Merewether Beach Reserves

Public Domain Plan

Prepared for Newcastle City Council and Land & Property Management Authority

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1.0 INTRODUCTION

1.1 MEREWETHER BEACH

The study area encompasses Merewether Beach and the streets, walkways and open spaces most closely associated with the beach and facilities, from the northern end of John Parade, to the southern edge of the ocean baths. It includes Robinson Reserve on the headland and Scenic Drive up to the Lloyd Street intersection. The western boundary of the site is formed by Scenic Drive and Frederick Street up to its intersection with John Parade. The site also includes Watkins Street up to Coane Street.

1.2 PURPOSE OF REPORT

The Merewether Beach Public Domain Plan has been commissioned by Newcastle City Council to provide a framework for public domain improvements, and possible expansion of commercial activities in the public lands and facilities of Merewether Beach. The Public Domain Plan references the Plan of Management, 2009.

The Plan incorporates a Technical Manual, which gives details of the materials that furnish the public domain. Amenity, usability, efficiency of commerce, and durability in the harsh environment are major considerations that the Technical Manual address.

1.3 STRUCTURE

The public domain manual is broken into five sections - The first three sections outline the principles and site analysis that underpin the design. Section 4, the Public Domain Plan breaks the plan down into key areas with additional information for each on traffic, architectural and landscape elements. Finally section 5, the Technical Manual provides details of the materials, fixtures and setout of the design plan.

Additional appendices cover historical research, traffic analysis and additional design elements and analysis.

1.4 RELATED DOCUMENTS

- Merewether Beach Reserves Plan of Management, March 2009.
- Any landscape reports - Draft Street Tree Masterplan etc.

2.0 PROJECT PRINCIPLES

2.1 THE PUBLIC DOMAIN

Merewether is one of Newcastle's most exposed beaches. The greater terrain provides minimal protection; facing south east it is situated at the edge of a sand dune margin between the ocean and the Hunter River. Despite its exposure it is a popular destination for runners and walkers, swimmers and surfers. The protection offered by the lower promenade and embankment behind, the surf club, inboard portions of the baths promenade and the lower promenade pavilion are all popular gathering places.

Merewether Beach holds a dramatic vantage point at the headland end of a chain of beaches, and due to the terrain provides views back along to Dixon Beach, Bar Beach and the headland beyond. Rehabilitated dunes soften the urban edge while also stabilising beach morphology and protecting against sand drift. A language of concrete paths, walls and steps is rendered distinctive through the use of locally sourced aggregates. Simple features like the white post and rail fence unite the upper promenade and define the pedestrian zone from the dunes. The site's topography affords a range of vantage points throughout, from Robinson Reserve to the multilevel beach promenade, Jefferson Park and along John Parade. Due to the exposure of the site tree planting remains a challenge and shade is identified as one of the key elements missing from the beach reserves.

The existing configuration of Merewether Beach is less suited to larger events like Surf Fest. Identification as a National Surfing Reserve, one of only 7 in New South Wales, is an opportunity to consolidate its best attributes while correcting its shortcomings in this plan.

The public domain is generally considered to be the land that is in public ownership and freely accessible to the public: at Merewether the public domain is made up of streets, parking areas, promenades, pedestrian and cycle routes, parks and vegetated landscape spaces, swimming pools and associated amenities.

It is essential that all elements of the public domain are considered together. Measures to control traffic should be balanced with pedestrian comfort and convenience, the geometry of streets, and the desired future character of Merewether Beach. The PDP aims to maximise amenity for all users of the public domain, and to upgrade the image of the locale while retaining and enhancing the characteristics that form the precinct's identity.

The principles set out in this section provide a design framework for the public domain of Merewether Beach. These principles underpin the strategies and improvements outlined in Section 3.

2.2 IDENTITY

The character of Merewether Beach is primarily fixed by its natural setting; the beach, rock platforms and ocean, framed by steep landforms form a powerful, memorable landscape. These natural qualities have been enhanced by recent revegetation works, reinforcing the image of the beach landscape as a remnant of the wild coastal edge. It is essentially a transition zone between the urban environment and wild nature.

Design of public domain can recognise and enhance the coastal character by reinforcing the primacy of the natural elements. Colours, artworks, furniture should be secondary to the view, and built to respond to the erosive forces of the sea and wind.

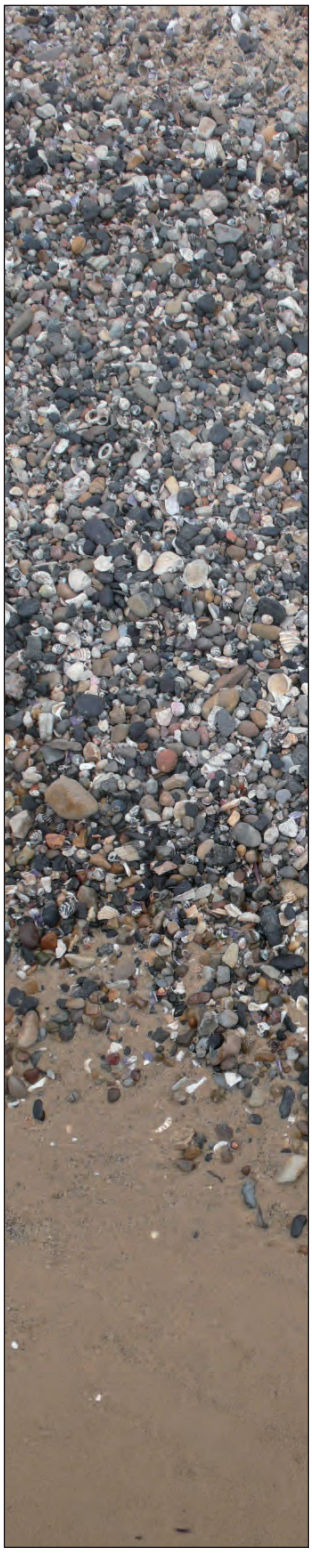
- Maintain ocean and beach views from the public domain
- Continue revegetation program to restore coastal ecosystems
- Use materials that weather well, and that fit with the muted colour palette of the coastal environment.

Ocean Baths


Dunes + Beach


Rock shelf + cliffs


Southern headland



Beach debris

Merewether Beach also has a history of use and development that is reflected in physical remnants, street layout and pathway systems. Early rail lines for mining fore shadowed the alignments of Watkins Street, John Parade and the upper promenade. Retaining walls, the lower level promenade and the ladies baths persist from a previous period of site interventions for occupation.

Although some are buried within past and recent developments these remnants could make a much stronger contribution to the image and character of the area through:

- Interpretation of historic alignments in the configuration of elements and placement of new buildings
- Adaptive public reuse;
- Referencing the elements in design of the public domain through materials etc;
- Signage and interpretation.

Three public buildings occupying the site provide a range of public facilities with each providing toilets, showers and change rooms. They are of varied character and architectural merit.

The Surf Club is the most animated building of the three buildings on the site with a complementary mix of uses. The building has little architectural merit, yet is a visually prominent building in the round. Swells cafe enlivens the public promenade but restricts movement at a key site threshold.

The Surf House is a well designed yet modest civic building in the round. It is a remarkably good example of this type of beach-side public building, but is in very poor repair; The upper storey is visible from Ridge Street without dominating the street view corridor toward the ocean; The building addresses the public ocean edge promenade with the entry loggia; two colonnades address the promenade and ocean, and it is generously set back; Change rooms and toilets appear to be readily accessible from the promenade and are naturally lit and ventilated. Provision also appears to have been made for a kiosk and storage at this level.

The Baths Pavilion is well situated at the base of the headland, overlooking the baths. Like a greek stoa, its archetype, it quietly fronts the more important space of the heroically scaled pool and coastline. It provides oversight of the pool from a raised terrace; The building is of straight forward design and construction and has large light and airy change rooms and toilets accessed from the back of the structure.

The shade pavilion is well situated, straddling the better defined lower level ocean edge promenade and providing shelter in a very exposed beach front location; It is visible from afar and provides protected over sight of the beach. It is vulnerable to ocean damage during very high seas, it was replaced during the 1980's.

Design of the public domain must understand and reinforce the elements that make this place distinctive, but also support the aspirations of a contemporary resident and visitor community.

2.3 MATERIAL PALETTE + COLOUR

The character of the built elements of the public domain will be defined, to a large degree, by the materials used in its construction. The quality and colour of materials can tie the constructed elements to the dominant elements of the coastal environment. Existing natural features give clues to the desired material character – stone, sand, weathered shells and pebbles, coastal vegetation. Materials are robust, but softened from salt and wind, and colours are muted, soft, washed out. The sea is just as often grey as blue.

Natural bedrock is exposed at points within the site displaying a rick sandstone layered with coal. Retaining walls along the lower promenade utilise recycled concrete broken into pieces and bright green and blue waste material from the BHP smelter process. In the footpaths locally sourced aggregates from the smelter process and the sand mining in Dixon Park provide a distinctive colouration in keeping with the natural sand and shell elements on the beach.

- Use materials that reference the character of the natural environment.
- Materials should be robust, plain and durable.
- The colour palette should respect the dominant landscape character.

View down Watkins Street

2.4 LANDFORM + VIEWS

Landform helps to shape the physical identity and spatial quality of the public domain. Design of the public domain should seek to enhance the patterns that respond to landform, and to retain or open up significant views. The desire for street tree planting, for example, should often be balanced against retaining a view that may characterise a particular place. Layout and placement of elements can contribute to character by orientation of places to a significant view. Design should also work with the qualities of landform to provide appropriate pedestrian connections and ways through spaces.

- Retain/reveal significant views from the public domain to the ocean and beach
- Reinstate the visual connection between Watkins Street and the beach.
- Orientate Jefferson Park to the beach
- Identify significant views, and consider these in the selection and placement of street trees and furniture.

Watkins Street carpark

2.5 CIRCULATION + TRANSPORT

A fundamental principle of public domain design is to encourage walking and cycling as forms of transport. At Merewether Beach, there is sometimes intense demand for both parking and pedestrian use that creates conflict in terms of safety and convenience. Streets must comfortably accommodate vehicles, cyclists and pedestrians, and reduce conflict between these forms of access. The aim of plans, through design, should be to give priority to pedestrians, to maximise comfort and safety, and make a livable, walkable place.

Use of public transport should be encouraged through ease of access to public transport, and the provision of comfortable waiting areas.

To balance all forms of transport and reduce conflict the plan seeks to:

- Rationalise the layout of vehicular circulation and parking to provide opportunities to enhance and extend pedestrian space;
- Identify areas of pedestrian/vehicle conflict and rectify where possible;
- Provide seating and shelter at bus waiting areas; and
- Provide cycle facilities in the public domain to encourage cycling.

Watkins Street carpark

Promoting pedestrian amenity is central to design of the public domain. Encouraging pedestrian access reduces car dependency, promotes equal access and increases opportunities for social exchange and community life. Streets and public spaces should be comfortable, safe and engaging places that encourage people to visit and to stay. There should also be shelter, seating and visual delight.

Accessibility for all users is a key element of improved pedestrian amenity. A continuous path of travel should be provided where possible, or include areas without steps and steep grades.

Robinson Reserve lookout

Watkins Street carpark

Upper promenade

Swells cafe + surf club

Use the opportunity provided by public domain improvements to :

- Provide access to streets, parks and public spaces for all users;
- Eliminate level changes, obstructions and confusing paving patterns as much as possible;
- Provide clear and generous links between high use areas, and improve the relationship of streets to associated public spaces;
- Create a range of spaces for recreation and for social interaction;
- Improve pedestrian environments and encourage use through pavement widening, street tree planting and upgrading of furniture and facilities; and
- Enhance safety and the perception of personal security, and implement the recommendations of CPTED where applicable.

Refer to the Technical Manual for specific guidelines for designing for people with a disability.

2.6 ENVIRONMENT + CLIMATE CHANGE

The lower margins of the site will come under threat from rising sea levels in the future, with the lower promenade and shade pavilion being most at risk; yet for the time being they offer wonderful amenity in proximity to the intertidal zone. Those more fortified parts of the site, above the influence of sea leve rise, behind the sea walls are targeted for improvement in this plan, to consolidate an enduring legacy for the parklands.

A program of coordinated improvements embodied in the Public Domain Plan offers opportunities for review of the relationship of this place to the local and broad scale natural environment, and for incorporating a more immediate environmental agenda. Design of the public domain should consider water use, pollution, environmentally appropriate use of materials, and the long term potential effects of climate change. Potential measures to mitigate impact include:

- Promotion of public transport, cycling, walking
- Use of materials with low embodied energy
- Re use and recycling of materials
- Capture, filtering and re-use of stormwater
- Focus on long term preservation of the environment and adaptation to climate change conditions

Water Sensitive Urban Design

Design of streets, parks and small landscape spaces can integrate water sensitive urban design by encompassing and facilitating measures to filter water before it enters waterways or the ocean, and to harvest and reuse water for the public domain. It may be possible and appropriate to integrate these measures where whole streetscapes are to be renewed, or into new landscape spaces including parks.

The potential to integrate water harvesting or filtering will be dependent on topography, and the ability to retrofit or adapt existing storm water systems. Individual systems should also be underpinned by a catchment wide strategy for harvesting, storing and treating storm water.

- Where possible, collect storm water for watering street trees and landscape elements;
- Allow, where possible and appropriate, for future connections to storm water treatment systems when renewing or rectifying storm water infrastructure as part of public domain works;
- Treat storm water as close to the source as possible; and
- Collect and treat storm water from paths and roads in bioretention tree pits, rain gardens and filter gardens, and integrate seamlessly with the design of streets.

See Section 5.1.7 for guideline details for Water Sensitive Urban Design.

2.7 URBAN ELEMENTS

Good design in the public domain can reinforce site characteristics and contribute to the identity of a place. Quality street furniture, paving and lighting contribute to quality public domain outcomes and solutions.

Furnishing in the public domain should respond to the scale and character of the place, and the function of each element. There should, however, be a limited range of elements across the study area to promote a uniformity in maintenance practices. A limited palette of materials used in a variety of ways reinforces unity and allows for variation in detail where appropriate.

Urban elements should be selected to suit the environment, and complement the character of Merewether Beach.

A Technical Manual, detailing the layout and type of paving and furniture, has been prepared for Merewether Beach and forms Sections 5 of this document.

2.8 PUBLIC ART

Public art is an important cultural activity. It aids legibility of place, enlivens the public domain and can define and reveal specific identity.

Public art ranges from the monumental to the temporal and can include:

- Free standing art objects;
- Artist involvement in the design and layout of public parks, squares and forecourts;
- Artist involvement in the design of specific elements of the public domain; and
- Festivals and other cultural events.

Merewether Beach has a local and a regional focus. Public art projects should reflect this in scale, funding and level of provision.

The Public Domain Plan promotes a robust design language, using natural, local and ordinary elements that enhance the coastal character. A generosity of scale is also desired in the public domain, to accommodate a high level of use, and to reflect the open quality of beach, ocean and sky. In line with this thinking, public art would best be integrated into the overall public domain design, as artful design of public spaces, or art integrated with public domain elements.

- Create public art that enhances and contributes to the provision of quality facilities and amenities.
- Public art is encouraged as part of building facades and forecourts, and integrated into the design of public spaces.
- Develop public art that will reflect the local identity, diversity and values of Merewether Beach, and that will promote sites of significant cultural and natural heritage.

Planning and design for an artwork to commemorate Merewether Beach as a National Surfing Reserve has been carried out by the Merewether National Surfing Reserve Committee in collaboration with the Merewether Surf Club and Newcastle City Council. This piece has been integrated into the plan for Merewether Beach. See Appendix D.

Exposed sandstone

3.0 STRATEGIC OVERVIEW

3.1 REGIONAL CONTEXT

Merewether Beach is located 3.5 kilometres south of Newcastle's CBD, in the Lower Hunter Region, between the Central Coast to the south and Port Stephens to the north. As the sixth largest city in Australia Newcastle forms the economic, administrative and cultural hub for the Hunter region. Established around a working harbour and extensive coastline, the city extends back along the Hunter River to the Mount Sugarloaf Ranges to the west and Lake Macquarie to the south.

The suburb of Merewether lies to the south of Newcastle's CBD and connects to the urban centre through the suburbs of Bar Beach, Adamstown, Merewether Heights and the Junction. Merewether maintains strong links with surrounding recreation areas with beach frontage and access along the Bathers Way to northern beaches. To the south Glenrock Reserve provides walking trails through nature reserves.

Strategy

The public domain plan presents an opportunity to reinforce the unique character of Merewether while also strengthening its links to the regional context of Newcastle. This can be achieved through a range of strategies involving:

- Improve public transport connections between Newcastle city centre and Merewether beach.
- Establish cycleways and walks which are clearly sign-posted, and provided with generous public footpaths.
- Strengthen the connection with Glenrock reserve through sign-posting and investigation of pedestrian coastal access.
- Improve links and provisions for the Bather's Way tourist route to highlight the amenities of Merewether ocean baths and beach.

Figure 1.1 Regional Context Plan.

3.2 HISTORIC OVERVIEW

Subsequent to European settlement of the Newcastle region the site was privately owned, represented by the intervention of the Glenrock railway line in 1862.

Since the late 1800's when sea bathing first become popular in coastal New South Wales the site has become progressively more public in support of access to this coastline. This progressive transformation is demonstrated by the series of public projects which left their mark on the site :

- Merewether tram line (1905),
- Lower promenade, shade pavilion and low retaining walls (C1910's)
- First surf club house
- The Ladies' Baths (1928)
- Merewether Ocean Baths, pavilions and low retaining walls (1935)
- Surf House (1937)
- Surf Club

Strategy

The public domain plan provides an opportunity to respond to the history of the site by strengthening elements of the public domain that contain historic value. Strategies include:

- Reestablish alignment of Watkins Street to the historic rail line and the upper beach promenade.
- Preserve and enhance the character of the upper and lower promenades through material selection and provision of multiple beach access points.
- Public art within the beach reserves provides an opportunity to display the cultural surfing heritage of the site as well as the industrial and civic history of surrounding land use.

*** The historic images were sourced online from*
1 Newcastle Region Art Gallery, the Newcastle Region Library and the Newcastle Regional Museum using http://collections.ncc.nsw.gov.au/keemu/pages/nrm/index.htm
and
2 the National Library of Australia
http://www.pictureaustralia.org/apps/pictureaustralia?term1=merewether+beach&Submit=search&action=PASearch&attribute1=any+field&mode=search

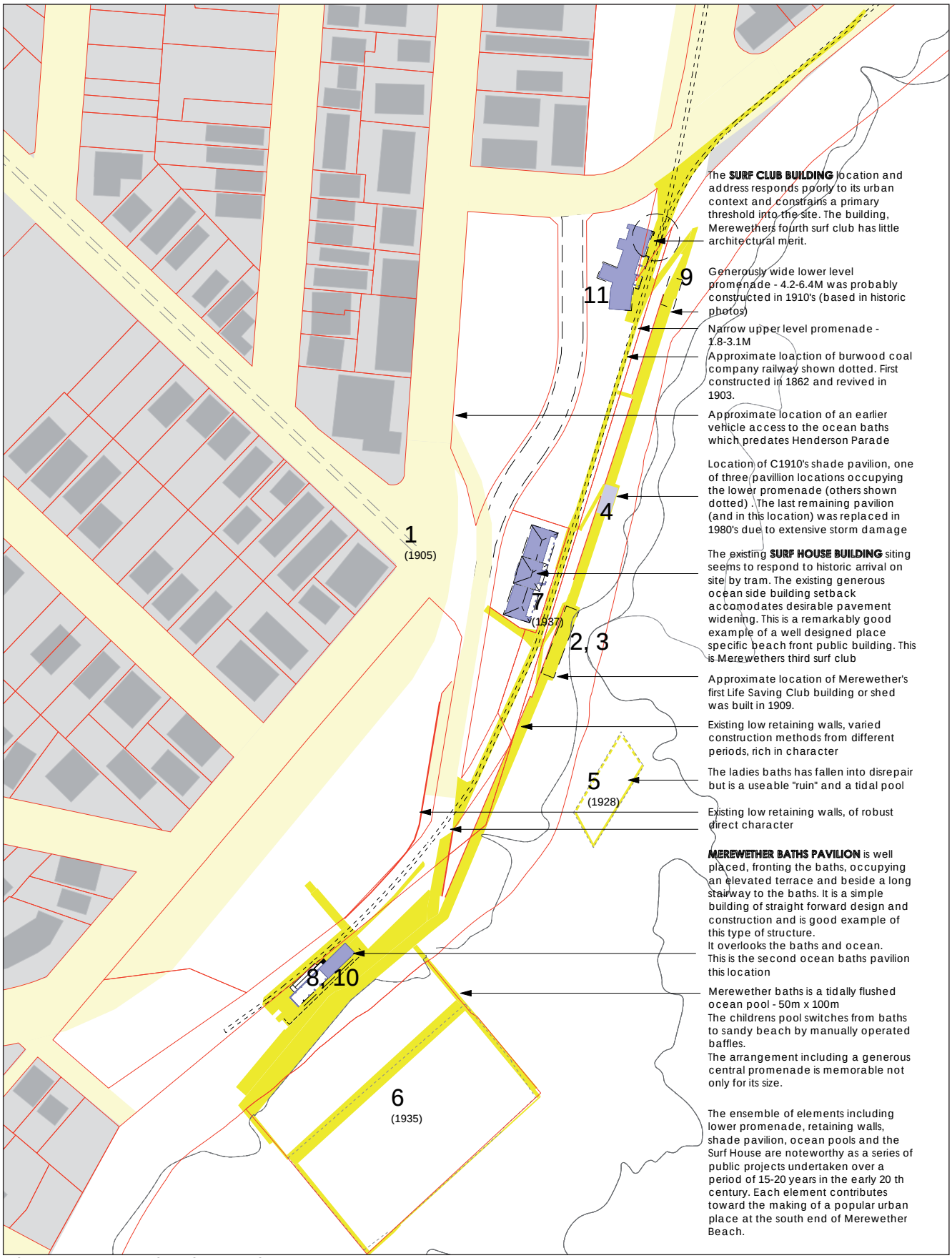


Figure 1.2 Historic overview

3.3 STREET DESIGN + TRAFFIC MANAGEMENT

Traffic Management Objectives

The Public Domain Plan is focussed primarily on improving the appearance, amenity, usability and access to the range of public spaces and facilities within the precinct, particularly the beach. To achieve this, there is a need firstly to understand how people, cars and traffic use the area currently. Only then can the affects of any changes be assessed and weighed against the potential public benefits. Accordingly, extensive surveys of existing traffic and pedestrian movements within and through the study area have been undertaken at critical (peak) times. The proposals outlined in the plan have been assessed in order to ensure that they not only accommodate these movements, but also respond to existing deficiencies.

Traffic analysis is included in Appendix G

Strategy

- One-way northbound flow in John Parade, between Watkins Street and the existing access to the Dixon Street car park.
  This removes some traffic from the beach front, providing an opportunity to provide a substantially improved and widened pedestrian footpath, that accommodates cycles as part of the recreational cycle route. This also creates an opportunity to reduce traffic volumes and conflicts across John Parade at its intersection with Watkins Street. The effects of the re-routing of southbound traffic that the one-way system creates have been investigated in detail and can be accommodated onto alternate routes.

- Closure of the northern part of Henderson Parade in the vicinity of the Surf Club; and the introduction of a new connection onto Frederick Street.
  This enables an uninterrupted open space/pedestrian connection between Frederick Street and the beach front.
  To support this, traffic movement would be one way in Henderson Parade between its new junction with Frederick Street and the existing car park access opposite upper Frederick Street, in the vicinity of the swimming pool (which is currently used for both entry and exit movements) This results in improved pedestrian safety along Henderson Parade, and reduces vehicle conflicts that presently occur along this entire route.

- Creation of a slow speed environment within the entire study area.
  This is achieved by the introduction of a roundabout at the intersection of Frederick Street and John Parade, as well as the introduction of right-angled parking in Frederick Street immediately south of Johns Parade. There is also a proposed flush-paved median in Scenic Drive and Frederick Street, which will have the effect of visually narrowing the road and providing opportunities for pedestrians to cross more safely. These measures, in conjunction with the judicious use of kerb blisters and landscaping generally, are intended to create a more attractive physical road environment where lower speeds will be self-enforcing.

Figure 1.3 Street hierarchy and traffic conflict points. SCALE 1:4000

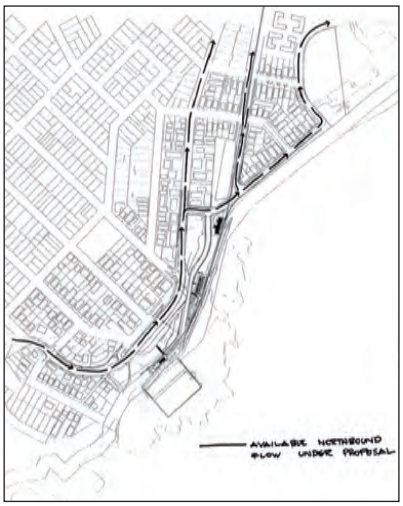


Figure 1.4 Available northbound traffic flow

Figure 1.5 Available southbound traffic flow

Parking
The need to maintain parking supply within the beach front precinct is acknowledged in principle as a general objective, as existing spaces are heavily utilised at peak times. In addition, it is considered to be undesirable to displace parking demands (which will increase over time) into residential areas. With most comparable studies, the achievement of significant urban design improvements usually results in a loss of parking and this is generally an unavoidable consequence. In this case however, the overall parking supply is expected to remain unchanged and the scheme is essentially 'parking neutral', through:

- more efficient use is of the Watkins Street car park, and reintroduction of parking in Watkins Street carriageway;
- 90 degree parking on Frederick Street achieves a greater parking yield than parallel parking
- existing parallel parking is generally maintained

Public Transport
Existing public transport services are maintained and the opportunity has been taken to introduce bus shelters on both sides of Frederick Street in the vicinity of the commercial centre.

Access to Facilities
The proposed changes maintain access to all existing facilities, though with an improved level of safety through reduced traffic conflicts and more effective control of vehicular access to the beach front. Service vehicle access will be maintained to all properties. Specific improvements include the one-way flow arrangement in Henderson Parade, the control of access to The Great North Walk using bollards, and the construction of a viewing platform in the Robinson Rerserve, with the car park itself remain an informal area for use by cars as well as truck drivers.

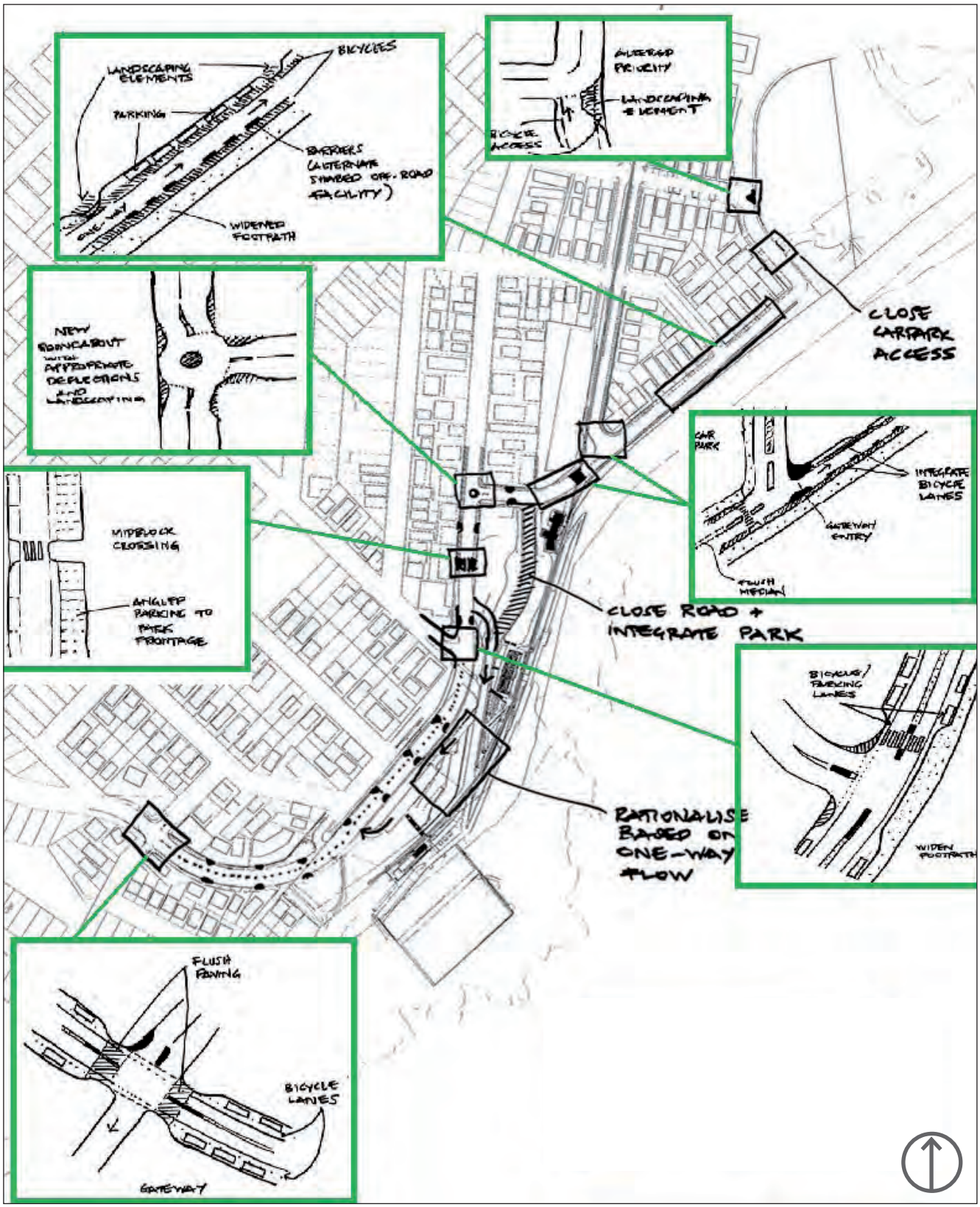


Figure 1.6 Potential traffic strategies for the site.

3.4 PEDESTRIAN + CYCLE CONNECTIONS

PEDESTRIAN CONNECTIONS

Specific areas of pedestrian/vehicle conflict were identified through traffic analysis and site inspections, and through consultation with stakeholders. These are identified in Figure 1.8 opposite.

Strategy

Improvement to pedestrian safety and amenity will result from the interventions described in Section 4.0, based on the premise that slow vehicle speeds must be the main priority. Specific improvements include:

- a 'differential treatment' in John Parade immediately south of Watkins Street to caution drivers that this is a 'special' precinct
- The provision of pedestrian crossings in John Parade and Frederick Street, to supplement the pedestrian underpass
- The creation of a gateway treatment in Scenic Drive on approach to Lloyd Street, to caution and slow drivers approaching down the steep gradient
- Kerb blisters, including refuge islands at the proposed roundabout, intended to provide safer informal crossings and provide pedestrians with improved visibility
- Minor reduction in parking on the lowest level of multi level parking at the Merewether Baths end of the beach, to reduce potentially dangerous reversing movements, creating a shared zone for service vehicles and pedestrians.

The study also identified areas where the density of pedestrian traffic is not catered to on existing pathways and promenades. Specifically, the John Parade footpath on the eastern side, and the upper level beach promenade are generally too narrow, exacerbated by pinch points at the Surf Club and the Baths car park. Strategies for creating a generous and comfortable pedestrian environment include:

- Widening of the John Parade footpath to six metres, to accommodate pedestrians and cycles;
- Widening of the upper promenade to six metres as a standard dimension;
- Creation of a generous plaza space at the Surf Club, as the first point of arrival for the majority of pedestrians;
- Creation of a shared zone at the Baths car park, with vehicular access limited to service vehicles.

CYCLE CONNECTIONS

Under the Newcastle Bike Plan 2009, existing off-road cycle paths through Dixon Park meet proposed on-road cycle routes along John Parade and Henderson Parade.

Strategy

The Merewether Public Domain Plan proposes extensions to this network to provide on-road cycle routes:

- along Frederick Street connecting to the Junction and back along Scenic Drive
- along John Parade linking to the existing off-road coastal link through Dixon Park
- widened footpaths and beach promenade provide a recreational off-road route linking Dixon Park to the Merewether Ocean Baths

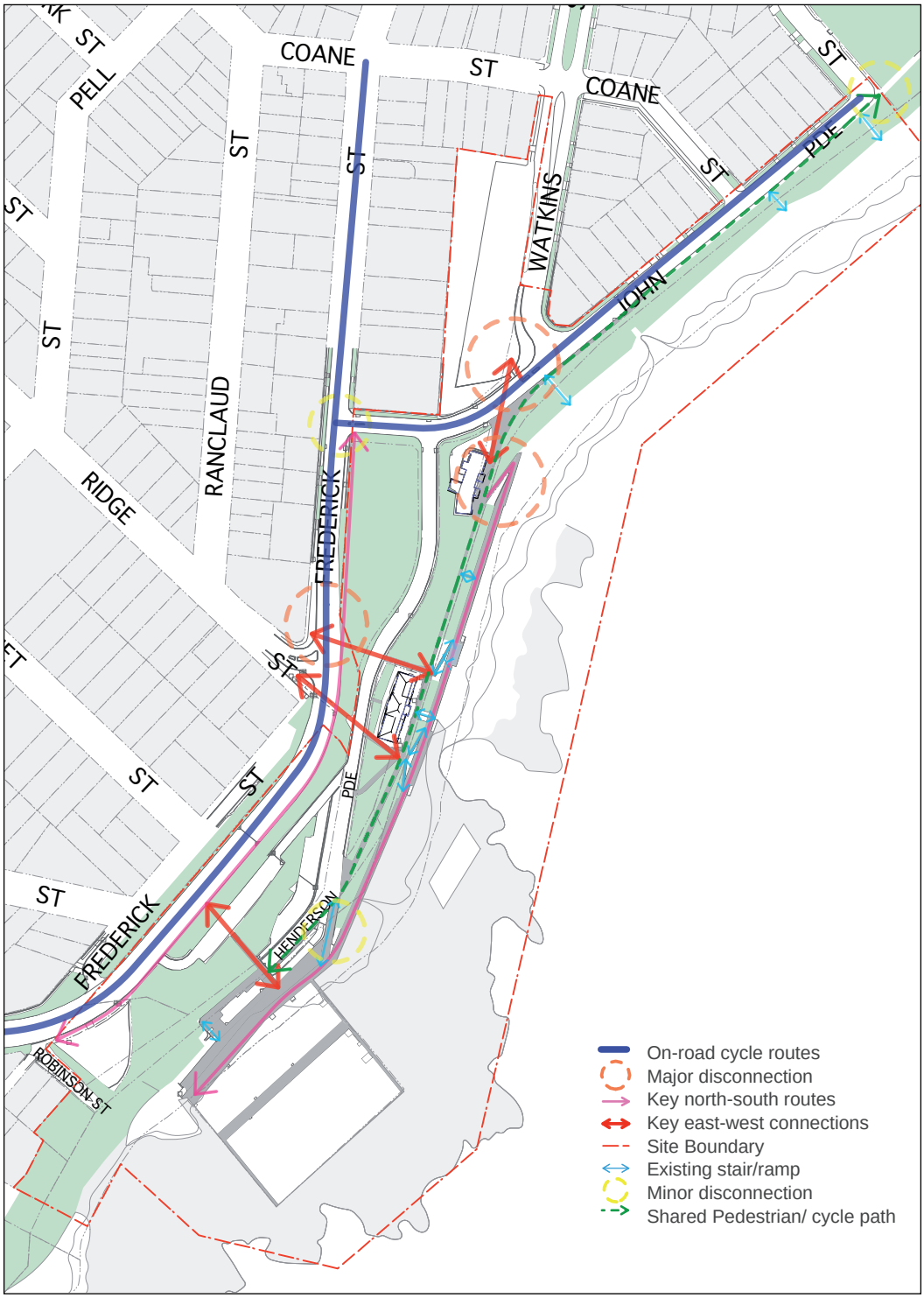


Figure 1.7 *Key pedestrian connections.* SCALE 1:4000

3.5 HYDROLOGY + CATCHMENT ANALYSIS

Merewether is a coastal suburb located on a terrain of steep headlands and low flatlands.

This topography produces distinctive micro catchments which flow either directly to the coast or are diverted to areas of impeded drainage - often the site of coastal freshwater wetlands.

Following the urbanisation of the suburb and imposition of a street grid, these natural drainage lines are diverted to street reserves and storm water systems which bypass the natural areas of impeded drainage and water retention that would naturally filter water along the catchment. Storm water under this new regime is released into the ocean with very little filtration, carrying urban waste and polluted water.

By understanding the urban catchment we are able to identify sites for intervention in the form of swales, bioretention wetlands and other Water Sensitive Urban Design (WSUD) strategies to filter and retain storm water.

Strategy

Water Sensitive Urban Design strategies for Merewether Beach include:

- Permeable paving and water filtration swales in Watkins Street car park
- Water filtration swale in Watkins Street, with potential to capture and filter storm water from a wider catchment area, at the bottom of the catchment in an area where water naturally collects. Stormwater would be filtered and retained in swales, then released through existing stormwater outlet on Merewether Beach
- Collection and filtration of storm water at the base of the Baths car park

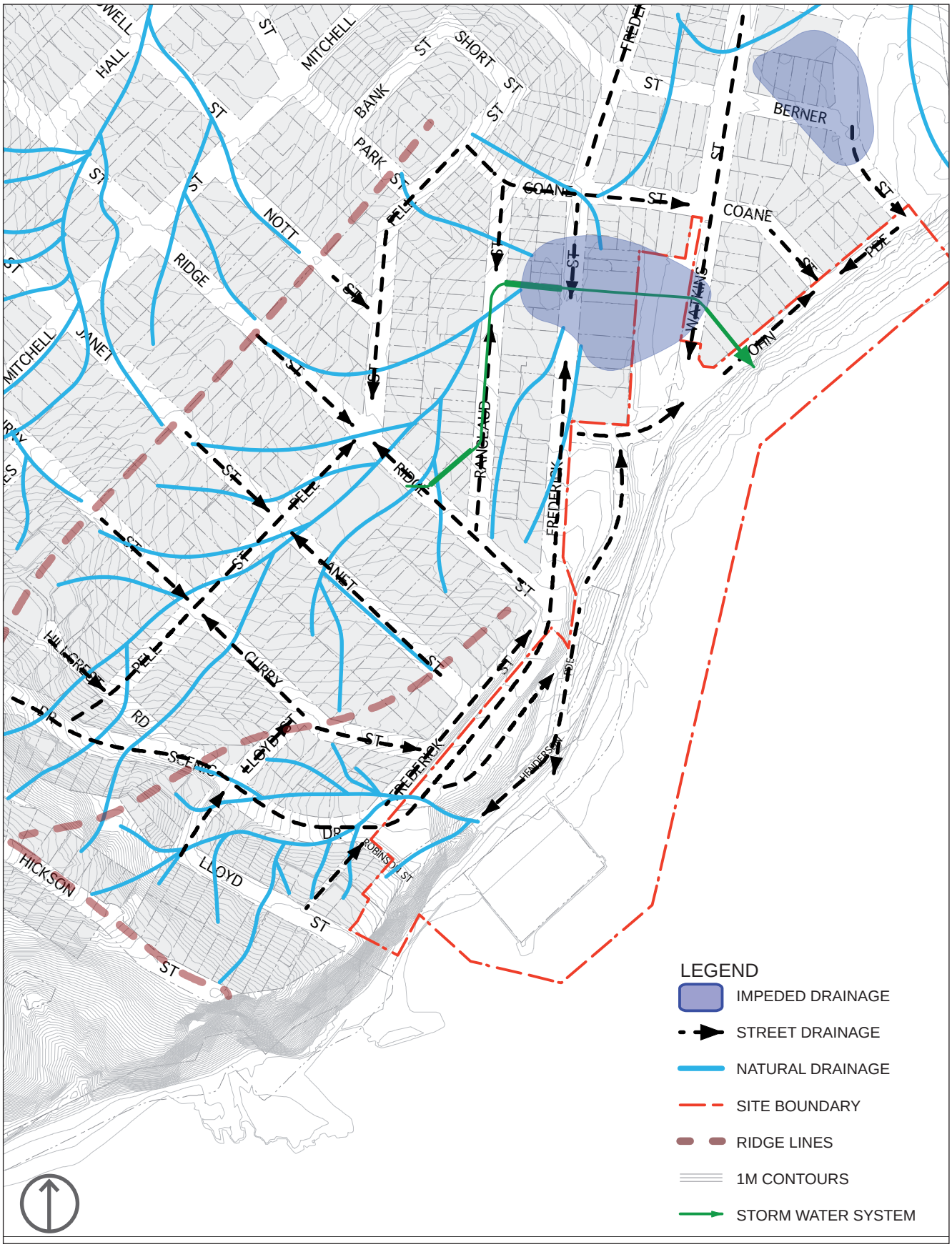


Figure 1.8 *Micro catchment analysis of natural drainage lines and street flow.* SCALE 1:5000

3.6 CHARACTER DEFINING ELEMENTS

Landscape Strategy
The landscape character of Merewether is to be maintained and enhanced through:

- Interventions of appropriate scale that sit within the existing topography
- Planting which reflects the current precedent set by dune revegetation
- Structures and tree planting which reflect the scale and materiality of Merewether while enhancing view lines and vantage points along the beach

Material Strategy
Existing built elements along the beach front contain overlays of different periods of building. Generally, walls, paths and steps are solidly built from ordinary materials, incorporating local and recycled aggregates. Many of the existing elements will be retained. New elements should embody the character of the natural environment, and reflect the qualities of existing elements. Strategies include:

- Concrete paving to reflect existing paving treatments
- Locally sourced aggregates
- Robust materials which will withstand exposure to coastal conditions
- Fencing, lighting and furniture to tie into the character of Merewether and the precedent of other Newcastle beaches

Architectural Strategy
Each of the park buildings should provide protection, prospect and activation as well as providing particular building functions. These park buildings viewed in the round need to engage positively with the spaces they edge. The provision of public amenities in the existing or proposed buildings needs to respond appropriately to adjoining park uses, and to achieve a coordinated approach for the park holistically. Public facilities should be low energy and low maintenance, be naturally lit and ventilated and should feel light and airy. Opening and closing screens and shuttering should be considered in subsequent design stages.

The surf club location is at a site pivot point which is an existing focus of activity and a popular site threshold. A replacement building is needed to rationalise the facilities, make the public promenade more generous and provide a multi use community building. On the promenade level, it would provide a cafe, surf life saver rooms, surf club rooms, public toilets showers and change rooms as well as storage spaces. The upper level would include a serviced mixed use community room surrounded by a publicly accessible deck. Stepped platforms and a unifying shade pavilion are proposed for the edge of park parallel to John Parade.

The Surf House site has an approved DA. It should achieve the relationship to the promenade demonstrated by the DA approved section. If the proposal DA does not proceed, the existing building could be partially reused or interpreted into smaller footprint pavilion on an elevated terrace, with toilets, outdoor showers and shade structure with barbecue facilities.

The Merewether Bathers Pavilion is a very simple structure which could provide higher public benefits. Roof extensions and terraces would improve oversight of the ocean pool. A supplementary serviced community room may be accommodated if the existing amenities on the first floor were accessed and rationalized accordingly, Access would need to be upgraded and reconfigured. The ground floor terrace should be extended northward and be fronted by a modest cafe kiosk in the north east corner of the existing building. Existing ground floor functions would need to be moved southward within the existing building footprint.

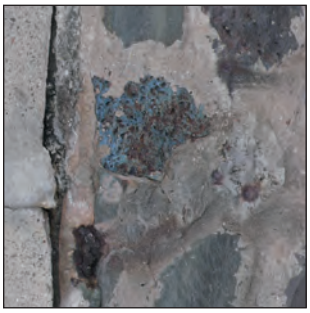
LANDSCAPE CHARACTER

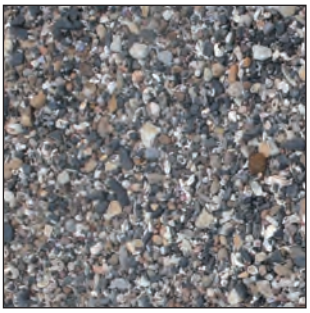
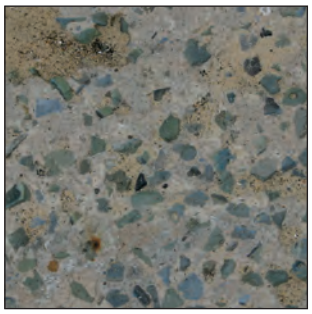
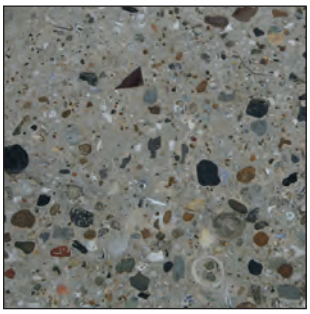






MATERIAL CHARACTER

ARCHITECTURAL CHARACTER

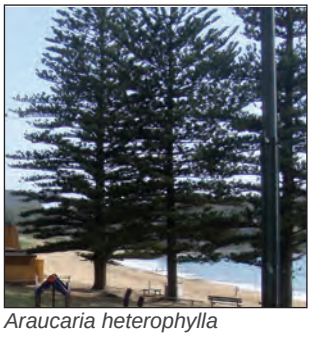

Shade Pavilion

Surf Club


Surf House

Baths Pavilion

Cupaniopsis anacardioides (Tuckeroo)



Araucaria heterophylla (Norfolk Island Pine)

Revegetated dune between upper and lower promenades

Slope stabilisation techniques

3.7 VEGETATION STRATEGY + STREET TREES

Recent revegetation programs carried out by local groups are successfully establishing a vegetated edge to the beach and steep dune slopes between the beach and the urban areas above. This program is stabilising dunes, and reestablishing the preexisting indigenous vegetation communities that have been degraded through wear and weed growth.

Harsh environmental conditions - onshore salt winds and shallow infertile soils have restricted tree growth, even for the locally indigenous Banksia that would be expected to withstand such conditions. The pressure for uninterrupted ocean views can also be expected to hamper public support for a tree planting program.

Strategies for planting in Merewether Beach and Parklands include:

- Expansion of the revegetation program, replacing grass banks in unused areas to create a unified character through the parklands
- Provide an appropriate low maintenance environment and enhance habitat
- Mass planting of indigenous species at Watkins Street car park to reduce the severity of this environment
- Tree planting to define major streets

Watkins Street:	*Cupaniopsis anacardioides*
Frederick Street:	*Hibiscus tiliaceus* *Araucaria heterophylla*
Ridge Street:	*Acronychia imperforata*
John Parade:	*Araucaria heterophylla* *Banksia integrifolia*

Trees as Placemaking Strategy

Norfolk Island Pines (*Araucaria heterophylla)* are an iconic tree species along the east coast of Australia. Historically used as a navigational marker for ships along the coast, these trees are specifically adapted to the exposed conditions of beachs and headlands. Norfolk Island Pines, due to their resiliant characteristics, have been planted along beaches, coastal avenues and parks.

In Merewether, Norfolk Island Pines are recommended for Frederick Street as a single row. These trees will provide a grand scale for the street and define the ridge and entry to Merewether Beach. In the larger landscape of Newcastle they can act as a point of orientation visable above the surrounding built environment.

The selection of Norfolk Island Pines reflects cultural planting elsewhere in Newcastle with King Edward Park displaying the largest planting of this species.

On local streets the species selection reflects two criteria: resistance to the coastal exposure and scale of planting. Smaller tree species have been selected for local streets to reflect the scale of the street reserve and houses, and define the hierarchy of streets.

Figure 1.9 Vegetation strategies for beach reserves and adjacent streets.

4.0 PUBLIC DOMAIN PLAN

4.0 DESIGN PLANS

This section of the Public Domain Plan includes detailed design proposals for each portion of the site. Each portion addresses key areas of the overall site, and reflect the intended future staging of works. There is some overlap in the division of key areas.

1. John Parade
2. Watkins Street + Carpark
3. Jefferson Park + Surf Club
4. Beach Promenade + Surf House
5. Baths + Pavilion
6. Robinson Reserve + Scenic Drive

Figure 2.1 *Public Domain Plan* NOT TO SCALE

Existing footpath along John Parade

Narrabeen sculptural walk

Balmoral beach promenade

Narrabeen dune planting

4.1 John Parade

Design Objectives
- Resolve traffic and pedestrian conflict at intersection of Watkins Street.
- Provide generous pedestrian promenade linking Merewether Ocean Baths to Dixon Park and beyond.
- Allow for mixed use of promenade, walkers, surf watch, dogs, cyclists, family groups.

1. John Parade is converted to single lane one way system northbound. Combined parking and cycle lane on the western side.
2. Retain and protect dune planting along John Parade.
3. Provide continuous 4-6 metre promenade along John Parade. Kerb moves into carriage way, existing beach boundary retained.
4. Extend corner to provide safe pedestrian crossing point and reduce speed of traffic in the intersection.
5. Replace existing beach access stairs with timber structures built over existing concrete steps, to meet current standards.
6. Textured surface at grade with surrounding street to distinguish area of high pedestrian activity.
7. New stair access to lower beach promenade.
8. Extend and widen ramp access to beach to reduce steep grade.
9. New feature retaining wall to define viewing area at grade with upper promenade. Defined by change in surface paving with seating and public art. A generous pedestrian plaza is formed at this busy entry. Refer to Appendix D for Surf Sculpture design guidelines.
10. Lifeguard facility incorporated into construction of retaining wall below viewing platform. Recommend investigation during detailed design.
11. New marked pedestrian zebra crossing to provide direct link from carpark to the beach and promenade.
12. John Parade south widens to two lanes with parallel parking on both sides of road. Medium size street trees are proposed for both sides of street.
13. Verge is planted and sloped to accommodate level change from John Parade to the platforms in Jefferson Park.
14. New retaining wall as part of proposed Surf Club upgrade.
15. Separate on-road cycle lane - contro flow heading southbound.

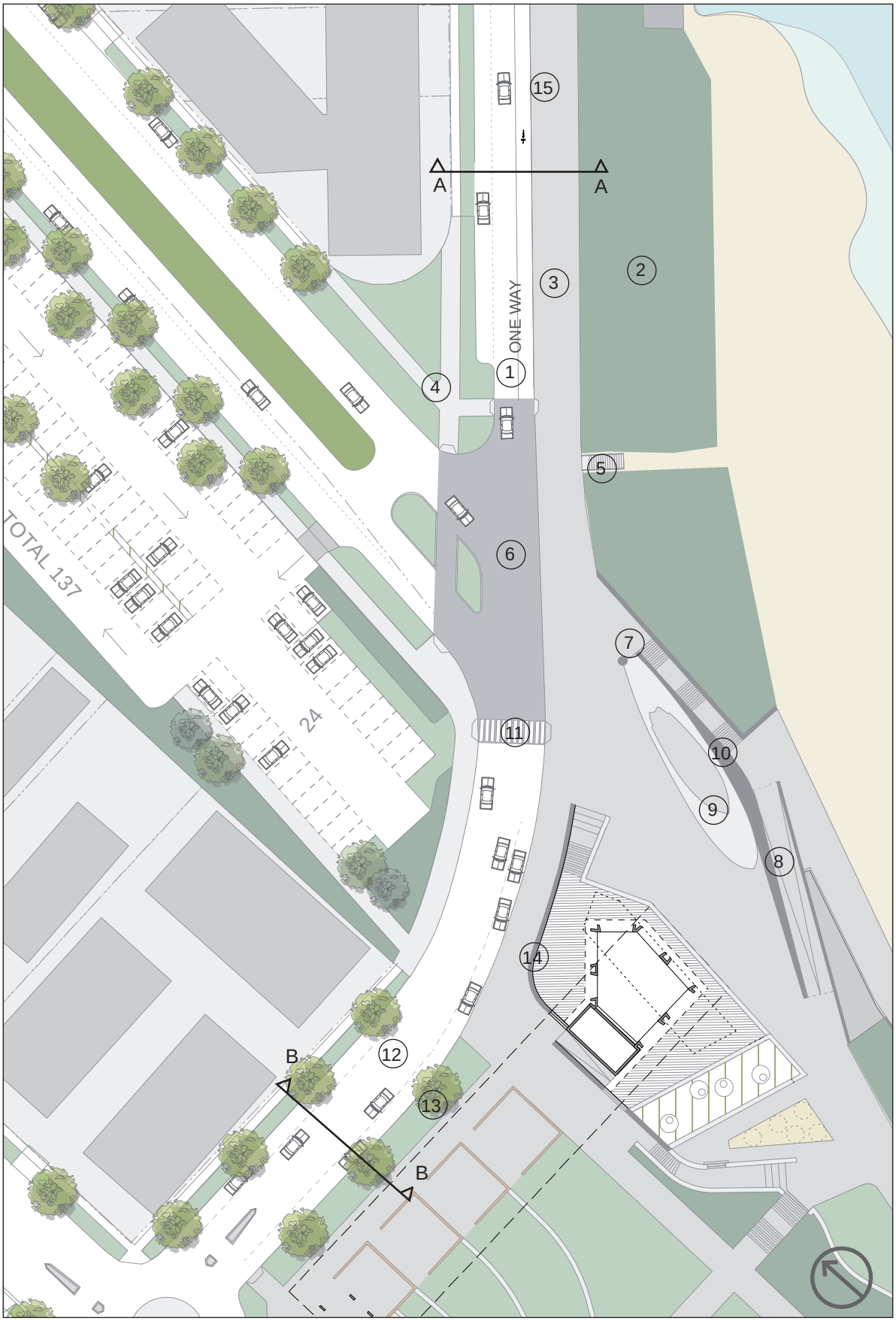


Figure 2.2 *John Parade Street Upgrade* SCALE 1:750

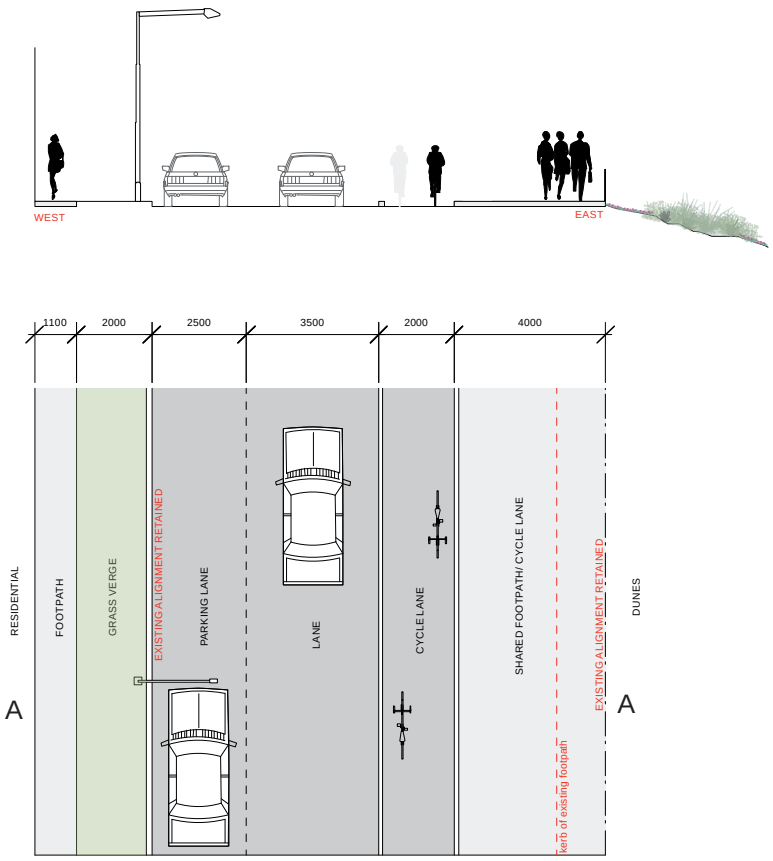


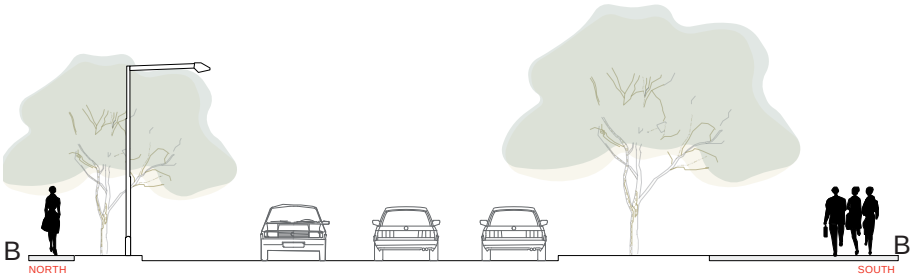
Figure 2.3 TYPICAL STREET SECTION THROUGH NORTH JOHN PARADE

SCALE 1:200

Figure 2.4 *Sketch perspective down John Parade*

STREET IMPROVEMENTS - NORTH JOHN PARADE

- Footpath widened to 4-6m from existing beach side edge (and seawall) inwards.
- New kerb line
- Street one-way northbound from Watkins Street to Ocean Avenue.
- Single traffic lane northbound, 4m
- Combined parking/ cycle lane, 3.5m on western side
- Retain existing kerb line



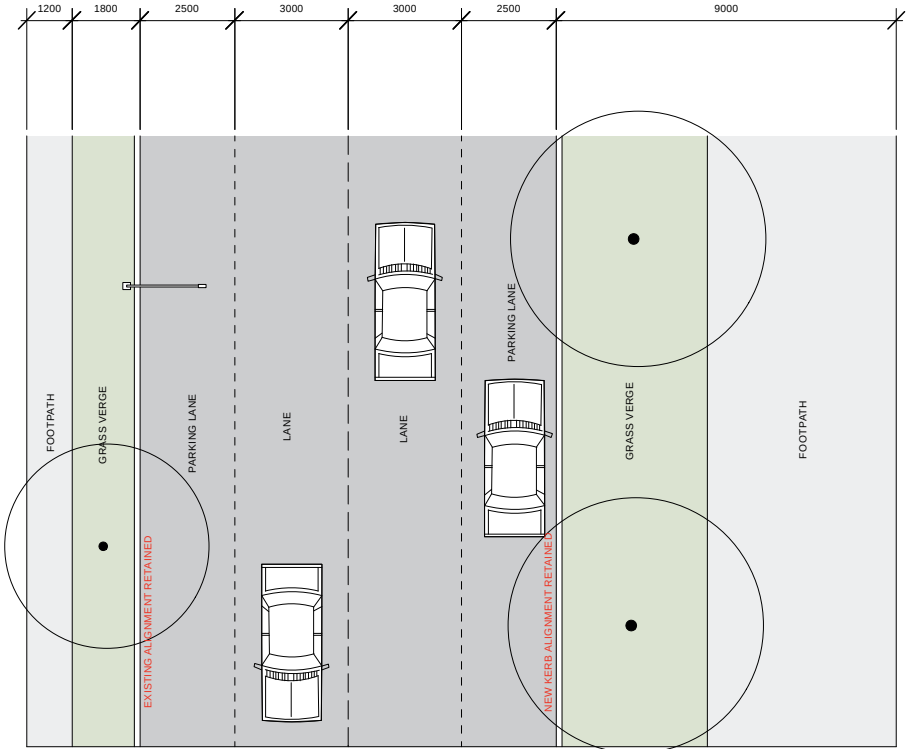


Figure 2.5 TYPICAL STREET SECTION THROUGH SOUTH JOHN PARADE
SCALE 1:200

STREET IMPROVEMENTS - SOUTH JOHN PARADE

- New kerb line southern side
- Street two-way from Frederick Street to Watkins Street.
- Two-lane carriageway, 3m wide lanes
- Parallel parking both sides of street, 2.5m
- Retain existing kerb line on northern side.

Central road swale

Parking bay swale and tree planting

Existing Watkins Street carpark

Wide central swale with tree planting

4.2 Watkins Street + Carpark

Design Objectives
- Reinstate alignment of Watkins Street.
- Rationalise parking.
- Provide safe pedestrian access to the beach and Promenade.

1. Dune vegetation to screen between carpark and private residences.
2. New marked carpark. Carpark spaces permeable gravel surface.
3. Central drainage swale with tree planting surrounded by permeable paving.
4. Planted spaces provide relief from hard surface and retain water. Tree planting provides shade to cars and people.
5. Flexible space can be utilised for Surf Fest administrative area, extra parking, and small grassed picnic area.
6. New alignment of Watkins Street opens up parallel parking on western side of Watkins Street.
7. Central wide bioswale median retains and filters water along Watkins Street.
8. Width of intersection is reduced to extend corner and provide safer pedestrian crossing points along John Parade.
9. New marked pedestrian crossing to provide direct link from carpark to beach.
10. Textured surface treatment of intersection at grade with the road reserve. Signals change in traffic condition in this area, reduces traffic speed and allows safer pedestrian crossing points.
11. John Parade reduced to one way northbound with widened promenade.
12. Other traffic strategies for Watkins Street include:
    - Four-way stop signs at the intersections of Watkins Street and Berner Street, and Watkins Street and Coane Street.
    - Pedestrian refuge at the intersection of Coane Street and Frederick Street.

Figure 2.6 *Watkins Street and Carpark* SCALE 1:750

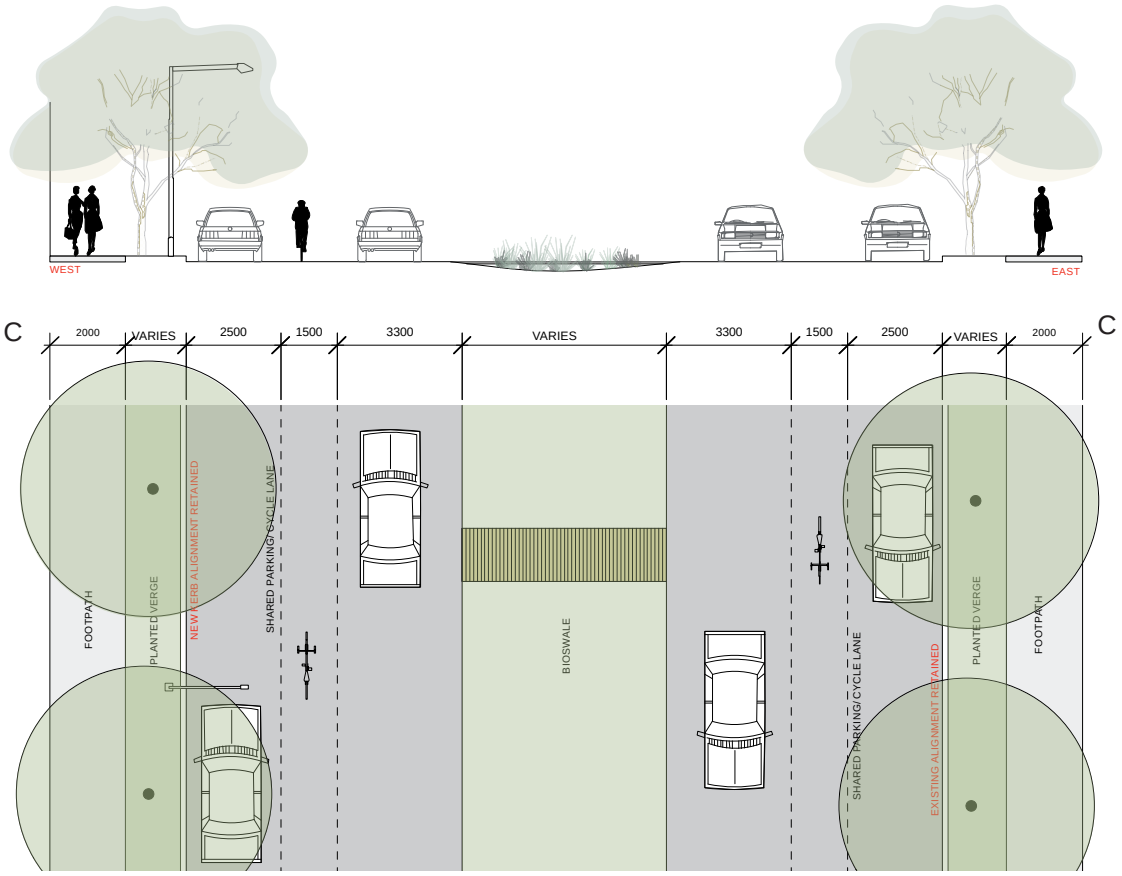


Figure 2.7 TYPICAL STREET SECTION THROUGH WATKINS STREET SCALE 1:200

STREET IMPROVEMENTS

- Reestablish street alignment.
- Retain kerb line on eastern side of street
- 5m wide swale down centre of street
- Carriageway 3.5m wide each lane
- Combined parking/ cycle lane, 3.5m on both sides of street
- New kerb on western side.
- Street tree planting.

Figure 2.8 *Sketch perspective of proposed Surf Club and promenade upgrade*

Terraced grassed levels, Dee Why Beach

Seat walls and steps

Shade structure, Pyrmont Park

Existing Jefferson Park from Henderson Parade

4.3 Jefferson Park + Surf Club

Design Objectives
- Reorientate part of park to Frederick Street.
- Improve pedestrian connection to Promenade and Beach.
- Provide generous pathways for shared use.
- Resolve terrain difficulties to provide usable park spaces.

1. New round-about at intersection of Frederick Street and John Parade
2. Frederick Street upgrade to reduce traffic speed and create safe crossing points for pedestrians (see figure 2.10)
3. Avenue of Norfolk Island Pines define ridge and Frederick Street. 5 metre wide footpath provides strong link from Jefferson Park to Frederick Street commercial strip and links to adjacent terrace. Terrace at grade with Frederick street provides flexible site for market stalls and functions.
4. Wide grassed terrace seating provides informal amphitheater within park while also resolving steep terrain.
5. Grassed terraces lead into paved platforms which form adaptable spaces for locating park amenities (e.g. barbecues). Future potential as enclosed lightweight commercial spaces to be investigated as part of any future review of the Merewether Beach Reserves Plan of Management process. These platforms can also function in conjunction with terrace on Frederick Street as the site for festival booths and market stalls. Most significantly they provide fixed shade structures within the park.
6. Closure of the top section of Henderson Parade allows a strong connection to form between the park and beach. Retaining a pedestrian pathway at this level still allows access at the lower side of the park and views down to the beach.
7. New public change rooms and toilets on lower level of surf club. Light wells in roof structure allow for natural light and ventilation.
   Green roofs provide water retention area and visual amenity to the upper terrace of the Surf Club.
8. Outdoor showers close to change facility and entry to promenade.
9. Reestablished dune vegetation provides buffer along this edge of the park while also stabilising steep slopes.
10. New access stairs provide direct link to upper promenade.
11. Flat grassed area provides level surface in park for ball games and picnics.
12. Bus stop with overhead shade structure provides point of scale and definition at the public transport entry to the beach.
13. New community function room on upper level of Surf Club.
14. Upper terrace of Surf Club provides function space and public access down to beach promenade.
15. Shaded picnic area.

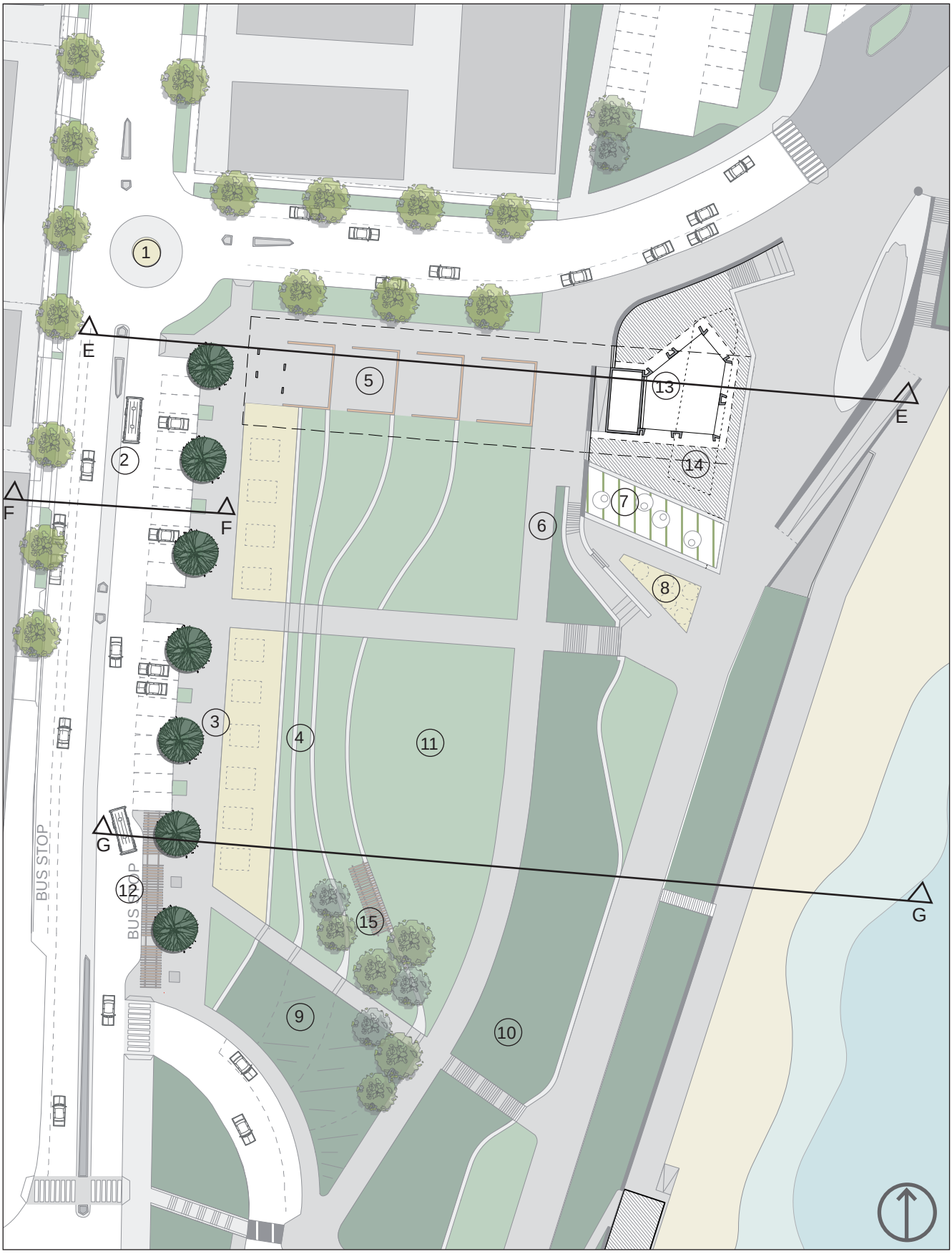


Figure 2.9 *Jefferson Park and Surf Club Redevelopment* SCALE 1:750

STREET IMPROVEMENTS

- Retain existing kerb line on western side.
- Parallel parking on western side, 2.1m lane
- 4m lane northbound.
- Central marked median, 2m
- 5m lane southbound
- 90 degree angle parking on eastern side, rear to kerb.
- New kerb line abutting Jefferson Park

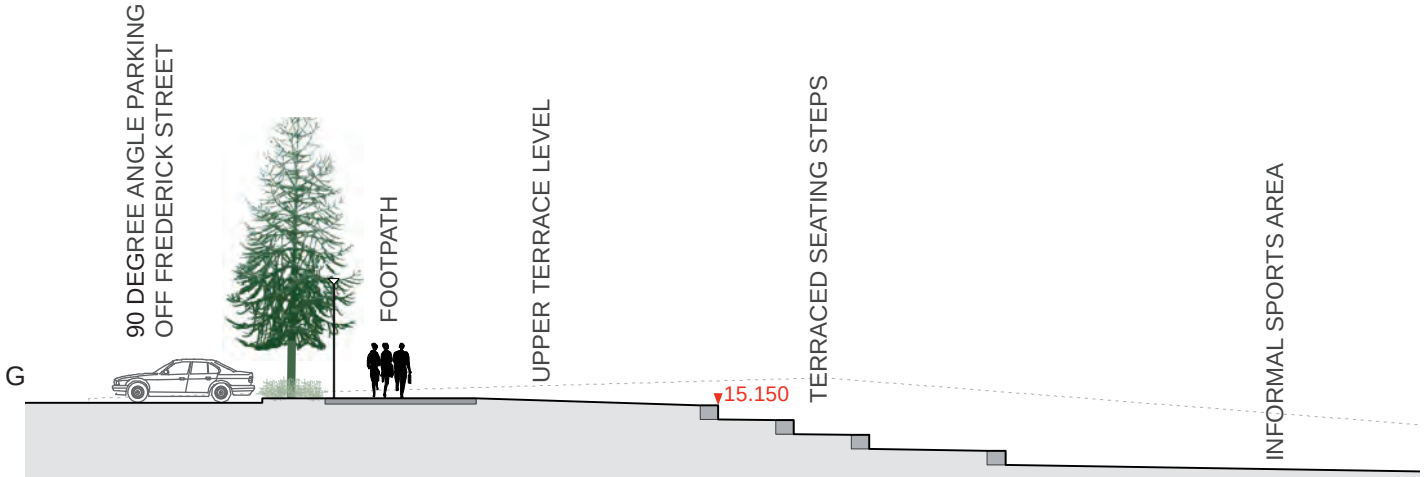


Figure 2.11 SECTION THROUGH JEFFERSON PARK SCALE 1:250

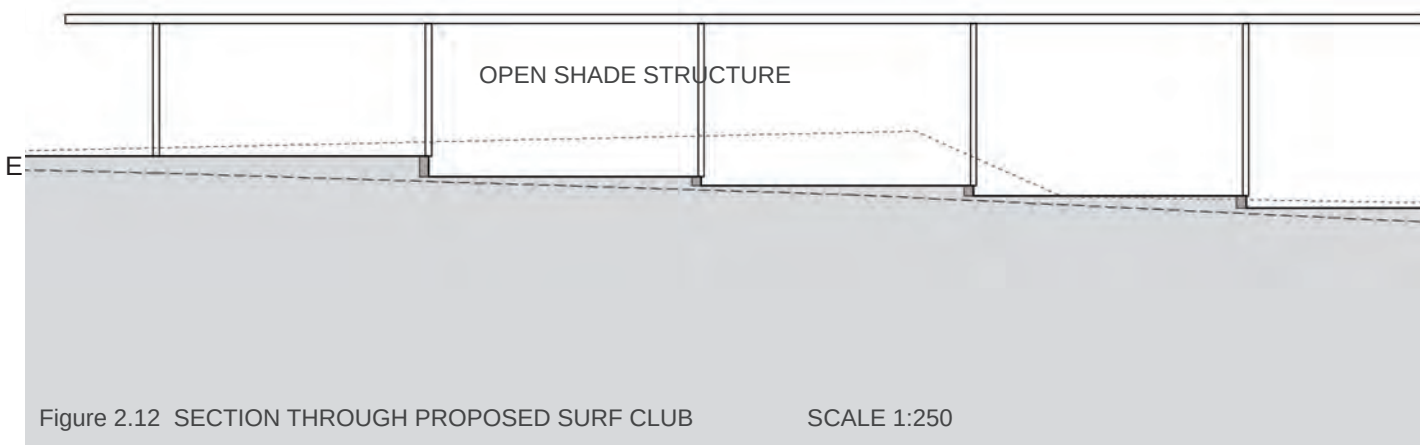
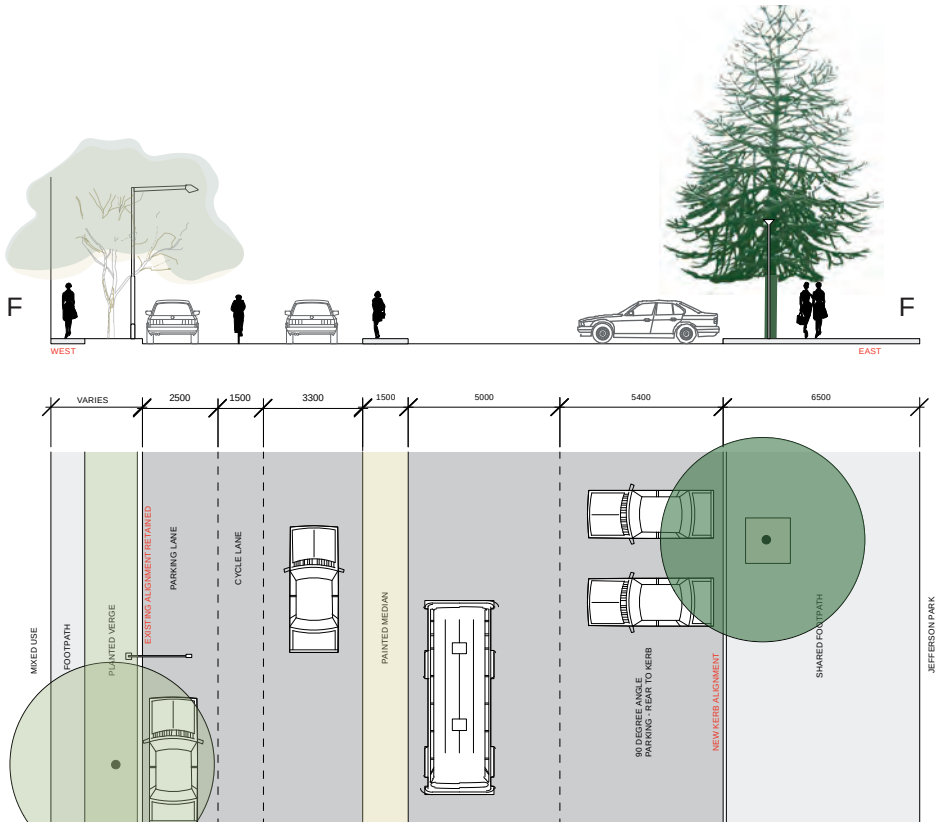
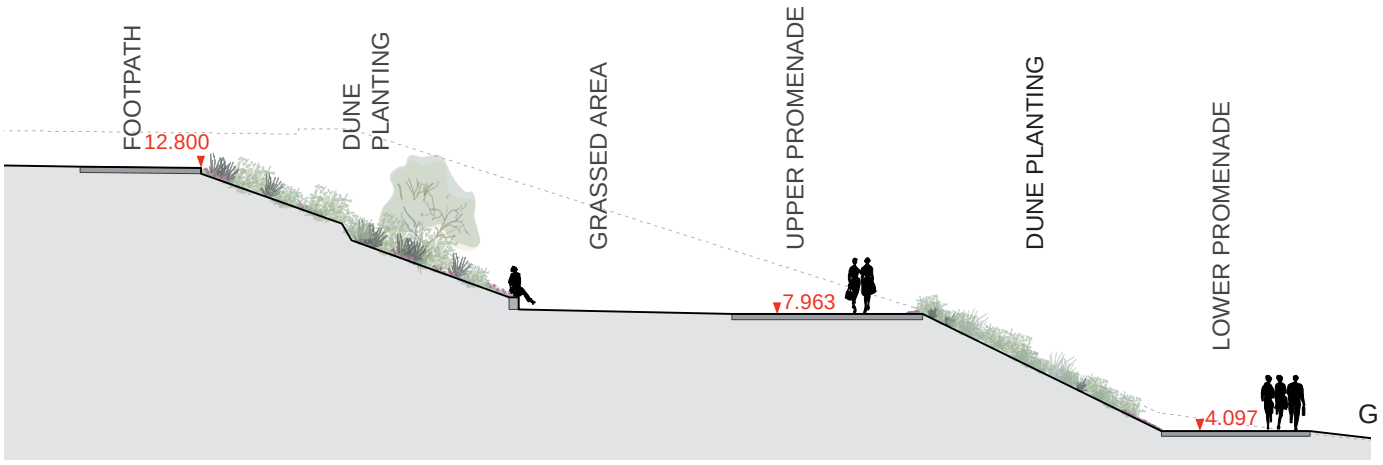


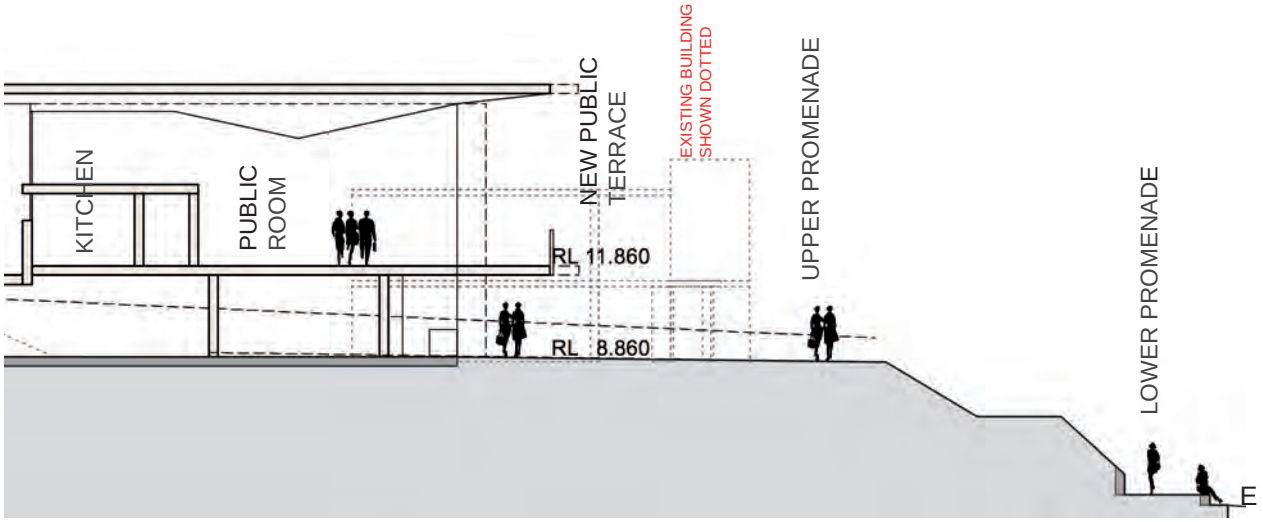
Figure 2.12 SECTION THROUGH PROPOSED SURF CLUB SCALE 1:250



Open canopy of Nortolk Island Pine at Dee Why

Figure 2.10 TYPICAL STREET SECTION FREDERICK STREET SCALE 1:250





Seat wall on Glebe foreshore

Merewether promenade

Sloped bank, retaining wall and promenade

4.4 Beach Promenade + Surf House

Design Objectives
- Provide consistent generous upper promenade.
- Maintain and improve upon pedestrian connection to the beach.
- Provide mix of vegetation zones, dune planting and turf to accommodate habitat and needs of people.

1. Retain existing underpass and reduce entrance speed to Ridge street as traffic calming strategy.
2. Tightening of intersection of Scenic Drive and Ridge Street to reduce traffic speed and pedestrian risk.
3. Extension of corner to reduce gradient and provide safe pedestrian zone outside the Beach Hotel.
4. Formal pedestrian zebra crossing at grade in conjunction with pedestrian underpass.
5. New stair access to Henderson Parade with textured road surface and pedestrian blister opposite.
6. Marked Pedestrian crossing at top of new entry to Henderson Parade.
7. New section of Henderson Parade with five minute parking for surf check. Henderson Parade now one way system southbound. (see section 2.12)
8. Henderson Parade still maintains parallel parking on eastern side with service area in front of Surf House.
9. Dune vegetation maintained and protected on steep slopes.
10. Pocket lawns along upper promenade provide area for families to picnic. (see detail section 2.13)
11. Upper promenade widened to 6 metres from existing eastern edge. Consistent treatment and width from John Parade to the Baths.
12. Dune planting is maintained on slopes between promenade levels.
13. Ramps shortened to accommodate new promenade width.
14. Provide safety barrier at the end of the underpass. Extend kerb on opposite side to provide pedestrian blister, with textured road surface at crossing point.

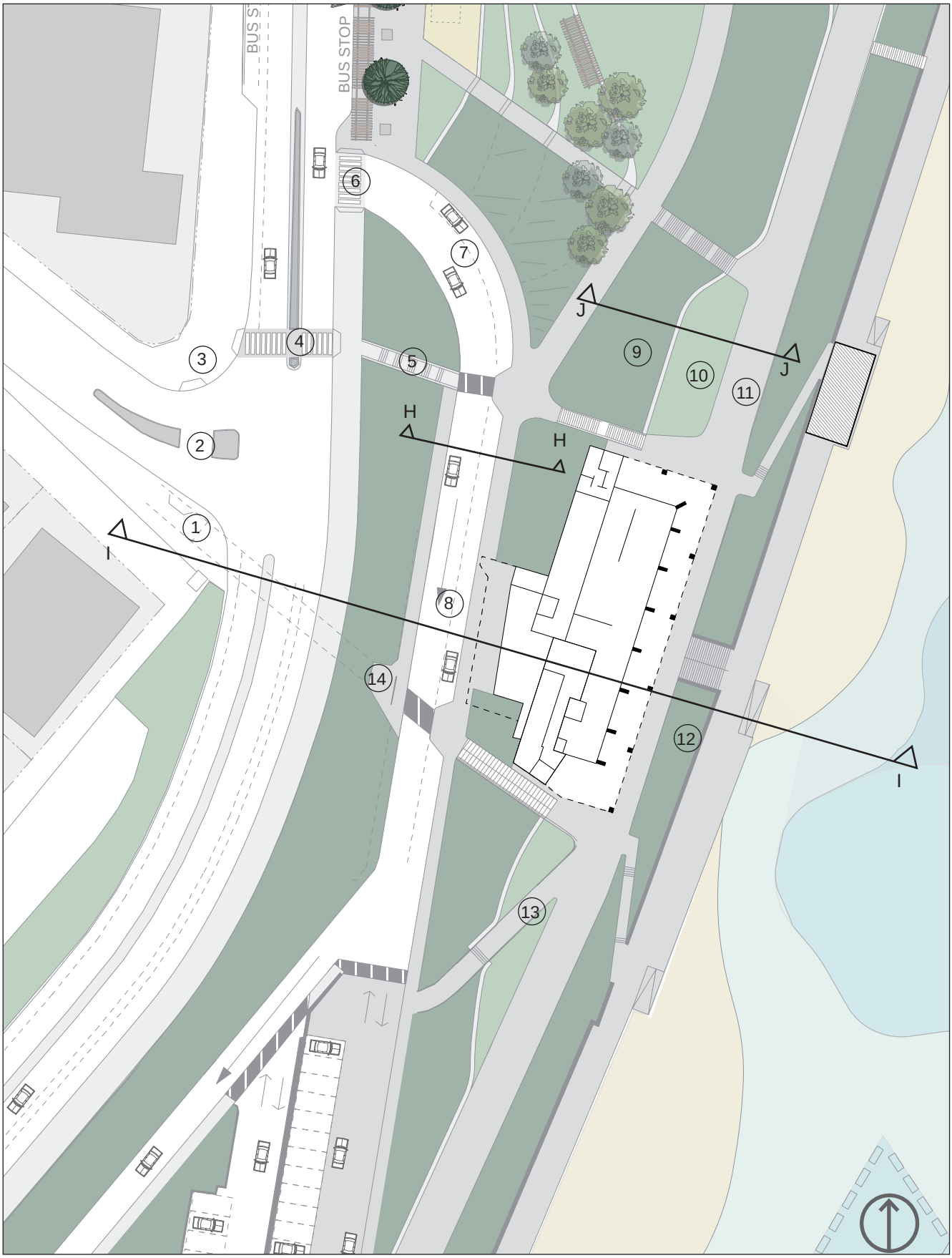


Figure 2.13 Beach Promenade and Surf House

SCALE 1:750

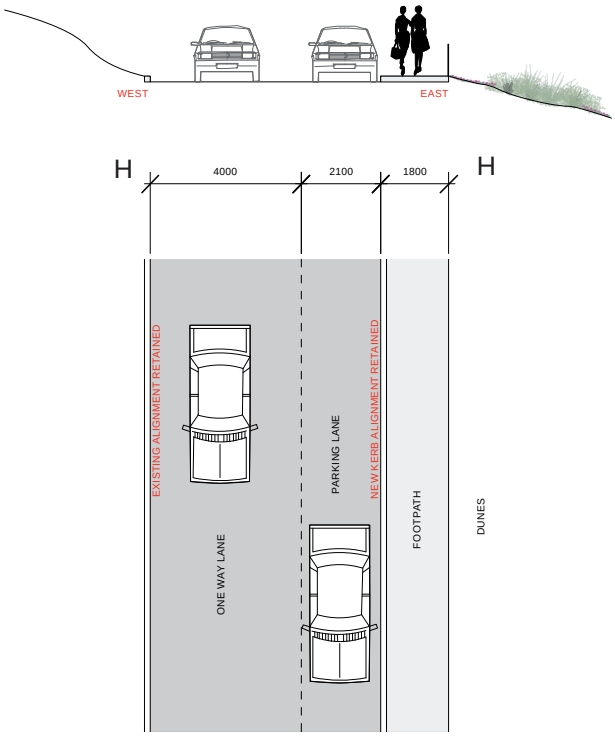


Figure 2.14 TYPICAL SECTION THROUGH HENDERSON PARADE SCALE 1:200

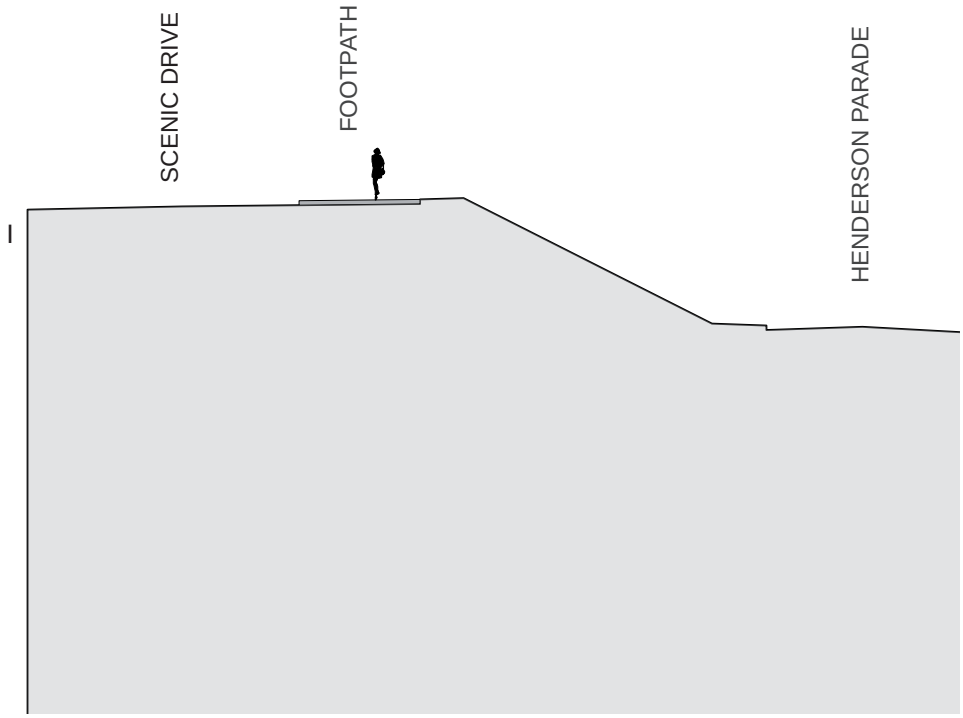


Figure 2.15 SECTION THROUGH PROPOSED SURF HOUSE

STREET IMPROVEMENTS

- Northern section of road closed
- New entry drive to street.
- Retain western kerb
- Single traffic lane southbound, 4m
- Parallel parking lane eastern side, 2.1m
- 1.8-2m footpath along eastern side.

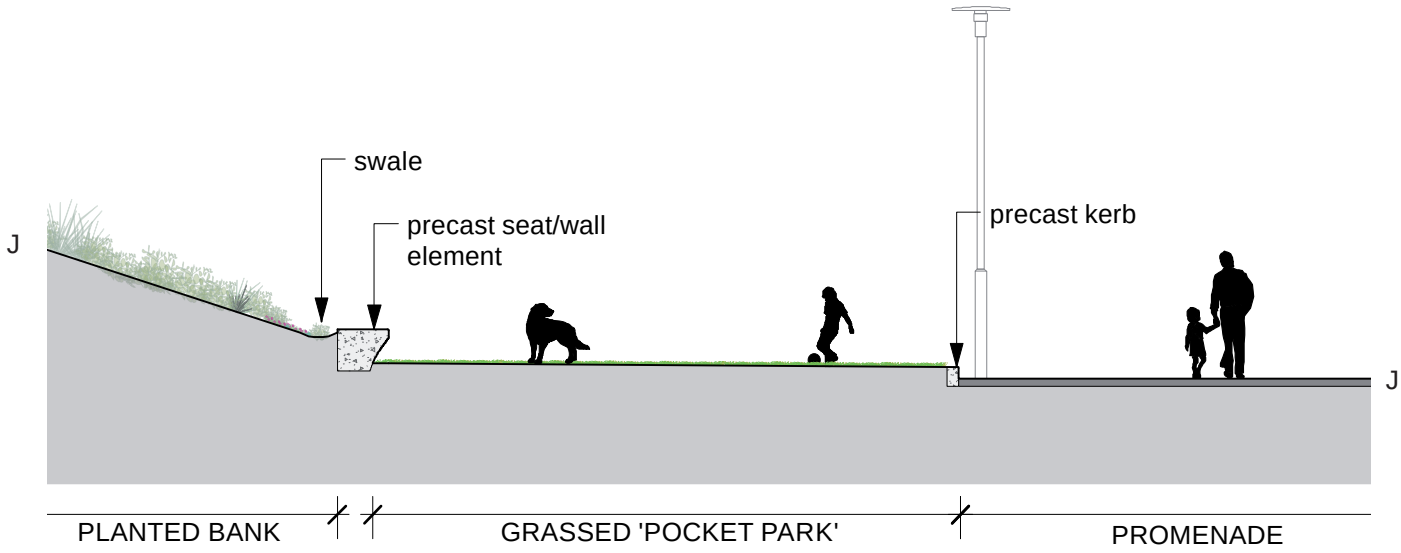
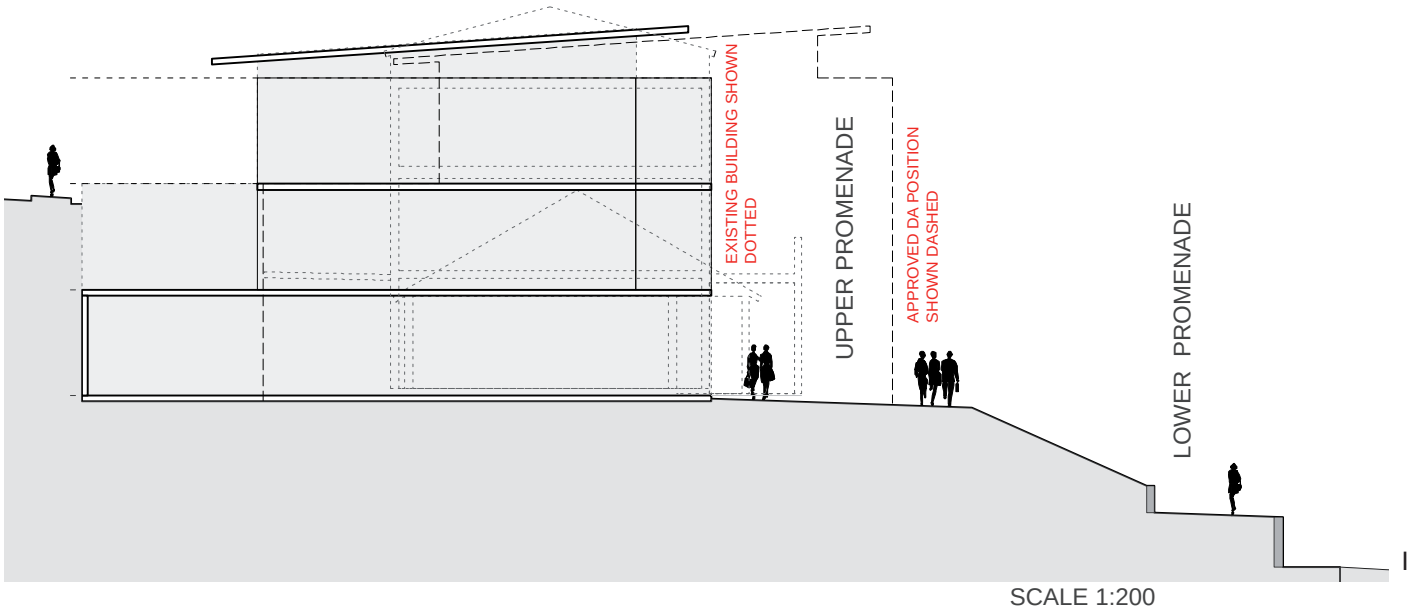


Figure 2.16 DETAIL SECTION OF TYPICAL GRASSED 'POCKET PARK SCALE 1:100



SCALE 1:200

Ocean Baths

Swale, Armory Wharf

Existing levels at Merewether Baths

4.5 Baths and Pavilion

Design Objectives
- Upgrade areas surrounding the Baths Pavilion, including resolving level differences and pedestrian/ traffic conflicts.
- Resolve parking in three levels carpark.

1. Provide legible link along upper promenade to the BATHS PAVILION.
2. Resolve changes of level along lower portion of baths promenade.
3. Reconnect terrace in front of BATHS PAVILION with area to the north through consistent level and rebuilt access stairs.
4. New pocket grassed area to provide shaded seating area near baths.
5. New outdoor showers area.
6. Shade Pavilion, hardwood post and beam structure. Bleacher seats run underneath.
7. Viewing terrace.
8. New kiosk cafe, relocate existing facilities into southern end of building.
9. Improve the buildings outlook over the pool. Change rooms and toilet facilities to be reduced in extent and introduce a new public room and kitchen in upper pavilion level. Investigate future commercial potential of buildings as per Merewether Plan of Management.
10. New porch with awning above.
11. New stair and access ramp to bring level with northern edge of building.
12. Limited access past this point to Baths Pavilion, using boom gate or retractable bollards.
13. Bioswale system to capture and treat water from upper carparks.
14. Parking spaces widened and turning area identified at end of this level.
15. 90 degree angle parking marked in carpark with path at edge.
16. New access stair to footpath on Scenic Drive.
17. Ladies Baths - Strategic repair to remove hazards. Historic remnant not maintained for formal use.

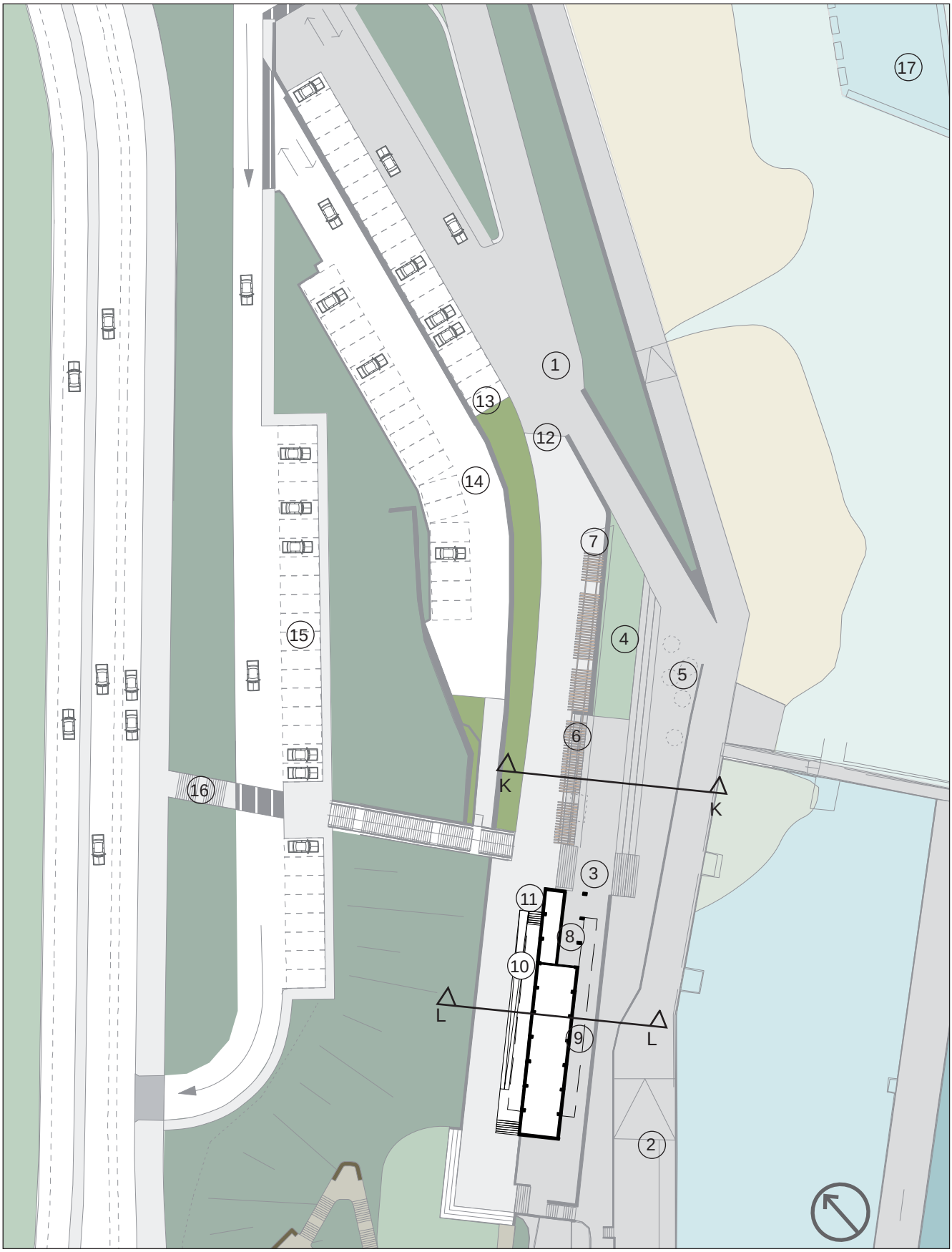


Figure 2.17 Ocean Baths and Baths Pavilion SCALE 1:750

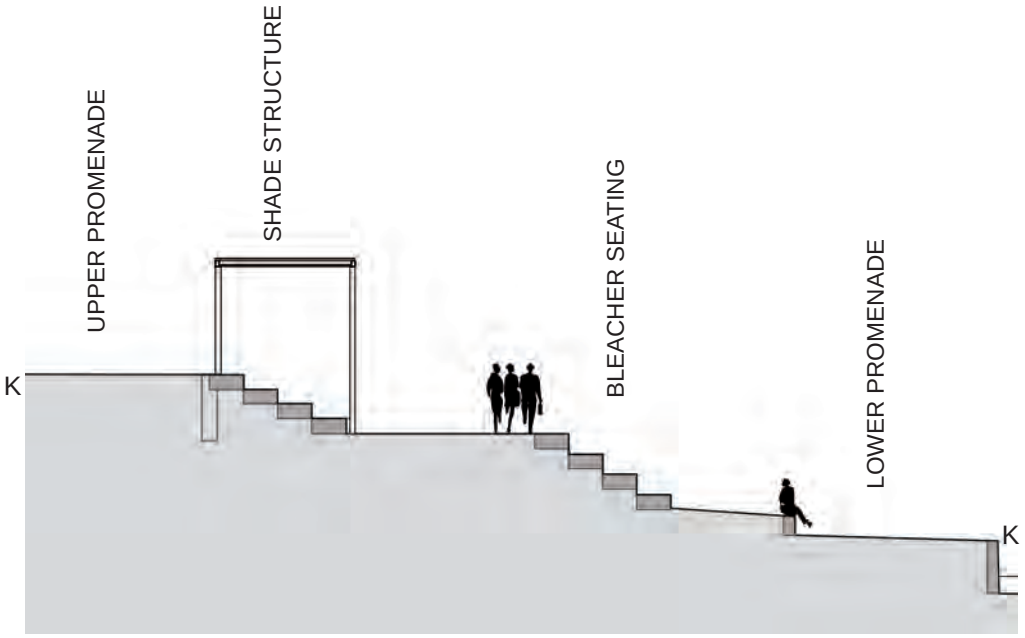


Figure 2.18 SECTION THROUGH PROPOSED BATHS SHADE STRUCTURE
SCALE 1:200

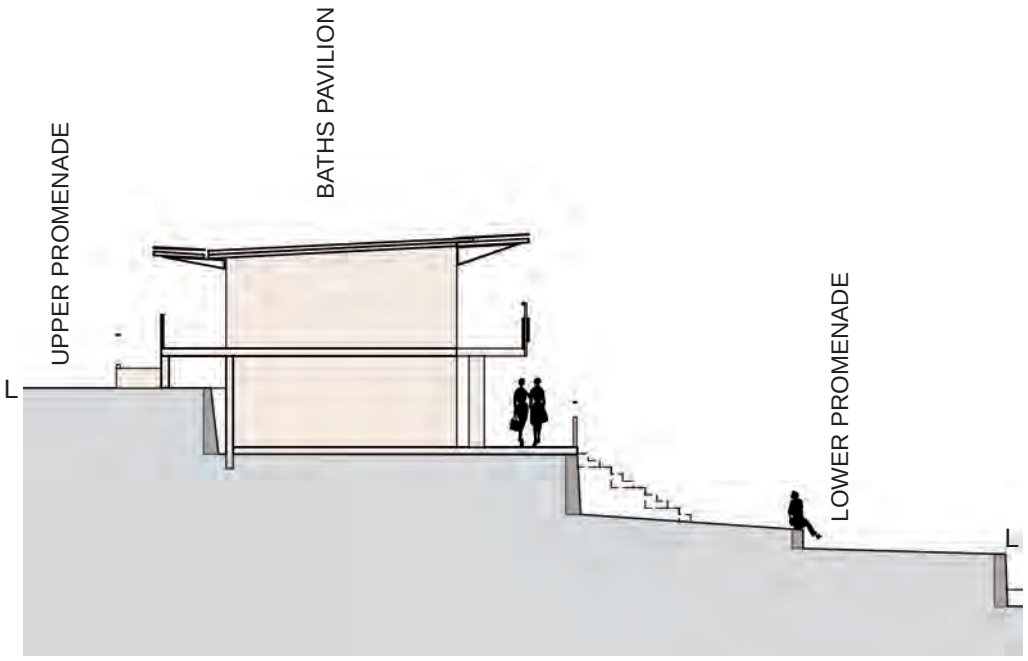


Figure 2.19 SECTION THROUGH BATHS PAVILION SCALE 1:200

Figure 2.20 Sketch perspective of Baths, pavilion and shade structures

Robinson Reserve carpark

Viewing area at Narrabeen

Timber walkway, Ballast Point

4.6 Robinson Reserve

Design Objectives
- Maintain existing informal parking structure of lookout.
- Resolve traffic speed and risk areas along Scenic Drive.

1. New 4 metre wide footpath from edge of Jefferson Park to the Robinson Reserve. Path can act as shared pedestrian and cycle path for informal use by families.
2. Central median of textured or painted surface to reduce carriage way and slow traffic. Within this strip pedestrian refuges can be located where applicable.
3. Raised median from Robinson Reserve up to the intersection with Lloyd Street to reduce speed of traffic. Breaks in raised median have been allowed for individual driveways and streets.
4. Kerb blister to either side of the entry to the reserve carpark, ensures no parked cars to either side of entry and reduces risk to pedestrians.
5. Informal dress circle parking, unmarked.
6. Timber viewing platform to provide space beyond carpark to view ocean and whale watch. Can be investigated to link up with walkway proposal from Baths Pavilion up to the lookout via Heritage Park.
7. Proposed site for Heritage Park. Further investigation required including geological survey of slope. Possible site for cultural and historical interpretation. Refer to Appedix C for Heritage Park design guidelines.

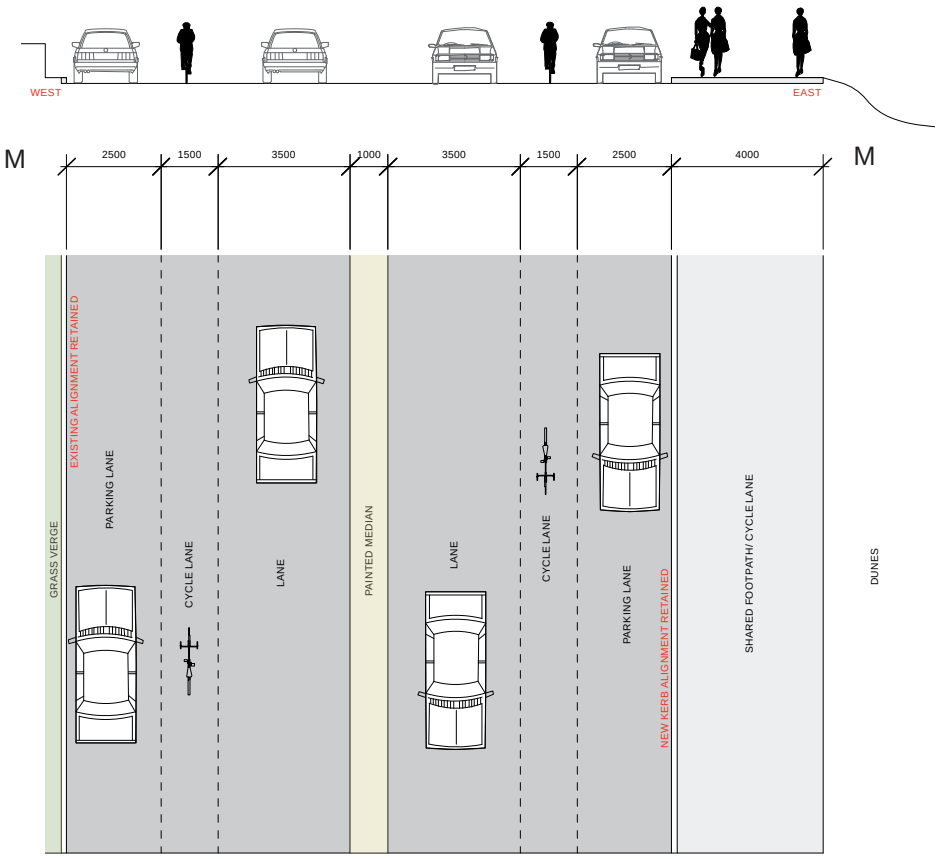


Figure 2.21 SECTION THROUGH SCENIC DRIVE SCALE 1:200

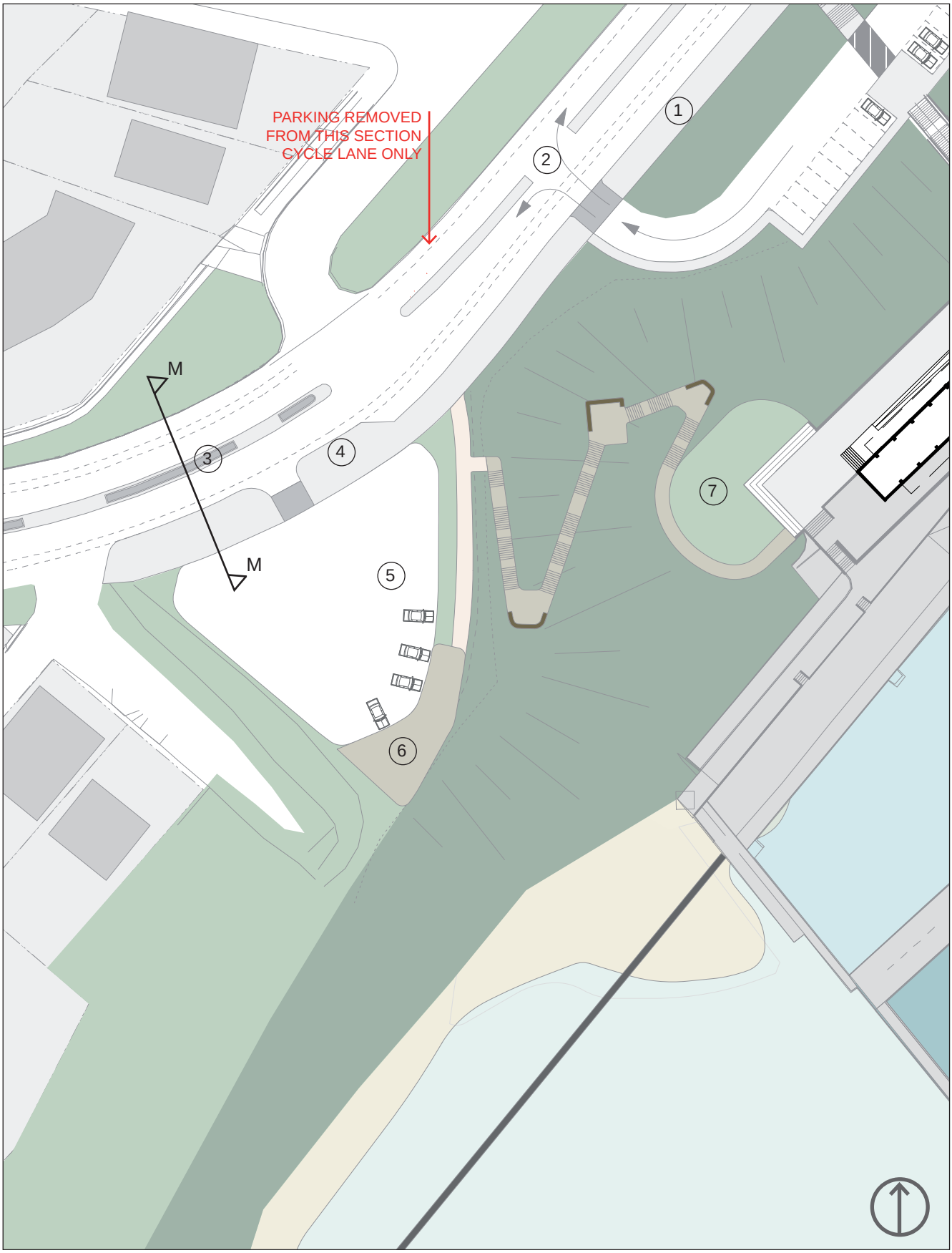
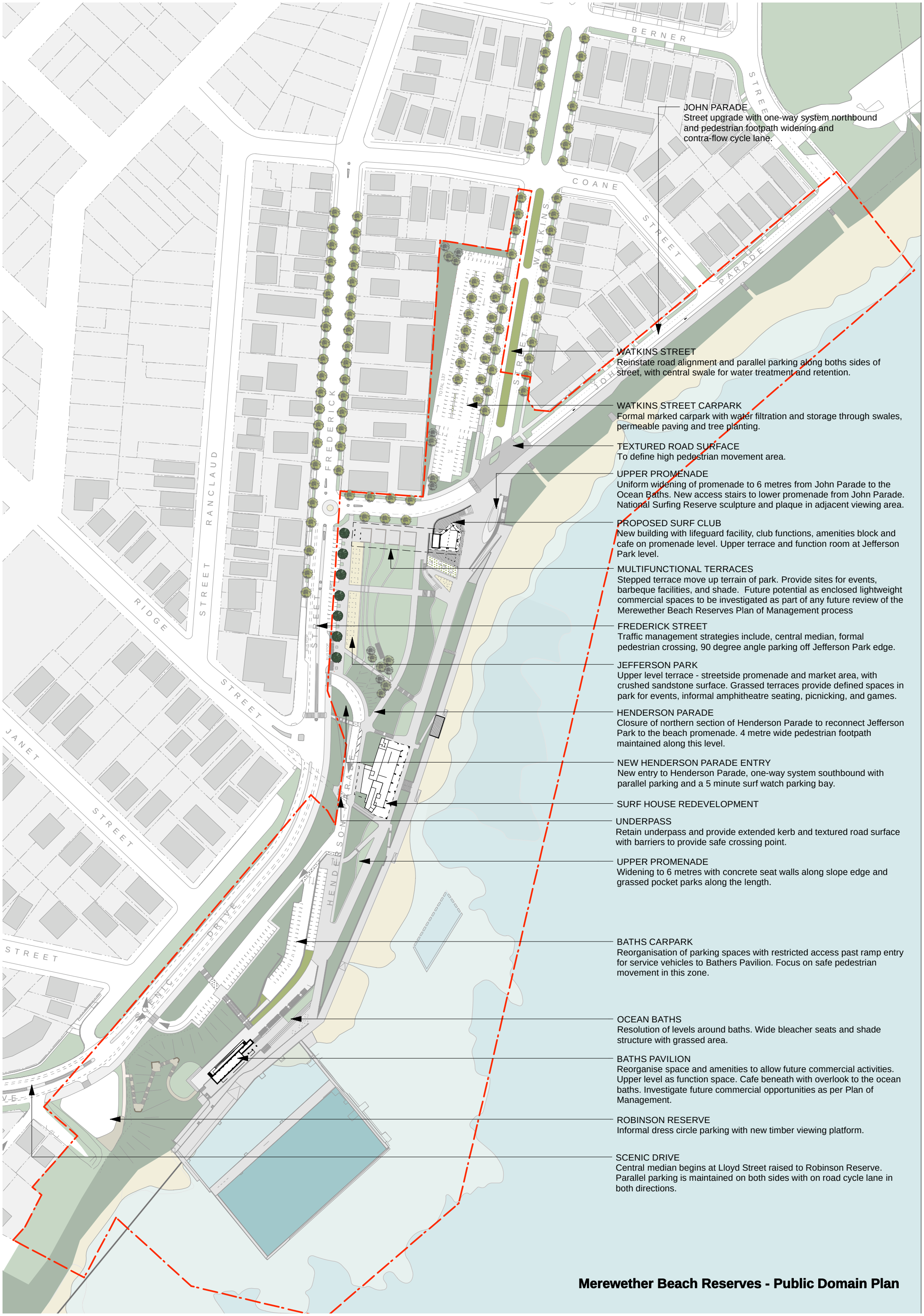


Figure 2.22 Robinson Reserve carpark and lookout

SCALE 1:750



JOHN PARADE
Street upgrade with one-way system northbound and pedestrian footpath widening and contra-flow cycle lane.

WATKINS STREET
Reinstate road alignment and parallel parking along boths sides of street, with central swale for water treatment and retention.

WATKINS STREET CARPARK
Formal marked carpark with water filtration and storage through swales, permeable paving and tree planting.

TEXTURED ROAD SURFACE
To define high pedestrian movement area.

UPPER PROMENADE
Uniform widening of promenade to 6 metres from John Parade to the Ocean Baths. New access stairs to lower promenade from John Parade. National Surfing Reserve sculpture and plaque in adjacent viewing area.

PROPOSED SURF CLUB
New building with lifeguard facility, club functions, amenities block and cafe on promenade level. Upper terrace and function room at Jefferson Park level.

MULTIFUNCTIONAL TERRACES
Stepped terrace move up terrain of park. Provide sites for events, barbeque facilities, and shade. Future potential as enclosed lightweight commercial spaces to be investigated as part of any future review of the Merewether Beach Reserves Plan of Management process

FREDERICK STREET
Traffic management strategies include, central median, formal pedestrian crossing, 90 degree angle parking off Jefferson Park edge.

JEFFERSON PARK
Upper level terrace - streetside promenade and market area, with crushed sandstone surface. Grassed terraces provide defined spaces in park for events, informal amphitheatre seating, picnicking, and games.

HENDERSON PARADE
Closure of northern section of Henderson Parade to reconnect Jefferson Park to the beach promenade. 4 metre wide pedestrian footpath maintained along this level.

NEW HENDERSON PARADE ENTRY
New entry to Henderson Parade, one-way system southbound with parallel parking and a 5 minute surf watch parking bay.

SURF HOUSE REDEVELOPMENT

UNDERPASS
Retain underpass and provide extended kerb and textured road surface with barriers to provide safe crossing point.

UPPER PROMENADE
Widening to 6 metres with concrete seat walls along slope edge and grassed pocket parks along the length.

BATHS CARPARK
Reorganisation of parking spaces with restricted access past ramp entry for service vehicles to Bathers Pavilion. Focus on safe pedestrian movement in this zone.

OCEAN BATHS
Resolution of levels around baths. Wide bleacher seats and shade structure with grassed area.

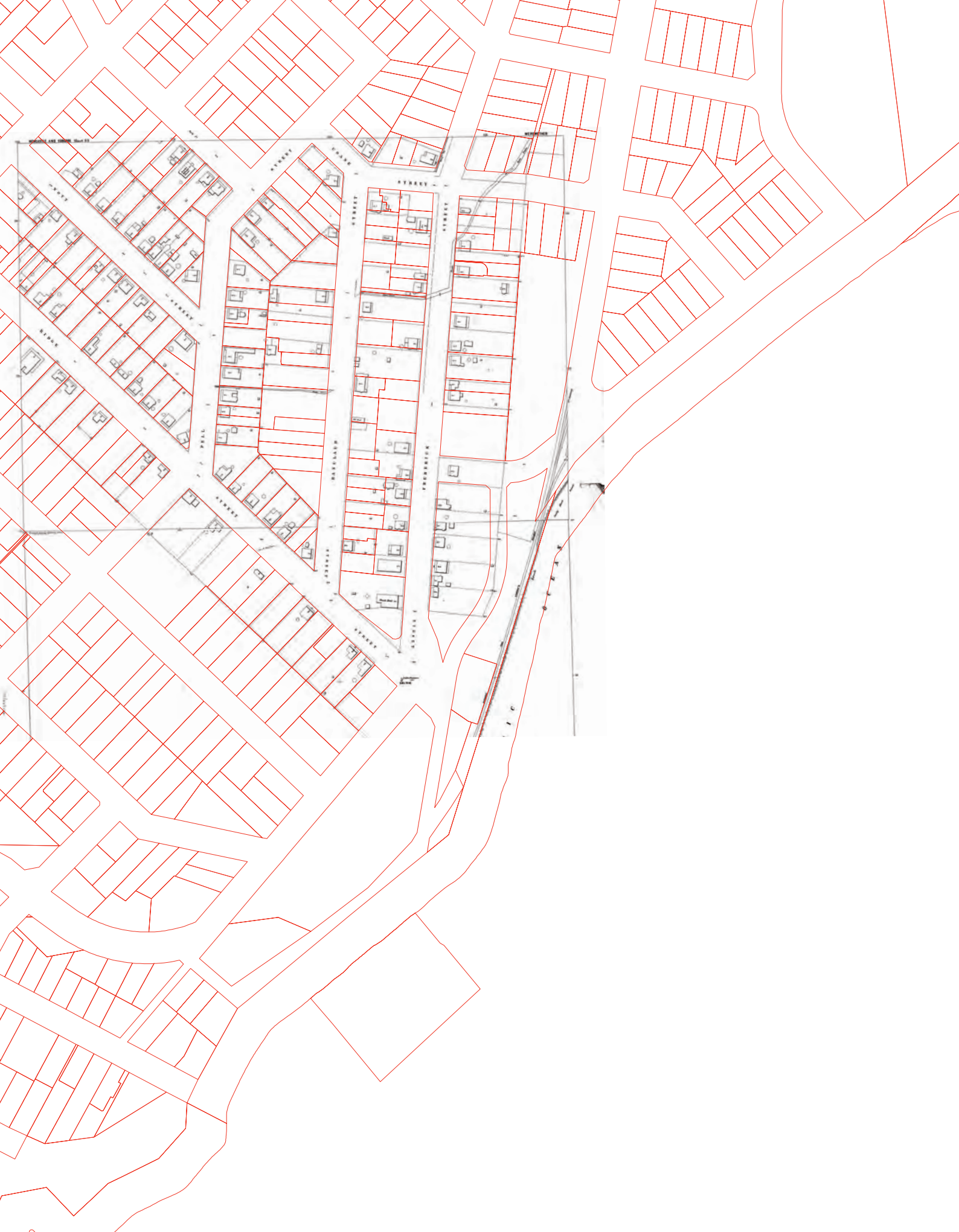
BATHS PAVILION
Reorganise space and amenities to allow future commercial activities. Upper level as function space. Cafe beneath with overlook to the ocean baths. Investigate future commercial opportunities as per Plan of Management.

ROBINSON RESERVE
Informal dress circle parking with new timber viewing platform.

SCENIC DRIVE
Central median begins at Lloyd Street raised to Robinson Reserve. Parallel parking is maintained on both sides with on road cycle lane in both directions.

Merewether Beach Reserves - Public Domain Plan

A EXTENDED HISTORICAL ANALYSIS



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MEREWETHER PUBLIC DOMAIN PLAN FOR NEWCASTLE COUNCIL AND THE DEPARTMENT OF LANDS

Historic Drawing 1890

aA.01

1:2500 @ A3

62.5 0 62.5 125m

Preliminary draft - 25 November 2009

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MEREWETHER PUBLIC DOMAIN PLAN FOR NEWCASTLE COUNCIL AND THE DEPARTMENT OF LANDS

Historic photo 1944

aA.02

1:2500 @ A3

62.5 0 62.5 125m

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MEREWETHER PUBLIC DOMAIN PLAN FOR NEWCASTLE COUNCIL AND THE DEPARTMENT OF LANDS

Historic drawing 1959

aA.03

1:5000 @ A3

125m 0 125 250m

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Historic photo 1965

aA.04

1:2500 @ A3

62.5 0 62.5 125m

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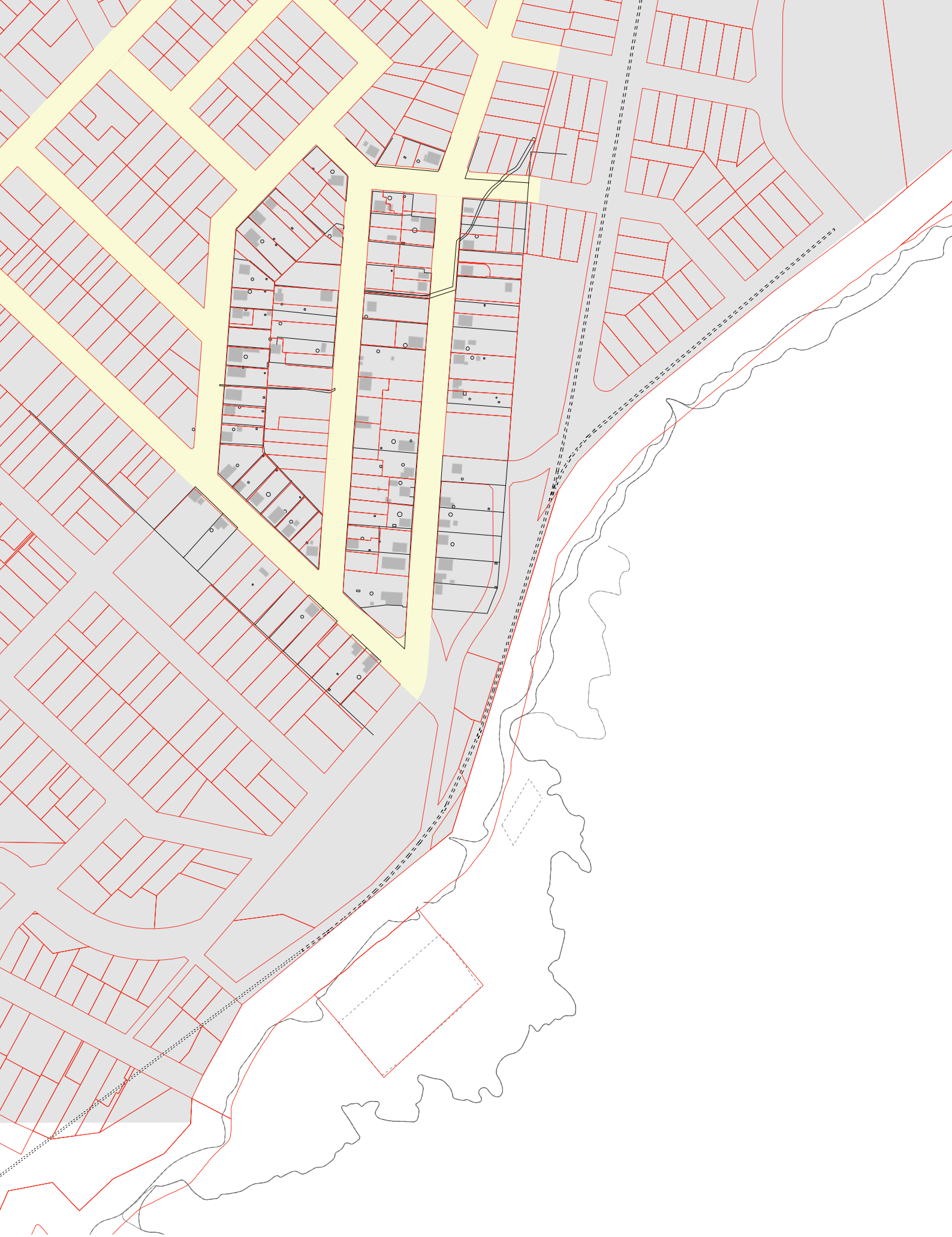
Historic photo 1988

aA.05

1:2500 @ A3

62.5 0 62.5 125m

Preliminary draft - 25 November 2009



MEREWETHER PUBLIC DOMAIN PLAN FOR NEWCASTLE COUNCIL AND THE DEPARTMENT OF LANDS

buildings
rail/tram line
street
promenade
carpark
retaining wall
public building

Site evolution 1890

aA.06

1:1500 @ A3
37.5 0 37.5 75m

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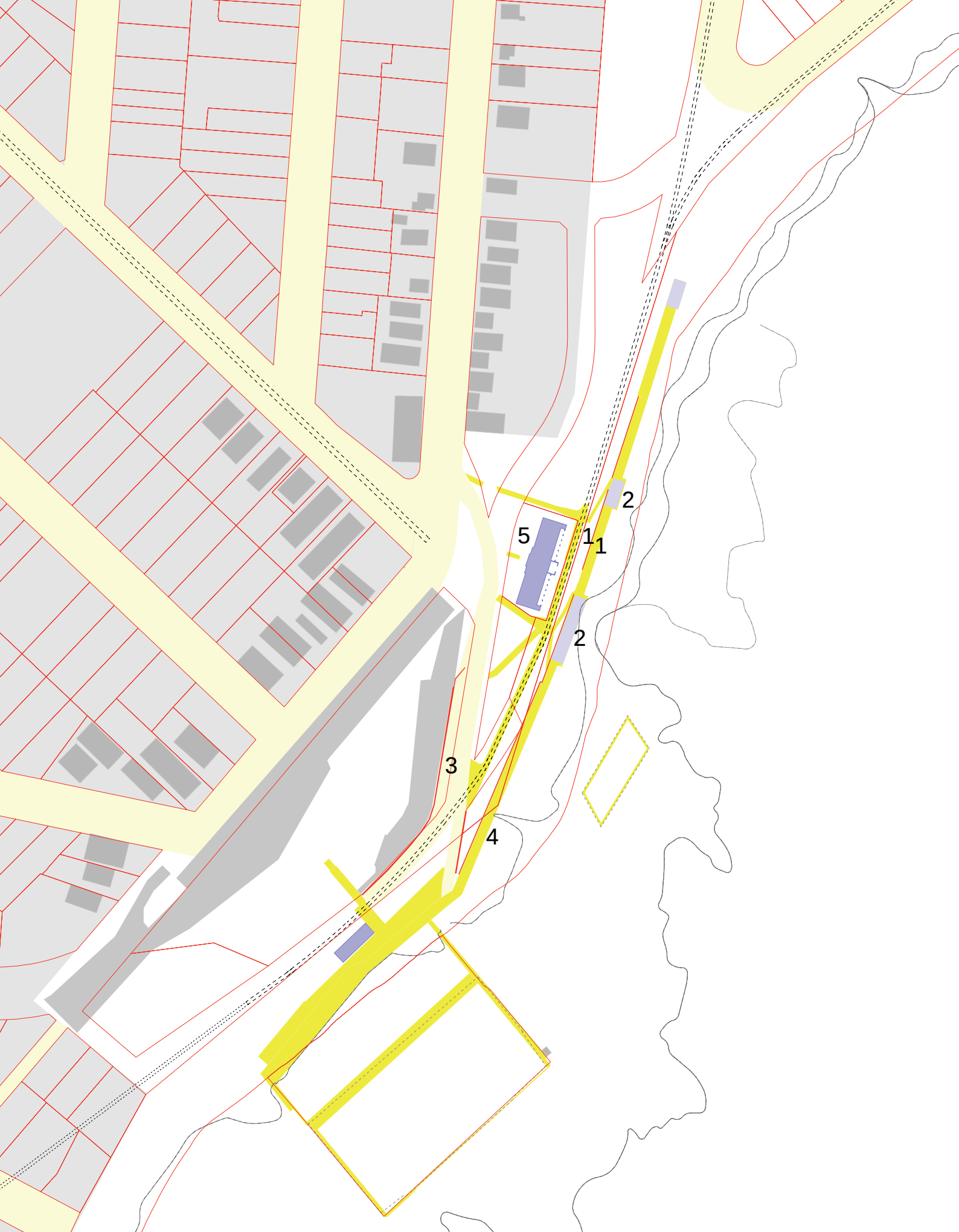

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buildings
rail/tram line
street
promenade
carpark
retaining wall
public building

Site evolution 1944

aA.07

1:1500 @ A3
37.5 0 37.5 75m

Preliminary draft - 25 November 2009

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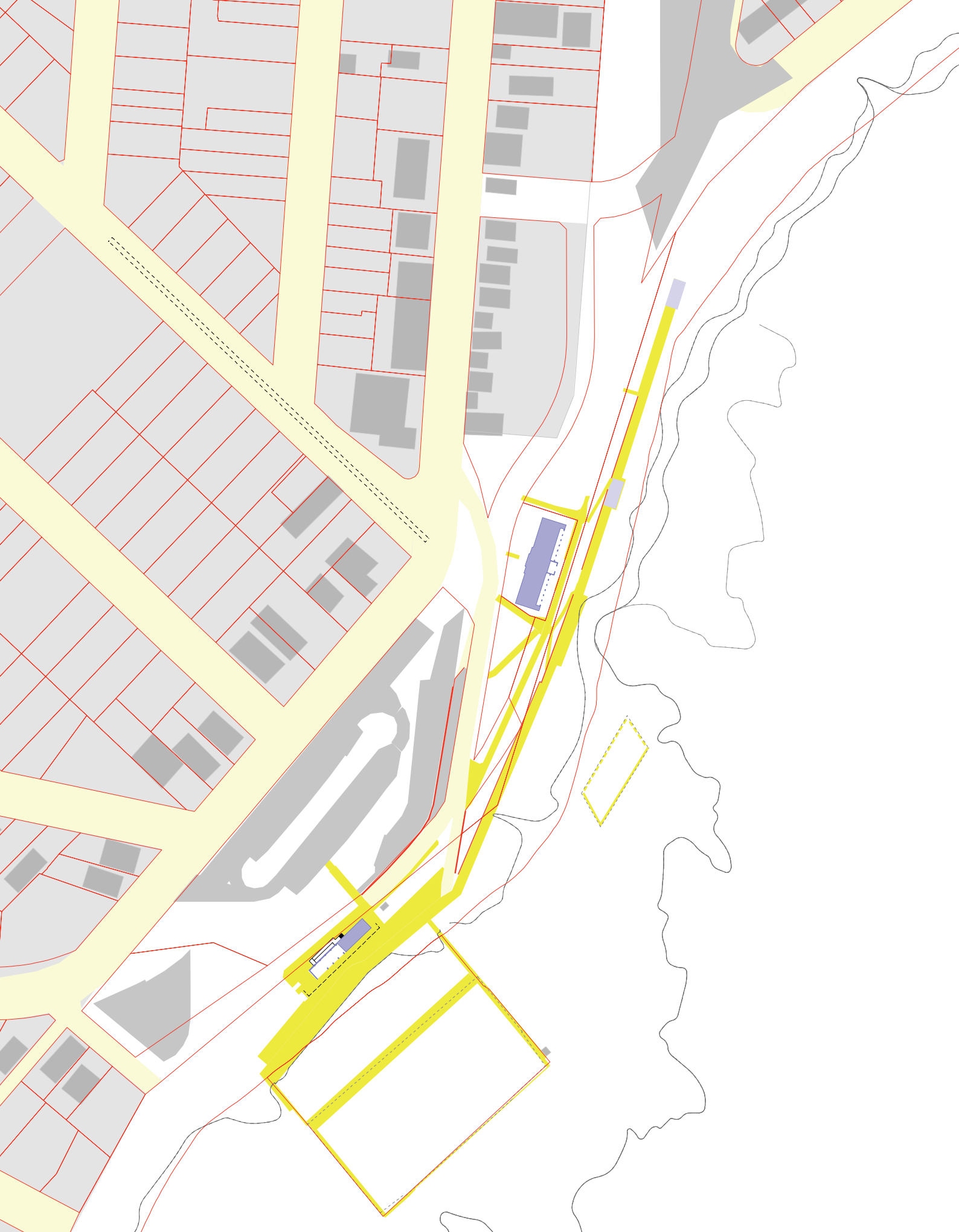

MEREWETHER PUBLIC DOMAIN PLAN FOR NEWCASTLE COUNCIL AND THE DEPARTMENT OF LANDS

buildings
rail/tram line
street
promenade
carpark
retaining wall
public building

Site evolution 1965

aA.08

1:1500 @ A3

37.5 0 37.5 75m

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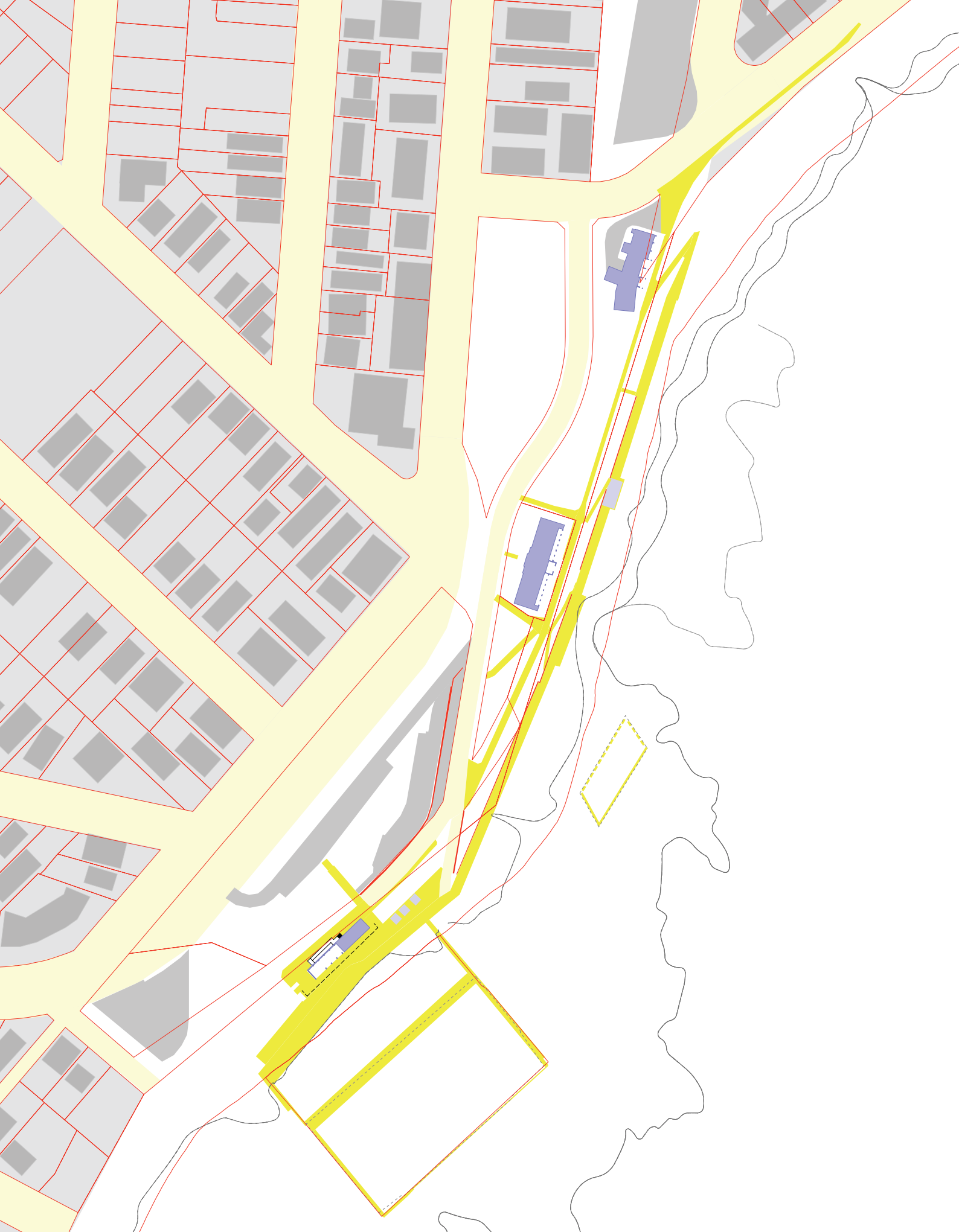

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buildings
rail/tram line
street
promenade
carpark
retaining wall
public building

Site evolution 1988

aA.09

1:1500 @ A3
37.5 0 37.5 75m

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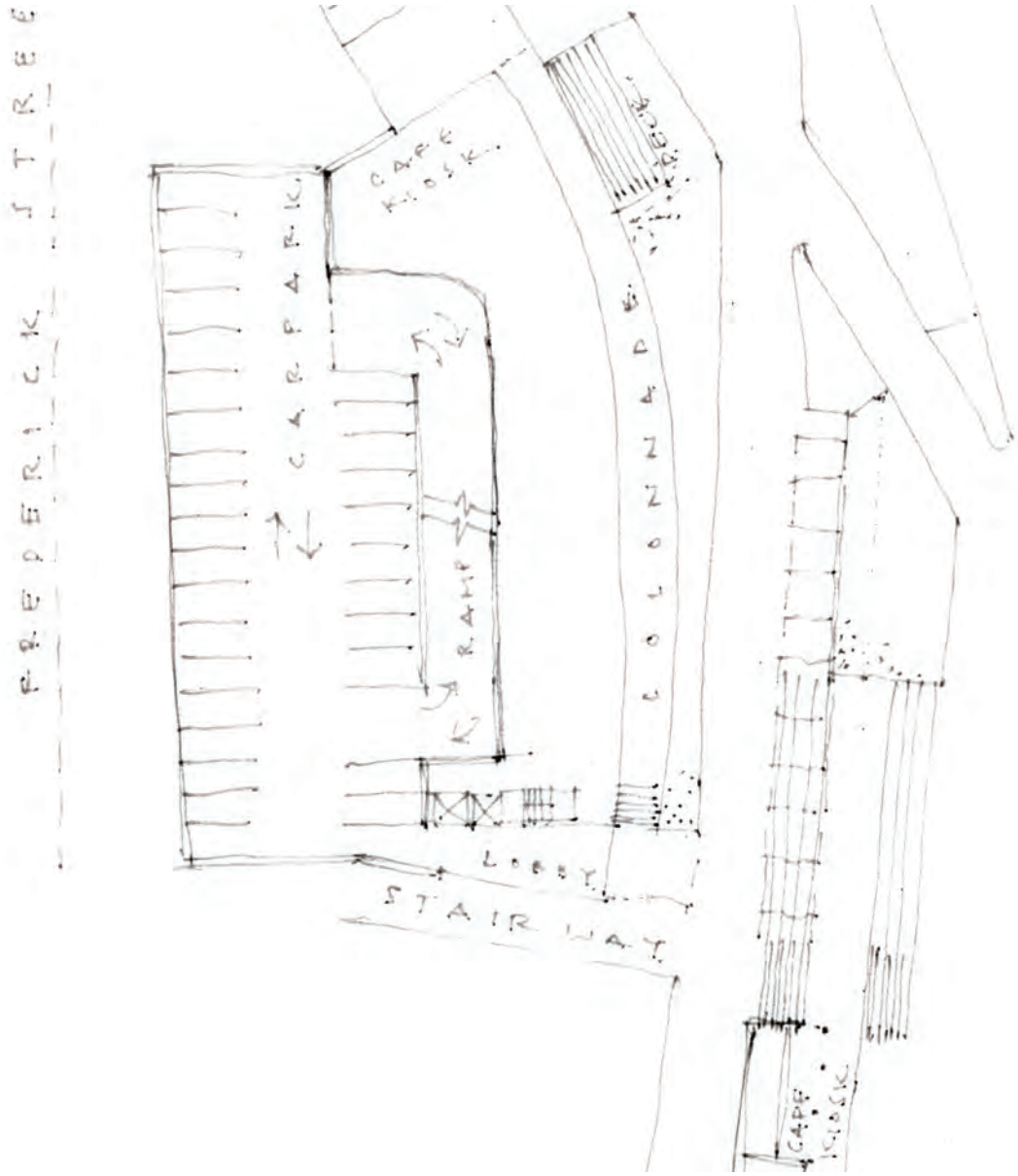
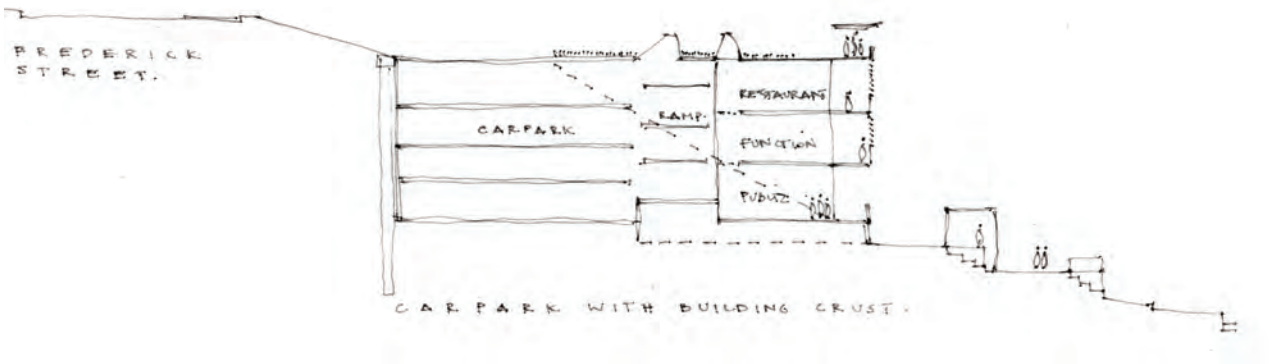
B BATHS CARPARK



The sketch describes the maximum site depth which could be considered in terms of urban design, which extends to the inside edge of the existing upper terrace car park.
The roof level would require extensive treatment to achieve a green roof, public viewing terrace, and proper design integration of roof penetrations for lighting, ventillation and building services.
The lower floor level should provide public facilities which could be complemented with a modest cafe / kiosk.

This would be a high cost solution in relation to location and general availability of development sites.
This approach seems to be well in advance of the existing urbanisation of the context.

Elements which contribute toward cost include :
- high proportion of car park per floor - approx 66%
- high a proportion car park circulation between aisles and from floor to floor, per floor - approx 50% (30-35% is optimal)
- 3-4 storey retaining wall structure and drainage will be required
- geotech condition is likely to require costly structure to avert slippage, achieve adequate anchorage and the like.



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Headland with stabilised slope behind Baths Pavilion

Existing natural spring on site

Revegetated area

C Merewether Headland Heritage Park

The proposed Heritage Park is located on a steeply sloping site between Robinson Reserve and the back of Merewether Baths Pavilion. The lower part of the site contains remnants of the mouth of the old Burwood Colliery Railway tunnel that connected Merewether Beach to Burwood Beach – the entrance has been closed in for safety and is barely discernable in the existing landscape.

The Heritage Park site is a continuation of the coastal landscape of cliffs, headlands and steep slopes that frame the lower dune slopes. Parts of this landscape has recently been revegetated by the Merewether Landcare group, restoring the indigenous vegetation.
As part of the ongoing work, the Landcare group have a proposal to revegetate the area and create a Heritage Park. The lower parts of the site have already been successfully cleared of Bitou Bush and revegetated. Proposals for Heritage Park should now be seen in context of the series of open spaces proposed in the Public Domain Plan. Jefferson Park will be the major open space, with areas for active recreation and picnic – tables and sheltered barbeques. The landscape areas of the lower promenade will also have informal picnic areas.

The focus of Heritage Park should be on the environment and heritage, and on providing an interesting alternative access from Robinson Reserve, rather than trying to fit a family park with picnic facilities into a small and steep site. Interventions to provide paths, interpretation and circulation should make minimal impact on the existing landform, retain the existing rock outcrops and keep a bushland character.

Following are guidelines for development of a design brief for Heritage Park.

- Retain bush character – indigenous planting, retain rock outcrops and use robust materials such as stone, plain concrete, steel and timber;
- Minimise alterations to topography that would require major retaining structures – paths should be of light construction and supported above the ground where possible to avoid construction of retaining walls;
- Stage construction of walkways to allow progressive revegetation up the slopes;
- Integrate interpretive signage and artwork into the overall design of the park and structures – attach to walls, handrails to avoid clutter;
- Where walls are necessary, use site rock to visually integrate with bush character;
- Paths, walkways, steps handrails etc should conform with the Building Code of Australia and relevant Australian Standards (disability access will not be possible from Robinson Reserve, investigate any ramifications of this in relation to potential for discrimination);
- Provide for informal use and picnics at the flatter low area behind Merewether Baths pavilion;
- Provide access – steps and ramp from the Beach and Baths.

(1) Extension of paved area at back of baths pavilion

(2) Revegetation planting up slope, retained by wall at base.

(3) Generous concrete steps as entrance to Heritage Park

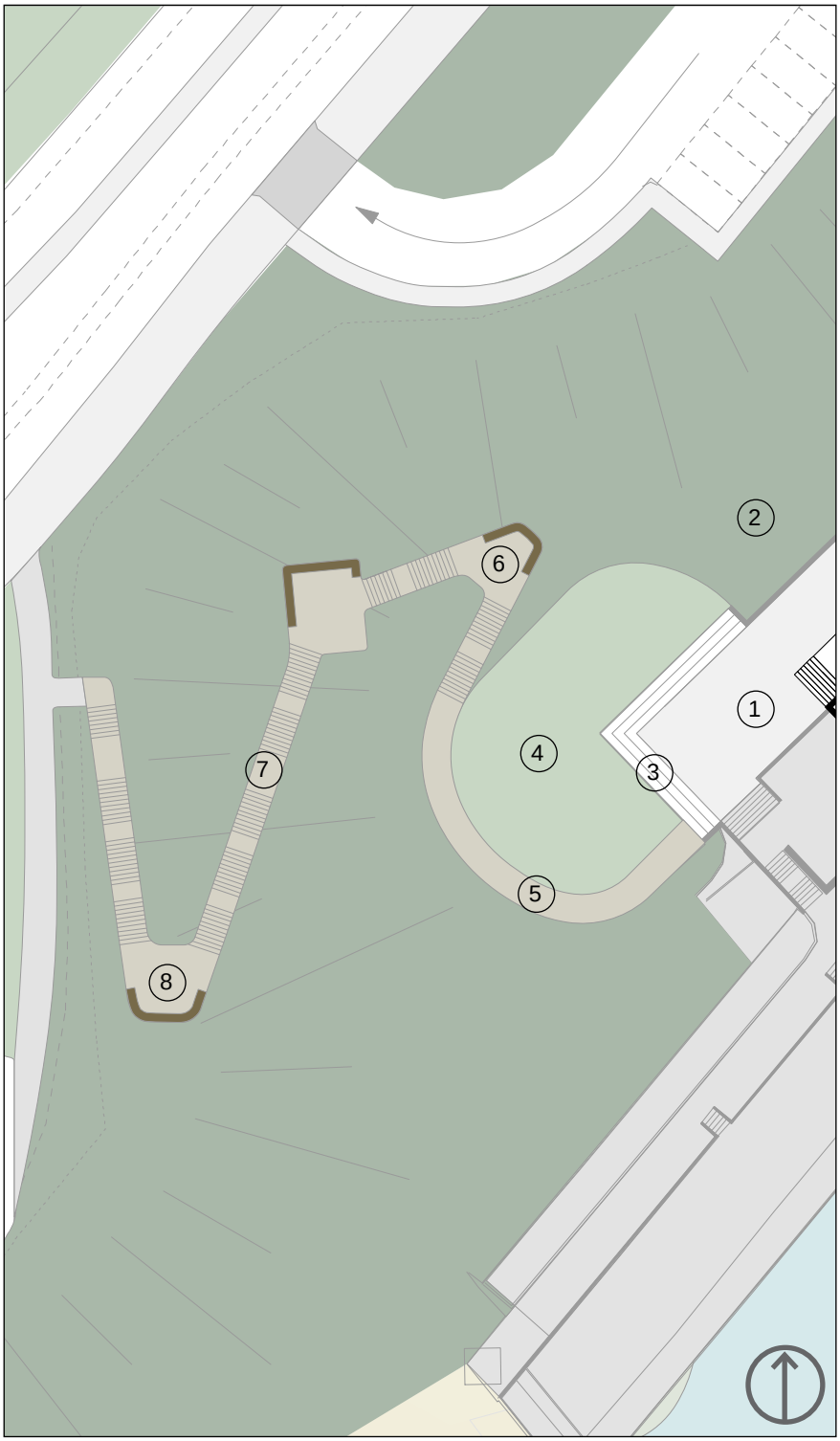
(4) Grassed picnic space at sheltered lowest level

(5) Concrete or crushed sandstone path to edge of grass

(6) Timber stair/ walkway with viewing platforms

(7) Stair acts as reinforcing on slope and provides safer access up the slope

(8) Upper viewing area with seating can act as points along interpretive/ educational walkway



SCALE 1:500

Bronte to Bondi coastal walkway

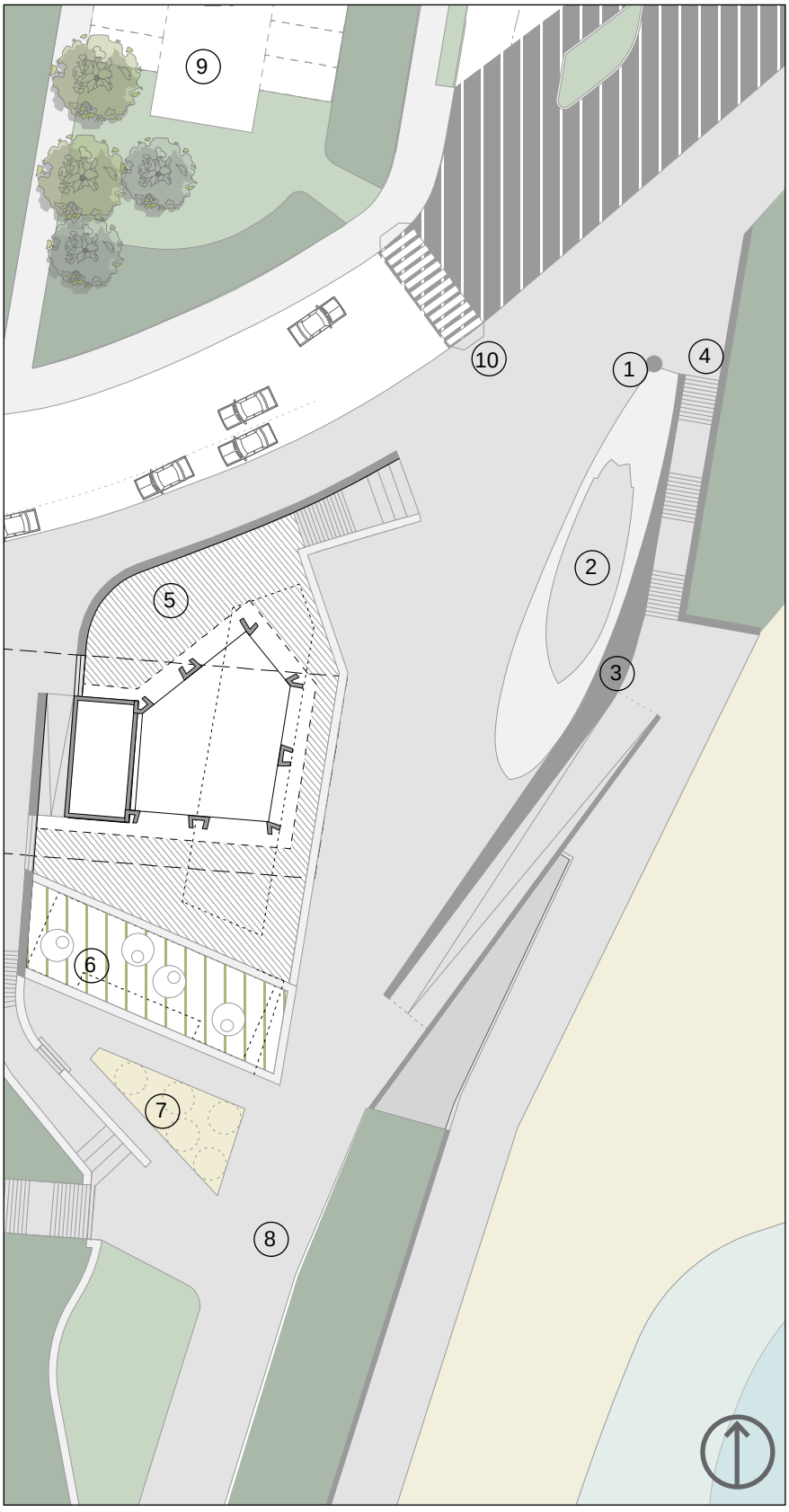
Viewing areas along walkway

Timber stairs with open steel railing

D SURF SCULPTURE

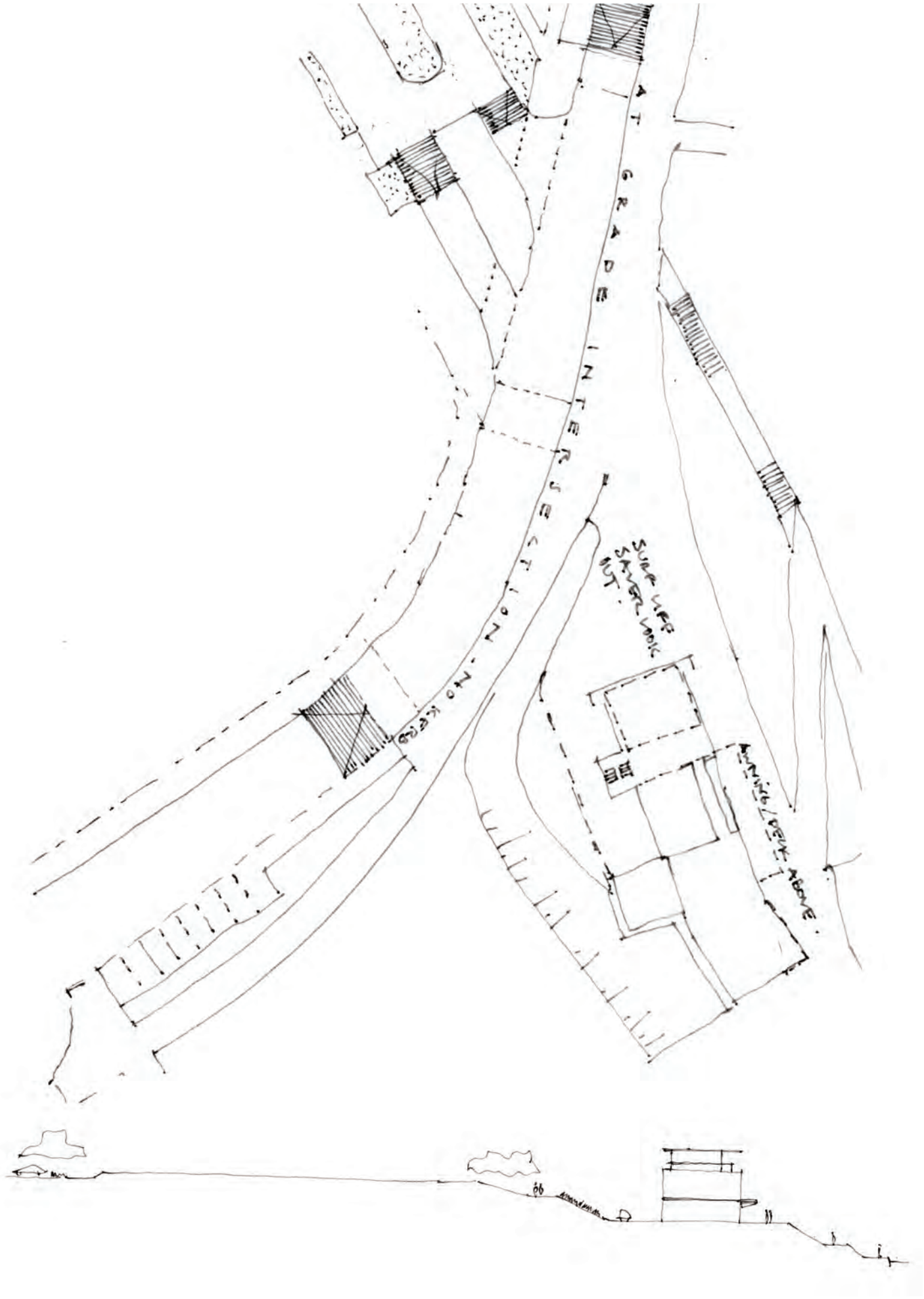
The classification of Merewether Beach as a National Surfing Reserve presents an opportunity to acknowledge the value placed on this beach and its tradition of surfing. Public art and signage are one strategy for sharing the history of the beach while also enhancing its unique identity. With the upgrade of the upper promenade at Merewether and the potential redevelopment of the Surf Club the enlarged terrace at the junction of the upper promenade and John Parade offers a dramatic location for these public art elements at the entrance to the beach.

1. Stainless steel sculpture of Double surfboards at main entry. Set out from promenade edge to allow movement around the sculpture and views through to the ocean.
2. Shadow relief for surfboard sculpture set into pavement through contrasting surface texture or material.
3. Feature retaining wall with sloping form, interpretive railing along length, relating to surfing tradition and local history of Merewether.
4. New access stairs to beach and lower promenade from John Parade,
5. Upper deck of proposed Surf Club building, allows public access from Jefferson Park to the Promenade and beach. Proximity of Surf Club to sculpture allows for the shared history of the beach between surf lifesaving and surfers to be celebrated.
6. Public changerooms and toilet amenities
7. Outdoor showers
8. Promenade widened to 6 metres
9. Watkins Street carpark
10. New marked pedestrian crossing.



SCALE 1:500

E ARCHITECTURAL OPTIONS



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MEREWETHER PUBLIC DOMAIN PLAN FOR NEWCASTLE COUNCIL AND THE DEPARTMENT OF LANDS

Surf Club Options

aE.01a

Preliminary draft - 25 November 2009

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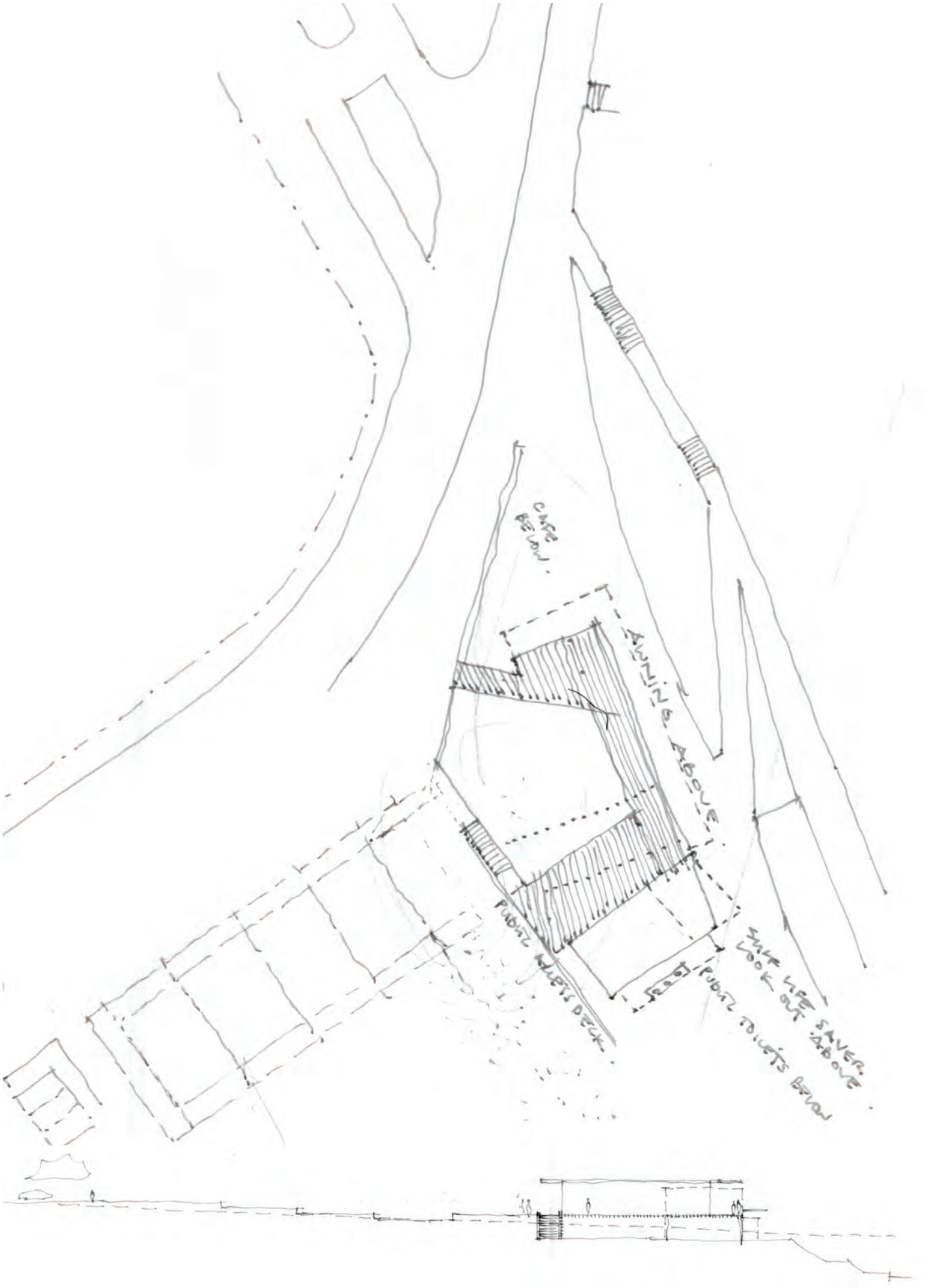

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Surf Club Options

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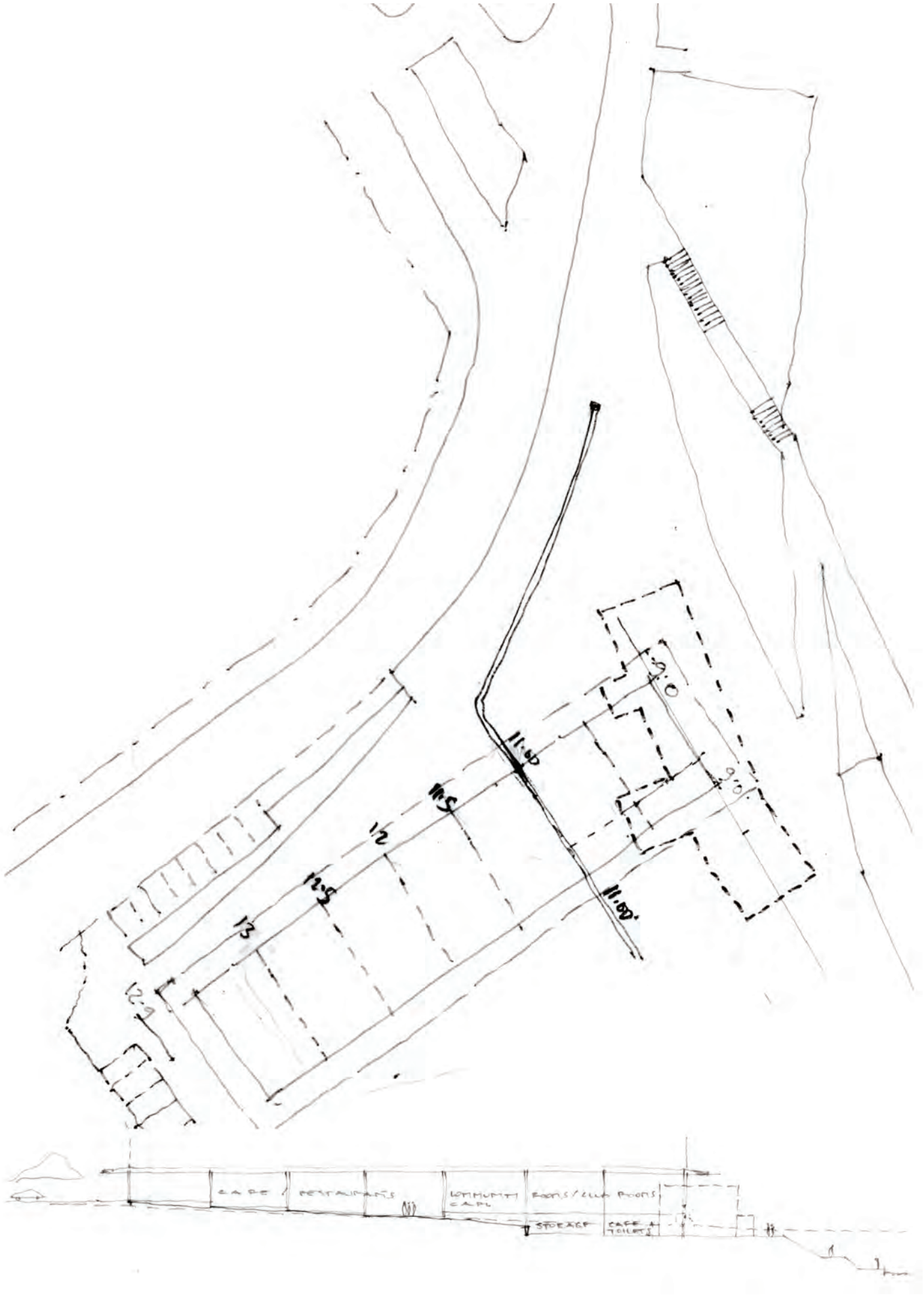

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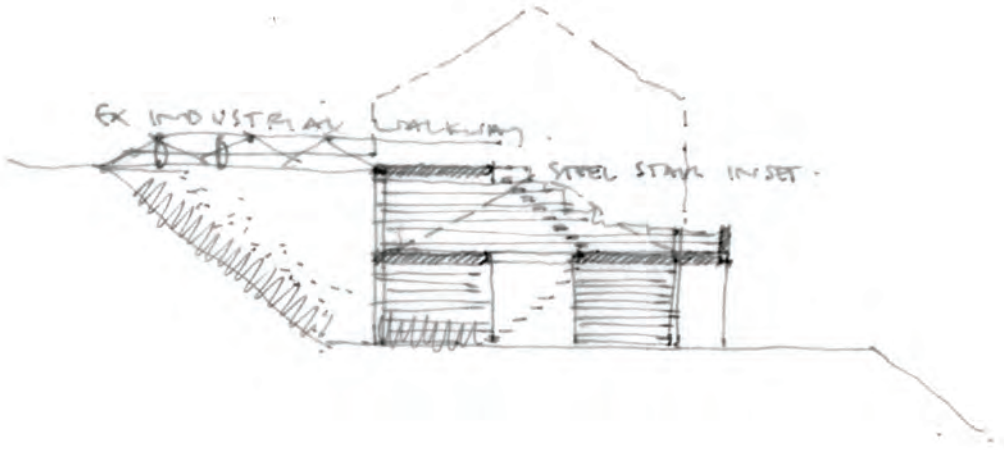

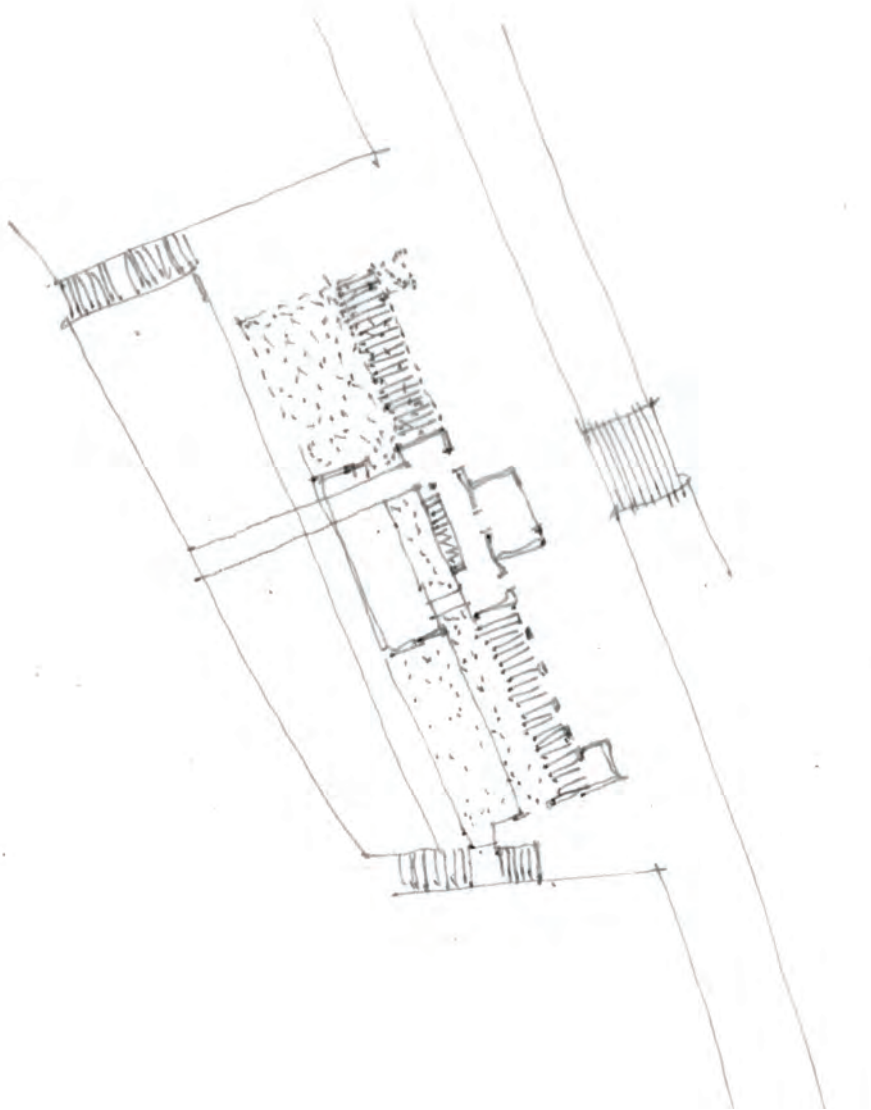

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Surf House Options

aE.02a

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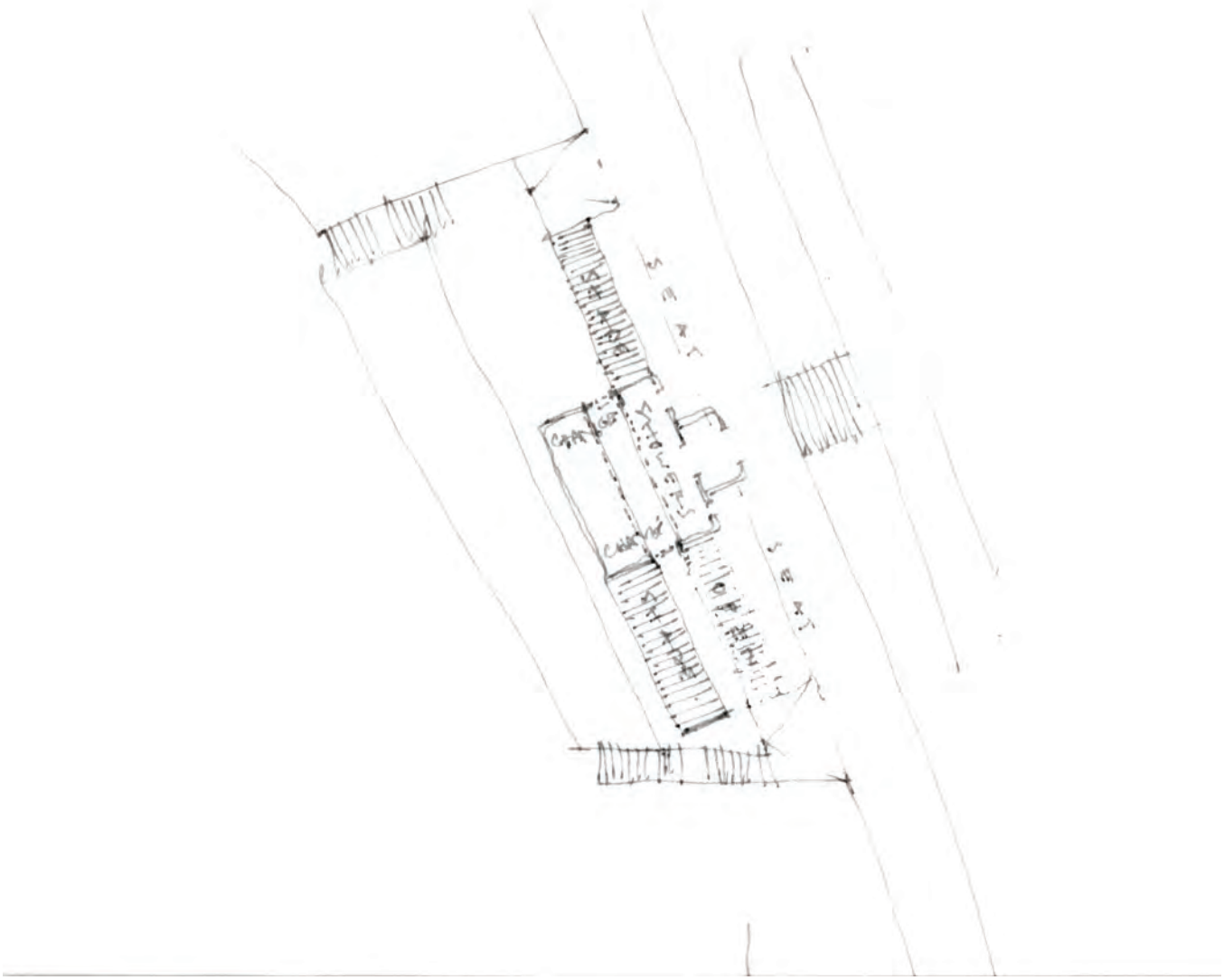

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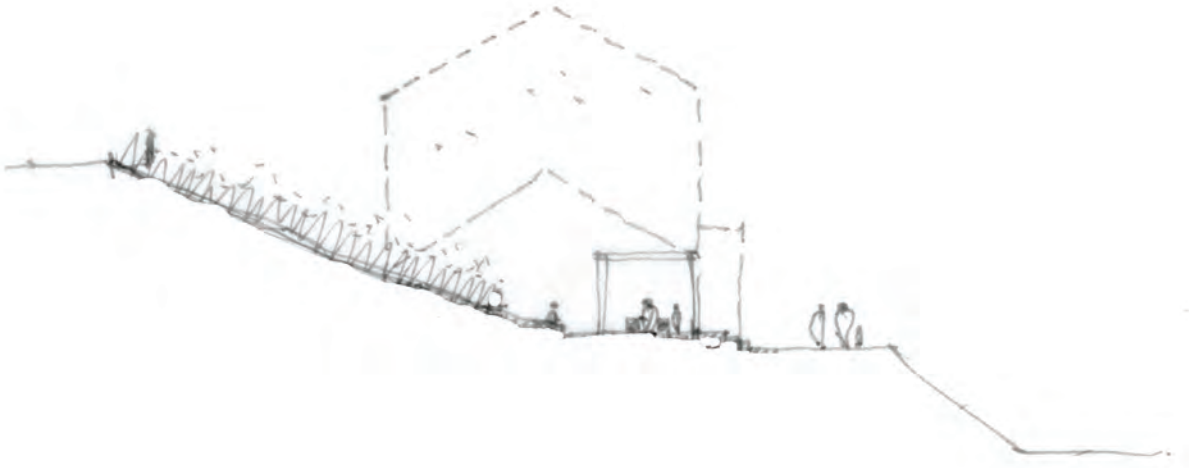

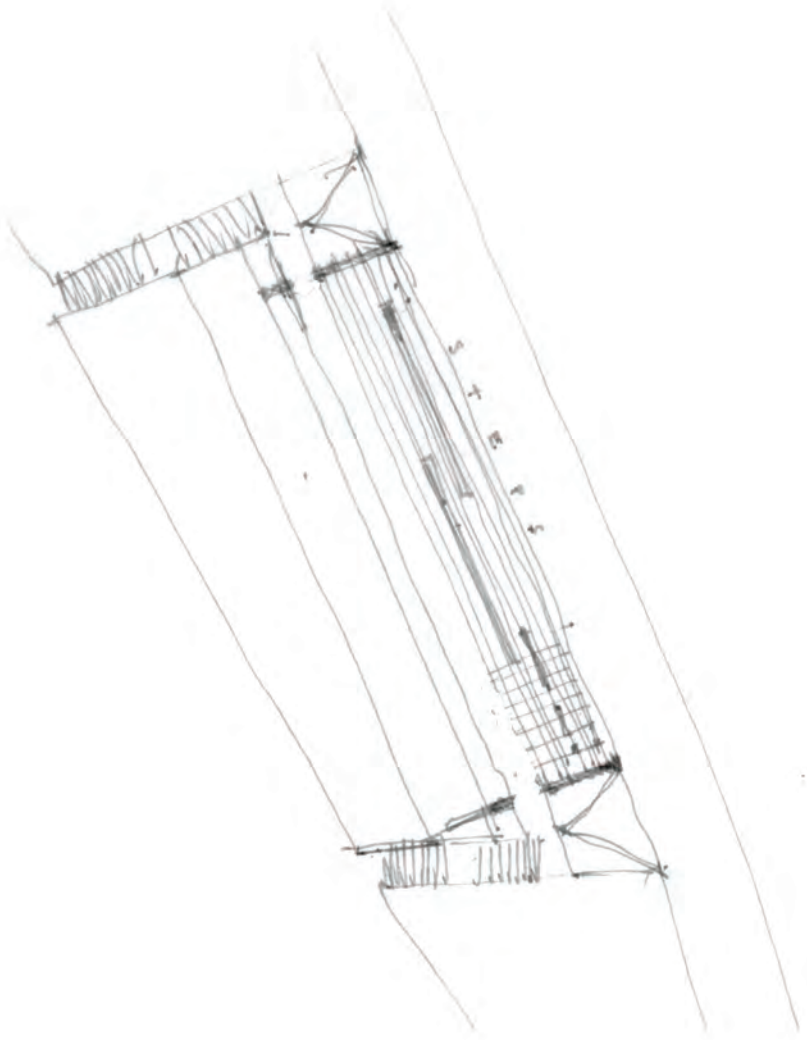

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Surf House Options

aE.02c

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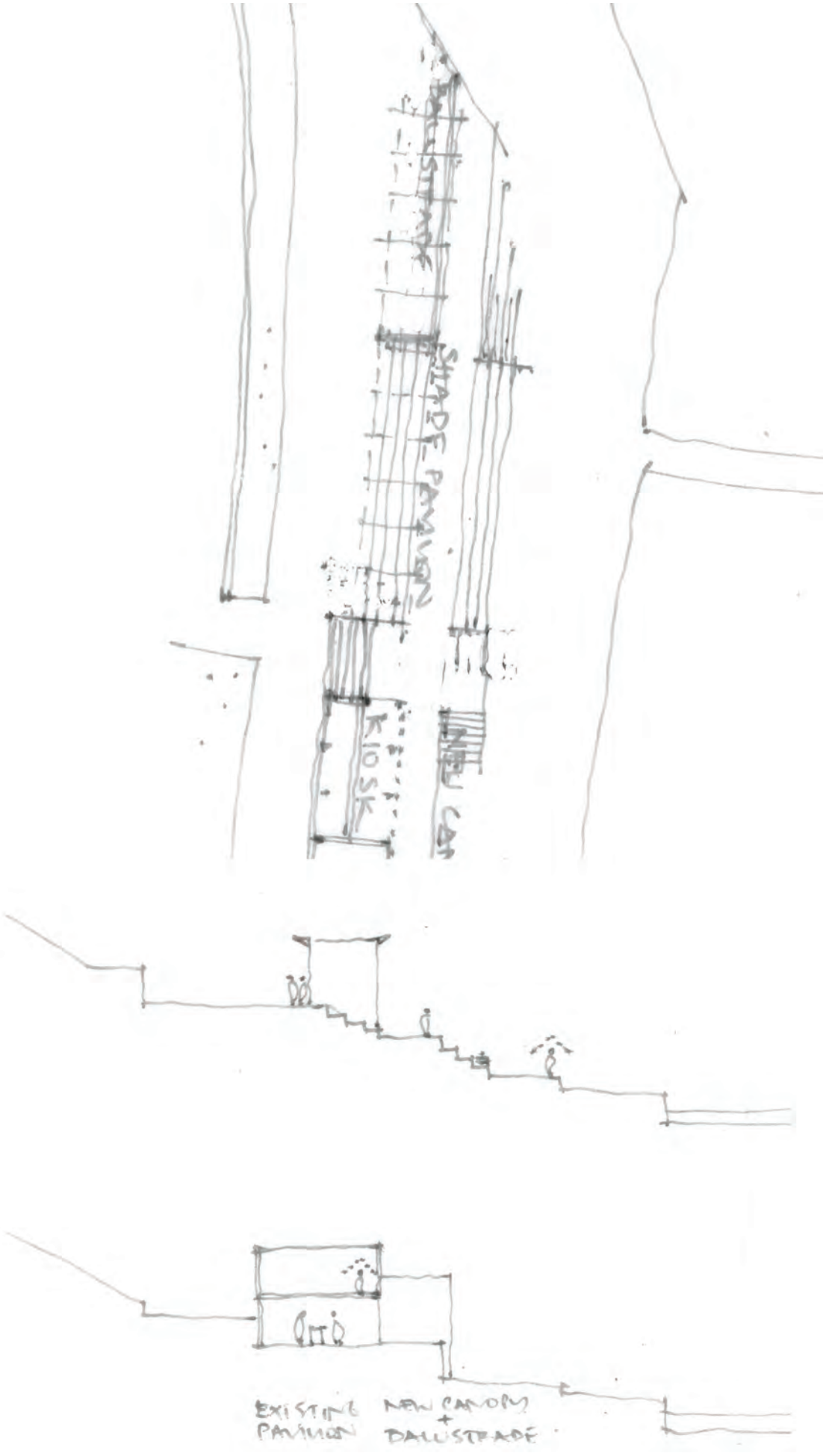

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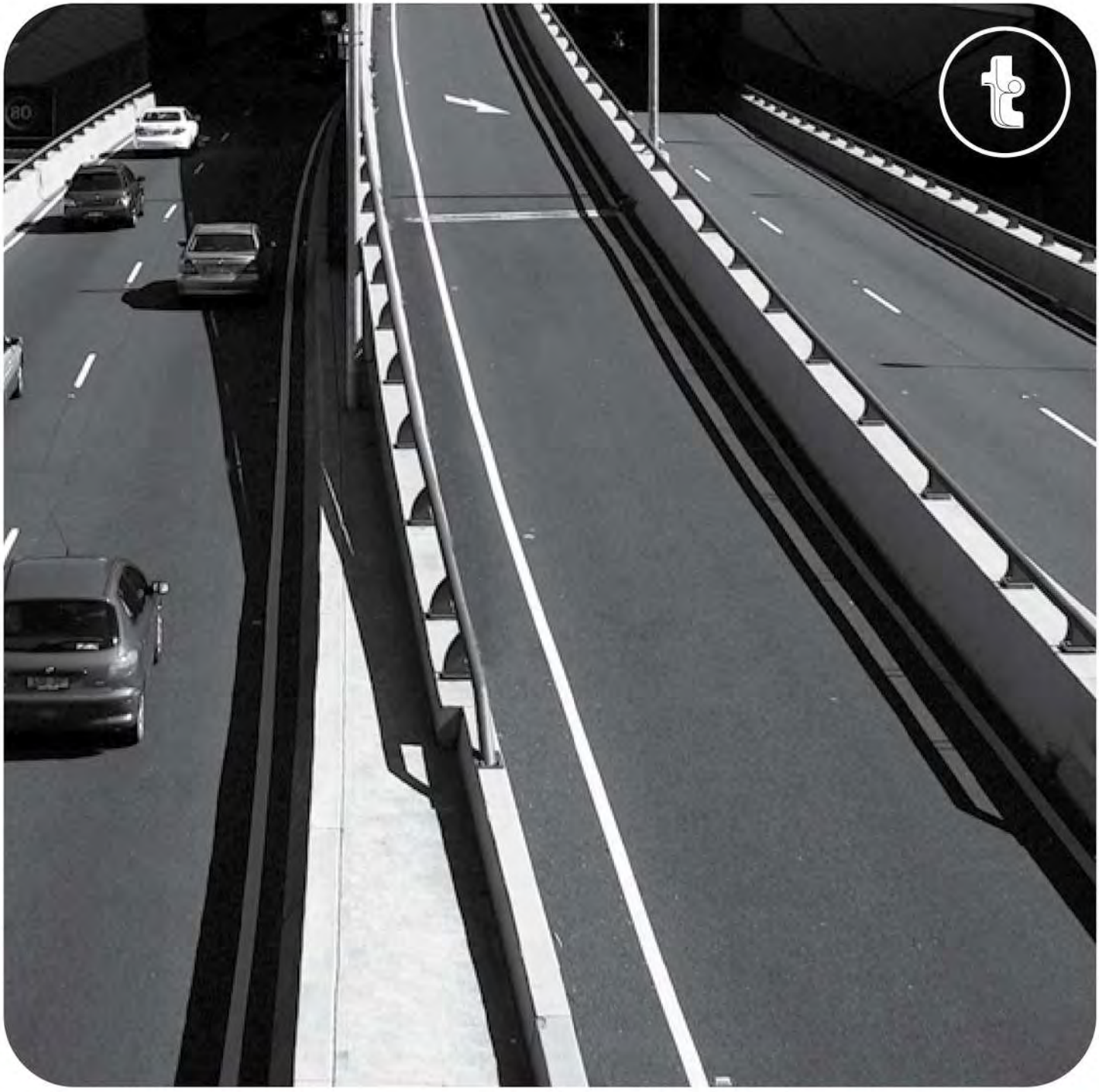
Baths Pavilion Options

aE.03

Preliminary draft - 25 November 2009

F TRAFFIC ANALYSIS + RECOMMENDATIONS



traffic assessment

merewether beach reserves public domain plan

prepared on behalf of Newcastle city council by TRAFFIX traffic & transport planners
ref: 09173 preliminary report version 1, February 2010

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traffic & transport planners

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contents

1. introduction

TRAFFIX has been commissioned by Newcastle City Council to undertake traffic investigations in support of the Merewether Beach Reserves Public Domain Plan, as part of a team of consultants under the co-ordination of JILA (Jane Irwin Landscape Architecture). To date, extensive investigations have been undertaken to assess the current traffic and parking conditions within the study area and to also review the traffic impacts arising from the proposed changes under the Draft Public Domain Plan. The Draft Plan has evolved through an extensive process of consultation and investigation and is currently on public exhibition to obtain wider public comment, with a view to its finalisation. This will include a strategy for its staged implementation.

This preliminary report provides a brief summary of the nature and scope of investigations undertaken to date and is intended as a technical appendix to the main exhibition materials. It is proposed that following the public exhibition process and any subsequent revisions, a more comprehensive report will be provided detailing the traffic implications of the final Public Domain Plan, once adopted by Council.

2. Investigations to date

Investigations have been undertaken into existing traffic, parking and pedestrian conditions, to provide an understanding of how vehicles and pedestrians currently move through the study area. These have included:

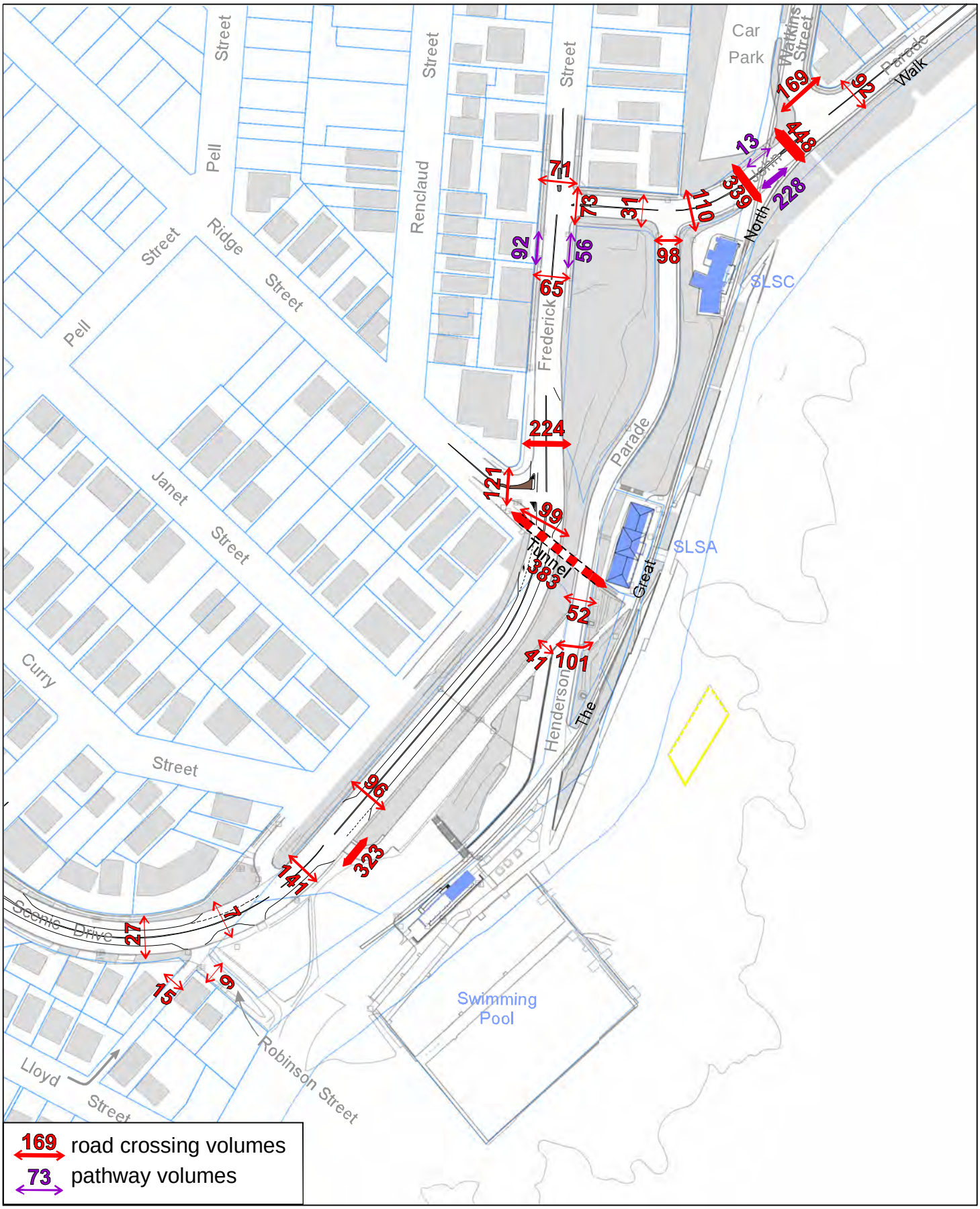
- Surveys of existing pedestrian volumes on a typical bust Sunday during the summer months, to identify key desire lines and to inform the need for improved pedestrian facilities. The summary results of these surveys are provided graphically in **figure 1** which relate to volumes over a 5 hour survey period between 10am and 3pm. The full results are provided for reference purposes in **appendix b**;

- Surveys of traffic conditions at all critical intersections to assess their current performance during the critical evening on-street commuter peak period on a typical weekday. The maximum volumes surveyed occurred between 4.45 and 5.45pm and these volumes are shown graphically in figure 2. The performance of these intersections was assessed using a computer model knows as SIDRA and the modelled results are provided in **appendix a**. All intersections were found to operate satisfactorily, with only moderate delays. This means that there is no existing traffic capacity impediment that would undermine the implementation of the Draft Plan;

- The only significant change under the Draft Plan that will affect traffic movement (and intersection performance) is the proposal to introduce one-way northbound flow in John Parade between Watkins Street and the access to the Dixon Street public car park. This enables substantial pedestrian and bicycle improvements to be implemented along the beachfront. The southbound traffic that is redirected as a result of this change has been assigned onto the road network and creates no adverse impacts at any intersection, as also shown in **appendix a**;

- The current high demand for parking within the study area at peak times (on weekends) is acknowledged and has been observed throughout the surveys mentioned above. Accordingly, notwithstanding that urban design improvements of the nature and scale proposed would ordinarily result in some loss of parking, the Draft Plan essentially maintains the existing parking supply, so that the improvements are 'parking neutral'. This will be quantifies as the plan evolves, as it will be subject to community input;

- The resultant Draft Plan is provided in **appendix c** for ease of reference.



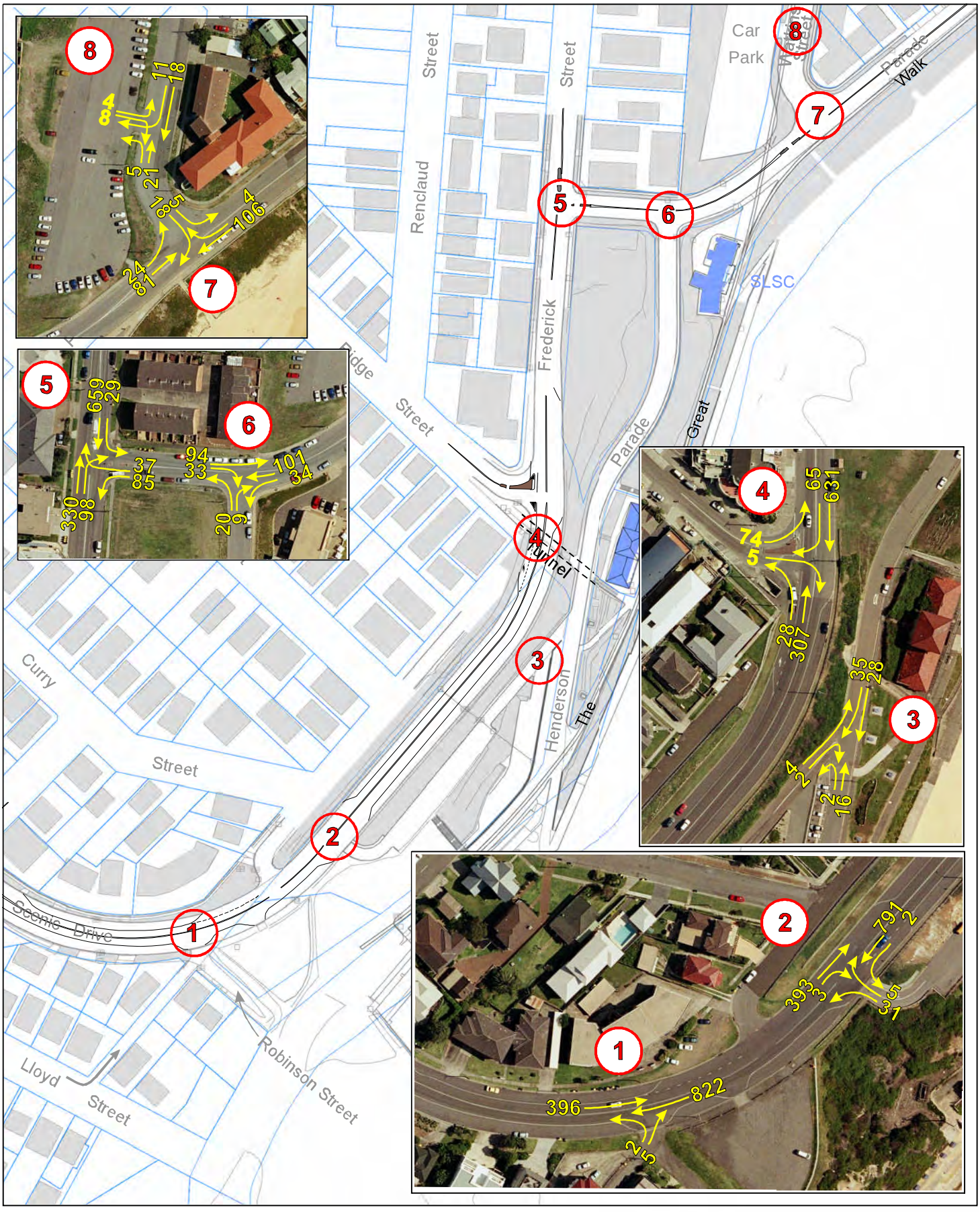
N

0 100m

impact assessment: public domain plan
merewether beach

figure 1
pedestrian volumes: sunday 22/11/09 10am - 3pm

prepared on behalf of Newcastle City Council
by **Traffix traffic & transport planners**



Source: UBD 2008

N

0 100m

impact assessment: public domain plan
merewether beach

figure 2
peak pm vehicle volumes: weekday 4:45-5:45

prepared on behalf of Newcastle City Council
by **Traffix traffic & transport planners**

3. principles underpinning draft plan

The Draft Urban Domain Plan has been prepared on the basis of extensive investigations across all disciplines and is presented in **appendix c**. With regard to the traffic planning principles associated with the Plan, the following key issues have been assessed and are discussed briefly below.

- Traffic Management Objectives

The Merewether Beach Reserves Public Domain Plan is focussed primarily on improving the visual appearance, urban amenity, useability and access to the range of public facilities that are situated within the precinct. In order to achieve these objectives, there is a need firstly to understand how people, cars and traffic use the area currently. Only then can the affects of any changes be assessed and weighed against the public benefits that are planned to be achieved.

Accordingly, extensive surveys of existing traffic and pedestrian movements within and through the study area have been undertaken at critical (peak) times. The proposals now under consideration have been assessed in order to ensure that they not only accommodate these movements, but also respond to existing deficiencies.

- Traffic Management Proposals

The main traffic change relates to the introduction of a one-way northbound flow in Johns Parade, between Watkins Street and the existing access to the Dixon Street car park. This is intended to remove some traffic from the beachfront, providing an opportunity to provide a substantially improved and widened pedestrian footpath, as well as cycle facilities. This also creates an opportunity to reduce traffic volumes and conflicts across Johns Parade at its intersection with Watkins Street. The effects of the re-routing of southbound traffic that the one-way system creates has been investigated in detail and can be accommodated onto alternate routes.

The second main change relates to the proposed closure of the northern part of Henderson Parade in the vicinity of the Surf Club; and the introduction of a new connection onto Frederick Street. This enables the integration of open space to create a continuous, uninterrupted open space/pedestrian connection between Frederick Street and the beachfront. This is supported by the proposed one-way movement of traffic in Henderson Parade between its new junction with Frederick Street and the existing car park access opposite upper Frederick Street, in the vicinity of the swimming pool (which is currently used for both entry and exit movements). This results in

improved pedestrian safety along Henderson Parade, as well as reducing vehicle conflicts that presently occur along this entire route.

The third main changes relate to the creation of a slow speed environment within the entire study area. This is achieved by the introduction of a roundabout at the intersection of Frederick Street and Johns Parade, as well as the introduction of right-angled parking in Frederick Street immediately south of Johns Parade. There is also a proposed flush-paved median in Scenic Drive and Frederick Street, which will have the effect of visually narrowing the road and providing opportunities for pedestrians to cross more safely. These measures, in conjunction with the judicious use of kerb blisters and landscaping generally, are intended to create a more attractive physical road environment where lower speeds will be self-enforcing.

- Parking

The need to maintain parking supply within the beachfront precinct is acknowledged in principle as a general objective, as this parking is heavily utilised at peak times. In addition, it is considered to be undesirable to displace parking demands (which will increase over time) into residential areas. With most comparable studies, the achievement of significant ur5ban design improvements usually results in a loss of parking and this is generally an unavoidable consequence. In this case however, more efficient use is being made of the Watkins Street car park, while angled parking also achieves a greater parking yield that parallel parking. Finally, existing parallel parking is generally maintained. Accordingly, the overall parking supply is expected to remain unchanged and the scheme is essentially 'parking neutral'.

- Public Transport

Existing public transport services are maintained and the opportunity has been taken to introduce bus shelters on both sides of Frederick Street in the vicinity of the commercial centre. (??)

- Access to Facilities

The proposed changes maintain access to all existing facilities, though with an improved level of safety through reduced traffic conflicts and more effective control of vehicular access to the beachfront. Service vehicle access will be maintained to all properties. Specific improvements include the one-way flow arrangement in Henderson Parade, the control of access to The Great North Walk using bollards, and the construction of a viewing platform in the Robertson Street car park, with the car park itself remain an informal area for use by cars as well as truck drivers.

- Pedestrians

Pedestrian safety and amenity is achieved by the above measures, based on the premise that slow vehicle speeds must be the main priority. Specific improvements relate to the introduction of a 'differential treatment' (such as a coarse aggregate finish) in Johns Parade immediately south of Watkins Street to caution drivers that this is a 'special' precinct, the provision of pedestrian crossings in Johns Parade and Frederick Street (with the removal of the existing Ridge Street tunnel) and the creation of a gateway treatment in Scenic Drive on approach to Lloyd Street, to caution and slow drivers approaching down the steep gradient. All kerb blisters, including refuge islands at the proposed roundabout, are intended to provide safer informal crossings and provide pedestrians with improved visibility.

4. conclusions

The above assessment provides a very preliminary overview of the nature and scope of investigations undertaken to date as well as the traffic planning principles that have been adopted which guide the Draft Plan. These should not be considered in isolation, but rather in the context of the broader urban design improvements that are the fundamental aim of the study.

It is expected that following the public exhibition period, the Draft Plan will be finalised for adoption by Council, taking due regard of all public submissions.

appendix a

sidra intersection analysis

(existing and future)

SIDRA INTERSECTION

Movement Summary

watkins st. carpark (8)

EX - TUES PM

Give-way

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (m)	Prop. Queued	Eff. Stop Rate	Aver Speed (km/h)
Watkins St. (south)										
1	L	5	16.7	0.016	18.0	LOS B	0	0.00	0.89	20.3
2	T	22	4.3	0.016	0.0	LOS A	0	0.00	0.00	50.0
Approach		**29**	**6.9**	**0.016**	**3.7**	**LOS A**		**0.00**	**0.18**	**42.0**
Watkins St. (north)										
8	T	19	5.0	0.016	0.1	LOS A	1	0.07	0.00	49.4
9	R	12	8.3	0.016	18.1	LOS B	1	0.10	0.82	42.0
Approach		**32**	**6.2**	**0.016**	**6.8**	**LOS A**	**1**	**0.08**	**0.31**	**46.5**
Carpark (west)										
10	L	4	20.0	0.017	1.4	LOS A	1	0.14	0.27	21.4
12	R	8	11.1	0.017	1.3	LOS A	1	0.14	0.27	21.1
Approach		**14**	**14.3**	**0.017**	**1.3**	**LOS A**	**1**	**0.14**	**0.27**	**21.2**
All Vehicles		**75**	**8.0**	**0.017**	**4.6**	**Not Applicable**	**1**	**0.06**	**0.25**	**42.9**

Symbols which may appear in this table:

Following Degree of Saturation
x = 1.00 for Short Lane with resulting Excess Flow
* x = 1.00 due to minimum capacity

Following LOS
- Based on density for continuous movements

Following Queue
- Density for continuous movement

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SIDRA INTERSECTION

Movement Summary

watkins st. carpark (8)

EX - SUN mid

Give-way

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (m)	Prop. Queued	Eff. Stop Rate	Aver Speed (km/h)
Watkins St. (south)										
1	L	55	1.8	0.055	18.0	LOS B	0	0.00	0.89	20.3
2	T	49	2.0	0.055	0.0	LOS A	0	0.00	0.00	50.0
Approach		**104**	**1.9**	**0.055**	**9.5**	**LOS A**		**0.00**	**0.47**	**31.8**
Watkins St. (north)										
8	T	83	2.4	0.048	0.3	LOS A	2	0.17	0.00	48.4
9	R	18	5.3	0.048	18.4	LOS B	2	0.22	0.79	41.8
Approach		**102**	**2.9**	**0.048**	**3.7**	**LOS A**	**2**	**0.18**	**0.15**	**47.2**
Carpark (west)										
10	L	55	1.8	0.080	1.8	LOS A	3	0.20	0.31	21.0
12	R	20	4.8	0.080	1.6	LOS A	3	0.20	0.33	20.7
Approach		**76**	**2.6**	**0.080**	**1.7**	**LOS A**	**3**	**0.20**	**0.31**	**20.9**
All Vehicles		**282**	**2.5**	**0.080**	**5.3**	**Not Applicable**	**3**	**0.12**	**0.31**	**39.8**

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Following Degree of Saturation
x = 1.00 for Short Lane with resulting Excess Flow
* x = 1.00 due to minimum capacity

Following LOS
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Following Queue
- Density for continuous movement

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SIDRA INTERSECTION

Movement Summary

John Pd. and Watkins St. (7)

FU - TUES PM

Give-way

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (m)	Prop. Queued	Eff. Stop Rate	Aver Speed (km/h)
Watkins St. (north)										
9	R	42	2.4	0.054	7.5	LOS A	2	0.26	0.60	42.3
Approach		**42**	**2.4**	**0.054**	**7.5**	**LOS A**	**2**	**0.26**	**0.60**	**42.3**
John Pd. (west)										
10	L	25	3.8	0.059	8.3	LOS A	0	0.00	0.67	49.0
11	T	85	2.3	0.059	0.0	LOS A	0	0.00	0.00	50.0
Approach		**112**	**2.7**	**0.059**	**1.9**	**LOS A**		**0.00**	**0.15**	**49.7**
All Vehicles		**154**	**2.6**	**0.059**	**3.5**	**Not Applicable**	**2**	**0.07**	**0.28**	**47.5**

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Following Degree of Saturation
x = 1.00 for Short Lane with resulting Excess Flow
* x = 1.00 due to minimum capacity

Following LOS
- Based on density for continuous movements

Following Queue
- Density for continuous movement

SIDRA SOLUTIONS

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SIDRA INTERSECTION

Movement Summary

John Pd. and Watkins St. (7)

EX - TUES PM

Give-way

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (m)	Prop. Queued	Eff. Stop Rate	Aver Speed (km/h)
John Pd. (east)										
5	T	117	1.7	0.067	0.5	LOS A	4	0.27	0.00	47.6
6	R	6	14.3	0.067	8.9	LOS A	4	0.27	0.62	47.7
Approach		**124**	**2.4**	**0.067**	**1.0**	**LOS A**	**4**	**0.27**	**0.04**	**47.6**
Watkins St. (north)										
7	L	5	16.7	0.007	7.0	LOS A	0	0.21	0.56	42.5
9	R	15	6.7	0.024	8.9	LOS A	1	0.39	0.63	41.2
Approach		**21**	**9.5**	**0.024**	**8.4**	**LOS A**	**1**	**0.34**	**0.61**	**41.6**
John Pd. (west)										
10	L	24	4.0	0.061	8.3	LOS A	0	0.00	0.67	49.0
11	T	89	2.2	0.061	0.0	LOS A	0	0.00	0.00	50.0
Approach		**115**	**2.6**	**0.061**	**1.8**	**LOS A**		**0.00**	**0.15**	**49.8**
All Vehicles		**260**	**3.1**	**0.067**	**1.9**	**Not Applicable**	**4**	**0.16**	**0.13**	**48.0**

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Following LOS
- Based on density for continuous movements

Following Queue
- Density for continuous movement

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SIDRA INTERSECTION

Movement Summary

John Pd. and Watkins St. (7)

EX - SUN mid

Give-way

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (m)	Prop. Queued	Eff. Stop Rate	Aver Speed (km/h)
John Pd. (east)										
5	T	301	2.0	0.178	1.6	LOS A	12	0.48	0.00	45.9
6	R	22	4.3	0.178	10.0	LOS A	12	0.48	0.71	46.9
Approach		**324**	**2.2**	**0.178**	**2.2**	**LOS A**	**12**	**0.48**	**0.05**	**46.0**
Watkins St. (north)										
7	L	27	3.6	0.032	7.9	LOS A	1	0.36	0.62	42.0
9	R	65	1.5	0.196	16.2	LOS B	7	0.68	0.88	36.0
Approach		**93**	**2.2**	**0.196**	**13.7**	**LOS A**	**7**	**0.58**	**0.81**	**37.6**
John Pd. (west)										
10	L	64	1.6	0.162	8.3	LOS A	0	0.00	0.67	49.0
11	T	245	2.0	0.162	0.0	LOS A	0	0.00	0.00	50.0
Approach		**309**	**1.9**	**0.162**	**1.7**	**LOS A**		**0.00**	**0.14**	**49.8**
All Vehicles		**726**	**2.1**	**0.196**	**3.5**	**Not Applicable**	**12**	**0.29**	**0.18**	**46.2**

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Following Queue
- Density for continuous movement

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Movement Summary

John Pd. and Henderson Pd. (6)

EX - TUES PM

Give-way

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (m)	Prop. Queued	Eff. Stop Rate	Aver Speed (km/h)
Henderson Pd. (south)										
1	L	21	4.5	0.038	7.7	LOS A	1	0.27	0.57	38.9
3	R	9	10.0	0.038	7.8	LOS A	1	0.27	0.64	38.8
Approach		**32**	**6.2**	**0.038**	**7.8**	**LOS A**	**1**	**0.27**	**0.60**	**38.9**
John Pd. (east)										
4	L	36	2.8	0.020	6.5	LOS A	0	0.00	0.61	43.3
5	T	106	1.9	0.055	0.0	LOS A	0	0.00	0.00	50.0
Approach		**142**	**2.1**	**0.055**	**1.6**	**LOS A**		**0.00**	**0.15**	**48.1**
John Pd. (west)										
11	T	99	2.0	0.079	0.6	LOS A	4	0.27	0.00	41.3
12	R	35	2.9	0.079	7.3	LOS A	4	0.27	0.61	28.2
Approach		**134**	**2.2**	**0.079**	**2.3**	**LOS A**	**4**	**0.27**	**0.16**	**36.8**
All Vehicles		**308**	**2.6**	**0.079**	**2.6**	**Not Applicable**	**4**	**0.14**	**0.20**	**44.7**

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Following Queue
- Density for continuous movement

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Movement Summary

John Pd. and Henderson Pd. (6)

EX - SUN mid

Give-way

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (m)	Prop. Queued	Eff. Stop Rate	Aver Speed (km/h)
Henderson Pd. (south)										
1	L	27	3.6	0.149	13.6	LOS A	5	0.59	0.74	33.4
3	R	33	3.0	0.149	13.7	LOS A	5	0.59	0.84	33.3
Approach		**61**	**3.3**	**0.149**	**13.6**	**LOS A**	**5**	**0.59**	**0.80**	**33.3**
John Pd. (east)										
4	L	111	1.8	0.060	6.5	LOS A	0	0.00	0.61	43.3
5	T	316	1.9	0.164	0.0	LOS A	0	0.00	0.00	50.0
Approach		**425**	**1.9**	**0.164**	**1.7**	**LOS A**		**0.00**	**0.16**	**48.1**
John Pd. (west)										
11	T	255	2.0	0.216	2.5	LOS A	15	0.55	0.00	34.9
12	R	78	2.6	0.215	9.2	LOS A	15	0.55	0.76	26.0
Approach		**333**	**2.1**	**0.216**	**4.1**	**LOS A**	**15**	**0.55**	**0.18**	**32.3**
All Vehicles		**819**	**2.1**	**0.216**	**3.5**	**Not Applicable**	**15**	**0.27**	**0.21**	**43.6**

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Following Queue
- Density for continuous movement

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SIDRA INTERSECTION

Movement Summary

Frederick St. and road above Henderson Pd.

EX - TUES PM

Give-way

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (m)	Prop. Queued	Eff. Stop Rate	Aver Speed (km/h)
Frederick St. (south)										
2	T	414	1.9	0.183	8.4	LOS A	32	0.71	0.00	41.6
3	R	3	25.0	0.182	28.2	LOS B	32	0.88	0.99	33.7
Approach		**417**	**2.2**	**0.183**	**8.6**	**LOS A**	**32**	**0.71**	**0.01**	**41.5**
East leg										
4	L	33	3.0	0.170	15.7	LOS B	5	0.79	0.85	11.1
6	R	5	16.7	0.171	15.6	LOS B	5	0.79	0.84	11.0
Approach		**39**	**5.1**	**0.170**	**15.6**	**LOS B**	**5**	**0.79**	**0.85**	**11.1**
Frederick St. (north)										
7	L	2	33.3	0.002	17.9	LOS B	0	0.00	0.89	41.0
8	T	833	2.0	0.433	0.0	LOS A	0	0.00	0.00	50.0
Approach		**836**	**2.2**	**0.433**	**0.1**	**LOS A**		**0.00**	**0.00**	**50.0**
All Vehicles		**1292**	**2.2**	**0.433**	**3.3**	**Not Applicable**	**32**	**0.25**	**0.03**	**46.0**

Symbols which may appear in this table:

Following Degree of Saturation
x = 1.00 for Short Lane with resulting Excess Flow
* x = 1.00 due to minimum capacity

Following LOS
- Based on density for continuous movements

Following Queue
- Density for continuous movement

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SIDRA INTERSECTION

Movement Summary

Frederick St. and road above Henderson Pd.

EX - SUN mid

Give-way

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (m)	Prop. Queued	Eff. Stop Rate	Aver Speed (km/h)
Frederick St. (south)										
2	T	429	2.1	0.194	1.9	LOS A	16	0.46	0.00	46.1
3	R	13	7.7	0.194	20.3	LOS B	16	0.57	0.85	39.5
Approach		**443**	**2.3**	**0.194**	**2.4**	**LOS A**	**16**	**0.46**	**0.03**	**45.9**
East leg										
4	L	62	1.6	0.390	13.7	LOS A	16	0.70	0.98	11.8
6	R	69	1.4	0.390	13.7	LOS A	16	0.70	1.02	11.7
Approach		**131**	**1.5**	**0.389**	**13.7**	**LOS A**	**16**	**0.70**	**1.00**	**11.7**
Frederick St. (north)										
7	L	2	33.3	0.002	17.9	LOS B	0	0.00	0.89	41.0
8	T	398	2.0	0.207	0.0	LOS A	0	0.00	0.00	50.0
Approach		**401**	**2.2**	**0.207**	**0.1**	**LOS A**		**0.00**	**0.01**	**49.9**
All Vehicles		**975**	**2.2**	**0.390**	**3.0**	**Not Applicable**	**16**	**0.30**	**0.15**	**44.2**

Symbols which may appear in this table:

Following Degree of Saturation
x = 1.00 for Short Lane with resulting Excess Flow
* x = 1.00 due to minimum capacity

Following LOS
- Based on density for continuous movements

Following Queue
- Density for continuous movement

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SIDRA INTERSECTION

Movement Summary

Ridge St. and Frederick St.

EX - TUES PM

Give-way

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (m)	Prop. Queued	Eff. Stop Rate	Aver Speed (km/h)
Frederick St. (south)										
1	L	36	2.8	0.020	6.5	LOS A	0	0.00	0.61	30.8
2	T	337	0.9	0.173	0.0	LOS A	0	0.00	0.00	50.0
Approach		**372**	**1.1**	**0.173**	**0.6**	**LOS A**		**0.00**	**0.06**	**49.2**
Frederick St. (north)										
8	T	674	1.0	0.357	2.2	LOS A	32	0.50	0.00	45.7
9	R	80	1.2	0.357	9.3	LOS A	32	0.63	0.78	40.8
Approach		**754**	**1.1**	**0.357**	**2.9**	**LOS A**	**32**	**0.51**	**0.08**	**45.2**
Ridge St. (west)										
10	L	77	1.3	0.094	11.3	LOS A	3	0.42	0.91	40.0
Approach		**77**	**1.3**	**0.094**	**11.3**	**LOS A**	**3**	**0.42**	**0.91**	**40.0**
All Vehicles		**1203**	**1.1**	**0.357**	**2.7**	**Not Applicable**	**32**	**0.35**	**0.13**	**45.9**

Symbols which may appear in this table:

Following Degree of Saturation
x = 1.00 for Short Lane with resulting Excess Flow
* x = 1.00 due to minimum capacity

Following LOS
- Based on density for continuous movements

Following Queue
- Density for continuous movement

SIDRA SOLUTIONS

Site: EX TUES PM
T:\Traffix\2009\09173\Modelling\7 december\09 173 frederick st - ridge st (4).aap
Processed Dec 10, 2009 04:20:08PM

A18385, TRAFFIX, Small Office
Produced by SIDRA Intersection 3.2.2.1563

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SIDRA INTERSECTION

Movement Summary

Ridge St. and Frederick St.

EX - SUN mid

Give-way

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (m)	Prop. Queued	Eff. Stop Rate	Aver Speed (km/h)
Frederick St. (south)										
1	L	55	1.8	0.030	6.5	LOS A	0	0.00	0.61	30.8
2	T	423	1.9	0.220	0.0	LOS A	0	0.00	0.00	50.0
Approach		**478**	**1.9**	**0.220**	**0.7**	**LOS A**		**0.00**	**0.07**	**49.0**
Frederick St. (north)										
8	T	421	1.9	0.323	2.5	LOS A	26	0.45	0.00	46.1
9	R	149	2.0	0.323	10.2	LOS A	26	0.63	0.85	40.2
Approach		**570**	**1.9**	**0.323**	**4.5**	**LOS A**	**26**	**0.50**	**0.22**	**44.4**
Ridge St. (west)										
10	L	136	2.2	0.186	12.3	LOS A	6	0.50	0.95	39.4
Approach		**136**	**2.2**	**0.186**	**12.3**	**LOS A**	**6**	**0.50**	**0.95**	**39.4**
All Vehicles		**1184**	**1.9**	**0.323**	**3.9**	**Not Applicable**	**26**	**0.30**	**0.24**	**45.4**

Symbols which may appear in this table:

Following Degree of Saturation
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* x = 1.00 due to minimum capacity

Following LOS
- Based on density for continuous movements

Following Queue
- Density for continuous movement

SIDRA SOLUTIONS

Site: EX SUN mid
T:\Traffix\2009\09173\Modelling\7 december\09 173 frederick st - ridge st (4).aap
Processed Dec 10, 2009 04:20:08PM

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SIDRA INTERSECTION

Movement Summary

John St. and Frederck St. (5)

FU - TUES PM

Give-way

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (m)	Prop. Queued	Eff. Stop Rate	Aver Speed (km/h)
Frederick St. (south)										
2	T	347	2.0	0.323	5.9	LOS A	29	0.57	0.00	43.8
3	R	103	1.9	0.323	16.4	LOS B	29	0.93	1.05	35.8
Approach		**450**	**2.0**	**0.323**	**8.3**	**LOS A**	**29**	**0.66**	**0.24**	**41.6**
John St. (east)										
4	L	42	2.4	0.525	40.6	LOS C	19	0.91	1.09	25.3
6	R	39	2.6	0.520	40.8	LOS C	19	0.91	1.08	25.2
Approach		**81**	**2.5**	**0.522**	**40.7**	**LOS C**	**19**	**0.91**	**1.09**	**25.2**
Frederick St. (north)										
7	L	31	3.2	0.425	6.5	LOS A	0	0.00	0.61	43.3
8	T	786	2.0	0.426	0.0	LOS A	0	0.00	0.00	50.0
Approach		**818**	**2.1**	**0.426**	**0.2**	**LOS A**		**0.00**	**0.02**	**49.7**
All Vehicles		**1349**	**2.1**	**0.525**	**5.4**	**Not Applicable**	**29**	**0.27**	**0.16**	**44.3**

Symbols which may appear in this table:

Following Degree of Saturation
x = 1.00 for Short Lane with resulting Excess Flow
* x = 1.00 due to minimum capacity

Following LOS
- Based on density for continuous movements

Following Queue
- Density for continuous movement

SIDRA SOLUTIONS

Site: FU - TUES PM
T:\Traffix\2009\09173\Modelling\7 december\09 173 frederick st - john pd (5).aap
Processed Dec 14, 2009 05:29:40PM

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SIDRA INTERSECTION

Movement Summary

John St. and Frederck St. (5)

EX - TUES PM

Give-way

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (m)	Prop. Queued	Eff. Stop Rate	Aver Speed (km/h)
Frederick St. (south)										
2	T	347	2.0	0.295	4.7	LOS A	26	0.54	0.00	44.9
3	R	103	1.9	0.295	14.1	LOS A	26	0.82	1.00	37.3
Approach		**450**	**2.0**	**0.295**	**6.8**	**LOS A**	**26**	**0.60**	**0.23**	**42.9**
John St. (east)										
4	L	89	2.2	0.533	28.3	LOS B	22	0.86	1.10	29.8
6	R	39	2.6	0.534	28.5	LOS C	22	0.86	1.08	29.6
Approach		**129**	**2.3**	**0.533**	**28.4**	**LOS B**	**22**	**0.86**	**1.10**	**29.7**
Frederick St. (north)										
7	L	31	3.2	0.378	6.5	LOS A	0	0.00	0.61	43.3
8	T	694	2.0	0.378	0.0	LOS A	0	0.00	0.00	50.0
Approach		**725**	**2.1**	**0.378**	**0.3**	**LOS A**		**0.00**	**0.03**	**49.7**
All Vehicles		**1304**	**2.1**	**0.534**	**5.3**	**Not Applicable**	**26**	**0.29**	**0.20**	**44.3**

Symbols which may appear in this table:

Following Degree of Saturation
x = 1.00 for Short Lane with resulting Excess Flow
* x = 1.00 due to minimum capacity

Following LOS
- Based on density for continuous movements

Following Queue
- Density for continuous movement

SIDRA SOLUTIONS

Site: EX - TUES PM
T:\Traffix\2009\09173\Modelling\7 december\09 173 frederick st - john pd (5).aap
Processed Dec 10, 2009 04:09:51PM

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SIDRA INTERSECTION

Movement Summary

John St. and Frederck St. (5)

EX - SUN mid

Give-way

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (m)	Prop. Queued	Eff. Stop Rate	Aver Speed (km/h)
Frederick St. (south)										
2	T	403	2.0	0.463	2.6	LOS A	38	0.37	0.00	46.7
3	R	297	2.0	0.463	11.8	LOS A	38	0.71	1.01	38.9
Approach		**700**	**2.0**	**0.463**	**6.5**	**LOS A**	**38**	**0.51**	**0.43**	**43.1**
John St. (east)										
4	L	255	2.0	0.729	25.3	LOS B	52	0.75	1.35	31.1
6	R	43	2.3	0.729	25.6	LOS B	52	0.75	1.23	30.9
Approach		**298**	**2.0**	**0.729**	**25.3**	**LOS B**	**52**	**0.75**	**1.33**	**31.1**
Frederick St. (north)										
7	L	60	1.7	0.252	6.5	LOS A	0	0.00	0.61	43.3
8	T	423	1.9	0.252	0.0	LOS A	0	0.00	0.00	50.0
Approach		**483**	**1.9**	**0.252**	**0.8**	**LOS A**		**0.00**	**0.08**	**49.1**
All Vehicles		**1481**	**2.0**	**0.729**	**8.4**	**Not Applicable**	**52**	**0.39**	**0.50**	**41.5**

Symbols which may appear in this table:

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* x = 1.00 due to minimum capacity

Following LOS
- Based on density for continuous movements

Following Queue
- Density for continuous movement

SIDRA SOLUTIONS

Site: EX - SUN mid
T:\Traffix\2009\09173\Modelling\7 december\09 173 frederick st - john pd (5).aap
Processed Dec 10, 2009 04:09:50PM

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appendix b

survey data

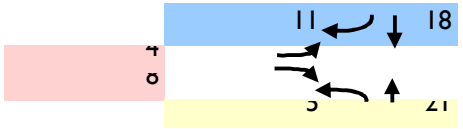
Curtis Traffic Surveys

Turning movement count

Job: 0911031x
Day, date: Tue 24 Nov 09
Location: 8 Watkins St & car park
Weather: Intermittent drizzle
Client: Traffix

N

Peak Hour Volumes



Banned movement

Time Period	From Watkins St north		From car park		From Watkins St south		movements	
	Through	Right	Left	Right	Left	Through		
15:00 to 15:15	1	0	0	0	0	11	12	
15:15 to 15:30	5	0	0	0	0	10	15	
15:30 to 15:45	0	0	0	0	0	0	0	
15:45 to 16:00	0	0	0	1	0	0	1	
16:00 to 16:15	9	0	0	0	0	9	18	
16:15 to 16:30	5	2	0	0	0	5	12	
16:30 to 16:45	3	3	0	0	0	3	9	
16:45 to 17:00	5	0	1	1	2	7	16	
17:00 to 17:15	4	5	0	1	0	3	13	
17:15 to 17:30	4	3	1	2	3	4	17	
17:30 to 17:45	5	3	2	4	0	7	21	Peak
17:45 to 18:00	2	0	1	0	0	2	5	
Hourly Summary	43	16	5	9	5	61		
15:00 to 16:00	6	0	0	1	0	21	28	
15:15 to 16:15	14	0	0	1	0	19	34	
15:30 to 16:30	14	2	0	1	0	14	31	
15:45 to 16:45	17	5	0	1	0	17	40	
16:00 to 17:00	22	5	1	1	2	24	55	
16:15 to 17:15	17	10	1	2	2	18	50	
16:30 to 17:30	16	11	2	4	5	17	55	
16:45 to 17:45	18	11	4	8	5	21	67	Peak Hour
17:00 to 18:00	15	11	4	7	3	16	56	

Curtis Traffic Surveys

Turning movement count

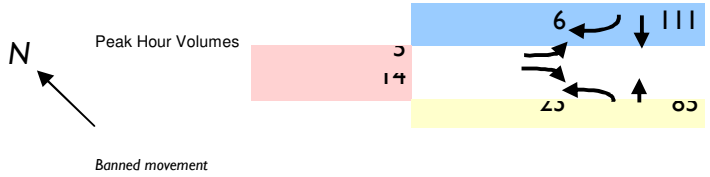
Job: 0911031x

Day, date: Tue 24 Nov 09

Location: 7 John Pd & Watkins St

Weather: Intermittent drizzle

Client: Traffix



Time Period	From John Pd north		From Watkins St		From John Pd south		movements	
	Through	Right	Left	Right	Left	Through		
15:00 to 15:15	12	1	1	0	2	8	24	
15:15 to 15:30	9	0	2	3	2	14	30	
15:30 to 15:45	15	0	0	0	1	11	27	
15:45 to 16:00	17	0	0	1	3	10	31	
16:00 to 16:15	22	1	1	8	3	12	47	
16:15 to 16:30	16	0	1	4	6	12	39	
16:30 to 16:45	16	3	0	2	6	11	38	
16:45 to 17:00	22	1	1	5	2	13	44	
17:00 to 17:15	30	1	3	3	7	24	68	
17:15 to 17:30	23	0	0	4	6	19	52	
17:30 to 17:45	31	2	1	6	9	25	74	Peak
17:45 to 18:00	27	3	1	1	1	17	50	
Hourly Summary	240	12	11	37	48	176		
15:00 to 16:00	53	1	3	4	8	43	112	
15:15 to 16:15	63	1	3	12	9	47	135	
15:30 to 16:30	70	1	2	13	13	45	144	
15:45 to 16:45	71	4	2	15	18	45	155	
16:00 to 17:00	76	5	3	19	17	48	168	
16:15 to 17:15	84	5	5	14	21	60	189	
16:30 to 17:30	91	5	4	14	21	67	202	
16:45 to 17:45	106	4	5	18	24	81	238	
17:00 to 18:00	111	6	5	14	23	85	244	Peak Hour

Curtis Traffic Surveys

Turning movement count

Job: 0911031x

Day, date: Tue 24 Nov 09

Location: 6 John Rd & Henderson Rd

Weather: Intermittent drizzle

Client: Traffix

N

Peak Hour Volumes: 94 / 33 / 20 / 9 / 101 / 34

Time Period	From John Rd west		From Henderson Rd		From John Rd east		movements	
	Through	Right	Left	Right	Left	Through		
15:00 to 15:15	9	3	2	1	3	10	28	
15:15 to 15:30	6	3	1	0	2	9	21	
15:30 to 15:45	11	4	1	2	5	11	34	
15:45 to 16:00	10	5	2	2	7	12	38	
16:00 to 16:15	14	3	3	2	9	21	52	
16:15 to 16:30	19	4	2	3	4	17	49	
16:30 to 16:45	18	2	2	3	4	13	42	
16:45 to 17:00	22	7	7	1	7	23	67	
17:00 to 17:15	20	9	2	2	6	26	65	
17:15 to 17:30	28	10	4	2	8	23	75	
17:30 to 17:45	24	7	7	4	13	29	84	Peak
17:45 to 18:00	14	5	2	3	3	28	55	
Hourly Summary	195	62	35	25	71	222		
15:00 to 16:00	36	15	6	5	17	42	121	
15:15 to 16:15	41	15	7	6	23	53	145	
15:30 to 16:30	54	16	8	9	25	61	173	
15:45 to 16:45	61	14	9	10	24	63	181	
16:00 to 17:00	73	16	14	9	24	74	210	
16:15 to 17:15	79	22	13	9	21	79	223	
16:30 to 17:30	88	28	15	8	25	85	249	
16:45 to 17:45	94	33	20	9	34	101	291	Peak Hour
17:00 to 18:00	86	31	15	11	30	106	279	

Curtis Traffic Surveys

Turning movement count

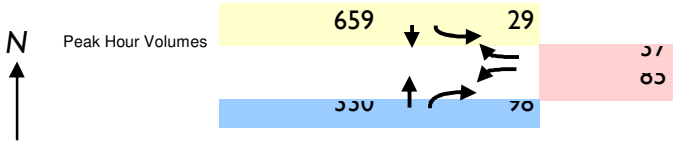
Job: 0911031x

Day, date: Tue 24 Nov 09

Location: S Frederick St & John Pd

Weather: Intermittent drizzle

Client: Traffix



Time Period	From Frederick St south		From John Pd		From Frederick St north		movements	
	Through	Right	Left	Right	Left	Through		
15:00 to 15:15	39	4	8	6	8	72	137	
15:15 to 15:30	42	4	6	9	7	67	135	
15:30 to 15:45	49	7	7	5	8	53	129	
15:45 to 16:00	44	6	8	6	9	46	119	
16:00 to 16:15	50	4	12	10	13	92	181	
16:15 to 16:30	60	17	10	9	6	98	200	
16:30 to 16:45	66	13	9	6	7	100	201	
16:45 to 17:00	82	20	22	8	9	110	251	
17:00 to 17:15	74	23	21	8	6	179	311	
17:15 to 17:30	80	30	18	9	8	205	350	Peak
17:30 to 17:45	94	25	24	12	6	165	326	
17:45 to 18:00	82	15	24	6	4	107	238	
Hourly Summary	762	168	169	94	91	1294		
15:00 to 16:00	174	21	29	26	32	238	520	
15:15 to 16:15	185	21	33	30	37	258	564	
15:30 to 16:30	203	34	37	30	36	289	629	
15:45 to 16:45	220	40	39	31	35	336	701	
16:00 to 17:00	258	54	53	33	35	400	833	
16:15 to 17:15	282	73	62	31	28	487	963	
16:30 to 17:30	302	86	70	31	30	594	1113	
16:45 to 17:45	330	98	85	37	29	659	1238	Peak Hour
17:00 to 18:00	330	93	87	35	24	656	1225	

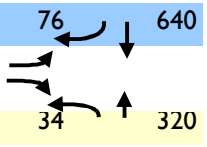
Curtis Traffic Surveys

Turning movement count

Job: 091105tx
Day, date: Tue 24 Nov 09
Location: 4 Frederick St & Ridge St
Weather: intermittent drizzle
Client: Traffix

N

Peak Hour Volumes



Banned movement

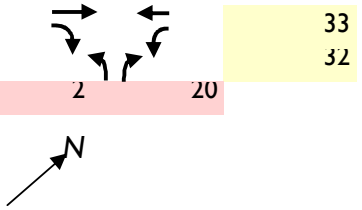
Time Period	From Frederick St south		From Ridge St		From Frederick St north		movements	
	Through	Right	Left	Right	Left	Through		
15:00 to 15:15	67	11	12	0	5	37	132	
15:15 to 15:30	74	9	12	1	6	39	141	
15:30 to 15:45	84	10	16	1	8	57	176	
15:45 to 16:00	59	17	14	2	4	49	145	
16:00 to 16:15	105	15	19	4	6	54	203	
16:15 to 16:30	84	8	14	3	7	67	183	
16:30 to 16:45	97	13	16	1	7	74	208	
16:45 to 17:00	89	6	13	2	1	56	167	
17:00 to 17:15	179	14	21	0	9	81	304	
17:15 to 17:30	205	18	17	1	15	75	331	Peak
17:30 to 17:45	158	27	23	2	3	95	308	
17:45 to 18:00	98	17	12	0	7	69	203	
Hourly Summary	1299	165	189	17	78	753		
15:00 to 16:00	284	47	54	4	23	182	594	
15:15 to 16:15	322	51	61	8	24	199	665	
15:30 to 16:30	332	50	63	10	25	227	707	
15:45 to 16:45	345	53	63	10	24	244	739	
16:00 to 17:00	375	42	62	10	21	251	761	
16:15 to 17:15	449	41	64	6	24	278	862	
16:30 to 17:30	570	51	67	4	32	286	1010	
16:45 to 17:45	631	65	74	5	28	307	1110	
17:00 to 18:00	640	76	73	3	34	320	1146	Peak Hour

Curtis Traffic Surveys

Turning movement count

Job:	091105tx
Day, date	Tue 24 Nov 09
Location:	3 Henderson Pd & continuation
Weather:	Intermittent drizzle
Client:	Traffix

Peak Hour Volumes: 5 | 33 / 1 | 32 / 2 | 20



Time Period	From road above Henderson Pd: Through	Right	Henderson Pd south: Left	Right	Henderson Pd east: Left	Through	movements	
15:00 to 15:15	2	0	0	1	1	2	6	
15:15 to 15:30	0	0	1	0	0	3	4	
15:30 to 15:45	1	0	0	0	2	4	7	
15:45 to 16:00	0	1	0	2	2	5	10	
16:00 to 16:15	0	1	0	2	4	5	12	
16:15 to 16:30	1	1	1	6	5	7	21	
16:30 to 16:45	2	0	0	1	1	6	10	
16:45 to 17:00	0	1	0	4	6	6	17	
17:00 to 17:15	1	1	1	2	7	7	19	
17:15 to 17:30	2	0	1	4	7	13	27	Peak
17:30 to 17:45	1	0	0	6	8	9	24	
17:45 to 18:00	1	0	0	8	10	4	23	
Hourly Summary	11	5	4	36	53	71		
15:00 to 16:00	3	1	1	3	5	14	27	
15:15 to 16:15	1	2	1	4	8	17	33	
15:30 to 16:30	2	3	1	10	13	21	50	
15:45 to 16:45	3	3	1	11	12	23	53	
16:00 to 17:00	3	3	1	13	16	24	60	
16:15 to 17:15	4	3	2	13	19	26	67	
16:30 to 17:30	5	2	2	11	21	32	73	
16:45 to 17:45	4	2	2	16	28	35	87	
17:00 to 18:00	5	1	2	20	32	33	93	Peak Hour

Curtis Traffic Surveys

Turning movement count

Job: 091105tx

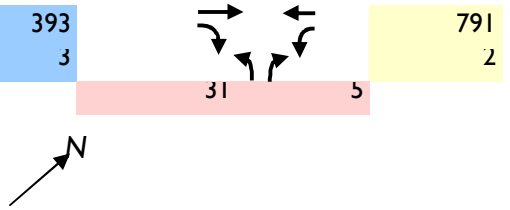
Day, date: Tue 24 Nov 09

Location: 2 Frederick St & road above Henderson Pd

Weather: Intermittent drizzle

Client: Traffix

Peak Hour Volumes: 393 (3) | 31 | 5 | 791 (2)



Time Period	From Scenic Dr Through	From Scenic Dr Right	From road above Henderson Pd Left	From road above Henderson Pd Right	From Frederick St Left	From Frederick St Through	movements	
15:00 to 15:15	42	1	2	0	1	66	112	
15:15 to 15:30	38	0	3	1	0	71	113	
15:30 to 15:45	45	0	4	0	1	65	115	
15:45 to 16:00	58	0	4	1	1	68	132	
16:00 to 16:15	39	0	4	1	1	98	143	
16:15 to 16:30	63	1	6	2	1	94	167	
16:30 to 16:45	72	2	7	0	0	112	193	
16:45 to 17:00	89	0	5	0	1	124	219	
17:00 to 17:15	112	2	6	1	0	208	329	
17:15 to 17:30	95	1	11	3	1	248	359	Peak
17:30 to 17:45	97	0	9	1	0	211	318	
17:45 to 18:00	101	0	2	2	1	109	215	
Hourly Summary	851	7	63	12	8	1474		
15:00 to 16:00	183	1	13	2	3	270	472	
15:15 to 16:15	180	0	15	3	3	302	503	
15:30 to 16:30	205	1	18	4	4	325	557	
15:45 to 16:45	232	3	21	4	3	372	635	
16:00 to 17:00	263	3	22	3	3	428	722	
16:15 to 17:15	336	5	24	3	2	538	908	
16:30 to 17:30	368	5	29	4	2	692	1100	
16:45 to 17:45	393	3	31	5	2	791	1225	Peak Hour
17:00 to 18:00	405	3	28	7	2	776	1221	

Curtis Traffic Surveys

Turning movement count

Job: 091105tx

Day, date: Tue 24 Nov 09

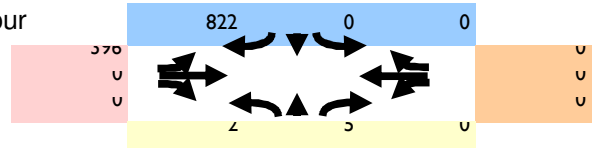
Location: T Scenic Dr, Robinson St & Lloyd St

Weather: Intermittent drizzle

Client: Traffix

All motor vehicles *Derived from adjacent site*

Peak Hour



Derived from adjacent site

Time Period	From Frederick St left to Lloyd	From Frederick St left to Robinson	From Frederick St to Scenic Dr	From Scenic Dr to Frederick St	From Scenic Dr to Robinson St	From Scenic Dr to Lloyd St	From Lloyd St to Scenic Dr	From Lloyd St to Frederick St	From Lloyd St to Robinson St	From Robinson St to Lloyd St	From Robinson St to Scenic Dr	From Robinson St to Frederick St	Total vehicle movements	
15:00 to 15:15	0	0	68	43	0	0	0	1	0	0	0	1	113	
15:15 to 15:30	0	0	74	38	0	0	0	0	0	0	0	0	112	
15:30 to 15:45	0	0	69	45	0	0	0	0	0	0	0	0	114	
15:45 to 16:00	0	0	72	58	0	0	0	3	0	0	1	2	136	
16:00 to 16:15	0	0	102	39	0	0	0	0	0	0	0	1	142	
16:15 to 16:30	0	1	100	64	0	0	0	3	0	0	0	2	170	
16:30 to 16:45	0	0	119	74	0	0	2	2	0	0	0	1	198	
16:45 to 17:00	0	0	129	89	0	0	0	1	0	0	0	0	219	
17:00 to 17:15	0	0	214	114	0	0	1	2	0	0	0	0	331	
17:15 to 17:30	0	0	259	96	0	0	0	1	0	0	0	0	356	Peak
17:30 to 17:45	0	0	220	97	0	0	1	1	0	0	0	0	319	
17:45 to 18:00	0	0	111	101	0	0	0	0	0	0	0	0	212	
Totals	0	1	1537	858	0	0	4	14	0	0	1	7		
15:00 to 16:00	0	0	283	184	0	0	0	4	0	0	1	3	475	
15:15 to 16:15	0	0	317	180	0	0	0	3	0	0	1	3	504	
15:30 to 16:30	0	1	343	206	0	0	0	6	0	0	1	5	562	
15:45 to 16:45	0	1	393	235	0	0	2	8	0	0	1	6	646	
16:00 to 17:00	0	1	450	266	0	0	2	6	0	0	0	4	729	
16:15 to 17:15	0	1	562	341	0	0	3	8	0	0	0	3	918	
16:30 to 17:30	0	0	721	373	0	0	3	6	0	0	0	1	1104	
16:45 to 17:45	0	0	822	396	0	0	2	5	0	0	0	0	1225	Peak Hour
17:00 to 18:00	0	0	804	408	0	0	2	4	0	0	0	0	1218	

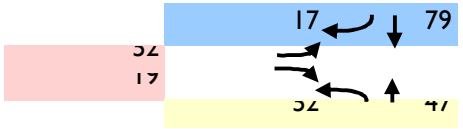
Curtis Traffic Surveys

Turning movement count

Job: 09110316x
Day, date: Sun 22 Nov 09
Location: 6 Watkins St & car park
Weather: Fine, hot
Client: Traffix

N

Peak Hour Volumes



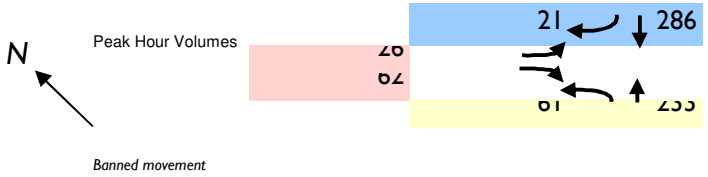
Banned movement

Time Period	From Watkins St north		From car park		From Watkins St south		movements	
	Through	Right	Left	Right	Left	Through		
10:00 to 10:15	16	2	6	2	6	9	41	
10:15 to 10:30	14	0	16	3	11	11	55	
10:30 to 10:45	29	3	21	6	19	16	94	Peak
10:45 to 11:00	12	6	12	4	13	7	58	
11:00 to 11:15	14	4	6	4	7	7	46	
11:15 to 11:30	24	4	13	3	7	13	68	
11:30 to 11:45	13	4	14	4	11	7	57	
11:45 to 12:00	13	6	14	6	12	13	64	
12:00 to 12:15	10	3	13	4	7	7	48	
12:15 to 12:30	21	4	13	3	6	12	61	
12:30 to 12:45	17	2	12	3	6	14	56	
12:45 to 13:00	13	2	10	3	10	11	49	
13:00 to 13:15	19	6	12	6	13	7	67	
13:15 to 13:30	17	2	11	2	6	10	48	
13:30 to 13:45	13	3	19	1	7	17	62	
13:45 to 14:00	14	2	6	4	2	3	33	
14:00 to 14:15	12	4	11	4	6	3	42	
14:15 to 14:30	13	13	8	4	12	7	61	
14:30 to 14:45	10	4	7	3	14	7	51	
14:45 to 15:00	10	2	7	1	7	3	34	
Hourly Summary	310	78	233	78	192	202		
10:00 to 11:00	71	11	55	15	31	43	248	
10:15 to 11:15	87	13	55	17	34	43	253	
10:30 to 11:30	77	17	52	19	32	47	266	
10:45 to 11:45	63	18	43	17	44	40	229	
11:00 to 12:00	66	18	47	17	41	44	235	
11:15 to 12:15	62	17	36	17	37	44	237	
11:30 to 12:30	57	17	36	17	36	43	230	
11:45 to 12:45	61	15	34	20	31	48	229	
12:00 to 13:00	61	11	30	17	29	46	214	
12:15 to 13:15	70	16	47	17	37	44	233	
12:30 to 13:30	66	14	43	16	37	42	220	
12:45 to 13:45	64	13	32	12	38	43	226	
13:00 to 14:00	63	13	48	13	30	37	210	
13:15 to 14:15	58	11	47	11	21	37	185	
13:30 to 14:30	56	22	44	13	27	36	198	
13:45 to 14:45	51	23	34	17	34	26	187	
14:00 to 15:00	47	23	33	14	41	28	188	

Curtis Traffic Surveys

Turning movement count

Job: 0911031x
Day, date: Sun 22 Nov 09
Location: 7 John Pd & Watkins St
Weather: Fine, Hot
Client: Traffix



Time Period	From John Pd north: Through	Right	From Watkins St: Left	Right	From John Pd south: Left	Through	movements	
10:00 to 10:15	27	3	7	10	16	32	97	
10:15 to 10:30	34	7	3	27	26	10	111	
10:30 to 10:45	16	3	7	7	7	15	61	
10:45 to 11:00	33	4	1	12	13	27	94	
11:00 to 11:15	60	6	7	13	16	48	150	
11:15 to 11:30	61	6	3	11	13	65	159	
11:30 to 11:45	74	4	3	14	16	40	151	
11:45 to 12:00	87	17	6	17	10	64	203	
12:00 to 12:15	40	3	1	4	7	31	86	
12:15 to 12:30	33	7	4	7	10	44	120	
12:30 to 12:45	33	3	7	12	13	37	131	
12:45 to 13:00	32	6	6	12	17	36	131	
13:00 to 13:15	71	4	3	11	12	63	168	
13:15 to 13:30	44	4	7	10	10	44	121	
13:30 to 13:45	100	11	17	21	17	71	259	Peak
13:45 to 14:00	66	6	0	16	16	34	140	
14:00 to 14:15	63	7	3	4	11	37	140	
14:15 to 14:30	33	7	6	21	13	31	130	
14:30 to 14:45	37	3	3	7	16	37	127	
14:45 to 15:00	33	4	1	7	10	25	84	
Hourly Summary	1087	106	103	249	281	857		
10:00 to 11:00	110	23	20	36	66	86	363	
10:15 to 11:15	143	24	20	61	66	102	416	
10:30 to 11:30	170	21	20	43	53	133	464	
10:45 to 11:45	228	20	16	30	60	180	554	
11:00 to 12:00	284	33	21	33	53	213	663	
11:15 to 12:15	264	30	13	46	46	178	599	
11:30 to 12:30	236	26	14	42	43	177	560	
11:45 to 12:45	237	23	18	40	42	178	540	
12:00 to 13:00	200	14	18	33	31	130	468	
12:15 to 13:15	231	13	22	42	36	164	550	
12:30 to 13:30	222	17	27	43	36	164	551	
12:45 to 13:45	267	23	37	54	60	236	679	
13:00 to 14:00	283	23	31	38	37	234	688	
13:15 to 14:15	273	23	27	31	36	226	660	
13:30 to 14:30	266	21	26	27	61	233	689	
13:45 to 14:45	243	13	12	30	36	161	557	
14:00 to 15:00	210	11	13	43	32	172	501	

Curtis Traffic Surveys

Turning movement count

Job: 0911031x

Day, date: Sun 22 Nov 09

Location: S John Rd & Henderson Rd

Weather: Fine, Hot

Client: Traffix

N

Peak Hour Volumes: 242 (74) | 300 (105) | 26 | 31

Time Period	From John Rd west: Through	From John Rd west: Right	From Henderson Rd: Left	From Henderson Rd: Right	From John Rd east: Left	From John Rd east: Through	movements	
10:00 to 10:15	19	8	3	4	8	17	61	
10:15 to 10:30	41	16	4	4	24	63	152	
10:30 to 10:45	44	17	6	7	26	30	154	
10:45 to 11:00	43	16	7	3	17	36	132	
11:00 to 11:15	37	13	3	6	26	60	147	
11:15 to 11:30	79	23	8	7	33	84	234	Peak
11:30 to 11:45	44	14	7	7	29	70	171	
11:45 to 12:00	36	20	6	7	28	78	197	
12:00 to 12:15	63	17	3	6	13	66	176	
12:15 to 12:30	78	14	4	7	29	50	182	
12:30 to 12:45	33	10	3	4	20	47	139	
12:45 to 13:00	46	12	3	4	18	80	167	
13:00 to 13:15	41	13	3	3	24	36	142	
13:15 to 13:30	31	17	4	7	23	31	133	
13:30 to 13:45	43	14	7	3	17	46	134	
13:45 to 14:00	43	11	4	6	21	36	145	
14:00 to 14:15	37	17	6	7	26	43	160	
14:15 to 14:30	34	16	3	11	23	47	158	
14:30 to 14:45	32	16	7	10	24	34	163	
14:45 to 15:00	30	20	7	8	23	32	160	
Hourly Summary	1004	316	110	129	458	1134		
10:00 to 11:00	149	61	24	20	77	188	519	
10:15 to 11:15	167	66	22	22	75	231	605	
10:30 to 11:30	203	73	26	23	104	232	687	
10:45 to 11:45	203	70	27	23	107	272	704	
11:00 to 12:00	216	72	24	27	116	272	749	
11:15 to 12:15	242	74	26	31	105	300	778	
11:30 to 12:30	241	65	22	31	101	266	726	
11:45 to 12:45	232	61	18	26	92	243	694	
12:00 to 13:00	244	53	17	23	82	243	664	
12:15 to 13:15	222	47	17	18	91	233	630	
12:30 to 13:30	195	54	17	18	83	234	603	
12:45 to 13:45	183	56	21	17	84	233	598	
13:00 to 14:00	180	57	20	21	87	211	576	
13:15 to 14:15	178	63	21	25	87	176	594	
13:30 to 14:30	201	60	22	27	87	176	597	
13:45 to 14:45	210	64	22	34	94	204	628	
14:00 to 15:00	215	73	23	36	96	176	643	

Curtis Traffic Surveys

Turning movement count

Job: 091103tx

Day, date: Sun 22 Nov 09

Location: S Frederick St & John Rd

Weather: Fine, Hot

Client: Traffix

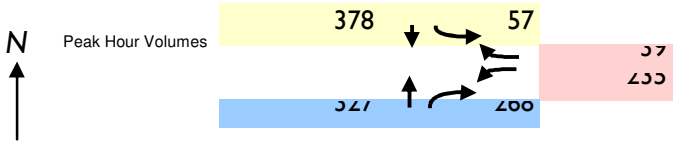


diagram wrong

Time Period	From Frederick St south		From John Rd		From Frederick St north		movements	
	Through	Right	Left	Right	Left	Through		
10:00 to 10:15	56	22	17	8	11	32	146	
10:15 to 10:30	78	31	31	8	10	52	210	
10:30 to 10:45	81	63	66	15	12	62	299	
10:45 to 11:00	97	63	31	0	0	62	311	
11:00 to 11:15	102	78	62	15	14	89	360	
11:15 to 11:30	87	62	31	8	10	80	298	
11:30 to 11:45	88	57	61	11	12	103	314	
11:45 to 12:00	94	62	52	12	7	101	330	
12:00 to 12:15	87	63	57	8	12	87	318	
12:15 to 12:30	78	60	41	8	13	85	285	
12:30 to 12:45	124	75	70	15	23	127	474	Peak
12:45 to 13:00	87	48	43	10	11	81	282	
13:00 to 13:15	83	60	30	8	14	77	272	
13:15 to 13:30	87	52	57	0	10	83	287	
13:30 to 13:45	57	43	48	12	7	83	234	
13:45 to 14:00	74	41	42	8	12	77	252	
14:00 to 14:15	73	52	42	10	4	81	244	
14:15 to 14:30	83	67	62	17	16	88	295	
14:30 to 14:45	71	41	41	12	7	88	240	
14:45 to 15:00	88	47	38	12	8	37	232	
Hourly Summary	1581	1115	986	205	227	1539		
10:00 to 11:00	312	181	165	39	41	228	966	
10:15 to 11:15	358	237	210	46	44	285	1180	
10:30 to 11:30	367	260	230	46	44	313	1260	
10:45 to 11:45	354	264	223	42	44	334	1283	
11:00 to 12:00	351	261	226	46	45	373	1302	
11:15 to 12:15	356	248	223	37	45	373	1260	
11:30 to 12:30	327	248	213	37	48	378	1247	
11:45 to 12:45	383	262	247	41	57	402	1407	
12:00 to 13:00	376	268	233	37	57	382	1359	
12:15 to 13:15	354	263	226	37	61	370	1313	
12:30 to 13:30	343	233	224	37	56	366	1285	
12:45 to 13:45	278	203	180	34	44	306	1045	
13:00 to 14:00	263	176	177	30	45	302	1015	
13:15 to 14:15	275	188	169	34	55	266	987	
13:30 to 14:30	271	203	172	45	41	271	1025	
13:45 to 14:45	263	203	167	45	41	272	1031	
14:00 to 15:00	277	207	163	31	37	254	1011	

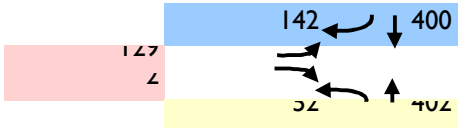
Curtis Traffic Surveys

Turning movement count

Job: 0911031x
Day, date: Sun 22 Nov 09
Location: 4 Frederick St & Ridge St
Weather: Fine, hot
Client: Traffix

N

Peak Hour Volumes



Banned movement

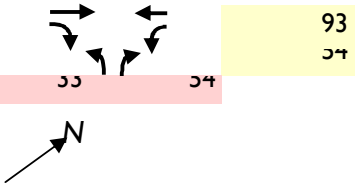
Time Period	From Frederick St south		From Ridge St		From Frederick St north		movements	
	Through	Right	Left	Right	Left	Through		
10:00 to 10:15	83	17	27	2	6	61	196	
10:15 to 10:30	80	23	32	1	7	67	210	
10:30 to 10:45	77	37	37	0	6	66	267	
10:45 to 11:00	104	26	40	2	10	48	230	
11:00 to 11:15	106	31	32	1	12	102	284	
11:15 to 11:30	111	33	36	0	12	111	325	Peak
11:30 to 11:45	76	30	17	0	7	87	239	
11:45 to 12:00	104	32	37	0	12	87	274	
12:00 to 12:15	71	40	36	0	7	71	267	
12:15 to 12:30	104	33	28	1	17	111	294	
12:30 to 12:45	101	37	28	1	14	111	292	
12:45 to 13:00	73	18	23	0	8	80	222	
13:00 to 13:15	73	24	31	0	12	73	257	
13:15 to 13:30	78	33	33	0	7	77	232	
13:30 to 13:45	67	42	28	0	10	70	237	
13:45 to 14:00	77	32	22	0	7	78	218	
14:00 to 14:15	78	21	28	0	7	71	225	
14:15 to 14:30	86	27	43	0	7	85	248	
14:30 to 14:45	102	32	36	0	10	82	264	
14:45 to 15:00	86	16	26	0	10	76	214	
Hourly Summary	1843	608	626	8	194	1716		
10:00 to 11:00	366	105	136	3	29	262	903	
10:15 to 11:15	367	117	141	4	33	303	991	
10:30 to 11:30	420	131	145	3	40	347	1106	
10:45 to 11:45	417	144	125	3	43	348	1078	
11:00 to 12:00	417	148	122	1	43	367	1122	
11:15 to 12:15	402	137	126	0	42	378	1085	
11:30 to 12:30	375	135	118	1	47	378	1054	
11:45 to 12:45	400	142	129	2	52	402	1127	
12:00 to 13:00	387	128	113	2	48	373	1075	
12:15 to 13:15	373	112	110	2	51	377	1065	
12:30 to 13:30	367	112	117	1	43	363	1003	
12:45 to 13:45	333	117	117	0	37	342	948	
13:00 to 14:00	317	131	116	0	36	340	944	
13:15 to 14:15	302	128	113	0	33	336	912	
13:30 to 14:30	310	122	123	0	31	342	928	
13:45 to 14:45	343	112	133	0	31	334	953	
14:00 to 15:00	352	96	137	0	34	332	951	

Curtis Traffic Surveys

Turning movement count

Job: 09110S1x
Day, date: Sun 22 Nov 09
Location: S Henderson Rd & continuation
Weather: Fine, Hot
Client: Traffix

Peak Hour Volumes



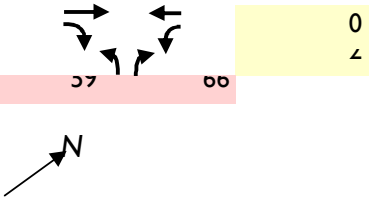
Time Period	From road above Henderson Rd		Henderson Rd south		Henderson Rd east		movements	
	Through	Right	Left	Right	Left	Through		
10:00 to 10:15	2	1	6	5	5	13	32	
10:15 to 10:30	1	0	7	5	5	20	38	
10:30 to 10:45	3	1	6	7	7	22	50	
10:45 to 11:00	2	3	6	11	11	22	57	
11:00 to 11:15	4	1	5	7	7	24	52	
11:15 to 11:30	3	1	7	12	12	27	64	Peak
11:30 to 11:45	1	2	7	10	10	23	55	
11:45 to 12:00	4	0	7	12	12	21	58	
12:00 to 12:15	2	1	5	12	12	20	52	
12:15 to 12:30	4	4	7	8	8	23	56	
12:30 to 12:45	3	1	7	10	10	18	49	
12:45 to 13:00	1	3	4	10	10	26	54	
13:00 to 13:15	1	1	7	7	7	26	49	
13:15 to 13:30	3	0	3	13	13	18	50	
13:30 to 13:45	1	1	8	8	8	20	46	
13:45 to 14:00	2	2	4	7	7	13	37	
14:00 to 14:15	2	1	8	16	16	22	63	
14:15 to 14:30	1	1	8	16	16	23	63	
14:30 to 14:45	3	4	12	10	10	17	60	
14:45 to 15:00	1	1	7	12	12	27	64	Peak
Hourly Summary	46	29	137	202	202	433		
10:00 to 11:00	8	5	27	30	30	77	177	
10:15 to 11:15	10	5	26	34	34	86	197	
10:30 to 11:30	12	6	26	41	41	93	223	
10:45 to 11:45	10	7	27	42	42	98	228	
11:00 to 12:00	12	4	30	43	43	97	229	
11:15 to 12:15	10	4	30	46	46	93	229	
11:30 to 12:30	11	7	30	42	42	89	221	
11:45 to 12:45	13	6	30	42	42	82	215	
12:00 to 13:00	10	7	23	40	40	87	211	
12:15 to 13:15	7	7	27	35	35	93	208	
12:30 to 13:30	8	5	21	40	40	88	202	
12:45 to 13:45	8	5	22	36	36	90	199	
13:00 to 14:00	7	4	22	35	35	77	182	
13:15 to 14:15	8	4	21	44	44	75	196	
13:30 to 14:30	8	5	24	47	47	80	209	
13:45 to 14:45	10	8	26	47	47	77	223	
14:00 to 15:00	7	7	33	54	54	93	250	

Curtis Traffic Surveys

Turning movement count

Job: 0911031x
Day, date: Sun 22 Nov 09
Location: 2 Frederick St & road above Henderson Rd
Weather: Fine, Hot
Client: Traffix

Peak Hour Volumes: 408 | 12 | 0 | 2 | 59 | 66



Time Period	From Scenic Dr Through	From Scenic Dr Right	From road above Henderson Rd Left	From road above Henderson Rd Right	From Frederick St Left	From Frederick St Through	movements	
10:00 to 10:15	55	4	11	6	2	0	78	
10:15 to 10:30	63	0	14	15	3	0	115	
10:30 to 10:45	79	0	17	15	1	0	112	
10:45 to 11:00	63	3	21	15	0	0	126	
11:00 to 11:15	90	3	15	6	0	0	114	
11:15 to 11:30	123	3	22	16	0	0	168	Peak
11:30 to 11:45	93	3	13	17	0	0	126	
11:45 to 12:00	92	4	13	22	1	0	132	
12:00 to 12:15	98	2	11	7	1	0	121	
12:15 to 12:30	103	6	16	11	2	0	138	
12:30 to 12:45	112	2	20	11	1	0	146	
12:45 to 13:00	80	6	13	13	1	0	113	
13:00 to 13:15	99	2	18	17	0	0	136	
13:15 to 13:30	83	2	7	7	1	0	106	
13:30 to 13:45	84	1	4	13	0	0	102	
13:45 to 14:00	106	3	13	11	1	0	138	
14:00 to 14:15	94	3	11	13	1	0	124	
14:15 to 14:30	70	1	13	11	1	0	96	
14:30 to 14:45	93	3	14	7	2	0	123	
14:45 to 15:00	91	3	18	13	1	0	128	
Hourly Summary	1821	58	286	256	19	0		
10:00 to 11:00	302	9	63	51	6	0	431	
10:15 to 11:15	337	8	67	51	4	0	467	
10:30 to 11:30	379	11	73	54	1	0	520	
10:45 to 11:45	393	14	71	56	0	0	534	
11:00 to 12:00	400	13	63	63	1	0	540	
11:15 to 12:15	408	12	59	66	2	0	547	
11:30 to 12:30	386	13	53	57	4	0	517	
11:45 to 12:45	403	14	60	53	3	0	537	
12:00 to 13:00	393	16	60	44	3	0	518	
12:15 to 13:15	394	16	67	52	4	0	533	
12:30 to 13:30	376	12	60	50	3	0	501	
12:45 to 13:45	348	11	44	52	2	0	457	
13:00 to 14:00	376	8	46	50	2	0	482	
13:15 to 14:15	371	7	37	48	3	0	470	
13:30 to 14:30	356	8	43	50	3	0	460	
13:45 to 14:45	367	10	53	48	3	0	481	
14:00 to 15:00	350	12	56	48	3	0	471	

Curtis Traffic Surveys

Turning movement count

Job: 091105tx

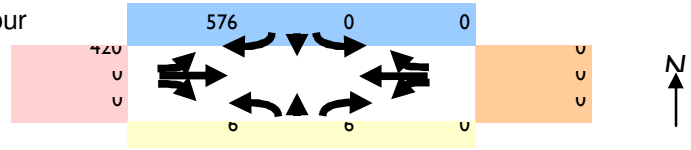
Day, date: Sun 22 Nov 09

Location: T Scenic Dr, Robinson St & Lloyd St

Weather: Fine, hot

Client: Traffix

Peak Hour



All motor vehicles — *Derived from adjacent site*

Time Period	From Frederick St: left to Lloyd	left to Robinson	to Scenic Dr	From Scenic Dr: to Frederick St	to Robinson St	to Lloyd St	From Lloyd St: to Scenic Dr	to Frederick St	to Robinson St	From Robinson St: to Lloyd St	to Scenic Dr	to Frederick St	Total vehicle movements	
10:00 to 10:15	2	1	46	59	0	0	0	0	0	0	0	0	108	
10:15 to 10:30	4	0	76	83	0	2	1	3	0	0	0	0	189	
10:30 to 10:45	4	0	73	79	0	1	1	1	0	0	0	0	181	
10:45 to 11:00	0	0	124	90	0	0	2	0	0	0	0	0	216	
11:00 to 11:15	0	0	133	93	0	0	4	1	0	0	0	0	233	
11:15 to 11:30	0	0	136	128	0	0	2	1	0	0	0	0	287	Peak
11:30 to 11:45	0	0	133	96	0	0	2	3	0	0	0	0	234	
11:45 to 12:00	0	0	149	96	0	0	1	1	0	0	0	0	247	
12:00 to 12:15	0	0	136	100	0	0	1	1	0	0	0	0	240	
12:15 to 12:30	0	0	129	109	0	0	1	1	0	0	0	0	240	
12:30 to 12:45	0	0	116	114	0	0	1	3	0	0	0	0	234	
12:45 to 13:00	0	0	123	86	0	0	3	2	0	0	0	0	216	
13:00 to 13:15	0	1	129	101	0	0	0	1	1	0	1	0	234	
13:15 to 13:30	0	0	113	87	0	0	1	0	0	0	0	0	203	
13:30 to 13:45	0	0	86	85	0	0	0	0	0	0	0	0	171	
13:45 to 14:00	0	0	120	111	0	0	2	2	0	0	0	0	235	
14:00 to 14:15	0	0	102	97	0	0	0	1	0	0	0	0	200	
14:15 to 14:30	0	0	116	71	0	0	2	2	0	0	0	0	191	
14:30 to 14:45	0	0	123	98	0	0	0	4	0	0	0	0	227	
14:45 to 15:00	0	0	113	96	0	0	2	0	0	0	0	0	213	
Totals	10	2	2350	1879	0	3	26	27	1	0	1	0		
10:00 to 11:00	10	1	381	311	0	3	4	4	0	0	0	0	694	
10:15 to 11:15	8	0	430	345	0	3	8	5	0	0	0	0	819	
10:30 to 11:30	4	0	510	370	0	1	7	5	0	0	0	0	917	
10:45 to 11:45	0	0	548	407	0	0	10	5	0	0	0	0	970	
11:00 to 12:00	0	0	573	413	0	0	9	6	0	0	0	0	1001	
11:15 to 12:15	0	0	576	420	0	0	6	6	0	0	0	0	1008	Peak Hour
11:30 to 12:30	0	0	549	401	0	0	5	6	0	0	0	0	961	
11:45 to 12:45	0	0	532	417	0	0	4	6	0	0	0	0	961	
12:00 to 13:00	0	0	508	409	0	0	6	7	0	0	0	0	930	
12:15 to 13:15	0	1	477	410	0	0	5	7	1	0	1	0	924	
12:30 to 13:30	0	1	465	388	0	0	5	6	1	0	1	0	887	
12:45 to 13:45	0	1	433	357	0	0	4	5	1	0	1	0	824	
13:00 to 14:00	0	1	430	364	0	0	5	5	1	0	1	0	843	
13:15 to 14:15	0	0	423	380	0	0	5	5	0	0	0	0	809	
13:30 to 14:30	0	0	424	364	0	0	4	5	0	0	0	0	797	
13:45 to 14:45	0	0	465	377	0	0	4	7	0	0	0	0	853	
14:00 to 15:00	0	0	458	362	0	0	4	7	0	0	0	0	831	

Curtis Traffic Surveys

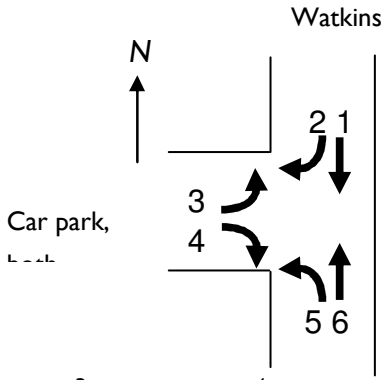
Job: 091105tx

Day, date Tue 24 Nov 09

Location: 8 Watkins St & car park

Weather: Intermittent drizzle

Surveyor Kranti



All motor vehicles

Time Start 15:00	1	2	3	4	5	6	Cars in car park
15:15	1	0	0	0	0	11	4
15:30	5	0	0	0	0	10	4
15:45	0	0	0	0	0	0	4
16:00	0	0	0	1	0	0	4
16:15	9	0	0	0	0	9	3
16:30	5	2	0	0	0	5	5
16:45	3	3	0	0	0	3	8
17:00	5	0	1	1	2	7	8
17:15	4	5	0	1	0	3	12
17:30	4	3	1	2	3	4	15
17:45	5	3	2	4	0	7	11
18:00	2	0	1	0	0	2	11
	37	16	5	9	5	40	

Curtis Traffic Surveys

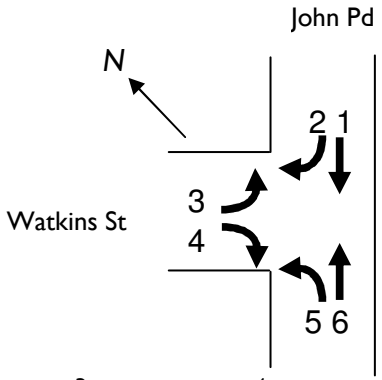
Job: 091105tx

Day, date Tue 24 Nov 09

Location: 7 John Pd & Watkins St

Weather: Intermittent drizzle

Surveyor



All motor vehicles

Time Start 15:00	1	2	3	4	5	6
15:15	12	1	1	0	2	8
15:30	9	0	2	3	2	14
15:45	15	0	0	0	1	11
16:00	17	0	0	1	3	10
16:15	22	1	1	8	3	12
16:30	16	0	1	4	6	12
16:45	16	3	0	2	6	11
17:00	22	1	1	5	2	13
17:15	30	1	3	3	7	24
17:30	23	0	0	4	6	19
17:45	31	2	1	6	9	25
18:00	27	3	1	1	1	17

Curtis Traffic Surveys

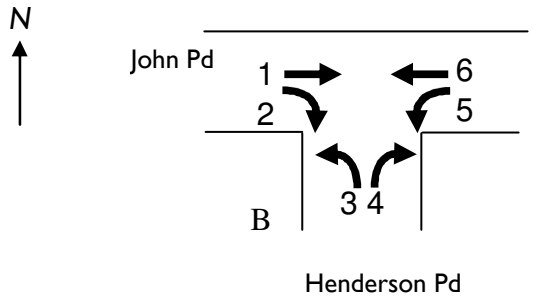
Job: 091105tx

Day, date Tue 24 Nov 09

Location: 6 John Pd & Henderson Pd

Weather: Intermittent drizzle

Surveyor



Time Start	All motor vehicles					
15:00	1	2	3	4	5	6
15:15	9	3	2	1	3	10
15:30	6	3	1	0	2	9
15:45	11	4	1	2	5	11
16:00	10	5	2	2	7	12
16:15	14	3	3	2	9	21
16:30	19	4	2	3	4	17
16:45	18	2	2	3	4	13
17:00	22	7	7	1	7	23
17:15	20	9	2	2	6	26
17:30	28	10	4	2	8	23
17:45	24	7	7	4	13	29
18:00	14	5	2	3	3	28

Curtis Traffic Surveys

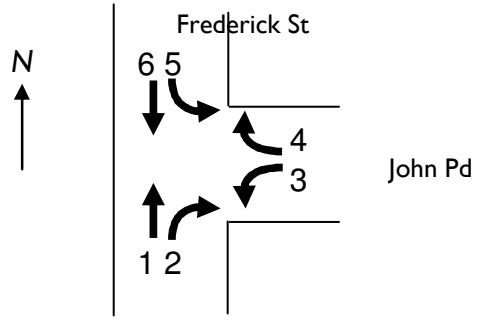
Job: 091105tx

Day, date Tue 24 Nov 09

Location: 5 Frederick St & John Pd

Weather: Intermittent drizzle

Surveyor Sandeep



All motor vehicles

Time Start 15:00	1	2	3	4	5	6
15:15	39	4	8	6	8	72
15:30	42	4	6	9	7	67
15:45	49	7	7	5	8	53
16:00	44	6	8	6	9	46
16:15	50	4	12	10	13	92
16:30	60	17	10	9	6	98
16:45	66	13	9	6	7	100
17:00	82	20	22	8	9	110
17:15	74	23	21	8	6	179
17:30	80	30	18	9	8	205
17:45	94	25	24	12	6	165
18:00	82	15	24	6	4	107

Curtis Traffic Surveys

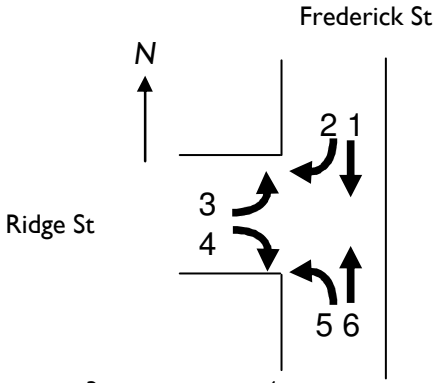
Job: 091105tx

Day, date: Tue 24 Nov 09

Location: 4 Frederick St & Ridge St

Weather: intermittent drizzle

Surveyor: Mustafa



All motor vehicles

Time Start 15:00	1	2	3	4	5	6
15:15	67	11	12	0	5	37
15:30	74	9	12	1	6	39
15:45	84	10	16	1	8	57
16:00	59	17	14	2	4	49
16:15	105	15	19	4	6	54
16:30	84	8	14	3	7	67
16:45	97	13	16	1	7	74
17:00	89	6	13	2	1	56
17:15	179	14	21	0	9	81
17:30	205	18	17	1	15	75
17:45	158	27	23	2	3	95
18:00	98	17	12	0	7	69

Curtis Traffic Surveys

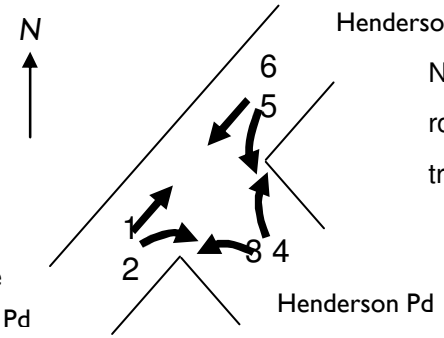
Job: 091105tx

Day, date Tue 24 Nov 09

Location: 3 Henderson Pd & continuation

Weather: Intermittent drizzle

Surveyor



Note, second car park access road above south leg of Henderson Pd treated as south leg of Henderson Pd

All motor vehicles

Time Start 15:00	1	2	3	4	5	6
15:15	2	0	0	1	1	2
15:30	0	0	1	0	0	3
15:45	1	0	0	0	2	4
16:00	0	1	0	2	2	5
16:15	0	1	0	2	4	5
16:30	1	1	1	6	5	7
16:45	2	0	0	1	1	6
17:00	0	1	0	4	6	6
17:15	1	1	1	2	7	7
17:30	2	0	1	4	7	13
17:45	1	0	0	6	8	9
18:00	1	0	0	8	10	4
	11					

Curtis Traffic Surveys

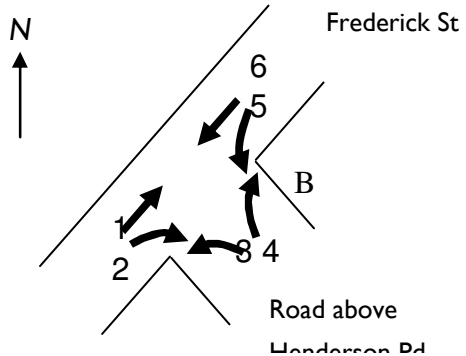
Job: 091105tx

Day, date Tue 24 Nov 09

Location: 2 Frederick St & road above Henderson Pd

Weather: Intermittent drizzle

Surveyor



All motor vehicles

Time Start 15:00	1	2	3	4	5	6
15:15	42	1	2	0	1	66
15:30	38	0	3	1	0	71
15:45	45	0	4	0	1	65
16:00	58	0	4	1	1	68
16:15	39	0	4	1	1	98
16:30	63	1	6	2	1	94
16:45	72	2	7	0	0	112
17:00	89	0	5	0	1	124
17:15	112	2	6	1	0	208
17:30	95	1	11	3	1	248
17:45	97	0	9	1	0	211
18:00	101	0	2	2	1	109

Curtis Traffic Surveys

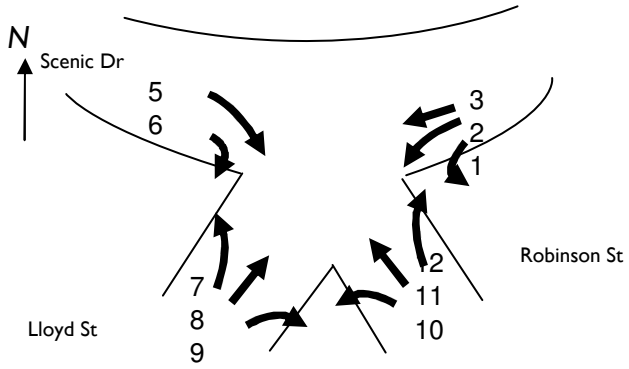
Job: 091105tx

Day, date Tue 24 Nov 09

Location: 1 Scenic Dr, Robinson St & Lloyd St

Weather: Intermittent drizzle

Surveyor



Time Start 15:00	All motor vehicles											
	1	2			5	6	7	8	9	10	11	12
15:15	0	0			0	0	0	1	0	0	0	1
15:30	0	0			0	0	0	0	0	0	0	0
15:45	0	0			0	0	0	0	0	0	0	0
16:00	0	0			0	0	0	3	0	0	1	2
16:15	0	0			0	0	0	0	0	0	0	1
16:30	0	1			0	0	0	3	0	0	0	2
16:45	0	0			0	0	2	2	0	0	0	1
17:00	0	0			0	0	0	1	0	0	0	0
17:15	0	0			0	0	1	2	0	0	0	0
17:30	0	0			0	0	0	1	0	0	0	0
17:45	0	0			0	0	1	1	0	0	0	0
18:00	0	0			0	0	0	0	0	0	0	0

Curtis Traffic Surveys

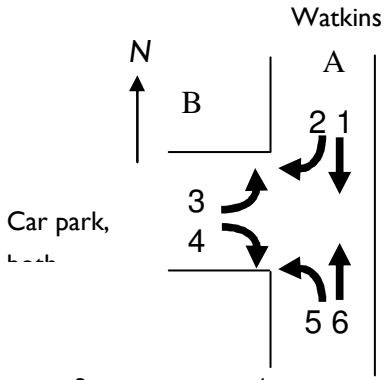
Job: 091105tx

Day, date: Sun 22 Nov 09

Location: 8 Watkins St & car park

Weather: Fine, hot

Surveyor: Kavya Yarlagadda



All motor vehicles

cars in car park derived from count

Time Start 10:00	1	2	3	4	5	6	Cars in car park	120
10:15	16	2	6	2	6	9		120
10:30	14	0	16	3	11	11		112
10:45	29	3	21	6	19	16		107
11:00	12	6	12	4	15	9	112	112
11:15	14	4	6	4	9	9		115
11:30	24	4	13	5	9	13		110
11:45	15	4	14	4	11	9		107
12:00	13	6	14	6	12	13	104	105
12:15	10	3	15	4	7	9		96
12:30	21	4	13	5	6	12		88
12:45	17	2	12	5	6	14		79
13:00	13	2	10	3	10	11	70	78
13:15	19	8	12	6	15	7		83
13:30	17	2	11	2	6	10		78
13:45	15	3	19	1	7	17	67	68
14:00	14	2	6	4	2	5		62
14:15	12	4	11	4	6	5		57
14:30	15	13	8	4	12	9		70
14:45	10	4	9	5	14	9		74
15:00	10	2	7	1	9	5	75	77

Curtis Traffic Surveys

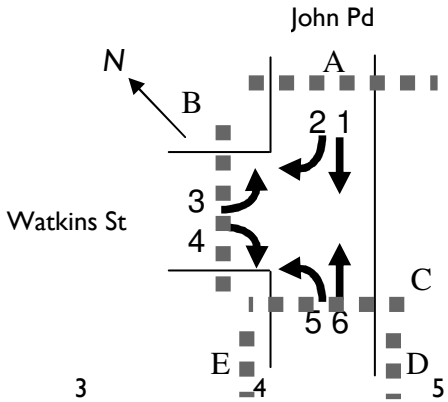
Job: 091105tx

Day, date: Sun 22 Nov 09

Location: 7 John Pd & Watkins St

Weather: Fine, Hot

Surveyor: Avinash Indupalli



Time Start	All motor vehicles						Pedestrians crossing street			walking along footpath	
10:00	1	2	3	4	5	6	A	B	C	D	E
10:15	27	5	7	10	16	32	2	5	10	10	0
10:30	34	9	5	27	26	10	9	10	15	15	2
10:45	16	5	7	9	9	15	8	5	18	21	0
11:00	33	4	1	12	15	29	0	5	19	8	0
11:15	60	6	7	13	16	48	7	15	26	10	1
11:30	61	6	5	11	13	63	6	8	15	7	0
11:45	74	4	3	14	16	40	2	15	24	13	0
12:00	89	17	6	17	10	64	6	15	28	9	0
12:15	40	3	1	4	7	31	2	5	25	6	0
12:30	53	2	4	7	10	44	3	6	36	11	1
12:45	55	3	7	12	15	39	1	10	32	10	0
13:00	52	6	6	12	19	36	3	6	34	14	0
13:15	71	4	5	11	12	65	0	8	30	18	1
13:30	44	4	9	10	10	44	7	4	42	16	1
13:45	100	11	17	21	19	91	2	0	23	15	0
14:00	68	6	0	16	16	34	8	7	22	8	2
14:15	63	2	3	4	11	57	10	23	16	6	1
14:30	55	2	6	21	15	51	8	11	11	11	0
14:45	57	3	3	9	16	39	3	6	12	7	2
15:00	35	4	1	9	10	25	5	5	10	5	1

Curtis Traffic Surveys

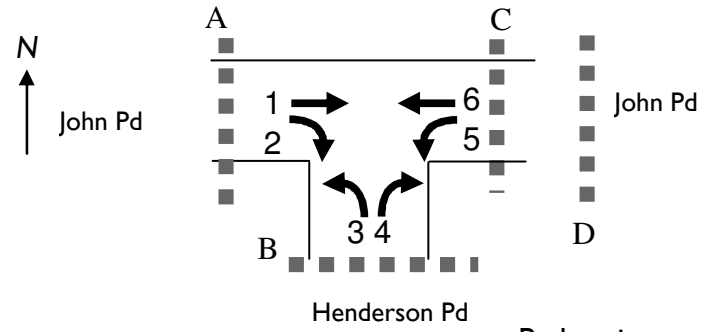
Job: 091105tx

Day, date Sun 22 Nov 09

Location: 6 John Pd & Henderson Pd

Weather: Fine, Hot

Surveyor Rajesh Mandah Indupally



Time Start	All motor vehicles						Pedestrians crossing street			
10:00	1	2	3	4	5	6	A	B	C	D mid block
10:15	19	8	5	4	8	17	5	4	4	15
10:30	41	16	4	4	24	63	3	6	3	22
10:45	44	19	6	9	26	50	5	3	5	15
11:00	45	18	9	3	19	58	4	6	6	13
11:15	37	15	3	6	26	60	2	9	7	15
11:30	79	23	8	7	33	84	3	6	5	13
11:45	44	14	7	7	29	70	4	6	9	10
12:00	56	20	6	9	28	78	2	4	10	22
12:15	63	17	5	8	15	68	0	3	8	23
12:30	78	14	4	7	29	50	3	4	12	19
12:45	55	10	3	4	20	47	0	5	5	20
13:00	48	12	5	4	18	80	0	0	0	27
13:15	41	13	5	3	24	56	0	4	3	23
13:30	51	19	4	7	23	51	0	3	6	16
13:45	43	14	7	5	19	46	0	4	4	12
14:00	45	11	4	6	21	58	0	6	4	16
14:15	59	19	6	7	26	43	0	8	6	18
14:30	54	16	5	11	23	49	0	5	4	11
14:45	52	18	7	10	24	54	0	6	4	17
15:00	50	20	7	8	23	52	0	6	5	12

Curtis Traffic Surveys

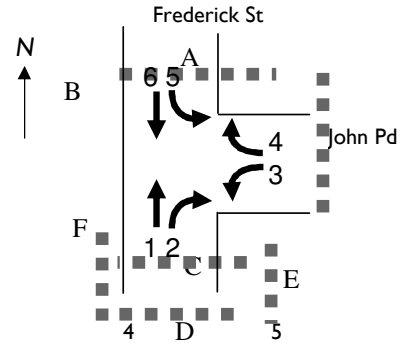
Job: 091105tx

Day, date Sun 22 Nov 09

Location: 5 Frederick St & John Pd

Weather: Fine, Hot

Surveyor Kranti



john closure check

Time Start	All motor vehicles						Pedestrians crossing street				walking along footpath				
10:00	will	2	3	4	D	5	6	A	B	C	D mid block	E	F	east here	east hende west here
10:15	56	22	17	8	11	32	0	0	2	5	3	3	33		25
10:30	78	31	31	8	10	52	0	0	0	3	2	0	41		39
10:45	81	63	66	15	12	62	0	1	0	4	1	0	75		81
11:00	97	65	51	8	8	82	2	1	0	2	5	2	73		59
11:15	102	78	62	15	14	89	0	2	2	10	2	2	92		77
11:30	87	62	51	8	10	80	10	4	6	11	0	8	72		59
11:45	68	59	61	11	12	103	10	1	2	4	0	3	71		72
12:00	94	62	52	12	9	101	11	10	15	5	2	11	71		64
12:15	87	65	59	6	12	89	2	5	1	0	1	4	77		65
12:30	78	60	41	8	13	85	2	3	4	5	7	4	73		49
12:45	124	95	90	15	23	127	11	2	3	1	6	0	118		105
13:00	87	48	45	10	11	81	2	5	13	4	1	2	59		55
13:15	65	60	50	6	14	77	3	4	2	4	5	4	74		56
13:30	67	52	39	6	10	83	6	6	1	6	1	15	62		45
13:45	59	43	46	12	9	65	1	1	1	0	4	2	52		58
14:00	74	41	42	6	12	77	2	8	5	5	4	8	53		48
14:15	75	52	42	10	4	61	9	14	8	6	5	14	56		52
14:30	63	69	62	17	16	68	0	6	0	6	5	7	85		79
14:45	71	41	41	12	9	66	0	0	0	3	2	3	50		53
15:00	68	47	38	12	8	59	0	0	0	0	0	0	55		50
													1342	0	1191

Curtis Traffic Surveys

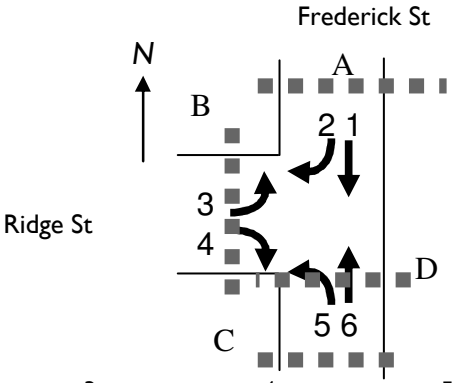
Job: 091105tx

Day, date: Sun 22 Nov 09

Location: 4 Frederick St & Ridge St

Weather: Fine, hot

Surveyor: Manish Singh



Time Start	All motor vehicles						Pedestrians crossing street			
10:00	will	2	3	4	5	6	A	B	C	D tunnel
10:15	83	17	27	2	6	61	4	5	4	28
10:30	80	23	32	1	7	67	5	12	2	18
10:45	99	37	37	0	6	88	1	8	3	18
11:00	104	28	40	2	10	46	9	9	1	19
11:15	106	31	32	1	12	102	5	7	9	21
11:30	111	55	36	0	12	111	19	9	3	31
11:45	96	30	17	0	9	87	10	12	3	25
12:00	104	32	37	0	12	89	16	5	1	26
12:15	91	40	36	0	9	91	1	4	12	9
12:30	104	33	28	1	17	111	17	20	3	25
12:45	101	37	28	1	14	111	3	1	13	15
13:00	93	18	23	0	8	80	17	0	1	13
13:15	95	24	31	0	12	95	26	1	5	11
13:30	78	33	35	0	9	77	20	5	6	18
13:45	67	42	28	0	10	90	13	1	6	7
14:00	79	32	22	0	7	78	17	7	1	17
14:15	78	21	28	0	7	91	9	2	3	20
14:30	86	27	45	0	7	83	9	0	16	22
14:45	102	32	38	0	10	82	10	4	6	29
15:00	86	16	26	0	10	76	13	9	1	11

Curtis Traffic Surveys

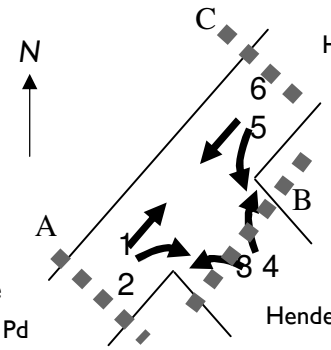
Job: 091105tx

Day, date Sun 22 Nov 09

Location: 3 Henderson Pd & continuation

Weather: Fine, Hot

Surveyor Bula Sunil Kumar



Road above Henderson Pd

Note, second car park access road above south leg of Henderson Pd treated as south leg of Henderson Pd

Time Start	All motor vehicles						Pedestrians crossing street		
10:00	1	2	3	4	5	6	A	B	C
10:15	2	1	6	5	5	13	5	9	6
10:30	1	0	7	5	5	20	2	16	8
10:45	3	1	6	9	9	22	2	13	3
11:00	2	3	8	11	11	22	4	5	3
11:15	4	1	5	9	9	24	2	6	6
11:30	3	1	9	12	12	27	4	4	9
11:45	1	2	7	10	10	25	0	3	4
12:00	4	0	9	12	12	21	1	3	2
12:15	2	1	5	12	12	20	0	2	1
12:30	4	4	9	8	8	23	3	4	0
12:45	3	1	7	10	10	18	1	3	1
13:00	1	3	4	10	10	26	0	3	0
13:15	1	1	7	7	7	26	0	3	0
13:30	3	0	3	13	13	18	2	2	0
13:45	1	1	8	8	8	20	3	1	0
14:00	2	2	4	7	7	15	4	2	5
14:15	2	1	6	16	16	22	2	0	4
14:30	1	1	6	16	16	23	4	11	0
14:45	5	4	12	10	10	19	2	6	0
15:00	1	1	9	12	12	29	0	5	0
	46	29	137	202	202	433			

Curtis Traffic Surveys

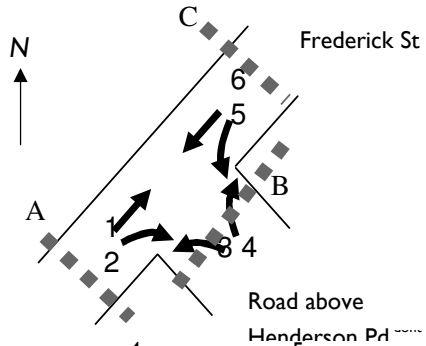
Job: 091105tx

Day, date Sun 22 Nov 09

Location: 2 Frederick St & road above Henderson Pd

Weather: Fine, Hot

Surveyor Sunil Gali



Time Start	All motor vehicles						Pedestrians crossing street		
10:00	1	2	3	4	5	site 1 will do that	A	B	C
10:15	55	4	11	6	2		7	8	6
10:30	83	0	14	15	3		10	17	6
10:45	79	0	17	15	1		13	18	7
11:00	85	5	21	15	0		15	18	4
11:15	90	3	15	6	0		17	20	6
11:30	125	3	22	18	0		9	12	4
11:45	93	3	13	17	0		8	17	3
12:00	92	4	13	22	1		4	15	3
12:15	98	2	11	9	1		7	19	7
12:30	103	6	16	11	2		6	13	5
12:45	112	2	20	11	1		3	20	9
13:00	80	6	13	13	1		6	17	3
13:15	99	2	18	17	0		5	16	5
13:30	85	2	9	9	1		3	15	3
13:45	84	1	4	13	0		4	24	2
14:00	108	3	15	11	1		5	17	4
14:15	94	3	11	15	1		4	16	5
14:30	70	1	13	11	1		3	9	6
14:45	95	3	14	9	2		5	17	4
15:00	91	5	18	13	1		7	15	4
	1821	58	288	256	19				

Curtis Traffic Surveys

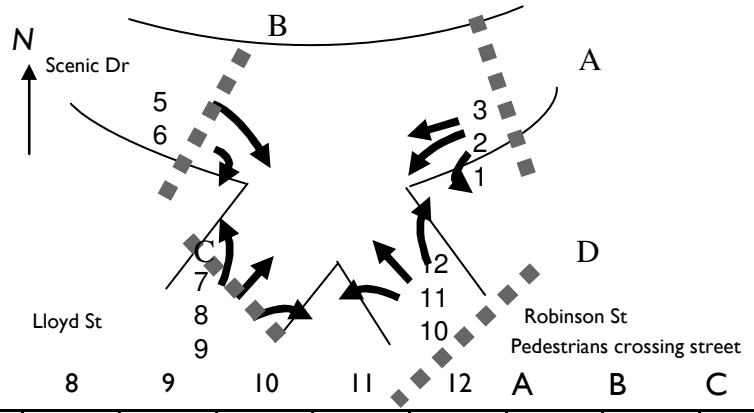
Job: 091105tx

Day, date Sun 22 Nov 09

Location: 1 Scenic Dr, Robinson St & Lloyd St

Weather: Fine, hot

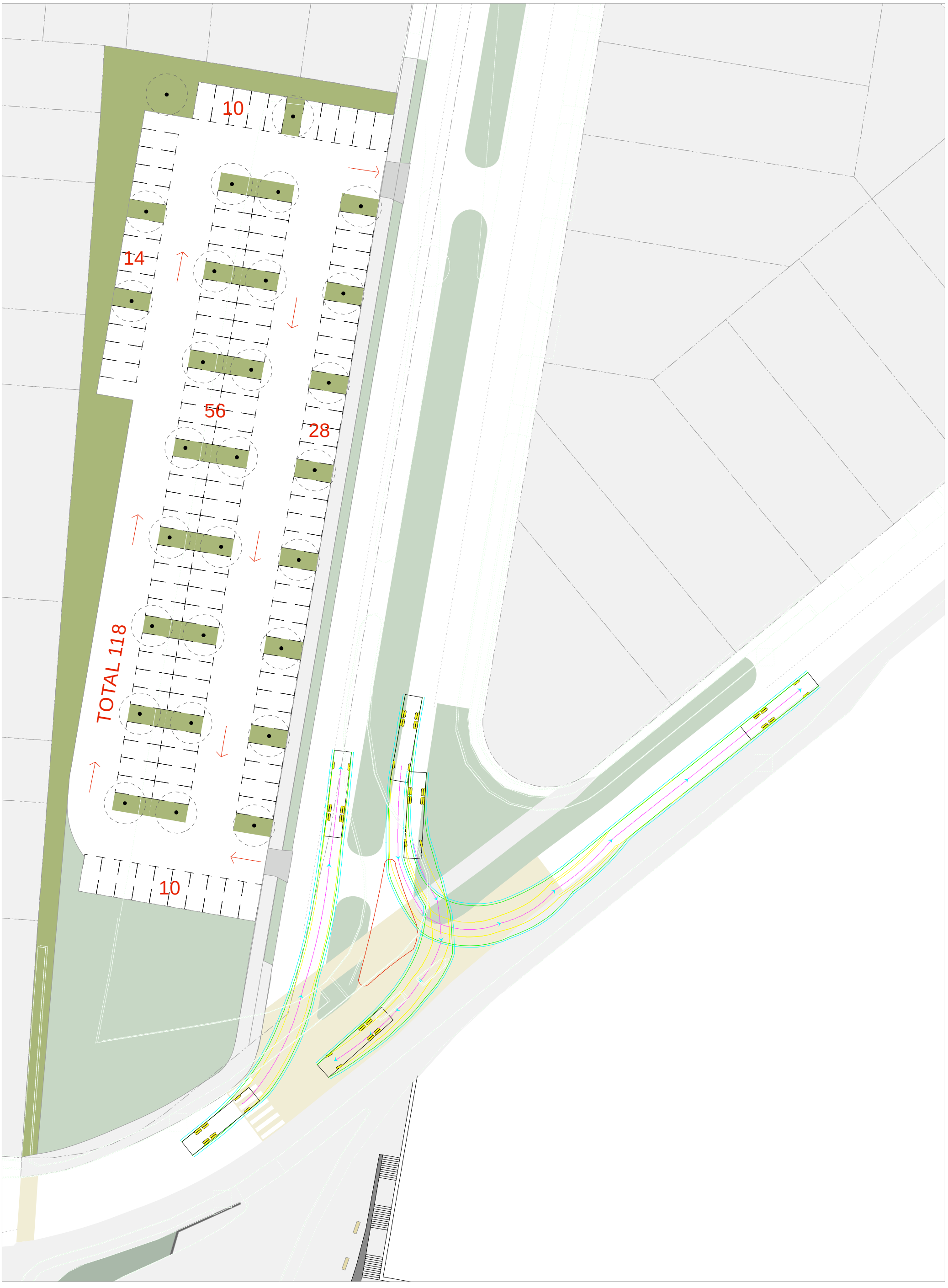
Surveyor Kanishk Kumar

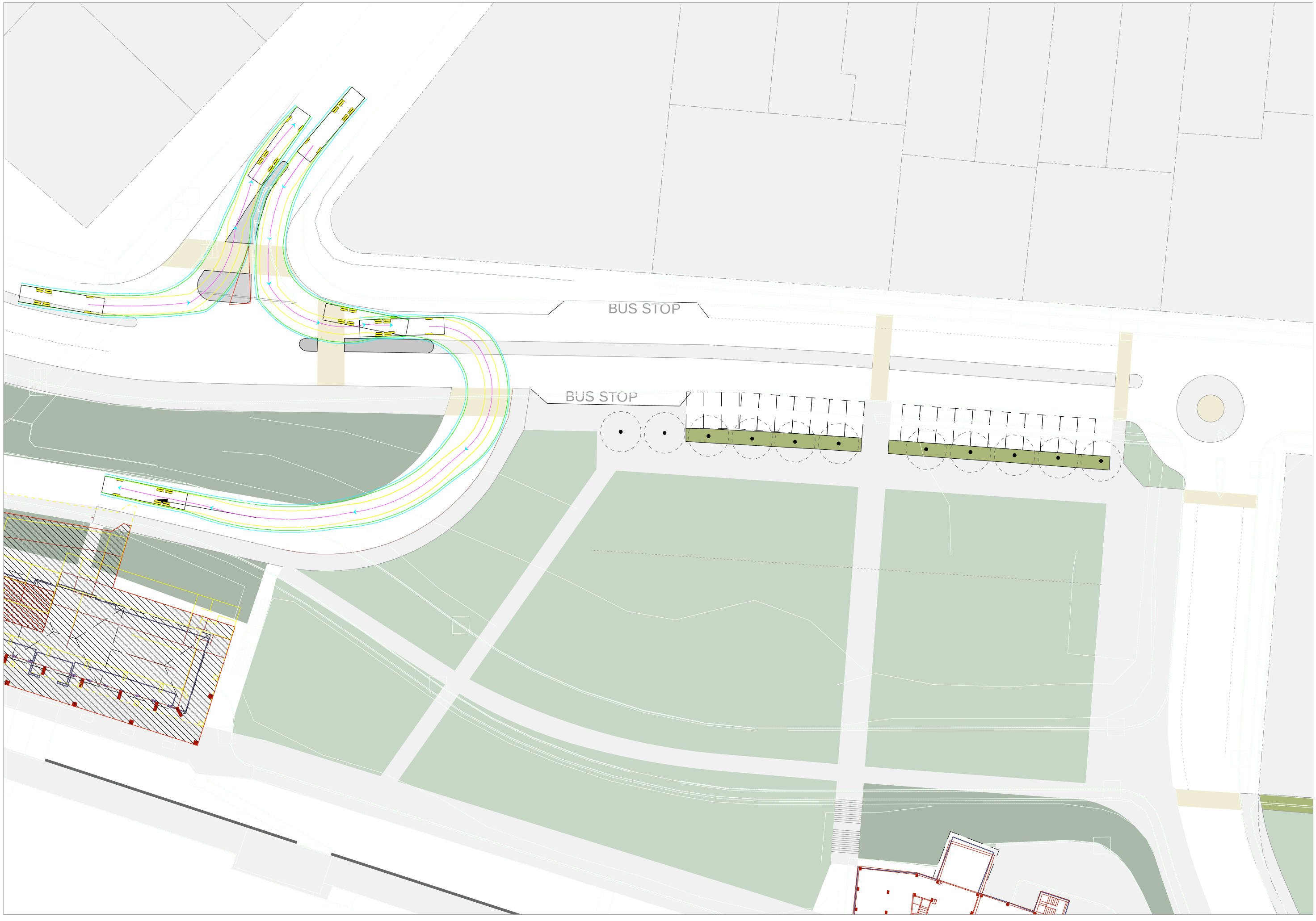


Time Start 10:00	All motor vehicles																
	1	2	3		5	6	7	8	9	10	11	12	A	B	C	D
10:15	2	1	46		0	0	0	0	0	0	0	0	0	0	0	1
10:30	4	0	96		0	2	1	3	0	0	0	0	4	0	0	0
10:45	4	0	95		0	1	1	1	0	0	0	0	2	0	0	0
11:00	0	0	124		0	0	2	0	0	0	0	0	1	2	2	0
11:15	0	0	135		0	0	4	1	0	0	0	0	0	1	0	0
11:30	0	0	156		0	0	2	1	0	0	0	0	0	2	0	0
11:45	0	0	133		0	0	2	3	0	0	0	0	0	1	0	2
12:00	0	0	149		0	0	1	1	0	0	0	0	0	0	0	3
12:15	0	0	138		0	0	1	1	0	0	0	0	0	0	2	0
12:30	0	0	129		0	0	1	1	0	0	0	0	0	4	1	0
12:45	0	0	116		0	0	1	3	0	0	0	0	0	0	1	0
13:00	0	0	125		0	0	3	2	0	0	0	0	0	3	0	0
13:15	0	1	129		0	0	0	1	1	0	1	0	0	1	1	1
13:30	0	0	115		0	0	1	0	0	0	0	0	0	0	0	0
13:45	0	0	86		0	0	0	0	0	0	0	0	0	4	0	0
14:00	0	0	120		0	0	2	2	0	0	0	0	0	3	1	0
14:15	0	0	102		0	0	0	1	0	0	0	0	0	1	2	0
14:30	0	0	116		0	0	2	2	0	0	0	0	0	0	3	1
14:45	0	0	125		0	0	0	4	0	0	0	0	0	1	1	0
15:00	0	0	115		0	0	2	0	0	0	0	0	0	4	1	1

appendix c

draft public domain plan


10
14
56
28
TOTAL 118
10


BUS STOP
BUS STOP