



Bondi Park, Beach and Pavilion
Plan of Management and Master Plan
Vehicle Parking and Movement Study
Investigation of Parking Options

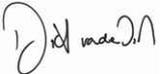
transportation planning, design and delivery

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1. Introduction

1.1 Background

GTA Consultants (NSW) Pty Ltd (GTA), in association with Conybeare Morrison International Pty Ltd (CM+) have been engaged by Waverley Council to undertake an assessment of vehicle access and parking upgrade options for Bondi Park, Bondi Beach and Bondi Pavilion. This assessment seeks to inform the Master Plan and Plan of Management for the period 2013-2023 being prepared by Council.

1.2 Study Scope and Objectives

The Vehicle Parking and Movement Study seeks to inform the development of the Plan of Management for Bondi Park, Beach and Pavilion by investigating options for improved parking layout and arrangements. The study objectives include:

- improving the level of pedestrian access and priority
- reducing pedestrian access severance along Park Drive and Queen Elizabeth Drive
- accommodating a comparable number of car, motor bike and push bike parking spaces which currently exists on site
- providing recommendations for managing tourist coach parking on Campbell Parade
- providing recommendations for services and delivery access for the Bondi Pavilion.

The investigation area focuses on existing car parking facilities on Queen Elizabeth Drive and Park Drive, and includes maintenance vehicle parking requirements for Bondi Park, service vehicle delivery requirements of the Bondi Pavilion, and tourist coach parking along Campbell Parade.

A Universal Access Study (undertaken by Funktion) has been conducted in parallel to this study. The study brief indicates that the Universal Access Study would *“document the current circumstances and make recommendations to facilitate improvements in the level of pedestrian access and priority, particularly in areas of high pedestrian concentration for people of all abilities. The study should also investigate the provision of disabled parking and access from the car park to the beach.”*

A number of joint meetings have been held with Funktion and Waverley Council staff to achieve integrated outcomes between the two studies.

The results of previous community consultation in relation to the Bondi Park, Beach and Pavilion Plan of Management were reviewed as part of the study. In addition, a stakeholder consultation workshop was held on 25 February 2013 to gather more information about stakeholder requirements and views on the best approaches to design and manage vehicle parking and movement in Bondi Park.

1.3 Report Purpose and Structure

This report sets out the key findings of the investigation and evaluation of vehicle access and parking options for the study area. Following this introduction (Chapter 1), the rest of the report is structured as follows:

- Chapter 2 *Context* – presents a discussion of the existing study area characteristics, conditions and context

- Chapter 3 *Key Issues and Opportunities* – discusses the transport, parking and urban design issues and opportunities identified during the course of the study
- Chapter 4 *Parking Options* – presents the parking options considered in the evaluation
- Chapter 5 *Options Evaluation* – provides a discussion of the analysis and evaluation of the parking options
- Chapter 6 *Preferred Option* – discusses in more detail the key features of the preferred option
- Chapter 7 *Summary and Conclusions*– provides a summary of the key study findings and outlines recommendations for the subsequent stages of the Plan of Management development.

2. Context

The iconic Bondi Park, Beach and Pavilion form a recreational and cultural asset as well as a destination for the local Bondi Beach community, the greater Waverley local government area (LGA), and visitors from metropolitan Sydney, nationally and internationally. Bondi Park, Beach and Pavilion attract an average of 25,000 visitors daily during the summer period.

Bondi Park is bounded by Campbell Parade to the west, north west and north, and Notts Avenue forms its southern boundary. It occupies an area of approximately 16.5 hectares, with its terrain forming a natural amphitheatre around Bondi Bay.

Figure 2.1 shows the extent of the study area, corresponding to the Plan of Management area, also indicating the surrounding road network while Figure 2.2 shows the existing facilities within the study area.

Figure 2.1: Plan of Management Area



Source: Waverley Council

Figure 2.2: Existing Facilities



Source: Waverley Council

2.1 Land Use and Activities

Bondi Park is Crown Land, maintained by Waverley Council and is a 'Cultural Landscape' of National and State significance. Many of the recreational and fixed facilities are multi-functional in nature allowing a variety of land uses and activities to take place over time – daily, weekly, seasonally and as one off, sometimes large, special events e.g. City 2 Surf, Festival of the Winds, SLSC Championships, Australia Day, Christmas celebrations, Ice Skating, Flickerfest, Sculpture By The Sea, etc.

The predominant land uses by area include a multiplicity of recreational open spaces and landscaped parks – from open grassed slopes to intimate small scale parks, the beachfront promenade and Bondi Beach itself – the area of sand from the promenade seawall to high water mark – utilised for sun bathing, relaxing, walking, swimming and jogging.

Further facilities within Bondi Park include the south toilets, Skate Park, the promenade Life Saving lookout tower, under-promenade SLSC storage facilities, fitness station, the Wally Weekes Ocean Pool, Children's Wading Pool, and the terraced park and playgrounds of Biddigal Reserve.



City 2 Surf finish in front of Bondi Pavilion
Image source: <http://bondieye.com.au/tag/city2surf/>

Access roads such as Queen Elizabeth Drive and dedicated car parking areas, such as Park Drive also contribute significantly to land take. Built facilities within the Park include the Bondi Pavilion, the Bondi

Surf Bathers’ Life Saving Club, and at the rear, the Park Maintenance Depot, the North Bondi Surf Life Saving Club (currently under construction) and the nearby public toilets.

Bondi Pavilion is an important focus for the Waverley residential catchment, offering a full program of cultural activities to a broad cross section of the community.

A key challenge for the study was to assess the highest and best land use for the precinct based on the investigations, with particular regard to the options to potentially relocate at-grade parking areas that could maximise park green spaces.

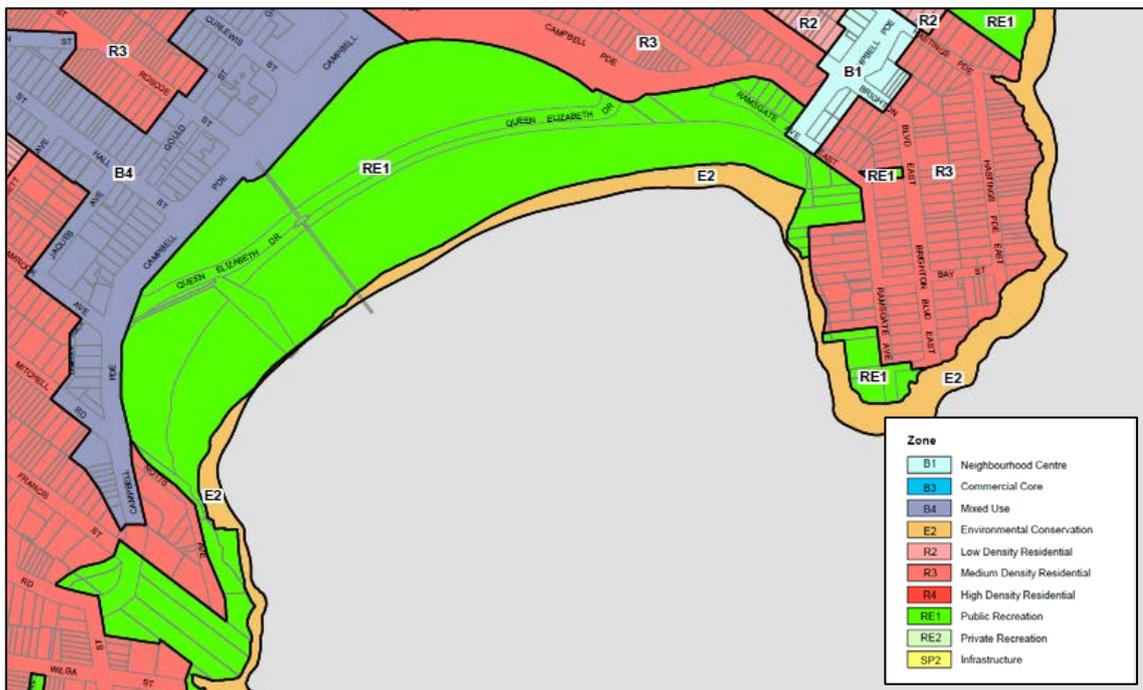
2.2 Strategy and Policy

2.2.1 Zoning

Bondi Park is zoned for public recreation (RE1) and environmental conservation (E2) in the Waverley Local Environmental Plan 2012. The area immediately to the north west across Campbell Parade is zoned as mixed use (B4), while the areas to the north and east comprise predominantly residential areas (R3, R2).

Figure 2.3 shows the land zoning map for Bondi Park and its immediate surrounds.

Figure 2.3: Bondi Park Land Zoning



Source: Extracted from Waverley Local Environmental Plan 2013, Land Zoning Map – Sheet LZN_004

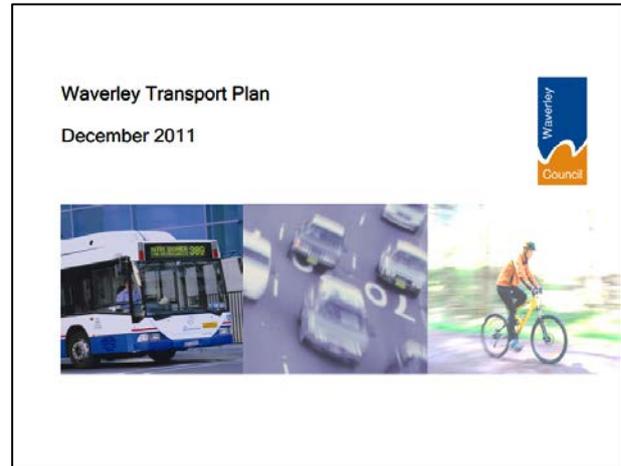
2.2.2 Waverley Transport Plan

The Waverley Transport Plan (Waverley Council, December 2011) was prepared to supplement the formal adoption of the Waverley Together 2 Community Strategic Plan in 2009. It aims to guide Council to implement the transport vision articulated by the Waverley community to achieve a more

sustainable environment underpinned by greenhouse gas reduction and community health and amenity improvements.

The Waverley Transport Plan aims to achieve:

- Regular public transport use particularly for trips to work and recreation
- Safer and less congested roads and intersections
- Equitable access and effective management of vehicle parking, both on-street and off-street
- Frequent walking and bicycle riding by the community, particularly for local trips
- Improved and encouraged public transport, cycling and pedestrian alternatives
- High quality, safe and accessible pedestrian routes
- Safe and connected bike network and facilities
- Appropriate planning and delivery of all stakeholder needs for improvement to transport effectiveness and usefulness.



The plan also seeks to achieve the transport targets set out in the Waverley Strategic Plan, particularly to:

- Reduce average kilometres travelled by Waverley residents per day by private car by 15%
- 40% of the total daily distance travelled by residents is by public transport, walking or cycling.

The Waverley Transport Plan outlines a number of strategies to meet its targets, with a particular emphasis on improving public transport access to Bondi Beach.

2.3 Transport

2.3.1 Vehicle Access and Egress

The key access roads servicing the Bondi Beach precinct and Bondi Park include:

- Campbell Parade
- Queen Elizabeth Drive
- Beach Road
- Park Drive.

A number of other roads intersecting Campbell Parade provide local access to the precinct. These include Notts Avenue, Lamrock Avenue, Hall Street, Roscoe Street, Curlewis Street, Beach Road and Wairoa Avenue.

Campbell Parade

Campbell Parade is classified as a local road and follows a curved alignment, and links the study area with Bondi Road and with Bondi Junction to the west. The section of Campbell Parade bordering the northern side of the study area is a two-way road configured with two (2) travel lanes, a bike lane and a parking lane in each direction, set within a 20 to 25 metre wide carriageway with a 5-metre wide median island. The posted speed limit is 40 km/h within this section.

Campbell Parade provides the key vehicular access to the various areas within Bondi Park. Some key intersections include Notts Avenue, Queen Elizabeth Drive, Park Drive and Ramsgate Avenue.

Queen Elizabeth Drive

Queen Elizabeth Drive is classified as a local road, providing access via Campbell Parade to the public car parks (pay parking) within the study area. It is a one-way road, and generally accommodates 90-degree angle parking along each side (except for the section fronting Bondi Pavilion). The posted speed limit is 30 km/h, except within the designated shared zone fronting Bondi Pavilion, where speed is restricted to 10km/h.

Access to the car parking areas is via a roundabout at the south west intersection of Queen Elizabeth Drive with Campbell Parade, while egress from the car parking areas is via the north east intersection of Queen Elizabeth Drive with Campbell Parade, between Warners Avenue and Ramsgate Avenue.

Park Drive

Park Drive provides access to the rear of the Bondi Pavilion and the 'Pay and Display' car park within the study area. It forms an extension of Beach Road across Campbell Parade. It has a signalised intersection with Campbell Parade.

2.3.2 Pedestrian Access

Connectivity with Campbell Parade

Pedestrian access to Bondi Park is mainly via Campbell Parade. However, due to slope constraints, direct pedestrian connectivity between Bondi Park and Campbell Parade is not achieved for the sections between Roscoe Street and the Queen Elizabeth Drive egress location, which are mainly separated by a concrete heritage wall about 1.2 metres high.

For this stretch of Campbell Parade, direct pedestrian connection with Bondi Park is only achieved at the following locations:

- Pedestrian footbridge between Roscoe Street and Curlewis Street
- Park Drive / Campbell Parade intersection
- Pedestrian footbridge opposite the Warners Avenue/Campbell Parade intersection
- A narrow wall opening with stairs within the coach parking area on Campbell Parade, between the northern pedestrian footbridge and the Queen Elizabeth Drive egress.

Campbell Parade Pedestrian Crossings

Pedestrian crossings across Campbell Parade are provided at the following locations:

- South of Lamrock Avenue (pedestrian refuge)
- Hall Street (signalised)

- Roscoe Street (signalised)
- Curlewis Street (signalised)
- Beach Road/Park Drive (signalised)
- Wairoa Avenue (zebra, east side only)
- Ramsgate Avenue (signalised, west side only).

These are shown in Figure 2.4.

2.3.3 Public Transport

Buses

A number of bus routes run along Campbell Parade, providing public transport links with Bondi Junction and the City, as well as other residential areas in the eastern suburbs. These include:

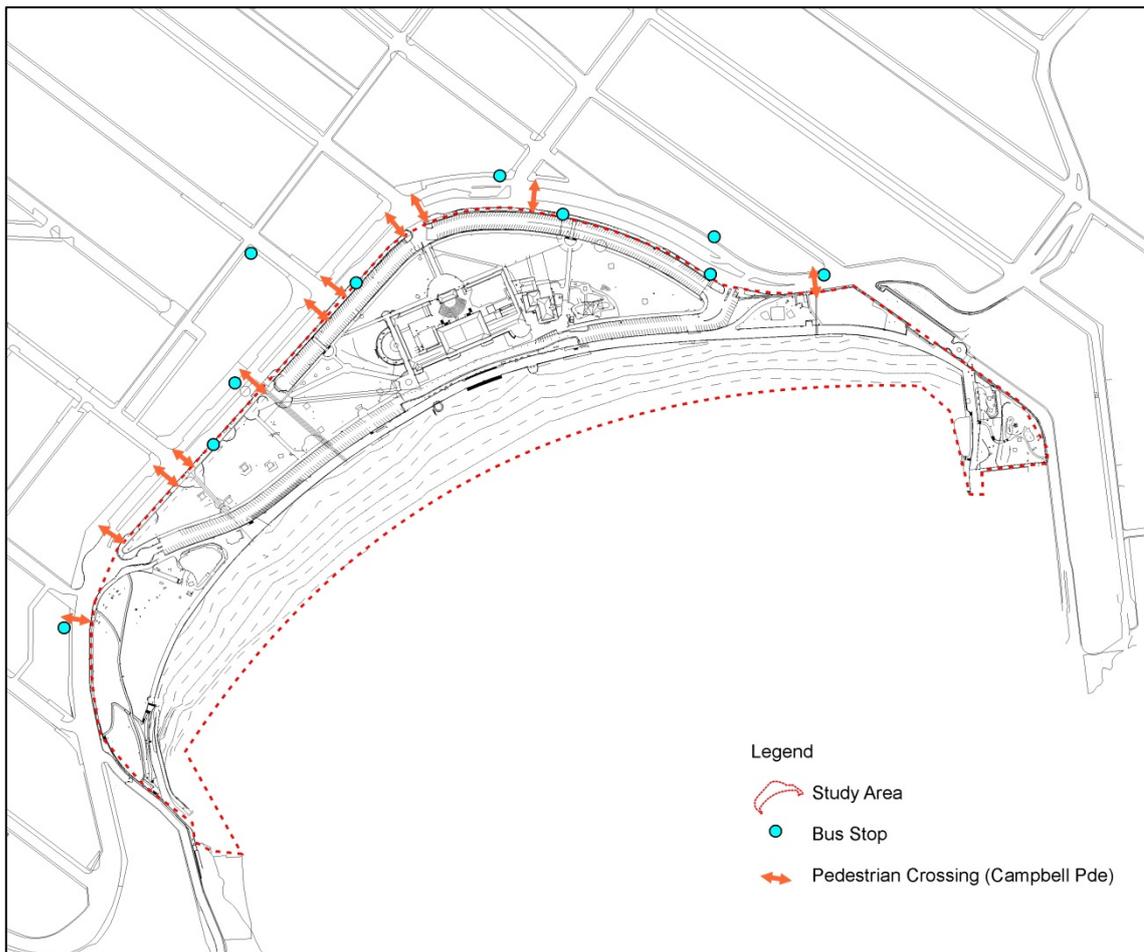
- Route 333: North Bondi to Circular Quay via Bondi Beach, Bondi Junction, Paddington, Darlinghurst and City (limited stops, PrePay-only).
- Route 380: North Bondi to Circular Quay via Bondi Beach, Bondi Junction, Paddington, Darlinghurst and City. Daytime services extend to Watsons Bay via Vaucluse Heights and Dover Heights.
- Route 381: North Bondi to Bondi Junction via Bondi Beach and Denham Street.
- Route 382: North Bondi to Bondi Junction via Bondi Beach (limited evening service only).
- Route X84: North Bondi to Bondi Junction via Bondi Beach (AM peak hour express service).

Bus stop locations are listed in Table 2.1 and shown in Figure 2.4.

Table 2.1: Campbell Parade Bus Stop Locations

Direction	Stop ID and Location	Routes
Northbound / Eastbound	202621 near Lamrock Avenue	380, 381
	202622 near Hall Street	333, 380, 381
	202623 near Wairoa Avenue	333, 380, 381
	202624 opposite Queen Elizabeth Drive egress	380, 381
	202625 near Ramsgate Avenue	380, 381
Southbound / Westbound	202635 near Ramsgate Avenue	380, 381
	202637 opposite Wairoa Avenue	333, 380, 381, X84
	202638 opposite Curlewis Street	380, 381, 382
	Opposite Hall Street	333, 380, 381, 382

Figure 2.4: Pedestrian Crossings and Public Transport Facilities



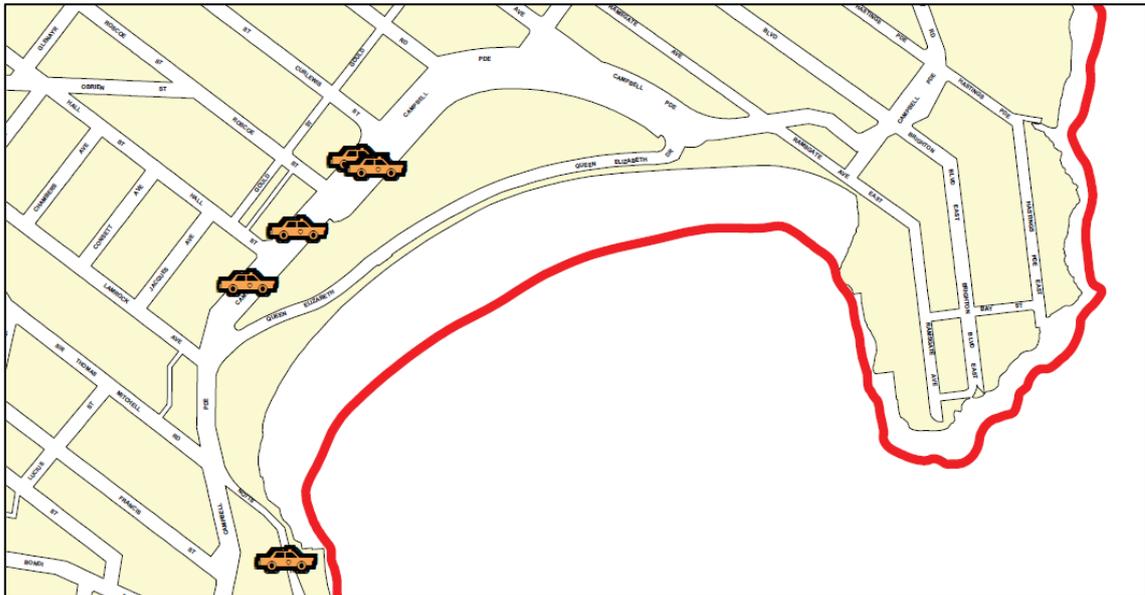
Light Rail

It is understood that a feasibility study to reintroduce light rail in Bondi is being currently undertaken. The likely route for this proposed light rail would essentially be along Campbell Parade. No further details are available at this time. Nevertheless, it is essential to note that the reintroduction of light rail along Campbell Parade would enhance the public transport accessibility of Bondi Park.

Taxis

There are four taxi ranks on Campbell Parade, as shown in Figure 2.5. The taxi rank on the north east bound side of Campbell Parade approaching Curlewis Street only operates between 6pm and 6am.

Figure 2.5: Campbell Parade Taxi Ranks



Source: Extracted from "TaxiRanks in Waverley.pdf", document provided by Waverley Council.

2.4 Car Parking

2.4.1 Parking Supply

Waverley Council operates the following car parking areas within Bondi Park:

- Queen Elizabeth Drive¹ and Park Drive² (between Beach Road and the Campbell Parade/Queen Elizabeth Drive egress intersection) – ticketed parking (pay at exit). This car park operates 24 hours a day, seven days a week.
- Park Drive metered parking (between opposite Roscoe Street and Beach Road³ (pay and display). It operates between 8:00am and 10:00pm.

There are also a number of parking spaces within the courtyard space of Bondi Pavilion used for car parking, as well as some spaces at the rear of the Pavilion reserved for Council vehicles and service deliveries.

Campbell Parade also accommodates on-street pay parking, with median parking provided along a section between Beach Road and the Campbell Parade/Queen Elizabeth Drive egress intersection.

Tourist coach parking is located along Campbell Parade.

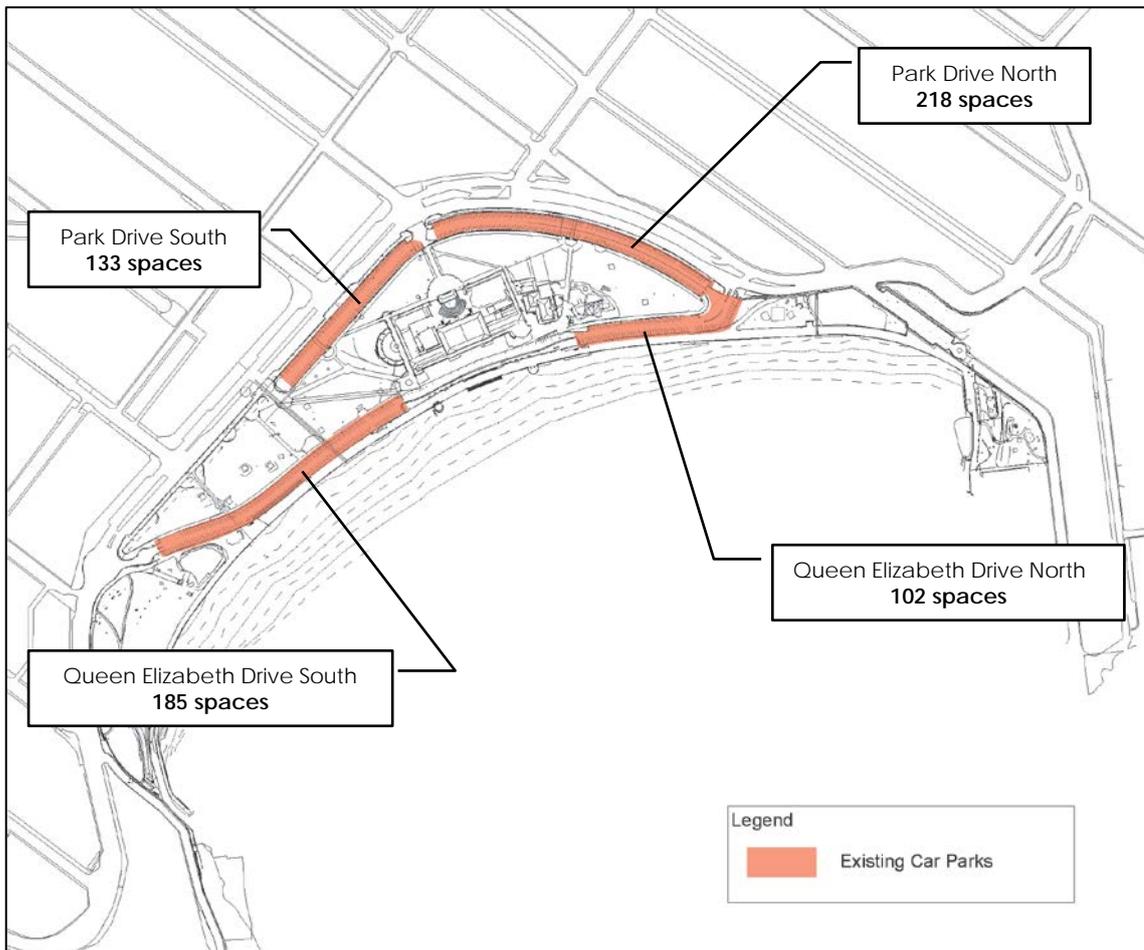
Figure 2.6 shows the different parking areas within the core of Bondi Park, indicating the number of spaces for each.

¹ For clarity, the car park section of Queen Elizabeth Drive south west of the Pavilion is referred to as "Queen Elizabeth Drive South" and the car park section north east of the Pavilion is referred to as "Queen Elizabeth Drive North".

² Referred to in the remainder of this report as "Park Drive North".

³ Referred to in the remainder of this report as "Park Drive South".

Figure 2.6: Car Parking Areas in Bondi Park Core Area



2.4.2 Parking Fees

Queen Elizabeth Drive and Park Drive North

The parking fees for the Queen Elizabeth Drive and Park Drive North car parking areas are as follows:

- Under 10 minutes: free
- First hour or part thereof above 10 minutes: \$8
- 1-2 hours: \$16
- 2-3 hours: \$22
- 3-4 hours: \$27
- 4-5 hours: \$32
- 5 hours and above: \$37
- Additional fees for overnight parking: \$43.

These parking areas are accessible 24 hours a day, seven days a week. Fees are payable upon exit, with manual collection at the Queen Elizabeth Drive egress.

Beach Permits

Waverley Council offers beach parking permits which could be used to park a specific vehicle at the Queen Elizabeth Drive and Park Drive North car parks at Bondi Park for an unlimited time. These

normally cost \$1,375 a year, but Waverley LGA residents and property owners could purchase them for an annual fee of \$107.

A separate lane is provided for beach permit holders at the Queen Elizabeth Drive egress.

Park Drive South

A parking fee of \$5.80 per hour, with a maximum duration of four (4) hours is charged at the Park Drive South carpark. During weekdays in the winter months from May to September, a discounted rate of \$3.00 per hour is charged.

Park Drive South carpark operates between 8:00am and 10:00pm.

2.4.3 Parking demand characteristics

Queen Elizabeth Drive and Park Drive North

Council provided estimates of demand for the parking spaces covered by Queen Elizabeth Drive, including Park Drive North.

Council estimates that approximately 80% of all parking transactions at Queen Elizabeth Drive are by holders of Bondi Beach Parking Permits.

The estimated total transactions for Financial Year 2012 are as shown in Table 2.2.

Table 2.2: Queen Elizabeth Drive Car Park – Estimated Demand FY 2012

Quarter	Tickets	Beach Passes	Total
Quarter 1	23,673	83,932	107,605
Quarter 2	33,663	132,555	166,218
Quarter 3	34,535	138,664	173,199
Quarter 4	25,690	102,432	128,122
Total FY 2012	117,561	457,583	575,144

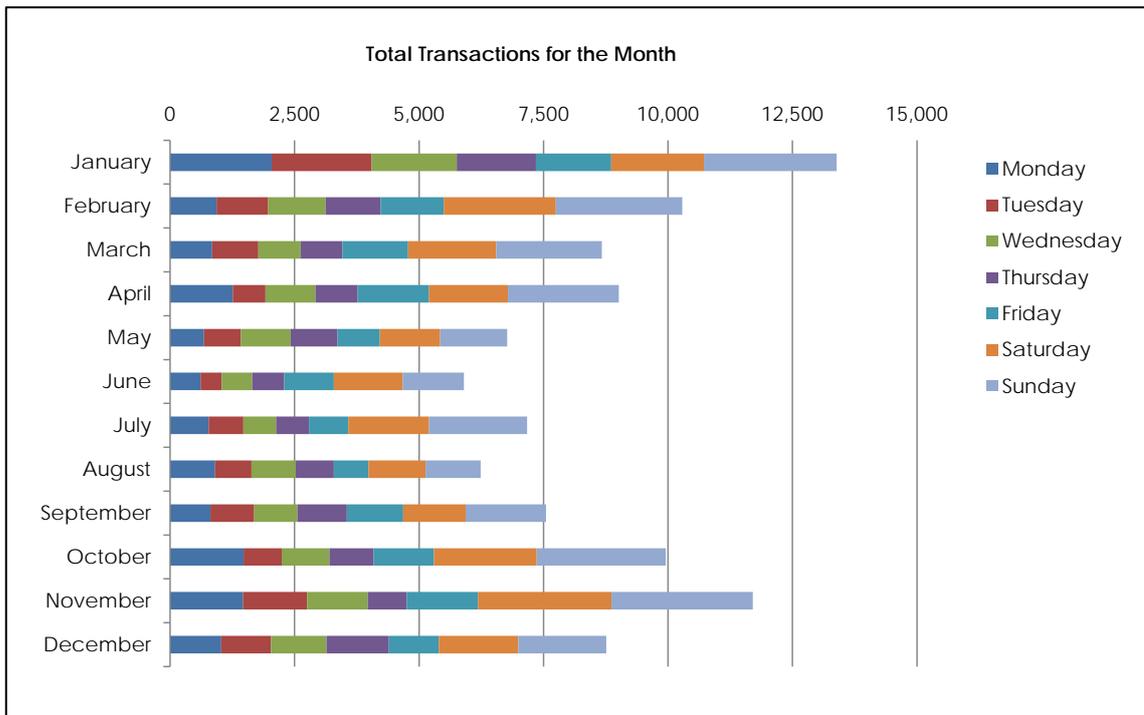
Data source: Waverley Council

Park Drive South

The following figures show the parking demand characteristics for Park Drive South, which were generated from parking usage information provided by Waverley Council for the period July 2011 to June 2012 (FY 2012):

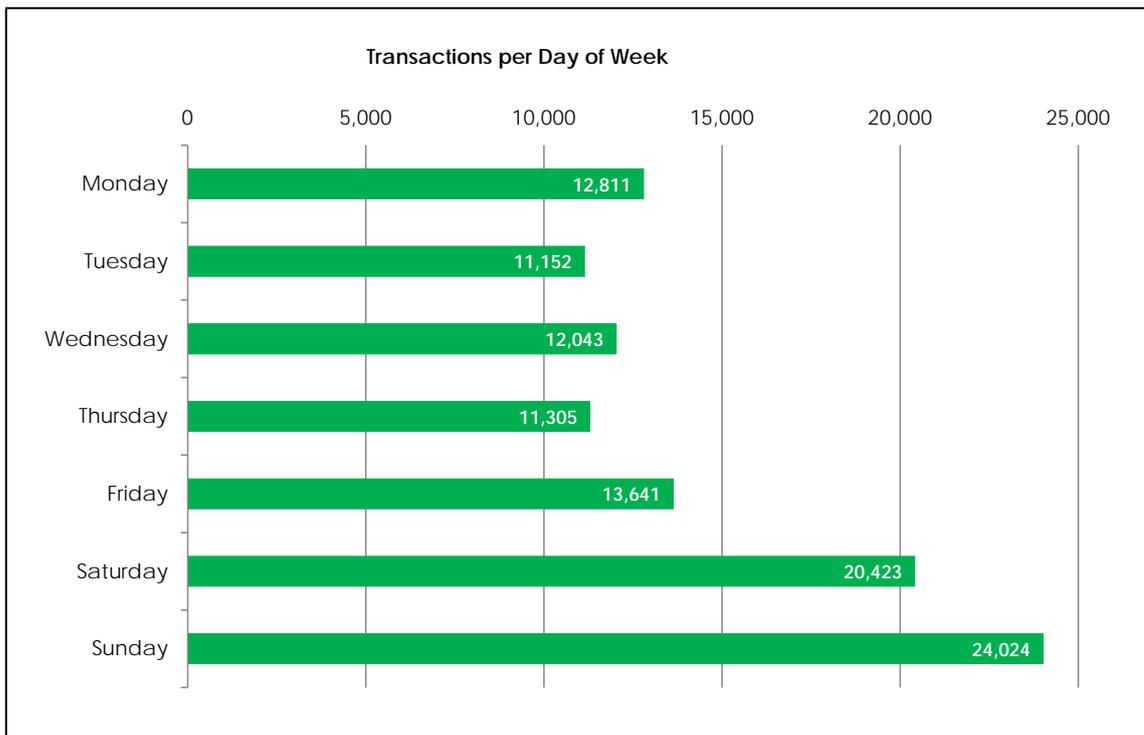
- Figure 2.7 shows monthly transactions by day of week for FY 2012, indicating the peak month was January with more than 12,500, followed by November.
- Figure 2.8 shows transactions by day of week, indicating that the busiest day is Sunday, followed by Saturday.
- Figure 2.9 shows average parking duration, indicating that majority of parking was between 1 and 2 hours duration.

Figure 2.7: Park Drive South – Monthly Transactions, FY 2012



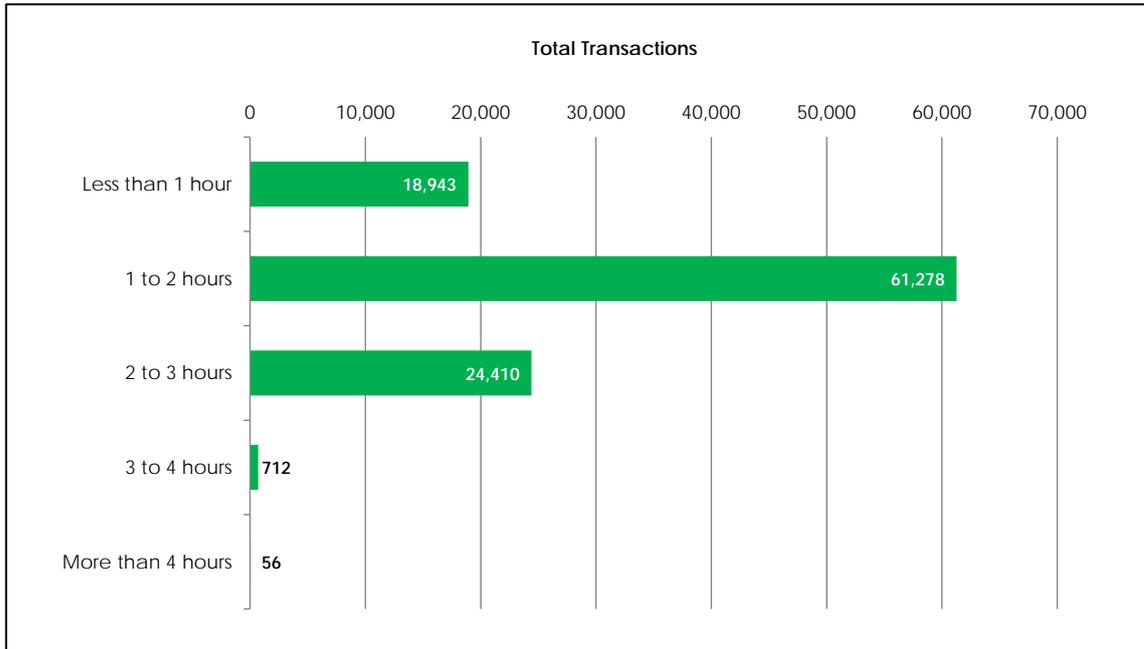
Data source: Waverley Council

Figure 2.8: Park Drive South – Transactions by Day-of-Week, FY 2012



Data source: Waverley Council

Figure 2.9: Park Drive South – Parking Duration, FY 2012



Data source: Waverley Council

3. Key Issues and Opportunities

This chapter presents a summary of the key issues identified during site visits, stakeholder consultation and a review of background documents relating to vehicle movement and parking in the study area.

3.1 Transport and Access

3.1.1 Pedestrian Connectivity and Safety

The primary transport and access issue at Bondi Park relates to pedestrian access and connectivity. The hierarchy of transport modal access within the Bondi Park is unclear⁴. While pedestrian access and connectivity is the key objective of the parking options to be evaluated, this needs to be more clearly articulated within the Plan of Management not only in terms of policy setting, but also relating to physical design.

The opportunities to provide pedestrian facilities along the main desire lines are limited by slope constraints, and where achieved, the connections between the surrounding precincts (e.g. Campbell Parade) are blocked either by parked or moving vehicles. This also presents safety issues⁵ brought about by the movement conflicts.

Site observations reveal that the vehicle speed limit of 10 km/h within the shared zone along Queen Elizabeth Drive fronting the Bondi Pavilion is generally exceeded. The volume of pedestrians at this location poses safety issues with speeding vehicles.

In addition to the Park Drive and Queen Elizabeth Drive car parks acting as barriers to pedestrian connectivity, the other locations where pedestrian access needs to be improved include:

- Across Campbell Parade near the Lamrock Avenue bus stop, where there is a high volume of pedestrians crossing the road, at times in front of a stopped bus providing limited sight distance to vehicles approaching from the south. The downward slope of Campbell Parade (northbound) further presents safety concerns.
- Park Drive access to the rear of the Pavilion from Campbell Parade, where there is no separate pedestrian facility provided.
- Notts Avenue, where there are no footpaths provided and where the steep slopes further constrain pedestrian access.

The Plan of Management aims to address the key issue of pedestrian connectivity to, from and within Bondi Park and thus is a key driver to the consideration of parking options.

3.1.2 Vehicle Access and Egress

The key issues relating to general traffic access and egress within Bondi Park include:

- Queen Elizabeth Drive, with its one-way traffic arrangement, provides for a legible vehicular access to Bondi Park. However, during peak periods, there are congestion issues particularly

⁴ The term "Queen Elizabeth Drive" itself connotes priority given to vehicles, rather than pedestrians.

⁵ According to crash statistics provided by Waverley Council, no pedestrian accident has been recorded for Queen Elizabeth Drive, with a number having been recorded for Campbell Parade. The data does not include "near misses".

relating to the parking fee collection period, which takes some time to service. As a result, vehicle egress becomes an issue. Of particular concern raised during the stakeholder consultation process was egress for emergency vehicles.

- Drop-offs: Bondi Park hosts a number of establishments and activities in which parents need to drop off or pick up young children. This requires short-term car parking within reasonable walking distance of the destination. However, the arrangement of car parking and land uses in Bondi Park do not generally allow enough time for these parents to park the car and drop off or pick up their children within the free parking allowance.
- Taxi access: there is no clear policy on taxi access to Queen Elizabeth Drive. Although a 10-minute “free parking” allowance is provided to entering vehicles which could allow taxi passengers to get dropped off along Queen Elizabeth Drive, taxi passengers leaving Bondi Park need to use any of the taxi ranks on Campbell Parade.

3.1.3 Servicing and Deliveries

The various activities being undertaken in Bondi Park and Bondi Pavilion require regular service vehicle access and deliveries. Currently, this is generally achieved via Park Drive to the rear of Bondi Pavilion. However, these deliveries generally present conflicts with a major pedestrian desire line linking Bondi Beach with the surrounding residential precinct through Bondi Pavilion.

Access to the loading dock, separate from major pedestrian desire lines, needs to be identified and developed. Access to Bondi Park yard for maintenance vehicles would also ideally be separate from pedestrian desire lines. Where these are not possible, sight lines need to be maintained to achieve acceptable levels of safety.

3.1.4 Public Transport

Community consultation undertaken for the Plan of Management indicates a heavy preference for better public transport access to Bondi Park, Beach and Pavilion. Improving public transport access to the study area should not be limited to Campbell Parade. The public transport facilities along Campbell Parade would need to further be connected with the main destinations within Bondi Park.

3.1.5 Bicycle

The Waverley Bike Plan identifies a number of bicycle routes within the LGA linking with Bondi Beach, which is recognised as a major destination. There are also on-road bicycle facilities provided on both sides of Campbell Parade to meet the potential demand. However, no separate bicycle facility is provided within Bondi Park. Although bicycles are allowed on Queen Elizabeth Drive, they are prohibited from using the adjacent promenade. There are also limited bicycle parking facilities on Queen Elizabeth Drive.

3.1.6 Light Rail

Waverley Council is investigating the feasibility of reintroducing a light rail line along Campbell Parade in the future, which if realised would contribute towards greater public transport accessibility of Bondi Park, Beach and Pavilion.

No further details of the feasibility study are available at the moment. However, the key light rail issues relating to this investigation include:

- Impacts on pedestrian connectivity across Campbell Parade, with the light rail line potentially acting as a barrier if not designed appropriately.
- Potential impacts of revised intersection arrangements at the Queen Elizabeth Drive access and egress locations in relation to the rail alignment.

3.2 Parking

3.2.1 Supply

Parking is a prevalent issue in any traffic generating development. In line with the Waverley Transport Plan objectives to reduce private car trips, parking supply needs to be carefully managed. Providing for additional parking in Bondi Park would potentially contribute towards increased accessibility. However, it also would bring negative impacts in terms of traffic congestion and amenity. Reducing parking supply would contribute towards sustainable transport objectives of reducing car use, but if the demand is not adequately met by alternative transport modes, such reduction would negatively contribute to the viability of Bondi Park, Beach and Pavilion. As such, a delicate balance between providing additional parking and achieving sustainable transport objectives needs to be achieved.

In the absence of further detailed evaluation of impacts of changes in parking supply, Council has taken the approach to maintain current parking supply numbers.

3.2.2 Configuration

The key issue relating to the existing configuration of car parking facilities at Bondi Park is that the strip layout of both the Park Drive and Queen Elizabeth Drive car parking spaces present a barrier to access between the beach and the surrounding precinct. The Park Drive North and Park Drive South parking areas are generally separated from Campbell Parade, mainly because of elevation differences. The Queen Elizabeth Drive car park has retained its historical arrangement, from the time when vehicles were given priority access to destinations, evident in the way cars are parked (facing the beach, i.e. rear to kerb on the park side, front to kerb on the beach side).

In order to reconnect severed pedestrian desire lines, the strip configuration of the car parks at Bondi Park would need to be reconsidered.

3.2.3 Parking Duration

The layout of car parking at Bondi Park could be characterised as follows:

- Short term parking (in relative terms) within Park Drive South, which is towards the rear
- Long term parking (unlimited for beach permit holders) along Queen Elizabeth Drive.

However, Queen Elizabeth Drive, being closest to the beach and used as main access to the Bondi Pavilion, would ideally cater to a higher parking turnover (i.e. short stay), whereas Park Drive, being to the rear of activities, would ideally cater to longer stay parking. Thus, from a vehicle parking perspective, Queen Elizabeth Drive would ideally be designated for short-stay parking, while Park Drive (both North and South) would ideally be designated for longer stay parking.

Note, however, that such arrangements would not necessarily be in line with pedestrian connectivity objectives, i.e. higher vehicle volumes on Queen Elizabeth Drive if vehicle access all along Queen Elizabeth Drive is maintained.

3.2.4 Payment Method

The existing payment method for Queen Elizabeth Drive and Park Drive North, comprised of ticket and payment at exit, creates egress congestion issues that impact on the overall efficiency of the movement system during peak periods. The payment method that exists on Park Drive South, i.e. pay-and-display, presents a more effective scheme that allows commensurate revenue collection (with vigilant monitoring) to be achieved without the traffic impacts associated with ticket gates/barriers.

The parking meters could also be upgraded to “smart” parking meters, with the potential of implementing more effective parking management measures such as linkages with electronic databases, payment schemes, etc.. These smart meters have the potential of capturing parking demand characteristics, including monitoring of the use of beach permits, in order to more appropriately address required changes in parking policy.

3.2.5 Beach Permits

Through the stakeholder consultation process, it has been revealed that the predominance of beach permit usage on Queen Elizabeth Drive and Park Drive North has brought about a number of parking management issues. These include:

- An estimated 80% of parking transactions⁶ on Queen Elizabeth Drive and Park Drive North are from beach permit holders. They often occupy “higher-demand” car spaces from early in the morning, with unlimited time restriction, thus preventing the higher parking turnover (as discussed earlier).
- This potentially creates higher traffic movements, in which more drivers cruise down Queen Elizabeth Drive in the hope of finding a parking space closer to the beach. During a number of site observations, it was found that while the Park Drive car parks are less than half full, the Queen Elizabeth Drive parking spaces are fully occupied.
- There are potential opportunity costs associated with revenue losses arising from unmet parking demand from other users (non-permit holders).

Understandably, any change to the policy governing beach permits would be a sensitive community issue. However, parking spaces, particularly in-demand parking spaces, should be considered as a finite resource that needs to be managed effectively, in line with demand management measures and sustainable transport objectives.

3.2.6 Tourist Coaches

The section of Campbell Parade between Warners Avenue and the Queen Elizabeth Drive egress adjacent to Bondi Park is signposted for tourist coach parking. This zone is designated as a pay parking area. However, Council observations indicate that most tourist coach drivers / operators tend to remain within their vehicles with the coach engines running (generally to keep the air-conditioning running)

⁶ Estimates were provided by Waverley Council.

while their passengers visit the beach. The running engines have generated complaints to Council due to noise and exhaust fumes, and have presented difficulty in the enforcement of parking restrictions (including payment collection).

Council aims to develop improvement options to address this key issue. These are further discussed in Section 6.4 on page 45.

3.2.7 Other Requirements

Parking improvement options at Bondi Park would need to consider the vehicle access, parking and egress requirements of other users of Bondi Park in addition to the general public. These include:

- Staff (e.g. Bondi Pavilion, Bondi Park, Lifesavers)
- Service vehicles and deliveries (e.g. Bondi Pavilion, rubbish collection)
- Bondi Park maintenance vehicles and equipment
- Emergency vehicles
- Special events.

3.3 Urban Design

3.3.1 Heritage Significance

Bondi Park is a 'Cultural Landscape' of National (included on the National Heritage List in 2008) and State significance. The NSW Environment and Heritage listing describes the historical significance in the following terms: *Bondi Beach is of State significance for its place in the history of beach swimming, surfing, and surf lifesaving in Australia in the 19th and 20th centuries.* It continues: *The Bondi Surf Pavilion and Bondi Park are components in Waverley Council's 160,000 (pounds) Bondi Beach Improvement Scheme, brought about by the immense popularity of the beach for recreation in the 1920s.* It further states: *The improvement scheme is a landmark in the history of urban design in NSW because of its ambitious scale.* It will be important for any design proposal to consider any potential heritage impacts or benefits.

3.3.2 Sense of Place/Urban Appeal

The overall 'Bondi Beach' area is in fact a series of parallel activity zones. These zones have distinct identities and activities. For example, the west side of Campbell Parade forms a near continuous urban edge of retail, café and restaurant activities, and apartment buildings. This frontage is only interrupted by public school grounds and by the series of perpendicular streets that lead back into surrounding residential neighbourhoods.

The appeal of Bondi Park is its crescent landform, amphitheatre-like, with its backdrop of urban Campbell Parade frontages, overlooking the sweep of promenade, Bondi Beach, Pacific Ocean bookended by rocky headlands. The centrepiece of Bondi Park is the Bondi Pavilion and adjoining Bondi Surf Bathers SLSC. The Pavilion is a significant structure, extending its urban influence into the park with fore-plaza, colonnade, side and rear amphitheatre/plaza spaces, multi-level beach promenade, a network of pedestrian pathways extending into the park, and two pedestrian overbridges linking over the Park Drive carpark to Campbell Parade. Most of these urban elements have a

consistent architectural character and define pedestrian scale places within the overall Bondi Park open space.

It will be important in considering various master planning scenarios to ensure proposals reinforce the existing strong character and iconic 'sense of place' that the Park, Pavilion and Beach represent.

3.3.3 Regional Connectivity

Bondi Park and Beach form part of larger regional recreational routes, including the Bondi to Bronte Coastal Walk, the Waverley and Woollahra regional cycling/touring network, and recreational and competition ocean swimming activities. The Park is also utilised informally by large numbers of swimmers, joggers, walkers (with and without dogs) and for fitness activities.

The masterplanning concepts developed as part of the Plan of Management study, should consider opportunities to improve regional connectivity of the Park, Pavilion and Beach with the adjoining coastal strip, retail hubs and streetscapes, and with the adjoining residential neighbourhoods.

3.3.4 Campbell Parade and Neighbourhood Connectivity

A masterplan for Campbell Parade was approved by Council in 2006 and the west side, from Lamrock Avenue to Beach Street was upgraded in 2007-2008. There are no current plans by Council to proceed with the remaining upgrade stages. The Campbell Parade Masterplan sought to reconnect the urban fabric – the grid of streets, to Bondi Park and to the promenade and Bondi Beach. Regular fully signalised intersections provide safe crossings from west (retail/café strip) to east Campbell Parade (parkside). Future additional signalised crossings and park pathways would further enhance pedestrian accessibility along this edge of the precinct.

Pedestrian links to the Park, Pavilion and Beach are particularly poor along Campbell Parade between Beach Road and Ramsgate Avenue, where temporary median parking arrangements create a confusing route for pedestrians to traverse. Links are also poor between the Wairoa Avenue café zone and associated residential neighbourhood) and Bondi Beach Primary School/markets, and the Park, Pavilion and Beach. Connections of the beach front promenade to the west (Notts Avenue, Bondi Icebergs) and to the east (Ramsgate Avenue) are a challenge due to the steep level change, and conflicts with local vehicular access requirements.

Provision for compliant pedestrian access and safe, legible crossing arrangements are a particular issue to be addressed in the study.

3.3.5 Park Pedestrian Accessibility, Safety and Equality of Access

Many Bondi Park pathways are non-compliant due to excessive steep slope or are undermined by long sections of pathway ending in a set of stairs. Many of the existing pedestrian ramps do not comply with current regulations, in terms of slope and handrail provision. Of particular concern for pedestrian safety is the section of Queen Elizabeth Drive between Campbell Parade and the Pavilion. Here pedestrian footpath and crossing facilities are unsafe and the car is given priority. Also the junction of Queen Elizabeth Drive and Campbell Parade is very limited in pedestrian provision, with unsafe or non-existent footpath and crossing provision.

3.3.6 Sustainability

An important consideration in the upgrade of Bondi Park, Pavilion and Beach is the consideration in all design aspects of the sustainability of the Park for future generations. Sustainability considerations cut across all levels and aspects of design and should include water and energy, re-use, management, convenient and high amenity access to public transport options, provisions for cyclists, share cars, scooters, landscape planting selections, lighting and furniture design, and maintaining community social and cultural programs. A fundamental principle should be to maximise equality of access, across as much of the Park and Beach and throughout the Pavilion as is possible.

3.3.7 Safety and Security

It will be important in the master planning of the Park, Pavilion and Beach to maximise opportunities for passive surveillance, in line with principles of Crime Prevention through Environmental Design (CPTED) to avoid areas of potential entrapment, retain visual openness at eye level, to maximise legibility and to appropriately light all public areas at night.

4. Parking Options

The Study Brief prepared by Waverley Council identified the following options for investigation:

Option 1

Review and refine parking and movement needs in the current configuration. Look to remove traffic access in front of the Pavilion.

This study considered the removal of traffic access in front of the Pavilion as a separate option. Thus, the option with the current configuration was designated Option 1A, while a similar option with a car-free Pavilion Forecourt area was also investigated. This was designated as Option 1B.

Option 2

Partially underground Park Drive and create a green roof over. The extent of the underground car park may vary depending on the ground level change between Campbell Parade and Park Drive. Consequently the extent of this the underground car park could be staged to include the following areas:

- *Option 2A is to investigate underground car park from Roscoe Street to Beach Road.*
- *Option 2B is to underground from Roscoe Street to the northern pedestrian bridge.*

Option 3

Fully underground car parking in Bondi Park. Close vehicular access to Queen Elizabeth Drive (park extends to promenade), create an underground car park along Park Drive and/or Queen Elizabeth Drive to meet current capacity or a variation thereof. Provide access and egress via Campbell Parade.

Option 4

The study brief also covered the investigation of “any other evident options”, and in line with this, an option that was developed during the Plan of Management design workshop held from 27-28 February 2013, designated as Option 4, was also investigated. Option 4 is characterised by a more compact underground parking structure footprint located at the rear of the Pavilion, and encompasses the removal of parking on Queen Elizabeth Drive, as well as the provision of improved loading facilities at the rear of the Pavilion and incorporating the storage requirements of Bondi Park service equipment and vehicles within the underground parking.

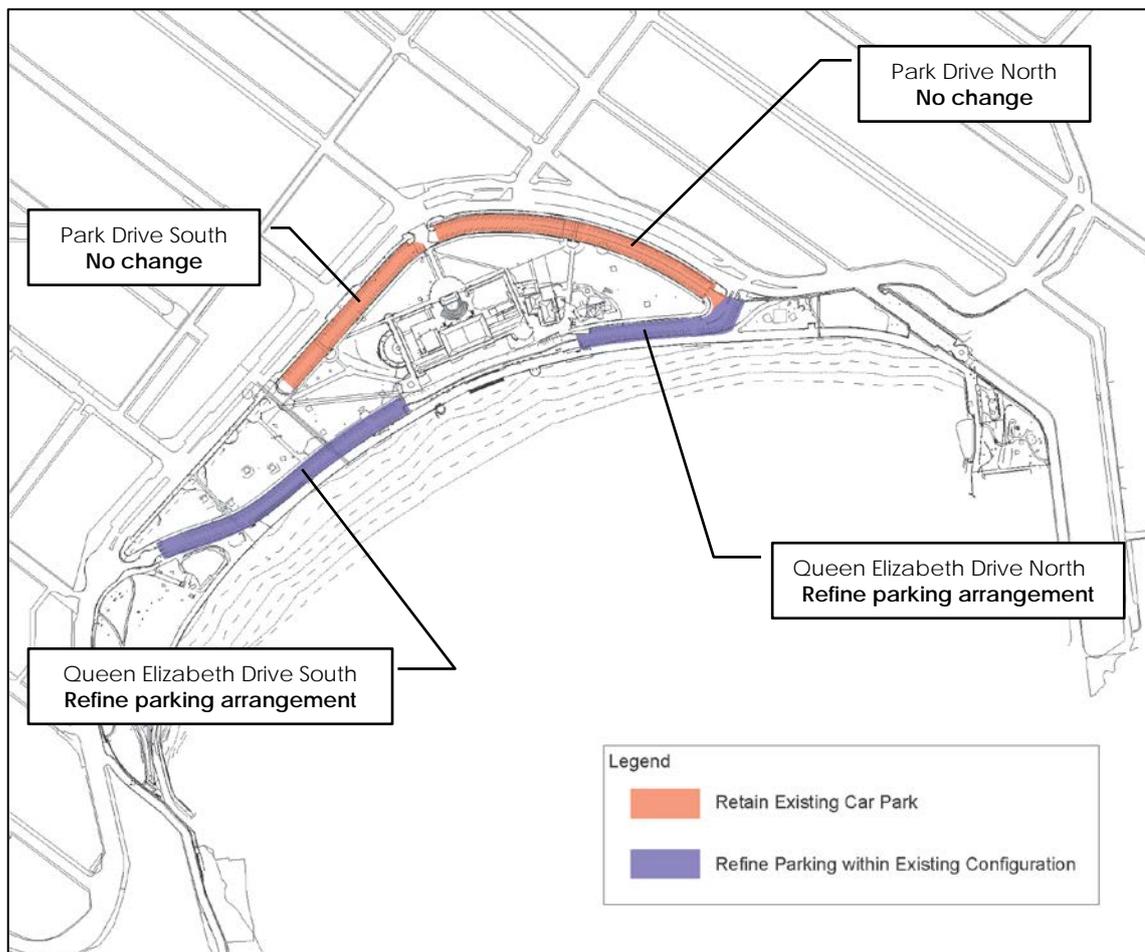
These options are discussed in more detail in the following sections.

4.1 Option 1A: Do Minimum

Option 1A: Do Minimum retains the existing configuration with minor refinements to the layout of car parking spaces to allow for pedestrian crossings across Queen Elizabeth Drive. No changes are proposed for arrangements of parking at Park Drive North and Park Drive South car parks. Existing arrangements for a shared zone along the section of Queen Elizabeth Drive in front of the Pavilion would be maintained.

Figure 4.1 diagrammatically shows the extent of parking modifications in Option 1A.

Figure 4.1: Option 1A: Do Minimum



4.1.1 Advantages

The following advantages have been identified for Option 1A:

- Offers some improvement to traffic/pedestrian conflict points
- Retains current net parking supply
- Allows for minimal disruption to Bondi Park users, events and heritage items
- Allows minimal disruption to current activities (e.g. lifesavers, businesses)
- Provides for a straightforward, legible vehicle circulation pattern.
- Could be implemented at a low cost to Council/ratepayers.

4.1.2 Disadvantages

The following disadvantages have been identified for Option 1A:

- Presents a business-as-usual approach, lacks long-term vision and becomes a lost opportunity for the Plan of Management to incorporate community aspirations and vision
- Maintains extensive hard paved areas
- Parking areas continue to visually dominate and intrude on beachfront
- Park Drive and the wall along Campbell Parade form barriers to the park, Pavilion and beach

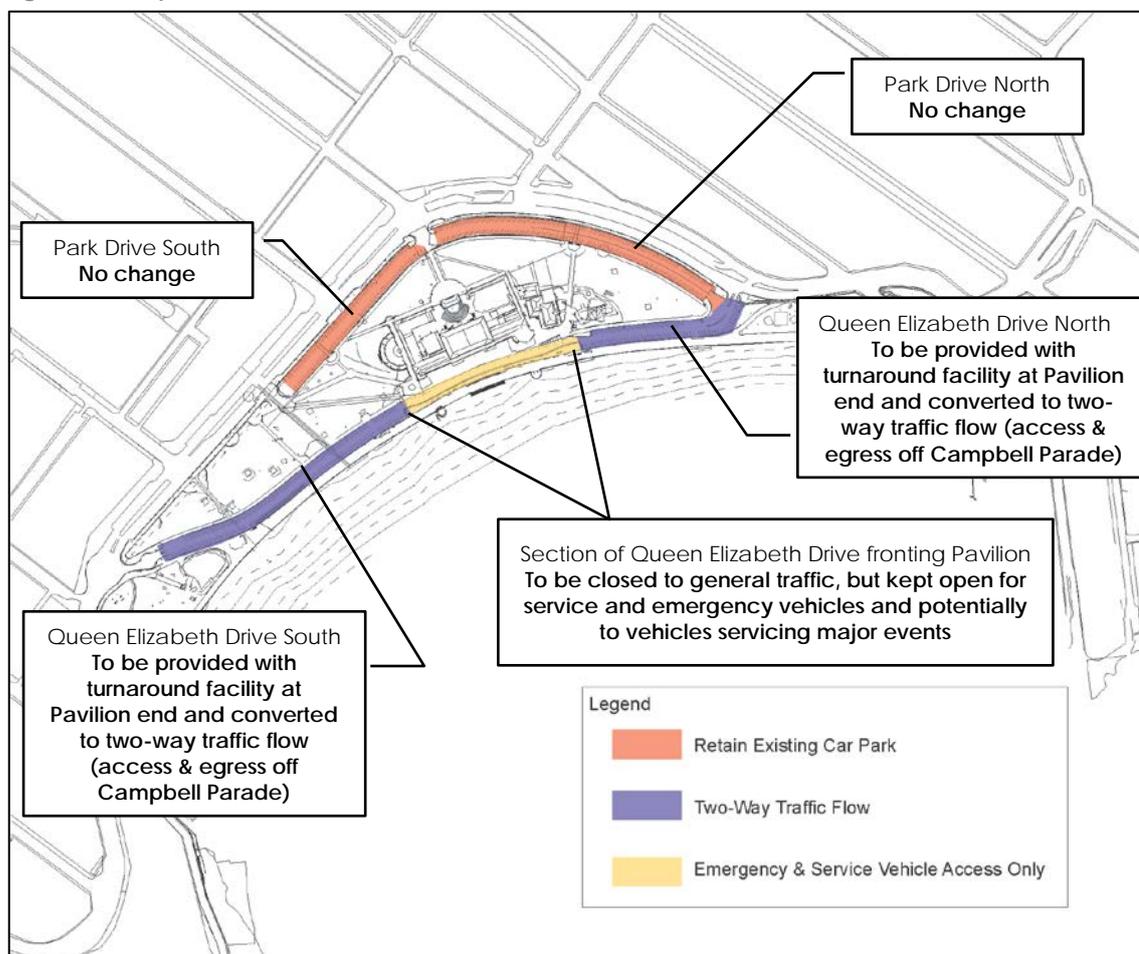
- Queen Elizabeth Drive also forms a barrier between the park and the beach/promenade
- Service access to rear of Pavilion remains unresolved.

4.2 Option 1B: Car-Free Pavilion Forecourt

Option 1B is similar to Option 1A, but with the section of Queen Elizabeth Drive fronting the Pavilion being closed to general traffic, and only kept open for service and emergency vehicles. This option would require the provision of turn-back facilities at two locations on Queen Elizabeth Drive at both sides of the Pavilion. The traffic flow on QED would be converted to two-way traffic flow with the existing access off the southern portion of Campbell Parade and the existing egress at the north eastern section of Campbell Parade being converted to allow both access and egress at these two locations.

Figure 4.2 diagrammatically shows the key features of Option 1B.

Figure 4.2: Option 1B: Car-Free Pavilion Forecourt



4.2.1 Advantages

The following advantages have been identified for Option 1B:

As for Option 1A with the following:

- Provides for a higher level of pedestrian safety within the Bondi Pavilion forecourt along Queen Elizabeth Drive.
- Provides increased space that could be used for markets or special events.
- Provides the opportunity to “downgrade” Queen Elizabeth Drive as private car park, in which a speed limit of 10km/h could be designated, thus providing an opportunity for lower levels of pedestrian-vehicle conflicts.
- Provides the opportunity to upgrade parking fee collection method to a smart meter / pay-and-display scheme.

4.2.2 Disadvantages

The following disadvantages have been identified for Option 1B:

As for Option 1A with the following:

- Increased costs associated with Queen Elizabeth Drive South and North each requiring ‘smart’ meter installation or separate manned booths.
- There could be additional negative impacts created by additional vehicle circulation requirements (e.g. additional cruising for parking).
- Potential traffic impacts on Campbell Parade south and north associated with the required two-way access/egress arrangements at both the existing entry only and exit only locations.

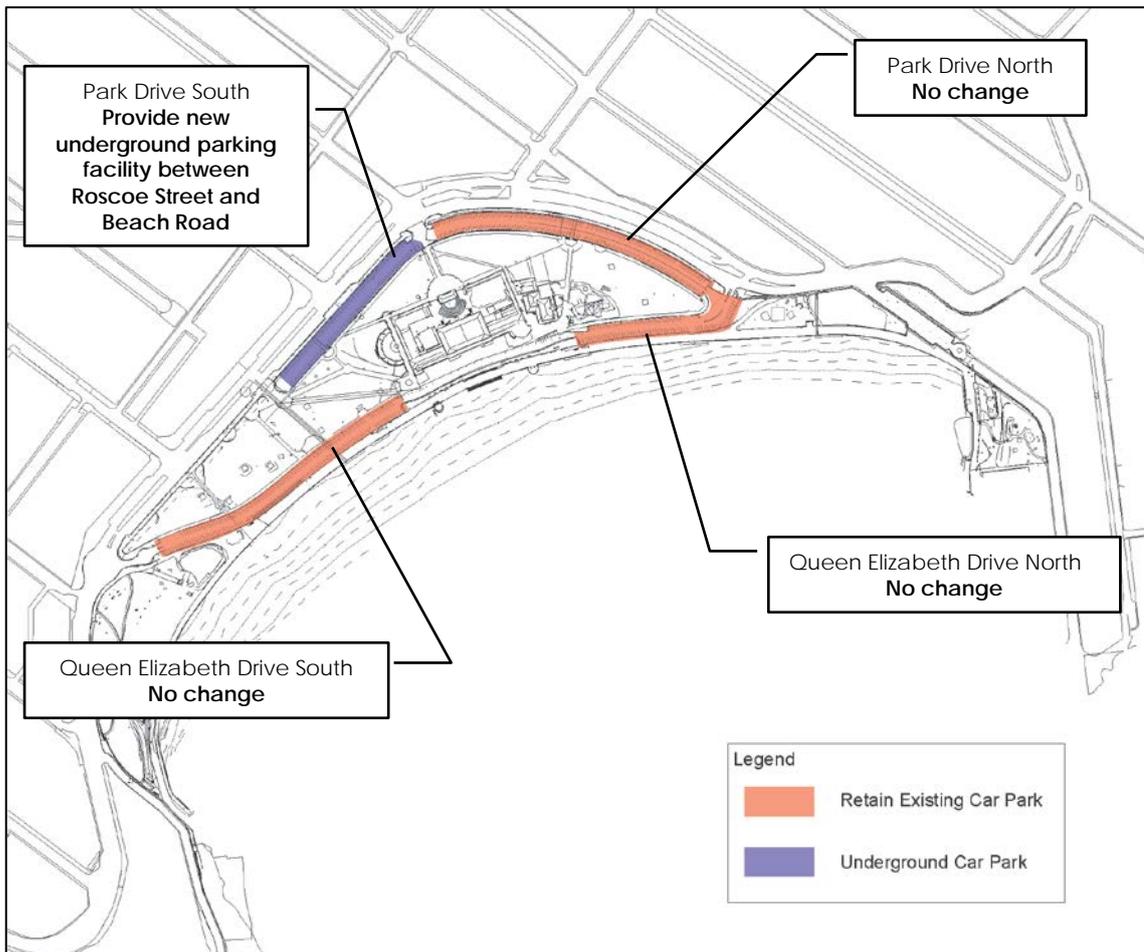
Potential traffic impacts brought about by increased vehicular circulation could be mitigated with the provision of dynamic parking information signage at strategic locations that would indicate the availability of parking spaces at each location within the study area to approaching motorists. This would reduce the volume of vehicles entering fully-occupied parking areas.

4.3 Option 2A: Underground Park Drive South

Option 2A, as per the study brief, provides for an underground car park for Park Drive South (between Roscoe Street and Beach Road). All other existing car parks remain as per current arrangements.

Option 2A is diagrammatically shown in Figure 4.3.

Figure 4.3: Option 2A: Underground Park Drive South

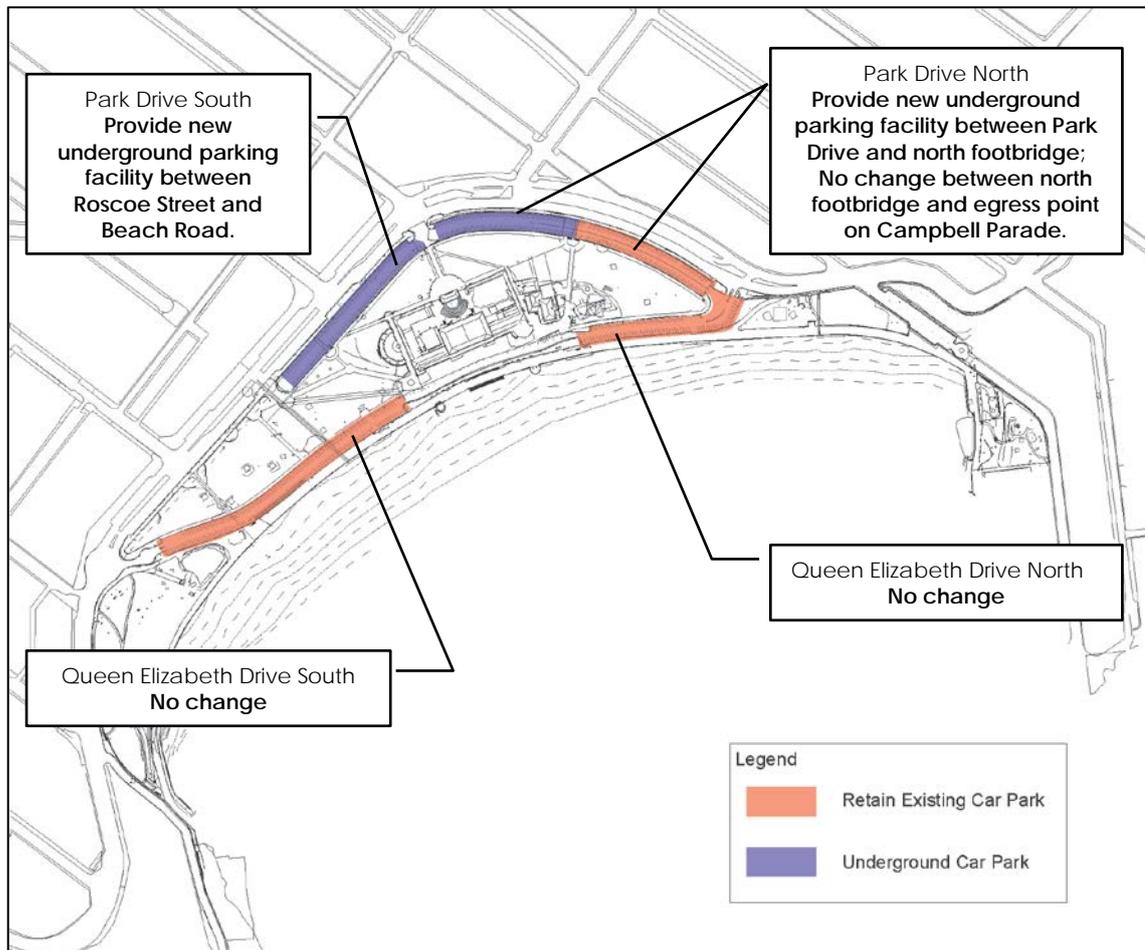


4.4 Option 2B: Underground Park Drive South and Portion of North

Option 2B extends the underground car park in Option 2A, such that the underground portion extends from Roscoe Street to the northern pedestrian bridge.

This is diagrammatically shown in Figure 4.4.

Figure 4.4: Option 2B: Underground Park Drive South and Portion of North



4.4.1 Advantages

The following advantages have been identified for Option 2A and Option 2B:

- Improves traffic/pedestrian conflict points
- Retains current parking quantum
- Has the potential to provide more parking spaces (if desired) with two underground levels
- Increases Bondi Park green space (at the rear of Bondi Pavilion)
- Increases parkland suitable for quiet uses (e.g. seniors)
- Reduces current barrier between Campbell Parade and Bondi Beach
- Reduces current dominance of hard-paved areas, as well as glare
- Offers a potential coach rest stop 'break-out' area
- Improves parking security and weather protection (for the underground portion)
- Provides rationale to increase parking charges.

4.4.2 Disadvantages

The following disadvantages have been identified for Option 2A and Option 2B:

- Significant cost involved (but could potentially be financed by future parking revenues)

- At least one third of Park Drive parking remains exposed
- Queen Elizabeth Drive parking areas continue to visually dominate/intrude on beachfront
- Queen Elizabeth Drive parking remains a barrier between Bondi Park and Bondi Beach
- There are potential heritage issues that need to be addressed (e.g. offsets, wall cuts, pedestrian bridges)
- Police concerns regarding safety/security of underground parking to be resolved.

It is noted that the elements of Option 2A and Option 2B that have been assessed in this section are as outlined in the Study Brief. These options do not include the provision of loading facilities, which would still need to be resolved.

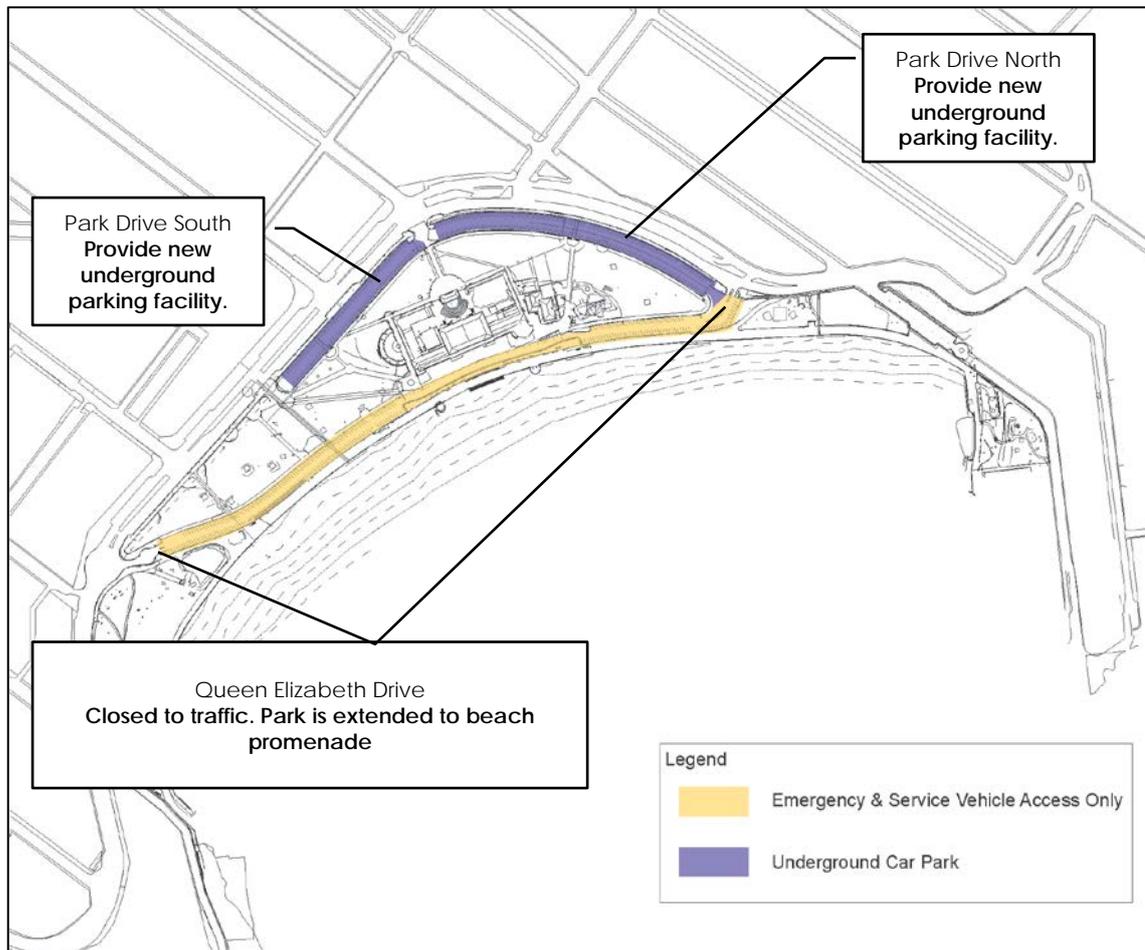
4.5 Option 3: Underground Park Drive South and North and QED Closed to Traffic

Option 3 entails converting the entire length of Park Drive between Roscoe Street and the Campbell Parade/ Queen Elizabeth Drive (QED) egress intersection into an underground car park. It also involves closing off Queen Elizabeth Drive to vehicular traffic and removal of parking spaces to enable the park to be expanded.

Option 3 entails providing additional car parking spaces within the underground parking on Park Drive, in order to maintain parking supply levels.

Figure 4.5 diagrammatically shows the changes in parking arrangements envisioned under Option 3.

Figure 4.5: Option 3: Underground Park Drive South and North + Car-free Queen Elizabeth Drive



4.5.1 Advantages

The following advantages have been identified for Option 3:

- Improves or removes traffic/pedestrian conflict points
- Significantly increases Bondi Park recreational green space
- Increases parkland that would be suitable for quiet uses, picnics or promenading
- Improves equitable access to park green space (potential to remove existing stairs)
- Connects Campbell Parade to Bondi Park and Bondi Beach
- Introduces potential parallel upper beach promenade
- Significantly reduces current dominance of hard pavements and glare
- Offers a potential coach rest stop 'break-out' area
- Improves parking security and weather protection
- Opportunity for water-sensitive urban design (WSUD), which maximises infiltration and minimises the "heat island" effect.

4.5.2 Disadvantages

The following disadvantages have been identified for Option 3:

- Does not allow emergency and service vehicle access to the beachfront, promenade and Bondi Pavilion
- Involves significant cost (but could potentially be offset by parking forward revenue)
- There are heritage issues to be addressed (e.g. offsets, wall cuts, impacts on pedestrian bridges)
- Could impact special events requiring width of Queen Elizabeth Drive (e.g. City 2 Surf), with a temporary widened path required
- Potential negative traffic impacts on Campbell Parade, with all carpark access achieved only through two access points opposite the shopping strip
- Service vehicle access to the rear of Bondi Pavilion remains unresolved
- Police concerns regarding safety/security of underground parking to be resolved.

4.6 Option 4: Compact Underground Carpark (PoM Design Workshop Option)

Option 4 was developed during the Plan of Management workshop for Bondi Park and Bondi Pavilion organised by Waverley Council and attended by design consultants and Council stakeholders. This was held from 27-28 February 2013.

Option 4 builds upon Option 3 by providing a more compact underground parking facility at the rear of Bondi Pavilion, generally between the two footbridges. It strengthens the key pedestrian desire line through the Pavilion and to Park Drive.

Option 4 entails removing parking off Queen Elizabeth Drive, but keeps the roadway open for emergency and service vehicle access (and potentially for vehicles servicing special events). The traffic flow would follow the existing one-way flow from south to north.

Deliveries to Bondi Pavilion would be achieved through a new service road to be provided at the rear of the Pavilion. It would be accessed from the existing surface car park at Park Drive North (north of the footbridge), which would be converted to short stay parking. The service road would be aligned in a manner that avoids heavy vehicles having to go under the northern footbridge, to achieve vertical clearance requirements. This service road would also be used by Bondi Park maintenance vehicles to access an improved parks yard proposed at the existing location.

The portion of the existing surface parking on Park Drive North between the northern footbridge and the existing egress to Campbell Parade would be retained as a surface car park, but converted to short stay parking spaces to facilitate drop-offs and pick-ups.

Option 4 also involves the upgrade of the existing Campbell Parade / Queen Elizabeth Drive (entry) roundabout into a signalised intersection. This would allow for safer pedestrian crossing at this location and provide for more efficient pedestrian access to the south west of Bondi Park.

A variation of Option 4 for the long-term is to remove the service road between Park Drive North and the Pavilion, and replace it with a new road directly linking with Campbell Parade off Wairoa Avenue. This long-term option variation also allows incorporation of the parks yard and a garbage storage area within the underground parking facility.

Figure 4.6 conceptually shows the general proposed parking arrangements under Option 4 shows its planning features as developed from the Design Workshop.

Figure 4.6: Option 4: PoM Design Workshop Option – General Parking Arrangements



4.6.1 Advantages

The following advantages have been identified for Option 4:

- The new Campbell Parade / Queen Elizabeth Drive signalised intersection would improve pedestrian safety/access.
- Prioritises pedestrian connection through Bondi Pavilion to improve way-finding.
- Improves pedestrian access at the rear of Bondi Pavilion through Park Drive.
- Reduces barrier effect of Queen Elizabeth Drive between the park and promenade.
- Retains emergency/special events access along Queen Elizabeth Drive.
- Increases Bondi Park recreational green space.
- Offers potential coach rest stop 'break-out' area.
- Improves parking security and weather protection.
- Increases parkland suitable for quiet uses, picnics, reading, walks, sunbathing (e.g. rear of Pavilion)
- Improves to equitable access to park green space.
- Better connects Campbell Parade to the park, promenade and beach.

- Reorganises park service vehicle access.
- Allows for new Maintenance Depot and more legible service access.
- Allows for more legible delivery access to Pavilion loading dock.

4.6.2 Disadvantages

The following disadvantages have been identified for Option 4:

- Significant cost involved (could potentially be met by parking forward revenue).
- There are heritage issues to be addressed (e.g. pedestrian bridges, Pavilion through access).
- Funnels all carpark access through a single entry and could create negative traffic impacts
- The removal of the Queen Elizabeth Drive/Campbell Parade roundabout near Lamrock Avenue would need to be discussed with Sydney Buses and Transport for NSW, as the roundabout is currently being used as a bus turnaround facility on Campbell Parade (currently part of designated alternate Bondi Road bus route for turnaround).
- Potential service vehicle access conflict with pedestrian pathways/safety needs to be carefully managed.
- Police concerns regarding safety/security of underground parking to be resolved.

More detailed investigations would need to be undertaken in line with the underground car park design and approval process to evaluate the potential traffic impacts of relocating vehicular traffic accessing the car park facility to the northern Campbell Parade/QED intersection. The impacts would potentially be managed through the installation of traffic signals at this location, as well as through identification and signposting of efficient access routes to the car park access from external precincts that minimise impacts on the amenity of areas surrounding the Bondi Beach and Bondi Park precinct.

5. Options Evaluation

5.1 Approach

The approach used in evaluating the different parking options followed a first-cut, high-level appraisal using a qualitative approach against each option's general features, advantages and disadvantages, how well each addresses the key issues identified, and its ability to meet key objectives.

5.2 Evaluation Criteria

The criteria for the strategic-level evaluation were developed using the Waverley Council objectives outlined in the *Waverley Transport Plan* (Waverley Council, 2011), the study objectives identified in the Brief, and general strategic considerations of project evaluation.

These include:

Waverley Council and Waverley Transport Plan objectives

- Parking policy balances active travel rates and traffic efficiency
- People frequently use public transport
- Parking is equitably accessed and effectively managed
- Public transport, cycling and walking alternatives are improved and encouraged
- All pedestrian routes are high quality, safe and connected
- All stakeholder needs for transport effectiveness and usefulness are appropriately addressed and planned.

Study objectives

- Improves level of pedestrian access and priority
- Reduces pedestrian access severance
- Accommodates comparable number of parking spaces
- Integrates with the public domain
- Integrates coach parking requirements.

Other strategic considerations

- Emergency vehicle access
- Service delivery access
- Bondi Park equipment parking requirements
- Constructability
- Cost.

5.3 First-Cut Appraisal

Each option was given a qualitative score against each criterion, with each criterion/objective assigned equal weight. Based on the identified objectives and criteria, results of the first-cut, high level appraisal of the six identified parking options for Bondi Park are presented in Table 5.1.

Table 5.1: Summary of First-Cut Evaluation of Parking Options

Aims / Objectives	Option 1A	Option 1B	Option 2A	Option 2B	Option 3	Option 4
	Do Minimum	Car-free Pavilion Forecourt	Underground Park Drive South	Underground Park Drive South and Portion of North	Underground Park Drive South and North + Car-free QED	Compact Underground Carpark (PoM Workshop Option)
General Waverley Council and Waverley Transport Plan Objectives						
Parking policy balances active travel rates and traffic efficiency	✗	✓	✓	✓	✓	✓
People frequently use public transport	✗	✗	✗	✗	✓	✓
Parking is equitably accessed and effectively managed	✗	✓	✓	✓	✓	✓
Public transport, cycling and walking alternatives are improved and encouraged	✗	✓	✓	✓	✓	✓
All pedestrian routes are high quality, safe and connected	✗	✗	✓	✓	✓	✓
All stakeholder needs for transport effectiveness and usefulness are appropriately addressed and planned	✗	✗	✓	✓	✓	✓
Study Objectives						
Improves level of pedestrian access and priority	✗	✓	½*	½*	✓	✓
Reduces pedestrian access severance	✗	✗	½*	½*	✓	✓
Accommodates comparable number of parking spaces	✓	✓	✓	✓	✓	✓
Integrates with public domain	✗	✓	✓	✓	✓	✓
Integrates coach parking requirements	✗	✗	✗	✗	✗	✗
Other Strategic Considerations						
Emergency vehicle access	✓	✓	✓	✓	✗	✓
Service delivery access	✓	✓	✗	✗	✗	✓
Bondi Park equipment requirements	✓	✓	✗	✗	✗	✓
Constructability (ease of construction)	✓	✓	✗	✗	✗	✗
Cost	✓	✓	✗	✗	✗	✗
Score **	6	11	9	9	10	13

* It improves pedestrian access and connectivity on Park Drive, but not on Queen Elizabeth Drive.

** score was based on number of objectives/criteria met.

5.3.1 Key Findings

The key findings on the first-cut, high-level appraisal of each option are summarised below:

Option 1A: Do Minimum

- Lowest score among all options
- Does not meet strategic and project objectives.

Option 1B: Car-free Pavilion Forecourt

- Second highest score among options
- Does not meet long-term strategic and project objectives
- Potential option for implementation over the short term.

Option 2A: Underground Park Drive South

- Only partially achieves strategic and project objectives
- Does not address pedestrian severance on Queen Elizabeth Drive.

Option 2B: Underground Park Drive South and Portion of North

- Only partially achieves strategic and project objectives
- Does not address pedestrian severance on Queen Elizabeth Drive.

Option 3: Underground Park Drive South and North and No General Traffic Access on Queen Elizabeth Drive

- Third highest score among options
- Only partially achieves strategic and project objectives
- Does not address stakeholder requirements for Queen Elizabeth Drive access.

Option 4: Compact Underground Carpark (PoM Workshop Option)

- Highest-scoring option
- Adequately meets Council and project objectives
- Will require considerable resources to implement.

5.3.2 Recommendation

Based on the first-cut appraisal, it is recommended that the three (3) highest scoring options included in a short-list for further assessment. These are Option 1B, Option 3 and Option 4.

5.4 Analysis of Short-List Options

5.4.1 Option 1B: Car-Free Pavilion Forecourt

The key findings in relation to Option 1B are:

- Option 1B does not meet the strategic and project objectives over the long term. However, it presents a viable short-term alternative to manage car parking in Bondi Park due to its relative ease in implementation.

- It allows for more efficient parking management schemes to be implemented, through the use of smart meters and rationalise parking demand between Queen Elizabeth Drive and Park Drive car parks (e.g. vehicles with trailers would need to use Park Drive).
- It provides an improvement in pedestrian connectivity through Bondi Park compared with the existing situation, by allowing a legible area where pedestrians can access the beach safely and conveniently.
- By downgrading Queen Elizabeth Drive from a roadway and essentially creating two surface car parks on Queen Elizabeth Drive. Alternatively, each section of Queen Elizabeth Drive on either side of Bondi Pavilion could also be designated as shared zones. Either way, it provides the opportunity to decrease the current speed limit from 30 km/h to 10 km/h.
- The current access and parking arrangements for maintenance, service, delivery and emergency vehicles could be maintained.
- In order to comply with current standards, the parking spaces would either need to be arranged in a 60-degree angle with front to kerb parking, or the overall width of Queen Elizabeth Drive expanded by about 0.4m with 90-degree parking.
- The traffic impacts of two-way flows on both ends of Queen Elizabeth Drive and their intersections with Campbell Parade would need to be investigated in more detail.

The impacts of the physical changes along Queen Elizabeth Drive for special events would need to be further assessed. Recommendation for Option 1B

Option 1B presents a viable short-term option which could be immediately implemented, with the view of implementing a different option for the long term (either Option 3 or Option 4).

It would also be helpful in achieving short term project objectives if the following features are incorporated with Option 1B:

- Provision of a service road to the rear of the Pavilion to address short-term requirements for service deliveries.
- Expansion of footpaths to facilitate vehicle kerb overhangs and eliminate the requirement for wheel stops (for angled parking spaces), as they are trip hazards.
- Designating a taxi rank on QED and allowing taxis to use the section of QED fronting the Pavilion, to facilitate universal access.

5.4.2 Option 1B would need to be improved with the provision of a service road to the rear of the Pavilion to address short-term requirements for service deliveries. Option 3: Underground Park Drive South and North + Car-free Queen Elizabeth Drive

The key findings in relation to Option 3 are:

- Queen Elizabeth Drive not only functions as a parking area and driveway, but also allows police and emergency vehicle access to Bondi Park, which is essential to the management and maintenance of the park.
- Queen Elizabeth Drive also provides convenient access for pick-ups and drop-offs, and closing it to vehicular traffic would be an inconvenience to community members.

- Special events also require Queen Elizabeth Drive to be accessible, and extending the park over it would need to be designed efficiently.
- Service vehicle access to the rear of Bondi Pavilion remains unresolved.
- The configuration of underground parking under Park Drive is inefficient, requiring a long but narrow structure.
- Car park access and egress would be concentrated on two entry/exit points on Campbell Parade: at Park Drive/Beach Road and towards the north at the existing Queen Elizabeth Drive egress.
- Service vehicle access to the rear of Bondi Pavilion remains unresolved.

Recommendation for Option 3

Despite Option 3 scoring the third highest in the high-level evaluation, closing Queen Elizabeth Drive to vehicle access would have significant negative impacts to the access and movement needs of stakeholders and the community. It is critical that Queen Elizabeth Drive be kept open for service and emergency vehicle access, which is incorporated within Option 4.

In this regard, it is recommended that Option 3 be discarded.

5.4.3 Option 4: Compact Underground Carpark

The key findings in relation to Option 4 are:

- As Queen Elizabeth Drive is an essential corridor for the efficient functioning of Bondi Park, Option 4 considers keeping it open for service and emergency vehicle access.
- However, removing parking on Queen Elizabeth Drive would minimise vehicular movements and provide the opportunity of offering a higher priority to pedestrians (and cyclists).
- The underground parking structure proposed at the rear of the Pavilion has a more compact footprint, allowing for two parking rows per level.⁷
- Extending the park to link the rear of Bondi Pavilion with Campbell Parade would also allow for a higher level of pedestrian connectivity between the park and the surrounding precinct.
- The reconfigured Park Drive as a main pedestrian thoroughfare would provide a continuous pedestrian link from Campbell Parade to the beach.
- The portion of Park Drive North between the north footbridge and the Campbell Parade/Queen Elizabeth Drive egress intersection would remain as a surface car park, but with changed restrictions to allow for short-stay parking.
- Deliveries to the rear of the Bondi Pavilion and access to the Bondi Park yard is achieved via a service road that links the surface car park with new loading dock facilities to be provided on the north east side of Bondi Pavilion.
- In order to conform with the topography of the area, an opportunity to provide a “split-level” underground car park.
- Option 4 offers the potential to construct the underground parking structure in stages if configured in a “chevron” footprint (i.e. it allows only half the structure to be constructed thus minimising the impacts of reduced car parking during construction).

⁷ The footprint outlined in the Plan of Management Workshop drawing would need to be widened to meet current standards.

Recommendation for Option 4

Option 4 presents a potentially viable long-term alternative to manage car parking at Bondi Park and addresses the key strategic and project objectives. The considerable cost required to implement this option would potentially be offset by parking revenues, and a more detailed business case analysis would need to be undertaken in order to fine-tune the concept.

Option 4 could also be further refined to more effectively achieve project objectives. These refinements include:

- Provide a taxi rank on Queen Elizabeth Drive, to facilitate access to Bondi Park, Beach and Pavilion, particularly for less mobile members of the community. (This also entails allowing taxi access through the Pavilion Forecourt in the short term, under Option 1B).
- Designate QED as a High Pedestrian Activity Area (HPAA) with a 40 kilometre per hour speed restriction, with marked pedestrian crossings at major pedestrian desire lines.
- Modifications to the Campbell Parade/QED North intersection and access point to accommodate truck turning.

6. Preferred Option

6.1 Recommendation

Based on the results of the investigation discussed in the preceding chapter, Option 4 is recommended as the preferred option.

It is noted that Option 4 represents a significant task to be incorporated into the Bondi Park Plan of Management in the short term, due to a number of more detailed studies and investigations that need to be undertaken in order to further establish the feasibility of Option 4 with the specific site conditions at Bondi Park. These include detailed engineering and financial viability assessments to fine-tune the concept outlined in Option 4. There would also be a requirement for further community and stakeholder consultation. All these would take need to be undertaken as part of the initial stages of the Plan of Management, and as such, it is envisaged that Option 4 would be a suitable long term option.

For the short term, prior to the full implementation of Option 4, the key issues with regard to pedestrian access and severance would still need to be addressed. In this regard, it is recommended that Option 1B, which could be a more readily-implementable option that also meets project objectives, be implemented over the short term.

Figure 6.1 provides a conceptual layout of the short term option (Option 1B), while Figure 6.2 shows the conceptual layout for the proposed long term option (Option 4).

Figure 6.1: Conceptual Layout – Short Term Option (Option 1B)



Source: Waverley Council

Figure 6.2: Conceptual Layout – Long Term Option (Option 4)



Source: Waverley Council

6.2 Strategic Cost Estimates

6.2.1 Option 1B

The works required for Option 1B include constructing two turning circles on Queen Elizabeth Drive, and modifications to the existing car parking layout, including realigning existing car parking spaces to go-degree angle parking.

As recommended during the stakeholder consultation workshop, variable parking information signage would also need to be provided to guide motorists about parking availability in the different car parks.

Strategic-level cost estimates for Option 1B are as shown in Table 6.1.

Table 6.1: Strategic Costs Estimates for Option 1B

Item	Cost
Construction of QED turning circles (2No), including a roundabout-style turning head, central island and kerb relocations, vehicular kerb crossing for emergency vehicle access to the pavilion forecourt	\$500,000
Modifications to parking layout (re-lining spaces): demolition of existing exit/entry booths and gates, adjustments to entry/exit arrangements to allow for two way access	\$200,000
Installation of dynamic parking information signage on approach to Campbell Parade (2No)	\$100,000
Total	\$800,000

Additional cost items that would need to be provided in order to support Option 1B for the short-term period include:

- Monitoring equipment (e.g. traffic cameras) at the Pavilion Forecourt to enforce closure to general traffic. Alternatively, retractable bollards could be installed.
- Intersection adjustments / upgrades at the two access points along Campbell Parade, including modifications to the northern access entry to accommodate truck turning.

It is noted that the strategic cost estimates for Option 1B would be towards the upper end of a range of costs, with the lower end potentially half of the figures shown. However, the improvements would be undertaken for one of Australia’s top tourism visitation areas, and the high costs would potentially be offset by wider benefits.

6.2.2 Option 4

To provide a broad estimate of the costs involved in constructing an underground car park, GTA Consultants has prepared a summary based on *Rawlinson’s Australian Construction Handbook 2012*. These costs should be considered on a strategic level only, and further detailed analysis would need to be undertaken to better understand the costs of such underground parking structure at Bondi Park. These costs do not include service relocations, additional structural requirements for heritage preservation and supplementary drainage facilities, pumps, and other mechanical interventions.

Table 6.2 provides a summary comparison for at grade and underground car parking facilities.

Table 6.2: Indicative cost for new public car parks (2013)

Type of Facility	Cost per space (\$) ^a	Approximate Total Cost for 530 spaces
At-grade car park	\$2,970 to \$3,200 ^b	\$1,580,000 to \$1,700,000
Below ground – 2 levels	\$51,800 to \$55,850 ^c	\$27,450,000 to \$29,600,000

^a Source: *Rawlinson’s Australian Construction Handbook 2012*. Values increased by 4 per cent to account for consumer price increase. Does not include any land acquisition costs.

^b Including bitumen paving, stormwater drainage, minimal lighting and some landscaping

^c Reinforced concrete including deck over, mechanical ventilation, fire sprinklers, landscaping to top of deck; minimal facilities and no lifts.

Table 6.2 indicates that to construct an underground car park for 530 spaces would cost in the order of about \$28 million to \$30 million, based on an average construction cost for Sydney, as outlined in *Rawlinson’s Australian Construction Handbook 2012*. As identified, while it includes allowances for contingencies, the estimates do not include land acquisition costs, planning and other associated costs such as design fees, protection of heritage items, slope stabilisation works, utility relocation, and potential additional structural items associated with building at a coastal site.

Strategic cost estimates for Option 4 are shown in Table 6.3.

Table 6.3: Option 4: Strategic Costs Estimates

Item	Cost
Underground car park structure	\$29,600,000
Reconfigure Queen Elizabeth Drive (remove parking bays, extend kerbs, signage)	\$500,000
Reconfigure QED/Campbell Parade intersection (remove roundabout and provide signals, including new pedestrian crossings)	\$500,000
Total	\$30,600,000

In addition to the underground car park structure itself, the long-term option for Bondi Park underground parking also needs to incorporate the following:

- Accommodating the parks yard and a garbage bin storage area within the underground parking facility
- Works associated with expanding Bondi Park over the underground parking structure, including associated pedestrian footpaths and other facilities
- Structural considerations for building at a coastal site
- Any costs for parking meters or payment machines.

These estimates also do not include or provide for:

- Geotechnical investigation
- Engineering design
- Authority fees or charges, levies and overview including insurances, bank guarantees.
- Existing services relocations and facilitation including lowering or realignment thereof
- Protection of underground services during construction.

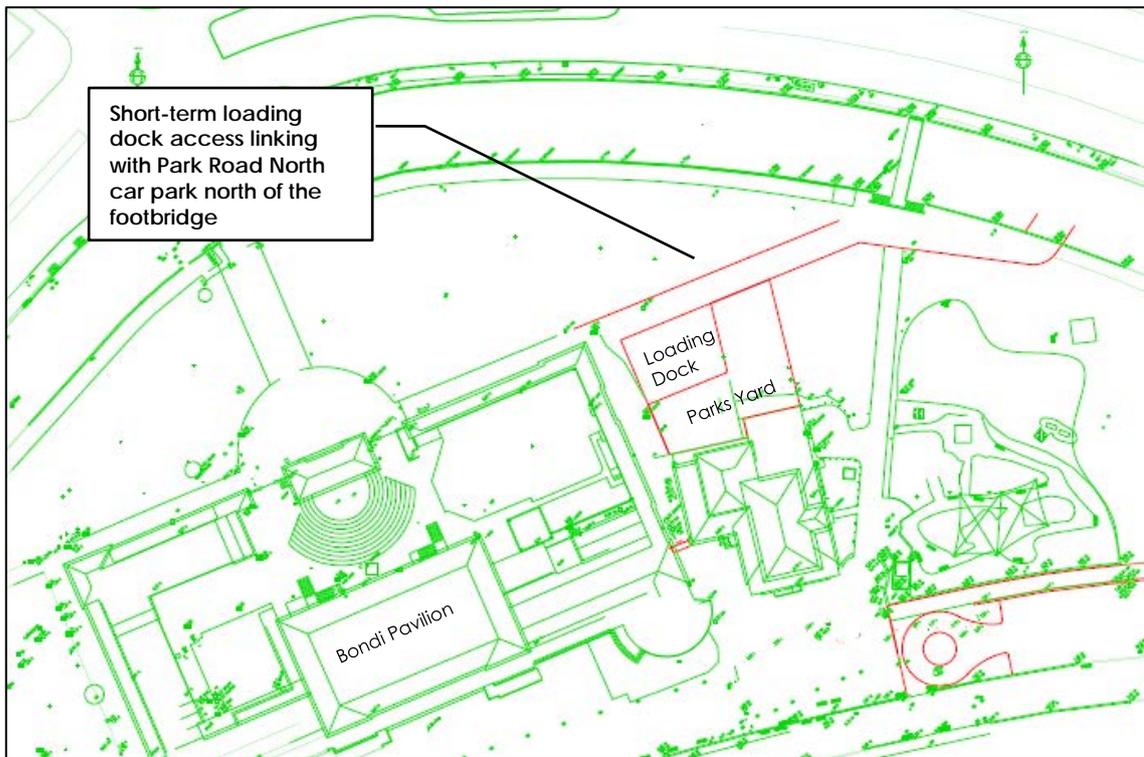
The cost estimates would need to be refined during future investigation, and it is likely that these would change. However, they provide a broad overview of the magnitude of costs associated with the preferred option, which is considered appropriate for the current strategic study.

6.3 Other Facilities

6.3.1 Bondi Pavilion Loading Dock

Service deliveries to the Bondi Pavilion currently use Park Drive. The current arrangements for service vehicle access present movement conflicts with pedestrians accessing the rear portion of the pavilion. As part of the preferred option, a loading dock for Bondi Pavilion would be provided towards the north side of the building, beside the existing parks yard. The loading dock would be accessed via a new service road between Park Drive North and the Bondi Park maintenance facilities yard, linking with the existing car park north of the footbridge, to avoid vertical clearance constraints with the taller service vehicles. The alignment of this loading dock service road is shown in Figure 6.3.

Figure 6.3: Loading Dock Access – Short Term

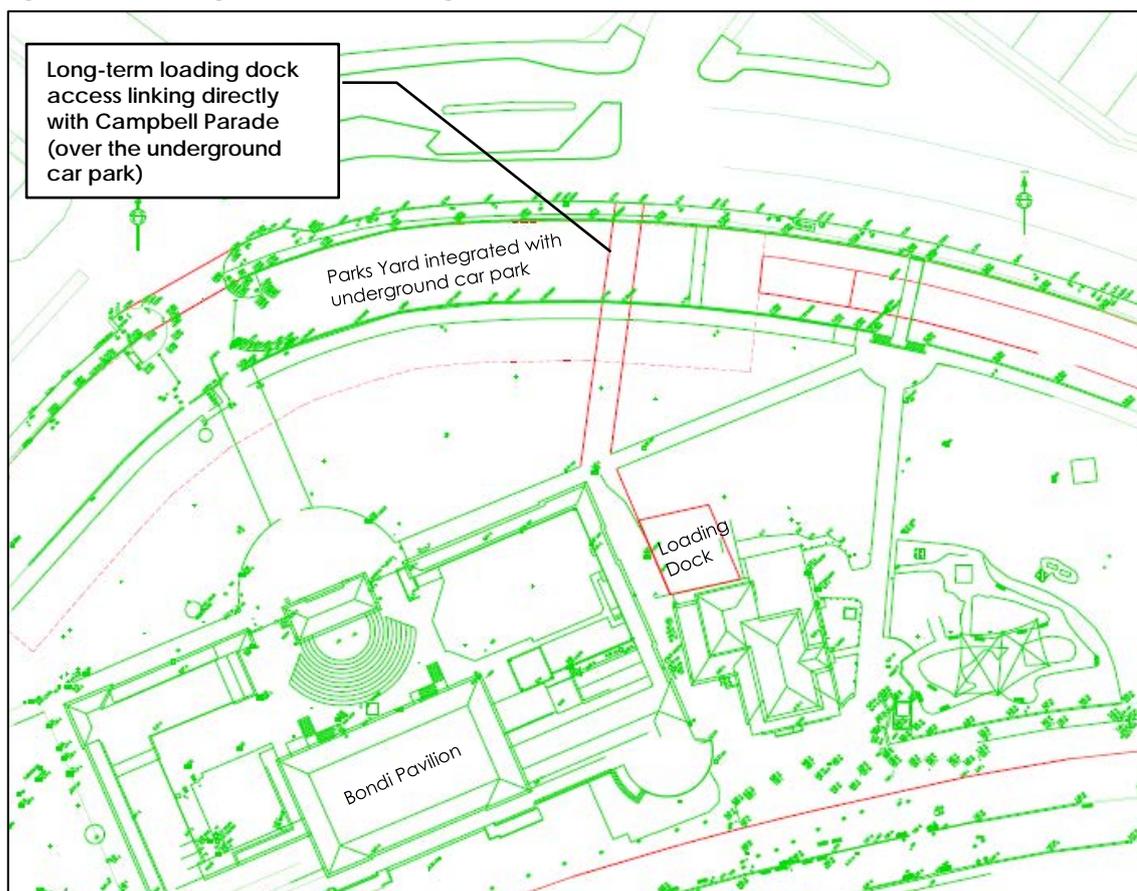


Source: Waverley Council

In the long term, when the underground car parking facility in Option 4 is constructed, access to the Bondi Pavilion loading dock would be provided via a new service road that links directly with Campbell Parade opposite Wairoa Avenue. This alignment requires a repositioning of the loading dock to facilitate service vehicle access. This is shown in Figure 6.4.

It is noted that an assessment of likely truck swept paths to access the proposed loading dock locations has been undertaken. This initial assessment indicates that trucks could satisfactorily access the proposed locations.

Figure 6.4: Loading Dock Access – Long Term



Source: Waverley Council

6.3.2 Bondi Park Maintenance Equipment Parking Area

The short-term plan for the parking area for Bondi Park maintenance equipment and vehicles would be within a 500 square metre area at the rear of the existing parks yard. This area would also be accessible via the service road linking the Bondi Pavilion loading dock with Park Road North surface car park north of the footbridge.

In the long term, the parking area for Bondi Park maintenance equipment and vehicles would be integrated within the underground parking facility in Option 4.

6.3.3 Emergency Vehicle Access

Emergency vehicle access would continue to be provided via Queen Elizabeth Drive.

- In the short term, when Option 1B is in place, the portion of Queen Elizabeth Drive in front of Bondi Pavilion would be closed to general traffic, but would continue to be accessible to police, emergency and potentially lifeguard vehicles.
- In the long term, parking would be removed from Queen Elizabeth Drive, but it would continue to be accessible to police and emergency vehicles.

6.4 Tourist Coach Parking

6.4.1 Coach Parking Issues

As discussed in Chapter 3, the section of Campbell Parade between Warners Avenue and the Queen Elizabeth Drive egress adjacent to Bondi Park is signposted as a “No Parking” zone with tourist coach excepted. This zone is also a designated pay parking zone (ticket) for these tourist coaches for a maximum of 30 minutes between 8:00am and 4:00am. These coaches bring local, interstate and international visitors to Bondi Park and Bondi Beach, generally as one of the stops on city day tours. An opening and stairs have been provided at the coach parking zone that allows coach passengers a more direct access route to Bondi Park, as shown in Figure 6.5.

Figure 6.5: Wall Cutting and Stairs at Coach Parking Zone



The key issue with tourist coach parking on this section of Campbell Parade relates primarily to the prevalent practice of coach drivers of not paying the designated parking fees.

Indication from the stakeholder consultation is that coach drivers tend to remain within their coaches with the engines running, presumably to keep the air-conditioning functioning while their passengers spend time visiting the park and the beach. This practice also creates issues with noise and pollution.

It was noted that no parking infringements have been issued against coach drivers during 2012.

6.4.2 Analysis

In the underlying options investigation process in this study, alternatives for accommodating tourist coach parking within Bondi Park have been looked into, and it is the general finding that the current designated location for tourist coach parking appears to be the most suitable, for the following reasons:

- coach manoeuvres required to approach the current location have already been tested, whereas relocating the coach parking to other areas would still need to be tested.
- current issues with noise and fumes would potentially create more significant negative impacts if coach parking is relocated to other areas of Bondi Park or Campbell Parade; however, these issues would still need to be managed at the current parking location.
- the urban design issues relating to visual corridors and sight lines are more manageable at the current coach parking location.
- the current coach parking area balances the spatial distribution of activities throughout Bondi Park.

Based on the analysis and consultation, the key concerns relating to coach parking management at the existing coach parking area on Campbell Parade which require resolution relate to vehicle exhaust and noise as well as the prevalent practice of non-payment of ticket parking fees. Situations in which drivers tend to remain within or near their stationary vehicles create ambiguities with regard to enforcement of parking fees.

These two issues require a review of the current parking restrictions in force at the Campbell Parade tourist coach parking zone, with the view of coming up with more defined enforcement framework in order to eliminate ambiguities in the intent and interpretation of current legislation. This enforcement framework would need to be mutually agreed to by Council and the coach operators in order to be successful.

6.4.3 Recommendation

It is evident that the current "ticket" parking scheme for coaches on Campbell Parade is not working for Council. The options available within the current legislation would be to convert this ticket pay parking arrangement to either a permit-based or a coupon-based system. This would potentially create a more-manageable arrangement by which fees are pre-paid, but would still require vigilant enforcement by Council rangers in order to be successful.

It is recommended that Council consider converting the existing scheme to a "No Stopping – Coach Permit Holders Excepted" zone for the 8:00am to 4:00pm period.

The "No Stopping – Coach Permit Holders Excepted" zone would have the following key features:

- Ambiguity in relation to stationary vehicles in the coach parking zone would be removed with the "No Stopping" restriction.
- Council would be able to collect parking fees up-front with pre-paid permits, minimising transactions and payment handling.
- Permits can be pre-purchased by prior arrangements as agreed with the industry association (i.e. Bus NSW), otherwise individual operators could make their own purchases.
- The permit parking scheme could be used to offer incentives such as higher discounts for longer-term (e.g. annual) permits.
- Additional restrictions such as the switching off of coach engines while parked could be set as a pre-condition to permits being granted.

The scheme would still require enforcement, but having a "No Stopping" zone instead of a "No Parking" zone would minimise the ambiguity about stationary vehicles. As indicated, the details of the scheme would need to be discussed and agreed with coach operators and industry stakeholders and

representatives. It would also need to be discussed with the RMS, either directly or through their representative at the Waverley Council Traffic Committee.

Council could also consider retaining the existing ticket pay parking scheme for coach drivers who have not purchased permits to run in parallel. However, in order to encourage more drivers/operators to follow the permit scheme, ticket pay parking rates would need to be charged at a premium.

Similar coach permit parking schemes are currently being implemented in a number of special events venues, such as ANZ Stadium in Sydney Olympic Park and Suncorp Stadium in Brisbane. Sydney Airport also has a number of "No Stopping" zones providing exceptions for a number of vehicle categories, including ticketed coaches.

The proposed permit scheme would need to be guided by:

- *Pay Parking Manual* (NSW Roads and Maritime Services, March 2012)
- Road Transport (Safety and Traffic Management) Regulation 1999 (Clause 124)
- Road Transport (Statutory Rules) Act 2013.

The coach parking permit could be categorised under the Declared Organisation Parking Scheme (DOPS), which is generally used by hospitals, universities, sporting venues, recreational areas and parks etc. to provide equitable parking for motorists.

In addition, an alternate coach parking area within the surrounding precinct could also be identified as an option for coach operators not wishing to purchase a coach parking permit. This area does not need to be within a reasonable distance from Bondi Park.

7. Summary and Conclusions

7.1 Summary

This investigation evaluated a number of parking and access improvement options for Bondi Park, Beach and Pavilion to ensure a higher level of pedestrian access and safety, minimising the existing conflicts with vehicular flows within the car parking areas.

A total of six (6) options were evaluated, as follows:

- Option 1A: Do Minimum
- Option 1B: Car-Free Pavilion Forecourt
- Option 2A: Underground Park Drive South
- Option 2B: Underground Park Drive South and Portion of Park Drive North
- Option 3: Underground Park Drive South and North + Car-free Queen Elizabeth Drive
- Option 4: Compact Underground Carpark (PoM Workshop Option)

A process based on a strategic assessment of how each option addresses key Council and Study objectives was undertaken, and a short-list of 3 options was developed. From this short-list, the preferred option (Option 4) comprised of an underground parking facility behind Bondi Pavilion and vehicle access improvements to Queen Elizabeth Drive was selected.

Due to the potential complexity of implementing the preferred option, a short-term option (Option 1B) was selected which would best address key Council and Study objectives during the intervening period prior to implementation of the preferred long-term option.

7.2 Program of Works

Table 7.1 shows the recommended Program of Works to achieve the objectives of Council and the study as discussed in this report.

Table 7.1: Recommended Program of Works

Timeframe	Project	Description	Proposed Budget
Short-term (Year 0 to Year 5)	Detailed investigations for Option 1B	Detailed parking surveys, traffic impact study, design development, utilities investigation, planning approval and other investigations preparatory to the implementation of Option 1B.	\$200,000
	Implement short-term parking improvement option (Option 1B)	Construction of turning circles, kerb realignment, parking space re-lining, changes to pavilion forecourt and associated works.	\$800,000
	Improvements to parks yard and loading dock	Construction of short-term loading dock and parks yard north of Bondi Pavilion, including service road access to Parks Drive North.	\$300,000
Medium-term (Year 5 to Year 10)	Detailed Feasibility Study and Design for Underground Car Park	Undertake economic and financial viability studies and technical/engineering feasibility study for underground parking structure (Option 4).	\$2,000,000
Long Term (beyond Year 10)	Implement long-term parking improvement option (Option 4)	Implement underground parking structure (Option 4), including underground parking structure.	\$29,000,000
	Expansion of Bondi Park to Campbell Parade	Extend Bondi Park to cover underground structure.	TBD

Melbourne

A 87 High Street South
PO Box 684
KEW VIC 3101
P +613 9851 9600
F +613 9851 9610
E melbourne@gta.com.au

Sydney

A Level 2, 815 Pacific Highway
CHATSWOOD NSW 2067
PO Box 5254
WEST CHATSWOOD NSW 1515
P +612 8448 1800
F +612 8448 1810
E sydney@gta.com.au

Brisbane

A Level 3, 527 Gregory Terrace
BOWEN HILLS QLD 4006
PO Box 555
FORTITUDE VALLEY QLD 4006
P +617 3113 5000
F +617 3113 5010
E brisbane@gta.com.au

Canberra

A Unit 4, Level 1, Sparta Building, 55 Woolley Street
PO Box 62
DICKSON ACT 2602
P +612 6263 9400
F +612 6263 9410
E canberra@gta.com.au

Adelaide

A Suite 4, Level 1, 136 The Parade
PO Box 3421
NORWOOD SA 5067
P +618 8334 3600
F +618 8334 3610
E adelaide@gta.com.au

Gold Coast

A Level 9, Corporate Centre 2
Box 37
1 Corporate Court
BUNDALL QLD 4217
P +617 5510 4800
F +617 5510 4814
E goldcoast@gta.com.au

Townsville

A Level 1, 25 Sturt Street
PO Box 1064
TOWNSVILLE QLD 4810
P +617 4722 2765
F +617 4722 2761
E townsville@gta.com.au