and public transport services in general. In this regard it is recommended that any shuttle service also link to the local railway stations.

7.4. Spoil Removal

It is anticipated spoil will be generated from construction compounds in the vicinity of the St Peters interchange with the exception of compound 10 and 13. Spoil handling would occur up to 24 hours per day and seven days per week. Where practical, spoil would be moved during the day, outside of peak periods. The potential spoil management sites and access routes from the construction compounds are identified in Table 7-3.

[7] New M5 EIS Volume 1A

Table 7-3 Potential Spoil Removal Sites[8]

Spoil management site	Location	Distance from the project (km)	Capacity for site accept spoil (m3)	Accessed via
CSR PGH Brick Pit	75 Townson Road, Schofields	55	550,000	Princes Highway and M5
DHA Schofields	49 Manorhouse Boulevard, Quakers Hill	60	500,000	Princes Highway, M5 and M7
Austral Plant 2 or 3 clay shale pit	738-780 Wallgrove Road, Horsley Park	40	3,000,000	Princes Highway, M5 and M7
Riverstone West Sakkara Development	Land west of Riverstone	60	3,500,000	Princes Highway, M5 and M7
Kurnell Landfill Company	330 Captain Cook Drive, Kurnell	15	7,000,000	Princess Highway and Captain Cook Drive

The removal of the spoil will generally occur along state roads to the south and west. It will not affect the amenity of residents of the City of Sydney.

7.5. Active and Public Transport

The impacts to cyclist and pedestrian facilities around the St Peters interchange as proposed in the New M5 EIS are as follows;

- The Bourke Road cycleway would be temporarily diverted around the construction works due to space constraints.
- Pedestrian facilities within areas subject to local roads upgrades would be relocated or temporary access paths would be constructed to maintain access throughout construction.
- Concrete barriers would be installed to separate construction equipment from members of the public where a haul road is close to a pedestrian access.
- Along Campbell Road / Campbell Street, Euston Road, Bourke Road, Bourke Street, Gardeners Road and the Princes Highway (where it intersects with Campbell Street), the footpath would be affected due to varied and periodic footpath closures and deviations for road widening. Pedestrians would be diverted to an alternative route or alignment.

A strategy for the maintenance of pedestrian and cyclist access throughout construction would be provided as part of the Construction Traffic Management Plan for the project which would be prepared during the detailed design phase of the project.

It is our advice that the proposed arrangements for active transport are not reasonable. In particular:

- **The Bourke Road cycleway diversion is not acceptable. Whilst one can divert traffic, bike riders will continue to use the same route.**
- **TTM support the City's position is that bicycles are human-powered and more vulnerable road users. Therefore, they need to retain their existing path of travel during construction of the New M5. This usually takes the form of dedicating the traffic lane that would**

[8] Source: New M5 EIS Vol 1A – Table 6-31

otherwise be used by motorised traffic to bike riders. Vehicles that are motorised are to be diverted instead as the impact of a detour is not as significant. The City has followed this approach during construction projects for many years.

- **In relation to pedestrian facilities, the proponent would need to follow all City policies including appropriate, accessible paths of travel during construction.**

A number of cycle ways and bicycle friendly routes are located in the vicinity of St Peter Interchange (see Figure 7-3) and within Sydney Park. Construction impacts are limited to the perimeter of the park and are therefore unlikely to impact on the community's use of the park.

Any intent to relocate existing routes during construction will require consultation with The City of Sydney.

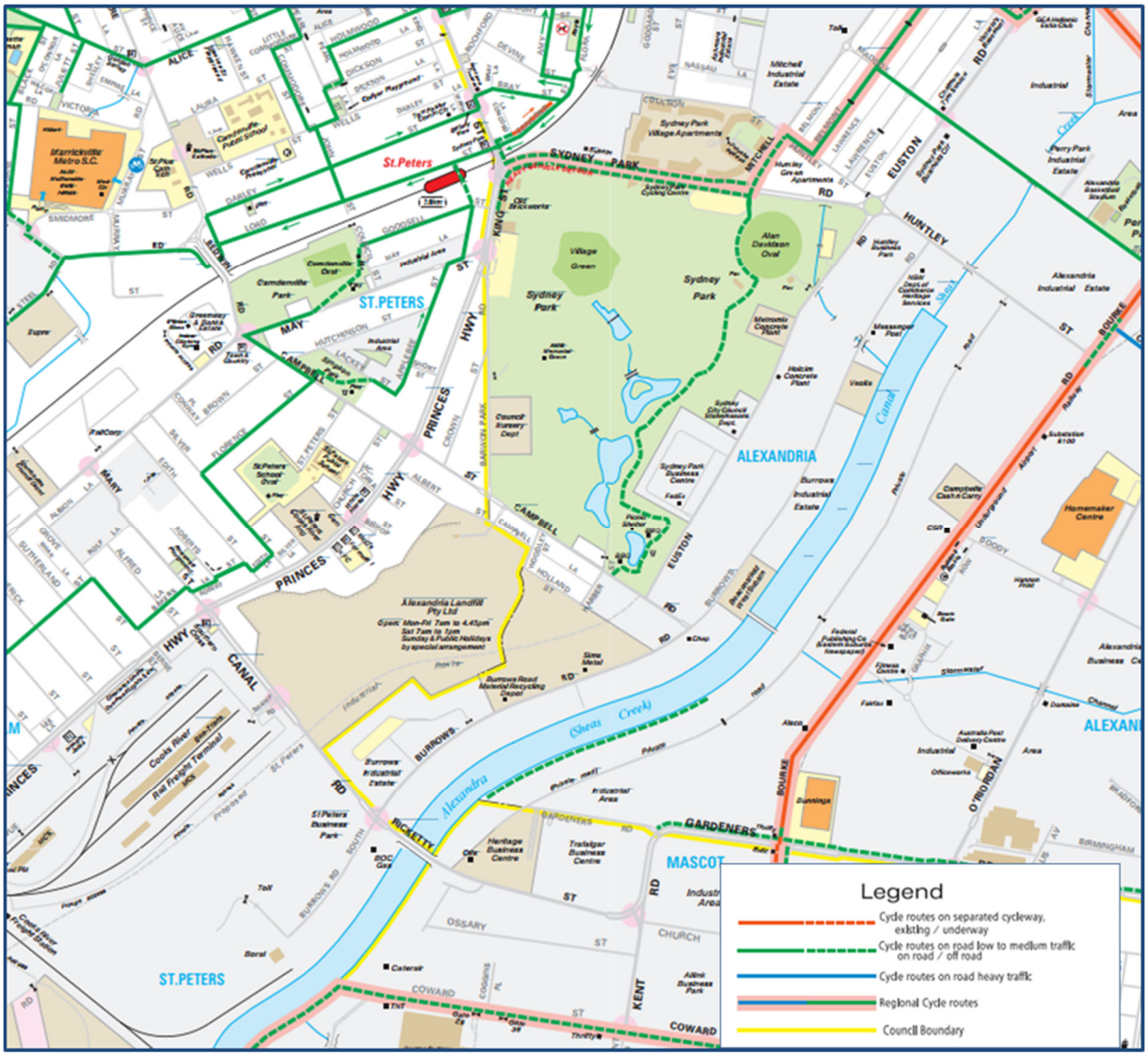


Figure 7-3: Local Cycle Network[9]

[9] Source: http://www.sydneycycleways.net/map/

It is essential that Council is involved in the management of pedestrians and cycling infrastructure during the construction phase. Significant changes to regulation of traffic should be referred to Council's Local Traffic Committee.

It is recommended that Council is consulted in relation to significant changes to the pedestrian and cycling infrastructure during the construction phase.

7.6. Bus Routes

The EIS contains proposals for temporary removal of a bus stop on The Princes Highway south of Campbell Street during construction and the permanent relocation of a bus stop on the eastern side of Canal Road further along the road to the south. Both of these measures are not in the interest of public transport users and indeed should be considered to be representative of poor planning.

In relation to the bus stop on the Princes Highway:

- It provides an important connection to local businesses and local residences.
- There appears no reason why it could not be relocated to the southern side of Albert Street during construction and still perform its function. Given the current upgraded intersection design it appears that this may be required anyway.

In relation to the proposed permanent relocation of the bus stop on Canal Road:

- This new location would be 130 metres from another bus stop. The bus stops service a major regional limited stops route (418 – Burwood to Bondi Junction). Placing them so close to each serves no purpose.
- Relocation of the bus stop to the Princes Highway could have been considered. However, the bus stop would have to be set back from The Princes Highway / Canal Road intersection enough distance to allow the bus driver to re-enter the traffic stream and enter the traffic turning right from the Princes Highway into Canal Road. This would place the bus stop back near another existing bus stop used for the route.
- Ultimately, the only appropriate place for the bus stop is where it is currently located. It is recommended that the bus stop is retained at this location and that the design reflects this.

It is recommended that the treatment of bus stops is reconsidered in the interests of maintaining at least the current level of service provided to the community. In particular:

- **The southbound bus stop on the Princes Highway south of Campbell Street should remain open to public transport users during the construction phase. It is noted that this may require it being located south of Albert Street.**
- **The southbound bus stop on Canal Road south of the Princes Highway should be retained in its current location.**

7.7. Green Travel Plan

The EIS does not include a Green Travel Plan.

Given the size of the project and the significant workforce it is recommended that one is required for the project. The green travel plan should give workers an opportunity to travel to and from work be means other than car. Provision should be made on site for workers who travel by bicycle.

7.8. Cumulative Effects

Construction of the Sydney Metro is planned to commence in 2017. A southern dive site is proposed for Marrickville and would be located north of Sydenham Station and south of Bedwin Road. This site would provide support for tunnelling operations and spoil removal. The impacts of truck movements associated with this activity in addition to the New M5 construction have not been assessed in the EIS. This additional truck traffic is most likely to remove spoil via Campbell Street east of the Princes Highway.

It is essential that planned road upgrades for Campbell Street as well as the upgrade of the intersection of Campbell Street with the Princes Highway are completed prior to this additional traffic entering the system.

8. Operational Phase

8.1. Active Transport

Planning for pedestrians and bike riders is an essential component of any road based project.

Pedestrian planning requires an understanding of the need to provide safe and convenient linkages between homes, schools, shops, and public transport. Such linkages should be as direct as possible.

The government's long-term strategy for cycling in NSW[10] identifies three pillars for Sydney's cycling future. The first pillar relates to infrastructure. It identifies the priority to "deliver bicycle infrastructure through major transport and development projects." This is applicable in the design of the New M5.

The following sections focus on what has been provided to ensure the safe and equitable access for pedestrians and bike riders.

8.1.1. Campbell Street - Unwins Bridge Road to the Princes Highway

Adequate pedestrian connectivity is maintained through the realignment and upgrade of the intersection. As with the existing intersection of Unwins Bridge Road with Campbell Street four pedestrian crossings have been provided. The triangle pedestrian crossing on the North-West bound exit will be removed.

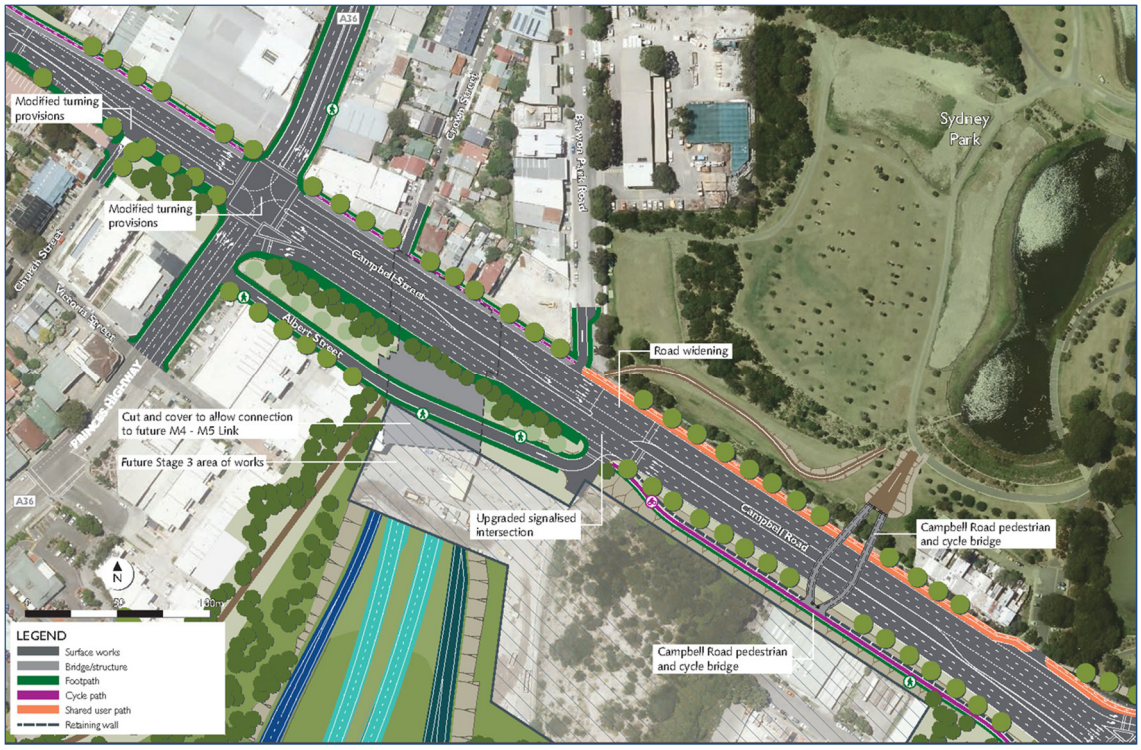
[10] Sydney's Cycling Future, Transport for NSW (2013)

Parking bays are proposed to be provided on the northern and southern side of Campbell Street in the vicinity of Simpson Park. The intersection of St Peters Street and Campbell Street will be upgraded to a signalised intersection with two pedestrian crossings providing pedestrian access between the northern and southern side of side of Campbell street.

A cycle lane has been provided on the northern side of Campbell street which appears to terminate at the intersection of Unwins Bridge Road/Campbell Road/May Street/ Bedwin Road.

The EIS plans[11] show a turn bay for traffic westbound on Campbell Street to turn right into May Street. This movement is currently banned and should remain so as it could result in diversions to King Street.

8.1.2. Intersection of Campbell Street and Princess Highway



Adequate pedestrian connectivity is maintained through the upgrade of the intersection. The upgraded intersection of Albert Street/ Campbell Street and Princess Highway provide for pedestrian crossings. The provision of an additional crossing across the Princess Highway on the Northern side of Campbell Street is an improvement on the existing intersection configuration.

There are inconsistencies in the figures of this intersection. A triangle pedestrian island is included on the north bound exit in some and in others it is not. The inclusion of a triangle pedestrian island is not appropriate in high density urban areas. It is recommended that the alternative layout without the island is adopted to ensure pedestrian safety.

[11] Volume 1A - Figure 5-31 Bedwin Road, Campbell Street and Campbell Road realignment, widening and extension works - map 1

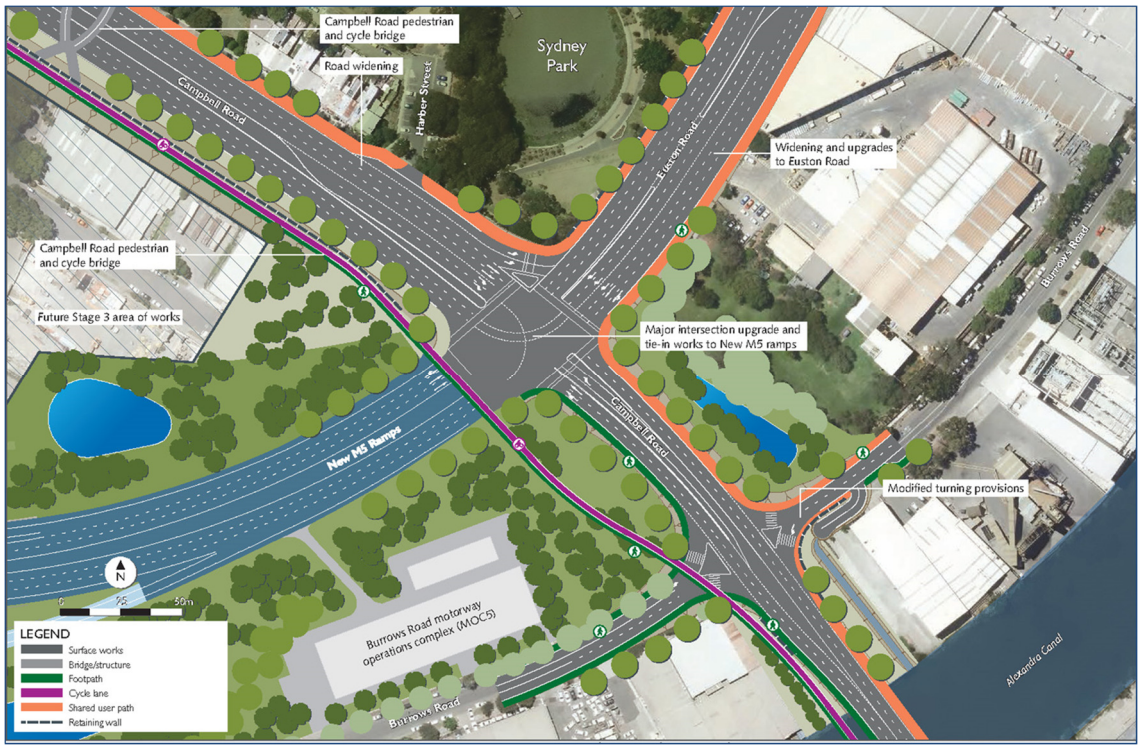
What appear to be raised and separated cycle ways and footpaths are provided on the Southern side of Campbell Street. Concern is raised about their narrow design, lack of rest areas and lack of access points to and from these facilities. Further consideration should be given to the design of these features to ensure amenity and encourage usage.

Provision is made for a bridge connecting the raised cyclist and pedestrian bridge from the southern of Campbell Road and Sydney Park. North of the bridge is an at grade pedestrian crossing at the signalised intersection proposed at Albert Street. This provides both separated and at grade access to and from Sydney Park.

It is our view that benefits of grade separation are likely to be offset by severance due to limited access points. An at grade solution on the northern side of Campbell Street would appear to be a more logical solution in developing the regional cycle network.

The EIS plans[12] show a turn bay for traffic westbound on Campbell Street to turn right into the Princes Highway. This movement is currently banned and should remain so as it could result in diversions to King Street.

8.1.3. Intersection of New M5/ Campbell Road to Burrows Road

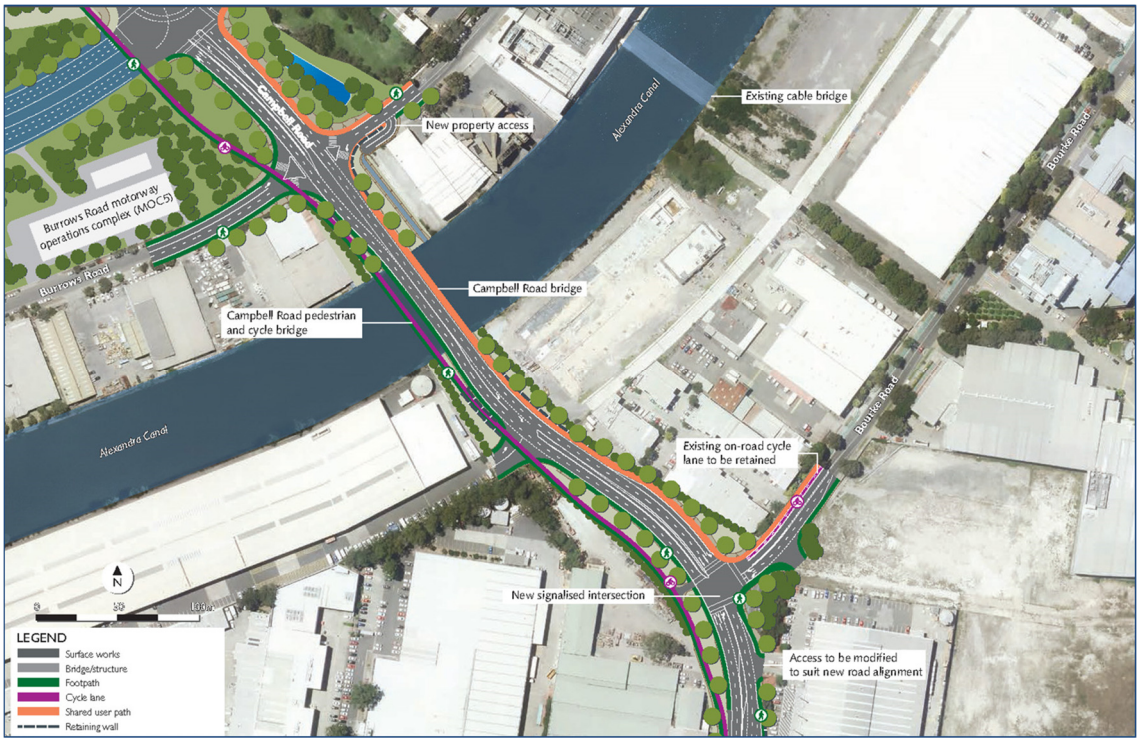


Adequate pedestrian connectivity is maintained through the upgrade of the intersection. Signalised pedestrian crossings have been provided across Campbell Road and Euston Roads while a pedestrian and cyclist bridge provides access across the M5.

[12] Volume 1A - Figure 5-32 Bedwin Road, Campbell Street and Campbell Road realignment, widening and extension works - map 2

The inclusion of a triangle pedestrian island at traffic signals is not appropriate in high density urban areas. **It is recommended that the alternative layout without the island is adopted to ensure pedestrian safety.**

8.1.4. Burrows Road to Bourke Road



The intersection of Bourke Road and Campbell Road is proposed to be signalised with the provision of three pedestrian crossings. Cyclists have the choice of using a shared path on the northern side of the new Campbell Road Bridge or a pedestrian/cyclist bridge on the southern side.

As noted earlier in Section 8.1.2 it is our view that benefits of grade separation are likely to be offset by severance due to limited access points. An at grade solution on the northern side of the new Campbell Road Bridge would appear to be a more logical solution in developing the regional cycle network.

8.1.5. Euston Road from Campbell Street to Maddox Street

Adequate pedestrian connectivity is maintained through the upgrade of the intersection of Euston Road with Sydney Park Road from a round-a-bout to a signalised intersection. Four pedestrian crossings have been provided. Two triangle pedestrian crossings have been provided on Sydney Park Road. These should be removed to ensure pedestrian safety.

Euston Road is to widened to three lanes each way north of Campbell Street with the kerbside lane to be available for parking outside of peak periods. This widening extends to just south of Maddox Street where the current cross section is maintained. A shared cycle lane is provided south of Sydney Park Road and along the southern side of Sydney Park Road itself up to Mitchell Road.

8.2. Euston Road

As highlighted in Section 5.2 the main source of the high increase in traffic on Euston Road is not related to the New M5. It is traffic diverting onto the upgraded Campbell Road and Euston Road from the Princess Highway and Campbell Street / Edgeware Road. This traffic then disperses onto the local street system. Streets that are known to be adversely affected include Maddox, Fountain, and Bowden are particular examples.

Local area traffic management measures will be required in the streets surrounding Euston Road should the New M5 project proceed.

9. Key Issues

9.1. Validity of WestConnex Stage 2

It is difficult to see how the New M5 is justified given the low traffic forecasts. The main traffic impact within the City of Sydney is in the vicinity of Euston Road which has traffic diverting from "non New M5" arterial traffic routes and filtering onto local streets.

The EIS does not address this issue. It is recommended that Council highlights the need for a justification for completion of the New M5 given that it results in significant traffic diversions that are best accommodated within the existing road network.

9.2. Construction Phase

If the project proceeds as per the EIS then there are aspects of the construction phase which will need to be addressed. These are summarised below.

The construction activities are expected to commence in late 2016 and conclude in 2019. Movement of spoil will be via the Princes Highway to the south and is not expected to cause significant disruption or adverse impacts on residents.

It is essential that planned road upgrades for Campbell Street as well as the upgrade of the intersection of Campbell Street with the Princes Highway are completed prior to traffic associated with the New M5 and Sydney Metro entering the system.

There is a need for a shuttle service between compounds if parking is to be accessible for workers. There is also a need to provide adequate accessibility between the compounds and public transport services in general. In this regard it is recommended that any shuttle service also link to the local railway stations.

It is our advice that the proposed arrangements for active transport are not reasonable. Council needs to be consulted in relation to significant changes to the pedestrian and cycling infrastructure during the construction phase. In particular:

- The Bourke Road cycleway diversion is not acceptable.
- In relation to pedestrian facilities, the proponent will need to follow all City policies including appropriate, accessible paths of travel during construction.

It is recommended that the treatment of bus stops is reconsidered in the interests of maintaining at least the current level of service provided to the community. In particular:

- The southbound bus stop on the Princes Highway south of Campbell Street should remain open to public transport users during the construction phase. It is noted that this may require it being relocated south of Albert Street.
- The southbound bus stop on Canal Road south of the Princes Highway should be retained in its current location.

It is recommended that a green travel plan is prepared for the project. The green travel plan should give workers an opportunity to travel to and from work be means other than car. Provision should be made on site for workers who travel by bicycle.

9.3. Operational Phase (prior to WestConnex Stage 3)

If the project proceeds as per the EIS local area traffic management measures will be required in the streets surrounding Euston Road.

The EIS plans show a turn bay for traffic westbound on Campbell Street to turn right into May Street. This movement is currently banned and should remain so as it could result in diversions to King Street.

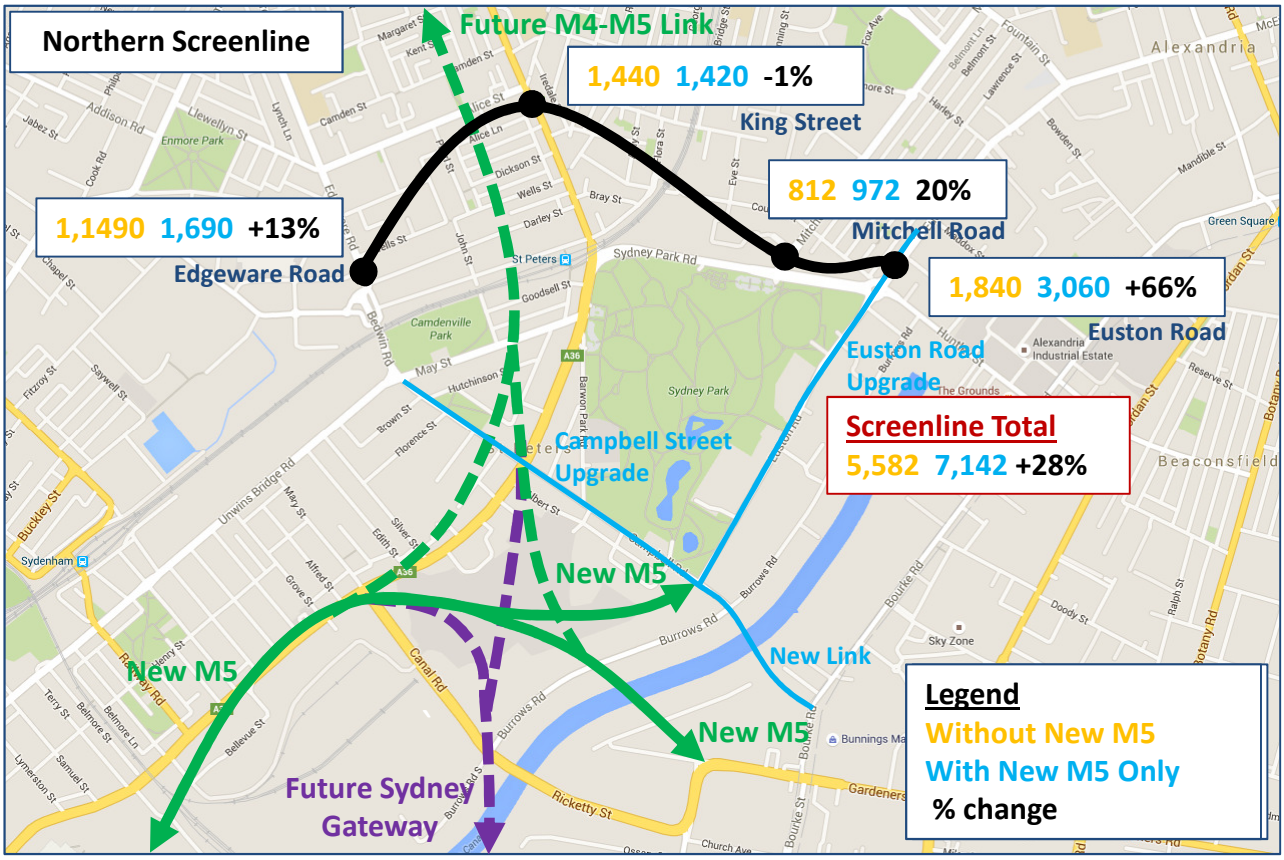
The EIS plans show a turn bay for traffic westbound on Campbell Street to turn right into the Princes Highway. This movement is currently banned and should remain so as it could result in diversions to King Street.

Provision is made for a bridge connecting the raised cyclist and pedestrian bridge from the southern of Campbell Road and Sydney Park. It is our advice that an at grade solution on the northern side of Campbell Street would be a more logical solution in developing the regional cycle network.

Whilst not explicit in the project description the right turn from the New M5 to the new Campbell Road Bridge link to Bourke Road will be banned. This effectively makes the new Campbell Road Bridge link a through route replacing the current route via Campbell Road / Burrows Road / Ricketty Street. We advise that this is a positive outcome.

TTM have been advised that the modelling for the New M5 has assumed banning of the right turn from Mitchell into Sydney Park Rd, and a bus only right turn from Euston into Sydney Park Road. This measure requires further consultation with the City of Sydney.

Appendix A Screenlines of Morning and Evening Peak Hour Traffic Forecasts



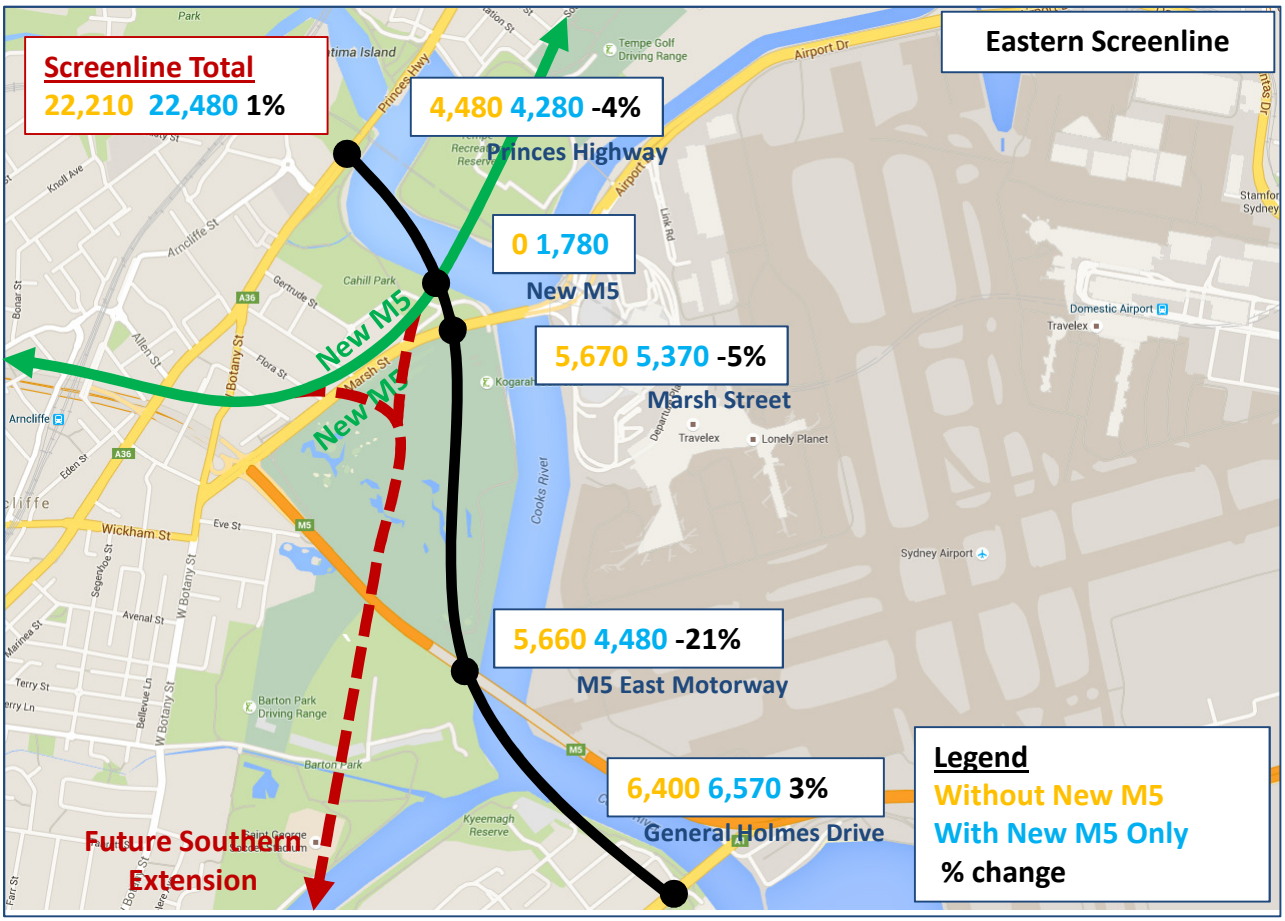
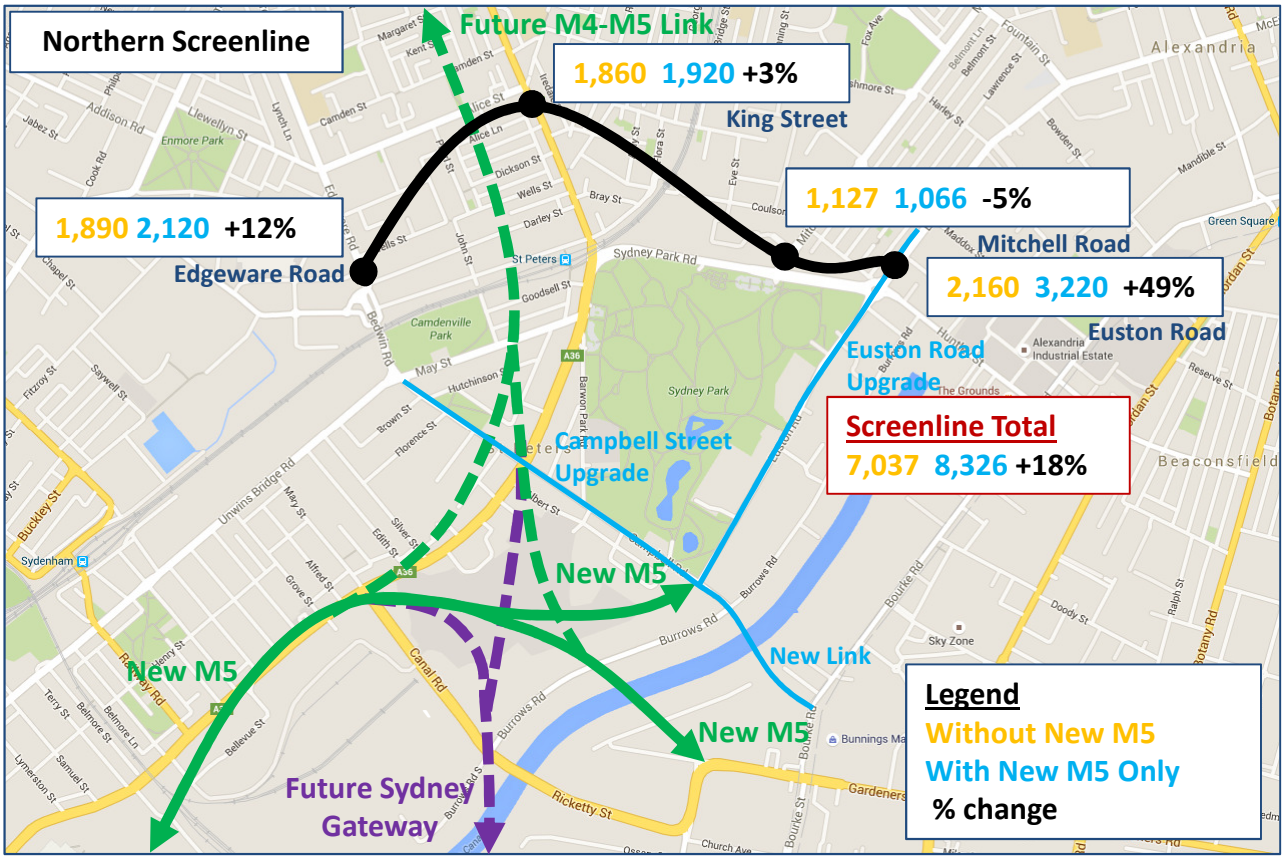


Figure A-1: Year 2021 Forecast Morning Peak Hour Traffic (2-Way)



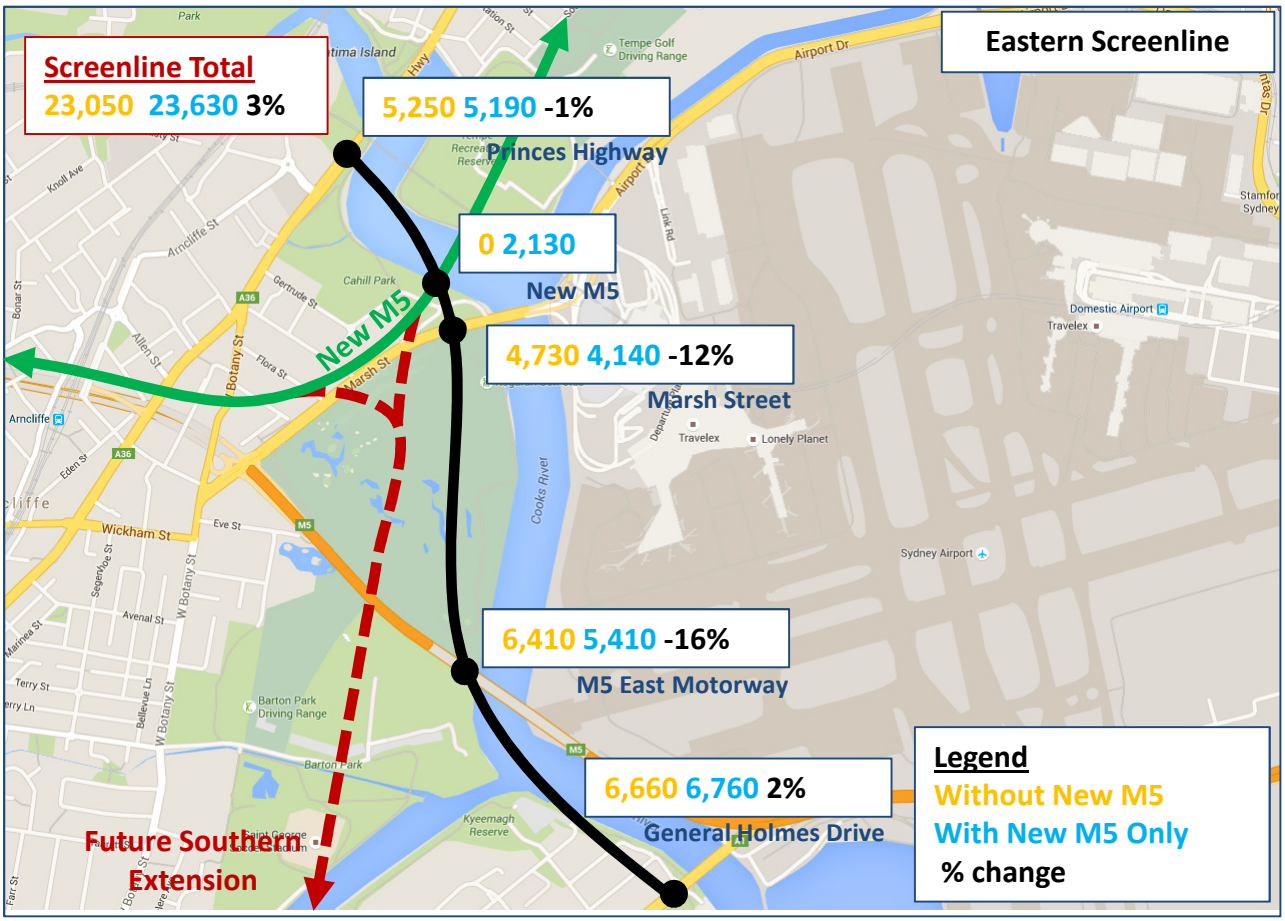
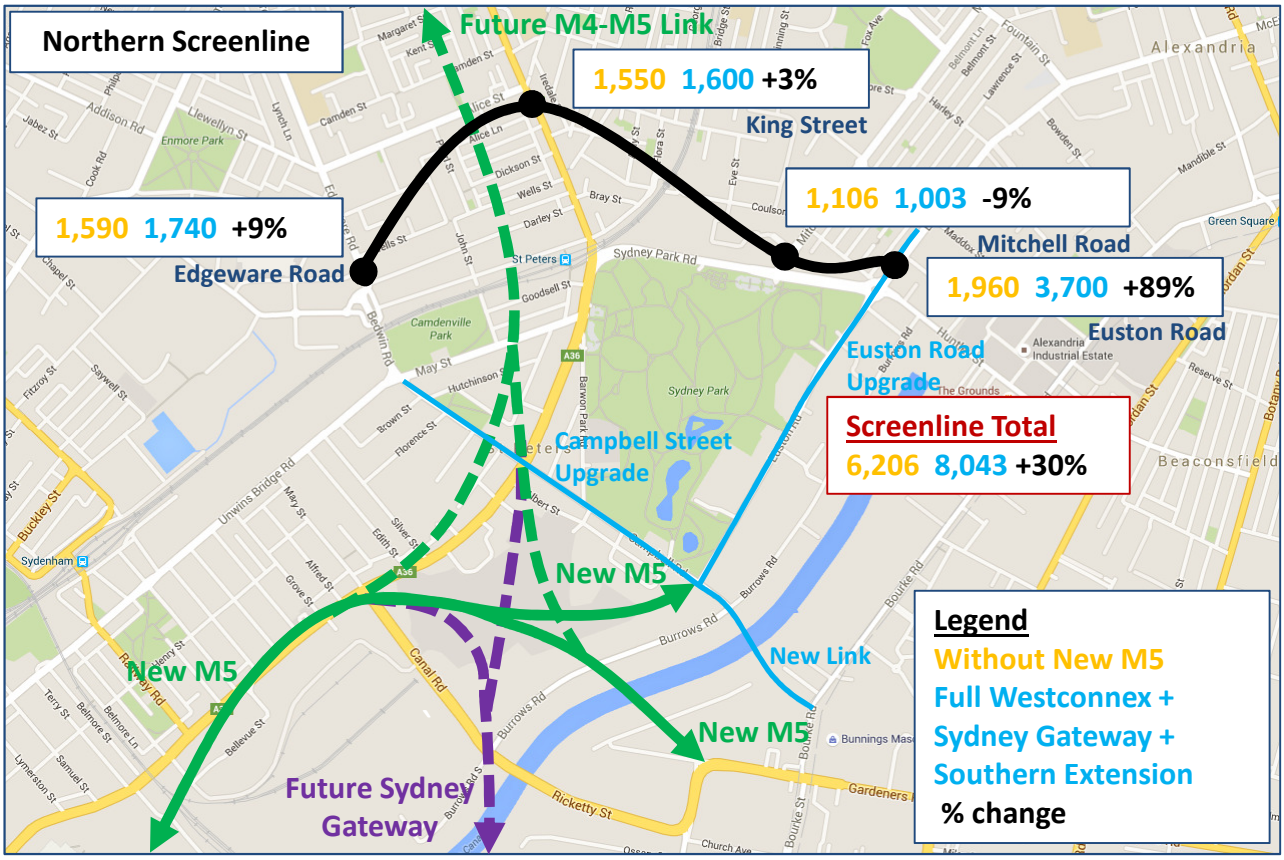


Figure A-2: Year 2021 Forecast Evening Peak Hour Traffic (2-Way)



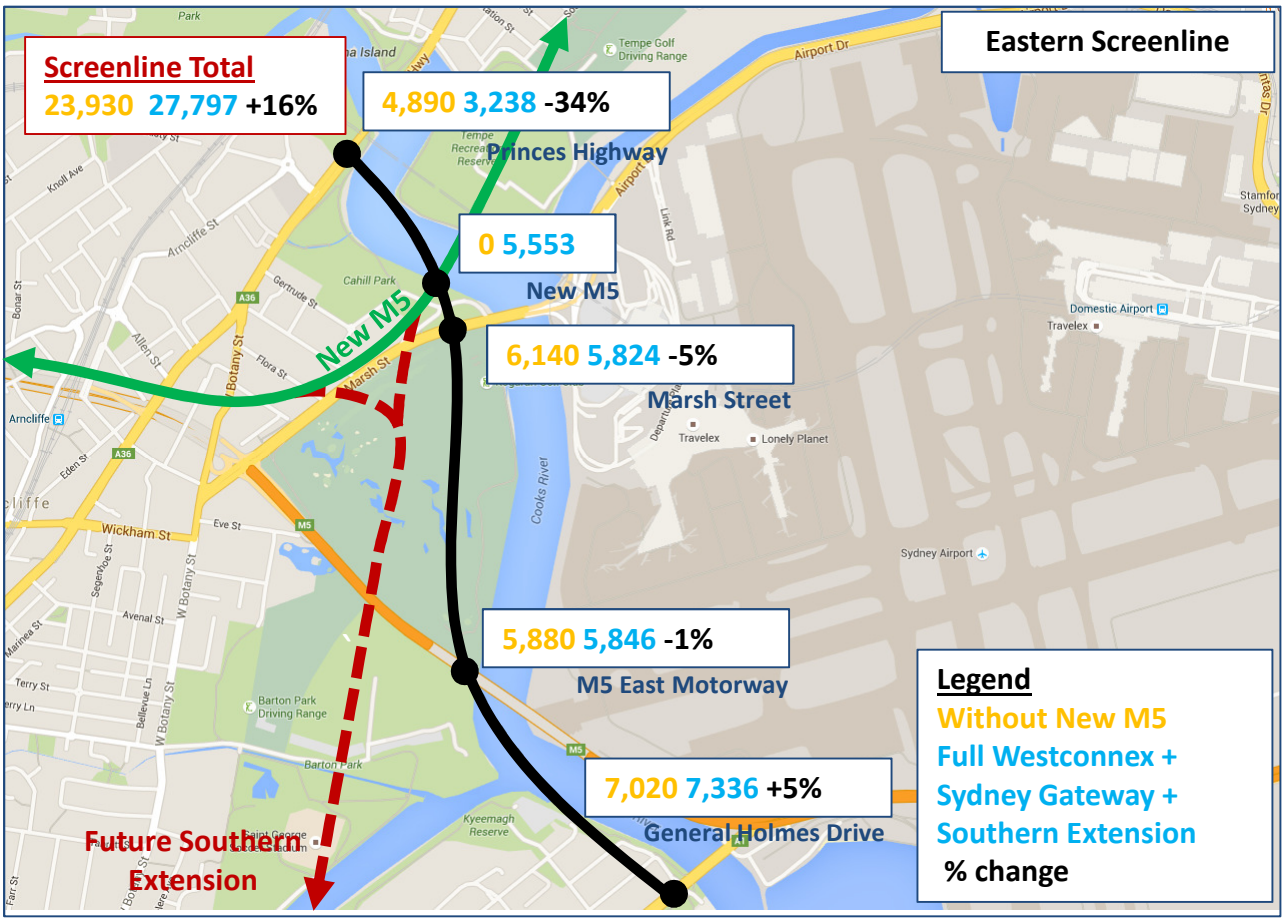
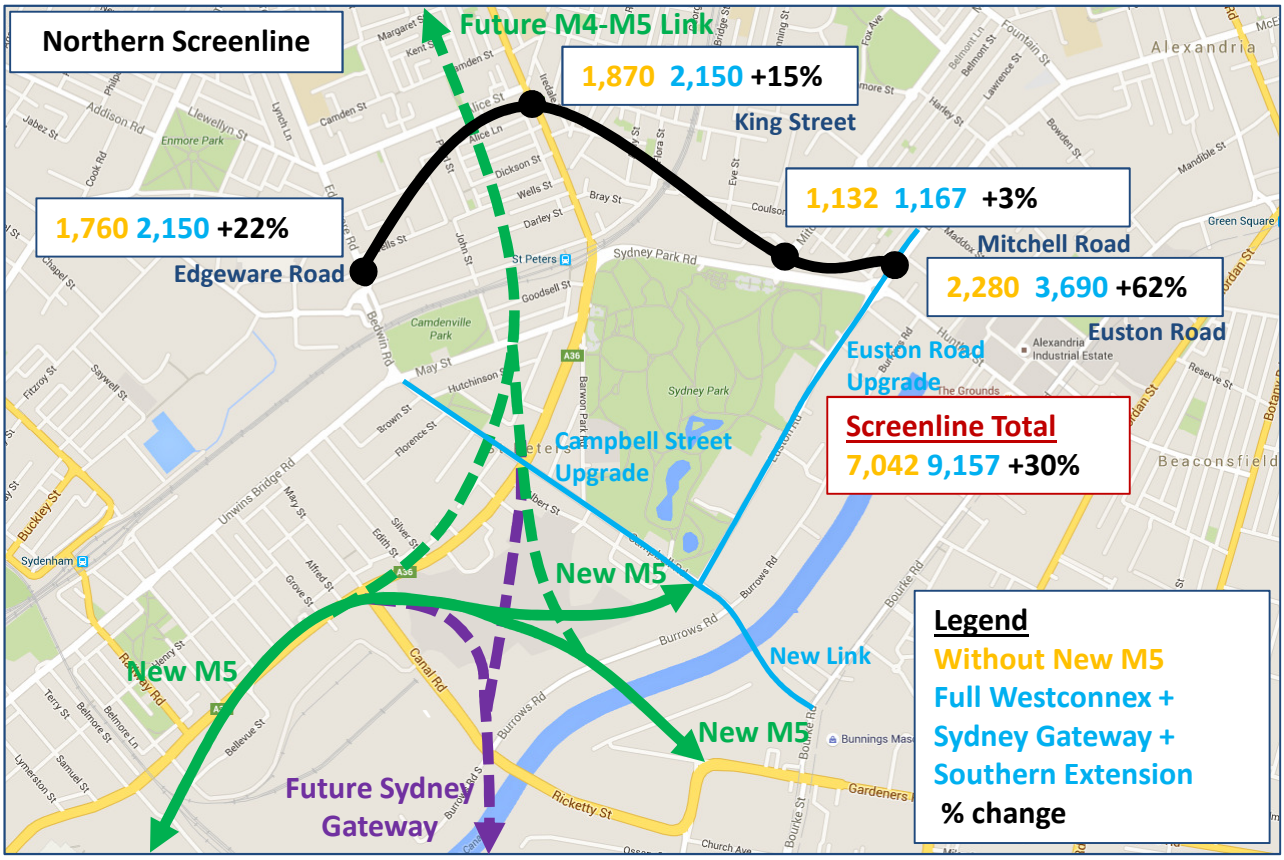


Figure A-3: Year 2031 Forecast Morning Peak Hour Traffic with WestConnex-Plus (2-Way)



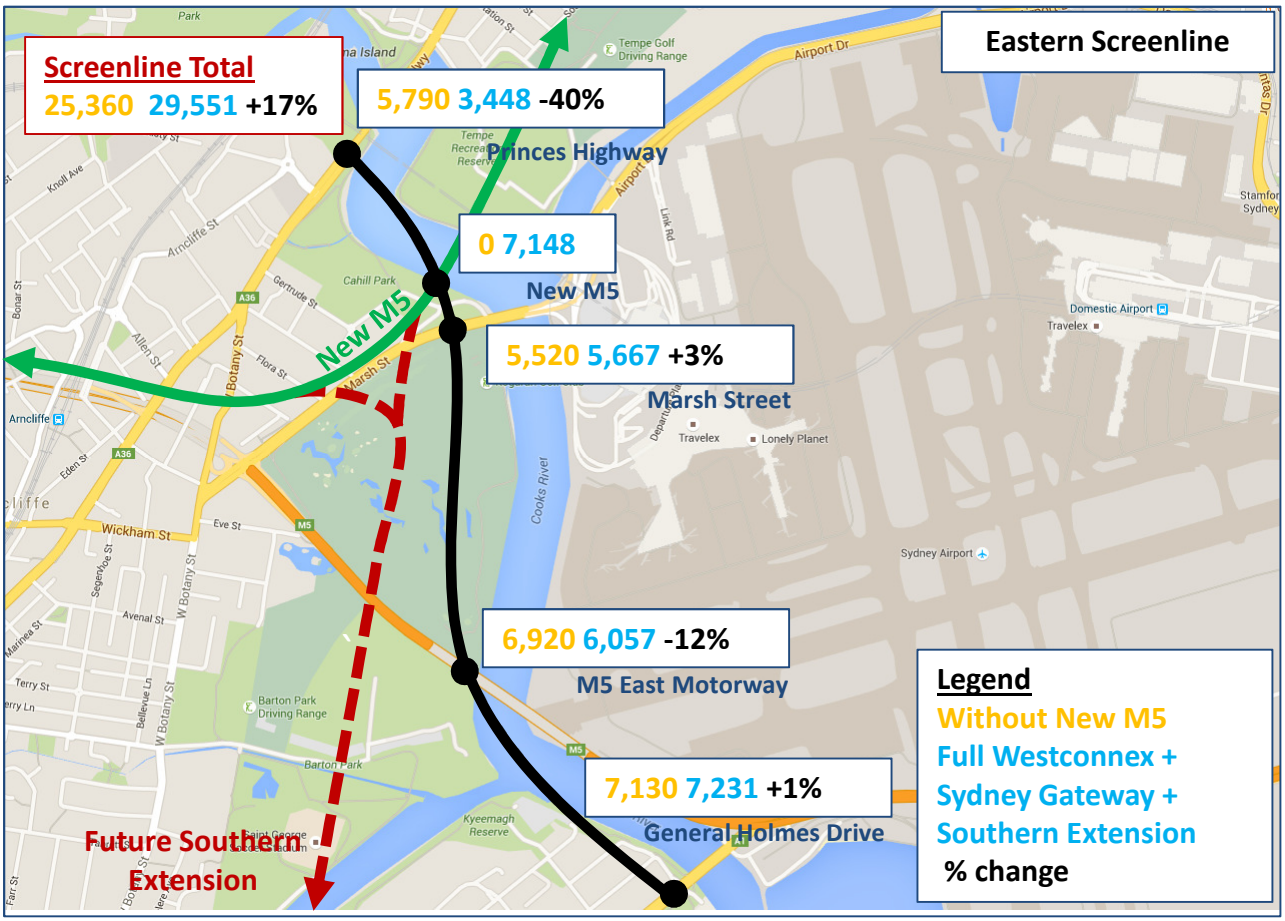


Figure A-4: Year 2031 Forecast Evening Peak Hour Traffic with WestConnex-Plus (2-Way)