

SYDNEY FISH MARKETS REDEVELOPMENT
TRANSPORT & ACCESSIBILITY IMPACT
ASSESSMENT

Prepared for
Sydney Fish Markets

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Executive Summary

Halcrow has been commissioned by the Sydney Fish Markets Authority to prepare a transport and accessibility impact assessment for the redevelopment of the Sydney Fish Markets in Pyrmont NSW.

The Sydney Fish Markets Authority is proposing a significant revitalisation and change in configuration, with new shops, restaurants and redevelopment of the existing at grade car park and new foreshore park. The proposal is the subject of a Part 3A application for concept approval to the NSW Department of Planning.

The proposed development represents a significant improvement to the leisure/retail precinct of the Sydney Fish Markets. It includes a removal of the existing hard surface car park and replacement by a three level public car park, additional wholesale, retail and dining spaces.

The site meets the criteria set within the *Integrating Land Use and Transport Package* and the *NSW Planning Guidelines for Walking and Cycling* for the placement of businesses and services. It is well served by public transport, located within a densely populated area and has good current and proposed walking and cycling networks.

The development will not have a significant impact on the operations of the surrounding road network, with the proposed changes to intersection operations potentially providing significant operational benefits outside of peak generation times for the site.

1 Introduction

Halcrow has been commissioned by the Sydney Fish Markets Authority to prepare a transport and accessibility impact assessment for the redevelopment of the Sydney Fish Markets in Pyrmont NSW.

The Sydney Fish Markets Authority is proposing a significant revitalisation and change in configuration, with redevelopment of the existing at grade car park and new foreshore park. The proposal is the subject of a Part 3A application for concept approval to the NSW Department of Planning.

The Director General of the Department of Planning has required the proponent to address:

Transport & Accessibility Impact Assessment prepared with regard to the RTA's Guide to Traffic Generating Developments and making reference to the Metropolitan Transport Plan – Connecting the City of Cities, NSW Planning Guidelines for Walking and Cycling and the Integrating Land Use and Transport policy package, considering the following issues:

- *an estimate of the trips generated by the proposed development, including a breakdown of vehicle types;*
- *traffic generation including:*
 - *daily and peak traffic movements likely to be generated by the project;*
 - *the impact on the safety and capacity of the surrounding road network and nearby intersections, including Pyrmont Bridge Rd/Wattle St, Pyrmont Bridge Rd/Western Distributor on/off ramps, Pyrmont Bridge Rd/Harris St and Fish Market access; and*
 - *the need and provision of upgrade, road improvement works, or funding (if required);*
- *parking (including justification of proposed quantum of parking spaces), access and loading dock arrangements, in accordance with relevant Australian Standards and including appropriate levels of onsite car parking having regard to the relevant planning controls, RTA guidelines and public transport accessibility of the site;*
- *details on whether currently used areas on Bank Street will continue to be used for overflow car parking;*

- *details on internal access and circulation arrangements, with particular regard to pedestrian safety; and measures to promote sustainable means of transport including public transport usage and pedestrian and bicycle linkages.*
- *details of access arrangements for workers to/from the site, emergency vehicles and service vehicle movements.*
- *details of construction vehicle access, movements and queuing.*

The proposed works will involve the demolition of 4 buildings on the site, removal of the existing at-grade car park, construction of a new multi-storey wholesale and retail building with car park and creation of a new foreshore park. This project is to be undertaken in 4 stages.

This report is based on a description of the works provided by Conybeare Morrison International as at 12 August 2010, site visits and surveys of the site to obtain information on the existing traffic and pedestrian situations. The report addresses the Director General's requirements and any particular traffic and transport issues raised by NSW Transport, the Roads and Traffic Authority and Sydney City Council.

The remainder of the report is set out as follows:

- Chapter 2 discusses the strategic context for the development
- Chapter 3 discusses the existing transport conditions surrounding the site;
- Chapter 4 describes the proposed development, including changes to the transport network and car parking;
- Chapter 5 examines the traffic impacts; and
- Chapter 6 presents the conclusions of the investigation.

Construction vehicle access, movements and queuing are subject to a separate report and included in the Construction Traffic Management Plan (Halcrow, 2010).

2 Strategic Context

2.1 *Strategic Planning Policy and Plans*

This chapter outlines government plans and strategies which provide a transport context within which this proposed development should be considered.

2.1.1 *NSW State Plan*

The NSW State Plan 2006 defined the NSW Government's overarching goals and priorities for action. It was intended to set a framework for linking the various other NSW Government plans and policies, including the Metropolitan Strategy. Goals

Included in the strategy are a number of transport related goals to deliver a high quality transport system; provide practical environmental solutions and improved urban environments.

Transport priority areas with targets assigned to them include:

- Increasing share of peak hour journeys on a safe and reliable public transport system
- Safer roads
- Cleaner air and progress on greenhouse gas reduction
- Jobs closer to home
- Improve the efficiency of the road network.

Specific transport targets in the NSW State Plan of relevance to the Sydney Fish Markets site include:

- Increase the mode share of bicycle trips made in the Greater Sydney region, at a local and district level, to 5% by 2016
- Increase the proportion of total journeys to work by public transport in the Sydney Metropolitan Region to 28 % by 2016.

2.1.2 *Metropolitan Strategy and Metropolitan transport plan*

The Metropolitan Strategy (December 2005) outlined a broad framework vision for the future growth of the Sydney metropolitan area to 2031. The strategy proposed the concentration of growth in centers by identifying housing and employment capacity targets for Sydney's sub regions and strategic centers.

2.1.3 *The Metropolitan Strategy*

The Metropolitan Strategy's transport vision for Sydney is "...neighbourhoods with improved local transport, with walking and cycling facilities and bus services to major centres. People will be able to carry out more of their trips closer to home, reducing the time taken and cost of longer trips".

Transport actions proposed by the Metro Strategy were:

- Improve transport between Sydney's centres
- Improve the existing transport system
- Influence travel choices to encourage more sustainable travel
- Improve transport decision-making, planning, evaluation and funding:
- Ensure sufficient port capacity is available to serve Sydney:
- Improve the efficiency of all types of freight movements in Sydney:
- Connect the regions and economic gateways within the GMR:
- Minimise the adverse impacts from freight movements

A review of the Metropolitan Strategy is presently underway and is expected to be completed by the end of 2010.

2.1.4 *Metropolitan Transport Plan*

This was released in February 2010 and provides a 25 year vision for the linking of Sydney's land use planning with its transport network. It is intended that this plan be merged with the updated Metropolitan Strategy when it is completed. The plan includes a 10 year funding guarantee for essential transport infrastructure and services.

The Metropolitan Transport Plan includes:

- The \$4.5 billion Western Express City Rail Service – a separate dedicated rail track to slash travelling times from Western Sydney to the city.
- Start of work on the \$6.75 billion North West rail link from Epping to Rouse Hill.
- A \$500 million expansion of the current light rail system with an extension from Lilyfield to Dulwich Hill and Barangaroo;
- Improvement to bus services – including 1000 new buses in strategic bus corridors.
- New trains – addition of 626 rail carriages.
- \$158 million for cycleway.
- \$400 million for commuter car park.
- \$225 millions for ferries.
- \$536 million for motorway planning, transit corridor reservations and land acquisition.
- \$483 million to deliver important freight works in Sydney.
- \$21.9 million of State and Federal Funded road projects.

2.1.5 *Integrating Land Use and Transport Policy Package*

The Integrating Land Use and Transport Policy Package consists of 5 documents to provide a framework for integrating land use and transport at regional and local levels. These documents are:

- Overview of ILUT
- Right Place for Business and Services Planning Policy
- Improving Transport Choice
- Summary of Employment and Journey to Work Patterns in the Greater Metropolitan Region.

The *Right Place for Business and Services* provides guidance on locating trip-generating developments in places that:

- help reduce reliance on cars and moderate the demand for car travel
 - encourage multi-purpose trips
 - encourage people to travel on public transport, walk or cycle
 - provide people with equitable and efficient access

- minimise dispersed trip-generating development that can only be accessed by cars
- ensure that a network of viable, mixed use centres closely aligned with the public transport system accommodates and creates opportunities for business growth and service delivery
- protect and maximise community investment in centres, and in transport infrastructure and facilities
- encourage continuing private and public investment in centres, and ensure that they are well designed, managed and maintained
- foster growth, competition, innovation and investment confidence in centres, especially in the retail and entertainment sectors, through consistent and responsive decision making.

Improving Transport Choice is the practice guidelines aimed at ensuring that developments maximize the potential for non private vehicle travel. The 10 principles encompassed by these guidelines are:

1. Develop concentrated centres of housing, employment, services and public facilities within an acceptable walking distance (400 to 1,000m) of major public transport nodes, such as railway stations and high frequency bus routes with at least a 15-minute frequency at peak times.
2. Encourage a mix of housing, employment, services, public facilities and other compatible land uses, in accessible centres.
3. Concentrate high density, mixed use, accessible centres along major public transport corridors within urban areas.
4. Plan and implement public transport infrastructure and services in conjunction with land use strategies to maximise access along corridors, and to and from centres.
5. Provide street networks with multiple and direct connections to public transport services and efficient access for buses.
6. Provide walkable environments and give greater priority to access for pedestrians, including access for people with disabilities.
7. Maximise cyclists' accessibility to centres, services, facilities and employment locations.
8. Use the location, supply and availability of parking to discourage car use.

9. Improve transport choice and propose an integrated transport approach by management road traffic flow and priority of transport modes.
10. Design with an emphasis on the needs of pedestrians, cyclists and public transport users.

2.1.6 *NSW Guidelines for Planning for Walking and Cycling*

The *NSW Guidelines for Planning for Walking and Cycling* set good principles for creating developments that are accessible by walking and cycling. It includes design principles to ensure that access to sites for pedestrians and cyclists is safe, convenient, direct, and connected to surrounding land uses, public transport and facilities.

2.2 ***Local Planning Context***

2.2.1 *City of Sydney Strategic Plan – Sustainable Sydney 2030*

This document sets objectives to guide development and foster a sustainable city. It sets the goal of making the City *Green Global and Connected*, with good walking, cycling and public transport networks.

Key objectives include:

Target 6 - By 2030, the use of public transport for travel to work by City Centre workers will increase to 80 per cent and the use of non-private vehicles by City residents for work trips will increase to 80 per cent.

Target 7 – By 2030, at least 10 per cent of City trips will be made by bicycle and 50 per cent by pedestrian movement.

Target 8 - By 2030, every resident will be within a 10 minute (800m) walk to fresh food markets, childcare, health services and leisure, social, learning and cultural infrastructure.

Target 9 – By 2030, every resident in the City of Sydney will be within a three minute walk (250m) of continuous green links that connect to the Harbour Foreshore, Harbour Parklands, Moore or Centennial or Sydney Parks.

2.2.2 *City of Sydney LEP and DCP*

City of Sydney is undertaking a major review of its LEP and DCP. This review responds to the NSW Government's planning reform program. The review will result in the preparation of a new, comprehensive local environmental plan (LEP) and consolidated development control plan (DCP) for the City of Sydney local government area.

The City of Sydney LEP 2005 sets requirements for development in the Ultimo-Pyrmont area in Chapter 3 Ultimo-Pyrmont. Key areas of focus within the LEP include Public Domain; and Movement and Parking.

(5) Public domain

The planning principles for Ultimo-Pyrmont's public domain are as follows:

- (a) Public recreation areas are to provide for a range of recreational opportunities for the residents of and workers within Ultimo-Pyrmont.*
- (b) Coordinated pedestrian and cycling networks are to be provided throughout Ultimo-Pyrmont and to link with the City centre and suburbs adjoining Ultimo-Pyrmont. Access to major natural features such as foreshores and escarpments are to be included.*
- (c) The passage of through motor traffic in residential areas and areas of pedestrian and cycling priority is to be discouraged.*

(9) Movement and parking

The planning principles for movement and parking within Ultimo-Pyrmont are as follows:

- (a) A range of housing and work, leisure and service facilities is to be provided in Ultimo-Pyrmont so that the need for travel is minimised.*
- (b) A high degree of accessibility is to be provided to places in and outside Ultimo-Pyrmont for both able and disabled persons. Walking, cycling and use of public transport are to be encouraged as the means of movement.*
- (c) Development in Ultimo-Pyrmont is to facilitate the provision and operation of a comprehensive regional public transport network.*
- (d) Development, particularly employment related development, is to be within the capacities of existing and proposed public transport and arterial road systems.*
- (e) The provision for vehicular movement is to be consistent with the development of a high-quality pedestrian environment within the street system.*
- (f) Parking controls are to support public transport strategies of the Government.*

The Sydney Fish Markets is located in a Residential-Business zone in the Sydney LEP 2005, for which the objectives of the zone are to:

- (a) to promote a wide range of uses, particularly business development including tourist, leisure, commercial, retail and office development consistent with Ultimo-Pyrmont's proximity to the Sydney CBD, harbour locations and transport infrastructure, and*

- (b) to accommodate residential development to a level compatible with adjoining business uses and consistent with the objective of creating a mixed-use area, and*
- (c) to accommodate uses which generate employment opportunities and provide facilities and services that enable people to live and work in the same community, and*
- (d) to ensure that the total amount of employment-generating development is compatible with the traffic capacity of Ultimo-Pyrmont and adjoining areas, and*
- (e) to encourage sustainable transport modes for journeys to work and other trips, including walking, cycling and all forms of public transport,*

2.2.3 Ultimo-Pyrmont Urban Development Plan 1999

The Ultimo-Pyrmont Urban Development Plan 1999 update states that the Sydney Fish Markets is a retail and leisure node that serves a “*unique retail attraction of regional significance for both tourists to Sydney and regular shoppers, and providing wholesale seafood supplies.*”

The UDP sets out the details of how development in Ultimo-Pyrmont will be implemented. Controls of relevance include:

- Identification of the possible future ramp from Wattle Street to the Western Distributor;
- Reinstatement of a view corridor at Miller Street;
- Parking provision rates of 1 space per 100 square metres of gross floor area (Map 14) for business development.
- Service Vehicle provision of:
 - 1 service vehicle space per 4,000 m2 gross floor area for first 20,000 m2;
 - 1 service vehicle space per 8,000m2 gross floor area thereafter.
 - 50% of the service vehicle spaces ' should be suitable for trucks.
- Access, parking, circulation and public domain requirements (Maps 15-18).

2.3 Approved Sydney Fish Markets Master Plan (2005)

In 2005 a Master Plan for the Sydney Fish Markets site was approved by the NSW Department of Planning. This plan included the redevelopment of the site to include significant uplift in commercial use of the site.

The approved master plan included the following floor space and parking provision for the site.

Table 2-1 Sydney Fish Markets approved Master Plan land use

Land Use	Proposed Floor space by use Sq m
Office	13,300
Retail	12,440
Wholesale	3,335
SFM Area	2,020
Selling floor including audit, seating, crate yard, weighing sorting and data entry	4,285
Total floor space	35,380

As part of the supporting documentation for the approved Master Plan, a Transport Management and Accessibility Plan was developed.

This TMAP involved the extensive use of surveys, on-site monitoring and other data sources to develop complete trip generation estimation. This was then assigned across travel modes to determine traffic trip generation for average weekday, average Friday and average Sunday.

In addition, the TMAP and approved Master Plan found that 993 parking spaces and 53 service dock spaces would be required for the combined land uses in the master plan. The NSW Department of Planning approved this number of spaces.

3 Existing Conditions

3.1 *Site Description*

The Sydney Fish Markets site is located at Bank Street, Pyrmont. It is approximately 1.2 km west of the Sydney CBD. It is located within the City of Sydney local government area.

The site is a roughly rectangular block placed on a north-south axis and is contained within an area between Pyrmont Bridge Road, Bank Street, the Western Distributor and Blackwattle Bay. As such, it has frontages to Pyrmont Bridge Road and Bank Street.

The Site is located within a maritime area fronting Blackwattle Bay and is adjacent to the Western Distributor and the Ultimo-Pyrmont Urban Renewal area. Over recent years, the surrounding parts of Pyrmont have been transformed from primarily industrial uses to mixed residential and commercial uses.

The site is home to an active fish market for both wholesale and retail trade and is a Sydney tourist attraction.

The site currently enjoys vehicular access to/from the intersection of Bank and Miller Streets Pyrmont.

Figure 3-1 shows the location of the subject site.

Figure 3-1 Site Location



3.2 *Sydney Fish Markets operations*

The Sydney Fish Markets operates as Sydney's wholesale hub for fish and seafood sales within Metropolitan Sydney. Its activities comprise:

- Sydney Fish Markets operations
- Seafood wholesale activities
- Seafood and local community retail
- Restaurant/cafés;
- Working fishing fleet;
- Seafood school;
- Commercial office space;
- Marina space for commercial cruise boats.

The existing uses are shown in the following table.

Table 3-1 Existing Land Uses

Land Use	Gross Floor Area (sq m)
Sydney Fish Markets Auction Hall	6945
Office Space	3246.7
Cooking School	498
Seafood Wholesale	1219
Retail	4600
Restaurants	883
Kiosks etc.	373
Total	17764.7

These land uses are described in the following sections.

Sydney Fish Markets operations

The Sydney Fish Markets operations include the seafood auction system, which is at the centre of Sydney's seafood supply chain. Locally caught and shipped seafood is sold on the auction floor, with the auctions commencing at 5:30 am each weekday, with Mondays and Fridays being the busiest days.

The majority of the seafood product sold by auction arrives by truck, with trucks being up to a 19 metre Semi-trailer in size. Purchased seafood is moved by hand trolley or forklift to trucks for distribution. These trucks are usually small rigid trucks or vans.

Seafood wholesaling

Seafood wholesale activities are directly related to the Sydney Fish Markets operations, and many are located on-site or close by. Seafood wholesaling tenants on the site operate seafood processing within their premises, and the Sydney Fish Markets provides a centralised offal collection service to minimise the traffic generated by the wholesale activities.

Various size trucks up to large rigid trucks are involved in the seafood wholesale activities. Offal removal is by a once-daily articulated vehicle trip (two-way).

Seafood and local community retail

There are six different seafood retailers on the site and this selection is attractive to the public seeking range, quality and price competition. Seafood retail is supported by a bakery, fruit and vegetable, bottle shop and delicatessen. These are complementary and act to enhance the attractiveness of the retail environment.

These shops also provide an important retail node for the local community.

Deliveries to the non-seafood retailers are usually by vans and small rigid trucks.

Restaurant/cafés

The restaurants and cafes are generally ancillary to the other retail activities. Sydney Fish Market is a very popular place for people wishing to eat seafood. There are two restaurants on site that provides table service; a number of the retail outlets in the retail arcade have limited seating at which patrons can eat prepared food (order from counter); similarly there are seats available outside along the edge of Blackwattle Bay.

Outdoor seating comprises approximately 76 tables with seating for up to 8 adults at each. There is also a small strip of grass next to the service lane and the two southernmost wharves which are used for seating by diners.

These activities require deliveries of non-seafood products and are usually by vans and small rigid trucks.

Working fishing fleet

There are two wharfs used by the local working fishing fleet. The fleet uses the Sydney Fish Market site to maintain their vessels and fishing equipment. This can entail the extension of nets, lines and other gear across the site for repair.

These boats unload at the northern dock, and their product is moved directly to the selling floor within the site.

Seafood school

This operates from the first floor of the main building and runs a series of cooking courses that promote the use of seafood. These occur mostly on Tuesday evenings outside of the transport peak period.

Commercial office space;

In the main building, Sydney Fish Market Pty Ltd occupies office space for administration and related use. There are also sub-let areas for commercial tenants.

Marina space for commercial cruise boats

The southernmost wharf provides marina berths for commercial cruise boats (some of whom offer services from the site) and casual berths for the general public to use when they access the site.

Public Tours and Education

Public tours for individuals, groups and schools are provided to show people over the site and introduce them to seafood. A regular flow of tourist operators have scheduled visits to the site, where their patrons are shown around. Some of these visitors may have a large seafood meal before leaving.

3.3 *Surrounding Land Uses*

Since the completion of the Sydney Fish Markets Master Plan in 2003, development of the area in Pyrmont has largely been completed, with a high residential, and employment population. Key Land uses in the area are described below.

Star City

Star City Casino is located 440 metres to the east of the site. It serves as a local retail, entertainment and dining hub in addition to being a regional entertainment venue. It has a large public car park and is also accessible via the light rail and is three stops from the Sydney Fish Markets.

Star City has approximately 2500 public car parking spaces.

Broadway shopping Centre

Broadway shopping centre is a sub-regional shopping centre with a retail food market, Coles supermarket and Target and K-Mart discount department stores located 1.3 km walk/cycle from the site. It also has cinemas and is located adjacent to the University of Sydney. Broadway shopping centre is accessible from the site via Wentworth Park road and Bay Street.

Broadway Shopping Centre has 1,872 public car parking spaces.

Sydney CBD

The Sydney CBD is located 1.2 km from the site via Pyrmont Bridge (this being the most direct walking route). The CBD is a source of visitors to site via walking, bus and bicycle and is a location for large retail and employment in the area.

Other retail in Pyrmont

There are two other, small supermarkets in Pyrmont that serve local shopping needs. These are the IGA, located on Miller Street approximately 100 metres from the site and the Coles located at the corner of Union and Edward Street

3.3.1 *Growth in Ultimo-Pyrmont*

The most recent census demographic information for the Ultimo-Pyrmont Area is shown in the following tables.

Table 3-2 Ultimo-Pymont residential and employment populations

Ultimo – Pymont	2001	2006	% Change
Employment	17,522	18,424	5.1%
Residential Population	11,915	16,641	39.7%
Employed Residents	5,846	7,641	30.7%
Residents employed locally	887	1,330	49.9%

Source NSW Transport Data Centre (Journey to Work data set) and ABS Census data

NB Employment and Journey to Work information does not include the section of Ultimo west of Wattle Street.

The above table shows that while population has increased by 40 percent during the 5 year period, employment increased by only 5 percent.

Table 3-3 and Table 3-4 show the mode share for workers employed in Pymont and Ultimo and for resident workers of Ultimo-Pymont.

Table 3-3 Journey to Work mode - Ultimo-Pymont residents

Employed Residents Main Mode	2001	2006	% Change (absolute)
Bus	10%	11%	1
Car Driver (incl truck and motorbike)	24%	24%	0
Car Passenger	4%	3%	-1
Ferry or Tram	*	2%	n/a
Did not work	11%	11%	0
Other modes	43%	42%	-2
Train	9%	6%	-3
Not Stated	*	2%	n/a

*Not recorded separately in the 2001 census.

Table 3-4 Journey to Work mode - Ultimo-Pymont workers

Ultimo-Pymont Workers Main Mode	2001	2006	% Change (absolute)
Bus	10%	9%	-1
Car Driver (incl truck and motorbike)	38%	38%	0
Car Passenger	5%	4%	-1
Ferry or Tram	*	2%	n/a
Did not work	11%	11%	0
Other modes	11%	11%	0
Train	25%	24%	-1
Not Stated	*	1%	n/a

*Not recorded separately in the 2001 census

While population has increased on the Pyrmont peninsula, it is clear that there not been a significant change in mode share between 2001 and 2006.

It is noted that development potential in Pyrmont has now largely been realised and so from hereon residential growth will occur at a much slower pace.

3.4 Road Network

The site is well placed within the state road network given that it is situated in adjacent to three major arterial roads – Western Distributor, Pyrmont Bridge Road and Wattle Street.

The site is accessed from the local road network at the intersection of Bank Street and Miller Street Pyrmont.

Bank Street is generally a two-way road with two lanes in each direction, with no parking allowed between Pyrmont Bridge Road and Miller Street. To the north of Miller Street, timed parking is allowed on both sides of the road.

Pyrmont Bridge Road is a declared State Road under the jurisdiction of the Roads and Traffic Authority of NSW (RTA) and is two-way with two lanes in each direction with additional turning bays at intersections. To the West at Taylor Street, Glebe, Pyrmont Bridge Road reduces to 1 travel lane in each direction, with turning lanes provided at some intersections.

The Western Distributor and its ramps, and their connections to Pyrmont Bridge Road are declared roads under the jurisdiction of the RTA and are controlled access roads.

Other key roads in the Pyrmont area include Harris Street, Bowman Street and Pyrmont Street. All of these roads are higher order (local) roads under the jurisdiction of the City of Sydney.

Parking restrictions vary along each of these roads.

3.4.1 *Traffic Flows*

Annual average daily traffic (AADT) flows on nearby roads were obtained from the RTA's website and are summarised in Table 3-5 below.

Table 3-5 Annual Average Daily Traffic Flows (RTA)

Road	1999	2002	2005	2008
Pymont bridge rd, West of Wattle St	24616	22010	22042	
Pymont bridge rd, North East of Wattle St	34762	31655	31105	
Western Distributor, West of Allen St	43767	47556	48855	49840
Western Distributor Ramps, South of Pymont Bridge Rd	34713	29718	31379	29685
Wattle Street, South of Pymont Bridge Rd	21565	19137	19924	18237
Western Distributor Ramps, North of Pymont Bridge Rd	14625	13464	13600	

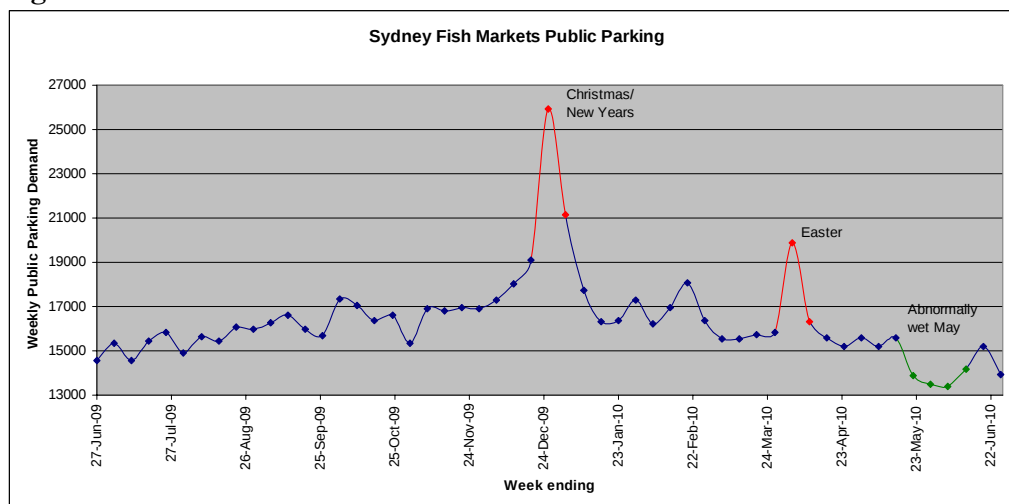
Source RTA Traffic Volume Data

From **Table 3-5** it can be seen that Pymont Bridge Road, and Wattle street had a decline in traffic following the opening of the Cross City Tunnel, with traffic redistributing around the network following the completion of this project. Traffic volumes on the Western Distributor have increased 22 percent in the 12 years between 1996 and 2008, an average increase of 1.9 percent per annum.

3.4.2 *Seasonal Variations in visitation to the Sydney Fish Markets*

Traffic flows in and out of the Sydney Fish Markets are seasonally dependant, with volumes having a normal peak in December at Christmas/New Years and Easter.

Figure 3-2 shows seasonal variation in traffic volumes entering the Market.

Figure 3-2 Seasonal variation in Fish Market traffic volumes.

The above seasonal variations have been analysed to provide a seasonal adjustment for the basis of the analysis. The seasonal adjustment factor is used to provide a measure of evaluating performance of the road network and car park for the Sydney Fish Markets across the year.

The calculation of the seasonal adjustment factor for 2009/2010 disregarded the Christmas/New year and Easter periods as they are extreme events and not representative of the entire year. The results of this calculation are shown in the following table.

Table 3-6 Seasonal adjustments

	Weekly Public Car park entries	
	Including Holidays	Excluding holidays
Max	25,925	19,862
Mode	15,519	15,519
Mean	16,329	16,041
85th percentile	17,317	17,203
75th percentile	16,919	16,874
6 June 2010	14185	
6 June 2010 percentile	8%	8%
Normalisation factor	122%	121%

The seasonal adjustment factor of 121 percent has been used to enable an evaluation of the increase in vehicular traffic at the site since 2002.

Table 3-7 Hourly Sunday inflow comparison (Cars) – 2002 to 2010

Sunday 15 minute volumes	2002 counts	2002 normalised (+22%)	2010 counts	2010 normalised (+21%)	Normalised Volume Change	% change
12:00 – 12:15	87	106	105	127	21	20%
12:15 – 12:30	87	106	99	120	14	13%
12:30 – 12:45	84	102	108	131	29	28%
12:45 – 13:00	117	143	122	148	5	3%
13:00 – 13:15	110	134	106	129	- 5	-4%
13:15 – 13:30	98	120	100	121	1	1%
13:30 – 13:45	78	95	90	109	14	15%
13:45 – 14:00	96	117	107	130	13	11%
Total	757	923	837	1015	92	10%

Between the 2003 approved TMAP and the time of application, traffic volumes into and out of the Sydney Fish Markets (seasonally adjusted) have grown by 10 percent.

This increase in volume of a Sunday peak is representative of the increased activity in Sydney Fish Markets and population in the Sydney Region and is consistent with the mode share found in 2003 as shown in Section 3.7.

3.4.3 *Intersection performance*

The road network surrounding the Sydney Fish Markets is dominated by intersections controlled by traffic signals. These intersections are:

- Bank Street, Miller Street and Sydney Fish Markets access.
- Bank Street and Western Distributor Ramps.
- Pyrmont Bridge Road, Western Distributor Ramps and Bank Street;
- Pyrmont Bridge Road and Harris Street;
- Pyrmont Bridge Road and Wattle Street.

Traffic volumes for typical weekday AM and PM, and Sunday peak periods at these intersections are shown in the following figure.

Figure 3-3 Weekday PM intersection volumes (2010 counted volumes)

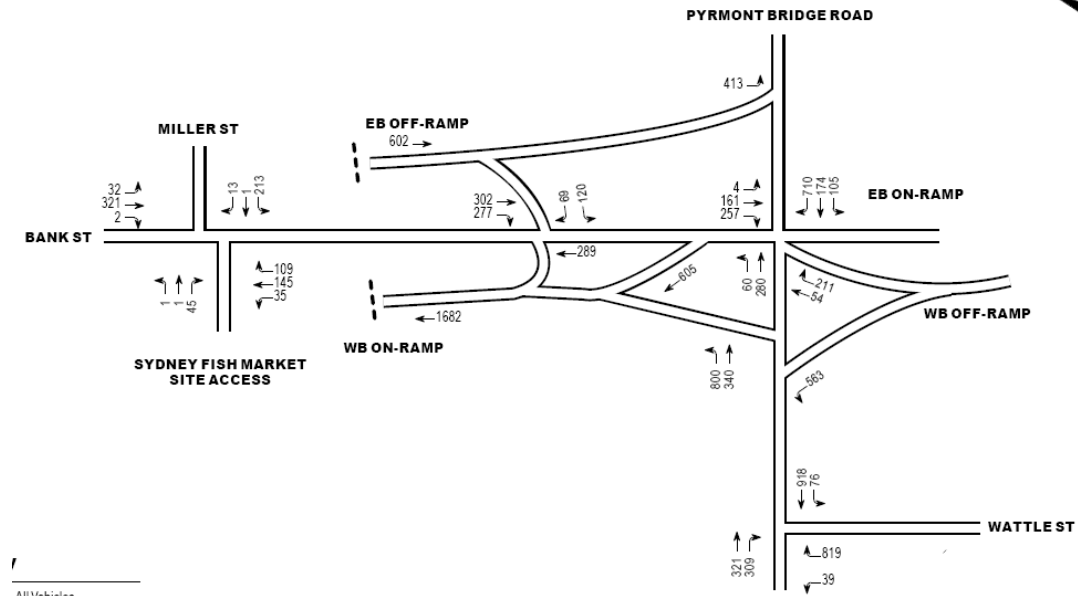
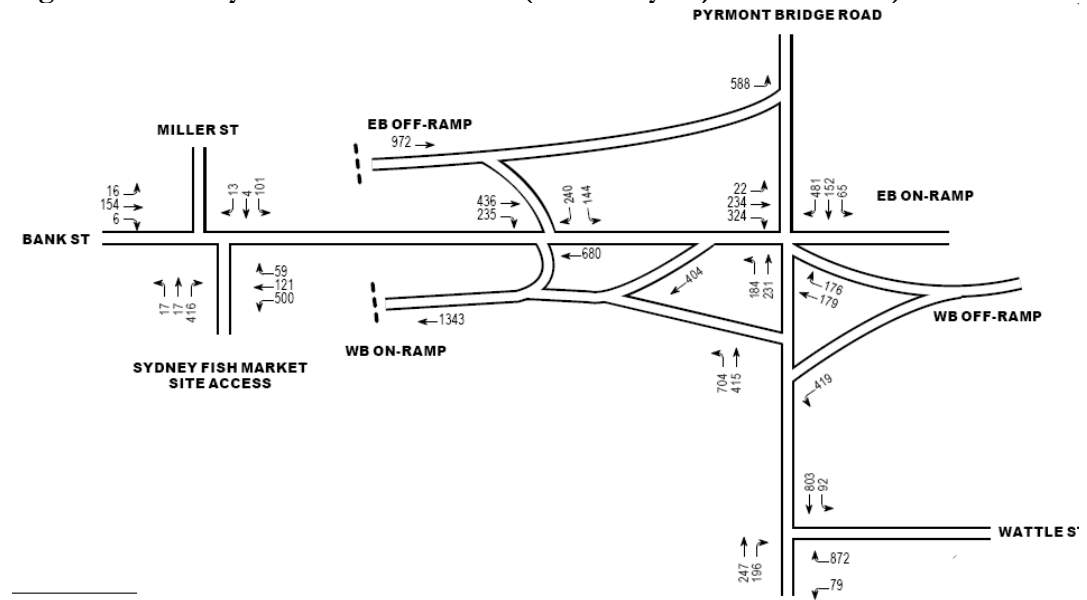


Figure 3-4 Sunday intersection volumes (seasonally adjusted volumes)



The performance of these intersections under current conditions was analysed using the Paramics traffic micro-simulation model. This traffic model evaluates the overall performance of a network by modelling individual vehicles to derive network wide statistics. Table 3-8 shows RTA intersection performance Criteria.

Table 3-8 RTA Level of Service Criteria

Level of Service (LoS)	Average Delay per Vehicle (secs/veh)	Traffic Signals, Roundabout	Give Way & Stop Signs
A	less than 14	Good operation	Good operation
B	15 to 28	Good with acceptable delays & spare capacity	Acceptable delays & Spare capacity
C	29 to 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Operating near capacity	Near capacity & accident study required
E	57 to 70	At capacity; at signals, incidents will cause excessive delays Roundabouts require other control mode	At capacity, requires other control mode
F	greater than 70	Extra capacity required	Extreme delay, traffic signals or other major treatment required

Table 3-9 shows the existing intersection performance against RTA level of service criteria

Table 3-9 Intersection Performance – 2010 AM and PM Peak Period – Levels of Service

Intersection	Thursday PM		Sunday Midday	
	Av. Delay (s)	LoS	Av. Delay (s)	LoS
Pymont Bridge Road / Wattle Street	82	F	60	E
Pymont Bridge Road / Harris Street	30	C	27	B
Bank Street / Miller Street / Fish Market Access	39	C	49	D
Pymont Bridge Road / Bank Street	77	F	57	E

It is noted that the performance of the intersection of Pymont Bridge Road and Bank Street is constrained by congestion on Anzac Bridge during the PM peak period. Eastbound queuing on Pymont Bridge Road affects the operation of the Pymont Bridge Road and Wattle Street Intersection. Northbound queues on Wattle Street can extend back as far back as Fig Street.

The intersections of Pymont Bridge Road with Wattle Street and Bank Street are operating at capacity during the Sunday Midday peak hour. The intersection of Bank Street and Miller Street operates near capacity with its operation occasionally effected by southbound queuing on Bank Street approaching Pymont Bridge Road.

These delays are consistent with those observed on site.

3.4.4 Summary

The capacity of the local road network is limited and the existing access to the Sydney Fish Markets is constrained with little scope for additional capacity due to the location of the structures and columns for the Western Distributor and its ramps. Accordingly, in line with the approved Master Plan, the amount of car parking will need to be limited to a level that is compatible with the level of spare capacity on the access road systems at different times of the week.

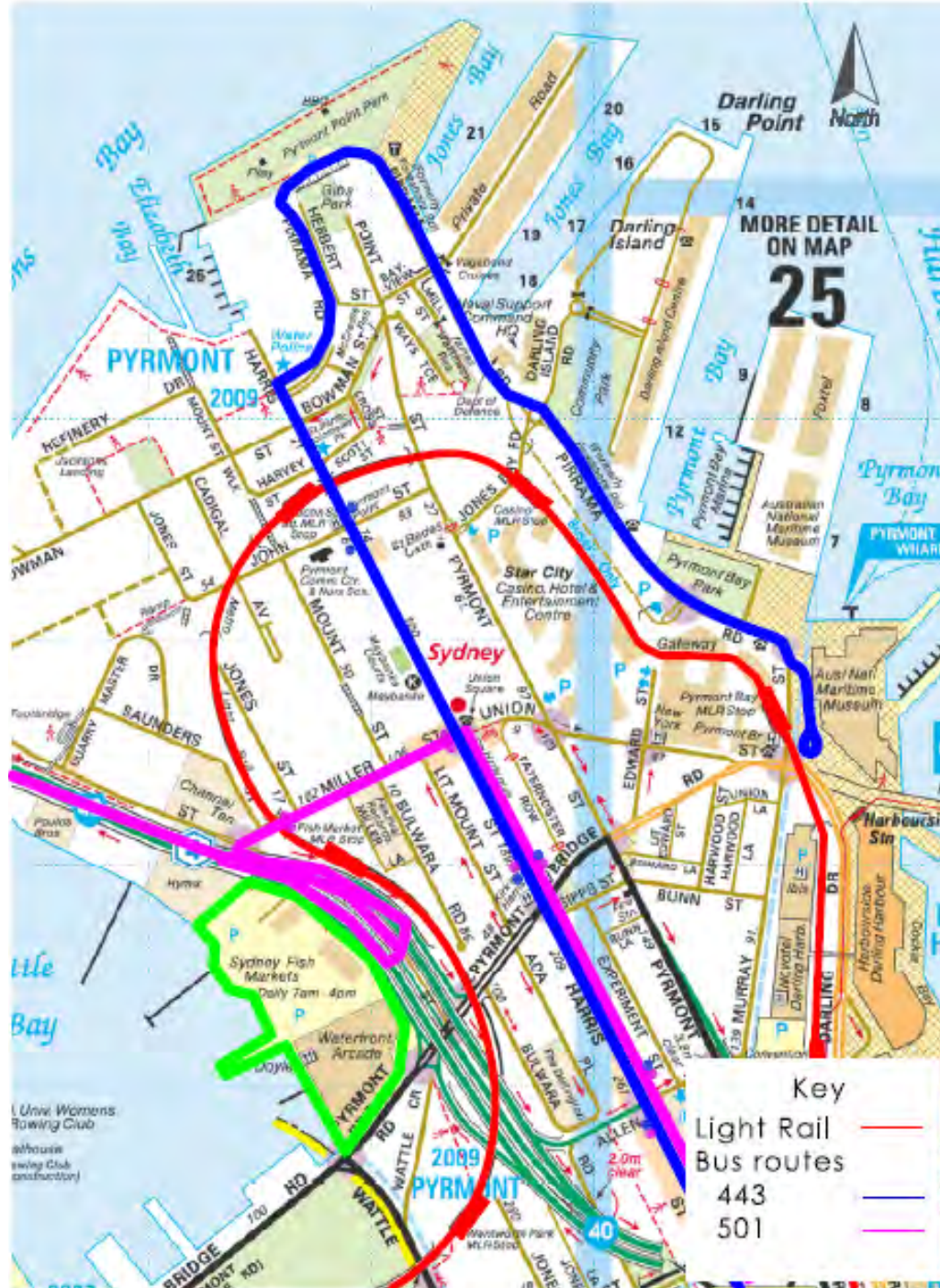
3.5 Public Transport Network

The Sydney Fish Markets is well served by public transport, with 2 major public transport services in short walking distance from the site. These are:

- Services provided by Sydney Buses connecting the Sydney Fish Markets to the Sydney CBD and the Balmain Peninsula via the Anzac Bridge;
- Services provided by Sydney Metro Light rail connecting to Pymont, Ultimo, Glebe and in 2012 to Leichardt, Summer Hill and Dulwich Hill.

These routes are shown in Figure 3-5.

Figure 3-5 Sydney Fish Markets Public Transport Network



3.5.1 Bus Services

The following bus services provide access to the Sydney Fish Markets on a regular basis.

- Route 501 – West Ryde to CBD – travels along Bank and Miller Streets, with the nearest stop located on Miller Street approximately 90 metres walk from the Fish Markets pedestrian entry at Miller Street.
- Route 443 – Darling Harbour to CBD – travels along Harris Street, with the nearest stop located on Harris Street, approximately 220 metres walk from the Fish Markets pedestrian entry at the intersection of Pyrmont Bridge Road and Bank Street.

The frequencies for these services are shown in the following table.

Table 3-10 Bus Service headways

Direction towards	Route	Headway between services (minutes)			
		Weekday			Sat/Sun
		7-9am	12-2pm	4-6pm	12-2pm
City	443	08:04	15:00	09:17	20:00
	501	9:18	20:00	20:00	30:00
	Combined	04:00	08:34	06:25	12:00
Darling Harbour	443	08:13	15:00	10:14	20:00
West Ryde	501	16:45	20:00	09:47	30:00
Sydney Fish Markets (from City)	Combined	08:00	08:34	04:55	12:00

Table 3-10 shows that the Sydney Fish markets is well served by bus services to and from the City and inner north west of Sydney, with a service delivering workers and visitors with a high frequency., accessible bus service, meeting the transport access criteria guidelines of the Integrating Land Use and Transport Package.

3.5.2 *Light Rail*

The existing light route connects the Sydney Fish Markets to Central railway station via Darling Harbour and Ultimo; and to Lilyfield via Glebe and Annandale. The Sydney Fish Markets Light Rail Station is approximately 70 metres from the Bank Street (at Miller Street) pedestrian entrance.

The Light Rail operates at 10-15 minute intervals between 6am and 10pm.

In 2010, the NSW Government committed \$500 million to the extension of the light rail to Dulwich Hill from Lilyfield, and investigation of an extension to Circular Quay from Central, via Barangaroo.

These extensions will increase the public transport access to and from the Fish Markets and potentially reducing car usage for trips to the Sydney Fish Markets.

3.5.3 *Tourist Services*

The Sydney Explorer (route 111) bus stops close to the Sydney Fish Markets near the intersection of Harris Street and Pyrmont Bridge Road. This premium tourist service operates at a 20 minute frequency from 9:03 am to 6:43pm.

3.6 ***Walking and Cycling Network***

3.6.1 *Walking network*

The Sydney Fish Markets is connected to the surrounding area of Pyrmont, Ultimo and Glebe by a good pedestrian network. Pedestrian crossings are provided at the traffic signal controlled intersections at the intersections of Bank Street with Miller Street and Pyrmont Bridge Road and along Pyrmont Bridge Road at the Wattle Street; the Western Distributor and Harris Street.

The Sydney Harbour Foreshore Authority and NSW Department of Planning have a long term plan for a foreshore walk along the length of the Sydney Harbour. Many parts of this path have been completed, including the Glebe Foreshore, Jacksons Landing and paths around Distillery Hill.

Access routes for people with disabilities near Sydney Fish Market are: the proposed foreshore promenade, Pyrmont Bridge Road and Bank Street. Miller Street is also nominated as a major route with access to Pyrmont Bridge.

The City of Sydney has identified a *Liveable Green Network* to connect the City's residents and workers to the Sydney Harbour Foreshore and a green ribbon for walking and cycling through the City. This is shown in the following figure.

Figure 3-6 City of Sydney Liveable Green Network



Source: City of Sydney, 2008

3.6.2 *Cycling network*

The Sydney Fish Markets is located close to one of the primary bicycle routes in the Sydney City area. This route connects Rozelle to the City via the Anzac Bridge, Saunders Street, Miller Street, Union Street and Pyrmont Bridge. This route is currently undergoing a significant upgrade with the Union Street Cycleway – a segregated two-

way facility on the northern side of Union Street between Harris Street and Pyrmont Bridge.

Other Cycleways to be upgraded (by Council) in the area include:

- Miller Street from Bank Street to Harris Street;
- Bank Street from Miller Street to Bowman Street;
- Saunders Street from Miller Street to the Anzac Bridge Ramps.
- Bulwarra Road from Allen Street to Mary Anne Street
- Darling Drive.
- Bowman Street

In addition, the City has identified that it will upgrade footpaths in the vicinity of the Sydney Fish Markets to be shared paths. These paths include:

- Pyrmont Bridge Road
 - Both Sides between Bank Street and Taylor Street
 - Southern side between Bank Street and Darling Drive
- Bank Street - Western side
- Wattle Street - Eastern and Western sides
- Taylor Street – Eastern side
- Quartermaster drive – northern side

These existing and proposed facilities in the area are shown in Figure 3-7.

Figure 3-7 City of Sydney Cycleways proposals



3.7 *Existing transport usage*

In June 2010, surveys were undertaken to evaluate the transport mode split for people arriving and departing at the Sydney Fish Markets. These surveys included:

- Vehicle occupancy for vehicles entering and exiting the site;
- Number of vehicles, by class entering and leaving the site;
- Number of pedestrians entering and leaving the site; and
- Interview survey to determine how pedestrians arrived at the site and their purpose.

The 2003 TMAP examined the origin of people visiting the site. This survey was repeated for pedestrians walking onto the site.

The 2010 pedestrian surveys found that 45 percent of visitors who arrived by foot parked locally off-site on a Sunday, representing 15 percent of total visitors arriving at the site.

The results of these surveys are shown in the following tables.

Table 3-11 Mode Share (2010)

Mode	Overall	Weekday	AM (7-9 am)	PM (4-6pm)	Sunday (12-2pm)
Car Driver	33%	38%	41%	34%	33%
Car Passenger	41%	8%	7%	10%	45%
Car Total	74%	46%	48%	44%	78%
Walked Only	16%	25%	19%	35%	14%
Bus	3%	2%	2%	2%	3%
Tram	3%	2%	1%	4%	3%
Light Commercial	1%	10%	13%	6%	1%
Rigid Commercial	0%	8%	12%	1%	0%
Taxi	1%	0%	1%	1%	0%
Bicycle	1%	5%	3%	6%	1%
Other	1%	1%	0%	1%	0%

The above table shows that there is a high proportion of vehicle traffic to the site on both weekdays and Sundays. This is reasonable due to the nature of the seafood purchases and the desire to maintain a low temperature for seafood for transportation for off-site consumption.

Vehicle occupancy for cars has, based on surveys slightly decreased since 2003. The following table compares vehicle occupancies by time of day for the 2003 and 2010 site entry surveys.

Table 3-12 Vehicle Occupancy

Time of Week	Average Occupancy	
	2003	2010
Weekday morning peak	1.54	1.18
Weekday evening peak	1.32	1.31
Sunday midday	2.43	2.33

3.8 Summary

The Sydney Fish Markets site is well located within road, public transport and walking and cycling networks, with good accessibility to the Sydney CBD, Ultimo-Pyrmont, Glebe, Rozelle and major transport interchanges at Central and Town Hall via the Light Rail and buses respectively.

The Sydney Fish Markets site meets the criteria set within the *Integrating Land Use and Transport Package* and the *NSW Planning Guidelines for Walking and Cycling* for the placement of businesses and services. It is well served by public transport, located within a densely populated area and has good current and proposed walking and cycling networks.

While the volume of car usage to the site has increased, it has been in line with the growth in surrounding transport networks.

4 Proposed Development

4.1 *Proposed Development*

The proposed development represents a significant improvement to the leisure/retail precinct of the Sydney Fish Markets. It includes a removal of the existing hard surface car park and replacement by a three level public car park, additional wholesale, retail and dining spaces.

The project will enhance the recreational environment and increase open space in the Pyrmont area. Facilities for pedestrians and bicycle riders will be improved through the creation of a new foreshore walk and a 2.5 metre shared path along Bank Street.

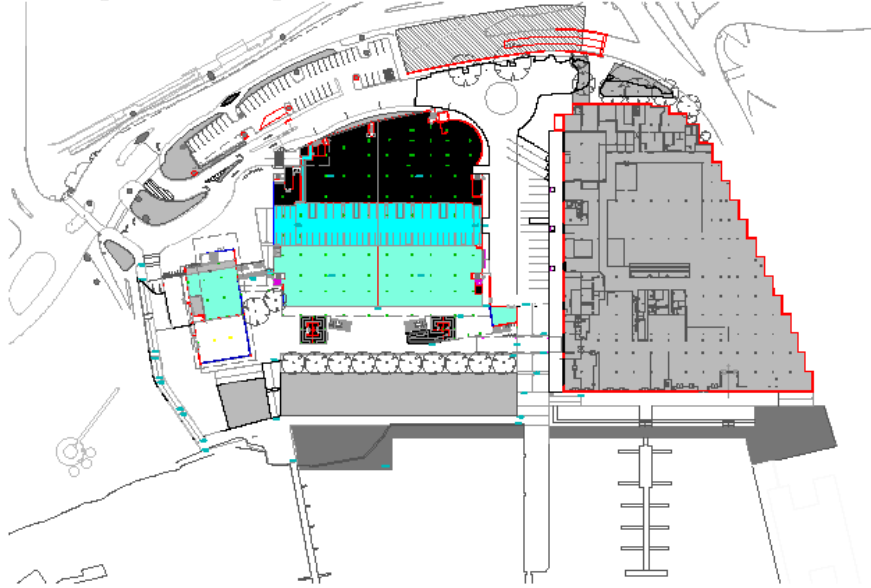
The access to the Sydney Fish Markets via the intersection of Bank and Miller Streets is proposed to be significantly improved by separating the vehicular entrance and exit; relocating the pedestrian access to the site to improve pedestrian and traffic flow and improving safety for all users.

Approval is sought for the project, which will be constructed in 3 stages, being stages 2-4 of the Fish Markets redevelopment.

These works are:

- Stage 2 – Demolition of existing building 40 construction of part of the floor slab for the new retail and wholesale building
- Stage 3 – Demolition of existing buildings 31,41,42,43 and 64 and construction of floor slabs for levels 1-4 and road works for the new entry road.
- Stage 4 — Demolition of existing buildings 36, 37 and 39, construction of an extension to the Stage 1 development and new kiosks, outdoor seating and net drying and storage area.

The final proposed development is shown in Figure 4-1 and in Appendix A.

Figure 4-1 Proposed Development

The floor areas associated with each land use are shown in the following table.

Table 4-1 Land Use Changes

	Retail	Restaurant	Kiosk etc	Office	Wholesale	Auction Hall	Cooking School	Total
Existing	4,600	883	373	3,247	1,219	6,945	498	17,765
Proposed	5,921	2,699	2,509	3,247	2,514	6,945	498	24,333
Change	1,321	1,816	2,136	-	1,295	-	-	6568
% Change	29	206	573	0	10	0%	0	0.37%0%

4.2 ***RTA and City of Sydney Council requirements***

The requirements of the City of Sydney Council and Roads and Traffic Authority have been considered in the assessment of the development and its transport impacts.

4.2.1 *City of Sydney Issues*

The City of Sydney raised traffic and transport issues in relation to:

- Pedestrian and cyclist movements;
- Details about internal access and circulation arrangements; particularly in relation to pedestrians and minimising potential conflict between vehicles and pedestrians;
- Consideration to minimising internal car parking to encourage public transport usage;
- Details about whether the existing car park on Bank Street will continue to be used for overflow parking;
- Investigation, in conjunction with the RTA of network improvements, including the Wattle Street Ramp.

4.2.2 *Roads and Traffic Authority Issues*

The Roads and Traffic Authority, in its consultation letter, raised issues relating to:

- Network performance (including intersections);
- Impacts on non car modes;
- Details of daily and peak traffic generation; and,
- A package of measures to address traffic and transport demand.

During consultation with the RTA, primary concern was the excess queuing during the peak Easter and Christmas/New Years periods. The RTA suggested that variable message signs be used during these periods to advise of delays and encourage visitors to modify behaviour.

The ramp from Wattle Street to the Western Distributor (see 4.2.1) was raised with the RTA. The RTA has no current plans for this ramp and given the scale of the Sydney Fish Markets redevelopment, which would not, of itself, precipitate such a major road system upgrade, is not appropriate for any further analysis.

4.3 *Public Parking requirements*

4.3.1 *Planning controls for parking*

The Ultimo-Pyrmont Development Plan sets allowable parking for business zoned sites north of Pyrmont Bridge Road and East of Harris Street as follows:

- Visitor/Employee parking – 1 space per 100 square metres of gross floor area.
- Service Vehicle provision of:
 - 1 service vehicle space per 4,000 m2 gross floor area for first 20,000 m2;
 - 1 service vehicle space per 8,000m2 gross floor area thereafter.
 - 50% of the service vehicle spaces ' should be suitable for trucks.

However, as the Sydney Fish Markets does not operate as a normal local retail or commercial business. As described previously, the Sydney Fish Markets is the centre of wholesale seafood trade for the entire Sydney Metropolitan area, as well as being a working port. It also is an important tourist attraction in inner Sydney, attracting visitors from Greater Sydney and beyond.

As identified in the approved 2005 Master Plan, and supporting TMAP, approximately 170 vehicles visit the Sydney Fish Markets for the basis of transporting seafood. In addition, over 400 retail and dining visitors can visit the site by car during a Sunday peak hour (peak parking demand).

4.3.2 *Parking demand for the Sydney Fish Markets*

Parking demand from visitors to the Sydney Fish Markets varies between the day of the week and time of day. Daily variations in activity are shown in the following table.

Table 4-2 Daily variation in visitations

	Visitors		
	Mean Visitors	Median Visitors	85 th percentile
Monday	2,629	2,460	3,192
Tuesday	2,405	2,263	2,763
Wednesday	2,582	2,323	2,629
Thursday	2,674	2,435	3,002
Friday	3,004	2,943	3,334

Saturday	4,092	4,188	4,559
Sunday	4,245	4,331	4,766

Daily visitors is the number of pedestrians entering via either the main entrance or Fruit shop entrance and does not include Wholesale or Auction Floor activity

Parking requirements on a Sunday vary across the year, with a high seasonal variation. The most recent traffic counts were undertaken during June 2010. This compares with counts undertaken in August 2002. In 2010, 837 vehicles entering the site between 12pm and 2pm compared with 812 vehicles in 2002. This shows a plateau in parking generation due to constraints in the supply of available parking.

The current car park has a nominal 417 parking spaces, with approximately 40 informal parking spaces and 1.2 kilometres of circulating aisle, providing space for approximately 500 cars on site. There is also queuing space for 28 cars between the Bank Street entrance and the pay booths.

A sample survey of pedestrians walking onto the site in 2010 found that 15 percent of visitors walking onto the site parked off-site and walked onto the site, representing 104 vehicles that parked elsewhere

Using the seasonal adjustment factors and growth since the approved Master Plan TMAP, the Sunday (all day) parking generation has been modelled for the entire site.

Overall parking demand for the existing situation (including visitors parking off-site and on-site staff parking) is shown in the following figure.

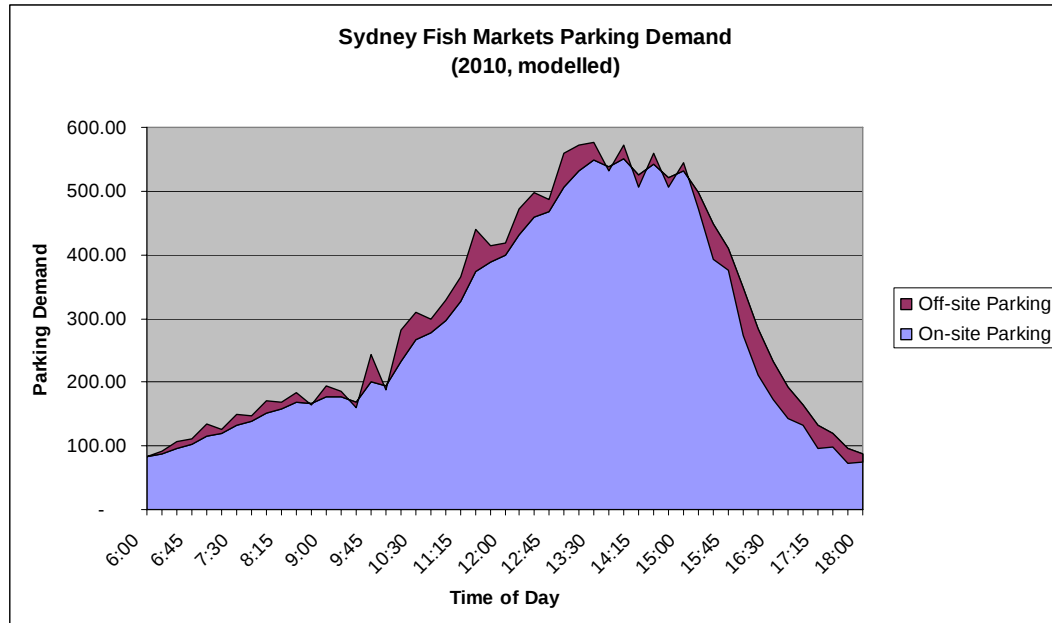
Figure 4-2 Sydney Fish Markets total parking demand

Figure 4-2 shows that total parking demand on-site for the Sydney Fish Markets on an 85th percentile day in 2010 is 551 vehicles at 2 pm for mid November. Of this parking, it is estimated that in the order of 100 spaces are used by site employees (in 2002, it was found that there was 123 vehicles on site prior to 7 am on a Sunday).

4.3.3 *Evaluation of parking demand*

The 2005 approved Master Plan TMAP found the following parking demand for the Sydney Fish Markets was 6.68 spaces / 100 m² (Nett Leasable Area) total for retail and restaurant (and associated activities) uses, equating to 9.54 spaces per 100 m² (Gross Floor Area).

The proposed development separates public parking from loading bays and the ground level parking, which on weekdays is dedicated to vans and small rigid trucks. On weekends, this parking is available for use by staff, freeing the multi-level car park for visitors.

As Sunday is the peak parking demand day, the requirements for public car parking have been evaluated on the following basis:

- Staff do not use the multilevel car park on a Sunday;
- All parking demand (including existing off-site parking) is included in the evaluation;
- Evaluation is based on land uses that generate trips on Sundays.

An evaluation of the peak parking demand for the entire site (including existing off-site parking) shows that for existing retail and dining associated uses, the peak parking demand is 9.80 spaces per 100 square metres of Gross Floor Area.

Applying the same principle to the entire site (17,765 m² GFA) results in a parking rate of 2.53 spaces per 100 m² GFA.

The 2010 proposal includes the following traffic generating land uses.

Table 4-3 Retail and dining related land use changes

	Retail (m²)	Restaurant (m²)	Total (m²)
Existing (GFA)	4,600	883	5,483
Proposed(GFA)	5,921	2,699	8,620
Change (GFA)	1,321	1,816	3,137
% Change	29	206	57

Considering parking restraint as a goal (as requested by City of Sydney Council), a number of alternative means of determining the parking requirements for a Sunday were appraised. These are:

1. Complete restraint (supplying existing demand only).
2. Unconstrained supply based on existing parking rates.
3. Applying the Ultimo Pymont Urban Development Plan rates to the increased land use plus existing parking demand.
4. Applying the Roads and Traffic Authority's Guide to Traffic Generating Development parking rates to the proposed total retail and dining land uses.
5. Applying the Roads and Traffic Authority's Guide to Traffic Generating Development rates to the increased retail and dining land use in addition to the existing parking demand.
6. Applying the Ultimo Pymont Urban Development plan rate to the entire development.

The results of applying these rates are shown in the Table 4-4.

Table 4-4 Parking Demand

	Parking Supply evaluation method	Evaluation measure	Gross Floor Area (m²)	Parking rate (spaces/100 m² GFA)	Peak parking demand*
1	Complete restraint	Existing retail and dining GFA	5,856	8.02	451
2	Unconstrained supply	Proposed retail and dining GFA	11,129	8.02	857
3	Applying UDP to increased GFA plus existing demand	Existing site total GFA	17,764.7	2.54	451
		Increased total GFA	6,568	1	66
		Total	24,332.7		516
4	Applying RTA rates to total retail and dining development	Proposed Retail GFA	5,921	6.1	361
		Proposed Restaurant GFA	2,699	15	405
		Total			766
5	Applying RTA rates to increased GFA plus existing demand	Existing site retail and dining GFA	5,856	8.02	451
		Increased retail GFA	1,321	6.1	81
		Increased restaurant GFA	1,816	15	272
		Total			804
6	Applying the UPD to the entire development	Total site GFA	24,333	1	244

*visitor parking demand

The above table shows that applying the UDP parking rates for the site to the entire redevelopment will not address existing parking demand and will push parking onto the surrounding street network.

In order to address the City of Sydney's issues relating to “...*minimising internal car parking to encourage public transport usage...*”, The Sydney Fish Markets will provide a lower level of parking that applies some constraint, while providing sufficient spaces to allow for the metropolitan wide nature of the development.

The 2005 Master Plan included provision for 993 parking spaces. The consent for this Master Plan identified that parking supply may need to be reduced if improvements to the external road system to accommodate additional traffic generation could not be made.

As identified in section 3.4.4, the existing road network has limited capacity to manage additional traffic generation from the site. Based on analysis of various levels of parking provision and associated parking space turn over (see section 5.1), an appropriate level of parking was found by applying the Ultimo Pyrmont Urban Development Plan rates for the area to the increased floor area, in addition to meeting existing parking supply (evaluation method 3).

The proposed level of public car parking in the multi-level car park (including disabled spaces) is 510 spaces. This is 6 spaces lower than would otherwise be required using the identified evaluation method. However, based on the existing design, which aims to maximise improvements to the urban environment, this would require an extra level of parking to be constructed – which is not appropriate.

Staff parking will take place in the ground floor loading area on weekends and they will not be able to use the multi-storey car park in order to ensure that an appropriate level of public car parking is provided on-site. During peak times of the year (Christmas/New Years and Easter), staff parking may be relocated to off-street parking away from the site, as occurs currently.

4.4 Access and Parking

The development proposes an increase in on-site parking provision, with the creation of the 3 level car park, and undercroft loading area. The existing hard surface Jones Street car park will be retained, with a reduction in parking at this location in order to provide the new access from Bank Street.

4.5 *Parking Management during construction*

During the stages of construction, parking on-site, will at times be reduced below the current levels of provision. The levels of parking supply available during each stage of construction have been evaluated as part of the Construction Traffic Management Plan (separate report).

Hours of operation for the Sydney Fish Markets wholesale and retail businesses may be modified to ensure maximum opportunity for parking when Stages 2 and 3 are under construction. This will enable vehicles collecting seafood to use the car prior to 9-10 am and the general public to use the car park after this time.

Sydney Fish Markets will develop a plan, in consultation with Transport NSW, Roads and Traffic Authority and the City of Sydney Council to manage parking during the construction phase, including promotion of the use public transport, walking and cycling.

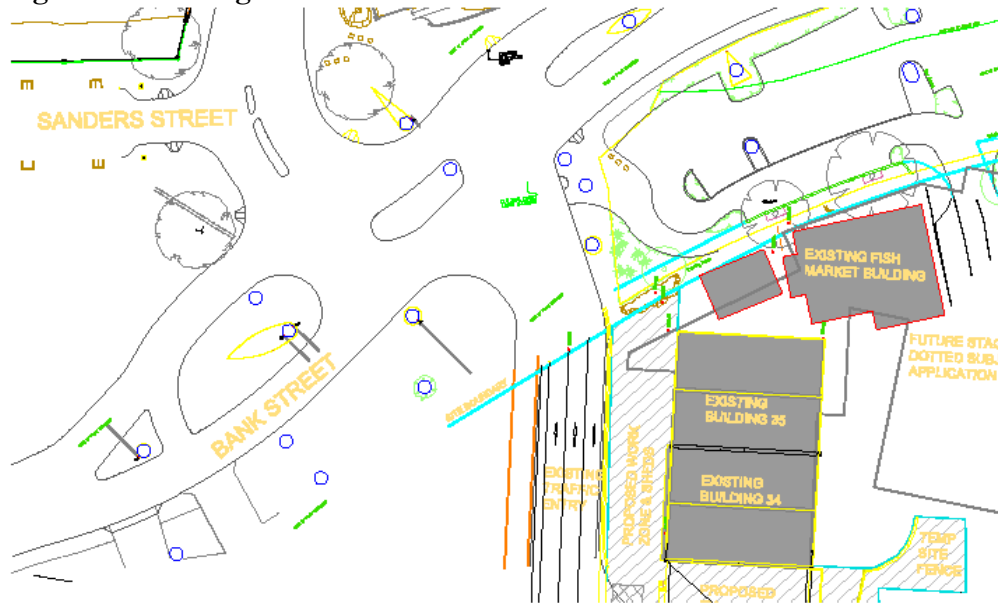
This construction parking management plan will also identify alternative parking locations for necessary car trips and means of accessing the Fish Markets from the parking stations located around Pyrmont, Ultimo and Glebe.

4.6 *Site Access Considerations*

As part of the revitalisation of the Sydney Fish Markets, the Miller Street intersection is proposed to be reconfigured to create a more pedestrian friendly access.

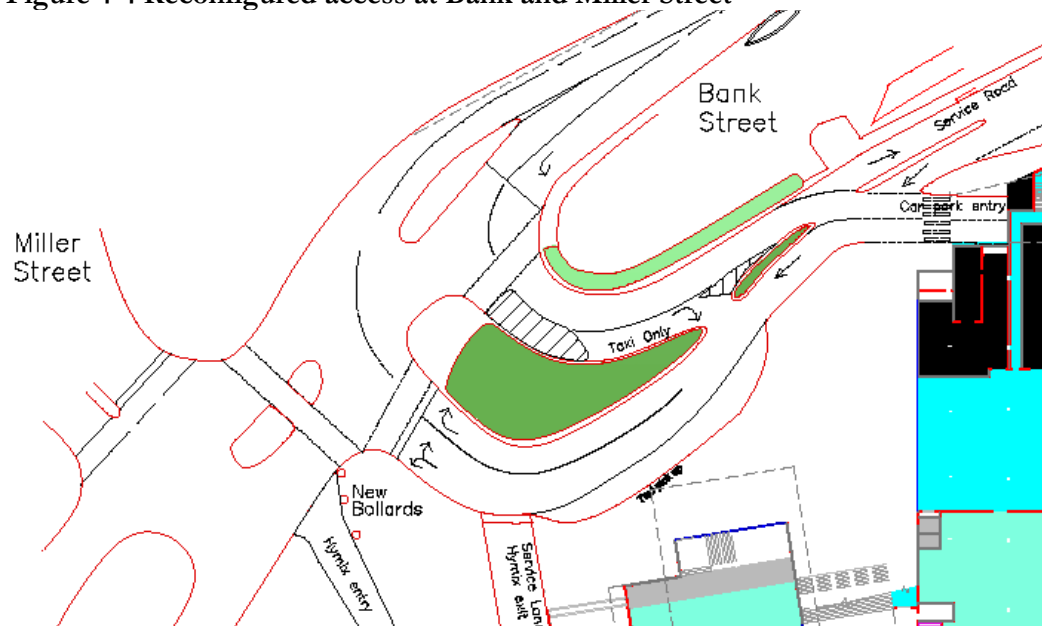
The existing intersection of Bank Street and The Sydney Fish Markets access driveway is shown in Figure 4-3.

Figure 4-3 Existing access at Bank and Miller Street



The proposed reconfiguration of the intersection is shown in Figure 4-4.

Figure 4-4 Reconfigured access at Bank and Miller Street



The modified arrangements at this intersection will provide the following improvements to access and amenity to the Sydney Fish Markets:

- Modification to the intersection to improve pedestrian access and overall traffic operations;
- New Taxi drop off and rank;
- Improved pedestrian access from Bank Street;
- 2.5 metre shared footpath along Bank Street.

The modifications to the intersection are designed to improve the safety and amenity for pedestrians and bicycle riders accessing the Sydney Fish Markets and Blackwattle Bay. By relocating the pedestrian crossing across Bank Street from the southern side of the intersection to the northern side of the Sydney Fish Markets driveway, significant improvements will be achieved. These include:

- A more direct entrance for pedestrians and public transport users arriving from Miller Street.
- Significant reduction in pedestrian/vehicle conflict by separating pedestrians from the main service vehicle access and car park access.
- Improvement to traffic signal operations by reducing delays for vehicles through the relocation of the marked foot crossing at the intersection.

Figure 4-5 Access improvements from Bank and Miller Streets

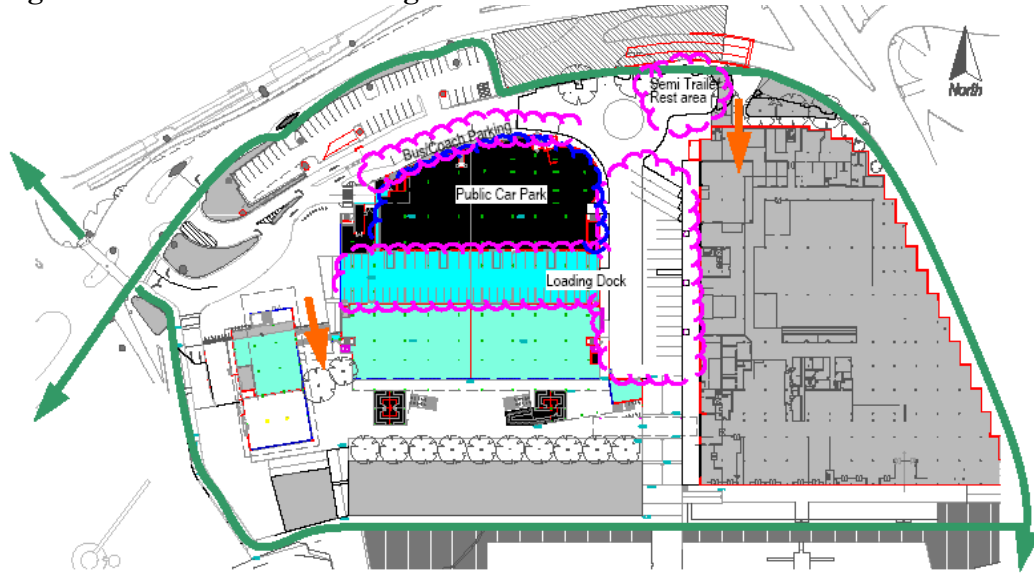
4.7 *Internal Arrangements*

The internal arrangements for the Sydney Fish Markets are the following:

- An internal roadway from the Bank/Miller Street intersection
- A separate service vehicle and distribution roadway
- Dedicated Bus pickup and drop off
- Improved pedestrian access
- Separation of seafood wholesale vehicles from public car parking
- Rest and recovery area for Heavy Vehicle Drivers
- Improved access for bicycle riders
- Dedicated guidance signage to access Fish Markets and Wentworth Park Light Rail Stations.

The internal access arrangements are shown in the following figure.

Figure 4-6 Internal access arrangements



4.8 *Public Car park arrangements*

Access to the public car park is via an internal roadway connected to the Bank and Miller Street intersection. This internal roadway diverges from the service roadway, with ticket barriers within the car park building.

The Car park will have three levels of parking accessed via a ramp. The design of the Car park will comply with the relevant Australian Standards – AS2890.1 – Off street car parking and AS2890.6 – Parking for people with disabilities.

4.9 *Service Vehicle Requirements*

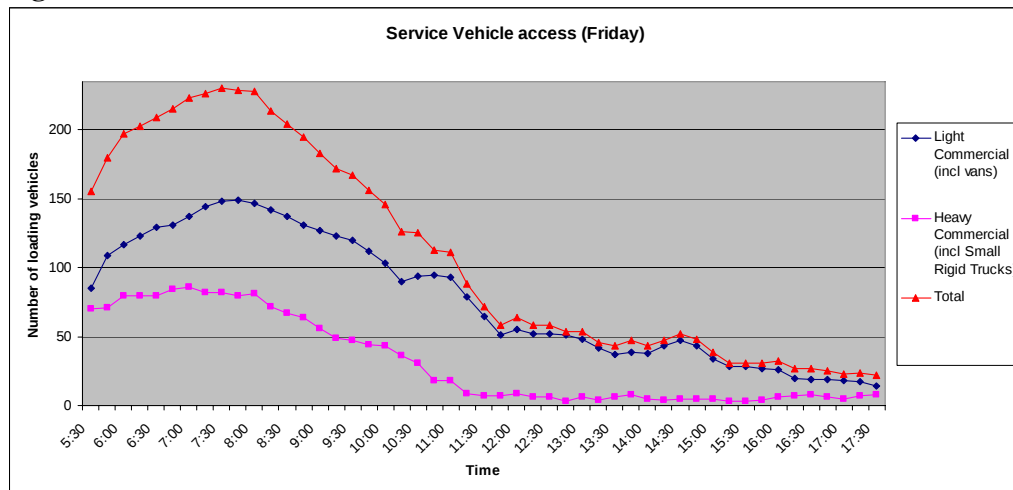
Service vehicle access and design has been developed based on information provided by the Sydney Fish Markets. As the Sydney Fish Markets is the regional wholesale auction and distribution facility, parking for large vehicles for loading and unloading is required. These operations usually operate in the following manner.

- Heavy trucks, including semi-trailers arrive during the night from the arterial road network. These trucks unload in the hours prior to commencement of the seafood auction at 5:30am.

- From 4:30am onwards, distribution trucks begin to arrive to collect seafood for distribution to restaurants and retail shops. The inbound activity peaks at 530 am at the beginning of the auction.
- Following commencement of the auction, laden vehicles (either refrigerated or following ice purchase) commence leaving the site. In addition, other vehicles will arrive to collect processed fish from the on-site wholesale operations.
- Service vehicle exits peak at 8am on a Wednesday and 11am on a Friday.

The approved Master Plan TMAP showed that service vehicle demand peaked at 230 vehicles during the Friday morning peak. It is understood that these numbers have remained stable in the intervening period to 2010. This is shown Figure 4-7.

Figure 4-7 Service Vehicle Demand Profile



The size and number of the service vehicle parking spaces has been determined by Sydney Fish Markets based on current and future operations. This requirement is:

- 3 Semi Trailer loading docks
- 4 Semi-trailer rest and recovery bays
- 19 Small Rigid vehicle bays.
- 13 loading docks for medium and large rigid trucks.
- 69 dedicated bays for vans and other light commercials.

All un-processed fish will be loaded in the dedicated loading areas.

In addition, small vans and light commercial vehicles will be able to use level 1 of the car park and the Bank Street Car Park for loading small boxes of processed fish. During periods of high trading, Small Rigid Vehicles (up to 6.4 metres) may use level 1 of the car park.

The Service Vehicle loading docks have been designed to comply with AS2809.5 – Commercial Vehicle Off-Street Facilities. Swept paths for heavy vehicles accessing the loading areas are shown in Appendix D.

4.10 Bicycles

4.10.1 Bicycle routes

The proposal includes the provision of:

- A new shared path along Bank Street from the corner of Pyrmont Bridge Road to Miller Street. This route will be designated for commuters who wish to access the Miller/Union Street Corridors.
- A new shared path for access along the Blackwattle Bay to the new promenade park and the future connections to Jacksons Landing and Pyrmont Park.
- The proposed development is well connected to the City's proposed network.

4.10.2 Bicycle Parking

The governing planning requirements for bicycle parking at the Sydney Fish Markets is the Urban Development Plan for Ultimo-Pyrmont. This sets bicycle parking at the following rates

UDP requirements for bicycle parking are:

- 1 space per 300 m² GFA for staff
- 1 space per 2500 m² GFA for visitors.

The NSW Government's State Plan sets a target of 5 percent of all trips in Greater Sydney will be by bicycle in 2016, while City of Sydney has a higher target of 10 percent of all trips by bicycle by 2016.

The current bicycle mode for the site varies between the time of day and weekday vs. weekend. The average mode share is 1-2 percent of trips.

As the site is dependant on visitor trade and the Sydney Fish Markets aims to reduce car dependency, doubling mode share is reasonable target for the provision of bicycle parking.

The comparative bicycle parking requirements are shown in Table 4-5.

Table 4-5 Bicycle Parking Provision

Criteria	Rate type	Rate	Number of bicycle racks/lockers
NSW State Plan	Staff	5 % of trips	23
	Visitors	5 % of trips	132
		Total	155
UDP	Staff	1 per 300 sq m GFA	107
	Visitor	1 per 2500 sq m GFA	12
		Total	119
Proposed Level	Staff	6 % of weekday trips	28
	Visitors	4 % of peak trips	94
		Total	122

Bicycle parking will be placed at the following locations:

- | | |
|---|-------------------|
| • Main pedestrian arrival forecourt (Level 1) | 46 visitor spaces |
| • Ground floor under the Foreshore Urban Plaza stairs | 48 visitor spaces |
| • Ground Level service lane | 14 staff spaces |
| • Jones Street car park | 14 staff spaces |

4.10.3 *Promotion of bicycle use*

Sydney Fish Markets will promote bicycle usage through the prominent placement of bicycle parking locations and bicycle access routes on its website.

4.11 ***Pedestrian access***

Pedestrian access to the site is being significantly improved as part of this project. Improvements include:

- A new high quality access from the Bank Street intersection.
- Improved access from the intersection of Pyrmont Bridge Road and Bank Street (Southwest corner).
- New foreshore promenade as part of the Sydney Harbour foreshore walk.
- Improved internal access.

Bank Street intersection

- Pedestrian access from the Bank Street intersection is improved in the following ways.
- A 2.5 metre or wider accessible path.
- Pedestrians directed away from the traffic intersection by means of planted areas to encourage safer access to and from the Sydney Fish Markets
- Pedestrian priority over the internal access road via a raised pedestrian crossing.

Improved access from Pyrmont Bridge Road

- Access from Pyrmont Bridge Road at the intersection with Bank Street will be improved in the following ways.
- A dedicated footpath will be provided from the boundary of the site to the main entrance near Miller Street.

- A 2.5 metre wide shared footpath will provide on the perimeter of the property as an alternative route.
- Both routes will be accessible.

New foreshore promenade

A new 10 metre foreshore promenade connected to the foreshore park, retail area and future pathways through the adjacent Hymix site (northern boundary) will be provided by the NSW Government as a separate project at an appropriate time.

This new path, combined with the Bank Street access will provide an alternate through route from Wattle Street to Miller Street.

Internal access

The internal pedestrian circulation will be improved by:

- Providing a dedicated pathway from the bus pick up/drop off area to the new pedestrian access.
- Separating visitors from delivery and seafood distribution vehicles.
- Providing safer, vertical access from the car park to the retail and dining areas.

4.12 Buses and Taxis

The development will improve access for mini-buses, tourist buses and taxis by:

- Providing a dedicated taxi lane and pick and drop off area near the new north eastern entrance.
- Providing dedicated min-bus and bus parking, with a roundabout for turn around next to the multi-level car park, with dedicated pedestrian walkway connecting to the new entrance.

No improvements to public passenger bus access within the site are proposed. Bank Street is constrained due to the placement of freeway columns and not suitable for stops for regular bus routes.

4.13 *Light Rail*

The existing Light Rail station (Fish Markets) at Miller Street is well patronised, clean and accessible. A lift connects the station to Miller Street and an accessible ramp connects from the station to Bank Street.

The improvements for light rail customers arise from the improved pedestrian arrival conditions within the site, with pedestrians no longer having to walk through the main car park.

4.14 *Emergency vehicles*

Emergency vehicles will be able to access the site from the Bank and Miller Street intersection. From this point they will be able to access:

- The concrete driveway to the foreshore path and waterfront park;
- The main and new buildings;
- The multi level car park and service lane and undercroft loading area via the internal roadway
- The existing main building via Pyrmont Bridge Road

Emergency services personnel will be able to access the site from the three pedestrian accesses at:

- Miller Street
- Pyrmont Bridge Road (at Bank Street)
- Pyrmont Bridge Road (at Wattle Street)

Access from Blackwattle Bay is possible for fire tenders and other personnel if required.

4.15 Summary

The proposed development of the Sydney Fish Markets provides improved pedestrian, public transport and vehicular access, while addressing the need to constrain growth in car travel by lowering the ratio of available parking to travel demand.

5 Traffic Assessment

A traffic assessment has been undertaken to evaluate the impact of the development on the road network. This assessment considers the existing traffic situation and the impact of the proposed development.

5.1 *Trip Generation of Proposed Development*

As the Sydney Fish Markets is a Sydney metropolitan wholesale and retail venue and tourist attraction, the appropriate method of traffic generation is to evaluation the turn over in parking for each parking space within the site. This is due to the constrained level of parking supply lowering demand for car usage to the site.

The periods identified for analysis were based on both the times at which the surround traffic network has maximum traffic flows and when the Sydney Fish Markets has peak traffic generation. As identified in section 3.4.3, the adjacent arterial road network has its traffic peak during the 5-6 pm period on a weekday, while as identified in section 4.3.2, the Sydney Fish Markets has its peak traffic generation during the 12-2pm period on a Sunday.

These two periods have been used as the basis for evaluation of the traffic impact of the proposed development because the proposed retail/restaurant additions would have the potential to add the most traffic during these two main traffic peak periods in the area.

5.1.1 *Future Weekday PM Peak Traffic Generation*

The future traffic generation of the restaurant component of the development have been calculated using trip generation rates from the RTA's to Guide to Traffic Generating Developments for the evening peak period. The average trip generation rate for the evening peak is 5 vehicle trips per 100m² of Gross Floor Area and it is assumed these trips would be distributed 80:20 between arrival and departure trips.

The proposed restaurant Gross Floor Area is 2,929 m² which equates to 146 vehicle trips / hour at 5 trips per 100 m² of GFA.

The present weekday evening traffic generation of the site component of the existing retail development provides a guide to how this traffic might increase in the future.

The existing traffic generation is 14 arrival vehicles /hour and 48 departure vehicles / hour. By applying an increase of 29% as per the increase in retail Gross Floor Area to the existing traffic, the future retail Weekday PM Peak and Weekend Midday generation can be calculated. These trips are shown in the following table.

Table 5-1 – Predicted Peak Hour Trip Generation

Period	Arrivals	Departures	TOTAL
Thursday Evening			
Restaurant	117	29	146
Retail	18	61	80
TOTAL	136	94	226

5.1.2 *Future Weekend Midday Peak Traffic Generation*

Given the complex tourist, retail and dining function of the site, using standard RTA traffic generation rates is not appropriate. As such, traffic generation for the Sunday midday period has been evaluated using the turnover of existing parking spaces on the site.

The existing site has a total of 417 formal parking spaces, with an inflow of 450 vehicles and an outflow of 510 vehicles (seasonally adjusted) during the peak period. This yields and traffic generation rate of 1.22 trips per space (outbound) and 1.08 trips per space (inbound). The difference between these two rates is reflected in the parking accumulation (see Figure 4-2) prior to the commencement of the peak period.

The parking turnover assessed for the future peak period (Sunday midday) is shown in Table 5-2.

Table 5-2 – Future Traffic Generation – Weekend Midday Peak

	Existing volumes	Existing volumes	Turnover (vehicles/space/ hour)	Future Traffic Generation (1)	Analysed Traffic Generation (2)
	(June 2010)	(Seasonally Adjusted)			
Departures	385	450	1.08	555	614
Arrivals	436	510	1.22	622	698
Total	821	960		1177	1312

(1) Based on 510 car parking spaces

(2) Assessment undertaken to evaluate the 95th percentile day (first Sunday in December).

Thus the proposed development is to increase the seasonally adjusted Sunday peak traffic generation of the site by some 352 vehicle trips per hour.

5.2 Traffic Distribution

The distribution of the additional traffic from the Fish Market development has been based on the existing Fish Market travel patterns.

In summary, generated trips are expected to be distributed as follows:

- North – 32%;
- South – 36%;
- East – 11%;
- West – 21%.

The volumes of traffic on Bank Street (north of Miller Street) is constrained by the local environment, with some local trips using Harris Street in preference to Bank Street to avoid any congestion along Bank Street and Pyrmont Bridge Road associated with the complexity of the road network..

The predicted future Fish Market development traffic is shown in the following figures

Figure 5-1 Sydney Fish Markets development traffic, Weekday PM

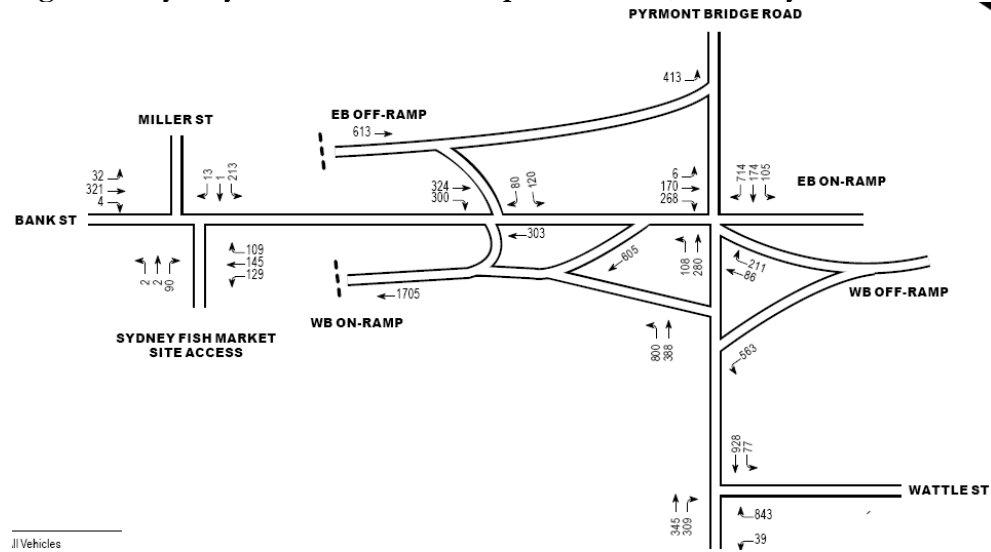
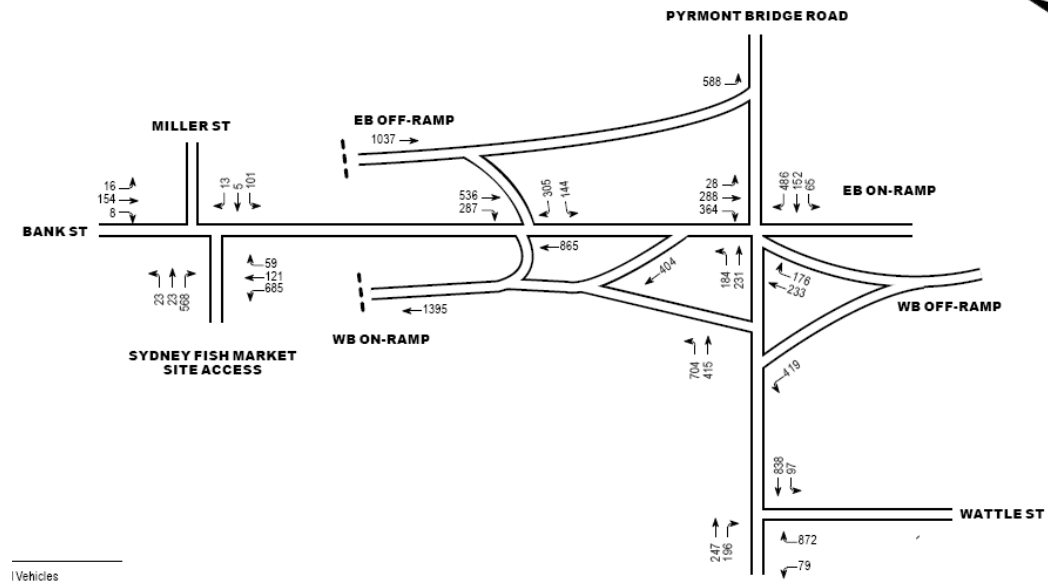


Figure 5-2 Sydney Fish Markets development traffic, Weekend midday peak



5.3 *Future Intersection Operations*

The proposed development was analysed using the Paramics micro-simulation traffic model and compared against the existing situation. In order to maintain traffic efficiency and minimise queuing and impact on the surrounding road network, two changes to the operations of traffic signals in the area are proposed. These are:

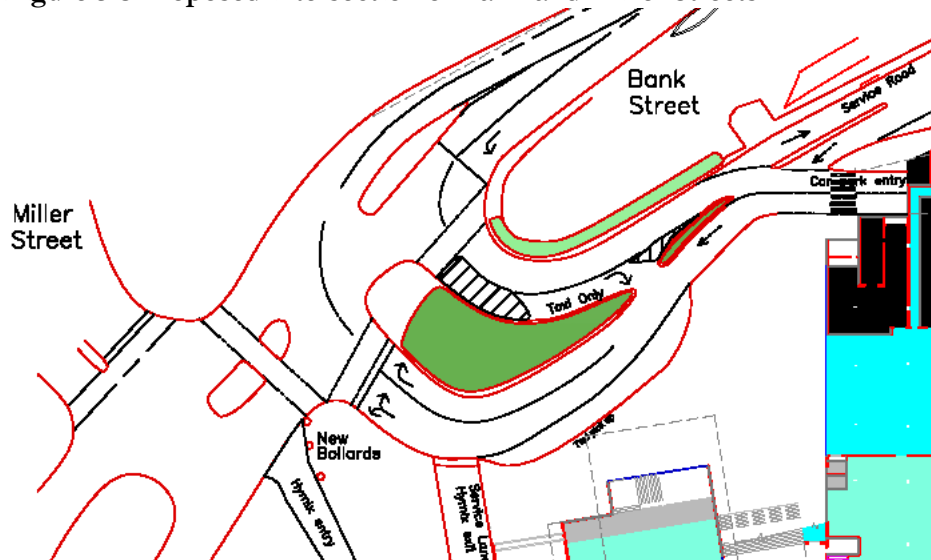
1. Changes to the layout and signal operations at the intersection of Bank and Miller Streets.
2. Changes to the lane markings and signal operations at the intersection of Pymont Bridge Road, Bank Street and the Western Distributor ramps.

5.3.1 *Intersection of Bank and Miller Streets*

The intersection of Bank and Miller Streets (TCS2360) intersection is proposed to be modified in the following ways (see Figure 5-3 and Appendix B):

- Separating the Sydney Fish Markets entrances by a central island associated with the improved pedestrian access.
- Relocating the marked foot crossing across Bank Street from the southern side of the Sydney Fish Markets entrance to the northern side of the entrance.
- Modifying traffic signal operations in line with the above.

Figure 5-3 Proposed intersection of Bank and Miller Streets

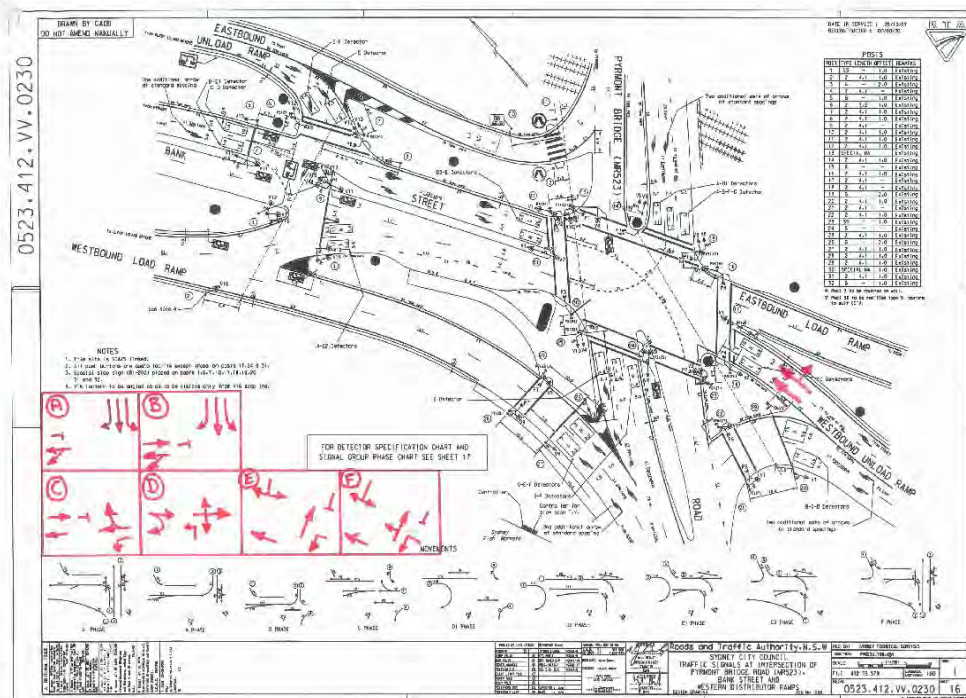


5.3.2 Intersection of Pyrmont Bridge Road, Bank Street and the Western Distributor ramps

The intersection of Pyrmont Bridge Road, Bank Street and the Western Distributor ramps (TCS 230) is proposed to be modified in the following ways (see Figure 5-4 and Appendix C):

- Remarking the northbound off ramp lanes from Western Distributor to be a through lane plus one shared through and right turn lane.
- Re-phasing the traffic signals to reconfigure which traffic movements operate at the same time.
-

Figure 5-4 Proposed intersection of Pyrmont Bridge Road, Bank Street and Western Distributor ramps



Under the proposed arrangement the Western Distributor north-westbound off ramp left turn movement onto Pyrmont Bridge Road would be included in 'phase F' combined with south-west approach traffic movements on Pyrmont Bridge Road. The demands of the north-east to south-west and south-east movements are relatively low and therefore the performance is not affected by the change in phasing.

The benefit of the proposed phase arrangement is that the length of 'phase C', Western Distributor north-westbound off ramp approach, can be shortened resulting in an increase in green time for other phase movements.

5.3.3 *Analysis*

The analysis of the existing situation and proposed development was undertaken in the Paramics traffic micro-simulation software. This allowed the complex operations and interactions between the Bank/Miller, Pyrmont Bridge/Bank/Western Distributor, Pyrmont Bridge/Harris and Pyrmont Bridge/Wattle intersections to be evaluated together.

The analysis was undertaken using the existing and future (post development) traffic volumes, with the traffic generation for the Weekend peak period being for the 95th percentile week of the year.

Three scenarios were analysed. These were:

- The existing situation (Existing)
- The proposed development with modifications to only the Bank/Miller intersection (Development)
- The proposed development with modifications to both the Bank/Miller and Pyrmont Bridge/Bank/Western Distributor ramps (Dev + Phasing)

The Paramics network for the proposed development is shown in Figure 5-5.

Figure 5-5 Sydney Fish Markets Paramics network

The evaluation of the scenarios has been undertaken using two measures of performance. These are:

- RTA NSW Level of Service
- Average Network operational speed

The results of these analyses are shown in Table 5-3 and Table 5-4.

Table 5-3 Existing and Future Peak Hour Intersection Performance

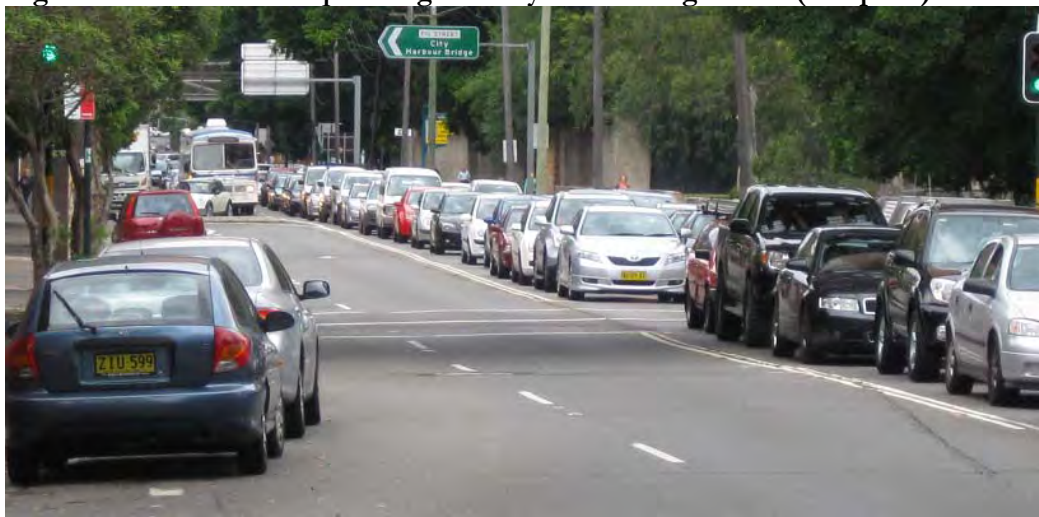
Intersection	Scenario	Thursday PM Peak		Sunday Midday Peak	
		Avg. Delay (s)	LoS	Avg. Delay (s)	LoS
Pyrmont Bridge Road / Wattle Street	Existing	82	F	60	E
	Development	102	F	57	E
	Dev + Phasing*	97	F	57	E
Pyrmont Bridge Road / Harris Street	Existing	30	C	27	B
	Development	32	C	25	B
	Dev + Phasing*	33	C	31	C
Bank Street / Miller Street / Fish Market	Existing	39	C	49	D
	Development	43	D	78	F
	Dev + Phasing*	39	C	59	E
Pyrmont Bridge Road / Bank Street	Existing	77	F	57	E
	Development	80	F	89	F
	Dev + Phasing*	68	E	70	E

* Development traffic plus proposed phasing arrangement at Pyrmont Bridge Road and Bank Street.

The analysis shows that the proposed development and arrangements will, in some cases provide an improvement in traffic operations during the critical PM peak, with only the increase in delay of only 10-15 seconds at intersections during the Sunday midday peak.

The increase in delay for the Weekday evening peak for the Pyrmont Bridge Road and Wattle Street intersection is due to the intersection already operating above capacity during the PM peak period, with significant queuing exhibited on Wattle Street (as shown in Figure 5-6). In these types of conditions, a minor increase in traffic volumes associated with a development can result in the traffic models reporting excessive delays because it is not able to take into account normal driver behavioural results.

Figure 5-6 Wattle Street queueing from Pyrmont Bridge Road (PM peak)



In complex networks, average travel speed is often a better measure of performance of the network. Average travel speed is used by the NSW Government in reporting the progress on implementing the *NSW State Plan*.

Table 5-4 shows average network travel speed for the analysis period.

Table 5-4 – Average Peak Network Travel Speed (km/hr)

Scenario	Average network speed (km/h)	
	Thursday PM	Sunday Midday
Existing	8.9	13.4
Existing + Development	7.8	9.1
Existing + Development + Proposed Phasing Arrangement	8.2	12.1

The results in the above table show that while the improvements to the Sydney Fish Markets is a large development, the overall network performance remains relatively unchanged.

Movements onto the Western Distributor during the weekday PM peak period are constrained by the prevailing speed and conditions on the Anzac Bridge, which contributes to congestion on Pyrmont Bridge Road, Wattle Street and Bank Street. With the changes to the signal arrangements, significant benefit is realised for the movement from the Western Distributor off ramp (away from the City) turning left into Pyrmont Bridge Road.

During the Sunday midday peak, the proposed signal arrangements assist flows into and out of the Sydney Fish Markets while improving overall operations.

The average network speed analysis shows that the Sydney Fish Markets will not have a significant impact on overall speeds and journey times, with a 10 percent decrease in prevailing travel speeds through the network.

5.4 Summary

The proposed Sydney Fish Markets development will have not have a significant impact on the operations of the surrounding road network, with the proposed changes to intersection operations potentially providing significant operational benefits outside of peak generation times for the site.

6 Conclusions

The proposed Sydney Fish Markets redevelopment involves the significant redevelopment of the site. The project will result in easier access to the site by pedestrians and public transport users and bicycle riders.

The development has been planned and designed in accordance with NSW Government and City of Sydney land use and transport planning policies and guidelines. With the Sydney Fish Market's location near significant pedestrian and bicycle paths in Pyrmont, good access to public transport and proximity to the State Road network, it is placed in the "*... the right place for business and services...*".

The Sydney Fish Markets development balances the City of Sydney's goal of "*...minimising internal car parking to promote public transport...*", while recognising the significant Sydney metropolitan nature of the wholesale and retail seafood trade and important tourist activity in inner Sydney. By separating pedestrians walking onto the site, visitor cars and wholesale activity within the site, safety and amenity will also be improved.

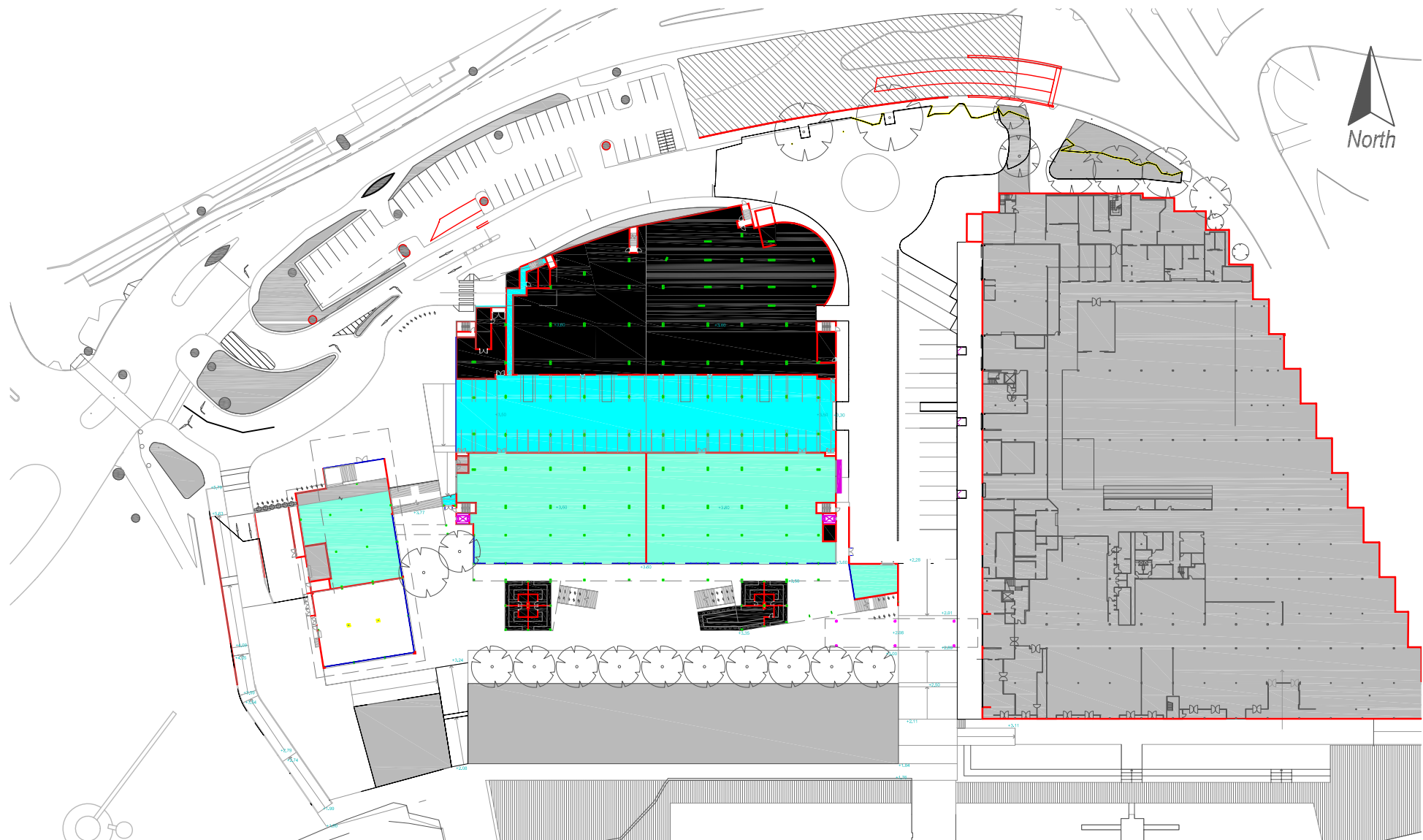
The proposed development will not have a significant impact on road network operations, and changes to intersections proposed as part of the development will provide benefits to general traffic flow outside of the peak times for the Sydney Fish Markets.

In conclusion, the Sydney Fish Markets redevelopment will improve access, safety and amenity for all transport users and improve access to the site for non-car modes while maintain vital access for wholesale and retail activity.

Appendix A Proposed site layout

Internal arrangements

Sydney Fish Markets



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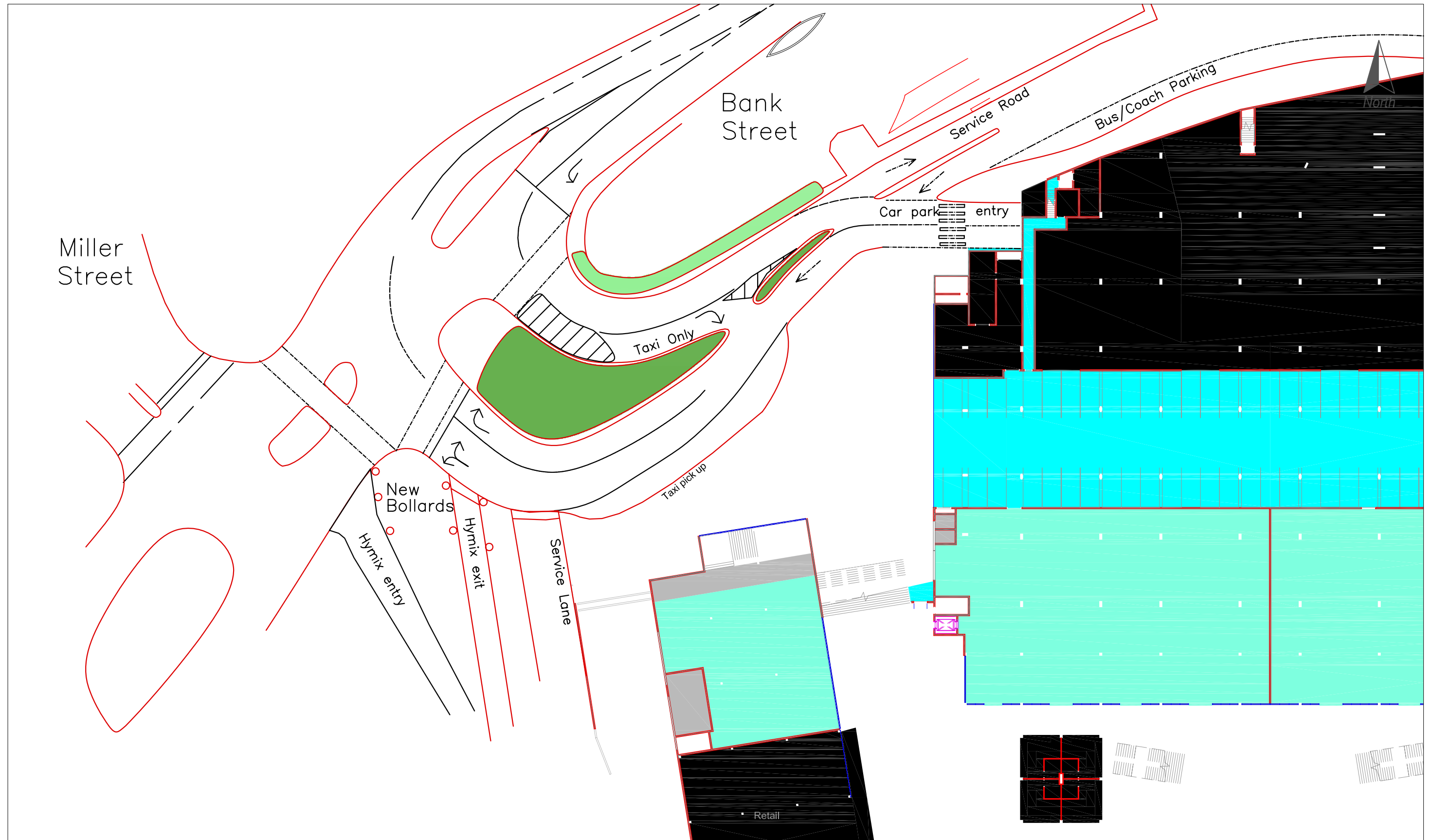
Figure 4-7

Date: 16 August 2010

Appendix B Proposed reconfiguration of the intersection of Bank and Miller Streets

Intersection of Bank and Miller Streets Pyrmont

Sydney Fish Markets



Scale:1:100@A3



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Figure 1

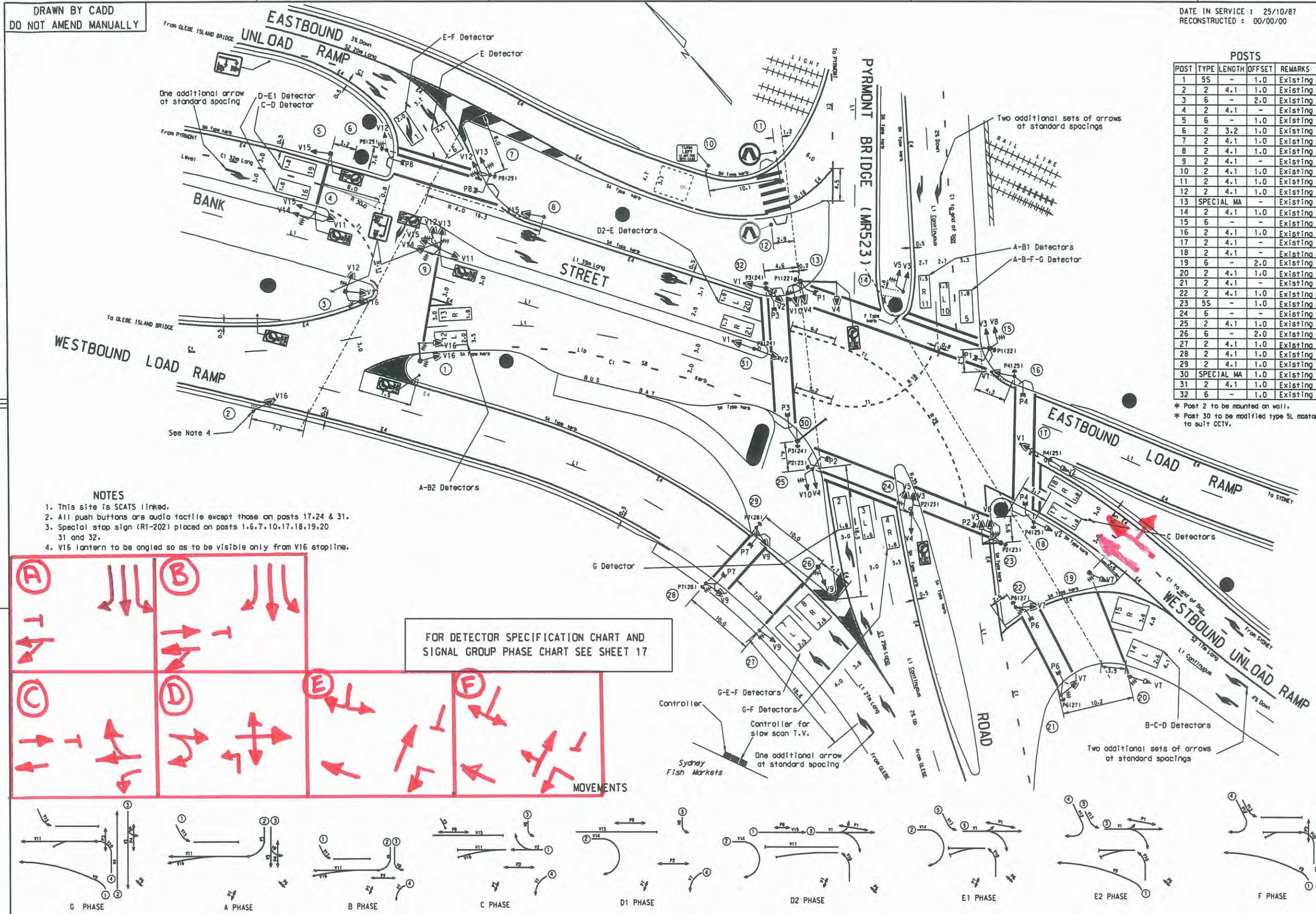
Date: 20 July 2010

Appendix C Proposed changes to the intersection of Pyrmont Bridge Road, Bank Street and the Western Distributor Ramps

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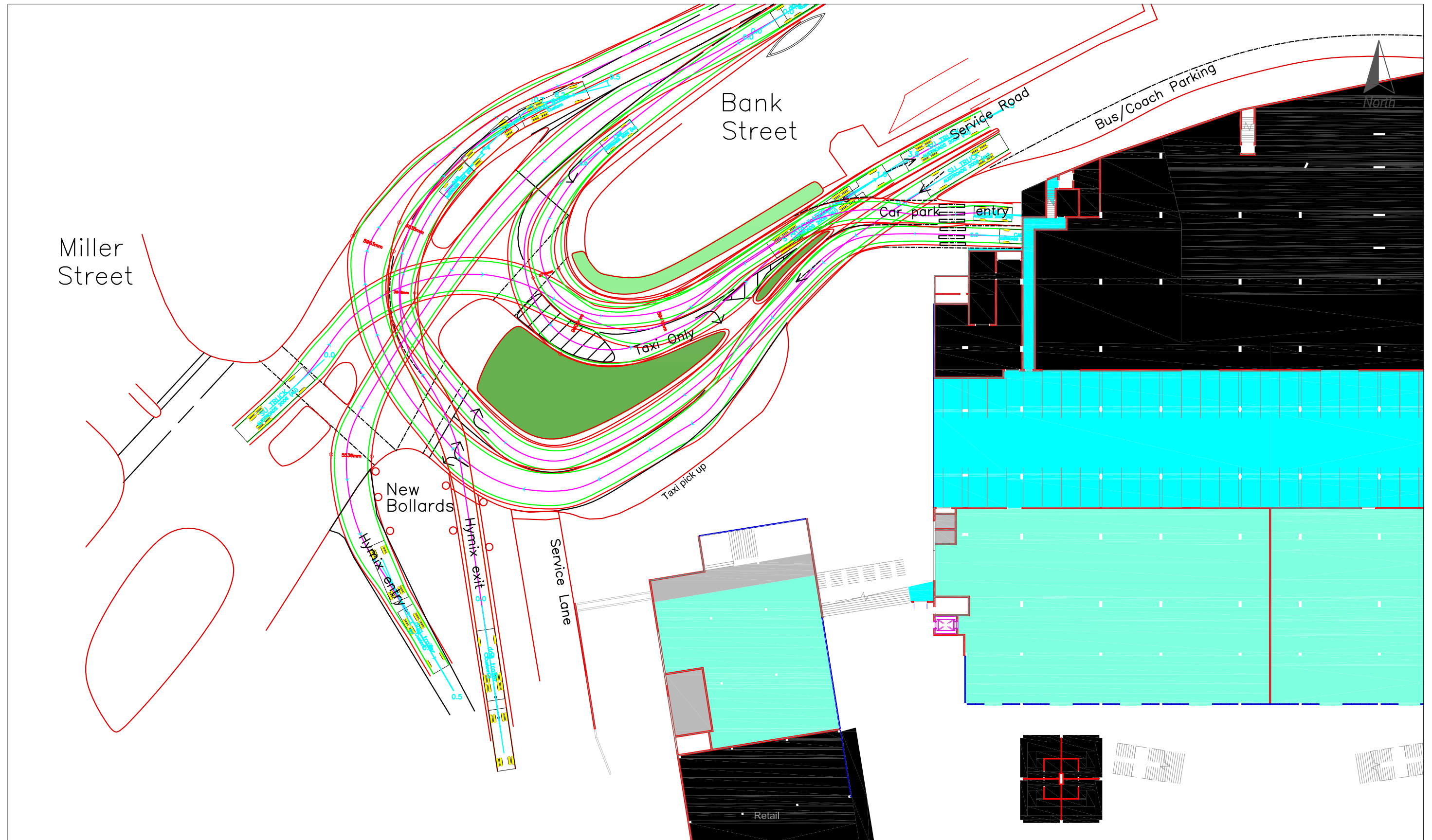


A ORIGINAL ISSUE 1. This drawing was prepared by CADD for the Roads and Traffic Authority, N.S.W. on 25/10/87. 2. This drawing was checked by CADD on 25/10/87. 3. This drawing was approved by CADD on 25/10/87. 4. This drawing was issued by CADD on 25/10/87. 5. This drawing was revised by CADD on 25/10/87. 6. This drawing was revised by CADD on 25/10/87. 7. This drawing was revised by CADD on 25/10/87. 8. This drawing was revised by CADD on 25/10/87. 9. This drawing was revised by CADD on 25/10/87. 10. This drawing was revised by CADD on 25/10/87.		REFERENCE PLANS 1. SYDNEY CITY COUNCIL TRAFFIC SIGNALS AT INTERSECTION OF PYRMONT BRIDGE ROAD (MR523), BANK STREET AND WESTERN DISTRIBUTOR RAMP. 2. SYDNEY CITY COUNCIL TRAFFIC SIGNALS AT INTERSECTION OF PYRMONT BRIDGE ROAD (MR523), BANK STREET AND WESTERN DISTRIBUTOR RAMP. 3. SYDNEY CITY COUNCIL TRAFFIC SIGNALS AT INTERSECTION OF PYRMONT BRIDGE ROAD (MR523), BANK STREET AND WESTERN DISTRIBUTOR RAMP. 4. SYDNEY CITY COUNCIL TRAFFIC SIGNALS AT INTERSECTION OF PYRMONT BRIDGE ROAD (MR523), BANK STREET AND WESTERN DISTRIBUTOR RAMP. 5. SYDNEY CITY COUNCIL TRAFFIC SIGNALS AT INTERSECTION OF PYRMONT BRIDGE ROAD (MR523), BANK STREET AND WESTERN DISTRIBUTOR RAMP. 6. SYDNEY CITY COUNCIL TRAFFIC SIGNALS AT INTERSECTION OF PYRMONT BRIDGE ROAD (MR523), BANK STREET AND WESTERN DISTRIBUTOR RAMP. 7. SYDNEY CITY COUNCIL TRAFFIC SIGNALS AT INTERSECTION OF PYRMONT BRIDGE ROAD (MR523), BANK STREET AND WESTERN DISTRIBUTOR RAMP. 8. SYDNEY CITY COUNCIL TRAFFIC SIGNALS AT INTERSECTION OF PYRMONT BRIDGE ROAD (MR523), BANK STREET AND WESTERN DISTRIBUTOR RAMP. 9. SYDNEY CITY COUNCIL TRAFFIC SIGNALS AT INTERSECTION OF PYRMONT BRIDGE ROAD (MR523), BANK STREET AND WESTERN DISTRIBUTOR RAMP. 10. SYDNEY CITY COUNCIL TRAFFIC SIGNALS AT INTERSECTION OF PYRMONT BRIDGE ROAD (MR523), BANK STREET AND WESTERN DISTRIBUTOR RAMP.		APPROVED 1. This drawing was approved by CADD on 25/10/87. 2. This drawing was approved by CADD on 25/10/87. 3. This drawing was approved by CADD on 25/10/87. 4. This drawing was approved by CADD on 25/10/87. 5. This drawing was approved by CADD on 25/10/87. 6. This drawing was approved by CADD on 25/10/87. 7. This drawing was approved by CADD on 25/10/87. 8. This drawing was approved by CADD on 25/10/87. 9. This drawing was approved by CADD on 25/10/87. 10. This drawing was approved by CADD on 25/10/87.		ROADS AND TRAFFIC AUTHORITY, N.S.W. SYDNEY CITY COUNCIL TRAFFIC SIGNALS AT INTERSECTION OF PYRMONT BRIDGE ROAD (MR523), BANK STREET AND WESTERN DISTRIBUTOR RAMP. DESIGN DRAWING TCS No. 230		REGION: SYDNEY TECHNICAL SERVICES CADD FILE: VV0230.16H.dgn SCALE: 1:1000 FILE: 412 TS 579 REGN: 0523.412.VV.0230 SHEET: 16	
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Appendix D Service Vehicle Arrangement and Swept Path Diagrams

Access Swept Paths

Sydney Fish Markets



Scale: 1:100@A3



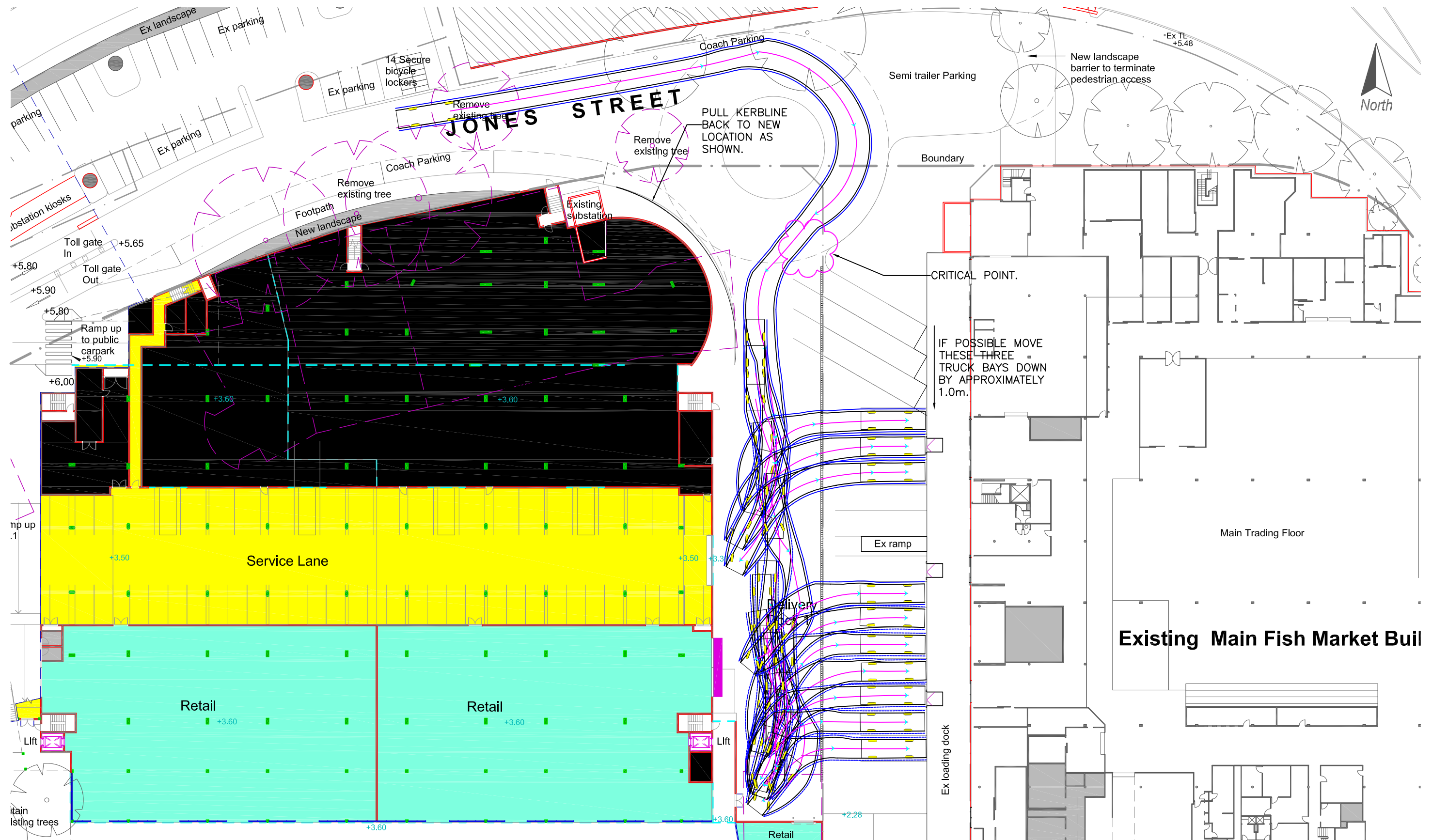
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Figure 1

Date: 1 September 2010

8.8m MRV TURN PATHS

SYDNEY FISH MARKETS



Scale: 1:500@A3

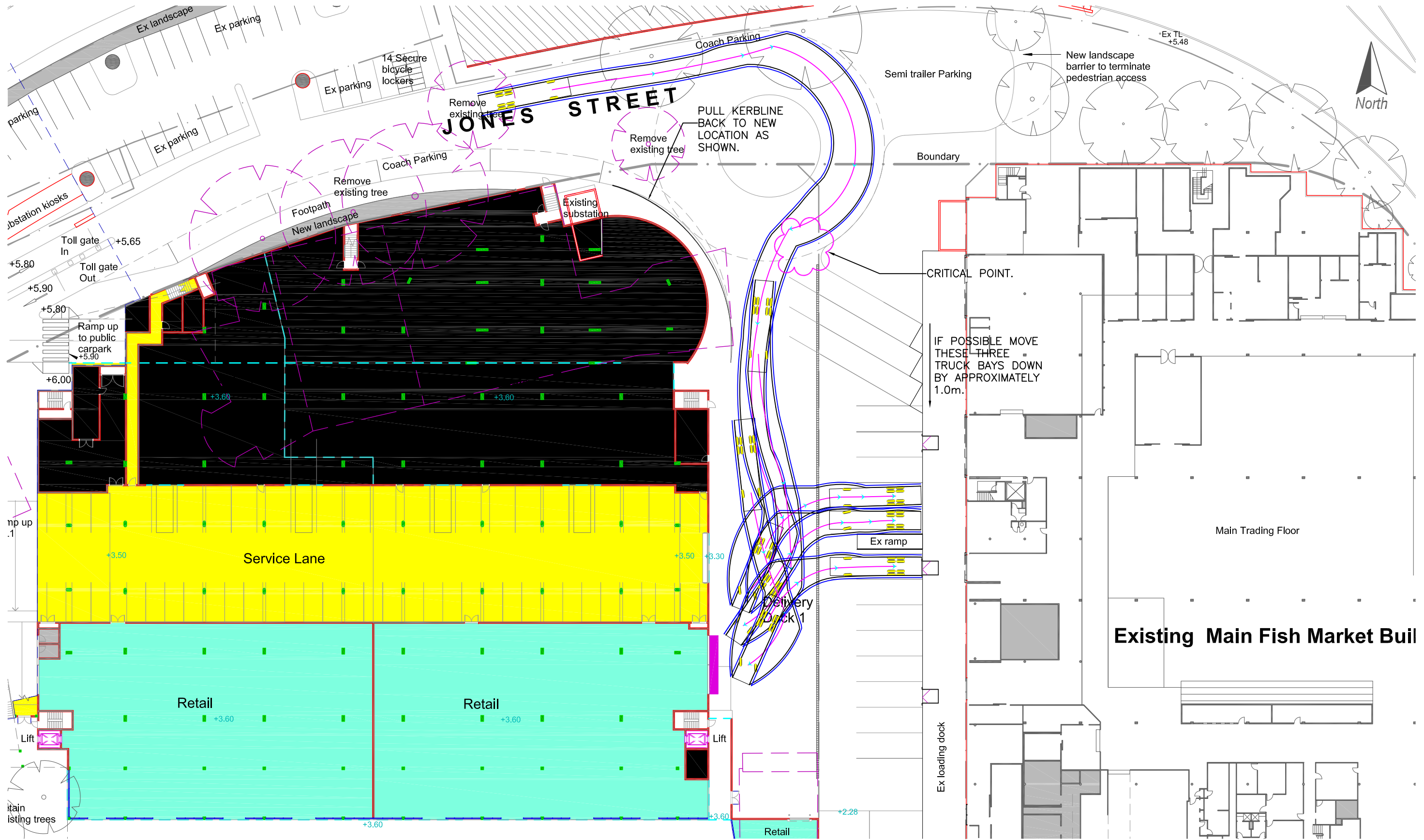
Halcrow

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Figure 11

Date: 29 JULY 2010

12.5m HRV TURN PATHS
SYDNEY FISH MARKETS



Scale: 1:500 @ A3



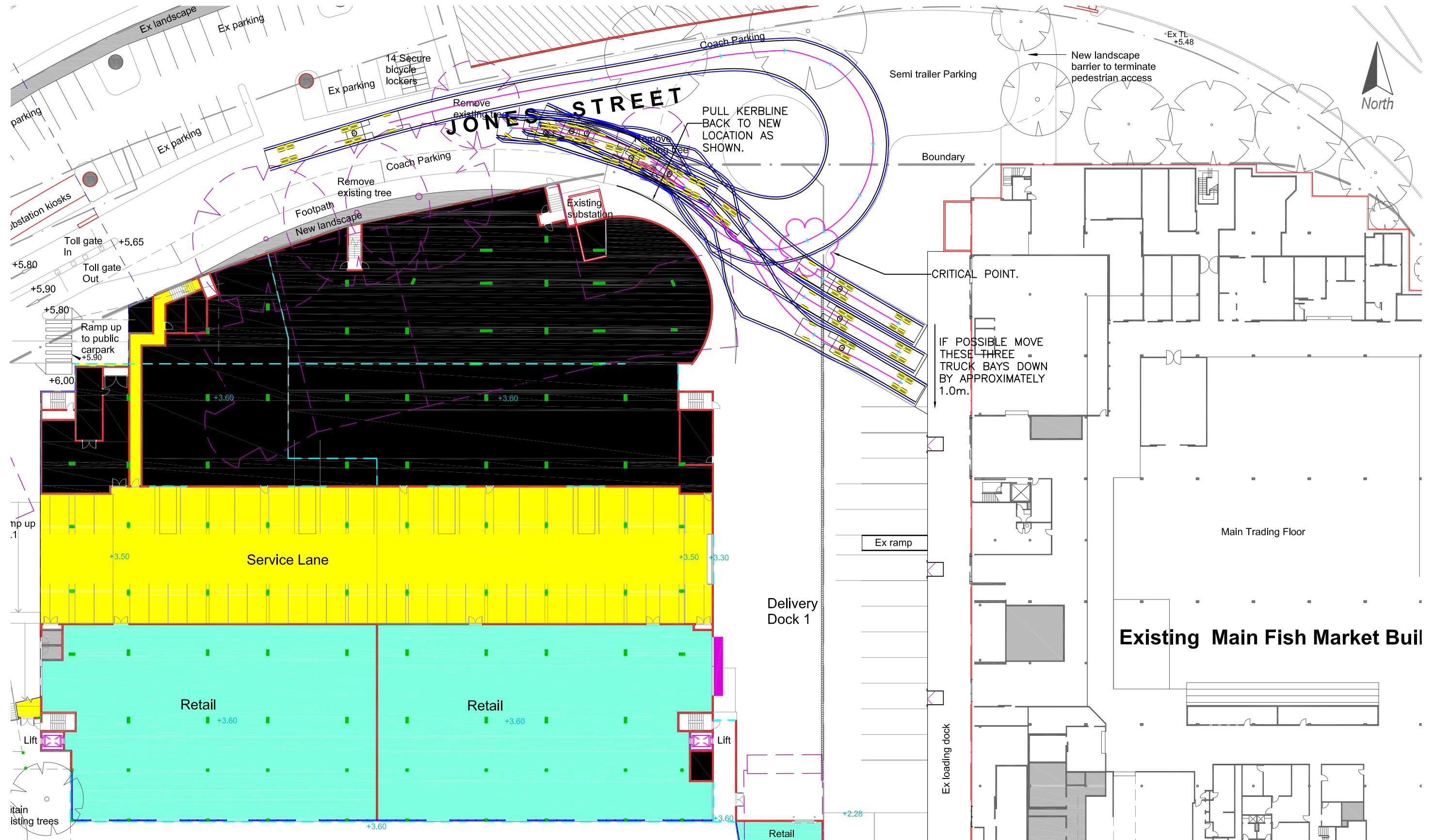
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Figure 12

Date: 29 JULY 2010

19m AV TURN PATHS

SYDNEY FISH MARKETS



Scale:1:500@A3

Halcrow

Filename: CTRLKBDa05

Figure 13

Date: 29 JULY 2010

Sydney Fish Markets Stage 2-4 8.8 m waste vehicle

Sydney Fish Markets



Scale:1:100@A3



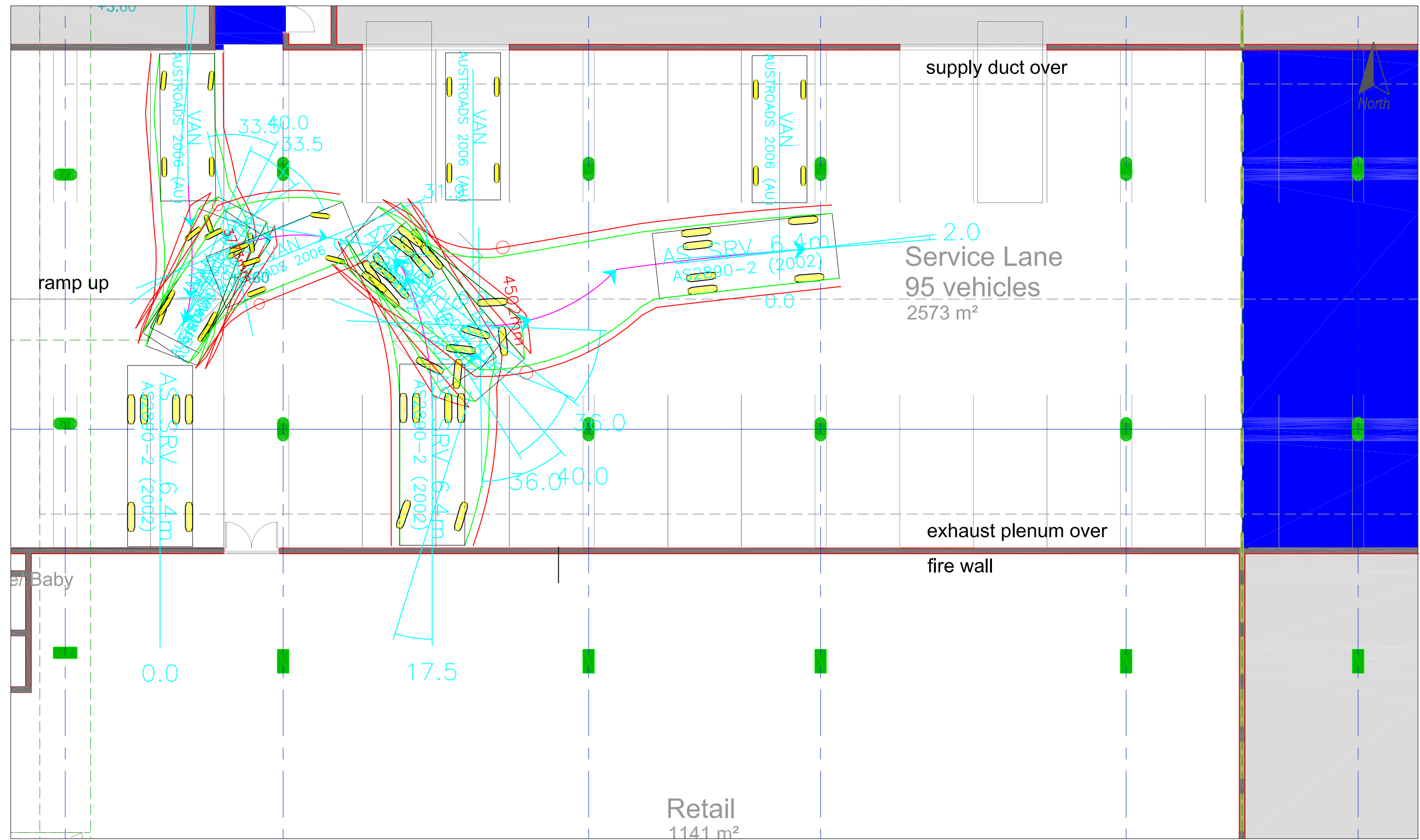
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Figure 1

Date: 31 May 2010

Sydney Fish Markets Stage 2-4 Service Lane Operations

Sydney Fish Markets



Scale:1:100@A3



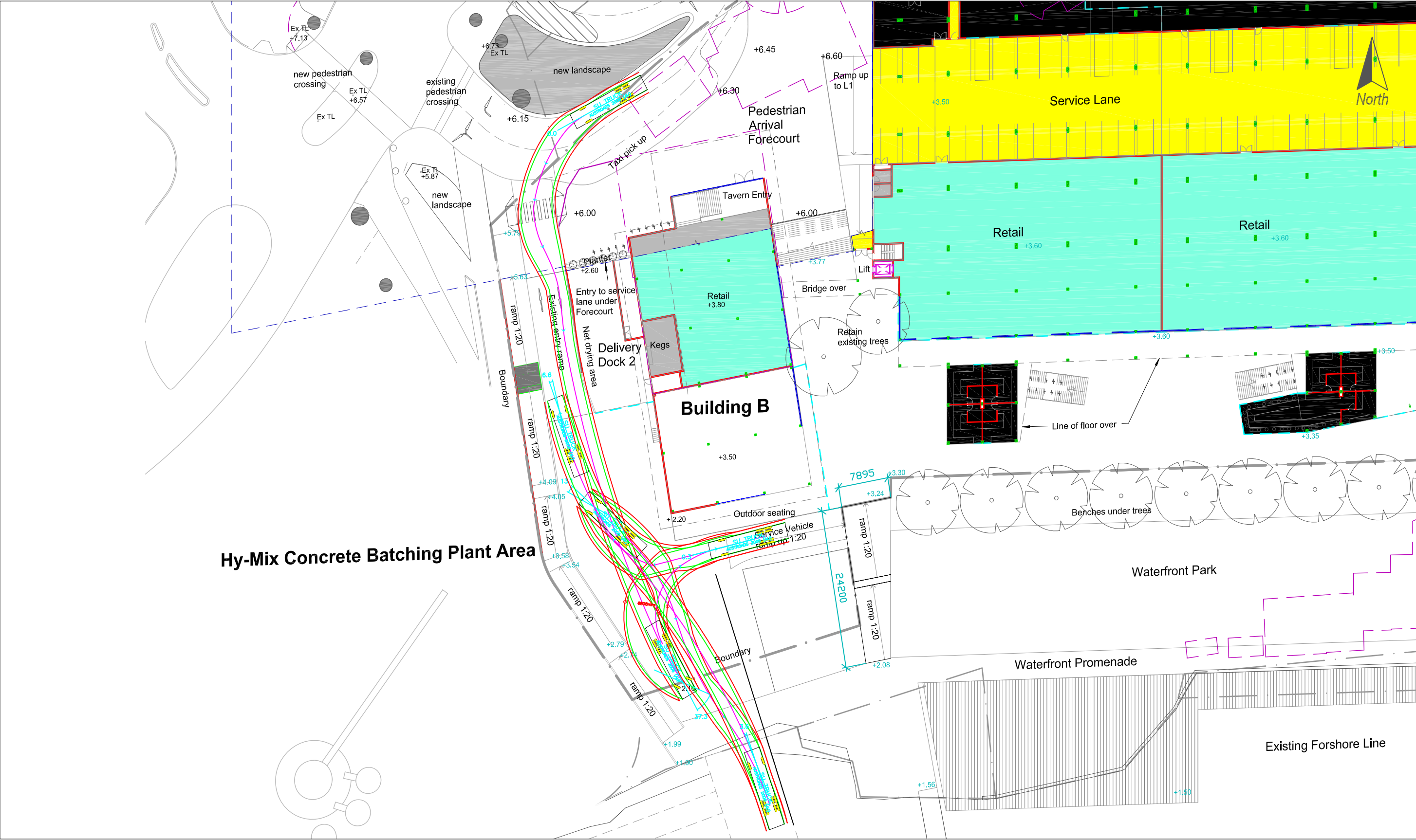
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Figure 1

Date: 31 May 2010

HRV Access to northern wharf

Sydney Fish Markets



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Figure 1

Date: 20 July 2010