Devonport-Takapuna Local Board Workshop Programme

Date of Workshop: Tuesday 4 July 2023
Time: 10am – 3pm
Venue: Kaipatiki Local Board Office, 90 Bentley Avenue, Glenfield, and MS Teams
Apologies:

Time	Workshop Item	Presenter	Governance role	Proposed Outcome(s)
10.00 – 11.00	**1. Eke Panuku** - Takapuna Beach Holiday Park **Attachments:** **1.1** Takapuna Holiday Park 27 June 2023 Memo	**Lisa Partis** Property Manager **Ruth Jost** Head of Property Portfolio	Keeping informed	Receive update on progress

11.00 – 12.30	**2. Parks and Community Facilities** - 139 Beach Rd and Kennedy Park WW2 Tunnels **Attachments:** **2.1** Presentation 139 Beach Road 4 July 2023 **2.2** Memo 139 Beach Road 16 June 2023 **2.3** Attachment A 139 Beach Road Future Options Memo 16 March **2.4** Attachment B 139 Beach Road Future Options Report **2.5** Attachment C 139 Beach Road Additional information and comments **2.6** Presentation Kennedy Park Tunnels 4 July 2023 **2.7** Memo Kennedy Park Tunnels 16 June 2023 **2.8** Attachment A Kennedy Park Tunnels Memo 16 March **2.9** Attachment B Kennedy Park Tunnels Condition Assessment & Proposed Maintenance Report **2.10** Attachment C Kennedy Park Tunnels Additional information and comments	**Sarah Jones** Manager Area Operations **Roma Leota** Project Manager	Keeping informed	Receive update on progress
30 min break				
1.00 – 2.00	**3. Auckland Transport** - Parking in residential streets surrounding Devonport town centre **Attachments:** **3.1** Devonport Parking Survey Presentation	**Denika Roberts** Customer Relationships Coordinator **Alok Vashita** Parking Design Manager	Keeping informed	Receive update on progress

2.00 – 3.00	**4. Local Board Services** - Local Board Draft Work Programme 2023/2024 **Attachments:** **4.1** Local Board Work Programme Post 27 June 2023 presentation	**Maureen Buchanan** Senior Local Board Advisor **Sugenthy Thomson** Lead Financial Advisor	Keeping informed	Receive update on progress

Next workshop: 11 July 2023

Role of Workshop:
(a) Workshops do not have decision-making authority.
(b) Workshops are used to canvass issues, prepare local board members for upcoming decisions and to enable discussion between elected members and staff.
(c) Members are respectfully reminded of their Code of Conduct obligations with respect to conflicts of interest and confidentiality.
(d) Workshops for groups of local boards can be held giving local boards the chance to work together on common interests or topics.

Devonport-Takapuna Local Board Workshop Record

Date of Workshop: Tuesday 04 July 2023
Time: 10am – 2.36pm
Venue: Devonport-Takapuna Local Board Office, Ground Floor, 1 The Strand, Takapuna and MS Teams

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Attendees

Chairperson: Toni van Tonder

Deputy Chairperson: Terence Harpur

Members: Peter Allen *(online)*
Gavin Busch
Melissa Powell
George Wood, CNZM

Staff: Trina Thompson – Local Area Manager
Maureen Buchanan – Senior Local Board Advisor
Rhiannon Guinness – Local Board Advisor
Henare King – Democracy Advisor

Apologies

None

Workshop item	Presenters	Governance role	Summary of discussion and Action points
1. **Eke Panuku** - Takapuna Beach Holiday Park	**Lisa Partis** Property Manager **Ruth Jost** Head of Property Portfolio **John Mansfield** General Manager, Top 10 Holiday Parks Group	Keeping informed	The local board was provided with an update on the Takapuna Beach Holiday Park. The local board raised the following points and questions in response to the presentation: • Concern with the safety of entry-point to the site, needs to be well thought out. • Clarified that going forward the park will not cater to permanent or long-term tenants. • Clarified that, due to the root system of the large Pohutukawa outside of the park boundary growing back into the park, the top corner of the park has become a grass tenting area. • Noted desire to see environmental reports – staff intend to bring before the board at a business meeting. • Clarified Eke Panuku will be undertaking drainage and inundation work at the site. • Clarified that the Rose Cottage, staff cabins, and amenities block are scheduled to be removed. • Clarified that the timeline of work relies on approval from the Board and speed of resource consent process. Tenant indicated an intention to start works in the last week of April 2024. Works are anticipated to take 9-10 months. • Concern that residents will have their ocean views impeded by new buildings. Tenant noted that the buildings will be as low as allowed under building regulations, but did not have exact measurements on hand. • Urged tenant to consider ways to incorporate retention tanks to recycle water. • Clarified that playground is situated within the lease area in the updated plan. • Noted desire to see affordable prices to make the park inclusive to all visitors to the area. • Clarified there will be no alcohol sold on site. Next Steps: • Variation to existing land owner approval to come to the next business meeting.

2. Parks and Community Facilities - 139 Beach Road, Kennedy Park WW2 Tunnels	**Sarah Jones** Manager Area Operations **Roma Leota** Project Manager **Steph Westmore** Senior Project Manager	Keeping informed	The local board was provided with an update on 139 Beach Road and the Kennedy Park WW2 Tunnels. The local board raised the following points and questions in response to the presentation: • Clarified that the entirety of the building at 139 Beach Road is classified as heritage • Questioned if Heritage New Zealand indicated any ability to contribute financially towards this project. Staff noted they did not, but did acknowledge it will be costly. • Concern for the safety of the Tunnels in their current state. Based on structural engineer's reports, Staff note it is not safe to open the tunnels until work has been done. • Confirmed that the full cost of this project will sit with the Local Board. Staff note they only option for external funding would be for a Trust to take over the building. • Questioned if a section of the tunnels could be propped up – staff noted this would be part of the investigation process. • Clarified that 139 Beach Road would not lose its heritage status, even if it was rebuilt with entirely new material and was essentially a replica of the original building. • Clarified that the option tunnel patchup option would require a specialist concreter and specific material, and that cost estimates were from an engineer and not a quote from a contractor. • Suggested the board signal through the Local Parks Management Plan that a commercial option could be considered for the site. • Noted it would be hard to justify the price of replicating 139 Beach Road. • Clarified that staff have not carried out public consultation about the priority of projects at Kennedy Park, but that it could be organised if the Board wished to investigate. Next Steps: • Letter from Heritage New Zealand to be distributed to Board members. • Staff to come back at a later workshop with definitive numbers on make-safe and refurbishment options.

3. Auckland Transport - Devonport Parking Survey	**Alok Vashista** Parking Design Manager **Denika Roberts** Customer Relationships Coordinator	Keeping informed	The local board was provided with an update on a parking survey of residential streets surrounding Devonport town centre. • AT are proposing a residential parking zone. The local board raised the following points and questions in response to the presentation: • Questioned how many complaints from residents were received, and concern that this was a solution to a non-existant problem. Staff noted that since 2018 they had received 12 requests for a residential parking zone, and 43 complaints regarding high parking demand causing illegal parking. • Noted that the businesses that make up Devonport town centre require people from outside of the Devonport area to operate. Some concern for unintentionally penalise people that keep the businesses alive, while also balancing the needs of the residents in the impacted area. • Noted the need for strong community feedback, from businesses and residents. • Clarified with Staff that parking is currently free, and that implemented paid parking zones would likely be 50c per hour. • Clarified that there is an existing legacy residential parking policy that is not consistent with the rest of the area and needs to be replaced. • Questioned if the Devonport BID had been consulted. Staff noted there was a town centre review prior to this piece of work, but that they are happy to work with them. • Concern that the number of recent AT consultations in Devonport will cause consultation fatigue. • Clarified that the survey was conducted in March this year. Noting that data could greatly differ under different times of the year, it was suggested that making a decision based on a limited sample of data could be problematic. • Concern with impacting Lake Road congestion any further. • Acknowledge the Staff and their work, noting there is further information to be gathered to avoid making assumptions with the presented data. Next Steps: • Staff to collect further data and bring back to the board

4. Local Board Services - Local Board Draft Work Programme 2023/2024	**Maureen Buchanan** Senior Local Board Advisor **Sugenthy Thomson** Lead Financial Advisor	Keeping informed	The local board was provided with an update on a parking survey of residential streets surrounding Devonport town centre. • Infrastructure and Environmental Services and Early Child Education worklines require further discussion once more information is available. • Deputy Chairperson Terence Harpur left the room for the discussion of the Place-making Takapuna workline, noting a conflict of interest. The local board raised the following points and questions in response to the presentation: • Clarified that no LDI funding is approved, or approved in principle, for later financial years. • Noted that Out and About won't start until later in the year, and usually operate in parks. Staff note there will need to be negotiations. • Noted potential to collaborate with the Kaipatiki Local Board on the Wairau Catchment Project • Clarified that projects in Milford from Parks and Community Facilities are a direct response to a presentation on accessibility earlier in the year which highlighted these issues. • Discussed potentially funding an additional $4,000 to the Rose Centre, to fortify a community house. Next Steps: • Work programmes will be adopted at the 18 July business meeting

The workshop concluded at 2.36pm.

Memorandum

27 June 2023

To: Devonport-Takapuna Local Board

Subject: Takapuna Holiday Park – 22 The Promenade, Takapuna

From: Lisa Partis - Commercial Property Manager, Eke Panuku Development Auckland

Ruth Jost – Head of Property, Eke Panuku Development Auckland

Purpose

1. To provide the local board with an update on the redevelopment of the Takapuna Holiday Park.

Summary

2. In March 2021, the local board granted landowner approval for the lessor and lessee to undertake site preparatory works and redevelop the Takapuna Holiday Park, subject to the regulatory consenting process.

3. The lessor works included the demolition of existing council buildings and measures to alleviate coastal inundation and stormwater flooding. The lessee works included building accommodation and amenity buildings, earthworks, installation of stormwater and wastewater infrastructure and landscaping.

4. The technical reports obtained during the resource consent application process prompted a revision to the layout and design of the park.

5. The lessor has revised the lessor's works to include the installation of a detention tank.

6. The lessee has revised their masterplan which includes a revision to the layout and number of accommodation and amenities increasing the total building footprint by 7%.

Context

7. Eke Panuku on behalf of Auckland Council (lessor) manage the commercial lease with Stephen Edwards Trust (lessee).

8. When the lease was granted in May 2019 (DT/2019/69), it was envisaged that the redevelopment would be staged over two-three years, subject to landowner approval and the regulatory approval process.

9. Landowner approval was granted in March 2021 (DT/2021/14), which enabled both parties to obtain technical reports and regulatory advice to prepare a joint resource consent application. This prompted a revision to the layout and design of the park.

10. The lessee has revised their masterplan and is working with the lessor to determine what impact these changes have on the lessor works. The lessor will submit a separate resource consent application for the lessor works.

11. The extent of changes for both the lessee and lessor is further outlined below and may require a further landowner approval, prior to both parties submitting resource consent.

Lessor's Works (Site Preparation)

12. The lessor's resource consent application will relate to the site preparatory works set out below:

    a. Installation of a landscape wall to the eastern boundary adjacent along the coastal walkway and part of the southern boundary to address stormwater flooding. The height of the wall will vary dependent on the site gradient but will be capped at 400mm.
    b. Installation of a detention tank and catchpits within the site connecting to existing site drainage outlets to alleviate stormwater flooding.

13. The demolition of all existing council buildings is a permitted activity under the Auckland Unitary Plan and regulatory consent is not required. Eke Panuku plan to commence demolition of the cabin and Rose Cottage in August 2023.

14. The change to the lessor's works includes the installation of a detention tank to better alleviate stormwater flooding, which may require a further landowner approval.

Lessee's Works (Redevelopment)

15. The lessee's resource consent application will relate to the redevelopment works outlined in the revised masterplan (refer Attachment C), to be read in accordance with the below:

    a. Earthworks to re-contour the site
    b. Removal of non-native trees
    c. Installation of a retaining wall along a portion of Alison Ave and replacement of boundary fencing
    d. Building accommodation and amenity buildings
    e. Installation of stormwater and wastewater infrastructure to service the new buildings
    f. Upgrading existing formed roads and creating additional paved areas within the leased area

16. The overall building footprint area has increased by 7%, from 850 sqm to 909 sqm (refer Attachment A). The extent of the change in the revised masterplan may require a further landowner approval.

Next steps

17. The local board will need to assess if a further landowner approval is required in accordance with the lessee's revised masterplan and the lessor's installation of a detention tank to better alleviate stormwater flooding.

18. If a further landowner approval is required, Eke Panuku will attend a business meeting in August 2023 to seek further landowner approval. If it is not required, the lessee and lessor will submit their respective resource consent applications in respect of the revised works outlined above and attached to this memo.

Attachments

Attachment A – Lessee's Summary of Accommodation and Amenity Changes

Attachment B – Lessee's Masterplan (2021)

Attachment C – Lessee's Revised Masterplan (2023)

Attachment D – Lessee's Landscape Plan

Attachment A – Lessee's Summary of Accommodation and Amenity Changes

SUMMARY OF ACCOMMODATION AND AMENITY CHANGES

Accommodation Type	**Masterplan**	**Masterplan-revised**
2 Bed Motel Unit – full facilities / parking underneath	6	7
2 Bed Accessible Motel Unit – full facilities	2	1
1 Bed Accessible Studio Unit – full facilities	Nil	1
1 Bed Studio Unit – full facilities	4	3
Boatshed Cabins – no facilities	4	5
Duty Manager Cabin – no facilities	1	Nil
1 Bed Duty Manager – full facilities	Nil	1
2 Bed Park Manager – full facilities	1	1
Reception/Laundry/Office/Workshop/Storage block	1	1
Guest Kitchen & Dining	1	1
Guest Facilities Block	3	2
Total Building Footprint Area	**850 m2**	**909.81 m2**
Total Visitor Accommodation Units	**16**	**17**

Powered sites - Campervans, Caravans, Tents	43	32
Single Tent Sites	8	8
Dump Station / Wash Down Area	1	1
Playground Inside park	0	1

Total Site area of park	7,277.60 m2	7,277.60 m2
Total Building Footprint Area	850 m2 11.68%	909.81 m2 12.50%
Site Coverage within park (includes eaves & Overhangs)	922 m2 12.67%	1,246.02 m2 17.12%
Impervious Area within park	3,250 m2 44.66%	3,088.40 m2 42.44%

Resource Consent Application – calculated over entire reserve.

Total Site area	10,454.76 m2
Site Coverage	1,659.99 m2 15.88%
Impervious Area	3,792.17 m2 36.27%

Attachment B – Lessee's Masterplan (2021)

TAKAPUNA HOLIDAY PARK

Masterplan

For Info . 22.02.18

SITE

rt@sitela.co.nz . www.sitela.co.nz . 021 838 855

KEY:

- (A) Reception
- (B) Admin / office / laundry with manager's residence upstairs (2 bed unit)
- (C) Entrance shared space with parking and 2 x camper pull-in
- (D) Baches - 6 x 2 bed units with parking under. Rear service connection to laundry at upper level
- (E) 2 x 2 bed units at grade for wheelchair accessibility
- (F) Baches - 4 x ensuite studios
- (G) Boatshed Cabins - 4 x single studios
- (H) Boatshed WCs - 2 x WC blocks with 4 x toilets & 4 x showers to each
- (I) Boatshed WC - Family toilets / showers
- (J) Galley Lifesave Tower - communal facilities including cooking, BBQ, lounge rooms, outdoor dining
- (K) Grass camping area
- (L) Public Playground
- (M) Stormwater swale
- (N) Second managers residence in Boatshed cabin
- (O) Camper parks
- (P) Public dump station & E car charging
- (Q) Boundary treatment: Dark stained horizontal slatted fence with small gaps between slats, and hedging
- (R) Recycling station
- (S) E bike and SUP hire
- (T) New interpretation panels for coastal walk and petrified forest

LANDSCAPE MATERIALS:

Roads / paving / retaining: Recycled concrete aggregate

Camper parks: Recycled crushed shell aggregate in recycled plastic reinforcing crates

Grass verge / camper break out areas: Kaikuyu grass in recycled plastic reinforcing crates

Playground: Sand safety fall surface

Hedge fencing: Dark stained pine post and no. 8 wire

Boundary fencing: Dark stained slatted pine with small gaps for semi-transparency

Takapuna Holiday Park

22.02.18 . 1:400 @ A3 For Info

rf@sitela.co.nz . 021 838 855 . 158_SK-001A Site Masterplan

MASTERPLAN

SITE

VEGETATION CONCEPT:

The intention is to create a largely native planting theme for the Holiday Park, to re-inforce and promote local coastal dune and rocky foreshore ecosystems in species selection.

The bulk of mature existing vegetation will be retained including the large Pohutukawas and other shade trees towards the northern corner of the park.

Smaller clumps of largely exotic vegetation around the existing buildings will be removed, to enable an open and safe environment.

Existing exotic palms will be removed, replaced with new single stem Pohutukawas and Nikau palms for shade.

PLANTING TYPES:

Existing trees retained

- (A) Single stemmed Pohutukawas
- (B) Nikau palms
- (C) Pittosporum crassofolium / Akeake mixed hedging between camper parks and along boundary
- (D) Coastal walk edge - Sand coprosma, Muehlenbeckia, Pingao and carex
- (E) Rain gardens - flax, cloi and carex
- (F) Green walls - Ficus

STORMWATER:

- Attenuation swale
- Stormwater main and laterals to buildings
- Rain water harvesting tanks with overflow to mains
- Ground drains / filter sumps

Note: ground level will be raised and drainage crowns formed to new sumps and swales

Takapuna Holiday Park

22.02.18 . 1:400 @ A3 For Info

rf@sitela.co.nz . 021 838 855 . 158_SK-002A Planting & Stormwater

PLANTING & STORMWATER

SITE

1 **Takapuna Holiday Park:** Entrance / Reception

SITE

2 **Takapuna Holiday Park:** Playground and Stowater Swale

SITE

3 **Takapuna Holiday Park:** View in from the Sea

SITE

4 **Takapuna Holiday Park:** Galley Lifesave Tower & Communal Facilities

SITE

5 **Takapuna Holiday Park:** Baches - 2 Bed Units

SITE

6 **Takapuna Holiday Park:** Boatshed WCs and Camping Area

SITE

7 **Takapuna Holiday Park:** Boatshed Cabins

SITE

8 **Takapuna Holiday Park:** Viewing North

SITE

9 **Takapuna Holiday Park:** Viewing Southwest

SITE

10 **Takapuna Holiday Park:** Viewing Northwest

Attachment C – Lessee's Revised Masterplan (2023)

Boyd Chamberlain

ARCHITECTURE LTD

Inspired design Inspired living

TOP 10 TAKAPUNA
AT 22 THE PROMANADE, TAKAPUNA BEACH, AUCKLAND

P 03 366 0056 **M** 021 83 62 62 **E** design@bcaltd.co.nz PO Box 9299, 15 Tyne Street, Tower Junction, Christchurch 8149

SITE INFORMATION

22 THE PROMANADE, TAKAPUNA BEACH, AUCKLAND

LOTS 1-3 (ZONE 1)
PP 18501

SITE AREA: 3,177.16m²

LOTS 4-10 (ZONE 2)
PP 18501

SITE AREA: 7,277.60m²

ALISON AVENUE

THE PROMENADE

EARNOCH AVENUE

16.29m, 64° 43' 2"

6.03m

14.09m, 89° 2' 50"

20.12m, 89° 3' 50"

23.17m, 89° 3' 50"

22.29m, 89° 3' 50"

5m ROAD BOUNDARY SETBACK

36.92m, 156° 73' 07"

63.09m, 155° 40' 59"

5m INTERNAL BOUNDARY SETBACK

ORIGINAL PARK ROADING

9m FORESHORE BOUNDARY SETBACK

TE ARAROA - NATIONAL WALKWAY

18.78m, 91° 11' 59"

20.29m, 89° 59' 59"

20.20m, 89° 59' 59"

24.79m, 89° 59' 59"

16.11m, 89° 59' 59"

12.73m, 79° 6' 50"

20.57m, 156° 73' 07"

S/W JUMP

STREET LIGHT

TOP HOUSE

TAKAPUNA BEACH

CAR & BOAT PARKING

20m MHWS SETBACK

MEAN HIGH WATER SPRINGS LINE (MHWS)

RANGITOTO CHANNEL

1 - EXISTING SITE PLAN

Scale 1:500

0 5 10 15 20 25 30 35 40 45 50m

Structural Engineer: ??

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PRELIMINARY

Rev:	Date:	Note:

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PROJECT TITLE :

TOP 10 TAKAPUNA
22 THE PROMANADE, TAKAPUNA BEACH, AUCKLAND

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SHEET TITLE :	EXISTING SITE PLAN		

SHEET No: **P1.1**

OF: 12 REV:

2 - PROPOSED SITE PLAN

Scale 1:500

0 5 10 15 20 25 30 35 40 45 50m

SITE INFORMATION

22 THE PROMANADE, TAKAPUNA BEACH, AUCKLAND

LOTS 1-3 (ZONE 1)
DP 18501

SITE AREA: 3,177.16m²

LOTS 4-10 (ZONE 2)
DP 18501

SITE AREA: 7,277.60m²

ZONE 1 SITE COVERAGE AREA:	413.97	m²
ZONE 1 SITE COVERAGE	13.0%	
ZONE 1 IMPERVIOUS AREA:	703.77	m²
ZONE 1 IMPERVIOUS SURFACE	22.1%	
ZONE 2 FOOTPRINT AREA:	909.81	m²
ZONE 2 FOOTPRINT COVERAGE	12.5%	
ZONE 2 SITE COVERAGE AREA:	1,246.02	m²
ZONE 2 SITE COVERAGE	17.1%	
ZONE 2 IMPERVIOUS AREA:	3,088.40	m²
ZONE 2 IMPERVIOUS SURFACE	42.8%	
TOTAL SITE COVERAGE AREA:	1,659.99	m²
TOTAL SITE COVERAGE	15.8%	
TOTAL IMPERVIOUS AREA:	3,792.17	m²
TOTAL IMPERVIOUS COVERAGE	36.2%	
RECEPTION FOOTPRINT AREA:	152.83	m²
MOTEL FOOTPRINT AREA: x7	57.68	m²
ACCESSIBLE MOTEL FOOTPRINT AREA:	67.64	m²
STUDIO FOOTPRINT AREA: x4	28.15	m²
CABIN FOOTPRINT AREA: x5	14.11	m²
KITCHEN / TOWER FOOTPRINT AREA:	74.52	m²
ACCESSIBLE ABLUTION FOOTPRINT AREA:	27.91	m²
RECEPTION SITE COVERAGE AREA:	190.68	m²
MOTEL SITE COVERAGE AREA:x7	83.70	m²
ACCESSIBLE MOTEL SITE COVERAGE AREA:	94.94	m²
STUDIO SITE COVERAGE AREA: x4	28.56	m²
CABIN SITE COVERAGE AREA: x5	14.87	m²
KITCHEN / TOWER SITE COVERAGE AREA:	145.52	m²
ACCESSIBLE ABLUTION SITE COVERAGE AREA:	40.39	m²

PLANNING ZONE	OPEN SPACE ZONE - INFORMAL RECREATION
EARTHQUAKE ZONE	1
WIND ZONE	HIGH
EXPOSURE ZONE	D - HIGH
SNOW ZONE	NO - 1KpA
CLIMATE ZONE	1

DESIGN NOTES

-MOTEL FOUNDATIONS -(NO STEEL)TIMBER PILES
-BBQ ON DECKS
-RECEPTION -FULL BC DOCS (JOHN WILL LODGE CONSENT)
-CONCRETE SLAB
-TIMBER FRAME
-STUDIO -SMALL SECURE BUILT IN BBQ ON DECK
-2x OUTSIDE SHOWERS & FOOT WASHERS
-DOGS OK IN PARK
-F&P DISHDRAW & 3/4 OVEN FOR ALL UNITS
-BBQ'S ON RETICULATED GAS
-ACCESSIBLE UNITS 1-10=1, 11-25=2, +25=1
-ACCESSIBLE CAR PARK BY RECEPTION & UNITS
-ACCESSIBLE RECEPTION - COUNTER, DOORS ETC
-ACCESSIBLE UNIT - CONTROLS, BENCH TOPS, SPACE IN ROOMS, KITCHEN, WINDOW HEIGHT.
-ACCESSIBLE KITCHEN & LAUNDRY - 1.5x1.5 AROUND EQUIPMENT
-ACCESSIBLE ROUTE UNIT TO COMMUNAL FACILITIES 1.2m WIDE
-SITE COVERAGE AREA INCLUDES EAVES OVER 1m

BC CHAT LIST

-ACCESSIBLE MOTEL DESIGN - LIVING 3.6x3.6M

Structural Engineer: ??

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TOP 10 TAKAPUNA
22 THE PROMANADE, TAKAPUNA BEACH, AUCKLAND

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SHEET TITLE :	PROPOSED SITE PLAN		

SHEET No: **P1.2**

OF: 12 REV:

3 - DETAILED SITE PLAN

Scale 1:250

0 5 10 15 20 25 30 35 40 45 50m

Structural Engineer: ??

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PRELIMINARY

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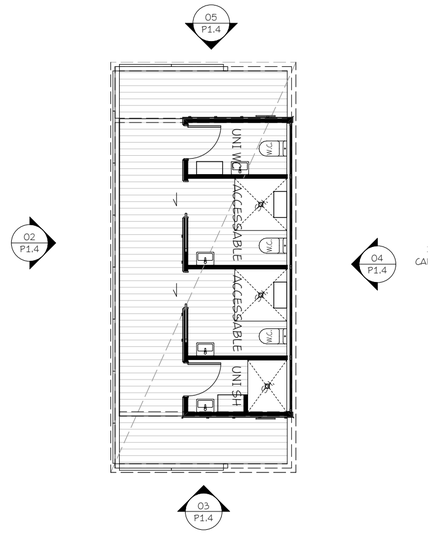
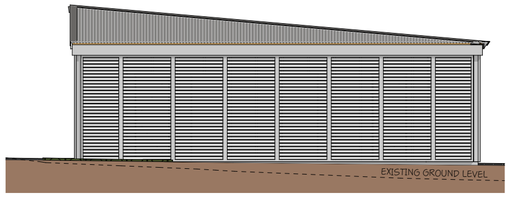


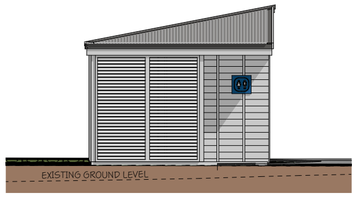
01 - ABLUTION A FLOOR PLAN

Scale 1:100



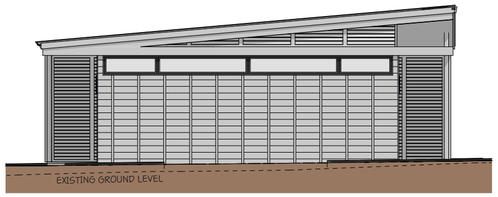
02 - ABLUTION A ELEVATION 02

Scale 1:100



03 - ABLUTION A ELEVATION 03

Scale 1:100



04 - ABLUTION A ELEVATION 04

Scale 1:100

05 - ABLUTION A ELEVATION 05

Scale 1:100

ABLUTIONS MATERIALS

NOTE COLOURS ARE PRELIMINARY

ROOFING
LONG RUN CORRUGATE ROOFING - IRONSAND

WALL CLADDING
RUSTICATED WEATHERBOARD WITH BATTENS OVER - WHITE

EXTERIOR JOINERY
POWDERCOATED ALUMINIUM JOINERY - IRONSAND
POWDERCOATED ALUMINIUM LOUVRES - WHITE

SOFFITS
9mm VILLABOARD - WHITE

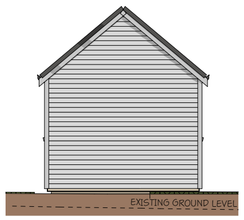
GUTTER & DOWNPIPE
COLORSTEEL - IRONSAND

FASCIA & BARGE
TIMBER - WHITE

EXPOSED BEAM & POSTS
TIMBER - WHITE

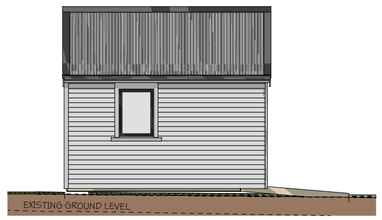
6 - CABIN FLOOR PLAN

Scale 1:100



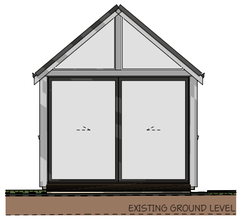
07 - CABIN ELEVATION 7

Scale 1:100



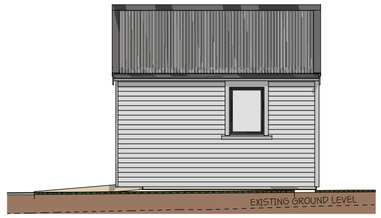
08 - CABIN ELEVATION 8

Scale 1:100



09 - CABIN ELEVATION 9

Scale 1:100



10 - CABIN ELEVATION 10

Scale 1:100

CABIN MATERIALS

NOTE COLOURS ARE PRELIMINARY

ROOFING
LONG RUN CORRUGATE ROOFING - IRONSAND

WALL CLADDING
TIMBER BEVELBACK WEATHERBOARD - WHITE
TIMBER FACINGS TO WINDOW & CORNERS - WHITE

EXTERIOR JOINERY
POWDERCOATED ALUMINIUM JOINERY - IRONSAND

SOFFITS
9mm VILLABOARD - WHITE

GUTTER & DOWNPIPE
COLORSTEEL - IRONSAND

FASCIA & BARGE
TIMBER - WHITE

Structural Engineer: ??

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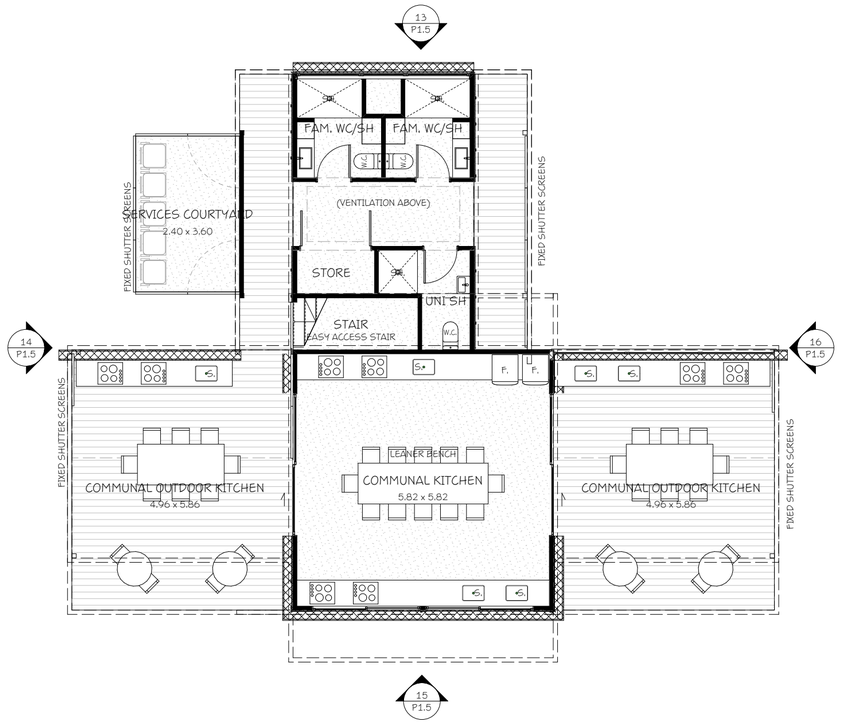
SHEET TITLE :	ABLUTIONS & CABIN PLANS & ELEVATIONS	

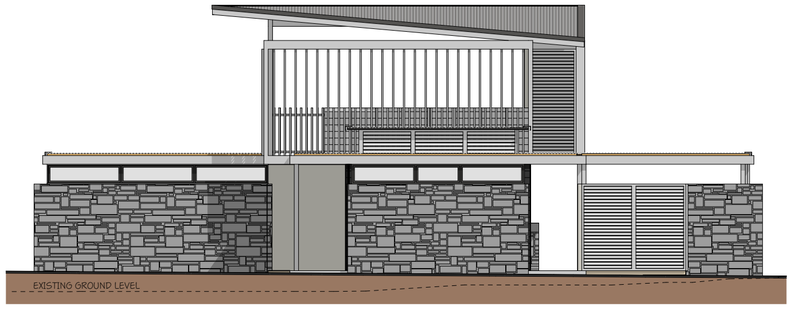
SHEET No: **P1.4**

OF: 12 REV:



11 - KITCHEN / ABLUTION FLOOR PLAN

Scale 1:100



13 - WATCH TOWER ELEVATION 13

Scale 1:100

14 - WATCH TOWER ELEVATION 14

Scale 1:100

TOWER MATERIALS

NOTE COLOURS ARE PRELIMINARY

ROOFING
LONG RUN CORRUGATE ROOFING - IRONSAND

WALL CLADDING
RUSTICATED WEATHERBOARD WITH BATTENS OVER - CHARCOAL
STONE VENEER - TONES SIMILAR TO FOSSILIZED FOREST ROCKS IN SHORE FRONT

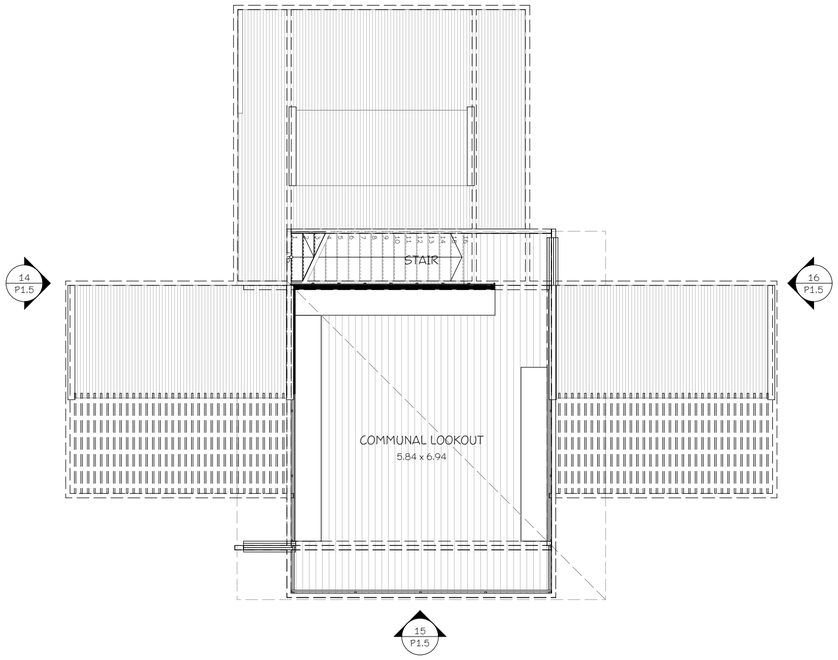
EXTERIOR JOINERY
POWDERCOATED ALUMINIUM JOINERY - IRONSAND
POWDERCOATED ALUMINIUM LOUVRES - WHITE
POWDERCOATED ALUMINUM BALUSTRADE - WHITE

SOFFITS
9mm VILLABOARD - WHITE

GUTTER & DOWNPIPE
COLORSTEEL - IRONSAND

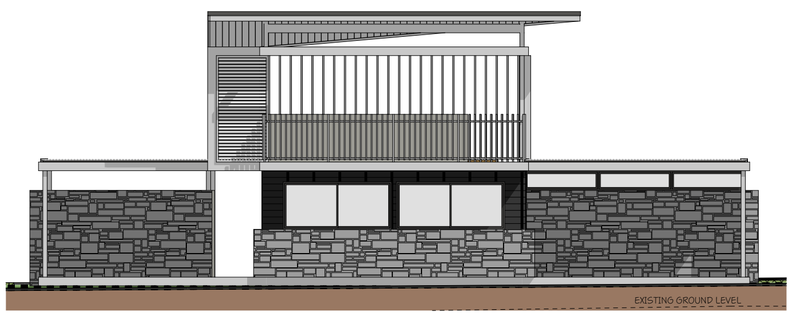
FASCIA & BARGE
TIMBER - WHITE

EXPOSED BEAM & POSTS
TIMBER - WHITE



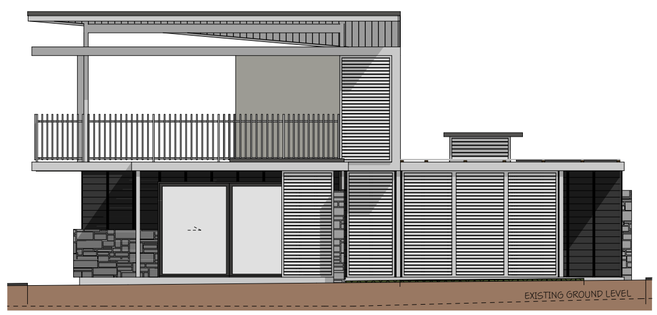
12 - WATCH TOWER UPPER FLOOR PLAN

Scale 1:100



15 - WATCH TOWER ELEVATION 15

Scale 1:100



16 - WATCH TOWER ELEVATION 16

Scale 1:100

Structural Engineer: ??

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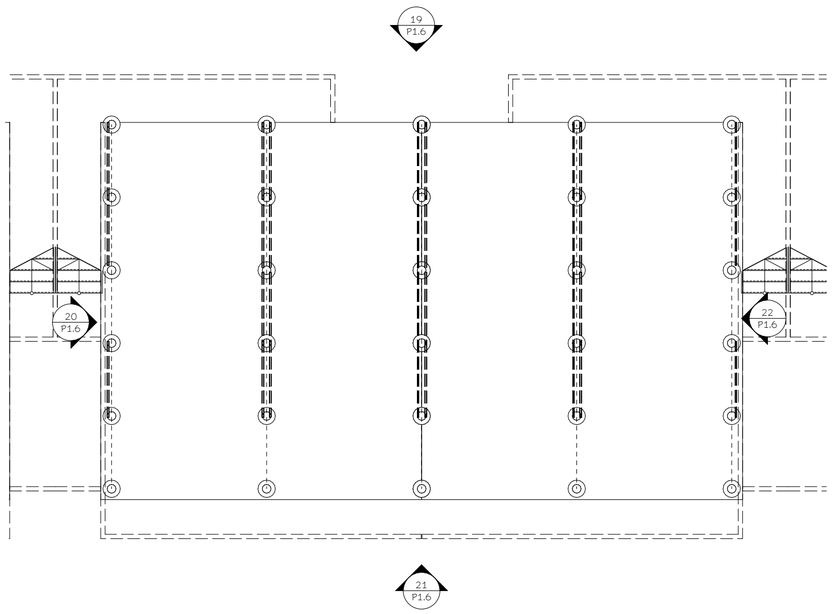
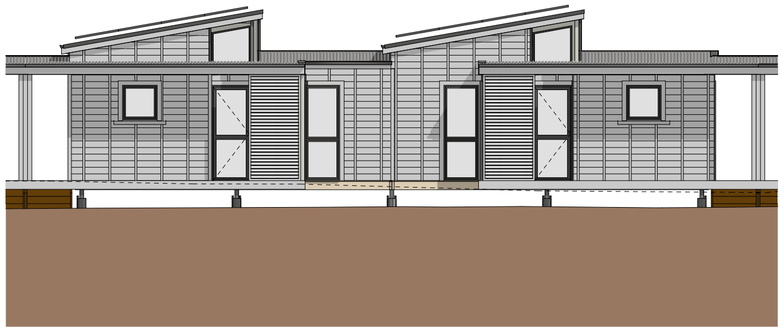
SHEET TITLE :	WATCH TOWER FLOOR PLANS & ELEVATIONS	

SHEET No: **P1.5**

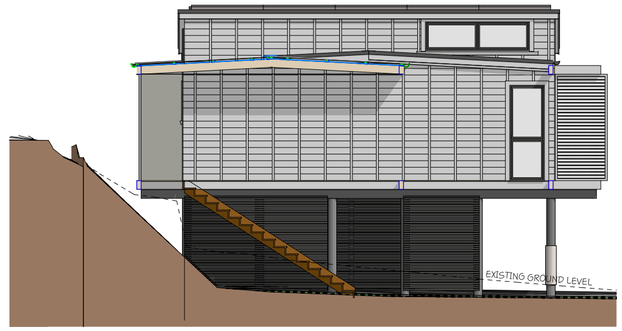
OF: 12 REV:



17 - MOTEL LOWER FLOOR PLAN
Scale 1:100



19 - MOTEL ELEVATION 19
Scale 1:100



20 - MOTEL ELEVATION 20
Scale 1:100

MOTEL MATERIALS

NOTE COLOURS ARE PRELIMINARY

ROOFING
LONG RUN CORRUGATE ROOFING - IRONSAND

WALL CLADDING
RUSTICATED WEATHERBOARD WITH BATTENS OVER - WHITE
TIMBER FACINGS TO WINDOW & CORNERS - WHITE

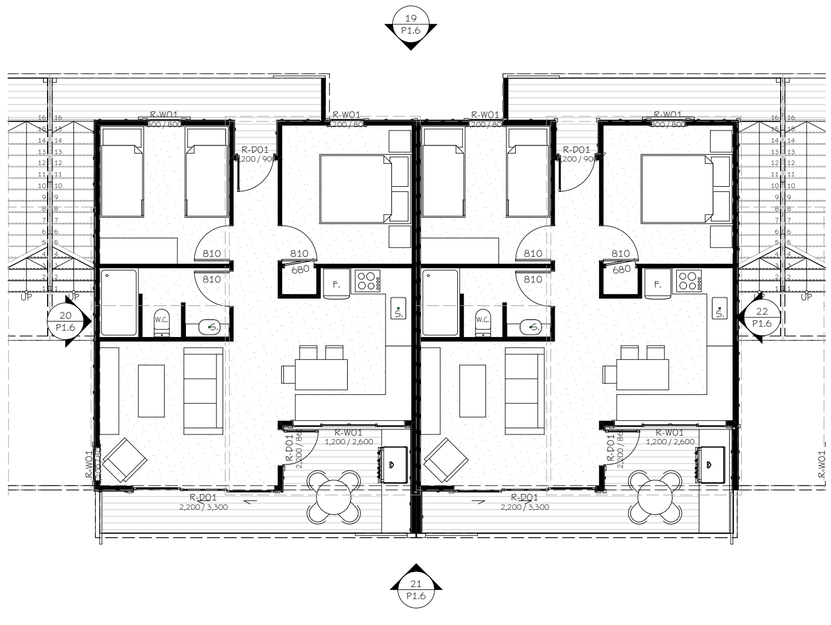
EXTERIOR JOINERY
POWDERCOATED ALUMINIUM JOINERY - IRONSAND
POWDERCOATED ALUMINIUM LOUVRES - WHITE

SOFFITS
9mm VILLABOARD - WHITE

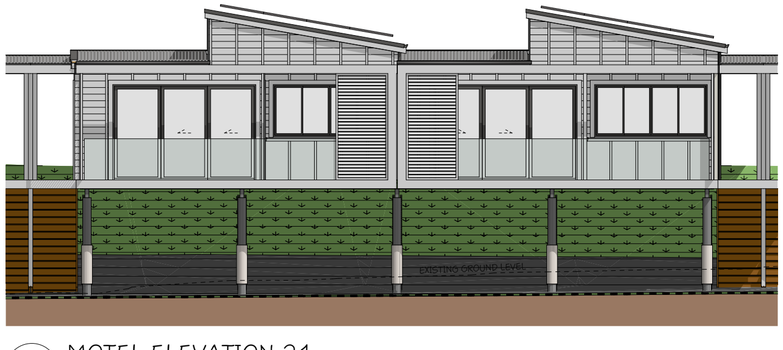
GUTTER & DOWNPIPE
COLORSTEEL - IRONSAND

FASCIA & BARGE
TIMBER - WHITE

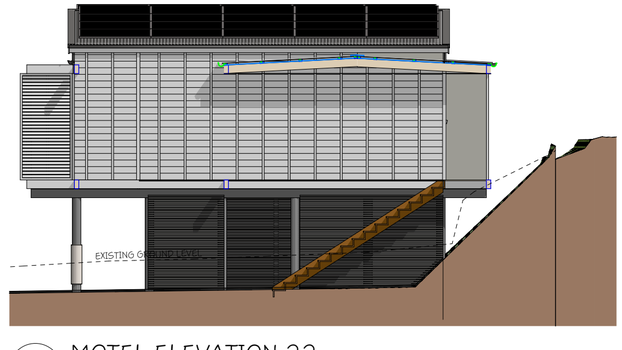
EXPOSED BEAM & POSTS
TIMBER - WHITE



18 - MOTEL UPPER FLOOR PLAN
Scale 1:100



21 - MOTEL ELEVATION 21
Scale 1:100



22 - MOTEL ELEVATION 22
Scale 1:100

Structural Engineer: ??

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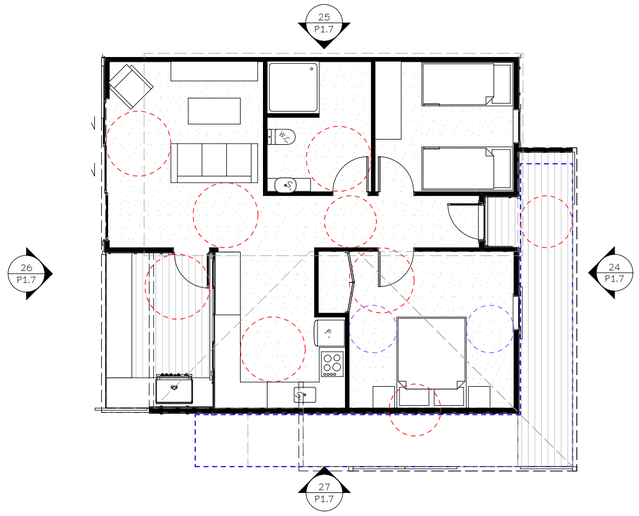
SHEET TITLE :	MOTEL FLOOR PLANS & ELEVATIONS		

SHEET No: **P1.6**
OF: 12 REV:



23 - ACCESSIBLE MOTEL FLOOR PLAN

Scale 1:100

MOTEL MATERIALS

NOTE COLOURS ARE PRELIMINARY

ROOFING
LONG RUN CORRUGATE ROOFING - IRONSAND

WALL CLADDING
RUSTICATED WEATHERBOARD WITH BATTENS OVER - WHITE
TIMBER FACINGS TO WINDOW & CORNERS - WHITE

EXTERIOR JOINERY
POWDERCOATED ALUMINIUM JOINERY - IRONSAND
POWDERCOATED ALUMINIUM LOUVRES - WHITE

SOFFITS
9mm VILLABOARD - WHITE

GUTTER & DOWNPIPE
COLORSTEEL - IRONSAND

FASCIA & BARGE
TIMBER - WHITE

EXPOSED BEAM & POSTS
TIMBER - WHITE

STUDIO MATERIALS

NOTE COLOURS ARE PRELIMINARY

ROOFING
LONG RUN CORRUGATE ROOFING - IRONSAND

WALL CLADDING
RUSTICATED WEATHERBOARD WITH BATTENS OVER - WHITE
TIMBER FACINGS TO WINDOW & CORNERS - WHITE

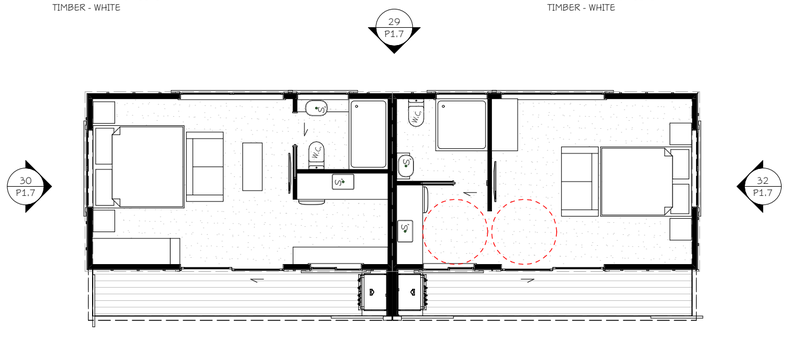
EXTERIOR JOINERY
POWDERCOATED ALUMINIUM JOINERY - IRONSAND
POWDERCOATED ALUMINIUM LOUVRES - WHITE

SOFFITS
9mm VILLABOARD - WHITE

GUTTER & DOWNPIPE
COLORSTEEL - IRONSAND

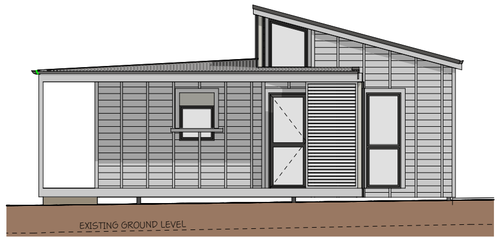
FASCIA & BARGE
TIMBER - WHITE

EXPOSED BEAM & POSTS
TIMBER - WHITE



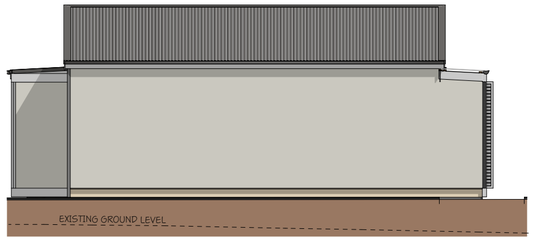
28 - STUDIO FLOOR PLANS

Scale 1:100



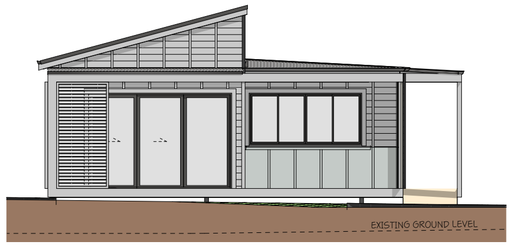
24 - ACCESSIBLE MOTEL ELEVATION 24

Scale 1:100



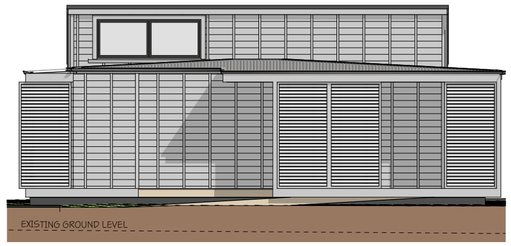
25 - ACCESSIBLE MOTEL ELEVATION 25

Scale 1:100



26 - ACCESSIBLE MOTEL ELEVATION 26

Scale 1:100

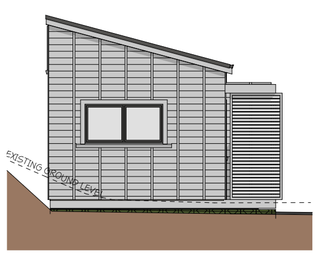


27 - ACCESSIBLE MOTEL ELEVATION 27

Scale 1:100

29 - STUDIO ELEVATION 29

Scale 1:100

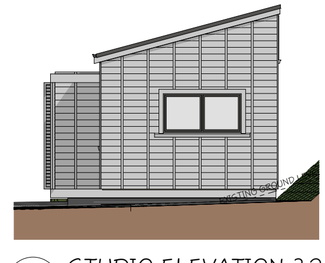


30 - STUDIO ELEVATION 30

Scale 1:100

31 - STUDIO ELEVATION 31

Scale 1:100



32 - STUDIO ELEVATION 32

Scale 1:100

Structural Engineer: ??

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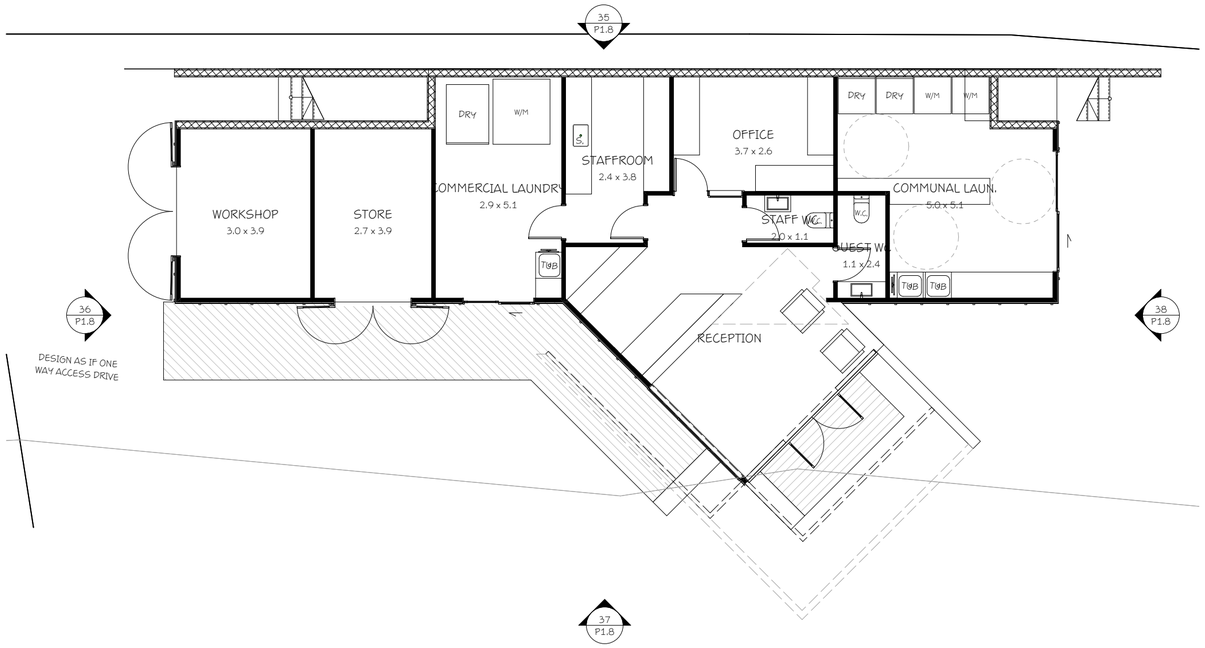
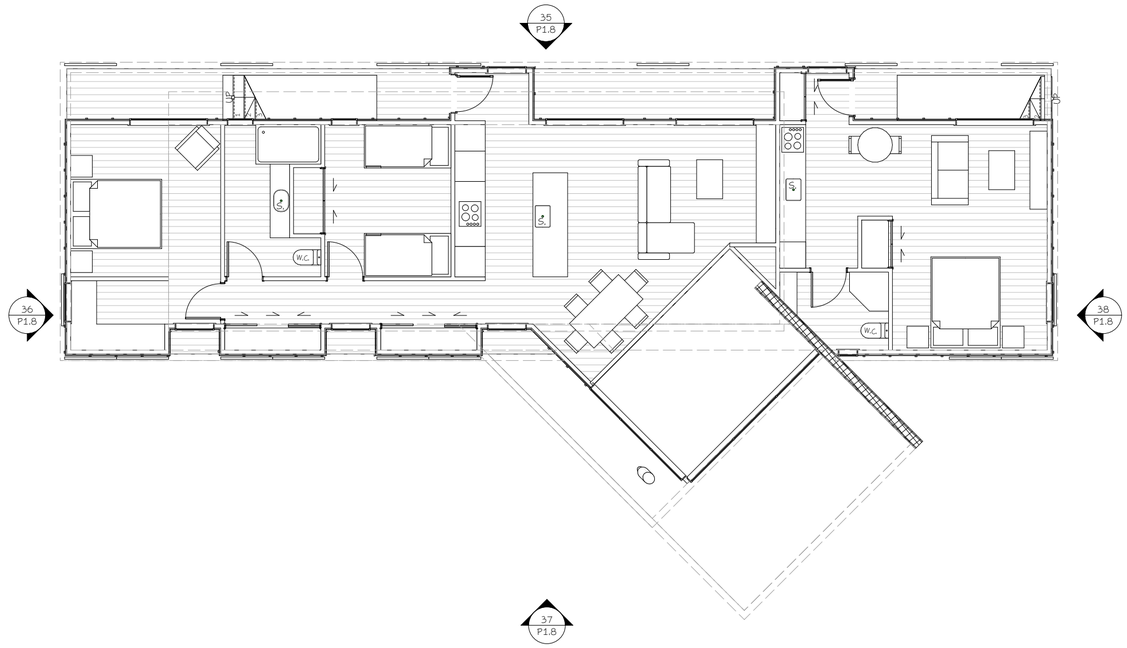
SHEET No: **P1.7**

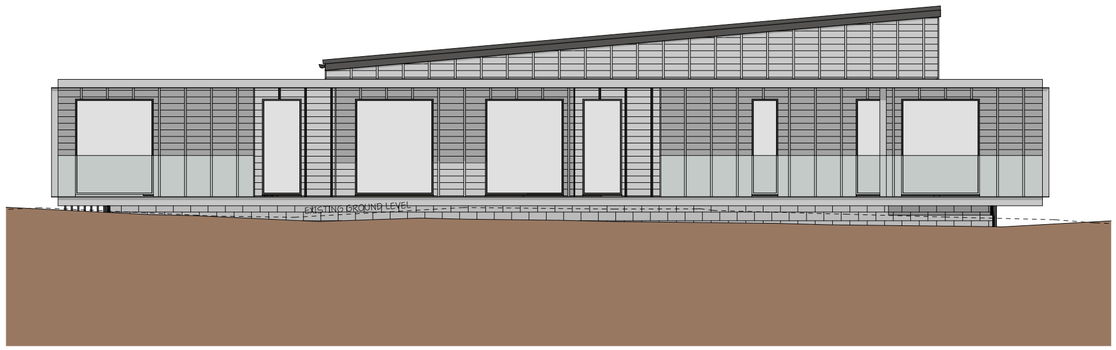
OF: 12 REV:





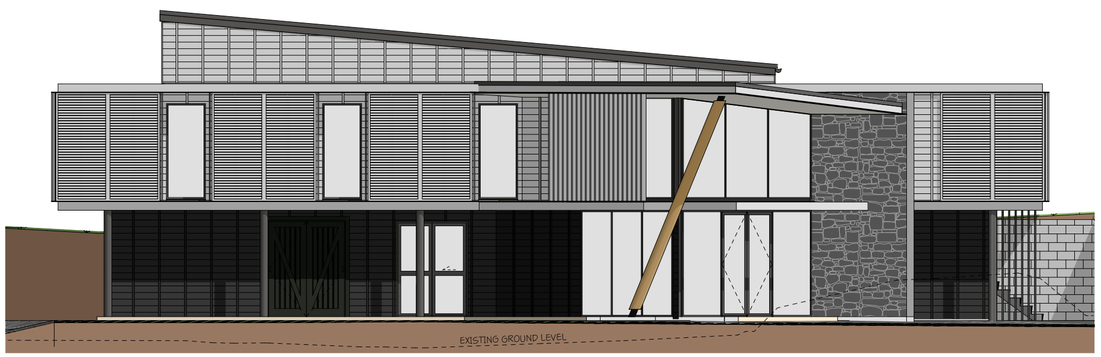
33 RECEPTION LOWER FLOOR PLAN
Scale 1:100

34 RECEPTION UPPER FLOOR PLAN
Scale 1:100



35 RECEPTION ELEVATION 35
Scale 1:100

36 RECEPTION ELEVATION 36
Scale 1:100



37 RECEPTION ELEVATION 37
Scale 1:100

38 RECEPTION ELEVATION 38
Scale 1:100

RECEPTION MATERIALS
NOTE COLOURS ARE PRELIMINARY

ROOFING
LONG RUN TRAY ROOFING - IRONSAND

WALL CLADDING
RUSTICATED WEATHERBOARD WITH BATTENS OVER - CHARCOAL (LOWER), WHITE (UPPER)
STONE VENEER - TONES SIMILAR TO FOSSILIZED FOREST ROCKS IN SHORE FRONT

EXTERIOR JOINERY
POWDERCOATED ALUMINIUM JOINERY - IRONSAND
POWDERCOATED ALUMINIUM LOUVRES - WHITE
POWDERCOATED ALUMINUM BALUSTRADE - WHITE

SOFFITS
9mm VILLABOARD - WHITE

GUTTER & DOWNPIPE
COLORSTEEL - IRONSAND

FASCIA & BARGE
TIMBER - WHITE

EXPOSED BEAM & POSTS
TIMBER - WHITE

1 0 1 2 3 4 5 6 7 8 9 10m

Structural Engineer: ??

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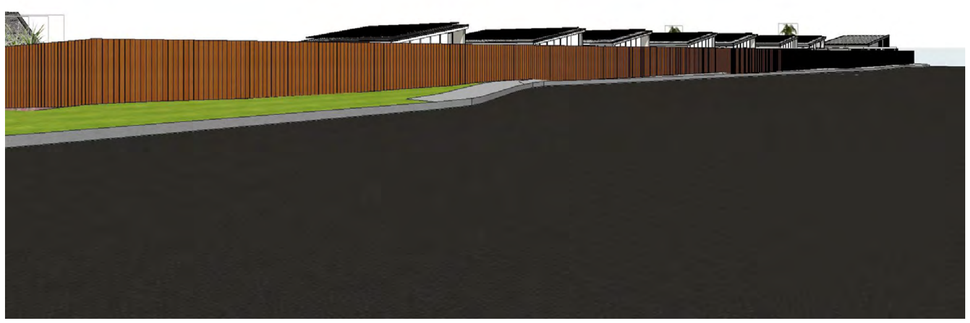
SHEET No: **P1.8** OF: 12 REV:

PERSPECTIVE FROM ALISON AVENUE

-

INTERNAL SITE PERSPECTIVE

-



PERSPECTIVE FROM ALISON AVENUE

-

PERSPECTIVE FROM TE ARAROA NATIONAL WALKWAY

-

1 0 1 2 3 4 5 6 7 8 9 10m

Structural Engineer: ??

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SHEET TITLE :	MOTEL PERSPECTIVES		

SHEET No: **P1.9**

OF: 12 REV:

ALISON AVENUE

EARNOCH AVENUE

18.29m, 84° 40' 2"
6.03m
14.09m, 89° 3' 50"
20.12m, 89° 3' 50"
22.17m, 89° 3' 50"
22.25m, 89° 3' 50"
36.92m, 158° 23' 10"
3.90m
26.97m, 158° 23' 10"
S/W SUMP
63.19m, 169° 48' 59"
3.12m
18.74m, 91° 11' 59"
20.29m, 89° 59' 59"
20.20m, 89° 59' 59"
24.79m, 89° 59' 59"
16.11m, 89° 59' 59"
12.73m, 79° 6' 50"

SUMP
INTERCEPTOR
24m LONG HUME - TITAN 600 SPUN PIPE
200mm Ø
100mm Ø

TE ARAROA - NATIONAL WALKWAY

NOTE: THIS IS A PRELIMINARY STORMWATER PLAN AND ALL SIZING, GRADIENTS AND CAPACITIES TO BE CONFIRMED BY HYDRAULIC / CIVIL ENGINEER

33 - STORMWATER DRAINAGE PLAN
Scale 1:250

0 5 10 15 20 25 30 35 40 45 50m

Structural Engineer: ??

USE ONLY THE "BUILDING CONSENT AUTHORITY" APPROVED DRAWINGS & ASSOCIATED DOCUMENTATION FOR CONSTRUCTION

PRELIMINARY

Rev:	Date:	Note:

Boyd Chamberlain
ARCHITECTURE LTD
P: 03 366 0056
M: 021 83 62 62
E: design@bcaltd.co.nz
PO BOX 9299
CHRISTCHURCH 8149

LICENSED BUILDING PRACTITIONER www.dbh.govt.nz BUILDING CONFIDENCE

PROJECT TITLE :

TOP 10 TAKAPUNA
22 THE PROMANADE, TAKAPUNA BEACH, AUCKLAND

ALL DIMENSIONS SHALL BE CHECKED AND VERIFIED BEFORE ANY CONSTRUCTION COMMENCES. USE PUBLISHED DIMENSIONS ONLY. DO NOT SCALE FROM THIS DRAWING. ALL WORK TO COMPLY WITH THE CURRENT REVISIONS OF THE NZ BUILDING CODE & REFERENCED STANDARDS AT THE TIME OF CONSTRUCTION.

PRINTED:	03/07/23	PAGE:	A2
SCALES:	AS SHOWN		
DRAWN:	JB	JOB No: 20094	
SHEET TITLE :	STORMWATER DRAIN PLAN		

SHEET No: **P1.10**

OF: 12 REV:

Attachment D – Lessee's Landscape Plan

KEY:

- (A) Trailer / campervan reception parking
- (B) Reception parking bay
- (C) Ex. reserve access
- (D) Boat wash & dump station
- (E) Gobi block & grass camper parks
- (F) 2m high wire mesh privacy screens with climbing plants
- (G) Hedging for privacy
- (H) Steps up to raised tent area
- (I) Post & wire fence to boundary
- (J) Existing fence retained

Roading layout subject to traffic engineer refinements

SITE LANDSCAPE ARCHITECTS ^

www.sitela.co.nz . 021838855 . Queenstown

1:500 @ A3

scale

A 12.04.23 . More trees, traffic amendments
\- 27.02.23 . Draft for review

revisions

Takapuna Beach Holiday Park
Context Plan

RC . RevA

drawing no. 158_SK-001

revision A

Alison Avenue

Earnoch Avenue

Reception

Motel 1 | Motel 2 | Motel 3 | Motel 4 | Motel 5 | Motel 6 | Motel 7

Tents
+ 5.8

+ 3.4

Cabin 5

Cabin 4

Studio 1

Studio 2

Studio 3

Studio 4
Accessible

Ablution

Kitchen

Cabin 1

Cabin 2

Cabin 3

Playground

Accessible Motel

ramp

ramp

Tents

Reserve

Te Araroa Trail

NORTH
Winter Set
Summer Set
Winter Rise
Summer Rise

KEY:

- (A) Trailer / campervan reception parking
- (B) Reception parking bay
- (C) Ex. reserve access
- (D) Boat wash & dump station
- (E) Gobi block & grass camper parks
- (F) 2m high wire mesh privacy screens with climbing plants
- (G) Hedging for privacy
- (H) Steps up to raised tent area
- (I) Post & wire fence to boundary
- (J) Existing fence retained

Roading layout subject to traffic engineer refinements

SITE LANDSCAPE ARCHITECTS ^

www.sitela.co.nz . 021838855 . Queenstown

1:400 @ A3

scale

A 12.04.23 . More trees, traffic amendments
- 27.02.23 . Draft for review

revisions

Takapuna Beach Holiday Park
Landscape Masterplan

RC . RevA

drawing no. 158_SK-002

revision A

EXISTING TREES RETAINED
(Refer Arborist Report)

01 & 07	Metrosideros excelsa (outside site)
02-06	Metrosideros excelsa
08	Coprosma robusta
50-51	Corynocarpus laevitagus

(All other existing trees to be removed)

PROPOSED TREES
(Refer Arborist Report - at least 24 total)
For species list refer SK-004

SITE LANDSCAPE ARCHITECTS ^

www.sitela.co.nz . 021838855 . Queenstown

1:400 @ A3

scale

A 12.04.23 . More trees, traffic amendments
\- 27.02.23 . Draft for review

revisions

Takapuna Beach Holiday Park
Planting Concept Plan

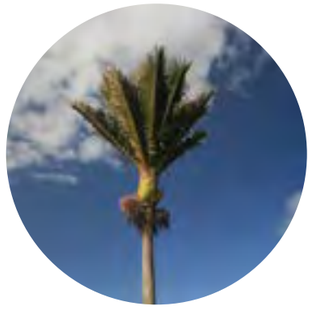
RC . RevA

drawing no. 158_SK-003

revision A

Trees

Metrosideros excelsia ‘Maori princess’



Rhopalostylis sapida

Knightia excelsa

Hoheria populnea

Alectryon excelsus

Carpodetus seratus

Pseudopanax crassifolius

Beilschmedia Tarairi

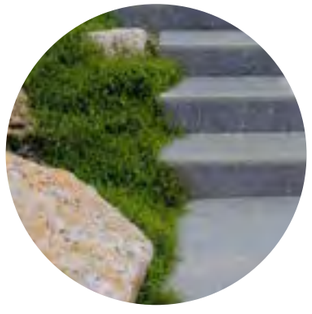
Shrubs / Ground Covers

Libertia ixioides

Austrostipa stipoides

Carex virgata

Euphorbia glauca



Muehlenbeckia axillaris

Metrosideros perforata

Hebe diomisifolia

Disphyma australe

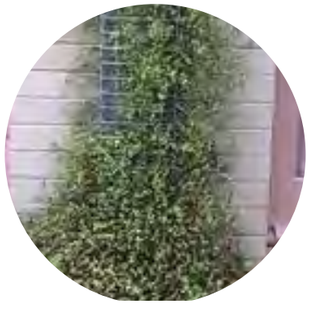
PLANT SCHEDULE (Preliminary)

Code	Botanical Name	Common Name	Spacing	Max grow ht to wd	Grade	No.
Trees:						
AE	*Alectryon excelsus*	Titoki	n/a	8 x 4m	2.5m	2
BT	*Beilschmedia Taraire*	Taraire	n/a	8 x 4m	2m	2
CS	*Carpodetus seratus*	Putaputaweta / Marbleleaf	n/a	10 x 4m	2m	2
HP	*Hoheria populnea*	Houhere / Lacebark	n/a	8 x 3m	2m	2
KE	*Knightea excelsia*	Rewarewa	n/a	10 x 3m	2m	2
MM	*Metrosideros excelsia 'Maori princess'*	Pohutukawa	n/a	8 x 5m	3m	8
PC	*Pseudopanax crassifolius*	Horoeka / Lancewood	1.2m	8 x 3m	1m	13
RS	*Rhopalostylis sapida*	Nikau	2m	8 x 3m	1m	25
				Total Proposed Trees:		**56**
Shrubs:						
AF	*Astelia fragrans*	Bush astelia				
AS	*Austrostipa stipoides*	Prickly spear-grass				
BC	*Brachyglottis 'Crustii'*	Brachyglottis				
CA	*Coprosma acerosa*	Sand coprosma				
CV	*Carex virgata*	Pukio				
DA	*Disphyma australe*	Horokaka / Coastal ice plant				
DN	*Dianella nigra*	Turuturu				
EG	*Euphorbia glauca*	Waiuatua				
LG	*Libertia grandiflora*	NZ iris				
MP	*Metrosideros perforata*	White climbing rata				
PG	*Phormium green dwarf*	Dwarf flax				
PP	*Pimelia prostrata*	NZ daphne				
SD	*Sophora 'dragon's gold'*	Dwarf kowhai				
HD	*Hebe diomisifolia / or other locally sourced spp.*	Hebe				
Climbers:						
TS	*Tecomanthe speciosa*	Three Kings Climber				
PH	*Parsonsia heterophylla*	NZ Jasmine				
MC	*Muehlenbeckia complexa ‘Nana’*	Small-leaved Pohuehue				
Hedging:						
GL	*Grisealinea littoralis*	Kapuka / Broadleaf				
PT	*Pittosporum tenuifolium*	Kohuhu				

Climbing Plants

Tecomanthe speciosa

Parsonsia heterophylla



Muehlenbeckia complexa ‘Nana’

139 Beach Road, Castor Bay

04 July 2023

Roma Leota – Project Manager (Parks and Community Facilities)

Devonport-Takapuna Local Board
Auckland Council

High level cost estimates – presented in April 2023

	Demolition	Reconstruction (replication)	Restoration
High-level estimated cost	$58,000	$420,400*	$**
Professional Services	$50,000	$100-$250k	$100-$250k
Pro's	Low cost. No building maintenance costs in the future.	The building will be retained.	The buildings heritage value will be preserved.
Con's	The building and its heritage character is lost.	The building will cease to have heritage value as original materials are replaced with new materials. Resource consent may not be approved.	A high-level cost provided in 2020 estimate the cost for restoration to be $1.8m.
Notes	Removing the building will provide additional open space for recreation purpose.	Ongoing financial investment is required to monitor and maintain the building.	Design, engineering, and quantity surveying is needed to establish costs in the current market.

Questions from April 2023 workshop

Question	Comments
Cost to make the building safe	Total remediation costs (including professional fees and consent fees, excluding GST) is $777,685.
What facilities are nearby, is there a need for another community facility?	Sunnynook Community Centre, Observation Post, and the Phoenix Theatre. There is a non-priority action in the Community Facilities Network Plan Action Plan - Revised 2022 to investigate community needs in Sunnynook and Milford for community facilities and potential improvements to existing assets to address needs.
Can the building be converted into a café or art centre?	Yes - the building is not classified. RMP 1985 states buildings of a public or community nature used for non-profit making purposes may be permitted.
Demolition – is consent likely to be granted given the heritage status?	Demolition is not supported by Heritage NZ Pouhere Taonga & council's Heritage Unit. Consent is possible, but it will be at a significant cost.
Video and montage board of the building's history	Yes - through educational interpretative signage to tell the history of the building.

Thank you

Ngā mihi

Devonport-Takapuna Local Board
Auckland Council

Please read the guidance below in red and delete the statements before sending.
For further guidance please refer to the **memo guidance**.

Memorandum

16 June 2023

To:	Devonport Takapuna Local Board
Subject:	Former Military Barracks Building Additional Information (Kennedy Park)
From:	Roma Leota – Project Manager
Contact Information:	Sarah Jones – Manager Area Operations Email: Sarah.Jones2@aucklandcouncil.govt.nz

Purpose

1. To provide addition information as requested by the Local Board on the future options for the former military barracks building at Kennedy Park.

Summary

2. A building options report and heritage assessment for the former barracks building was presented to the Local Board in April 2023.
3. The Local Board requested additional information at the workshop which are summarised in Table 2 below along with commentary.
4. Comments relating to the barracks building were obtained from Heritage New Zealand Pouhere Taonga, councils Heritage Unit, Planner and Policy team. These are included in Attachment C of this memorandum.
5. The demolition option is not supported on heritage grounds by Heritage New Zealand Pouhere Taonga and council's Heritage Unit. The financial cost for resource consent would be significant if demolition is the preferred option.
6. A cost estimate from a Quantity Surveyor in 2018 priced the remediation repairs for the building at $777,685. The total cost now would be substantially higher.
7. The building could be converted for community used for non-profit making purposes; however, a significant amount of investment is needed to repair the barracks to meet heritage standards, building code compliance and health and safety obligations.

Context

8. A heritage assessment and options for the old barracks building was presented to the local board in April 2023 along with high-level costs as shown in Table 1 below. A copy of the memorandum and heritage assessment are included in Attachment A and B.

Table 1: High level cost for demolition and reconstruction

	Demolition	Reconstruction (replication)	Restoration
High-level estimated cost	$58,000	$420,400*	$**
Professional Services	$50,000	$100-$250k	$100-$250k
Pro's	Low cost. No building maintenance costs in the future.	The building will be retained.	The buildings heritage value will be preserved.
Con's	The building and its heritage character is lost.	The building will cease to have heritage value as original materials are replaced with new materials. Resource consent may not be approved.	A high-level cost provided in 2020 estimate the cost for restoration to be $1.8m.
Notes	Removing the building will provide additional open space for recreation purpose.	Ongoing financial investment is required to monitor and maintain the building.	Design, engineering, and quantity surveying is needed to establish costs in the current market.

** Costs excludes professional services, design, engineering, resource consent and heritage input.*

*** Concept design, engineering, and quantity surveying are needed to establish a reliable cost estimate.*

9. The Local Board requested additional information about the barracks building in their workshop in April 2023. The information include:
    - The cost to make the building safe.
    - What community facilities are nearby, is there a need for another community facility?
    - Can the building be converted into a café or art centre?
    - Commercial use of the building versus reserve classification?
    - Investigate displaying historical information about the barracks building at the site, via video, photo montage board.
    - Planning requirements for demolition, modification, and reconstruction.
    - Input from councils Heritage Unit and Heritage NZ Pouhere Taonga

Discussion

10. The table below provides a summary of the information requested by the Local Board and comments from councils Heritage Unit, Planner and Policy team and Heritage New Zealand Pouhere Taonga. More details are included in Attachment C of this memorandum.

Table 2: Additional information and comments

Questions from April 2023 workshop	Comments
Cost to make the building safe.	Total remediation costs (including professional fees and consent fees, excluding GST) is $777,685.
What facilities are nearby, is there a need for another community facility?	Sunnynook Community Centre, Observation Post, and the Phoenix Theatre There is a non-priority action in the Community Facilities Network Plan (CFNP) Action Plan - Revised 2022 to investigate community needs in Sunnynook and Milford for community facilities and potential improvements to existing assets to address needs.
Can the building be converted into a café or art centre?	Yes - the building is not classified. The Reserve Management Plan 1985 states buildings of a public or community nature used for non-profit making purposes may be permitted.
Demolition – is consent likely to be granted given the heritage status?	Demolition is not supported by Heritage NZ Pouhere Taonga and council's Heritage Unit. Consent is possible, but it will be at a significant cost.
Video and montage board of the building's history.	Yes - through educational interpretative signage to tell the history of the building.

Next steps

11. A report of the preferred option for the barracks building will be presented to the local board for approval at a business meeting in September 2023.

Attachments

Attachment A: Former Military Barracks 139 Beach Road, Castor Bay. Future Options Report.

Attachment B: Future options for 139 Beach Road, Castor Bay (former military barracks) memo.

Attachment C: Additional information and Comments.

Please read the guidance below in red and delete the statements before sending.
For further guidance please refer to the memo guidance.

Memorandum

16 March 2023

To:	Devonport Takapuna Local Board
Subject:	Future options for 139 Beach Road, Castor Bay (former military barracks)
From:	Roma Leota – Project Manager
Contact Information:	Sarah Jones – Manager Area Operations Email: Sarah.Jones2@aucklandcouncil.govt.nz

Purpose

1. To receive feedback on the future of the former military barracks building at 139 Beach Road, Castor Bay.

Summary

2. The old barrack building at 139 Beach Road is a Heritage Asset, Category A in the Auckland Unitary Plan.
3. The building is in poor condition and any modification or restoration requires resource consent.
4. A recent building options report and heritage assessment in Attachment A provides three alternatives for consideration:
   - Demolition of the building and clearing of the site
   - Reconstruction (essentially replication) of the building in whole or part
   - Restoration of the building. This option may also involve partial reconstruction but would essentially restore the building to its original form.
5. High level estimate for the demolition of the building is $58,000. Reconstruction is priced at $420,400. The costs do not include professional services which is estimated to be $50,000 for the demolition and between $100,000 - $250,000 for reconstruction.
6. A reliable cost to restore the building cannot be determined without undertaking detailed analysis, design, engineering, and quantity surveying. A high-level cost of $1.8m was obtained in 2020 to restore the building.
7. The costs provided above are high level estimate only and does not include design, engineering, resource consent, contingency, and heritage input.
8. A budget of $19,643 has been approved this financial year, a further $200,000 and $300,000 were approved in principle in 2023/2024 and 2024/2025.

Context

9. The old ‘barrack building’ at 139 Beach Road was purchased by the council in 2012 from Housing New Zealand as part of an open space acquisition.

10. The building is listed as a Category A historic heritage item in the Auckland Unitary Plan. The heritage classification means any planned demolition of the building would trigger a non-complying resource consent, and modifications and restoration would require a resource consent.

11. Several assessments have been undertaken in the past by council staff and external specialists to understand the condition of the building. They include asbestos management survey, structural report, seismic and weathertightness assessments and site investigation.

12. The building is currently unused, and it is in poor condition based on the assessments that have been completed to date.

13. Some remedial work was undertaken in 2021 to remove and clean the ceiling void that contained asbestos fibres and encapsulate the underside of the asbestos roof. Some of the wall linings were removed and spray to eliminate mould, all floor coverings have been removed and disposed of.

14. A budget of $19,643 of Asset Based Services (ABS): Capex – Renewals was approved for the current financial year. A further $200,000 and $300,000 are allocated in financial year 2023/2024 and 2024/2025 respectively.

Discussion

15. A report completed by an external heritage architect in May 2022 contains a heritage assessment of the building, an investigation into the building condition, a schedule of work for reconstruction and three future options for the building:

    - Demolition of the building and clearing of the site
    - Reconstruction (essentially replication) of the building in whole or part
    - Restoration of the building. This option may also involve partial reconstruction but would essentially restore the building to its original form.

16. A cost estimate for the restoration of the building cannot be established without concept design, engineering, and quantity surveying.

17. High level cost estimates for options one and two including remedial work in page 21 of the report have been obtained and summarised in the table below. Please note the cost estimates do not include professional services, design, engineering, resource consent, contingency, and heritage input.

Table 1: High level cost for demolition and reconstruction

	Demolition	Reconstruction (replication)	Restoration
High-level estimated cost	$58,000	$420,400*	$**
Professional Services	$50,000	$100-$250k	$100-$250k
Pro's	Low cost. No building maintenance costs in the future.	The building will be retained.	The buildings heritage value will be preserved.
Con's	The building and its heritage character is lost.	The building will cease to have heritage value as original materials are replaced with new materials. Resource	A high-level cost provided in 2020 estimate the cost for restoration to be $1.8m.

		consent may not be approved.	
Notes	Removing the building will provide additional open space for recreation purpose.	Ongoing financial investment is required to monitor and maintain the building.	Design, engineering, and quantity surveying is needed to establish costs in the current market.

** Costs excludes professional services, design, engineering, resource consent, contingency, and heritage input.*

*** Concept design, engineering, and quantity surveying are needed to establish a reliable cost estimate.*

Next steps

18. A report of the preferred option will be presented to the local board for approval at a business meeting in June 2023.

Attachments

Attachment A: Former Military Barracks 139 Beach Road, Castor Bay. Future Options Report.

FORMER MILITARY BARRACKS
139 BEACH ROAD, CASTOR BAY

FUTURE OPTIONS REPORT

May 2022

dpa architects

83 Victoria Road, P.O. Box 32-318
Devonport, Auckland, New Zealand
admin@dpaarchitects.co.nz
Ph. (09) 445 8544

CONTENTS

1	**INTRODUCTION**	**01**
	Subject and Purpose of Report	
	Contents of Report	
	Heritage Ratings	
	Commission and Authorship	
2	**HISTORICAL SUMMARY**	**04**
	Construction of the Battery	
	Construction of the Barracks	
	The End of the War	
	Later History	
3	**ASSESSMENT OF HERITAGE VALUES**	**09**
	2015 Conservation Plan	
	Heritage New Zealand Pouhere Taonga Listing	
	Summary Statement	
4	**OPTIONS FOR THE BUILDING**	**12**
	Demolition of Building	
	Reconstruction/Replication	
	Restoration of the Building	
5	**CONDITION OF THE BUILDING**	**13**
	Roofing and Accessories	
	External Wall Cladding and Trim	
	Base Cladding and Structure	
	External Joinery	
	Roof Structure	
	Wall Framing	
	Internal Lining Including Floor Boards	
	Internal Joinery and Finishing Trim	
	Internal Fixtures and Fittings	
	Fireplace and Chimney	
	Subfloor Area	
	Building Services	
	External Steps and Paths	

6	**PROPOSED REMEDIAL WORK**	**21**
	Structural Upgrading	
	Roofing and Accessories	
	External Cladding and Trim	
	External Window Joinery	
	External Doors	
	Internal Linings	
	Fixtures and Fittings	
	Building Services	
	Site Works	
7	**USES FOR THE BUILDING**	**23**
8	**CONCLUSION**	**25**

1 INTRODUCTION

Subject and Purpose of Report

This report concerns a timber weatherboarded building located at 139 Beach Road, Castor Bay on Auckland's North Shore. It dates from 1943 and was one of a number of buildings originally constructed as part of a military battery camp on the site and were designed to resemble private residences as part of an effort to disguise their real purpose. After the end of the war the buildings were taken over by the State Advances Corporation and used for emergency accommodation.

The building that is the subject of this report is now the sole survivor of what was originally a group of some 13 buildings. It was last tenanted in 2006 before being purchased by Auckland Council with the intention of it being part of a heritage precinct. The building continues to be owned by Auckland Council.

The building is currently disused and is slowly falling into disrepair with plans to retain it as part of a heritage precinct not yet having been realised. Auckland Council is now considering the future of the building and this report has been prepared to assist in that process.

Contents of Report

The contents of the report were set out in a proposal addressed to Auckland Council and are summarised as follows:

- **Heritage Assessment**

  A comprehensive historical account and heritage assessment of the building was included in a conservation plan previously prepared for the building in 2015 by DPA Architects. This has been briefly summarised for this report to provide background information. The heritage listings for the building are as indicated on the following page.

- **Options for the Building**

  As noted, the building is currently disused and deteriorating. It is currently fenced off but remains a potential target for vandalism. It considered extremely vulnerable and a target for arsonists. A fire in the building would likely result in its complete destruction as has happened to a number of other vacant heritage buildings. A number of options for the building will be explored by this report, including their impact on the building's heritage values. Options to be considered include:

  - Demolition of the building and clearing of the site.
  - Reconstruction (essentially replication) of the building in whole or part.
  - Restoration of the building. This option may also involve partial reconstruction but would essentially restore the building to its original form.

- **Investigative Work**

  Various investigations have been undertaken on site to determine the condition of the building fabric and the report contains the outcome of those. The investigations that have been carried out include inspections of the roof and roof structure, external and internal linings and finishing details, wall and subfloor framing, kitchen and bathroom fixtures and fittings, the chimney and building services.

- **Schedule of Work Required**

  Following the assessment of the condition of the building fabric a preliminary schedule of the work that might be required to either reconstruct or replicate the building in some form

or to restore it to its original form has been included. Preliminary cost estimates have also been provided.

Heritage Ratings

- **Auckland Council**

The former Barracks Building appears to be mentioned twice in the Auckland Unitary Plan Schedule 14.1 Schedule of Historic Heritage.

ID 02686 lists Red Bluff/Castor Bay Battery recreation hut (former) at 139 Beach Road as a Category A historic heritage item. Its heritage values are listed as A: Historical, B: Social, D: Knowledge, E: Technology, F: Physical Attributes and H: Context. The interior of building/s are listed as an exclusion. It is noted that Red Bluff is actually located to the south of Campbells Bay and some distance to the north of Kennedy Park.

ID 01060 lists the Castor Bay Battery complex located at Kennedy Park, R 137 Beach Road, 141 Beach Road, **139 Beach Road**, Castor Bay as a A* historic heritage item. The Primary Feature of the complex is recorded as All World War II military-associated installations and its heritage values are listed as A, B, D, E and H. It has an associated Extent of Place and the interiors are not excluded in the listing. The A* is an interim category until a comprehensive re-evaluation is undertaken.

139 Beach Road (within the blue rectangle) shown within the wider extent of place shown hatched (from Auckland Unitary Plan).

- **Heritage New Zealand**

  The Castor Bay Battery and Camp is listed by Heritage New Zealand as a Category I Historic Place. This identifies it as a place of special or outstanding historical or cultural significance or value.

Commission and Authorship

This report was commissioned by Auckland Council and written by Dave Pearson, heritage architect and principal of DPA Architects of Devonport, Auckland.

2 HISTORICAL SUMMARY

Construction of the Battery

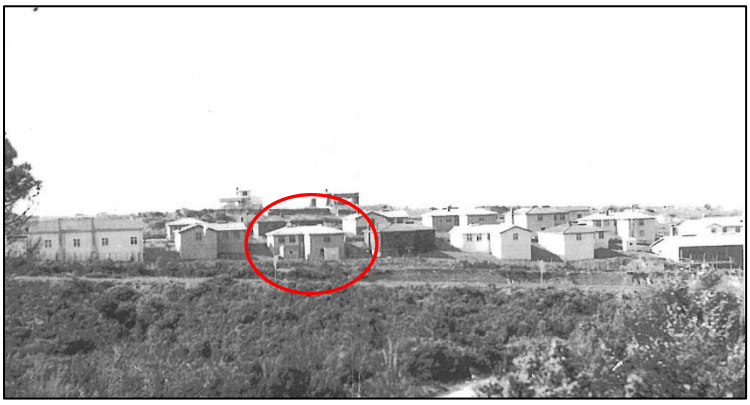
The Castor Bay site where the building in question and other military installations are located was purchased in 1934 by the New Zealand Defence Department with the intention of constructing a defence battery on the site. This battery, along with two others, was designed to protect the northern approach to the Rangitoto Channel. Construction of the battery commenced in 1941 and was completed the following year.

The close proximity of the battery to a residential area resulted in a method of camouflage said to be unique in the world. The observation post was designed to resemble a seaside ice cream shop and the gun emplacements had false roofs and canvas sides painted with windows and doors to disguise them as holiday homes. Finally, the water tank and parade ground were made to appear as tennis courts.

Disguised gun emplacement (left) and battery Observation Post (right).

Construction of the Barracks

A series of barrack buildings were constructed around the same time to house soldiers stationed at the site. The buildings, as a group, were designed to resemble a small housing estate with each building being constructed using a modified standard state house, using colours that would typically be used in such an an estate. A road was constructed leading onto the site and the houses were laid out in two rows on either side. The particular building was possibly used for recreational purposes but more likely was used a dormitory for male or possibly female defence personnel.

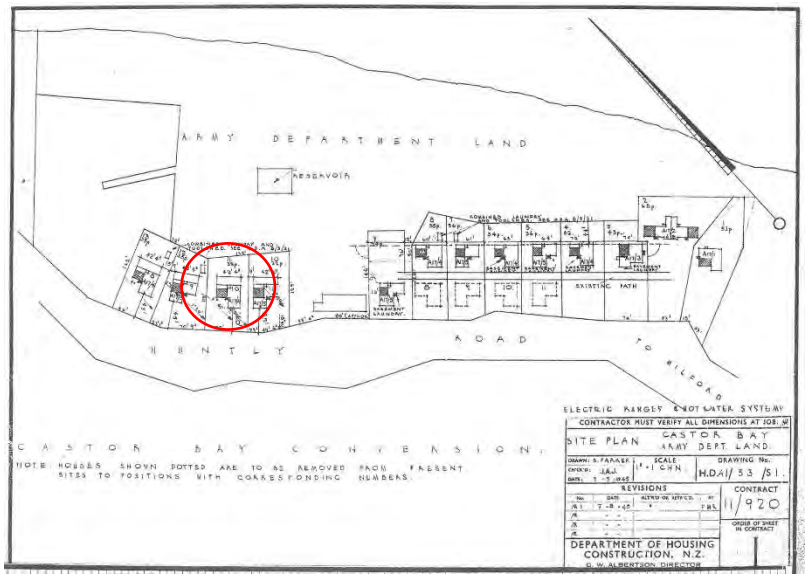


Photograph showing housing estate as constructed. The building in question is circled. The disguised gun emplacements can be seen in the background.

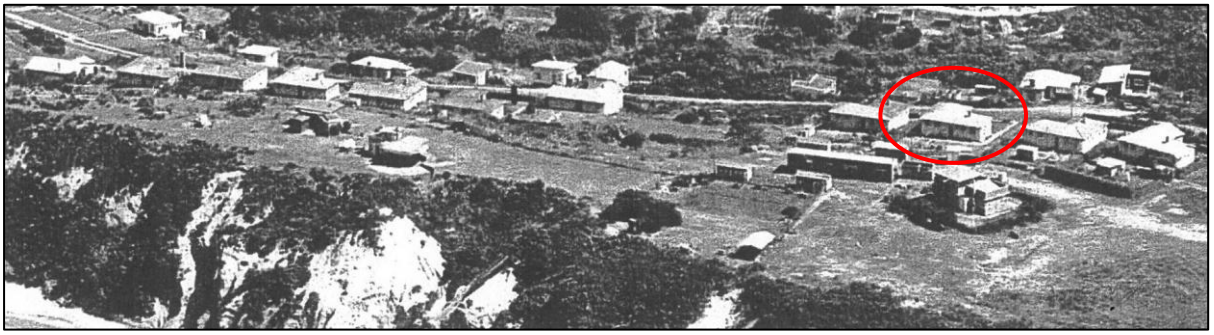
The End of the War

After the end of the war, the camp was vacated and many of the buildings were removed. In 1946, it appears that four of the buildings were repositioned further to the north along Huntly

Road, now Beach Road. In the mid-1950s, a number of the buildings, including the one in question, were redeveloped by the State Advances Corporation (later Housing New Zealand) for use as emergency housing. It appears that some modification of the buildings occurred at this time including the installation of additional windows. For the house in question, a new basement was constructed to house the laundry and it is also possible that the living room was extended at this time.



Plan showing houses to be relocated. The subject building is labelled No. 10. Plan is dated 1945.



Aerial view showing houses in their relocated position. The house in question is indicated with the red circle with the Battery Observation Post immediately below. The gun emplacements are located centre left. The remaining buildings at the left and right of the photograph have all been demolished.

Later History

Since then, the houses and ancillary buildings have been progressively demolished and the land given over to private housing. By the 1990s, the building at 139 Beach Road and one other originally used for officers' accommodation at 117 Beach Road were the only two left. The latter one was also subsequently demolished leaving the building in question as the sole survivor of 13 similar buildings that were originally constructed to appear as a small housing estate.

Today the building at 139 Beach Road still survives but is deteriorating and is considered vulnerable. Other military buildings remain on the site including the two gun emplacements, the observation post, the underground tunnels, an engine/generator room and two searchlight positions down on the cliff face.

3 ASSESSMENT OF HERITAGE VALUES

2015 Conservation Plan

The 2015 Conservation Plan evaluated the heritage values of the elements of which the building is comprised and also provided a Statement of Significance using the assessment criteria under which the building was evaluated in the Auckland Unitary Plan. This is reproduced below.

Historical	*The place reflects important or representative aspects of national, regional or local history, or is associated with an important event, person, group of people or idea or early period of settlement within New Zealand, the region or locality.*
	Coastal defence is a re-occurring theme in New Zealand history from the 1880s through to the mid-20th century. The Castor Bay counter-bombardment battery was part of a massive defence construction programme that was undertaken by the Public Works Department prior to WWII and included two-gun emplacements and a battery observation post. The battery was specifically constructed as part of the coastal defences intended to protect Auckland from foreign invasion. The barracks was one of a number of such buildings on the site that were used to house military personnel based at the battery. The former barracks is considered to have considerable significance as it reflects an important aspect of the history of New Zealand when the country joined Great Britain and the allies in the fight against Germany.
Social	*The place has a strong or special association with, or is held in high esteem by, a particular community or cultural group for its symbolic, spiritual, commemorative, traditional or other cultural value.*
	The former barracks is strongly associated with the military personnel that served at the Castor Bay battery during the Second World War. It is considered to have considerable significance under the social criterion.
Knowledge	*The place has potential to provide knowledge through scientific or scholarly study or to contribute to an understanding of the cultural or natural history of New Zealand, the region, or locality.*
	The former barracks, along with the remainder of the site, has the potential to provide considerable knowledge regarding military sites and, in particular, as an example of a site that was disguised as a housing complex. The building itself, as a barracks that was disguised as a house can also provide knowledge of a time in New Zealand's history. It is considered to have considerable significance under the social criterion.
Technology	*The place demonstrates technical accomplishment, innovation or achievement in its structure, construction, components or use of materials.*
	The place demonstrates construction techniques and use of materials that were typical of the period. These include the use of timber weatherboards and joinery. Materials including the softboard and plasterboard linings and possibly the asbestos cement roof are likely to date from the period when the State Advances Corporation refurbished the building as residential accommodation. The building is considered to have some significance under this criterion.

Physical Attributes	*The place is a notable or representative example of a type, design or style, method of construction, craftsmanship or use of materials or the work of a notable architect, designer, engineer or builder.*
	The former barracks was part of an elaborate deception to give the Castor Bay Battery and the associated structures the appearance of a seaside residential neighbourhood. In fact, no other site in New Zealand used such an element of deception so comprehensively. The building is therefore significant as the only known instance in New Zealand where a military barracks was disguised as a house. The building is typical of state housing of the period with its hipped roof, weatherboarded walls and small-paned windows sashes. The building has considerable significance under this criterion. It may be of international significance.
Aesthetic	*The place is notable or distinctive for its aesthetic, visual, or landmark qualities.*
	The building has the appearance of a standard state house of the period. It has landmark qualities, being readily visible from East Coast Bays Road and from within Kennedy Park.
Context	*The place contributes to or is associated with a wider historical or cultural context, townscape, landscape or setting.*
	The Castor Bay barracks was associated with other buildings that were also designed to have the appearance of a housing development. It is now the only one remaining. It is also associated with the other military installations on the site. The former barracks is associated with a wider network of coastal defences that were constructed over a period of some 70 years throughout New Zealand's history and were designed to protect cities and towns throughout the country.

Heritage New Zealand Pouhere Taonga Listing

Heritage New Zealand Pouhere Taonga produced a Review Report for a Registered Historic Place dated 14 March 2014. The report was entitled *Castor Bay Battery and Camp / Te Rahopara o Peretu, Auckland (Register No. 7265).*

The Registration Report includes the following statements:

The attempt to make the battery appear to be a civilian housing area was just one part of what became the most elaborate attempt at camouflaging a gun battery in New Zealand. Gun emplacements at Tomahawk Beach in Dunedin and the battery at bluff used similar measures but neither took it to the extremes used at Castor Bay and most other batteries attempted to hide rather than disguise the guns. At Castor Bay every attempt was made to make the emplacements, the control structure and even the reservoir appear to be something they weren't.

The HNZPT report also notes that the former barracks is the sole survivor of a building type unique to this site. It also notes that *"the site is believed to represent the most extensive survival of Second World War "architecture of deception" in the country. As the only known survivor*

from the sole military accommodation complex to be disguised as housing, the former men's dormitory is likely to be unique in this country".

Summary Statement

The Castor Bay Battery Camp was the most elaborate attempt to disguise a military installation as a residential housing settlement in New Zealand. It is an important example of what has been described as the "architecture of deception".

The deception extended to the gun emplacements which were disguised with painted canvas awnings to appear as holiday homes, the battery observation post which was made to resemble a modernist styled seaside cafe and the parade ground which was marked out as a tennis court. The barracks which were required to accommodate service personnel on the site were an essential part of the camp and were constructed to resemble a civilian housing area.

The battery observation post has survived, essentially as constructed. The gun emplacements, however, have long since lost their camouflage and the parade ground has been removed and the area grassed over. The majority of the barracks buildings and other ancillary buildings have been demolished, with the exception of the single remaining building located at 139 Beach Road. The barracks buildings were an essential part of the complex and the sole remaining building is likely to unique in New Zealand. It is considered that if it were to be lost, the overall significance of the site would be considerably reduced.

The later history of the building is also significant, firstly as it was used to accommodate female service personnel after a shortage of male personnel. The building is also significant for its use after it was relocated to provide social housing under the auspices of the State Advances Corporation.

4 OPTIONS FOR THE BUILDING

This report was required to explore a number of options for the building. These were to include:

- Demolition of the building and clearing of the site.
- Reconstruction (essentially replication) of the building in whole or part.
- Restoration of the building. This option may also involve partial reconstruction but would essentially restore the building to its original form.

Demolition of the Building

This option would involve complete demolition of the building. The site would be cleared of the building, its foundations and other infrastructure such as the concrete paths.

This option would clearly remove all evidence of the building which is the sole survivor of a group of barracks buildings disguised to appear as a civilian settlement. As has been noted, the barracks were an essential element of the Castor Bay battery in that they housed personnel serving on the site. As a military building designed to as appear effectively as an individual residential dwelling, the former barracks is believed to be unique in New Zealand as the only surviving example of its type and a good representation of the “Architecture of Deception”.

As noted, the building is scheduled as a Category A Historic Heritage place in the Auckland Unitary Plan and included in a Category 1 Historic Place by Heritage New Zealand Pouhere Taonga which is evidence of the significance that Auckland Council and Heritage NZ attach to the place.

Removal of the building would also deny the efforts that have been made by local community groups, notably the Kennedy Park WWII Installations Preservation Trust, who have attempted to preserve the building over the years. It would also be a lost opportunity for public education on the practice of visual deception.

Reconstruction/Replication

Reconstruction (essentially replication) of the building of the building in whole or part would involve effectively dismantling and replacing a lot of the original material with new material. There comes a point when there is so much new material that the building ceases to have any heritage value as it effectively becomes a new building.

There is a phrase that can apply to heritage buildings and it is do “as little as possible, as much as necessary”. In other words, wherever possible, fabric should be retained and repaired, rather than being replaced.

Restoration of the Building .

Under this option, the building would be restored to an earlier form where evidence exists for this to occur. This might be to its 1950s form where there is the most evidence to enable a faithful restoration. Some areas may be able to be returned to an earlier form where, for example, it appears that the original wall linings comprised tongue and groove boards.

Under this option, as much of the fabric as possible would be retained and repaired. This is obviously the preferred option and represents the best heritage outcome.

Under this option, some adaptation may be allowed to enable the building to fulfil a new use. Changes may involve the removal of sone internal walls to provide larger spaces for some activities. The building should also be insulated, the foundations and chimney may need to be structurally upgraded, new toilet facilities would be required, including the provision of an accessible toilet, some changes might be required for egress in the event of a fire and a new accessible ramp would also be needed.

5 CONDITION OF THE BUILDING FABRIC

Roofing and Accessories

The building is currently roofed with corrugated sheets containing asbestos cement. The hipped and ridge flashings also comprise asbestos cement. No building paper was laid beneath the roofing. The current roof appears to have replaced an original corrugated steel roof as evidenced by lead flashings around the chimney. The previous roof was painted red, again as seen on the chimney flashing and also by a terminal vent above the roof.

The asbestos cement roofing generally appears to be in reasonable condition with deterioration being consistent with its likely age. There is no evidence of leaks within the building originating from the roof. A separate report on the roof was commissioned by Auckland Council. The roof space in the building has since been cleared of asbestos particles and the underside of the sheets have been encapsulated. A certificate verifying that this work has taken place as been included in the appendices.

The lead chimney flashings are probably original and appear to be in fair condition. There is no evidence of leaks inside the building from around the chimney.

The spoutings currently comprise PVC plastic and probably replaced asbestos cement spoutings which in turn probably replaced original metal spoutings, possibly quadrant profile which would have been in use at the time. The downpipes appear to be a mix of plastic and asbestos cement.

Rear side of building. Note corrugated asbestos cement roof and remnant of earlier lead flashing at the base of the chimney. Note also plastic spouting.

External Wall Cladding and Trim

The external walls of the building are clad with what are likely to be bevel backed weatherboards with a paint finish. The original weatherboards are possibly rimu.

The weatherboards are in variable condition. The majority appear sound and it appears that some remedial work may have been carried out since the 2015 Conservation Plan was prepared. Nevertheless, some defects are still apparent including areas of decay and borer infestation. Some decay and evidence of water ingress which was not immediately apparent from the exterior became evident when areas of the internal linings were removed.

Decay is also evident in trim such as corner boxes and window facings. Other defects in the external cladding include rusting ventilation grilles and metal soakers over junctions between weatherboards.

Cladding defects included decayed weatherboards (left), rusting grilles and decayed corner boxes (top right) and rusting soakers (bottom right).

Base Cladding and Structure

The base of the building is generally clad with weatherboards that match those on the upper sections of the walls.

In the south corner of the building is a small basement that was constructed after the building was relocated in 1946 to provide space for a laundry. The outer wall comprises in situ concrete which has a substantial crack near the top of the wall. This could be the result of foundation settlement or rusting reinforcing within the concrete. Further movement appears to have occurred since the building was last surveyed in 2015.

Crack in foundation wall at south corner.

External Joinery

The windows generally comprise multi-pane casement sashes. While many are in reasonable condition, some are in a poor state of repair. Defects include decay in sills and sash members,

rusting hinges, cracked or missing putty and flaking paintwork. Some windows have previously been replaced but these are also showing signs of decay. The rear outer door is in poor condition. It appears to have been faced with a board to hide the decay. This has since been lost, leaving the door vulnerable to further decay. In the front porch, a timber sash was in poor condition and a pane of glass was missing.

Decay in window joinery, in sill and facing (left) and sash members (right).

Decay apparent in replacement sash (left) and rear door (right).

Roof structure

The roof structure including rafters, ceiling joists and other framing was inspected from below, following the removal of the ceilings to enable any asbestos fibres to be removed. From a visual inspection, the original framing members appear to be rimu.

The original framing appears to have been augmented by recycled timber, essentially whatever was at hand, but possibly from some of the other buildings on the site that were demolished. Some of the additional timber is clearly pinus radiata. The additional framing may have been installed when the original corrugated steel roof was replaced with the current asbestos cement sheets in an effort to take the expected additional weight.

Areas of roof and ceiling framing. Note original timbers and later recycled material.

Wall Framing

Within the building sections of internal linings were removed to ascertain the condition of the wall framing. Where it could be viewed, the framing appeared to be in reasonable condition although there were areas where decay was evident.

Some areas had building paper under the weatherboards, although it was missing in other areas, suggesting that the building may have been partly reclad in its life. Some additional framing had also been added.

External wall framing. Note water staining on weatherboards.

Wherever there is evidence of decayed weatherboards, the timber framing behind should be checked.


Areas of decayed weatherboards. The timber framing in these areas should be checked.

Internal Linings Including Floor Boards

The ceilings throughout the building were previously Pinex Softboard with timber battens over the joints. As noted, the ceilings were all removed recently to enable the roof space to be cleared of any asbestos particles.

The walls generally comprise plasterboard over original tongue and groove boarding, likely to be rimu. Some cracks are visible in the plasterboard, suggesting the building may have settled over time. The bathroom has hardboard over the original boarding and laminated plastic wallboards have been fixed above the bath. Original tongue and groove lining, now with a paint finish, can be seen in the toilet compartment. Similar tongue and groove boarding can be seen in the wardrobes and cupboards. Borer is evident in some areas. Elsewhere, areas of the wall linings are now missing, following intrusive investigations that were carried out to determine the condition of the wall framing.


Area where plasterboard has been removed, exposing original tongue and groove linings (left) and toilet with tongue and groove boards still in place (right).

Internal trim generally appears to be rimu. There is evidence of borer attack.

The floors comprise tongue and groove boards and generally appear to be in good condition. The timber is believed to be matai. A saw cut in the floor may have originated when the building was relocated, although the floor boards on either side of the cut do not match.

Matai tongue and groove floor boards. Note cut line.

Interior Joinery and Finishing Trim

The internal doors throughout the building appear to be hollow core, sheathed with rimu faced plywood. Some of the doors have been damaged and are showing signs of wear and tear. Borer is also present in some of the doors. The internal trim is also rimu, generally with a bullnose profile. Borer has also attacked some of the internal trim.

Interior of living area. Note plywood faced door and bullnose architraves and skirting.

Internal Fixtures and Fittings

Internal fixtures and fittings include cupboards and a stainless steel sink bench in the kitchen. The bathroom contains a bath, a shower and a basin. The building has a separate toilet, the seat of which has broken. The figures and fittings, with the exception of the toilet seat could be described as being “serviceable”.

The fittings are likely to all date from the time that the building was last tenanted by Housing New Zealand.

Fittings in kitchen (left) and bathroom (right).

Fireplace and Chimney

There is a single fireplace within the building located in what probably served as a living room. The fireplace is built of fire bricks and the surround and hearth are faced with ceramic tiles which probably date from the time the building was ,last tenanted. The fireplace has a timber mantelpiece and the hearth has a timber surround. The timber work has a paint finish.

The chimney is visible in the subfloor area below the building and above the roof where it has a plaster finish. It appears to have been constructed from precast concrete sections but is probably unreinforced. The extent of the foundation below the chimney is unknown. The condition of the chimney should be checked by a structural engineer.

Fireplace (left) and chimney above the roof line.

Subfloor Area

The subfloor area includes concrete piles timber jackstuds, braces, bearers and floor joists. It is likely that the subfloor framing and concrete piles were renewed when the building was relocated. Within the building, there is some unevenness in the floor, suggesting that settlement of the piles has occurred. Some piles may also have rotated due to uneven vertical loading.

The timber subfloor framing generally appears sound. In general, however, there is a lack of fixings between piles and jackstuds and jackstuds and bearers. The bracing requirements should be reviewed with additional braces provided if required.

Two views of subfloor area. Note general lack of fixings.

Building Services

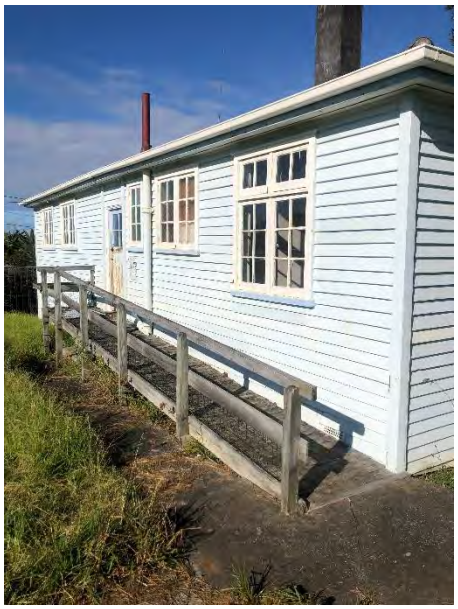
Building services to the building include stormwater and waste water, plumbing and electrical services.

The electrical wiring generally appears to be TPS (themoplastic sheathed) cable, suggesting the building was probably rewired when it was last tenanted.

The condition of the stormwater and waste water pipework has yet to be determined. Again, the services would have been replaced when the building was relocated in around 1946.

Exterior Steps and Paths

As the building is currently fenced off, the area within the fence appears unkept with grass and flora not being maintained. In particular, a Pōhutukawa tree that is not yet fully grown overshadows the western corner of the building.



At the back door, the steps remain although a timber ramp has since been constructed over them. The ramp has been poorly built and never painted and is in poor condition. At the front door, there is some evidence of the steps settling with a gap opening between the steps and the rest of the building.

There is a concrete path running between the front and back doors. The path has cracked and is uneven, largely due to the presence of a pine tree beside the house.

Elsewhere vegetation is located in close proximity to the house.

Timber ramp leading to the rear door.

6 PROPOSED REMEDIAL WORK

The following work is proposed to be undertaken to return the building to a good condition and fit for future uses.

Structural Upgrading

Although a structural report has yet to be completed and the former barracks appears generally sound, there are a few areas where the building may be deficient and structural upgrading may be required. These might include the following:

- Remediation of concrete wall to basement. Work may require a new concrete wall or replacement with timber framed wall.
- Remediation of subfloor area. The building may need to be repiled and new braces installed.
- Structural upgrading of chimney. The chimney appears to be constructed of precast concrete sections and is unlikely to be reinforced. Assuming the fireplace will no longer be used, a steel tube down the centre of the chimney may be an option for strengthening it.

Roofing and Accessories

The roof cladding currently comprises corrugated asbestos cement sheets which, apart from being a health hazard, is probably near the end of its life. Work to the roof should include the following:

- Removal and disposal of existing corrugated asbestos cement roof and accessories.
- Provision of new prefinished corrugated steel roofing and accessories including chimney and ridge and hip flashings rated for exposure in a marine environment. “True Oak” profile recommended for corrugated steel. New roofing should be laid over building paper.
- Provision of new prefinished spoutings and downpipes.

External Cladding and Trim

The walls are clad with bevel backed weatherboards, probably rimu if the extent of borer attack is any indication. Although some repairs may have been carried out, areas of decay are still visible. Work to external walls should include the following:

- Replacement of decayed weatherboards, trim etc. Opportunities should be taken to provide building paper where possible.
- Replacement of decayed areas of trim including corner boxes and joinery facings.
- Replacement of all rusting metal accessories including soakers and ventilation grilles. Punch rusting nails and putty holes.
- Sanding and repainting of all exterior surfaces.

External Window Joinery

The external window joinery is all timber. It is thought that some items may have been sourced from other houses, while others are new replacements. Some of the replacements have fared worse than the originals. Work to windows will include:

- Replacement of badly decayed frames & sashes.
- Repairs to other windows where decay is apparent in areas such as sills.
- Puttying and re-puttying of all sashes.
- Replacement of all rusted hardware including hinges and catches,

External Doors

The rear external door is probably an original door but is in poor condition.

- Provide new rear external door.

Internal Linings

The ceilings and some of the plasterboard wall linings are missing, having been removed to enable the ceiling space to be cleared of asbestos.

- Provide new plasterboard ceilings and cornices throughout the building.
- Remove wall linings as required to enable insulation to be installed.
- Insulation should also be provided in the external walls, beneath the floor and within the ceiling cavity.
- Treat building for borer.
- Give consideration to refixing and leaving exposed areas of original tongue and groove wall linings. Elsewhere, reline walls with plasterboard.
- Provide new skirtings and architraves as required.
- Provide new doors where damaged or refurbish existing as required.
- Prepare and redecorate interior of building throughout.
- Sand and varnish floor or provide new floorings as required.

Fixtures and Fittings

The extent of new fixtures and fittings will depend on the proposed uses for the building. The following may be the minimum requirements.

- Provide new kitchen fittings including sink and bench tops.
- Provide new accessible toilet space and fittings.

Building Services

The condition of the existing services is unknown at this stage. Work could potentially involve the following:

- Rewire the building as required and provide new lighting, power points, hot water services, heat pump.
- Provide new plumbing to kitchen and toilet facilities.
- Check existing foul water drainage and connect new fixtures.
- Check stormwater drainage and connect new downpipes.

Site Works

The site is currently overgrown with cracked and broken paths. Works to the site may include the following:

- Mow grass and trim vegetation back from house.
- Trim Pōhutukawa where it is overhanging the building.
- Assess future impacts of Pōhutukawa and pine tree and formulate management programme.
- Repair/reconstruct areas of cracked and uneven paving.
- Construct new accessible ramp for wheelchair usage.

7 POSSIBLE USES FOR THE BUILDING

A heritage building must always have a viable use if it is to survive for the future. The former barracks is now a classic example of what can happen if a building remains disused. Generally, it will continue to deteriorate at an ever increasing rate as no one is caring for it.

A heritage building should preferably always continue to be used for the purpose for which it was constructed, however, this is not always possible and a new use has to be found for it. This is certainly the case for the former barracks.

The need to find a viable use for the building was recognised in the 2015 Conservation Plan where Policy 1.1 – Viable Uses stated: *The former barracks should have a viable use as a means of aiding its survival. That use should be appropriate so as not to detract from the significance of the place.*

The need to find a viable new use for a heritage building has also been recognised by the ICOMOS New Zealand Charter for the Conservation of Places of Cultural Heritage Value (Revised 2010) which states: *The conservation of a place of cultural value is usually facilitated by the place serving a useful purpose.*

A new use should be appropriate and not detract from a building's character or its heritage values. It should also require the minimum of change and not require the removal of significant fabric.

In the case of the former barracks, clearly a new use has to be found for it. In its present configuration, the building contains a series of small rooms which reduces the number of possible options for reuse and it is accepted that changes will need to be made to realise the building's full reuse potential. For example, the removal of some internal walls to create larger spaces would immediately increase the number of possible uses. It is unclear if the building interior is in fact protected in the Auckland Unitary Plan although the present interior linings are likely to have originated from the time it was modified and converted for use as temporary housing.

As evidenced by the nearby former battery Observation Post building which evidently gets considerable use by the community, there is clearly a need for facilities that can be used for a variety of activities. Some possible uses may include the following and it is likely that many more would be found if the community was given the opportunity to respond with expressions of interest. Possible uses could potentially include the following. Some of these activities may require more substantial changes to the building and some may be less appropriate as greater wear and tear on the building may result.

- Arts and Crafts classes
- Art exhibitions/gallery
- Men's Shed/workshop
- Folk/jazz music club
- Kids after school & holiday programmes
- Cooking classes
- Military heritage museum

The building may also lend itself to commercial uses if the intention is that it should be financially self-supporting. Some possible commercial uses are listed below although it is accepted that a concession would likely need to be sought from council to permit a commercial activity in a public park. Commercial uses could include the following:

- Wine/whisky bar
- Café/restaurant
- farmers' Market












8 CONCLUSION

The former barracks building is a rather nondescript building with little in the way of architectural merit. It could also be considered to be lacking in aesthetic appeal, having the appearance of a typical state house constructed in the 1950s.

However, its real significance and importance rlies in other than its architectural or aesthetic values. Its particular value is derived from the fact that it was an important part of an effort to defend New Zealand against the threat of enemy invaders at the time of the Second World War. The building was also one of group of 13 buildings constructed as barracks and ancillary buildings to accommodate personnel working on the site.

The 13 buildings were, therefore, an essential element of the army battery camp at Castor Bay, alongside the gun emplacements, the battery observation post, an engine room and underground tunnel network.

The whole site was a primary example of the “architecture of deception”, whereby the camp was disguised to give the appearance of a seaside residential settlement. Thus, the battery observation post was disguised as a beachside café and the guns were draped with canvas painted to give them a residential appearance.

The charade was continued through to the barracks buildings which were designed to have the appearance of domestic dwellings. The building in question is now the sole survivor of the group of 13 buildings. If the building were to be lost, that would obviously impact on its own heritage values. In addition, as it was constructed as an essential part of the battery complex, the overall heritage values of the place would be reduced. For these reasons, every effort should be made to ensure its preservation.

The building has been neglected over the years and is now only in fair condition, essentially through a lack of use. This is despite the efforts of various community groups that have struggled to find a use for it and an inability to raise enough funding to restore it.

The building has got to the stage where it is considered to be vulnerable and its loss through fire, for example, cannot be discounted. Finding a new use for the building would greatly raise its chances of survival.

The battery observation post is apparently extensively used by the community for a number of activities and this report suggests a number of possible uses for the former barracks. It is strongly recommended that the building be restored and adapted as required to provide the flexibility to enable new uses to be found for it for the future.

Appendix C: 139 Beach Road - Additional Information and Comments

Questions from the April 2023 workshop	Comments
Cost to make the building safe.	Total remediation costs (including professional fees and consent fees, excluding GST) is $777,685. • Proposed Remediation Cost Estimate $648,071 • Professional Fees and Consents (20%) $129,614 The cost estimate is from a quantity surveyors estimate in 2018 based on a “like for like” basis for the existing building. Note: The total cost will be significantly higher now as further deterioration of the building would have occurred since 2018.
What facilities are nearby, is there a need for another community facility?	Community facilities located near the barracks building include the Sunnynook Community Centre, Observation Post, and the Phoenix Theatre. There is a non-priority action in the Community Facilities Network Plan Action Plan - Revised 2022 to investigate community needs in Sunnynook and Milford for community facilities and potential improvements to existing assets to address needs. The Service & Asset Planning team would lead the investigation when it is programmed into the network plan.
Can the building be converted into a café or art centre?	In its present configuration, the building contains a series of small rooms which reduces the number of possible options for reuse. Heritage New Zealand Pouhere Taonga are open to renovation to some extend and finding a balance between a workable solution that retains the character of the building. Heritage Unit comments - active uses could be potentially beneficial, subject to knowing more detail of the changes involved.
Commercialise vs reserve classification.	The building is held under the LGA 2002, so is not reserve and therefore not classified. It can be used for any community / recreation purpose the local board chooses consistent with the relevant reserve / local parks management plan and is not constrained by the Reserves Act 1977. Reserve Management Plan 1985 – states no buildings other than toilet facilities, shelters, changing rooms and storage shed are permitted. However, buildings of a public or community nature used for non-profit making purposes may be permitted (e.g., kindergartens, play-centres, plunket rooms, community centre).

Demolition – is consent likely to be granted given the heritage status.	Heritage New Zealand Pouhere Taonga do not support the demolition of the building. Heritage Unit comments - Complete demolition of a Category A* building scheduled under the Auckland Unitary Plan -Operative in Part (AUP-OIP) should be avoided unless strict criteria is met. Planning comments - consent is possible however there would be a high upfront cost to investigate the management approach council's Heritage Unit and Heritage New Zealand would support.
Heritage Unit additional comments.	Reconstruction of the building - complete replication is a supported option as retention and reuse of salvageable heritage fabric from the building is necessary to protect the sites heritage values. Seeking demolition would also reflect badly on the council from the wider community as a significant owner of built heritage assets in its approach to managing these sites. Restoration of the building - restoration of building fabric (salvage, reassembly and reinstatement of components returned to their former position) is the option supported by the AUP-OIP rules, as this approach maintains the heritage values of the site.
Video and montage board of the building's history.	Educational interpretative signage could be considered to tell the history of the building.
Auckland Council Planner comments.	In considering this site, the following is noted: • The partial demolition or destruction of a Category A* primary heritage feature will require resource consent under the provisions of Chapter J.2.1 as a non-complying activity. • Modifications to buildings or structures or the fabric or features of scheduled place will require resource consent under Rule J.2.1 as a discretionary activity. • Confirmation is required if any of the outstanding natural features on site will be disturbed. General earthworks on an Outstanding Natural Feature will require consent under Chapter H.4.4.2.1.1.1 as a discretionary activity. • Should any modifications to the network utilities on site be required, Watercare will need to be consulted. • A heritage impact report will be required including the intended use, construction methodology and methodology for management of ongoing activities. • Consultation with Heritage New Zealand will be required. • Potential consultation with iwi as the site has heritage value to Mana Whenua – to be confirmed with more details of the exact activity proposed.

WWII Tunnels

04 July 2023

Roma Leota – Project Manager (Parks and Community Facilities)

Devonport-Takapuna Local Board
Auckland Council

Cost estimates – presented in April 2023

	Option 1 Decommission Tunnels	Option 2 Localised Maintenance and Continued Monitoring	Option 3 Comprehensive Concrete Repairs
Cost Estimate	$10-$20k	$400k**	$1,500k
Service Life	Decommissioned	Uncertain	25 yrs +
Risk	Low	High	Moderate
Pro's	Low cost Low future maintenance burden	Medium cost repair Maintains operation of tunnels Less specialised concrete repair work required Lower health and safety risks during construction	Comprehensive repair Maintains operation of tunnels with extended service life Greatest level of confidence in structural performance
Con's	Complete loss of heritage value of tunnels Potential eventual collapse of tunnel structures Some associated monitoring costs and fencing costs associated with isolating land over tunnels	On-going monitoring and maintenance burden remains Uncertain future service life following repair Requires further full investigation to confirm suitability	Specialist contracting work Very high H&S management requirements Potential loss of intrinsic heritage value following extensive concrete repairs Extensive drainage exploration required externally Potential risk for uncovering further damage during works Requires further full investigation to confirm suitability

***Includes a provisional allowance for continued annual monitoring and associate maintenance.*

Questions from April 2023 workshop

Questions	Comments
Cost to make the tunnels safe	The localised patch repair type maintenance and continued monitoring option is estimated at $400,000. The future service life of the tunnels after repairs is still uncertain. A full investigation is required to confirm the suitability of this option.
Can some of tunnel be fixed and open to the public?	No - the engineering report recommends keeping the tunnels closed to public until a future maintenance strategy has been confirmed.
Can the entrance be made safe for viewing and education purposes?	A consultant with experience with heritage structures would be engaged to advised on the relevant repair activities once a preferred option has been confirmed.
Video and montage board of the tunnel's history	Educational signage could be considered to tell and display historical tunnel information at the site or via photo montage boards.

Thank you

Ngā mihi

Devonport-Takapuna Local Board
Auckland Council

Please read the guidance below in red and delete the statements before sending.
For further guidance please refer to the **memo guidance**.

Memorandum

16 June 2023

To:	Devonport Takapuna Local Board
Subject:	Kennedy Park WWII Tunnel Additional Information
From:	Roma Leota – Project Manager
Contact Information:	Sarah Jones – Manager Area Operations Email: Sarah.Jones2@aucklandcouncil.govt.nz

Purpose

1. To provide additional information as requested by the Local Board future management options of the Kennedy Park WWII tunnels.

Summary

2. A structural condition and future management plan for the tunnels was presented to the Local Board in April 2023.
3. The Local Board requested additional information at the workshop which are summarised in Table 2 below.
4. Comments relating to the tunnels were obtained from Heritage New Zealand Pouhere Taonga, councils Heritage Unit, Planner and Policy team. These are included in Attachment C of this memorandum.
5. Heritage New Zealand Pouhere Taonga and council's Heritage Unit do not support decommissioning the tunnels. The preferred option that would deliver the optimum heritage outcome is a hybrid of above-ground interpretation methods together with a localised maintenance and monitoring plan.
6. The cost estimate for the localised maintenance and continued monitoring of the tunnels is $400,000. The future service life of the tunnels after repairs is still uncertain based on the condition assessment.
7. It is recommended that the tunnels remain closed to the public until a future maintenance strategy and implementation plan has been confirmed. Once a preferred option has been confirmed a heritage structure consultant can be engaged to investigate repair activities.

Context

8. An assessment of the structure condition of the tunnels and future management options were presented to the Local Board in April 2023. A copy of the memorandum and heritage assessment are included in Attachment A and B.
9. A summary of the future options and cost estimates were also discussed at the April 2023 workshop as shown in Table 1 below.

Table 1: Cost estimates

	Option 1 Decommission tunnels	Option 2 Localised maintenance and continued monitoring	Option 3 Comprehensive concrete repairs
Cost Estimate	$10-$20k	$400k**	$1,500k
Service Life	Decommissioned	Uncertain	25yrs +
Risk	Low	High	Moderate
Pro's	Low cost. Low future maintenance burden	Medium cost repair. Maintains operation of tunnels. Less specialised concrete repair work required. Lower health and safety risks during construction.	Comprehensive repair. Maintains operation of tunnels with extended service life. Greatest level of confidence in structural performance.
Con's	Complete loss of heritage value of tunnels. Potential eventual collapse of tunnel structures. Some associated monitoring costs and fencing costs associated with isolating land over tunnels.	On-going monitoring and maintenance burden remains. Uncertain future service life following repair. Requires further full investigation to confirm suitability.	Specialist contracting work. Very high H&S management requirements. Potential loss of intrinsic heritage value following extensive concrete repairs. Extensive drainage exploration required externally. Potential risk for uncovering further damage during works. Requires further full investigation to confirm suitability.

***Includes a provisional allowance for continued annual monitoring and associate maintenance.*

10. Additional information was requested by the Local Board in the April workshop. The information include:

- The cost to make the tunnels safe.
- Can some of the tunnel be fixed and open to the public?
- Investigate displaying historical tunnel information at the site, via video, photo montage board.
- Planning requirements for modification and reconstruction.
- Input from councils Heritage Unit and Heritage NZ Pouhere Taonga.

Discussion

11. The table below provides a summary of the information requested by the Local Board and comments from councils Heritage Unit, Planner and Policy team and Heritage New Zealand Pouhere Taonga. More details are included in Attachment C.

Table 2: Additional information and comments

Questions from April 2023 workshop	Comments
Cost to make the tunnels safe.	The localised patch repair type maintenance and continued monitoring option is estimated at $400,000. The future service life of the tunnels after repairs is still uncertain. A full investigation is required to confirm the suitability of this option.
Can some of tunnel be fixed and open to the public?	No - the engineering report recommends keeping the tunnels closed to the public until a future maintenance strategy has been confirmed.
Can the entrance be made safe for viewing and education purposes?	A consultant with experience with heritage structures would be engaged to advised on the relevant repair activities once a preferred option has been confirmed.
Video and montage board of the tunnel's history.	Educational signage could be considered to tell and display historical tunnel information at the site or via photo montage boards.

Next steps

12. A report of the future management options will be presented to the local board for approval at a business meeting in September 2023.

Attachments

Attachment A: Kennedy Park WWII Tunnels options memo

Attachment B: Kennedy Park WWII Tunnel Condition Assessment & Proposed Maintenance.

Attachment C: Kennedy Park WWII Additional Information and Comments

Please read the guidance below in red and delete the statements before sending.
For further guidance please refer to the memo guidance.

Memorandum

16 March 2023

To:	Devonport Takapuna Local Board
Subject:	Kennedy Park WWII Tunnel Condition Assessment and Proposed Maintenance
From:	Roma Leota – Project Manager
Contact Information:	Sarah Jones – Manager Area Operations Email: Sarah.Jones2@aucklandcouncil.govt.nz

Purpose

1. To receive feedback on the condition assessment and future management options of the Kennedy Park WWII tunnels in Castor Bay.

Summary

2. The WWII tunnels at Kennedy Park were constructed in 1942 after the installation of the Castor Bay batteries. The tunnels provide a connection between that gun emplacement and the pétanque court at the western side of Kennedy Park.
3. An assessment of the current structural condition of the tunnels was completed in 2022 to prepare a future management plan for the tunnels. The assessment found the tunnels to be in poor condition.
4. Four options for the future management of the tunnels are outlined in the assessment in Attachment A for consideration:
   - Option 1 – Decommission the tunnels
   - Option 2 – Localised maintenance and continued monitoring
   - Option 3 – Comprehensive concrete repairs
   - Option 4 – Rebuild tunnels.
5. Indicative cost estimates to decommission the tunnels is between $10,000-$20,000. Localised maintenance and monitoring is priced at $400,000. A comprehensive concrete repair is estimated at $1.5m.
6. The tunnels are heritage listed structures and any major maintenance work would require resource consent.
7. A budget of $104,859 has been approved this financial year only. No budget has been allocated in future years.

Context

8. The Kennedy Park WWII tunnels were constructed following the installation of the Castor Bay gun batteries as part of the Waitemata Harbour defence during Work War 2. The gun

emplacements were constructed in 1941 and the tunnels, ramps and underground chambers were completed in 1942.

9. The tunnels provided connection between the gun emplacements near the clifftop and the pétanque courts at the western side of the reserve.

10. The public cannot access the tunnels however, the Kennedy Park WWII Installations Preservation Trust provide guided tours on the second Sunday of each month.

11. The tunnels are constructed in reinforced concrete and are over 80 years old. There appears to be little maintenance over the years apart from veneer concrete repairs on some of the walls.

12. A budget of $104,859 of Asset Based Services (ABS): Capex – Renewals was approved for the current financial year. No budget is allocated for future years.

Discussion

13. In 2022 staff engaged an engineering consultant to provide a detailed condition assessment of the tunnels at Kennedy Park to understand the condition of the tunnels and to prepare a future maintenance plan.

14. The assessment found the overall structure condition of the tunnels to be poor.

15. Four options and cost estimates for the future management of the tunnel network are presented in the assessment in Attachment A:

- Option 1 – Decommission the tunnels
- Option 2 – Localised maintenance and continued monitoring
- Option 3 – Comprehensive concrete repairs
- Option 4 – Rebuild Tunnels.

16. The cost estimates for options 1 to 3 are rough order estimates for physical works only. Option four has not been considered as feasible given the heritage value of the tunnel and gun emplacement. A detailed breakdown is included in the assessment.

Table 1: Cost estimates

	Option 1 Decommission tunnels	Option 2 Localised maintenance and continued monitoring	Option 3 Comprehensive concrete repairs
Cost Estimate	$10-$20k	$400k**	$1,500k
Service Life	Decommissioned	Uncertain	25yrs +
Risk	Low	High	Moderate
Pro's	Low cost. Low future maintenance burden	Medium cost repair. Maintains operation of tunnels. Less specialised concrete repair work required. Lower health and safety risks during construction.	Comprehensive repair. Maintains operation of tunnels with extended service life. Greatest level of confidence in structural performance.

Con's	Complete loss of heritage value of tunnels. Potential eventual collapse of tunnel structures. Some associated monitoring costs and fencing costs associated with isolating land over tunnels.	On-going monitoring and maintenance burden remains. Uncertain future service life following repair. Requires further full investigation to confirm suitability.	Specialist contracting work. Very high H&S management requirements. Potential loss of intrinsic heritage value following extensive concrete repairs. Extensive drainage exploration required externally. Potential risk for uncovering further damage during works. Requires further full investigation to confirm suitability.

***Includes a provisional allowance for continued annual monitoring and associate maintenance.*

Next steps

17. A report of the future management options will be presented to the local board for approval at a business meeting in June 2023.

Attachments

Attachment A: Kennedy Park WWII Tunnel Condition Assessment & Proposed Maintenance.

KENNEDY PARK WWII TUNNEL

CONDITION ASSESSMENT & PROPOSED MAINTENANCE

Prepared for Auckland Council

June 2022 Ref 22445

Hutchinson CONSULTING ENGINEERS

Auckland Council

Kennedy Park WII Tunnel

Condition Assessment
&
Proposed Maintenance

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PRINCIPAL ENGINEER

Date 30 June 2022

CONTENTS

1.0 Introduction **1**

1.1 Site Location 1
1.2 History 1
1.3 Previous Reporting 2
1.4 Condition Assessment Investigation 2

2.0 Existing Structure – Description and Layout **4**

2.1 Western Entrance Tunnel 4
2.3 Room One 5
2.4 Gunnery Plotting Room & Service Room 5
2.5 Ammunition Niche Corridor 6
2.6 Northern Ramp 6
2.7 Southern Ramp 7

3.0 Condition Assessment **8**

3.1 Western Tunnel Entrance 8
3.2 Room One, Gunnery Plotting and Service Rooms 9
3.2 Ammunition Niche Corrider 11
3.2 Ramps 12

4.0 Discussion **14**

5.0 Options Identification 15

6.0 Consents **17**

6.1 Building Consent 17
6.2 Resource Consent 17

7.0 Summary **18**

Appendices **19**

Appendix A: Tunnel Site Plan Drawings 19
Appendix B: Photographs 20
Appendix C: Estimated Construction Costs 21
Appendix D: Method Statement – Sika Concrete Repair Specification 22

1.0 Introduction

Hutchinson Consulting Engineers has been engaged by Auckland Council to provide a detailed on-site condition assessment for the Kennedy Park WWII Tunnels in Castor Bay. The purpose of the investigation and assessment was to provide Auckland Council with an understanding of the current structural condition in order to assist in the formulation of a future maintenance and management plan for the tunnels.

1.1 Site Location

The Kennedy Park WWII Tunnels are located within the Auckland Council Kennedy Park reserve, at 137 Beach Road, Castor Bay on Auckland's North Shore. The reserve is located on the eastern side of Beach Road and can be accessed via carparking near the northern end of the reserve, or via the JF Kennedy Memorial Walkwalk which extends to the south towards Rahopara Pa, above Castor Bay Beach Reserve.

The tunnels are located beneath grassed reserve and planted landscape areas and provide connection between the current petanque courts at the western end, and the Castor Bay Battery Gun Emplacements near the clifftop at the eastern end.

NZ TOPO MAPS *Kennedy Park WWIII Tunnels, Castor Bay* *GPS Co-ordinates* *(NZTM)* *E 1757640* *N 5930736*	

1.2 History

The Kennedy Park WWII Tunnels were constructed following the installation of the Castor Bay Batteries that they serve, during efforts to secure the entrance to the Waitemata Harbour and Auckland Port during World War 2.

During the heightened threat of Japanese or German attack on New Zealand in 1940, and following the sinking of RMS Niagara by German mines off Bream Head, a series of new gun emplacement structures were installed along the north Auckland eastern coast. Previous WWII gun emplacements that had been positioned at North Head were relocated to Whangaparoa to secure the entrances of the Hauraki Gulf, and two new 6" gun emplacements were constructed at Castor Bay to cover the Rangitoto Channel.

The gun emplacements themselves were constructed over a short three month time period commencing in March 1941, following which the access tunnels, ramps and underground chambers were built via a cut and cover method of construction. The tunnels were completed in 1942.

The gun emplacements were protected against aerial attacks and shelling with two large cantilever concrete frying-pan shaped roof structures that remain on site today. As a further camouflaging protection measure, two timber framed false-houses were also constructed over the top of the battery roofs, and draped with fake walls and widows to blend in visually on the clifftop with nearby battery camp houses. Various surrounding features including pergolas and fencing to appear like vegetable gardens, as well as the concealment of a concrete water reservoir by painting it in the form of a tennis court, added to the effect of disguising the Castor Bay Battery.

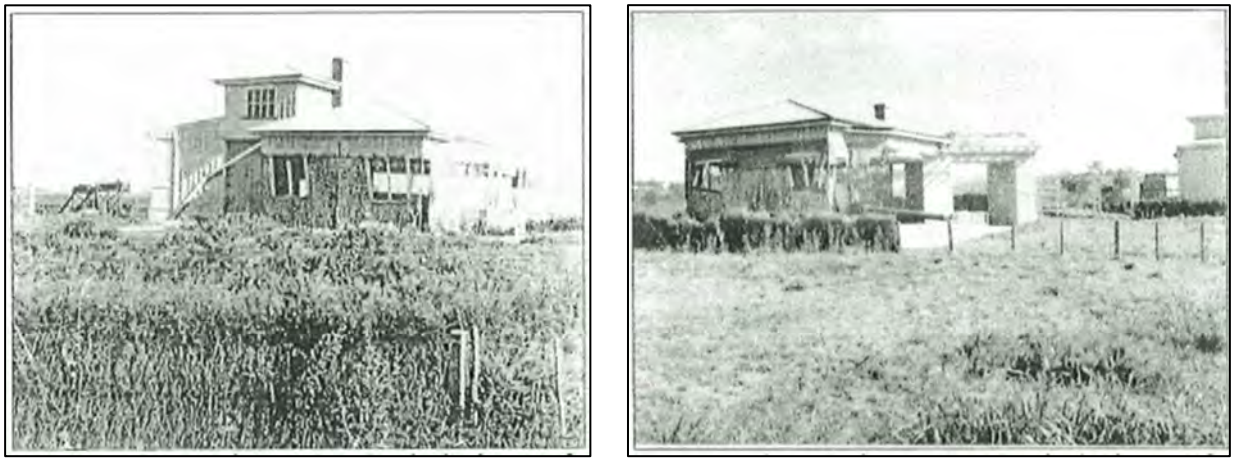


Figure 1: Gun emplacement camouflaging – 1994 National Archives, Wellington

1.3 Previous Reporting

This office has been provided with and located only limited previous reporting for the tunnels and gun emplacement structures, including the following:

- Kennedy Park, Castor Bay Gun Emplacements Concrete Condition Report by Consultech ref CT4099 dated December 1999
- Heritage Assessment Gun Emplacements Kenedy Park North Shore City by Salmond Architects Ref 0019 dated March 2000
- Specification for Concrete Reports to Gun Emplacements by Salmond Architects Ref 0019 dated March 2000

While the structures are known to have been constructed between March 1940 and 1941 during WWII, the original design or construction drawings have not been located.

1.4 Condition Assessment Investigation

Structural engineers from this office first attended the site to complete initial walkover observation inspections in August and September 2020. A further inspection was completed on 25th February 2022.

The purpose of the assessments were to carry out visual and non-destructive exploration of the existing reinforced concrete tunnel structures to assess overall condition and suitability for

on-going public access. Where possible it sought quantify the volume and extent of potential repair or strengthening works that could be carried out to extend the safe working use of the structure.

Both investigations of the access tunnels, store rooms, niches and ramps to the gun emplacement structures were carried out under torch light observation as there is no natural nor artificial lighting available within the tunnels.

The tunnels were accessed from the gates at the western petanque court end, and the eastern ends of the access ramps were further observed from outside the locked gates at the gun emplacements.

Figure 2:Western Entrance Tunnel from Petanque Courts

We note that the scope of assessment is limited to the reinforced concrete tunnel network and does not extend to the gun emplacement structures on the eastern clifftop.

2.0 Existing Structure – Description and Layout

2.1 Layout and Arrangement

The following presents a schematic layout of the tunnel and gun emplacements with areas labelled for future reference within this report.

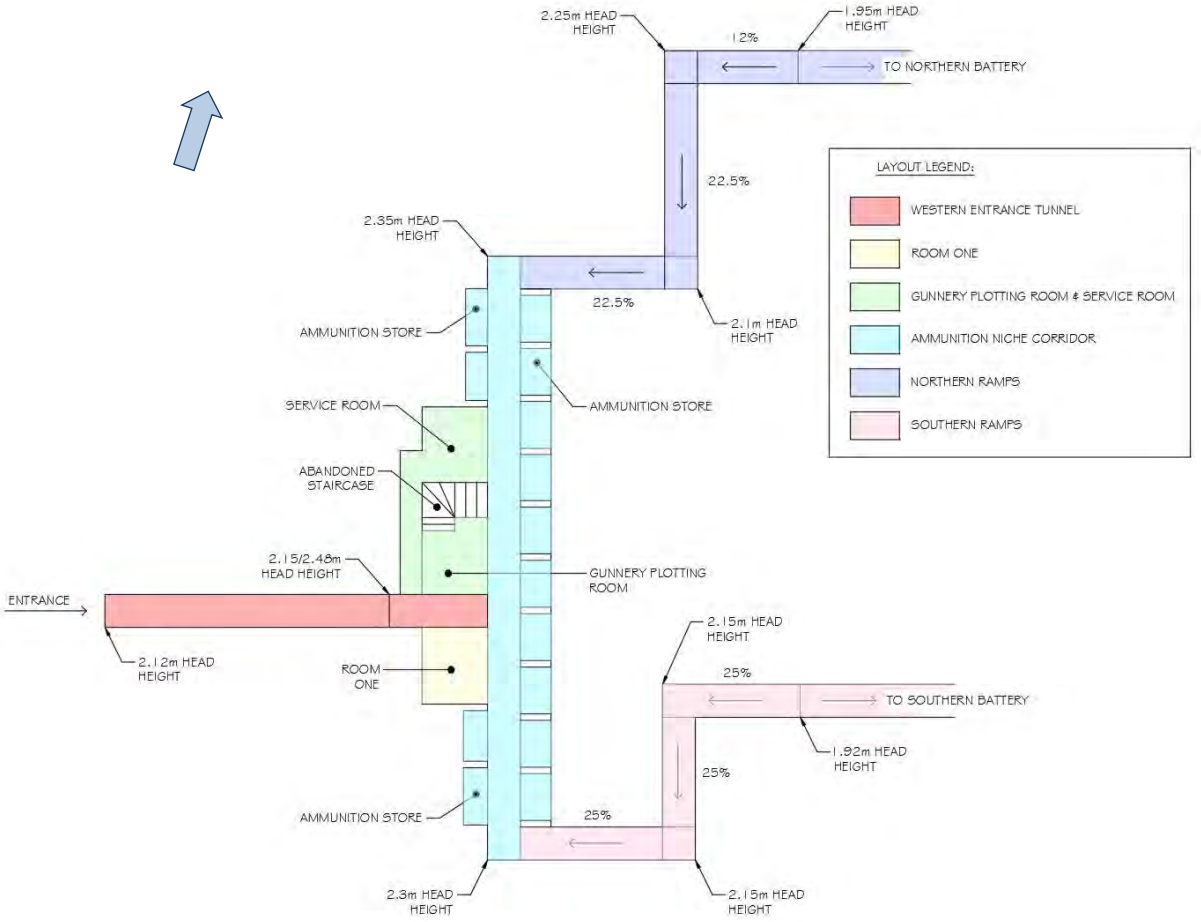


Figure 3: General Internal Tunnel Layout

Further site plan drawings are appended to this report.

2.1 Western Entrance Tunnel

The Western Tunnel Entrance provides the landward access to the tunnel system and gun emplacements from the Petanque Court area. The entrance would have originally provided the access for delivery of personnel, munitions and provisions when the battery was operational.

The tunnel entrance measures approximately 1500mm wide and has an approximate head height of 2150mm, stepping up to an increased head height of approximately 2480mm where the ceiling steps at the entrance to Room One and the Gunnery Plotting Room. The entrance tunnel measures roughly 17.5m in length between the gated entry at the courts to the back wall of the Ammunition Niche Corridor.

The entrance tunnel appears to be constructed from in-situ cast reinforced concrete, and the rough sawn timber facing of the formwork utilised during construction remains visible.

Drainage channels approximately 200mm wide x 50mm deep with a sloping cross section extend down both sides of the length of the entrance tunnel. The drains appear to be a retrospective inclusion, either cut into the existing ground slab or more likely via a topping slab having been brought up from the tunnel base to form the channels. The details of how these were formed and when is not confirmed.

Figure 4:Western Entrance Tunnel

The tunnel floor was notably wet (flooded) at the time of our August observation but dry at other times, suggesting that is susceptible to flooding following rain events. While leaked ground water is likely to contribute to moisture levels within the tunnels, the water at the floor of the entrance was of a volume attributable to flooding.

2.3 Room One

Room One is located on the southern side of the entrance tunnel at the north eastern end where it meets the Ammunition Niche Corridor. It is likely to have served as either a strategy room, sleep room or storage area. The room measures approximately 3000mm x 3500mm.

At the time of our observations the room was dry and empty.

2.4 Gunnery Plotting Room & Service Room

The Gunnery Plotting Room & Service Room are located on the northern side of the entrance tunnel at the north-eastern end, opposite Room One. The Gunnery Plotting and Service rooms are separated by an internal set of concrete stairs that are assumed to once provide access to and from above but that have been fully sealed off. A tunnel corridor extends behind the stair void and links the two rooms.

The rooms are similar in dimension, both approximately 3000mm x 3500mm, to Room One.

2.5 Ammunition Niche Corridor

The Ammunition Niche Corridor runs perpendicular to the Entrance Tunnel and provides service to both Gun Emplacements via the Northern and Southern Ramps. The niche corridor is understood to have been designed in lieu of more conventional magazine designs of similar batteries of the era, providing access between the gun emplacements as well as providing considerable munitions storage.

The Ammunition Niche Corridor is 1500mm wide and approximately 27.5m long measured between the Northern and Southern Ramps. Ten ammunition niches / alcoves are located along the eastern (seaward) side of the tunnel and four niches are located along the western side of the tunnel, positioned about the storage rooms. The niches are set up approximately 600 – 700mm above the corridor floor.

Figure 5: Ammunition Niche Corridor

The corridor floor has a gentle cross fall in its surface, sloping toward the rear western side, and drainage along the rear wall is limited to a narrow v-drain at the junction with the back wall. At the time of our August observation the corridor floor was wet, appearing to be in the drying stages of recent flooding.

2.6 Northern Ramp

The Northern Ramp extends from the northern end of the Ammunition Niche Corrider to the Northern Gun Emplacement via three ramp sections and two landing platforms. The ramp sections are 1500mm wide and are 8000mm, 9500mm and 6200mm long measured from the internal end towards the gun emplacement respectively. The ramp sections have a 22.5% grade, except for the eastern most section that is slightly shallower at approximately 12%.

The most notable feature within the northern ramp area is the presence of a concrete patch / protection veneer covering the majority of the ramp walls, that appears to have been retrospectively installed either a waterproofing effort or a remedial measure to alleviate or slow

the progression of corrosion damage. The details of the veneer are unknown including when, or by whom, it was installed. The veneer has not performed adequately and is further discussed below within the Condition Assessment of this report.

2.7 Southern Ramp

Similar to the Northern Ramp the Southern Ramp extends from the opposing end of the Ammunition Niche Corridor up to the Southern Gun Emplacement via three ramp sections and two intermediate landing platforms. The ramp sections of the Southern Ramp are approximately 8200mm, 6500mm and 4750mm in length measured from the corridor to the gun emplacement respectively. The ramp sections are equally graded at approximately 25% throughout.

The southern ramp features similar concrete coverings to the walls as the opposing ramp.

Figure 6:Southern Ramp Wall – Previous failed patch repairs

3.0 Condition Assessment

The purpose of the condition assessment survey was to identify the general structural condition of the tunnels, the extent and severity of any observable areas of damage, and to present any maintenance or remedial works recommendations where possible.

It must be noted that in the absence of any original design or construction as-built documentation for the reinforced concrete tunnel structures, it is not possible to provide any reliable structural analysis or capacities for same and this is outside of the scope of our assessment.

3.1 Western Tunnel Entrance

The Western Tunnel Entrance exhibits a number of areas of concrete cracking damage along its length.

Horizontal Cracking

A significant horizontal crack was observed in the northern wall of the entrance tunnel, approximately 1400mm above the floor (undulating), and measuring up to approximately 3mm in width at its worst. The crack was observed along the entire length of the entrance tunnel up to the junction with the Gunnery Plotting Room where the tunnel ceiling steps up, albeit it was observed to be wider at the tunnel entrance gates. It was noted that the crack extends through a very significant vertical crack in the tunnel shaft at the abovementioned junction (further described below), indicating that it formed prior to vertical crack.

Figure 7: Horizontal cracking to western entrance tunnel

Water staining and salt efflorescence was observed around the horizontal crack suggesting that it extends full depth through the concrete and exposes a waterproofing leak in the concrete that also exacerbates the risk of reinforcing corrosion.

The crack appears to have formed mechanically, i.e. is not considered to be a shrinkage crack from the time of original construction. It is possible that the crack has formed or been contributed to by corrosion in embedded horizontal steel, however no obvious spalls to cover concrete were observed. While corrosion is likely to be occurring and possibly contributing to the crack width observed we would expect to observe further damage – i.e.other cracks and spalled cover concrete, if the primary cause of the crack was corrosion induced. It is also possible that the crack has formed in the yield line of failed vertical reinforcing steel.

Vertical Cracking

As mentioned above, a very significant vertical crack was observed around the tunnel shaft near the junction with the Gunnery Plotting Room, measuring in excess of 5mm in width, and extending around the entire concrete tunnel anulus, including the walls and ceiling. It is the most significant of the cracks observed anywhere throughout the tunnel network and appears to have formed via displacement or settlement within this section of the tunnel.

Figures 8&9: Vertical cracking around western entrance tunnel

The shape and structural form of the tunnels either side of the crack provide inherent stability, however in the absence of confirmed structural details or any design knowledge of this area, this crack gives cause to the installation of temporary propping supports until further investigation and/or permanent repairs can demonstrate structural stability.

Significant water and efflorescence staining around the crack suggest that heavy leaks occur at this location and the embedded reinforcing will be subject to near continual wetting.

The remaining areas of the Western Entrance Tunnel, walls, floor and ceiling are in clearly aged condition but do not display obvious critical damage.

3.2 Room One, Gunnery Plotting and Service Rooms

The service rooms at the end of the Entrance Tunnel, along the back of the ammunition niche corridor, exhibit various areas of concrete damage as follows.

Room One

Room One exhibits corrosion induced spalls to the rear wall concrete and around the air vent to the Ammunition Niche Corridor. Corrosion induced concrete spalls are the result of physical expansion of the corroding reinforcing bars applying mechanical pressure to the cover concrete, causing it to pop off or spall from the face of the concrete element.

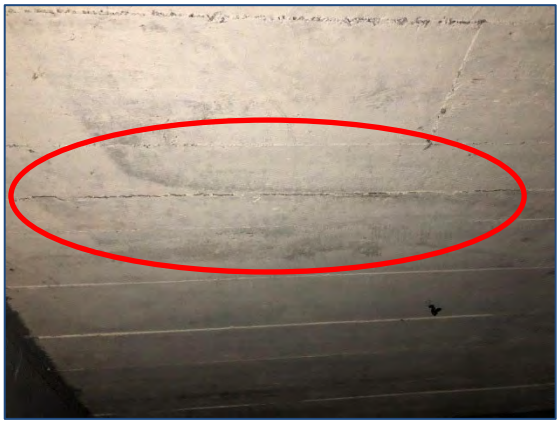
The tunnels are located in a coastal exposure / frontage environment where airborne salts (sea-spray) are regularly driven through the structure during wind and rain events. Further chloride ingress at the outside faces of the tunnels is also expected through an increase in

saline ground water. As a result of the somewhat *sealed* nature of a tunnel, chloride accumulation at the concrete is increased where it does not benefit from periodic rain washing that external concrete structures receive.

The spalls in Room One are not severe but clearly indicate advanced corrosion in the embedded reinforcing.

Gunnery Plotting Room

The Gunnery Plotting room exhibits at least one moderate crack through it's ceiling as well as cracking and spalling at the openings into the corridor. Given the longitudinal direction of the ceiling crack, it is considered likely to extend parallel to the primary reinforcing of the roof slab, suggesting that its cause is most likely corrosion or degradation related rather than load or flexural stress related.

Figures 10 & 11: Storage room corridor opening & ceiling crack

Service Room

The Service Room adjacent to the Gunnery Plotting Room and the access tunnel behind it display areas of concrete spalling. There is also a noticeable concrete degradation patch in the northern wall of the service room. The wall appears to have been subject to a concrete veneer covering, similar to those of the northern and southern ramps described above and below.

The coverings have been retrospectively installed as either as an internal waterproofing effort, or a remedial measure to alleviate / slow the progression of corrosion damage. The cementitious concrete covering has either degraded through carbonation, was poorly specified, batched and installed at the time of original repair, or a combination of all.

There are widespread tension cracks throughout the veneer covering and in large areas it is hollow and 'drummy' to the tap of a hammer, suggesting that it has delaminated from the parent concrete surface behind that it was installed upon.

Figure 12: Damage to storage room walls

In the spalling area observed in the northern service room, it has become completely chalky and can be broken out by the gentle scratch of a fingertip.

The veneer will no longer be providing any benefit to the concrete structure that it was intended to protect. In fact it is unlikely that any additional protection benefit has ever been garnered by the veneer, other than a short term slowing of chloride ingress from the inside face. In order for a surface patching repair of this nature to have been suitable for the long term protection of the concrete tunnel structure, it would have required to have been applied to the entire structure in a wholesale application. Various other corrosion protection measures, external drainage, waterproofing and the like should also have been incorporated into the repairs.

3.2 Ammunition Niche Corrider

The Ammunition Niche Corridor exhibits widespread areas of concrete cracking, spalls, corrosion staining, and areas where reinforcing steel that has heavily corroded is completely exposed.

Significant vertical cracks are present in near the corners of nearly all wall junctions with the entrance tunnel and service rooms, as well as the corners of the ramps.

Significant concrete cover spalls can be observed around a number of the ammunition niche recesses and various exposed reinforcing has corroded to a point where cross-sectional area loss will have occurred.

Figures 13 & 14: Damage to Ammunition Niche Corridor walls

A number of more localised spalls, cracks and corrosion staining that is penetrating the surface concrete can be observed throughout the corridor.

The bulk of the concrete defects within the Ammunition Niche Corridor appear to be condition related, i.e. from the degradation / breakdown of the reinforced concrete material and corrosion of the reinforcing, rather than load or stress related. While localised damage of reinforced concrete can be repaired, the widespread nature of the damaged areas within the corridor combined with the degree of breakdown observed to the parent concrete material will be troubling to feasible remedial options.

3.2 Ramps

Both the Northern and Southern ramp structures exhibit similar degrees of concrete damage, noting that these are the most exposed areas of the structure to the coastal frontage beyond the gun emplacements and receive the brunt of any sea-spray.

Similar to the Ammunition Niche Corridor, the majority of the corners between the ramp sections and their connection to the corridor display vertical cracking. A number of localised areas of corrosion staining was also observed at the ramp walls and at the floor to wall junction.


Figures 15 & 16: Corrosion staining through veneer coverings

As mentioned above, the most notable feature within the ramp areas is the presence of the concrete patch / protection veneer covering the walls. The details of the veneer are unknown including when, or by whom, it was installed - however based on the degree of water seepage through the inclined ceilings over the ramp areas it is likely that the veneer was installed as a retrospective internal waterproofing effort.

The veneer has not performed adequately and is no longer considered beneficial to the structure. The presence of the veneer could in fact be concealing the extent or the severity of concrete damage to the structural walls of the ramp tunnel behind it.


Figures 17 & 18: Failing veneer coverings to ramp walls

The inclined ceilings within the ramp sections of the tunnels present the most significant leaking and staining of any of the ceilings observed throughout the structure.

At the inflection points where the inclined ramp ceilings flatten, above the corner landing platforms, significant water ingress is evident from above. The water and corrosion staining observed is consistent with repetitive cyclic wetting. Spalls to the ceiling concrete were observed, and this is consistent with reinforcing corrosion related to the water ingress.


Figures 19 & 20: Water and corrosion staining, concrete spalls to ramp ceilings

4.0 Discussion

The reinforced concrete throughout the entire tunnel network has been adversely affected by chloride ingress, both wind driven through the interior of the tunnel and via seeping ground water externally. Significant corrosion of reinforcing steel has commenced and the resulting damage is evident in various forms in nearly all areas of the structure.

The original design documentation for the construction of the tunnels has not been located and no reliable structural capacity assessment or stability analysis can be completed, however it is considered unlikely that the original design would meet today's design and construction standards.

The overall structural condition of the tunnels is poor.

While the various individual areas of damage throughout the tunnels could be treated in isolation, they are sufficiently prevalent to suggest that further background damage to reinforcing exists that has not currently presented in visible damage but is imminent. The areas of the tunnel walls that have been previously covered with the patch concrete veneer are particularly concerning because it is assumed that the subject walls were selected for repair at the time on account of damage, and the failed veneer system is likely only masking the extent of same.

Discrete localised patch repairs to the damaged areas of the structure are not considered to be a pragmatic long term maintenance strategy, as the corrosion related issues will continue and will accelerate with time. Any proposed remediation solutions need to be comprehensive if they are to arrest further degradation and prolong the safe working life of the structure, otherwise a regular-to-continuous process of monitoring and concrete patch repair requirements should be expected.

The tunnel walls are unlikely to feature adequate positive drainage or waterproofing to the back face of the concrete and continued water ingress will occur no matter what repairs are carried out internally. Unless comprehensive repairs including external drainage and waterproofing works are carried out, ongoing decay will continue to occur at the interface with new and old concrete.

It is also worth noting that isolated concrete patch repairs that introduce fresh concrete application to an already corroding system have the potential to cause secondary effects of accelerated damage to adjacent areas – called the incipient anode effect.

With the removal of chloride contaminated concrete and the introduction of fresh repair concrete to the system, the electro-chemical balance in the reinforcing reverses and the areas of steel just outside of the repaired section become anodic, which can accelerate corrosion and spall damage in the material adjacent to the patch repair. To manage this effect sacrificial anodes can be installed to the perimeter of the patch repairs in the parent concrete to slow the rate of onset of this process, however the effectiveness and cost-worthiness of doing so would be lost on a structure of this age.

Given the extent of corrosion and extensive repairs required throughout the tunnel network to achieve a comprehensive remediation, large scale “patch repair” methodologies that typically include localised exposure, splicing and treating areas of existing reinforcement prior to fresh concrete installation, are not likely to be appropriate. A top-down approach is likely to be required, to be carried out by a concrete repair specialist contractor, working from one end of the tunnel to the other and implementing a combination of breakout repairs in conjunction with structural re-lining works. The volume of repair work required and eventual surface finish appearance will need input from an Auckland Council or Heritage NZ advisor to ensure that inherent heritage values are maintained following completion of the work. Related consents are also likely and will necessitate heritage specialist consultation.

It should be noted that all observations by this office have been carried out under limited available lighting and that the full extent of required concrete repair that is encountered by the contractor once established on site may be increased.

The tunnels are approximately 80 years old and appear to have been subject to very little maintenance over the course of their service life. Reinforced concrete structures that are built to current day building standards are only typically designed for a 50 – 100 year design life with reasonable routine maintenance expected.

Given the condition of the existing tunnels, and in the absence of any design information, it must be recognised that the structural integrity of the tunnels is unknown and unless the tunnel structures are entirely rebuilt from new the possibility of collapse exists.

5.0 Options Identification

Consideration should be given to the following future management options for the tunnel network.

Option 1 **Decommission Tunnels.** This option recognises that the reinforced concrete structures have reached the end of their safe working life and, as a result of limited successful prior maintenance, they can no longer be feasibly repaired in a cost-effective manner whilst maintaining intrinsic heritage values.

The tunnels would remain permanently closed to all public access and would require relevant signage to inform public of same. An exercise of collating and displaying historical tunnel information at the site, via photo montage boards or the like, might help to mitigate the loss of heritage value for the public and is considered worthwhile.

It is expected that the Gun Emplacements, where more readily accessible for repair solutions, could remain open for public access and viewing into the foreseeable future. While the gun emplacements are outside of the scope of this assessment, they appear to be due for routine investigation and maintenance.

Option 2 **Localised Maintenance + Continued Monitoring.** This option involves the completion of localised 'patch repair' type maintenance to the observed critical areas of damage. The repairs would typically comprise break-out of existing damaged cover concrete, reinforcement treatment and concrete patch repair. Concrete crack injection would be implemented to more severe cracking. Waterproofing patch works could be explored at the more evident areas of water ingress, however we note that these would be limited in overall effectiveness towards sealing the tunnels.

The maintenance repairs would be completed on a *'fix what is damaged' basis*, however would require acknowledgement from Auckland Council that on-going continued monitoring of damage and of overall structural condition must be maintained.

It is likely that any maintenance contractor carrying out the localised repair work would seek to do so under relevant disclaimers regarding the expected future performance of any repairs.

Given the extent and widespread nature of the damage observed throughout the tunnel, in time the frequency of damage recurrence will increase and the localised maintenance option may eventually lead to maintenance contractors

returning to address further issues on a regular basis. This could be viewed as reactionary maintenance and deemed to be 'chasing one's tail'.

Option 3 **Comprehensive Concrete Repairs.** This option involves comprehensive concrete repair work beyond localised maintenance patching.

A full dilapidation survey carried out by a concrete repair specialist contractor in conjunction with a structural engineer would be required to determine the full extent of works scope, and should form part of any works procurement process. The repairs are expected to include more widespread breakout of cover concrete, removal of the failed veneer linings to the ramp and service room walls, widespread steel reinforcement treatments and concrete replacement work that may extend to fully boxed and poured structural segments of walls or ceilings.

The tunnel surfaces would likely be subject to a low-pressure cleaning cycle on completion of the internal repairs. followed by the application of a chemical moisture inhibitor to all surfaces.

Temporary propping and shoring would be required to ensure the safety of personnel working within the tunnel during breakout work. The tunnel works are also likely to constitute Confined Space Work at times during the repair– i.e. during concrete breakout and chemical applications etc. which will require increased Health and Safety Management by the contractor and greater oversight by Auckland Council. The work might be more suited to a tunnelling specialist, than regular physical works maintenance contractors.

The repair work will require consultation with an Auckland Council or Heritage NZ advisor to ensure that adequate intrinsic heritage values are maintained following completion of the work to justify its implementation.

It should be reiterated that no structural analysis of the existing tunnel network has currently been completed, including seismic assessment, in the absence of any design drawings or documentation. This may be considered a pre-requisite of implementing the comprehensive repair option, where a large monetary investment is proposed and the on-going structural stability performance of the tunnels is expected.

Further investigation and exploratory work around the external drainage systems around the tunnel would be recommended as part of this option, and would likely require significant excavation within the reserve.

Option 4 **Rebuild Tunnels.** Given the heritage value of the tunnel and gun emplacement structures, demolition and rebuild has been discounted as a feasible option albeit this is the only option to provide verifiable stability and long term safe access.

Estimated Construction Costs

Indicative cost estimates have been completed for the options above and summarised in the Table below. More detailed breakdowns of the cost estimates are included in Appendix B of this report. Each option has been compared for pros and cons along with risks involved to provide a summary of the potential remedial works.

	Option 1 Decommission Tunnels	**Option 2** Localised Maintenance and Continued Monitoring	**Option 3** Comprehensive Concrete Repairs
Cost Estimate	$10-$20k	$400k**	$1,500k
Service Life	Decommissioned	Uncertain	25 yrs +
Risk	Low	High	Moderate
Pro's	Low cost Low future maintenance burden	Medium cost repair Maintains operation of tunnels Less specialised concrete repair work required Lower health and safety risks during construction	Comprehensive repair Maintains operation of tunnels with extended service life Greatest level of confidence in structural performance
Con's	Complete loss of heritage value of tunnels Potential eventual collapse of tunnel structures Some associated monitoring costs and fencing costs associated with isolating land over tunnels	On-going monitoring and maintenance burden remains Uncertain future service life following repair Requires further full investigation to confirm suitability	Specialist contracting work Very high H&S management requirements Potential loss of intrinsic heritage value following extensive concrete repairs Extensive drainage exploration required externally Potential risk for uncovering further damage during works Requires further full investigation to confirm suitability

Table 1 – Pro's/Con's Summary

***Includes a provisional allowance for continued annual monitoring and associate maintenance.*

Please note the estimates provided above include are rough order cost estimates for the physical construction with a ten percent contingency allowed for against each option.

6.0 Consents

6.1 Building Consent

Both the Localised Maintenance and the Comprehensive Repair options described above are considered to be 'maintenance' work to the existing tunnel structure, and could potentially be deemed exempt from Building Consent under Schedule 1 of the Building Act. This should be confirmed prior to procurement of any works.

6.2 Resource Consent

The Kennedy Park WWIII Tunnels are understood to be heritage listed structures and any major maintenance work is expected to require relevant resource consents.

Once a preferred option for the future management of the tunnels has been confirmed, a planning consultant experienced in heritage structures should be engaged to provide confirmation of the planning status of the repair activities and any resource consents that are likely to be required from Auckland Council.

Further consents from Heritage NZ should also be investigated and attained where necessary.

7.0 Summary

The Kennedy Park WWII Tunnels were constructed following the installation of the Castor Bay Batteries on Auckland's North Shore, during efforts to secure the entrance to the Waitemata Harbour in World War 2. The tunnels were constructed as a matter of urgency at that time and very little remains known about their design, construction specification, or capacity.

This office has been engaged by Auckland Council to provide a detailed on-site condition assessment of the reinforced concrete tunnels, to provide an understanding of their current structural condition and to assist in the formulation of a maintenance management plan for their future.

Widespread concrete degradation was observed throughout the concrete tunnel elements that is attributed to chloride ingress, concrete carbonation, and the resulting corrosion of embedded reinforcing steel. Except for a series of prior concrete veneer coverings to various walls within the tunnel, little prior maintenance of the structure appears to have taken place in the 80 years since construction in the 1940s and their overall structural condition is poor.

An options assessment has been carried out to highlight and consider potential options for the future maintenance of the tunnels, ranging from decommissioning the tunnels in their present condition through to a comprehensive concrete repair and drainage solution. A summary of the benefits and drawbacks of each option along with rough order costs estimates has been provided to assist Auckland Council in considering the most feasible outcome against availability of asset maintenance and repair budget.

Once a preferred strategy has been confirmed by Auckland Council a planning consultant experienced with heritage structures should be engaged to advise on the consenting requirements of the relevant repair activities. Further discussion with heritage specialists would also be beneficial to the formulation of finer repair details and procurement methods that adequately maintain the heritage values of the existing tunnels. Until a future maintenance strategy has been confirmed and relevant remedial measure implemented, we recommend that the tunnels remained closed to public access.

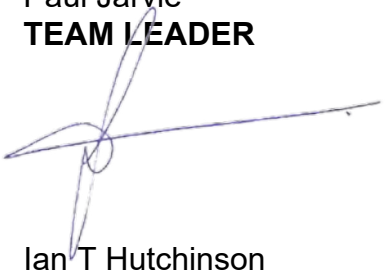
We trust this meets with your approval.

Yours faithfully,

IAN HUTCHINSON CONSULTANTS LTD

Prepared by Paul Jarvie
TEAM LEADER

Reviewed by Paul Wilson
STRUCTURAL ENGINEER



Approved by Ian T Hutchinson
PRINCIPAL ENGINEER

Hutchinson
CONSULTING ENGINEERS

Appendices

Appendix A: Tunnel Site Plan Drawings

KENNEDY PARK WWII TUNNEL
CONDITION ASSESSMENT
137 BEACH ROAD, CASTOR BAY
AUCKLAND

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CONSULTING ENGINEERS

154 Centreway Road
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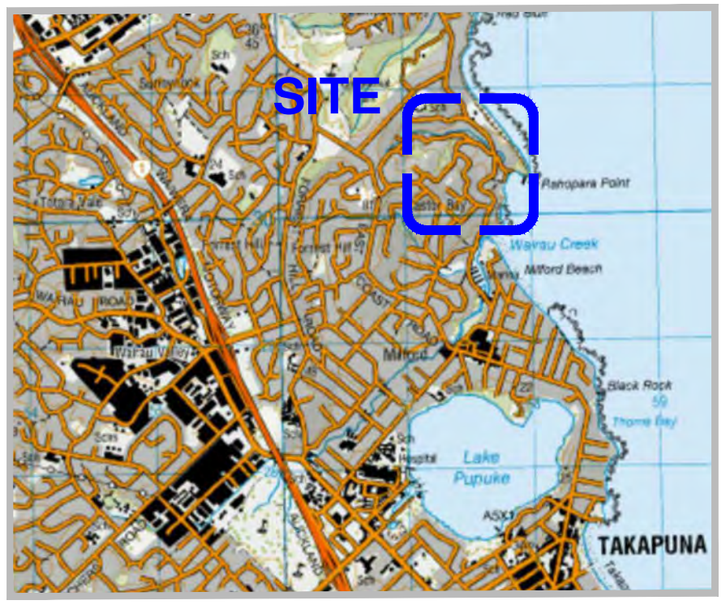
DRAWINGS

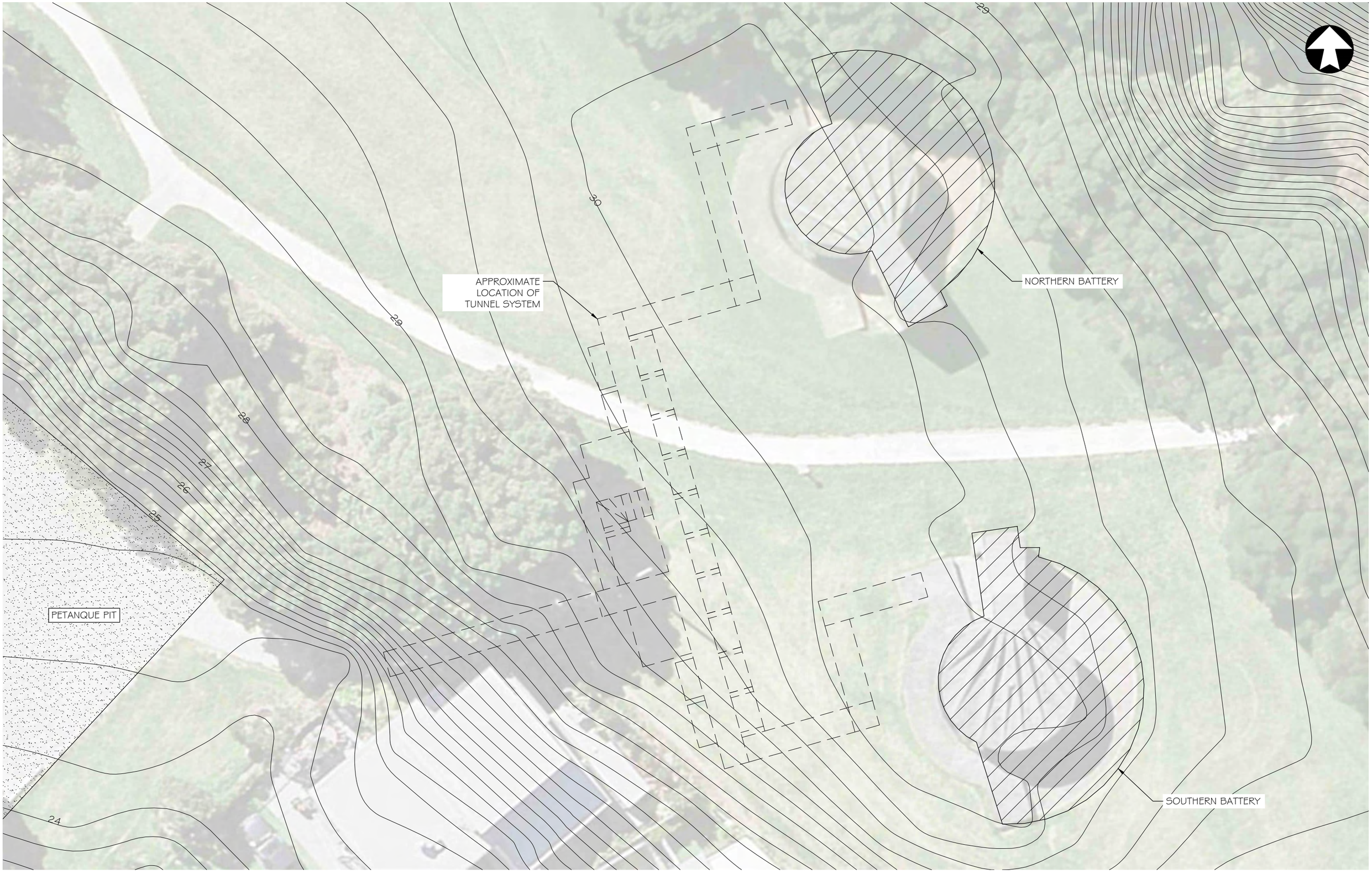
S00 COVER
S01 SITE PLAN
S02 EXISTING TUNNEL PLAN



LOCALITY PLAN

AERIAL LOCALITY PLAN

22445-S00



No.	Revision	Drawn	Chk.	Appd.	Date
A	ISSUED FOR APPROVAL	S.K	P.J	I.H	JUN 2022

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Design	P. WILSON	NOV 2020
Drawn	S. KIRYAKOS	NOV 2020
Checked	P. JARVIE	NOV 2020
Approved	I. HUTCHINSON	NOV 2020
Scale	1:200 @ A3	
Scale vert. exag.		

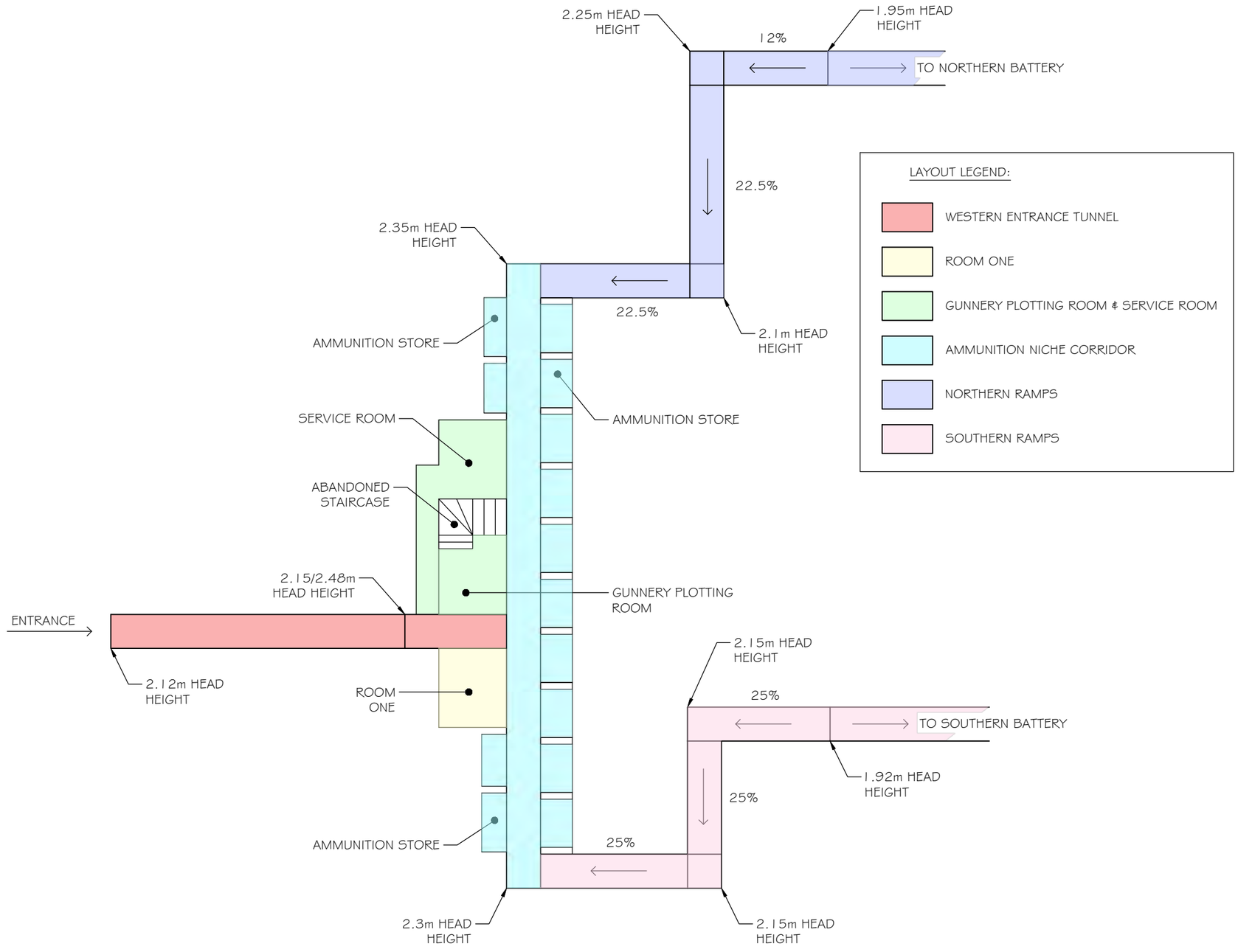
Auckland Council
Te Kaunihera o Tāmaki Makaurau

Project
KENNEDY PARK WWII TUNNEL CONDITION ASSESSMENT
137 BEACH ROAD
CASTOR BAY
AUCKLAND

Title
SITE PLAN

Job No.
22445

Sheet No.
S01



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Auckland Council
Te Kaunihera o Tāmaki Makaurau

Project
KENNEDY PARK WWII TUNNEL
CONDITION ASSESSMENT
137 BEACH ROAD
CASTOR BAY
AUCKLAND

Title
EXISTING TUNNEL PLAN

Job No.
22445

Sheet No.
S02

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Appendix B: Photographs

Photo 1: Rotten concrete at corner

Photo 2: Water ingress and rotten concrete to soffit

Photo 3: Failed wall repair

Photo 4: Large crack extending around soffit, walls and floor

Photo 5: Horizontal crack along entire entrance wall

Photo 6: Spalled concrete to ammunition store

Photo 7: Exposed reinforcing with little cover

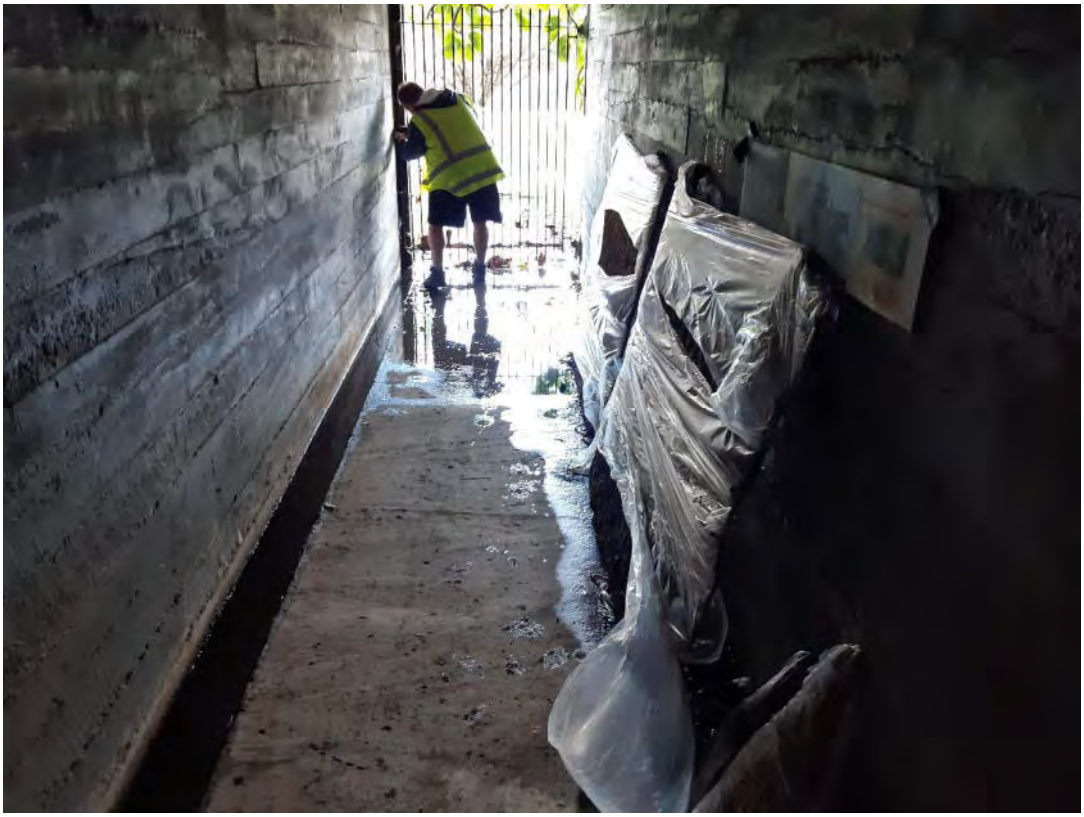

Photo 8: Flooded tunnel entrance

Photo 9: Rotten concrete with water seeping into service room

Photo 10: Spalled concrete exposing reinforcing

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Appendix C: Estimated Construction Costs

Cost Estimate - Option #2

Localised Maintenance + Continued Monitoring

Location: Kennedy Park WWII Tunnels, Castor Bay

Description: Maintenance estimate

Item	Description	Unit	Quantity	Rate	Amount
1.0	**Preliminary & General**				**$40,000.00**
1.1	Establishment and Dis-establishment	LS	1	15,000.00	$ 15,000.00
1.2	Contractor's Bond and Insurances	LS	1	5,000.00	$ 5,000.00
1.3	Contract Management Plans	LS	1	2,500.00	$ 2,500.00
1.4	Quality Control/Assurance Testing	LS	1	2,500.00	$ 2,500.00
1.5	Health and Safety Management	LS	1	15,000.00	$ 15,000.00
2.0	**Concrete Repairs**				**$150,000.00**
2.1	Temporary Works - Shoring	LS	1	35,000.00	$ 35,000.00
2.2	Concrete removal	m^3	10	1,500.00	$ 15,000.00
2.3	Reinforcing repairs	m^2	50	300.00	$ 15,000.00
2.4	Reinforcing coatings	m^2	50	100.00	$ 5,000.00
2.5	Repair concrete (Incl. forms, placement, curing et.)	m^3	10	5,500.00	$ 55,000.00
2.6	Crack injections	m	100	150.00	$ 15,000.00
2.7	Crack sealing	m	100	100.00	$ 10,000.00
3.0	**Drainage**				**$20,000.00**
3.1	Waterproofing repairs	L.S.	1	20,000.00	$ 20,000.00
4.0	**Miscellaneous**				**$20,000.00**
4.1	Consents	L.S.	1	20,000.00	$ 20,000.00
4.2	Signage	L.S.	1	5,000.00	$ 5,000.00
5.0	**Continued Monitoring and Maintenance**				**$150,000.00**
5.1	Continued Monitoring and Maintenance	p.a.	10	15,000.00	$ 150,000.00
		Subtotal			**$ 230,000.00**
		Potential On-going P.a. Costs			**$ 150,000.00**
		Contingency (10%)			**$ 20,000.00**
				Total (excluding GST)	**$ 400,000.00**

Cost Estimate - Option #3

Comprehensive Concrete Repairs

Auckland Council
Te Kaunihera o Tāmaki Makaurau

Location: Kennedy Park WWII Tunnels, Castor Bay
Description: Maintenance estimate

Item	Description	Unit	Quantity	Rate	Amount
1.0	**Preliminary & General**				**$100,000.00**
1.1	Establishment and Dis-establishment	LS	1	25,000.00	$ 25,000.00
1.2	Contractor's Dilapidation Survey, Setting Out and Supervision	LS	1	25,000.00	$ 25,000.00
1.3	Contractor's Bond and Insurances	LS	1	10,000.00	$ 10,000.00
1.4	Contract Management Plans	LS	1	5,000.00	$ 5,000.00
1.5	Quality Control/Assurance Testing	LS	1	5,000.00	$ 5,000.00
1.6	Health and Safety Management	LS	1	30,000.00	$ 30,000.00
2.0	**Concrete Repairs**				**$1,100,000.00**
2.1	Temporary Works - Shoring	LS	1	150,000.00	$ 150,000.00
2.2	Concrete removal	m^3	100	1,000.00	$ 100,000.00
2.3	Reinforcing repairs	m^2	500	250.00	$ 125,000.00
2.4	Reinforcing coatings	m^2	500	100.00	$ 50,000.00
2.5	Repair concrete (Incl. forms, placement, curing et.)	m^3	100	5,000.00	$ 500,000.00
2.6	Crack injections	m	100	150.00	$ 15,000.00
2.7	Crack sealing	m	100	100.00	$ 10,000.00
2.8	Concrete sealing	m^2	1000	150.00	$ 150,000.00
3.0	**Drainage**				**$115,000.00**
3.1	Investigate & upgrade external drainage	P.S	1	75,000.00	$ 75,000.00
3.2	External concrete repairs	P.S	1	40,000.00	$ 40,000.00
4.0	**Miscellaneous**				**$50,000.00**
4.1	Consents	L.S.	1	40,000.00	$ 40,000.00
4.2	Signage	L.S.	1	5,000.00	$ 5,000.00
4.3	As-built records	L.S.	1	5,000.00	$ 5,000.00
		Subtotal			**$ 1,365,000.00**
		Contingency (10%)			**$ 135,000.00**
				Total (excluding GST)	**$ 1,500,000.00**

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Appendix D: Method Statement – Sika Concrete Repair Specification

METHOD STATEMENT
Application of Discrete Galvanic Anode using Sika® FerroGard® Patch

17/02/2016 / VER.: 02/16 / SIKA (NZ) LIMITED / R. REEVES

REFURBISHMENT

BUILDING TRUST

TABLE OF CONTENTS

1	**Scope**	**5**
2	**System Description**	**5**
2.1	References	5
2.2	Limitations	5
3	**Products (not limited)**	**6**
3.1	Material Storage	6
4	**Health and Safety**	**6**
4.1	Risk Assessment	6
4.2	Personal Protection	6
4.3	First Aid	7
5	**Environment**	**7**
5.1	Cleaning Tools / Equipment	7
5.2	Waste Disposal	7
6	**Preliminaries**	**7**
7	**Installation**	**8**
8	**Additional Information**	**11**
9	**Legal Note**	**12**

1 SCOPE

This method statement describes the step by step procedure for applying **Sika FerroGard Patch** discrete galvanic anode.

2 SYSTEM DESCRIPTION

Sika FerroGard Patch is a discrete sacrificial anode applied to patch repairs on reinforced concrete structures which are corroding as a result of chloride ingress or concrete carbonation.

Many structures suffer corrosion damage due to the incipient effect following concrete patch repairs. Although the fresh mortar in patch repairs halts corrosion of the steel within, it does not deal with chloride contaminated concrete outside the patch repair which is the cause of the corrosion. This leads to further corrosion damage at the periphery of the repair.

Sika FerroGard Patch anodes redress the electrochemical imbalance induced through removal of the corrosion process from steel in the patch. **Sika FerroGard Patch** anodes corrode preferentially to the surrounding steel, protecting it from further corrosion damage.

Sika FerroGard Patch anodes are located within the parent concrete. Protective current is thus delivered directly to the steel outside the patch which is at greatest corrosion risk as opposed to clean steel within the patch repair.

Figure 1: Sika FerroGard-510 Patch

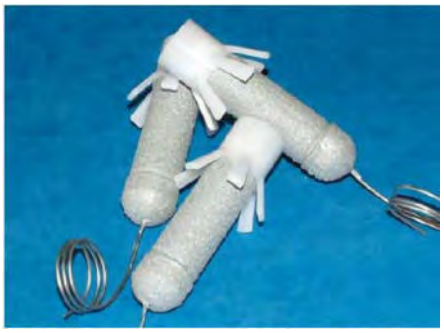


Figure 2: Sika FerroGard-515 Patch

Figure 3: Sika FerroGard-520 Patch

2.1 REFERENCES

This method statement has been written in accordance with the recommendations contained in European Standards EN 12696:2012.

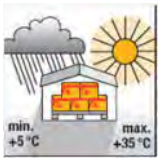
2.2 LIMITATIONS

- Products shall only be applied in accordance with their intended use.
- Local differences in product may result in performance variations. The most recent and relevant local Product Data Sheets (PDS) and Material Safety Data Sheets (MSDS) shall apply.
- For specific construction / build information refer to the Architect's, Engineer's or Specialist's details, drawings, specifications and risk assessments.
- Design of the **Sika FerroGard Patch** system should be undertaken by a competent designer.
- All work shall be carried out as directed by a supervising officer or a qualified engineer.
- This method statement is only a guide and shall be adapted to suit local product and standards, legislation or other local requirements.

3 PRODUCTS (NOT LIMITED)

Sika Product Names	Holes dimensions
Sika® FerroGard®-510 Patch	45 mm L x 25 mm Ø
Sika® FerroGard®-515 Patch	80 mm L x 25 mm Ø
Sika® FerroGard®-520 Patch	130 mm L x 25 mm Ø

3.1 MATERIAL STORAGE



Materials shall be stored properly in undamaged original sealed packaging, in dry cool conditions. Refer to specific information available on the product data sheet regarding minimum and maximum storage temperatures. Do not allow contact with oxidizing materials. Protect from moisture.

The plastic container should only be opened when product is required, and re-sealed when not in use. The silica gel parcels should not be removed from the packaging container..

4 HEALTH AND SAFETY

4.1 RISK ASSESSMENT

The risk to health and safety from falling objects or defects in the structure shall be properly assessed.

Where structures are considered to be unsafe appropriate action shall be carried out to make the working area safe.

4.2 PERSONAL PROTECTION

Work safely!

Protective clothing must be worn. Wear gloves and eye protection at all times. Always wash hands with suitable soap after handling products and before food consumption.

FOR DETAILED INFORMATION REFER TO THE RELEVANT MATERIAL SAFETY DATA SHEET

4.3 FIRST AID

Seek immediate medical attention in the event of excessive inhalation, ingestion or eye contact causing irritation. Do not induce vomiting unless directed by medical personnel.

Flush eyes with plenty of clean water occasionally lifting upper and lower eyelids. Remove contact lenses immediately. Continue to rinse eye for 10 minutes and then seek medical attention.

Rinse contaminated skin with plenty of water. Remove contaminated clothing and continue to rinse for 10 minutes and seek medical attention.

FOR DETAILED INFORMATION REFER TO THE MATERIAL SAFETY DATA SHEET

5 ENVIRONMENT

5.1 CLEANING TOOLS / EQUIPMENT

Clean all tools and application equipment immediately after use, with water.

Hardened material can only be mechanically removed.

5.2 WASTE DISPOSAL

Do not empty surplus material into drains; dispose responsibly through licensed waste disposal contractor in accordance with legislation and local / regional authority requirements. Avoid run off onto soil or into waterways, drains or sewers.

FOR DETAILED INFORMATION REFER TO THE MATERIAL SAFETY DATA SHEET

6 PRELIMINARIES

The structure should be assessed prior to application of the Sika FerroGard Patch anode range technology as follows;

i. **Review of records:** All available drawings and recorded information should be reviewed for information relating to location, quantity, nature and continuity of reinforcement and to concrete quality.
ii. **Inspection:** An inspection shall be carried out to ascertain the type, causes, and extent of defects and any features of the structure or its surrounding environment which could influence the effectiveness of the **Sika FerroGard Patch** anode. In particular, defects associated with delaminations, cracks, honeycombing or construction joints should be identified.
iii. **Chloride content** – The chloride content of the concrete should be determined, at typical locations.
iv. **Reinforcement location/concrete cover:** Steel reinforcement size and location should be established to confirm details in the drawings.

Concrete cover of the area to be protected should be determined to ensure a minimum cover of at least 20 mm for the purposes of installation of the **Sika FerroGard Patch** galvanic anode system.

v. **Reinforcement continuity:** Electrical resistance measurements to be performed to establish continuity of steel reinforcement/other metallic components on the structure. Any discontinuous components should either be treated as a separate zone or bonded to the main steel reinforcement.

vi. **Concrete repairs:** Any concrete repairs previously undertaken on the structure should be assessed to ensure electrical resistivity is in the range 50 to 200% of the parent concrete.

vii. **Stray currents:** The structure should be assessed for the presence of AC or DC stray currents. If stray currents are evident, remedial action must be undertaken under the auspices of a competent electrical/corrosion engineer.

a) **Reinforcement location/concrete cover**: Steel reinforcement size and location should be established to confirm details in the drawings.

b) **Concrete cover of the area to be protected** should be determined to ensure a minimum cover of at least 20mm for the purposes of installation of the **Sika Ferrogard-316 Duo TS** anode system, and that a slot of appropriate dimensions can be formed.

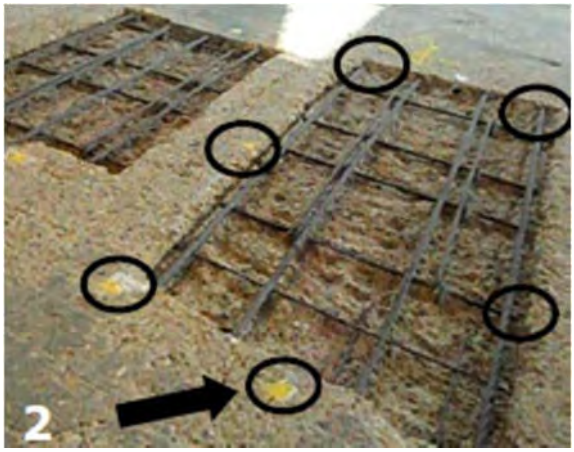
c) Confirm depth of surface to be treated prior to installation.

d) **Stray currents**: The structure should be assessed for the presence of ac or dc stray currents. If stray currents are evident, remedial action must be undertaken under the auspices of a competent electrical/corrosion engineer.

7 INSTALLATION

1. Break-out the concrete in the areas in which the **Sika FerroGard Patch** anodes are to be installed. Concrete break-out will follow the guidelines in EN 1504, including concrete removal from behind the steel reinforcement.

2. Having exposed the steel reinforcement to be repaired within the patch, a location for the **Sika FerroGard Patch** anodes should be identified, as close as is practically possible to the edge of the patch.



3. Clean the steel in the vicinity of the proposed **Sika FerroGard Patch** unit location, to facilitate electrical connection of the anode

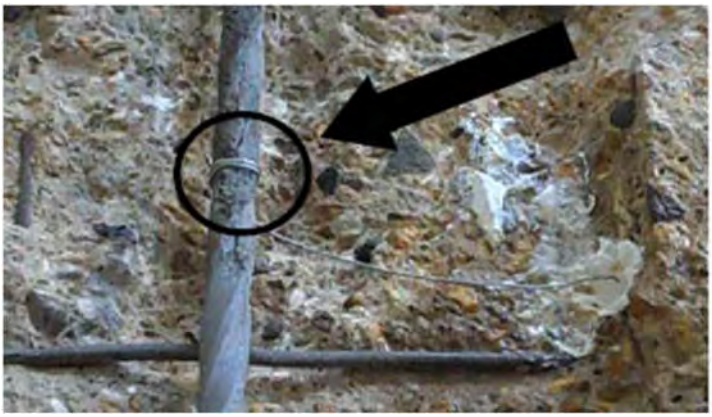
4. Confirm steel continuity in areas to be treated. If steel is discontinuous, it should be dealt with as detailed in (6) above.

5. Drill holes into the parent concrete at the sides of the patch, making sure to avoid steel contact. Anode spacing will depend on steel density.

6. Soak the holes for 15 minutes before removing any excess water.

7. Apply **Sika FerroGard-500 Crete** Mortar to the holes and push the **Sika FerroGard Patch** units in, ensuring that the whole anode surface is covered and that there are no air voids.

8. Attach the anode wire to the pre-cleaned steel surface using the plastic cable tie provided.



9. The patch repair should be filled in as normal using a suitable repair mortar within 2 hours of inserting the **Sika FerroGard Patch** anode, or, as a minimum, cap the hole with suitable repair mortar until the final reinstatement is undertaken, whilst ensuring that the anode unit is not disturbed.



10. The electrical resistance between the tying point on the **Sika FerroGard Patch** anode and the reinforcing steel should be confirmed to be <1 ohm using a suitable meter. If the resistance is >1 ohm then the **Sika FerroGard Patch** anode tying point should be removed, the reinforcing steel should be cleaned, and the **Sika FerroGard Patch** anode tying point re-installed. This process shall be continued until a resistance <1 ohm is achieved.

The electrical resistance of all anodes which fail the initial resistance test should be recorded as follows;

UNIT	DATA TEST	ELECTRICAL RESISTANCE/ohm

A copy of this data shall be handed to the engineer/client and Sika at the end of the project.

11. The installation phase is now complete

8 ADDITIONAL INFORMATION

Any unusual site details should be discussed with the engineer/Sika prior to installation of the system.

9 LEGAL NOTE

The information, and, in particular, the recommendations relating to the application and end-use of Sika products, are given in good faith based on Sika's current knowledge and experience of the products when properly stored, handled and applied under normal conditions in accordance with Sika's recommendations. in practice, the differences in materials, substrates and actual site conditions are such that no warranty in respect of merchantability or of fitness for a particular purpose, nor any liability arising out of any legal relationship whatsoever, can be inferred either from this information, or from any written recommendations, or from any other advice offered. The user of the product must test the products suitability for the intended application and purpose. Sika reserves the right to change the properties of its products. The proprietary rights of third parties must be observed. All orders are accepted subject to our current terms of sale and delivery. Users must always refer to the most recent issue of the local Product Data Sheet for the product concerned, copies of which will be supplied on request.

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METHOD STATEMENT

Crack Injection with Sikadur® Injectokit LV and TH

03/07/2014 / VER. NO.: 0714 / SIKA (NZ) LIMITED / REUBEN REEVES

REFURBISHMENT

BUILDING TRUST

TABLE OF CONTENTS

1	**Scope**	**3**
2	**System Description**	**3**
2.1	References	3
2.2	Limitations	3
3	**PRODUCTS**	**4**
3.1	System components	4
3.2	Material Storage	4
4	**equipment**	**5**
4.1	tools	5
4.2	cleaning	5
5	**health & safety**	**5**
5.1	risk assessment	5
5.2	Personal Protection	6
5.3	First Aid	6
5.4	Waste disposal	6
6	**Preparation**	**7**
6.1	Pre-project	7
6.2	Substrate preparation	7
6.3	Resin	8
7	**Application**	**8**
7.1	General	8
7.2	Sealing the surface of the crack	8
7.3	Epoxy injection	8
7.4	Removing the surface seal	9
8	**Inspection and Testing**	**9**
8.1	Before application	9
8.2	Site inspection	9
9	**9. Appendix**	**10**
9.1	Construction Journal	10
9.2	On site checklist: Materials	10
9.3	On-site Checklist: Quality Assurance	11
10	**Legal Note**	**11**

1 SCOPE

This Method Statement is written as a guideline for crack injection of concrete substrates using Sikadur Injectokit-LV and TH. This document shall be used and referred to in combination with all other relevant Product Data Sheets (PDS), Safety Data Sheets (SDS) and the specific Project Specifications.

Crack injection should only be carried out by trained and experienced specialists. If additional clarification or advice is needed, please do not hesitate to contact your local Sika Technical Service Department who will be pleased to assist you.

This document only describes the use of the Sikadur Injectokit-LV and TH for crack injection. For crack injection using Sikadur-52, or other epoxy or polyurethane injection systems, please refer to their respective Method Statements.

2 SYSTEM DESCRIPTION

The Sikadur Injectokit-LV and Sikadur Injectokit-TH systems consist of two part epoxy crack injection resins contained in a patented single cartridge, complete with injection nipples, hoses, and air release pins. Sikadur-31 or Sika AnchorFix-3+ is used to seal the cracks at the surface of the substrate and to bond on the surface injection ports, and Sikadur Injectokit LV and TH low viscosity epoxy resins are used to fill the cracks in the concrete substrates.

The Sikadur Injectokit-LV system consists of a low viscosity epoxy crack injection resin. Due to its low viscosity, cracks down to 0.2 mm at the surface can be filled. The Sikadur Injectokit-TH system consists of a thixotropic epoxy crack injection resin. Due to its thixotropic nature it is often used in situations where both sides of a crack cannot be sealed and where the depth and quantity of resin need to be controlled. Crack widths from 0.2 - 2 mm can be filled. The primary purpose of crack injection with Sikadur Injectokit LV and TH is to restore the structural integrity of the concrete substrate and to prevent moisture penetration through the crack.

2.1 REFERENCES

This method statement has been written in accordance with the recommendations contained in:

- **ACI 503.7-07 Specification for Crack Repair by Epoxy Injection**
- **ACI 224.1R-93 Causes, Evaluation and Repair of Cracks in Concrete Structures**
- **ACI RAP-1 Structural Crack Repair by Epoxy Injection**.

2.2 LIMITATIONS

- The products must only be used for their intended applications. The system configuration as described in the Product Data Sheets must be fully complied with and may not be changed.
- For any other specific construction / build information please refer to the relevant Engineer's specifications, details, drawings, and risk assessments.
- Local differences in product may result in performance variations. The most recent and relevant local Product Data Sheets (PDS) and Safety Data Sheets (SDS) apply.
- Always record the batch numbers of the Sikadur Injectokit resin that is used each day.
- Large mixing quantities of the Sikadur resins and /or high temperatures result in shortening of the pot life. In order to prolong the pot life, reduce the quantity of the mixing components and/or the material's temperature (i.e. store the sealed units in cool conditions until immediately prior to mixing and application).
- For application in cold or hot conditions, pre-condition the resin materials for at least 24 hours in temperature controlled storage facilities to improve the on-site mixing, application and pot life limitations.

- Special attention should be paid to the ambient environment and conditions. Observe the minimum / maximum temperatures for substrate, atmosphere and the materials, as well as taking care to avoid application near dew point conditions. Substrate temperature must be at least +3 °C above the dew point.
- **This Method Statement is produced and intended as a guide and must be adapted to suit the local Products, Standards, Legislation or any other specific local requirements.**

3 PRODUCTS

3.1 SYSTEM COMPONENTS

CRACK INJECTION RESIN:

Sika Brand	Description
Sikadur® Injectokit-LV	Pre-packaged low viscosity epoxy crack injection system
Sikadur® Injectokit-TH	Pre-packaged thixotropic epoxy crack injection system

SURFACE SEALANT:

Sika Brand	Description
Sikadur®-31	Sikadur®-31 CF Normal is a thixotropic, structural two-part epoxy adhesive and repair mortar.
Sika AnchorFix-3+	Sika AnchorFix-3+ is a solvent-free, thixotropic, epoxy anchoring adhesive in a pre-packaged cartridge for use in a standard caulking gun.

ADDITIONAL PRODUCTS:

- Sikadur Injectokit Nipple
- Sikadur Injectokit LV Hose
- Sikadur Injectokit TH Hose
- Sikadur Injectokit Air Release Valve
- Sikadur Injectokit TH Plunger
- Sika Thinner C

3.2 MATERIAL STORAGE

Materials must be stored properly in undamaged, original sealed packaging, in dry cool conditions at temperatures between +5°C and +25°. Protect all of the products from direct sunlight. Please refer to the specific information contained in the respective product data sheets regarding the minimum and maximum storage temperatures and times.

Sikadur Injectokit LV and TH will not cure at temperatures below 5°C. The temperature at which Sikadur Injectokit LV and TH are stored during the 24 hours before mixing will govern their pot life when mixed.

4 EQUIPMENT

4.1 TOOLS

				
Concrete Grinder	Vacuum Cleaner	Brush	Application Trowels	Brush

			
Mixing Container	Mixer Spindle	Mixing Paddle (for larger quantities)	Cartridge gun

4.2 CLEANING

Clean all tools and application equipment with Sika Thinner C immediately after use. Uncured epoxy should be wiped up with a rag wetted with solvent. Hardened material can only be removed mechanically.

It is recommended that protective gloves and clothing be worn during application; however, uncured Sikadur Injectokit may be removed from skin with warm soapy water.

5 HEALTH & SAFETY

5.1 RISK ASSESSMENT

The risks to health and safety from everything including any defects in the structure, working procedures and all of the chemicals used during the materials installation must be properly assessed and safely accommodated.

Any working areas on platforms and temporary structures must also provide a stable and safe area to work. All work and working procedures must be carried out fully in accordance with the

relevant local health and safety legislation.

5.2 PERSONAL PROTECTION

Work Safely!

Safety shoes, gloves and other appropriate skin protection should be worn at all times. The use of disposable or new / clean protective clothing during the materials' preparation and application is strongly recommended.

Always wear nitrile based protective gloves when handling epoxy adhesives as they can otherwise cause skin irritation. Additionally apply barrier cream to hands and any unprotected areas of skin before starting work.

Appropriate eye protection should be worn at all times whilst handling, mixing and installing the products. Carrying an eye wash with you at all times is recommended.

Always wash hands with suitable soap and clean water after handling the products and before food consumption, smoking, visiting the toilet and after finishing work.

The work area needs to be well ventilated and operatives should take frequent breaks in fresh air to avoid any other health issues.

Silica dust produced by the grinding or blast cleaning of concrete can be hazardous. Protect yourself and others by using a vacuum grinder or vacuum blast cleaning equipment with dust extraction and abrasive recycling attachments respectively. Always wear a dust mask/respirator when grinding concrete. Do not inhale the concrete dust.

For more detailed health and safety information, please refer to the relevant Safety Data Sheet (SDS).

5.3 FIRST AID

If the epoxy resin based adhesive products come into contact with eyes or mucous membranes, remove any glasses or contact lenses and rinse with clean warm water for 10 to 15 minutes then seek medical attention.

Any chemical spillages on skin must be cleaned immediately and rinsed thoroughly with clean warm water.

For more detailed health and safety information, please refer to the relevant Safety Data Sheet (SDS).

5.4 WASTE DISPOSAL

Do not empty any surplus material into drainage or water systems; dispose of all waste materials and packaging responsibly through licensed waste disposal facilities or contractors, fully in accordance with local legislation and the relevant authorities' requirements. Also avoid any chemical materials run-off into soil or into waterways, drains or sewers.

Any uncured adhesive waste, spillages and / or leftover Sika® Thinner C must be disposed of as hazardous waste and according to local regulations. Cured adhesive waste can be disposed of safely as normal building materials waste according to local regulations.

For more detailed health and safety information, please refer to the relevant Safety Data Sheet (SDS).

6 PREPARATION

6.1 PRE-PROJECT

The specific cracks that are to be crack injected shall be identified by the project engineer, taking into account the cause of the cracking, the expected anticipated future loading, and after determining whether the cracks are indicative of current or future structural problems. The decision on the suitability of the cracks for crack injection may require review of original construction drawings, specification, construction and maintenance records, site investigation and/or structural analysis. If the cracks reduce the strength, stiffness, or durability of the structure to an unacceptable level, or if the function of the structure is seriously impaired, then the cracks will need to be crack injected.

Review the project specifications in detail. Inspect the site conditions and the concrete substrate to be crack injected and report immediately in writing to the responsible Engineer if anything is unsuitable for proper execution of the works.

Obtain all of the necessary tools and equipment, plus materials required (for a checklist example, see Section 9.2), together with any special project requirements.

Protect any adjacent surfaces, vehicles etc., surrounding the work area from any dust or damage due to the preparation and execution of the crack injection works.

6.2 SUBSTRATE PREPARATION

Crack widths between 0.2 mm and 5 mm may be successfully injected with Sikadur Injectokit LV, and crack widths between 0.2mm and 2mm may be successfully injected with Sikadur Injectokit TH. (For very fine cracks, drilling a 6mm diameter pilot hole beneath each proposed nipple location will assist in the penetration of the Sikadur Injectokit LV and TH. The depth of the hole will depend on the substrate thickness, but should not be so deep as to risk intersection with reinforcing steel.) Concrete must be older than 28 days (dependent on the environmental situation, the mix design and effective strength requirements).

Before preparing the substrate for the crack injection application, it must be thoroughly inspected. If the edges of the crack have fretted, then “V”-groove the crack until sound concrete is reached. Where the substrate is unsound (i.e. where the edge of the crack has spalled or there is significant damage) the unsound material must be removed and repaired.

Where concrete repairs are necessary prior to the crack injection, it is important that the repair materials are designed and installed to be fully compatible with the substrate (i.e. they must have low shrinkage, compatible modulus of elasticity, good interface bond, adequate strength and an appropriate finished surface). Repairs should be carried out with suitable MonoTop or Sikadur repair mortars. Further advice on all aspects of concrete repairs can be obtained from your local Sika Technical Service Department.

Clean the substrate surface and remove all cement laitance adjacent to the crack (about 15mm on either side) using a wire brush or diamond grinder, to ensure the surface seal will bond to the substrate. The crack surfaces must be clean and free from any loosely adhering particles, or contaminants such as dirt, oil, dust, grease, etc., which could adversely affect or inhibit the bond of the Sikadur Injectokit LV and TH to the concrete. The cracks must be blown out with oil free, dry compressed air, and must be dry.

6.3 RESIN

Mixing of Sikadur Injectokit LV: Hit the side of the capsule near the base with a hammer 2 or 3 times on different sides to break the internal glass container of hardener. (The glass can be heard moving when broken.) To mix the resin, invert the cartridge 20-30 times slowly. Do not shake vigorously otherwise air will be incorporated.

Mixing of Sikadur Injectokit TH: Insert T-shaped rod through the conical nozzle and turn clockwise to engage stirring head in cartridge. Push rod down the full length of the cartridge to break the membrane separating the resin and hardener. Pump up and down 30 to 40 times to mix resin and hardener. Turn the T-shaped rod anticlockwise to disengage and then remove. Do not shake. The pot life begins when the resin and hardener are mixed. It is shorter at high temperatures and longer at low temperatures. To obtain longer workability at high temperatures, chill Sikadur Injectokit LV and TH before mixing.

The sequence of operations shall be planned to ensure that Sikadur Injectokit LV and TH can be injected and the work with it completed within 80% of the pot life (depending on the temperature). For details on the performance, pot life and other characteristics of the Sikadur Injectokit LV and TH resin, please refer to the Product Data Sheet.

Ten minutes after initial injection has been completed, re-inject all injection flanges. Repeat this re-injection procedure every 10 minutes until all injection flanges refuse injection adhesive.

7 APPLICATION

7.1 GENERAL

Prior to starting the application, measure and record the substrate moisture content, the relative humidity and determine the dew point. The substrate temperature must be at least 3°C above the dew point.

7.2 SEALING THE SURFACE OF THE CRACK

Using Sikadur 31 epoxy adhesive, fasten Sikadur Injectokit Nipples over the cleaned and prepared cracks at 200 to 500 mm intervals. The remainder of crack is also sealed off with Sikadur 31. Depending upon crack width and whether the crack has been sealed on both sides, Sikadur Injectokit Nipples may be required on both sides of the crack or at closer centres.

7.3 EPOXY INJECTION

Before starting epoxy injection, ensure that the surface seal has properly cured, and can withstand the injection pressures. For vertical cracks, start injection from the lowest flange. For horizontal cracks, either start injection from one end of the crack and proceed until the far end of the crack, or start at the widest section of the crack.

Where possible both sides of a crack should be sealed, however where a crack can be sealed from one side only, then Sikadur Injectokit TH should be used. Screw the Sikadur Injectokit-LV hose (if using Sikadur Injectokit-LV) or the Sikadur Injectokit-TH hose (if using Sikadur Injectokit-TH) onto the cartridge. Ensure that the rubber „O" ring is in place on the cartridge. Do not over tighten the fitting as this may distort the „O" ring. Place the cartridge into a standard gun. Push the free end of the Sikadur Injectokit-LV hose onto the first (lowest) nipple and tighten down the locking cap. Do not over tighten. Insert an air release pin into the next nipple above the injection point. Note: Do not start pumping until the air release pin is inserted to open the non-return valve and release trapped air. Commence pumping slowly, do not use excessive pressure. The rate of acceptance on fine cracks may be very slow.

When resin appears at the nipple next to the injection point:

(a) stop pumping

(b) release the pressure on the injection gun

(c) remove the air release pin

(d) unscrew the cap and with a twisting movement pull off the Sikadur Injectokit hose.

Attach the Sikadur Injectokit hose to the next nipple. Insert air release pin in nipple beyond and recommence pumping. Repeat the process until the entire length of crack has been injected. On completion of pumping, the last cartridge can be left connected and pressurised slightly to allow for possible seepage into deep seated cracks.

7.4 REMOVING THE SURFACE SEAL

After the Sikadur Injectokit LV and TH has cured, the flanges and Sikadur 31 or Sika AnchorFix-3+ can be ground from the surface of the crack using an angle grinder or similar. Allow 5 to 7 days curing for full structural integrity of the repair component to be achieved.

Allow to patch the concrete surface with suitable MonoTop or Sikadur repair mortars as required.

8 INSPECTION AND TESTING

8.1 BEFORE APPLICATION

Concrete substrates must be at least 28 days old.

If required by the Engineer, a test crack shall be injected using the same surface seal, injection adhesive, equipment, and application methods that are proposed for the injection work. The Engineer shall select the crack to be test injected. Ideally a single crack at least 3m long shall be selected, but if there is no crack this long then a number of shorter cracks with a total length of 3m shall be selected. Once the epoxy has cured this injected test crack shall be cored and the results approved by the Engineer (based on the criteria set out in Section 8.2) before beginning the remaining injection work.

8.2 SITE INSPECTION

On site, all aspects of preparation, mixing, and application of materials should be continuously observed and recorded, including the following:

- Surface preparation
- Material batch numbers
- Mixing of the resin materials
- All other details relating to the crack injection requirement and system specification

When required by the engineer, test cores shall be taken to check the quality of the crack injection work. The location of the cores shall be selected by the engineer, to ensure that cores are not drilled in areas of high stress and to avoid cutting reinforcing steel. The frequency of coring shall be determined by the engineer, but typically three cores would be taken from the first 30m of crack injected and one core for each 30m thereafter.

Core diameter shall typically be 50mm. Each core shall include as much of the crack as possible. Replace cores that do not intersect the crack for at least 75% of the core length.

Visually inspect the cores. The crack injection repair is acceptable if more than 90% of the crack is filled with resin.

The cores can also be tested for splitting tensile strength in accordance with ASTM C 42. The crack injection repair is acceptable if the tested strengths are 90% or more of that achieved on cores taken through uncracked concrete.

Repair the cored hole with MonoTop or Sikadur repair mortar.

9 9. APPENDIX

9.1 CONSTRUCTION JOURNAL

Throughout the process of the project work, a record should be written and maintained that details all aspects of the works involved in the preparation, mixing and application, including:

- Surface preparation
- Materials delivery / batch numbers
- Mixing and application of resin
- Ambient conditions (ambient temperature, substrate temperature, humidity, dew point)
- Any possible contamination
- Details of all test samples and results
- Any significant vibration
- Any other points of note or concern on site

9.2 ON SITE CHECKLIST: MATERIALS

- Brush
- Vacuum cleaner
- Compressor
- Mixing container
- Mixing spindle
- Mixer attachments
- Trowel
- Concrete core drill
- Thermometer
- Moisture meter
- Sikadur Injectokit-LV & TH
- Sikadur-31
- Sika AnchorFix-3+
- Sika Thinner C
- Safety goggles
- Safety hard hat
- Skin protection cream
- Protective gloves
- Nitrile gloves
- Clean water
- Eye wash kit

9.3 ON-SITE CHECKLIST: QUALITY ASSURANCE

SUBSTRATE PREPARATION	YES	NO
Are the cracks in the concrete above 0.2 mm?		
Has any damage to the substrate been repaired?		
Crack cleaning methods:		
Climate:		
Weather conditions:		
Does the air and surface temperature exceed 5°C?		
Ambient temperatures at the start of the workday:		
Ambient temperatures at the end of the workday:		
Ambient temperatures 4 hours after the end of the workday:		
Is the substrate temperature at least 3° above the dew point?		
Is there free standing water on the surfaces?		
Are the surfaces to be bonded cleaned?		
Is there any dust or other contaminants present?		
Batch numbers of Sikadur Injectokit-LV and TH used:		
After Installation:		
Are there any areas of the crack that do not appear filled?		
If required, have cores been drilled?		
If Yes, is more than 90% of the crack filled with Sikadur Injectokit-LV and TH?		

10 LEGAL NOTE

The information, and, in particular, the recommendations relating to the application and end-use of Sika products, are given in good faith based on Sika's current knowledge and experience of the products when properly stored, handled and applied under normal conditions in accordance with Sika's recommendations. in practice, the differences in materials, substrates and actual site conditions are such that no warranty in respect of merchantability or of fitness for a particular purpose, nor any liability arising out of any legal relationship whatsoever, can be inferred either from this information, or from any written recommendations, or from any other advice offered. The user of the product must test the products suitability for the intended application and purpose. Sika reserves the right to change the properties of its products. The proprietary rights of third parties must be observed. All orders are accepted subject to our current terms of sale and delivery. Users must always refer to the most recent issue of the local Product Data Sheet for the product concerned, copies of which will be supplied on request.

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METHOD STATEMENT

Repairing Concrete using Sika® Ready to Use Mortars

JUNE 2015 / VER. NO.: 0615 / SIKA (NZ) LIMITED /

REFURBISHMENT

BUILDING TRUST

TABLE OF CONTENTS

1	**Scope**	**3**
2	**System Description**	**3**
2.1	References	3
2.2	Limitations	3
3	**Products**	**4**
3.1	System Build-Up	4
3.2	Material Storage	4
4	**Equipment**	**4**
4.1	Materials	4
4.2	Essential Equipment	4
4.3	Additional Equipment	5
4.4	Mixing Equipment	5
5	**Health & Safety**	**5**
5.1	Risk Assessment	5
5.2	Personal Protection	6
5.3	First Aid	6
6	**Environment**	**6**
6.1	Cleaning Tools / Equipment	6
6.2	Waste Disposal	6
7	**Substrate Preparation**	**6**
7.1	Concrete	6
7.2	Steel Reinforcement	8
7.3	Pre-Wetting Substrate	8
8	**Mixing**	**9**
8.1	One Component Products	9
8.2	Two Component Products	9
8.3	Three Component Products	9
9	**Application**	**10**
9.1	Before Application	10
9.2	Reinforcement Corrosion Protection	10
9.3	Bonding Primer	10
9.4	Hand Applied Repair Mortars	11
9.5	Spray Applied Repair Mortars	11
9.6	Smoothing / Levelling Mortars	12
9.7	Curing	12
9.8	Application Limits	12
10	**Inspection, Sampling, Quality Control**	**13**
10.1	Substrate Quality Control - Before and After Preparation	13
10.2	Before, During and After Application	13
10.3	Performance Testing	14
11	**Yield & Consumption**	**14**
12	**Concrete Repair Flow Chart**	**15**
13	**Typical Drawing Showing System Build Up**	**16**
14	**Legal Note**	**16**

1 SCOPE

This method statement describes the step by step procedure for repairing concrete structures using the Sika MonoTop, SikaTop and Sika EpoCem range of ready to use mortar products.

2 SYSTEM DESCRIPTION

The Sika concrete repair range is a system of products consisting of a bonding primer, reinforcement corrosion protection layer; mortar repair and levelling or smoothing mortar.

USES

- Bonding primers for promoting adhesion of a repair mortar on concrete
- Reinforcement corrosion protection applied on steel reinforcement bars in concrete (principle 11, method 11.1)
- Repair and reinstatement of damaged or contaminated concrete on buildings, bridges, infrastructure and super structure works (principle 3, methods 3.1 and 3.3)
- Increasing bearing capacity of a concrete structure by adding mortar for strengthening (Principle 4, method 4.4)
- Preserving or restoring passivity of steel reinforcement bars in concrete (Principle 7, methods 7.1 and 7.2)
- Increasing cover to reinforcement bars with additional mortar
- Thin layer render
- For pore sealing or levelling a concrete surface prior to adding a protective coating
- Repair of minor defects

CHARACTERISTICS/ ADVANTAGES

- Pre-mixed for quality
- 1-component products only add water
- Adjustable consistencies
- Versatile range of performances
- Low shrinkage
- Products with easy surface finishing
- Products with classified performance classes
- Systems with high resistance to water and chloride penetration
- Products which can be hand or machine applied
- Compatible system with Sikagard concrete protection products References

2.1 REFERENCES

This method statement has been written in accordance with the recommendations contained in European Standards EN 1504: Products and systems for the protection and repair of concrete structures, and the following relevant parts:

- EN 1504 Part 1: Definitions, requirements, quality control and evaluation of conformity
- EN 1504 Part 3: Structural and non-structural repair
- EN 1504 Part 7: Reinforcement corrosion protection
- EN 1504 Part 10: Site application of products and systems, and quality control of works

2.2 LIMITATIONS

- Products shall only be applied in accordance with their intended use.
- Local differences in some products may result in some slight performance variations. The most recent and relevant local Product Sheet (PDS) and Material Safety Data Sheet (MSDS) shall apply
- For specific construction / build information refer to the Architects', Engineer's or Specialist's details, drawings, specifications and risk assessments.

- All work shall be carried out as directed by a Supervising Officer or a Qualified Engineer.
- This method statement is only a guide and shall be adapted to suit local products, Standards, legislations or other requirements

3 PRODUCTS

Sika Brand	Description
Sika® MonoTop®	1-component, ready to use repair mortar, bonding primer or reinforcement corrosion protection
SikaTop®	2-component, ready to use repair or levelling mortar
Sika® EpoCem®	3-component, ready to use bonding primer, reinforcement corrosion protection or levelling mortar

3.1 SYSTEM BUILD-UP

A Sika repair system comprises a range of products to suit the needs.

Bonding Primer And Reinforcement Corrosion Protection

Sika MonoTop-910 N	Normal use
SikaTop Armatec-110 EpoCem	Demanding requirements

Concrete Repair Mortars

Sika MonoTop-352N /NFG	R3 normal setting CC or PCC mortar
Sika MonoTop-412 N/NFG	R4 Normal setting CC or PCC mortar
Sika MonoTop-452	R4 Normal setting for horizontal repairs

Pore Sealer and Levelling Mortar

Sika MonoTop-723 N	R3 normal use
Sikagard-720 EpoCem	R4 demanding requirements

3.2 MATERIAL STORAGE

Materials shall be stored properly in undamaged original sealed packaging, in dry cool conditions. Refer to specific information contained in the product data sheet regarding minimum and maximum storage temperatures.

4 EQUIPMENT

4.1 MATERIALS

Sufficient quantities Sika repair materials	Refer to section 11
Sufficient clean water	For mixing 1-component, pre-wetting substrate & cleaning

4.2 ESSENTIAL EQUIPMENT

Hand tools	Trowels, floats, brushes for mortar application

Concrete removal	Traditional tools, hammer-drill or suitable mechanical equipment for removing damaged or contaminated concrete
Measuring cylinder	For accurate measurement of mixing water
Mixing equipment	Refer to section 4.4
Mixing bowl	Minimum ~18 - 20 litres per 25 kg bag
Sponge or pressurised air (oil free)	Wipe/blow away excess water from substrate
Curing	Membrane or similar to protect fresh mortar
Cleaning	Brush, low pressure water
Waste disposal	For paper bags and excess material

4.3 ADDITIONAL EQUIPMENT

Formwork	To profile application
Sealant	For sealing formwork
Spraying equipment	Mechanical application of mortars
Cleaning Equipment	Suitable for removing corrosion off reinforcement
Suitable profile	For levelling large surfaces

4.4 MIXING EQUIPMENT

Use professional equipment for mixing SikaGrout.

Single mixer with spindle paddle
small quantities

Double mixer with spindle paddles
medium quantities

Forced action pan mixer
large quantities

5 HEALTH & SAFETY

5.1 RISK ASSESSMENT

The risk to health and safety from falling objects or defects in the structure shall be properly assessed.

Platforms and temporary structures shall provide a stable and safe area to work. Do not take any unnecessary risks!

5.2 PERSONAL PROTECTION

Handling or processing cement products may generate dust which can cause mechanical irritation to the eyes, skin, nose and throat. Appropriate eye protection shall be worn at all times while handling and mixing products. Approved dust masks shall be worn to protect the nose and throat from dust.

Safety shoes, gloves and other appropriate skin protection shall be worn at all times.

Always wash hands with suitable soap after handling products and before food consumption. FOR DETAILED INFORMATION REFER TO THE SAFETY DATA SHEET

5.3 FIRST AID

Seek immediate medical attention in the event of excessive inhalation, ingestion or eye contact causing irritation. Do not induce vomiting unless directed by medical personnel. Flush eyes with plenty of clean water occasionally lifting upper and lower eyelids. Remove contact lenses immediately. Continue to rinse eye for 10 minutes and then seek medical attention. Rinse contaminated skin with plenty of water. Remove contaminated clothing and continue to rinse for 10 minutes and seek medical attention. FOR DETAILED INFORMATION REFER TO THE MATERIAL SAFETY DATA SHEET.

6 ENVIRONMENT

6.1 CLEANING TOOLS / EQUIPMENT

Clean all tools and application equipment with water immediately after use. Hardened material can only be removed mechanically.

6.2 WASTE DISPOSAL

Do not empty surplus material into drains; dispose responsibly through licensed waste disposal contractor in accordance with legislation and local / regional authority requirements. Avoid runoff onto soil or into waterways, drains or sewers.

FOR DETAILED INFORMATION REFER TO THE SAFETY DATA SHEET

7 SUBSTRATE PREPARATION

7.1 CONCRETE

The concrete substrate shall be thoroughly clean, in a good sound condition and free from dust, loose material, surface contamination and materials which reduce bond. Delaminated, weak, damaged and deteriorated concrete shall be removed by suitable means. If necessary, some sound concrete may also be removed but not to detriment of the structural integrity and only as directed by a Supervising Officer or Qualified Engineer.

Methods of cleaning, roughening and concrete removal are summarised as follows:

■ Intended use

□ For certain intended uses

	Cleaning	Roughening	Removal
Hammer and chisel			■
Breaker		■	■
Grit and sand blasting	■	■	
Water Blasting with low pressure (max. 180 bar)	■		
Water Blasting with high pressure (min. 600 bar)		■	□
Water Blasting very high pressure (min. 1100 bar)			■

Appropriate tool selection will depend on the type and extent of damage as well as the substrate quality and shall be agreed with the supervising officer or qualified engineer.

Note: Hydro-demolition is a preferred fast and effective method of removing concrete which does not produce micro cracks in the concrete.

As defined in EN 1504-10, water jet categories are as follows:

- Low Pressure – Up to 18 N/mm² (MPa) / 180 bar / ~2,600 PSI
  - Used for cleaning concrete and steel substrate
- High Pressure – from 18 to 60 N/mm² (MPa) / 600 bar / ~8,700 PSI
  - Used for cleaning steel substrate and for removal of concrete
- Very High Pressure –from 60 to 110 N/mm² (MPa) / 1100 bar / ~16,000 PSI
  - Used for concrete removal when low water volume is available

Where: 1N/mm² = 10 bar = 145 PSI (lbf/in²)

Concrete removal shall be kept to a minimum and shall not reduce the structural integrity of the structure. Pneumatic equipment or tools which can damage concrete due to an intense vibration shall not be used. The extent of concrete removal shall be in accordance with the chosen principle and method contained in EN 1504-9. In the case of repair and restoration the depth of contamination shall be established and taken into account when determining the depth of concrete removal..

Removal of concrete shall continue to expose the full circumference of the steel reinforcement to a minimum depth of 15 mm behind the back of the bars.

Breaking out shall continue along the reinforcement until non-corroded steel is reached as directed by the supervising officer or qualified engineer.

Edges around the patch repair shall be cut at an angle of >90° to avoid undercutting and a maximum angle of 135° to reduce the possibility of de-bonding.

Surface of the concrete substrate shall be roughened to 2 mm to increase bonding which can be tested in accordance with EN 1766: clause 7.2 for horizontal surfaces.

Micro cracked or delaminated concrete including damage caused cleaning, roughening or removal techniques shall be removed or repaired if they might reduce bond or structural integrity. Micro cracks can be detected by wetting the surface and allowing it to dry. Dark lines on the dried surface indicate cracks as they retain the water.
The finished surface shall be visually inspected prior to application and can be tapped lightly using a metal hammer to detect delaminated concrete. The supervising officer or qualified engineer shall be informed immediately of any

loose, cracked or damaged surfaces. In these circumstances repair materials shall not be applied without prior written consent of the supervising officer or qualified engineer.
If a smoothing coat is required the whole application surface shall be properly prepared. Appropriate cleaning procedures consist of low pressure water blasting, abrasive grit and sand blasting, or high pressure water blasting to remove a laitance layer.

7.2 STEEL REINFORCEMENT

The steel reinforcement shall be thoroughly clean and free from rust, scale, mortar, concrete, dust and other loose and deleterious material which reduces bond or contributes to corrosion. Tie wire and nails shall also be removed.

The whole circumference of the bar shall be uniformly cleaned, except where structural considerations prevent this. Cleaning shall not damage in anyway the structural integrity of the steel. Immediately notify the supervising officer or qualified engineer if there is a possibility of damaging the steel by cleaning.

Exposed bars contaminated with chloride or other deleterious material shall be cleaned by low pressure water jet (18 MPa) and checked afterwards to ensure the contamination has been totally removed.

If a reinforcement corrosion protection layer in the form of an active coating (method 11.1 as defined in the European Standards EN 1504-9) is to be applied, then the steel reinforcement shall be cleaned to Sa 2 defined by ISO 8501-1.

If reinforcement corrosion protection layer in the form of a barrier coating (method 11.2 of EN 1504-9) is to be applied, then the steel reinforcement shall be prepared to Sa 2. defined by ISO 8501-1.

Cleaned bars shall be protected against further contamination prior to application of a reinforcement corrosion protection layer.

Loss of steel-area on reinforcement due to corrosion, or due to any other damage, shall immediately be brought to the attention of the supervising officer or qualified engineer prior to any further work. Any further action such as replacing reinforcement bars shall only be carried in accordance with the direct instruction of the supervising officer or qualified engineer. The scope of this method statement does not include replacement of steel reinforcement bars.

7.3 PRE-WETTING SUBSTRATE

Concrete surfaces shall be saturated with clean low pressure water a minimum 2 hours before application ensuring that all pores and pits are adequately wet. The surface shall not be allowed to dry before application.

Just before application, Remove excess water prior to application e.g. using a clean sponge for small areas or air pressure for large areas. Ensure there is no standing water on the surface. The surface shall achieve a dark matt appearance without glistening and surface pores and pits shall not contain water (saturated surface dry). Use pressurised air (oil free) to blow away excess water in difficult to reach areas.

8 MIXING

Mixing shall always be carried out in accordance with the recommendations contained in the latest product data sheet (PDS).

Water addition must be within the stated maximum and minimum limits.

In determining the mixing ratio the wind strength, humidity, ambient and substrate temperature shall be taken into consideration.

8.1 ONE COMPONENT PRODUCTS

Product	Procedure
Sika MonoTop	▪ Place minimum recommended water ratio in mixing container. ▪ Progressively add powder while mechanically mixing using low speed (maximum 500 rpm) electric drill. ▪ Add more water if required to suit the desired consistency and flow properties but not exceeding maximum dosage. Mix in total for minimum 3 minutes or until the material is homogenous.

8.2 TWO COMPONENT PRODUCTS

Product	Procedure
SikaTop	▪ Shake component A thoroughly ▪ Pour component A into container and add powder component B progressively while mixing mechanically using a low speed (maximum 500 rpm) electric drill. Mix for minimum 3 minutes until homogenous. ▪ Do not add water.

8.3 THREE COMPONENT PRODUCTS

Product	Procedure
Sika EpoCem	▪ Thoroughly shake component A and B separately ▪ Pour component A into component B and shake thoroughly ▪ Pour mixed components A+B into mixing container and add component C progressively while mixing mechanically using low speed (maximum 500 rpm) electric drill. ▪ Mix for minimum 3 minutes until homogenous. ▪ Do not add water. ▪ Do not part mix components.

9 APPLICATION

The product and system shall be appropriate for the type of substrate, structure and exposure conditions for which they are required.

9.1 BEFORE APPLICATION

Working space shall be clean and tidy with no obstructions.

Record the substrate temperature, ambient temperature and relative humidity. Check pot life information on bag or in the product data sheet and allow for climatic conditions e.g. high / low temperatures & humidity.

External applications shall be adequately protected. Do not apply mortar repair in direct sun; windy, humid or rainy conditions; or if there is a risk of frost within 24 hours in unprotected areas.

Calculate the required volume for the application and then using the equation in section 10 of this method statement, calculate the yield of the product. Make sure there is enough material on the job site to carry out the work.

9.2 REINFORCEMENT CORROSION PROTECTION

Where reinforcement corrosion protection is required, apply material to the whole circumference of the steel reinforcement bar in two layers. Wait until the first layer has dried before applying the second layer. Use a mirror to inspect behind the back of the bars to ensure full coverage.

Take care not to splash or apply material on a dry concrete substrate behind the bars.

For small areas use two paint brushes to apply 2 layers and ensure full coverage. For larger areas a hopper gun can be used. Aim the spray in different directions to ensure coverage behind the back of the bars.

The repair mortar shall only be applied when the reinforcement corrosion protection is hardened (wet on dry). Refer to the relevant product data sheet for more information.

9.3 BONDING PRIMER

Refer to relevant repair mortar product data sheet if a bonding primer is required. If a bonding primer is required, the substrate surface shall be pre-wetted in accordance with section 7.3. Bonding primers can be applied by hand pressing the material firmly into the surface using a stiff brush or using a hopper gun for larger areas.

The repair mortar shall be applied wet on wet to a bonding primer. Ensure the substrate surface is fully covered behind the reinforcement bars. For large applications use only a bonding primer with long open time e.g. SikaTop Armatec-110 EpoCem refer to product data sheet.

9.4 HAND APPLIED REPAIR MORTARS

On a well prepared substrate, the repair mortar shall be pressed firmly into the repair area. Ensure all the substrate pores and pits are filled.

Check pot life and adjust as necessary the water to powder ratio to suit temperature and application conditions.

When the repair depth exceeds the maximum layer thickness of the repair material, then layers may be built up on top of one another to increase the overall construction depth. The first layer shall be hardened and exothermic reaction of the material completed. The 1st layer shall be at ambient temperature before applying the second layer.

Do not smooth the first layer before applying a second layer. The first layer shall have sufficient roughness to provide a mechanical key for subsequent mortar layers.

Ensure the repair mortar covers the whole circumference of the reinforcement bars and there are no voids left behind the back of the bars.

Finish the surface with a wooden or PVC float. Do not over work the finished surface as this will produce a cement rich surface texture, which may cause the formation of random (crazing) cracking in the surface.

9.5 SPRAY APPLIED REPAIR MORTARS

Repair mortars may be applied using the wet or dry spray technique. Refer to the relevant product data sheet for information relating to spraying. Before using any spray equipment, always read the manufacturers information before starting..

Sprayed mortars are generally applied through a nozzle (Diameter subject to maximum grain size of sprayed material. Refer to machine manufacturer's information) at an angle as close as 90° to the substrate as possible. The application distance between the nozzle and substrate is approximately 200 – 500 mm for the wet spray technique and 600 – 1000 mm away for the dray spray technique.

When spraying ensure the mortar covers the whole circumference of the reinforcement bars leaving no voids behind the back of the bars.

Do not exceed the specified maximum layer thickness of the repair mortar. If necessary, test the spray on an area before starting the main application.

In the case of wet spraying adjust as necessary the water to powder ratio to suit temperature and application conditions.

When the repair depth exceeds the maximum layer thickness of the repair material, then layers may be built up on top of one another to increase the overall construction depth. The first layer shall be hardened and exothermic reaction of the material completed. The 1st layer shall be at ambient temperature before applying the second layer. Do not smooth the first layer before applying a second layer. The first layer shall be cleaned using low pressure water or compressed air before applying subsequent mortar layers.

Finish the surface with a wooden or PVC float. Do not over work the finished surface as this will produce a cement rich surface texture, which may cause the formation of random (crazing) cracking in the surface.

9.6 SMOOTHING / LEVELLING MORTARS

Smoothing mortars can be applied by hand, by hopper gun or by mechanical spray equipment for large areas. Refer to relevant product data sheet for further information.

A smoothing coat shall be applied over the whole prepared concrete surface (including repair and non-repaired areas). Any laitance layer on the surface shall be removed (section 7.1) and surface pre-wet in accordance with section 7.3.

Wait until the repair material has properly hardened before applying a smoothing coat.

Use a toothed trowel to apply the mortar by hand in a vertical direction onto the surface. Hold the trowel at an acute angle to the surface and use different size toothed trowels to regulate the application thickness.

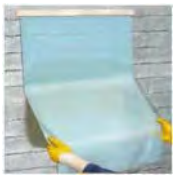
Table 1
Approximate application thickness guide

Toothed Trowel Size	Approximate Application Thickness	
	30°	45°
10 mm	~ 5.0 mm	~ 7.0 mm
5 mm	~ 2.5 mm	~ 3.5 mm
2 mm	~ 1.0 mm	~ 1.5 mm

When 1st layer is hard, apply the second layer between the vertical lines. The hardness can be tested by the ease at which a finger nail can be inserted into the mortar.

Finish surface with damp sponge, wooden or plastic float after material has set. Do not apply additional water on the surface as this will cause discoloration and cracking.

9.7 CURING



Cure with proper curing methods for 3 days or spray with appropriate curing compound (once any surface water has evaporated) or appropriate curing method. Curing methods include jute and water, plastic sheets or other suitable membranes.
The application shall be protected from wind, rain, frost and direct sunlight. The curing period is dependent on climate conditions. In warm temperatures with low humidity the application shall be protected from premature drying.

9.8 APPLICATION LIMITS

- Avoid application in direct sun and/or strong winds.
- Do not add water over the maximum recommended dosage.
- Always check the material's pot life and adjust for climate conditions.
- Temperature of the repair mortar and substrate shall not differ significantly.
- Where the structure is subject to dynamic loading, it is recommended for overhead applications to use repair systems specially tested for this situation.

10 INSPECTION, SAMPLING, QUALITY CONTROL

As part of “Good Practice” the contractor shall provide a QC report containing the following recommended data. For more detailed information refer to EN 1504-10 Annex A, or any other local standards or legislation which may apply.

10.1 SUBSTRATE QUALITY CONTROL - BEFORE AND AFTER PREPARATION

The following checks should be carried out before and after preparation.

Characteristic	References	Frequency	Parameters
Cleanliness of Concrete	Visual	After preparation & immediately before application	No contamination, loose particles or defects
Cleanliness of Steel Bars	DIN EN ISO 8501-1	After preparation & immediately before application	No rust, scale or contamination. [Grade Sa 2 or SA 2 ½ for methods 11.1 or 11.2]
Delaminating Concrete	Hammer Sounding	After preparation	No delaminating concrete
Roughness	Visual or EN 1766 on horizontal surfaces	After preparation	Minimum roughness 2 mm (repair area) No laitance layer (smoothing mortars)
Surface Tensile Strength of the Substrate	EN 1542	After preparation works	>1.0 N/mm² for structural repair

Table 2 QC summary before and after preparation

10.2 BEFORE, DURING AND AFTER APPLICATION

The following checks should be carried out before, during and after the application.

Characteristic	References	Frequency	Parameters
Packaging	Visual	Every bag	No damage
Dry product aspect	Visual	2 bags per 10	Loose, no lumps and not compacted
Mixed material	Visual	Every mix	Homogeneous, no lumps, no un-mixed dry powder
Precipitation	Record	During application	Keep records and provide protection
Wind Strength	Record	Daily	Less than 8 m/sec or provide protection
Batch Number	Visual	All bags	Keep records

Table 3 QC summary before during and after application

10.3 PERFORMANCE TESTING

The following can be used to check the adequacy of the application.

Characteristic	References	Frequency	Parameters
Compressive Strength on 40x40x160 prisms	EN 12190	3 prisms per batch	Within PDS limits
Cracking	Visual	28 days after application	No cracking on application
Presence of Voids/ Delaminating	EN 12504-1 Hammer sounding or *ultrasonic testing	After application	No delaminating concrete
Adhesion Bond *(pull off) (non-laboratory performance)	EN 1542 (Acc EN 1504-10 Table A.2)	Min 3 on a test area	1.2 – 1.5 N/mm² (Structural use) 0.7 N/mm² (non-structural use)

* Optional testing

Table 4 QC summary of performance testing

11 YIELD & CONSUMPTION

The yield of a product can be determined from the following equation (assuming no wastage).

Equation: $\text{yield (litres)} = \frac{(\text{weight of powder (kg)} + \text{weight of water (kg)})}{\text{density of mixture (kg/l)}}$

Given: weight of water 1 litre = ~1 kg

Example:

Calculate consumption of a bag weighing 25 kg mixed with 3.6 litres of water, when the density of the fresh material is 2.1 kg/l.

1 bag of 25 kg yields: $\frac{(25 + 3.6)}{2.1}$ = **~ 13.6 litres of mortar**

Therefore, the number of bags required for 1m³ of mortar will be:

Number of bags required per 1m³ = (1/yield) x 1000

(1/13.6) x 1000 = **~ 74 bags**

Consumption of a product can be calculated as follows:

Calculate how many kg of powder is required to cover a 10 mm thick application over an area 1 m² (assuming no wastage)

Weight of mixed mortar (kg) = volume (m_3) x density (kg/m³)
= (1 x 0.01) x 2100
= 21 kg (total)

Less weight of water;

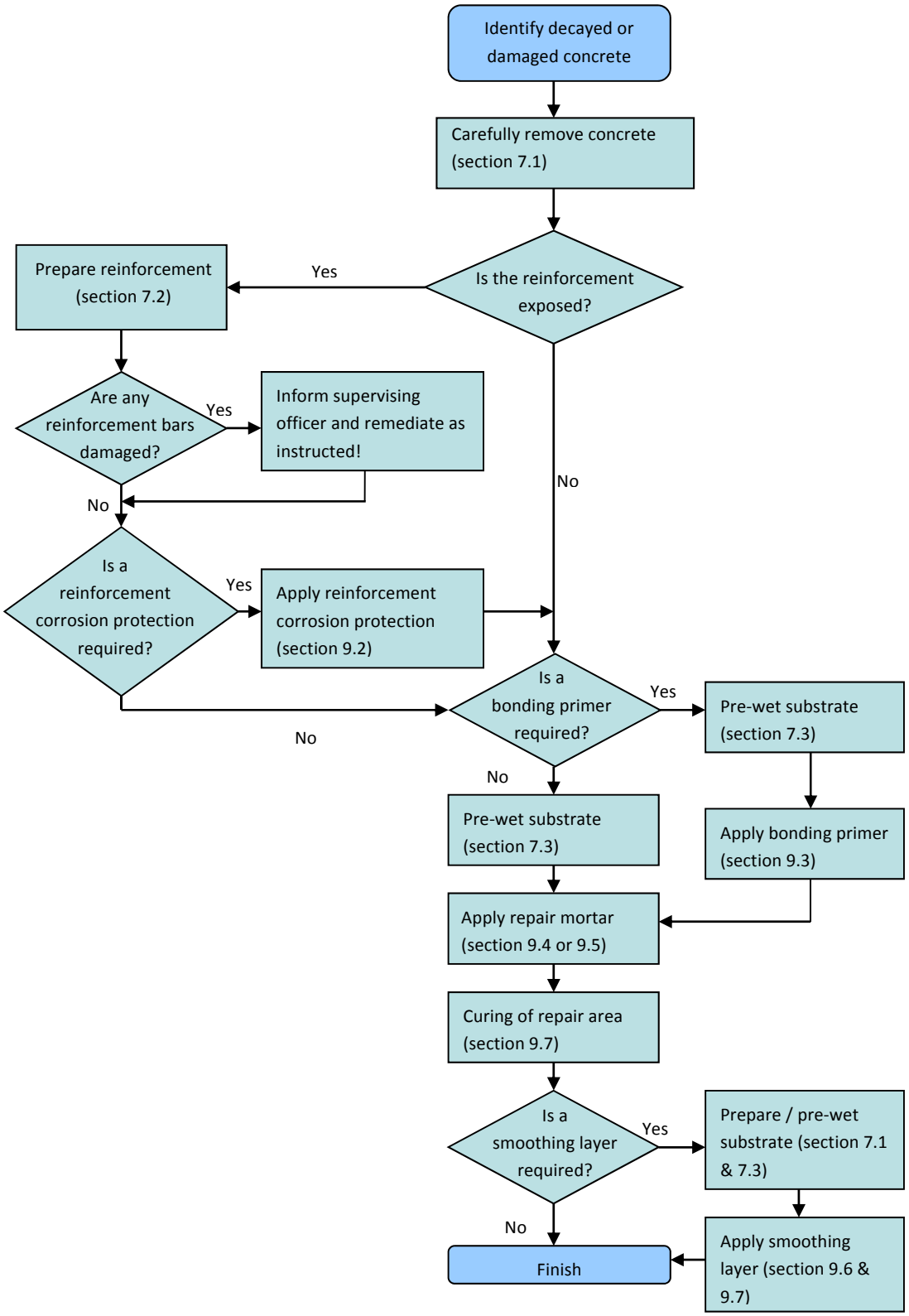
If water to powder mixing ratio = *14.5% then;

Required weight of powder = 21 / ((100+14.5)/100)
= **~ 18.3 kg powder**

* refer to current PDS for exact figure

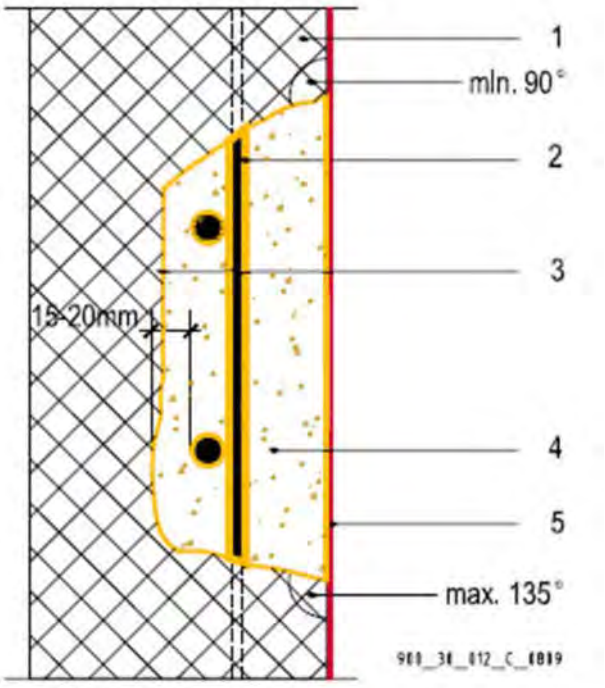
12 CONCRETE REPAIR FLOW CHART

The following is a guide to carrying out a concrete repair. This is not intended as a definitive guide to repair concrete and shall at all times be read in conjunction with all Architect's, Engineer's or specialist specifications together with EN 1504-10, local standards and all relevant product data sheets.



13 TYPICAL DRAWING SHOWING SYSTEM BUILD UP

This detail is for illustration purposes only and shall not be used as a construction drawing.



1 Host Concrete Structure
2 Reinforcement Corrosion Protection Layer
3 Bonding Primer
4 Repair Mortar
5 Smoothing / Levelling Mortar

14 LEGAL NOTE

The information, and, in particular, the recommendations relating to the application and end-use of Sika products, are given in good faith based on Sika's current knowledge and experience of the products when properly stored, handled and applied under normal conditions in accordance with Sika's recommendations. in practice, the differences in materials, substrates and actual site conditions are such that no warranty in respect of merchantability or of fitness for a particular purpose, nor any liability arising out of any legal relationship whatsoever, can be inferred either from this information, or from any written recommendations, or from any other advice offered. The user of the product must test the products suitability for the intended application and purpose. Sika reserves the right to change the properties of its products. The proprietary rights of third parties must be observed. All orders are accepted subject to our current terms of sale and delivery. Users must always refer to the most recent issue of the local Product Data Sheet for the product concerned, copies of which will be supplied on request.

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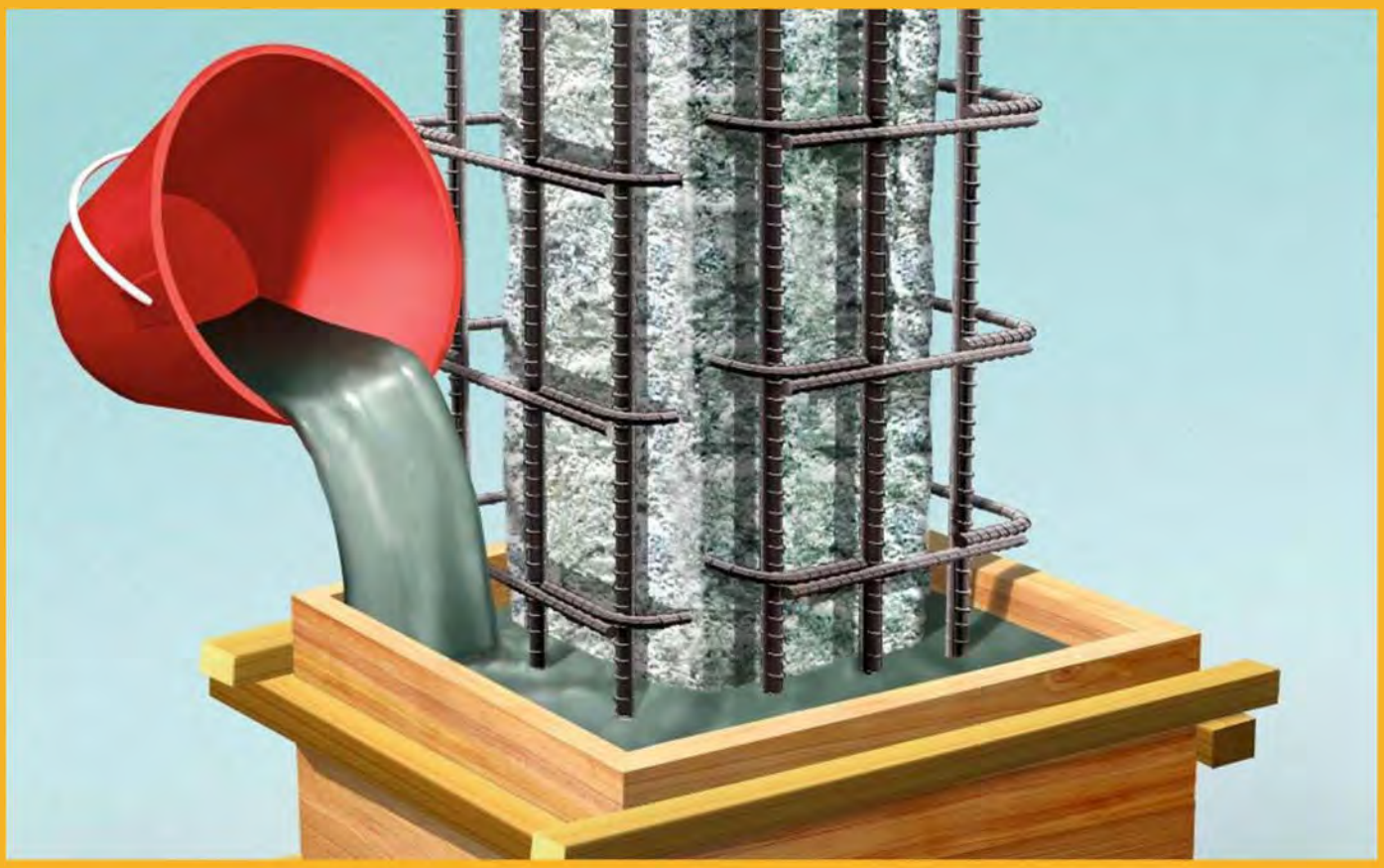


METHOD STATEMENT

Restoring Concrete Structures by Recasting, using Sika MonoTop®-438 R

MAY 2015 / VER. NO.: 0515 / SIKA (NZ) LIMITED /

REFURBISHMENT

BUILDING TRUST

TABLE OF CONTENTS

1	**Scope**	**3**
2	**System Description**	**3**
2.1	References	3
2.2	Limitations	3
3	**Products**	**3**
3.1	Material Storage	3
4	**Equipment**	**4**
4.1	Hand Tools	4
4.2	Mixing Tools	4
4.3	Miscellaneous Tools	4
5	**Health & Safety**	**4**
5.1	Risk Assessment	4
5.2	Personal Protection	4
5.3	First Aid	5
6	**Environment**	**5**
6.1	Cleaning Tools / Equipment	5
6.2	Waste Disposal	5
7	**Substrate Preparation**	**5**
7.1	Concrete	5
7.2	Steel Reinforcement	7
7.3	Pre-Wetting Substrate	7
7.4	Formwork	8
8	**Mixing**	**8**
8.1	One Component Products	8
9	**Application**	**8**
9.1	Before Application	8
9.2	Reinforcement Corrosion Protection	9
9.3	Bonding Primer	9
9.4	Recasting by pouring Sika MonoTop-438 R	9
9.5	Recasting by pumping Sika MonoTop-438 R	10
9.6	Removal of Formwork	10
9.7	Curing	10
9.8	Smoothing / Levelling Mortars	10
9.9	Application Limits	11
10	**Inspection, Sampling, Quality Control**	**11**
10.1	Substrate Quality Control - Before and After Preparation	11
10.2	Before, During and After Application	12
10.3	Performance Testing	12
11	**Additional Guidance**	**13**
11.1	Examples of Recasting	13
11.1.1	Pouring Method	13
12.1.1	Pumping Method	14
12.2	Maximum Thickness	14
12.3	Sealing Penetrations	14
13	**Concrete Repair Flow Chart**	**15**
14	**Legal Note**	**16**

1 SCOPE

This method statement describes the step by step procedure for using pourable mortars to restore concrete structures by recasting.

2 SYSTEM DESCRIPTION

This method statement describes the system build up using Sika MonoTop-438 R to restore concrete structures (methods 3.2, 4.4, 7.1, 7.2 11.1 and 11.2 of European Standard EN 1504-9). The system build up on the concrete substrate can consist of a bonding primer, reinforcement corrosion protection layer; pouring mortar, levelling or smoothing mortar.

2.1 REFERENCES

This method statement has been written in accordance with the recommendations contained in European Standards EN 1504: Products and systems for the protection and repair of concrete structures, and the following relevant parts:

- EN 1504 Part 1: Definitions, requirements, quality control and evaluation of conformity
- EN 1504 Part 3: Structural and non-structural repair
- EN 1504 Part 7: Reinforcement corrosion protection
- EN 1504 Part 9: General principles for the use of products and systems
- EN 1504 Part 10: Site application of products and systems, and quality control of works

2.2 LIMITATIONS

- Products shall only be applied in accordance with their intended use.
- Local differences in product may result in performance variations. The most recent and relevant local Product Data Sheets (PDS) and Safety Data Sheets (SDS) shall apply.
- For specific construction / build information refer to the Architect's, Engineer's or Specialist's details, drawings, specifications and risk assessments.
- All work shall be carried out as directed by a supervising officer or a qualified engineer.
- This method statement is only a guide and shall be adapted to suit local products, standards, legislation or other local requirements.

3 PRODUCTS

Sika Brand	Description
Sika MonoTop® -438 R	1-component, pourable ready to use repair mortar or reinforcement corrosion protection

3.1 MATERIAL STORAGE

Materials shall be stored properly in undamaged original sealed packaging, in dry cool conditions. Refer to specific information contained in the product data sheet regarding minimum and maximum storage temperatures.

4 EQUIPMENT

4.1 HAND TOOLS

Wire brush

Hammer & chisel

Application trowels

Smoothing floats

Mixing container

4.2 MIXING TOOLS

Drill and Mixing Paddle
Small quantities

Double Mixing Paddle
Medium quantities

Forced Action Pan Mixer
Large quantities

4.3 MISCELLANEOUS TOOLS

Water Spray

Concrete Removal & Cleaning Equipment (section 6.1)

Machine Applied Spray Equipment & Hopper Gun

5 HEALTH & SAFETY

5.1 RISK ASSESSMENT

The risk to health and safety from falling objects or defects in the structure shall be properly assessed.

Platforms and temporary structures shall provide a stable and safe area to work. Do not take any unnecessary risks!

5.2 PERSONAL PROTECTION

Handling or processing cement products may generate dust which can cause mechanical irritation to the eyes, skin, nose and throat.

Appropriate eye protection shall be worn at all times while handling and mixing products.

Approved dust masks shall be worn to protect the nose and throat from dust.

Safety shoes, gloves and other appropriate skin protection shall be worn at all times.

Always wash hands with suitable soap after handling products and before food consumption.

FOR DETAILED INFORMATION REFER TO THE SAFETY DATA SHEET

5.3 FIRST AID

Seek immediate medical attention in the event of excessive inhalation, ingestion or eye contact causing irritation. Do not induce vomiting unless directed by medical personnel.

Flush eyes with plenty of clean water occasionally lifting upper and lower eyelids. Remove contact lenses immediately. Continue to rinse eye for 10 minutes and then seek medical attention.Rinse contaminated skin with plenty of water. Remove contaminated clothing and continue to rinse for 10 minutes and seek medical attention.

6 ENVIRONMENT

6.1 CLEANING TOOLS / EQUIPMENT

Clean all tools and application equipment with water immediately after use. Hardened material can only be removed mechanically.

6.2 WASTE DISPOSAL

Do not empty surplus material into drains; dispose responsibly through licensed waste disposal contractor in accordance with legislation and local / regional authority requirements. Avoid runoff onto soil or into waterways, drains or sewers.

FOR DETAILED INFORMATION REFER TO THE SAFETY DATA SHEET

7 SUBSTRATE PREPARATION

7.1 CONCRETE

The concrete substrate shall be in a good sound condition and free from dust, loose material, surface contamination and materials which reduce bond. Delaminated, weak, damaged and deteriorated concrete shall be removed by suitable means. If necessary sound concrete shall also be removed but only as directed by a supervising officer or qualified engineer.

Methods of cleaning, roughening and concrete removal are summarised as follows:

■ Intended use

□ For certain intended uses

	Cleaning	Roughening	Removal
Hammer and chisel			■
Breaker		■	■
Grit and sand blasting	■	■	
Water Blasting with low pressure (max. 180 bar)	■		
Water Blasting with high pressure (min. 600 bar)		■	□
Water Blasting very high pressure (min. 1100 bar)			■

Appropriate tool selection will depend on the type and extent of damage as well as the substrate quality and shall be agreed with the supervising officer or qualified engineer.

Note: Hydro-demolition is a preferred fast and effective method of removing concrete which does not produce micro cracks in the concrete.

As defined in EN 1504-10, water jet categories are as follows:

- Low Pressure — Up to 18 N/mm^2 (MPa) / 180 bar / ~2,600 PSI
  - ➲ Used for cleaning concrete and steel substrate
- High Pressure — From 18 to 60 N/mm^2 (MPa) / 180 bar to 600 bar / ~2,600 PSI to ~8,700 PSI
  - ➲ Used for cleaning steel substrate and for removal of concrete
- Very High Pressure — From 60 to 110 N/mm^2 (MPa) / 600 bar to 1100 bar / ~8,700 PSI to ~16,000 PSI
  - ➲ Used for concrete removal when low water volume is available

Where: 1N/mm^2 = 10 bar = 145 PSI (lbf/in^2)

Concrete removal shall be kept to a minimum and shall not reduce the structural integrity of the structure. Pneumatic equipment or tools which can damage concrete due to an intense vibration shall not be used.

The extent of concrete removal shall be in accordance with the chosen principle and method contained in EN 1504-9. In the case of repair and restoration the depth of contamination shall be established and taken into account when determining the depth of concrete removal.

Removal of concrete shall continue to expose the full circumference of the steel reinforcement to a minimum depth of 15 mm behind the back of the bars.

Breaking out shall continue along the reinforcement until non-corroded steel is reached as directed by the supervising officer or qualified engineer.

Edges around the patch repair shall be cut at an angle of >90^o to avoid undercutting and a maximum angle of 135^o to reduce the possibility of de-bonding.

Surface of the concrete substrate shall be roughened to 2 mm to increase bonding which can be tested in accordance with EN 1766 for horizontal surfaces.

Micro cracked or delaminated concrete including damage caused by cleaning, roughening or removal techniques shall be removed or repaired if they might reduce bond or structural integrity. Micro cracks can be detected by wetting the surface and allowing it to dry. Dark lines on the dried surface indicate cracks as they retain the water.

The finished surface shall be visually inspected prior to application and can be tapped lightly using a metal hammer to detect delaminated concrete. The supervising officer or qualified engineer shall be informed immediately of any loose, cracked or damaged surfaces. In these circumstances repair materials shall not be applied without prior written consent of the supervising officer or qualified engineer.

If a smoothing coat is required the whole application surface shall be properly prepared. Appropriate cleaning procedures consist of low pressure water blasting, abrasive grit and sand blasting, or high pressure water blasting to remove a laitance layer.

7.2 STEEL REINFORCEMENT

The steel reinforcement shall be free from rust, scale, mortar, concrete, dust and other loose and deleterious material which reduces bond or contributes to corrosion. Tie wire and nails shall also be removed.

The whole circumference of the bar shall be uniformly cleaned, except where structural considerations prevent this. Cleaning shall not damage in anyway the structural integrity of the steel. Immediately notify the supervising officer or qualified engineer if there is a possibility of damaging the steel by cleaning.

Exposed bars contaminated with chloride or other deleterious material shall be cleaned by low pressure water jet (18 MPa) and checked afterwards to ensure the contamination has been totally removed.

If a reinforcement corrosion protection layer in the form of an active coating, such as Sika MonoTop® Primer, (method 11.1 as defined in the European Standards EN 1504-9) is to be applied, then the steel reinforcement shall be cleaned to Sa 2 defined by ISO 8501-1. If reinforcement corrosion protection layer in the form of a barrier coating, such as Sikadur-32, (method 11.2 of EN 1504-9) is to be applied, then the steel reinforcement shall be prepared to Sa 2½ defined by ISO 8501-1.

Cleaned bars shall be protected against further contamination prior to application of a reinforcement corrosion protection layer.

Loss of steel-area on reinforcement due to corrosion, or due to any other damage, shall be brought to the immediate attention of the supervising officer or qualified engineer prior to application. Any further action such as replacing reinforcement bars shall only be carried out in accordance with the direct instruction of the supervising officer or qualified engineer. The scope of this method statement does not include any replacement of reinforcement bars..

7.3 PRE-WETTING SUBSTRATE

Concrete surfaces shall be saturated with clean water a minimum 2 hours before application ensuring that all pores and pits are adequately wet. The substrate shall not be allowed to dry before application.

Formwork shall be fixed immediately after pre-wetting to avoid loss of moisture from the

substrate surface. Ensure there is no standing water on the surface before closing the formwork. The surface shall achieve a dark matt appearance without glistening and surface pores and pits shall not contain water.

7.4 FORMWORK

Formwork shall be clean and fixed in place as soon as possible after the substrate has been prepared. If required, release agents shall be applied to the formwork before placing into position. Do not contaminate the substrate with the release agent, to avoid reducing the bond of the Sika® MonoTop®-438 R.

Openings in the formwork shall be protected to prevent ingress of debris or contamination. Formwork shall be **watertight** and free from obstructions to allow the free flow of pourable mortar.

Formwork shall be designed to allow the controlled escape of air and water bleed.

8 MIXING

Mixing shall always be carried out in accordance with the recommendations contained in the latest product data sheet (PDS). Water addition must be within the stated maximum and minimum limits.

8.1 ONE COMPONENT PRODUCTS

Product	Procedure
Sika MonoTop-438 R	▪ Place minimum recommended water ratio in mixing container. ▪ Progressively add powder whilst mechanically mixing using low speed (maximum 500 rpm) electric drill. ▪ Add more water if required to suit the desired consistency and flow properties but not exceeding maximum dosage. Mix for a minimum of 3 minutes or until the material is homogenous..

9 APPLICATION

The product and system shall be appropriate for the type of substrate, structure and exposure conditions for which they are required.

9.1 BEFORE APPLICATION

Working space shall be clean and tidy with no obstructions.

Record the substrate temperature, ambient temperature and relative humidity. Check pot life information on bag or in the product data sheet and allow for climatic conditions e.g. high / low temperatures & humidity.

External applications shall be adequately protected. Do not apply mortar repair in direct sun; windy, humid or rainy conditions; or if there is a risk of frost within 24 hours in unprotected areas.

Calculate the required volume for the application and then using the equation in section 10 of this method statement, calculate the yield of the product. Make sure there is enough material on the job site to carry out the work.

9.2 REINFORCEMENT CORROSION PROTECTION

Where reinforcement corrosion protection is required, apply material to the whole circumference of the steel reinforcement bar in two layers. Wait until the first layer has dried before applying the second layer. Use a mirror to inspect behind the back of the bars to ensure full coverage.

Take care not to splash or apply material on a dry concrete substrate behind the bars.

For small areas use two paint brushes to apply 2 layers and ensure full coverage. For larger areas use hopper gun aim the spray in different directions to ensue coverage behind the back of the bars.

The recasting mortar shall only be applied when the reinforcement corrosion protection is hardened. Refer to the relevant product data sheet for more information.

9.3 BONDING PRIMER

Refer to relevant repair mortar product data sheet to determine if a bonding primer is required. If a bonding primer is required, the substrate surface shall be pre-wetted in accordance with section 6.3.

Bonding primers can be applied by hand (pressing the material firmly into the surface) using a stiff brush or using a hopper gun for larger areas. The repair mortar shall be applied wet on wet to a bonding primer. Ensure the substrate surface is fully covered behind the reinforcement bars. For large applications use only a bonding primer with long open time to take into account the formwork construction e.g. SikaTop Armatec-110 EpoCem. Refer to product data sheet for more information.

9.4 RECASTING BY POURING SIKA MONOTOP-438 R

Sika MonoTop-438 R shall be poured into the prepared opening as soon as possible after mixing, and within 15 minutes to optimise the expansion properties of the material. Pot life shall also be taken into consideration, adjusting for climatic conditions, when planning the work duration.

Pour the grout through the “mouth” of the formwork allowing the material to flow to the opposite end. Always maintain sufficient pressure head while pouring. Ensure a process of continuous pouring to avoid air entrapment and prevent the material flow from coming to a stop before the operation is completed. Make sure air displaced by the material can easily escape.

Always pour from opposite ends to any air release (blow) holes. Maintain pouring until material escapes from the air release holes. Allow some material wastage until it is certain all air has been released and there is no air trapped in the application.

Avoid free fall of the material to prevent segregation of the aggregate (max ~2 cm).

Never pour from two places as it will be difficult to determine if all air has been released, and the entire void has been filled.

Do not vibrate the formwork as this will cause segregation and bleeding.

9.5 RECASTING BY PUMPING SIKA MONOTOP-438 R

The method of pumping the material must ensure complete filling of the voids and crevices. Pumping equipment shall suit the material and purpose for which they are to be used. Always read the pump manufacturer's instructions and obtain further guidance if necessary.

Pumping shall generally be applied from the bottom of the application to force the air out of the top through controlled air release hole(s). Refer to section 10.1 for a typical example. Pumping shall only take place from one position on an application and shall continue until material escapes out of the controlled air release points. Allow some material wastage until it is certain all air has been released and there is no air trapped in the application.

9.6 REMOVAL OF FORMWORK

The formwork shall not be removed until sufficient strength has been achieved. This time depends on the material characteristics and climate conditions. As guidance the formwork around a high performance, low shrinkage repair mortar in normal 21°C / 55% relative humidity conditions may be removed approximately 12 to 24 hours after application.

Formwork shall only be removed with the agreement of the supervising officer or qualified engineer.

9.7 CURING

Best curing is achieved while the formwork is still in place. As soon as the formwork is removed, protect the still green material from premature drying. Cure with proper curing methods for at least 3 days or spray with appropriate curing compounds such as Antisol® A and Antisol® E once any surface water has evaporated. Curing methods include jute and water, plastic sheets or other suitable membranes.

9.8 SMOOTHING / LEVELLING MORTARS

Smoothing mortars can be applied by hand, by hopper gun or by mechanical spray equipment for large areas. Refer to relevant product data sheet for further information.

A smoothing coat shall be applied over the whole prepared concrete surface (including repaired and non-repaired areas). Any laitance layer on the surface shall be removed (section 6.1) and surface pre-wet in accordance with section 6.3.

Smoothing coats may be hand applied, using notched trowel, or spray applied. Refer to relevant product data sheet for further information.

Use a toothed trowel to apply the mortar onto the surface in a vertical direction. Hold the trowel at an acute angle to the surface and use different size toothed trowels to regulate the application thickness.

Table 1 Approximate application thickness guide

Toothed Trowel Size	Approximate Application Thickness	
	30°	45°
10 mm	~ 5.0 mm	~ 7.0 mm
5 mm	~ 2.5 mm	~ 3.5 mm
2 mm	~ 1.0 mm	~ 1.5 mm

When 1st layer is hard, apply the second layer between the vertical lines. The hardness can be tested by the ease at which a finger nail can be inserted into the mortar.

Finish surface with damp sponge, wooden or plastic float after material has set. Do not apply additional water on the surface as this will cause discoloration and cracking.

9.9 APPLICATION LIMITS

- Do not apply a grout as a patch repair or overlay in unconfined areas (horizontal, free applications)
- Avoid application in direct sun and/or strong winds.
- Do not add water over the maximum recommended dosage.
- Always check the material's pot life and adjust for climate conditions.
- Temperature of the repair mortar and substrate shall not differ significantly.

10 INSPECTION, SAMPLING, QUALITY CONTROL

As part of "Good Practice" the contractor shall provide a QC report containing the following recommended data. For more detailed information refer to EN 1504-10 Annex A, or any other local standards or legislation which may apply.

10.1 SUBSTRATE QUALITY CONTROL - BEFORE AND AFTER PREPARATION

The following checks should be carried out before and after preparation.

Characteristic	References	Frequency	Parameters
Cleanliness of Concrete	Visual	After preparation & immediately before application	No contamination, loose particles or defects
Cleanliness of Steel Bars	DIN EN ISO 8501-1	After preparation & immediately before application	No rust, scale or contamination. [Grade Sa 2 or SA 2 ½ for methods 11.1 or 11.2 EN 1504 Part 9]
Delaminating Concrete	Hammer Sounding	After preparation	No delaminating concrete
Roughness	Visual or EN 1766 on horizontal surfaces	After preparation	Minimum roughness 2 mm (repair area) No laitance layer (smoothing mortars)
Surface Tensile Strength of the Substrate	EN 1542	After preparation works	>1.0 N/mm² for structural repair

Table 2 QC summary before and after preparation

10.2 BEFORE, DURING AND AFTER APPLICATION

The following checks should be carried out before, during and after the application.

Characteristic	References	Frequency	Parameters
Temperature (ambient & substrate)	Record	During application	Within PDS limits
Ambient Humidity	Record	During application	Within PDS limits
Precipitation	Record	During application	Keep records and provide protection
Wind Strength	Record	Daily	Less than 8 m/sec or provide protection
Batch Number	Visual	All bags	Keep records
Adhesion to substrate	EN 1542	On completion	1.2 – 1.5 N/mm² (structural) 0.7 N/mm² (non-structural)

Table 3 QC summary before during and after application

10.3 PERFORMANCE TESTING

The following can be used to check the adequacy of the application.

Characteristic	References	Frequency	Parameters
Compressive Strength on 40x40x160 prisms	EN 12190	3 prisms per batch	Within PDS limits
Cracking	Visual	28 days after application	No cracking on application
Presence of Voids/ Delaminating	EN 12504-1 Hammer sounding or *ultrasonic testing	After application	No delaminating concrete
Adhesion Bond *(pull off)	EN 1542	Min 3 on a test area	Within PDS limits

* Optional testing

Table 4 QC summary of performance testing

11 ADDITIONAL GUIDANCE

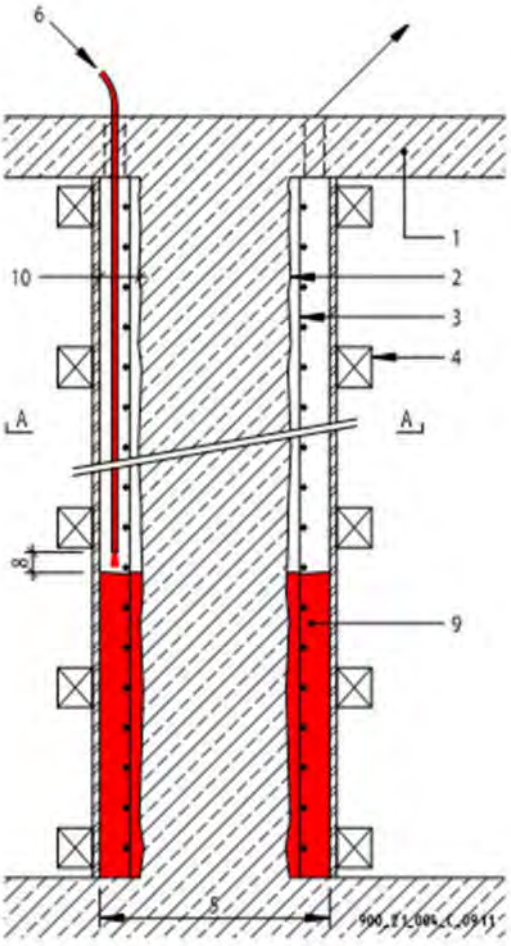
The following applications offer further guidance in specific situations.

11.1 EXAMPLES OF RECASTING

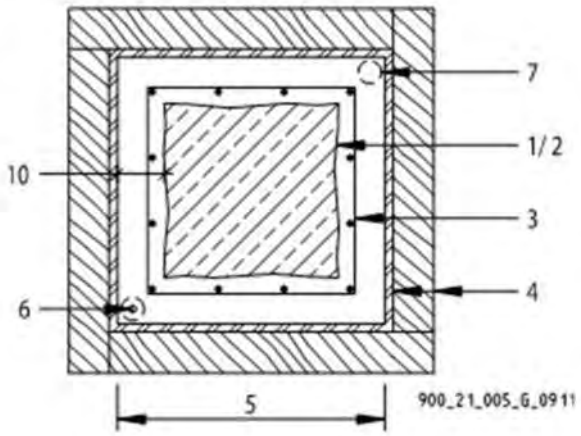
The following are two examples of recasting a concrete column for purposes of restoration, structural strengthening, preserving or restoring passivity using a pouring and pumping method.

11.1.1 POURING METHOD

The detail is for illustration purposes and not to be used as a construction drawing.



Elevation Section

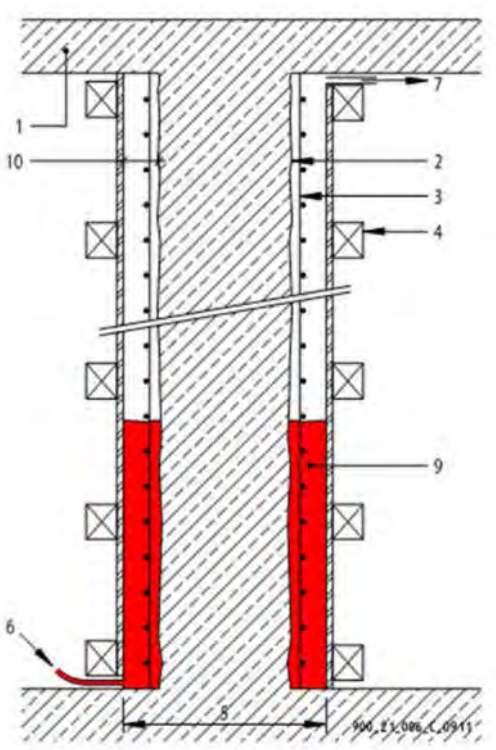


Section A – A

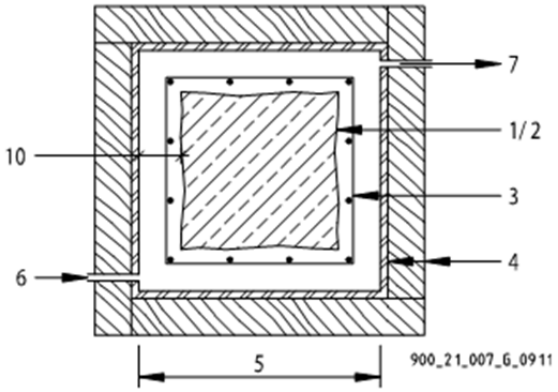
1 Host concrete structure
2 Prepared concrete substrate
3 Cleaned and prepared steel reinforcement bars
4 Formwork
5 Extent of refurbished concrete
6 Opening made in existing structure for material application
7 Opening made in existing structure for air release
8 Maintain application ~ 2 cm above material level
9 Pouring mortar suitable for methods 3.2, 4.4, 7.1 and 7.2 to European Standard EN 1504-9 e.g. Sika® MonoTop®-438 R.
10 Application thickness

12.1.1 PUMPING METHOD

The detail is for illustration purposes and not to be used as a construction drawing.



Elevation Section



Section A - A

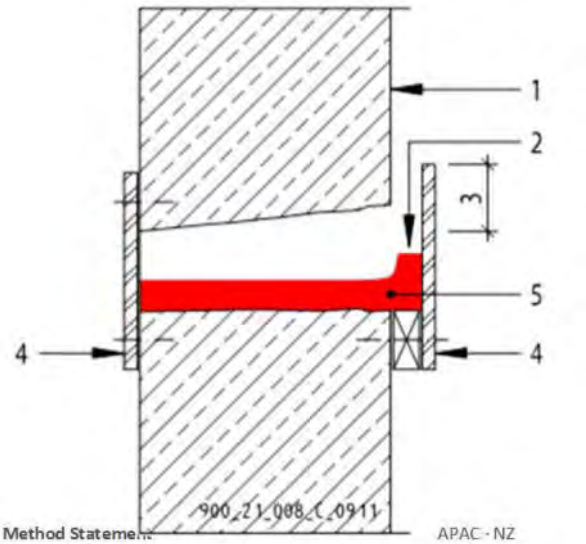
1	Host concrete structure
2	Prepared concrete
3	Cleaned and prepared steel reinforcement bars
4	Formwork
5	Extent of refurbished concrete
6	Special valve in formwork to pump in material
7	Valve in top of formwork for air release
9	High performance, low shrinkage pouring mortar suitable for methods 3.2, 4.4, 7.1 and 7.2 to European Standard EN 1504-9
10	Application thickness

12.2 MAXIMUM THICKNESS

The maximum application thickness of Sika MonoTop-438 R is 350 mm (500 mm if bulked out with 10 kg of Sika Pea Metal per 25 kg bag of Sika MonoTop-438 R). If deeper repairs are required, seek advice from the Sika Technical Department.

12.3 SEALING PENETRATIONS

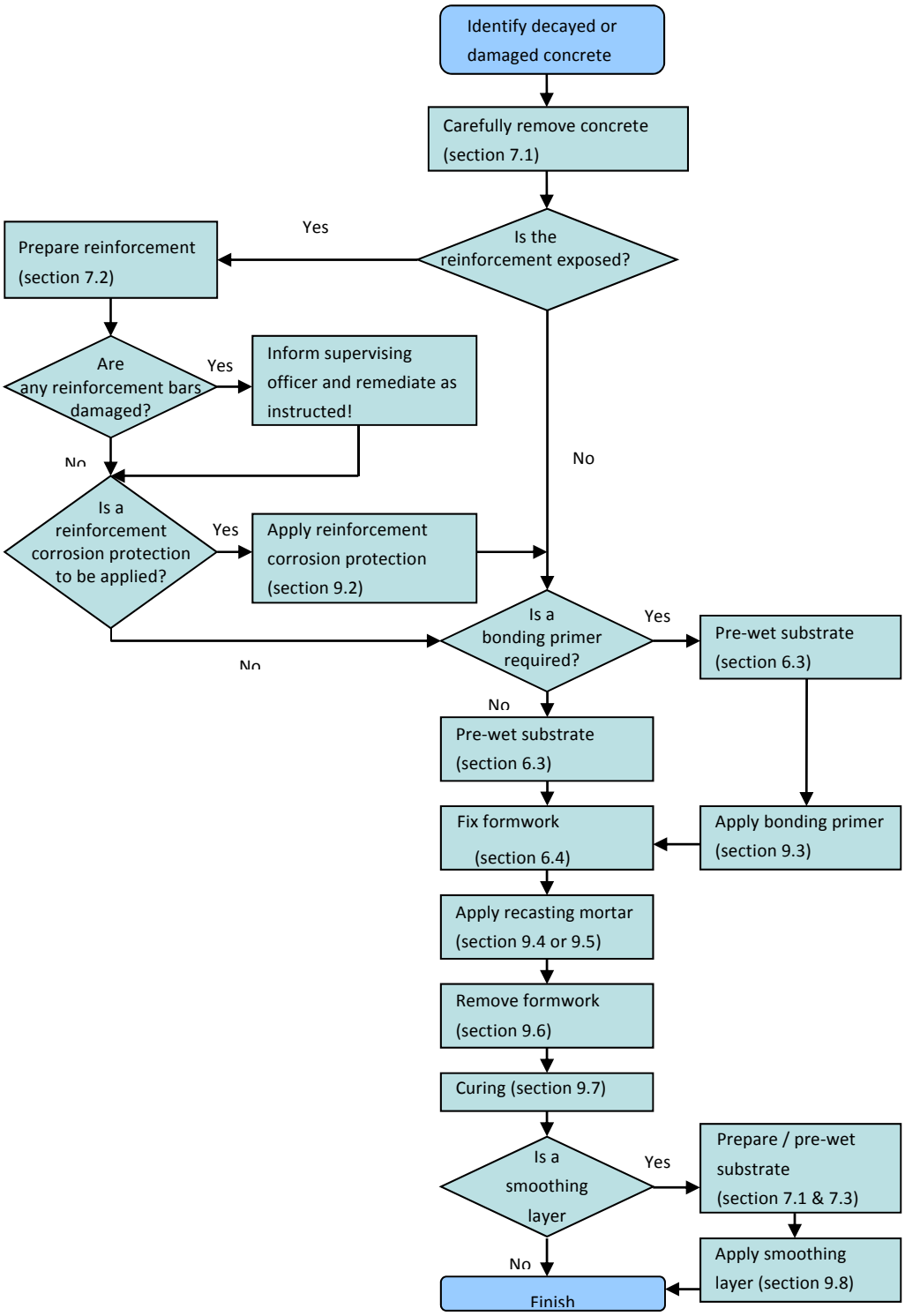
The following example shows how a penetration can be sealed in a vertical concrete wall using a poured repair material. The soffit of the void shall not be horizontal. It shall be profiled at an angle to allow the escape of air.



1	Host concrete structure
2	Opening to pour mortar
3	Pressure head
4	Temporary formwork
5	Repair material e.g. Sika® MonoTop®-438 R

13 CONCRETE REPAIR FLOW CHART

The following is a guide to carrying out a concrete repair. This is not intended as a definitive guide to repair concrete and shall at all times be read in conjunction with all Architect's, Engineer's or specialist specifications together with EN 1504-10, local standards and all relevant product data sheets.



14 LEGAL NOTE

The information, and, in particular, the recommendations relating to the application and end-use of Sika products, are given in good faith based on Sika's current knowledge and experience of the products when properly stored, handled and applied under normal conditions in accordance with Sika's recommendations. in practice, the differences in materials, substrates and actual site conditions are such that no warranty in respect of merchantability or of fitness for a particular purpose, nor any liability arising out of any legal relationship whatsoever, can be inferred either from this information, or from any written recommendations, or from any other advice offered. The user of the product must test the products suitability for the intended application and purpose. Sika reserves the right to change the properties of its products. The proprietary rights of third parties must be observed. All orders are accepted subject to our current terms of sale and delivery. Users must always refer to the most recent issue of the local Product Data Sheet for the product concerned, copies of which will be supplied on request.

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Appendix C: WWII Tunnels Additional Information and Comments

Queries from April workshop	Comments
Cost to make the tunnels safe.	The localised patch repair type maintenance and continued monitoring option is estimated at $400,000. The future service life of the tunnels after repairs is still uncertain. A full investigation is required to confirm the suitability of this option.
Can some of tunnel be fixed and open to the public?	The recommendation from the engineering consultant is to keep the tunnels closed to public until a future maintenance strategy has been confirmed and remediation measures are implemented.
Can the entrance be made safe for viewing and education purposes?	The floor area at the western entrance by the pétanque court is susceptible to flooding after rain events. Once a preferred option or strategy has been confirmed a consultant with experience with heritage structures would be engaged to advised on the relevant repair activities.
Video and montage board of the tunnel's history.	Educational signage could be considered to tell and display historical tunnel information at the site or via photo montage boards.
Heritage Unit comments.	Decommissioning- denies public access for appreciating the tunnels. Beyond the loss of heritage values, the retreat involved would also have health and safety implications as unchecked deterioration eventually leads to above ground dangers for users of the park. Localised maintenance and continued monitoring - is the most favoured option as this involves the least physical intervention. This should be combined with a maintenance plan which prioritises where action is needed most into a tabulated format. Actions can then be followed up in a more predictable and manageable work programme. Comprehensive concrete repairs would likely present unpalatable costs for the asset owner. Furthermore, the level of physical work involved would impact on for example, the original shuttered concrete fabric to the point where it would be barely identifiable.

Claystore and Kennedy Park heritage buildings – additional information

4 July 2023

Sarah Jones – Area Manager Operations

Devonport-Takapuna Local Board
Auckland Council

Purpose

Update members on additional information requested

Project background

Asset numbers Devonport Takapuna area

Community buildings – 87

Heritage - 18

Other assets >12,000

2023/2024 – 2025/2026 renewals budget

Asset type	$ budget required	Percentage of renewals budget
Heritage buildings	4,900,000	32%
Non-heritage buildings	4,555,000	30%
Non-building allocation	5,671,942	37%
Total	**15,126,942**	

2023/2024 – 2025/2026 work programme

Site	Building	Condition	Heritage	Capex project 2023/2024 – 2025/2026	$ estimate 2023/2024 – 2025/2026	Current budget allocation	Shortfall
Allenby Reserve	Allenby Ave Girl Guides Den	Moderate	Yes	No			
Allenby Reserve	Allenby Scout Ass Of NZ	Moderate	Yes	No			
Balmain Reserve	Public toilets	Poor	Yes	Yes	200,000		
Dacre Park	Claystore	Poor	Yes	Yes	1,400,000	1,404,000	0
Kennedy Park	139 Beach Road	Unusable	Yes	Yes	1,800,000	605,000	1,195,000
Kennedy Park	Battery Observation Post Building	Moderate	Yes	No			
Kennedy Park	Tunnels	Unusable	Yes	Yes	1,500,000	213,000	1,287,000
Killarney Park	The Pumphouse - Cafe Building	Moderate	Yes	No			
Total					**4,900,000**		**2,485,000**

2023/2024 – 2025/2026
Projects to push out

•	31688	Achilles Crescent Reserve - renew playground	$200,000
•	40162	Achilles Reserve - renew sports surface area	$100,000
•	37707	Bayswater Park playground, paths and fence renewal	$250,000
•	30085	Brian Byrnes Reserve - renew pedestrian path	$ 70,000
•	37706	Devonport Takapuna - car park renewals - partial	$500,000
•	40180	Devonport Takapuna - remediate storm effected assets	$100,000
•	27717	Kennedy Park - renew carpark and site drainage – partial	$400,000
•	31763	Ngataringa Park - investigate the skatepark use and relocation - partial	$500,000
•	24408	Sylvan Park - renew toilet facility	$150,000
•	31569	Takapuna Library and Service Centre - weather tightness renewal	$200,000
•	39953	Takapuna Pool & Leisure Centre - renew assets as identified in building assessment - partial	$200,000
Total			**$2,670,000**

Claystore options

Item	Category	External lift	Internal lift	Without lift	Without Seismic	Without first floor	Minimum to keep building going as is
Spend to date	Professoinal Services	225,000	225,000	225,000	225,000	225,000	225,000
PM	Professoinal Services	100,000	100,000	90,000	90,000	85,000	85,000
Architect	Professoinal Services	150,000	130,000	120,000	110,000	100,000	90,000
Consent	Professoinal Services	15,000	15,000	15,000	10,000	10,000	10,000
P&G	Physical Works	50,000	50,000	45,000	45,000	35,000	25,000
Abestos	Physical Works	15,000	15,000	15,000	15,000	15,000	15,000
Superstructure (exterior)	Physical Works	135,200	135,200	135,200	135,200	135,200	135,200
Roof	Physical Works	87,050	87,050	87,050	87,050	87,050	87,050
Siesmic	Physical Works	37,750	37,750	37,750			
Ground level internal	Physical Works	35,000	35,000	35,000	35,000	35,000	20,000
First level internal	Physical Works	120,000	120,000	120,000	120,000		
Lift internal	Physical Works	120,000					
Lift external	Physical Works		60,000				
Contingency		120,000	108,000	94,000	90,000	50,000	50,000
		1,210,000	**1,118,000**	**1,019,000**	**962,250**	**777,250**	**742,250**

139 Beach Road and tunnels additional information

Thank you

Ngā mihi

Devonport-Takapuna Local Board
Auckland Council

Devonport Parking Survey

March 2023

Let's go there

Overview

- Parking Design team from Auckland Transport conducted a parking survey on the residential streets surrounding the Devonport Town Centre to understand parking demand and behaviour

- The aim of this study was to analyse parking occupancy and utilisation and to make a recommendation if necessary

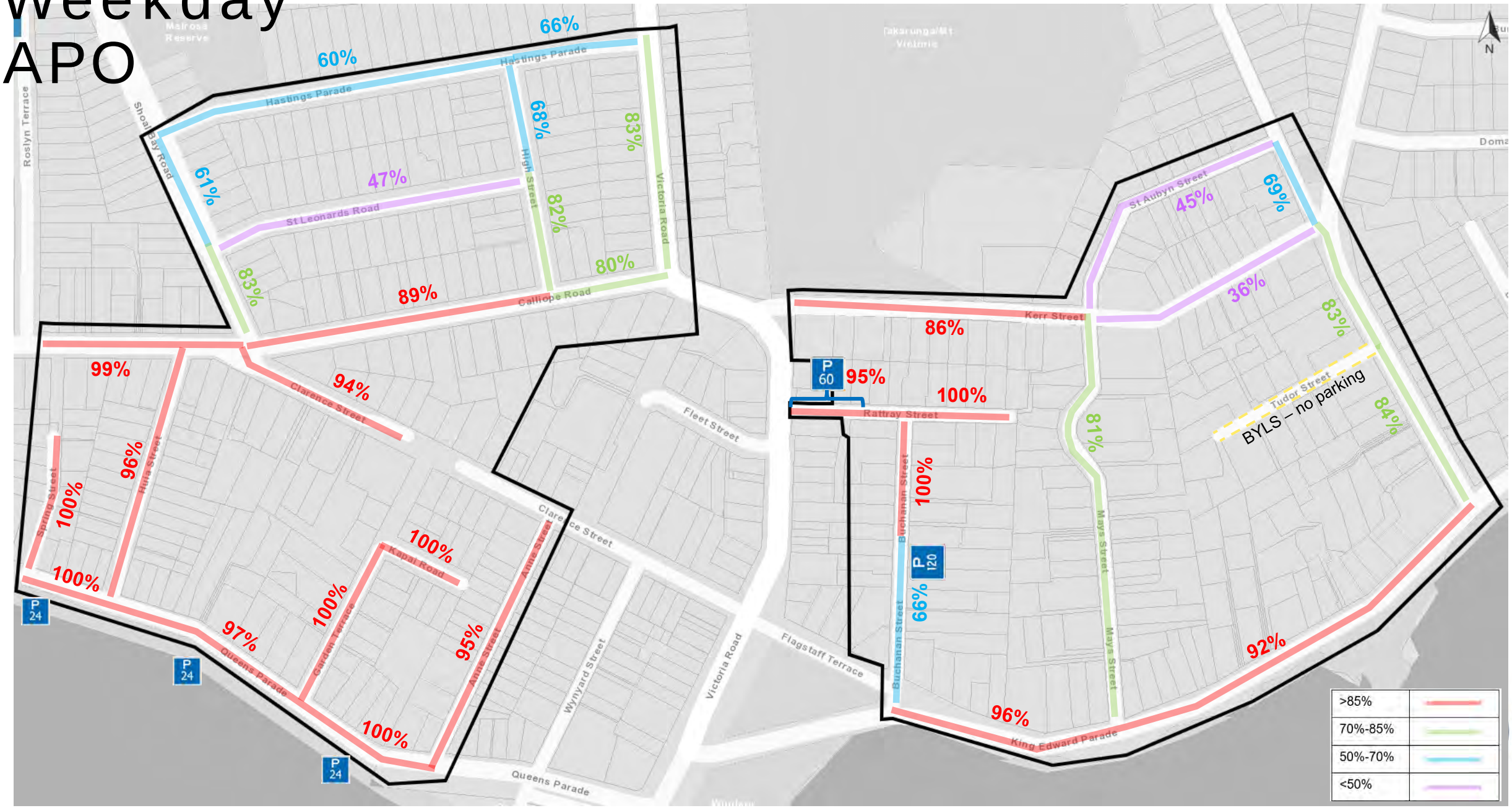
Study Area


Area 1: West
Area 2: East
Mozeley Avenue
Patuone Avenue
Owens Road
School
Patuone Place
Ewen Alison Avenue
Church Street
Beaconsfield Street
Tui Street
Cracroft Street
Burgess Road
Cambridge Terrace
Domain Street
William Bond Street
Caulley Street
Kiwi Road
Roslyn Terrace
Shoal Bay Road
Rutland Road
Calliope Road
Hastings Parade
High Street
St Leonards Road
Victoria Road
St Aubyn Street
Kerr Street
Tudor Street
Dudley Avenue
King Edward Parade
Battray Street
Buchanan Street
Mays Street
Fleet Street
Clarence Street
Spring Street
Hura Street
Kapai Road
Queens Parade
Garden Terrace
Anne Street
Wynyard Street
Marine Square
Devonport West
Devonport East

Survey

- Number plate based survey taken in 2 hour intervals
- The survey was carried out between 8am-6pm
- Survey dates were Tuesday 7th March, Thursday 9th March and Saturday 11th March 2023
- Parking Design then analysed the data looking at the Average Peak Occupancy (APO) to see if a change was needed to parking management

Weekday APO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Hastings Parade
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Roslyn Terrace
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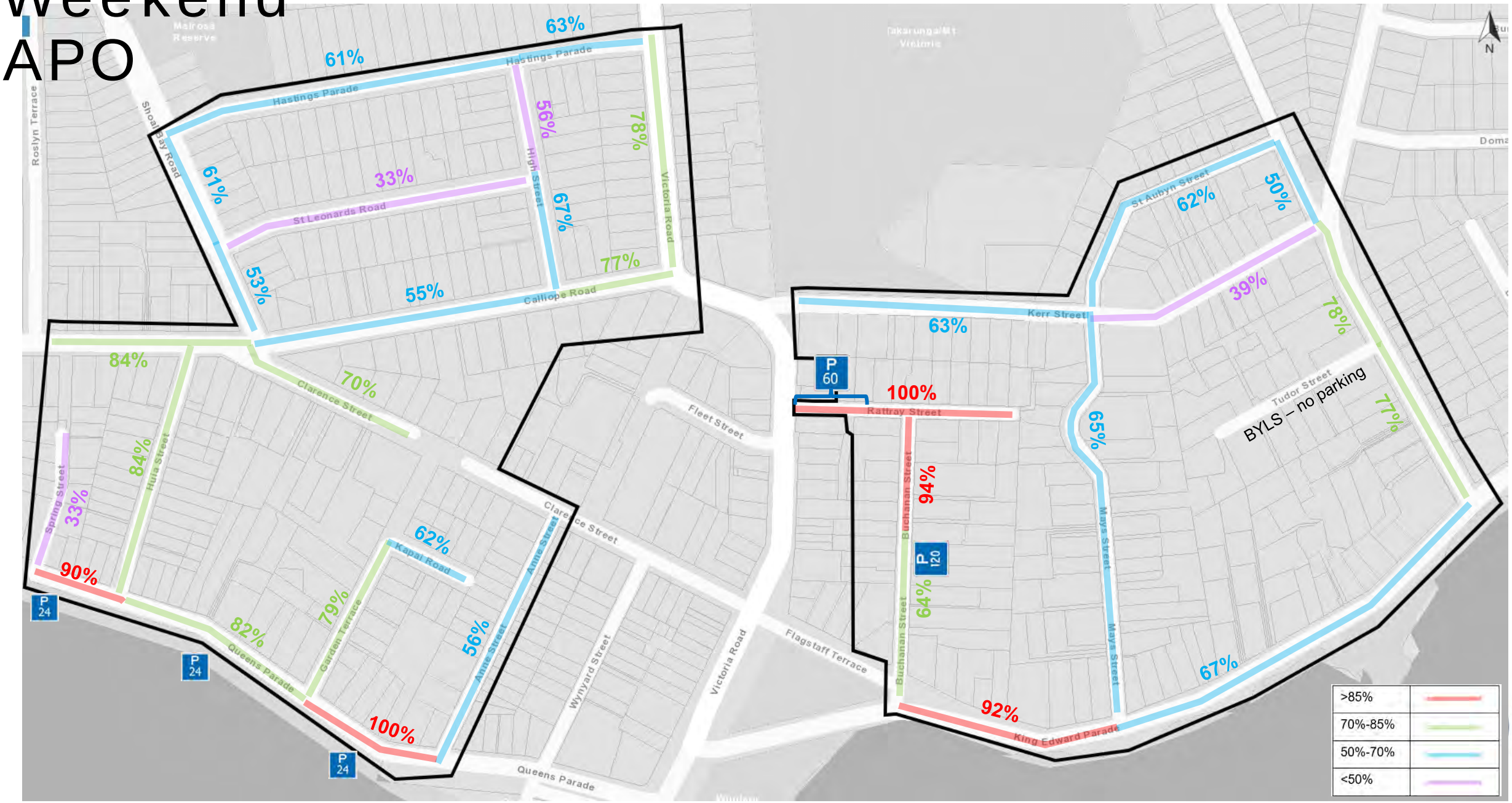
Victoria Road
St Leonards Road
Calliope Road
Clarence Street
Spring Street
Hota Street
Kapai Road
Garden Terrace
Anne Street
Queens Parade
Wynyard Street
Victoria Road
Fleet Street
Flagstaff Terrace
Buchanan Street
Rattray Street
Kerr Street
St Aubyn Street
Mays Street
Tudor Street
BYLS – no parking
King Edward Parade
P 60
P 120
P 24
P 24
P 24
66%
60%
68%
83%
61%
47%
82%
80%
83%
89%
99%
94%
96%
100%
100%
100%
100%
97%
100%
95%
100%
86%
95%
100%
100%
66%
81%
45%
69%
36%
83%
84%
92%
96%
>85%
70%-85%
50%-70%
<50%

Weekend APO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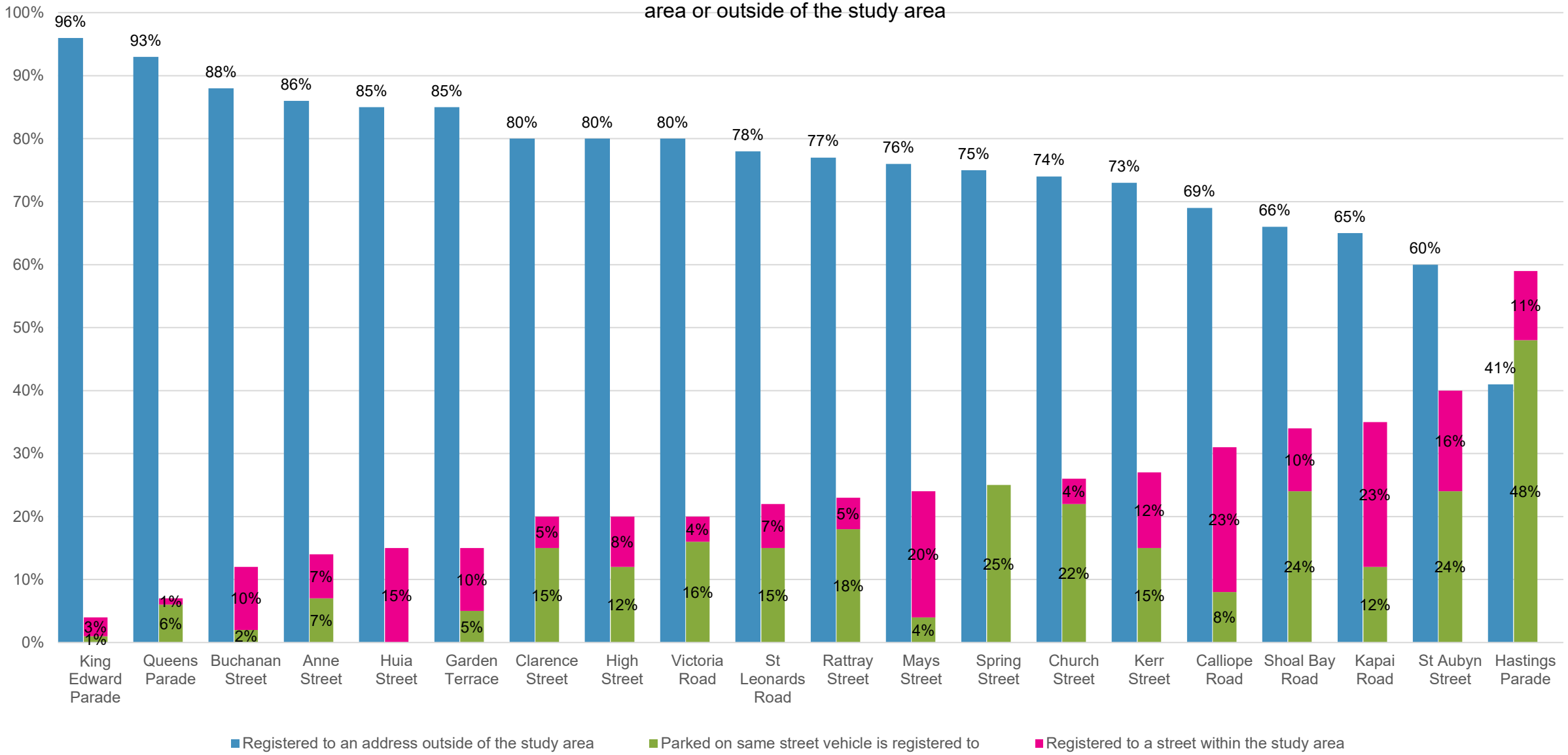
Kapai Road
Garden Terrace
Anne Street
Clarence Street
Queens Parade
Wynyard Street
Victoria Road
Flagstaff Terrace
Queens Parade
Kerr Street
St Aubyn Street
Rattray Street
Buchanan Street
Buchanan Street
Mays Street
Mays Street
Tudor Street
BYLS – no parking
King Edward Parade
63%
61%
61%
33%
56%
78%
67%
53%
55%
77%
84%
70%
84%
33%
62%
90%
82%
79%
56%
100%
63%
100%
94%
64%
65%
92%
67%
62%
50%
39%
78%
77%
P 60
P 120
P 24
P 24
P 24
>85%
70%-85%
50%-70%
<50%

Registered vehicles

Table showing the percent of total cars parked on each street that are either registered to the same street, to a street within the study area or outside of the study area



Summary

- APO during the week across the whole area was 74%
- The average length of stay was approx. 5hr 54mins
- APO on the weekends across the whole area was 57%
- When we look at the streets closest to the town centre and waterfront, APO during the week was mostly above 85% with Garden Terrace, Kapai Road, Spring Street, Rattray Street and part of Queens Parade 100% occupied
- A high number of vehicles parked belonged to an address outside of the survey area

Recommendation

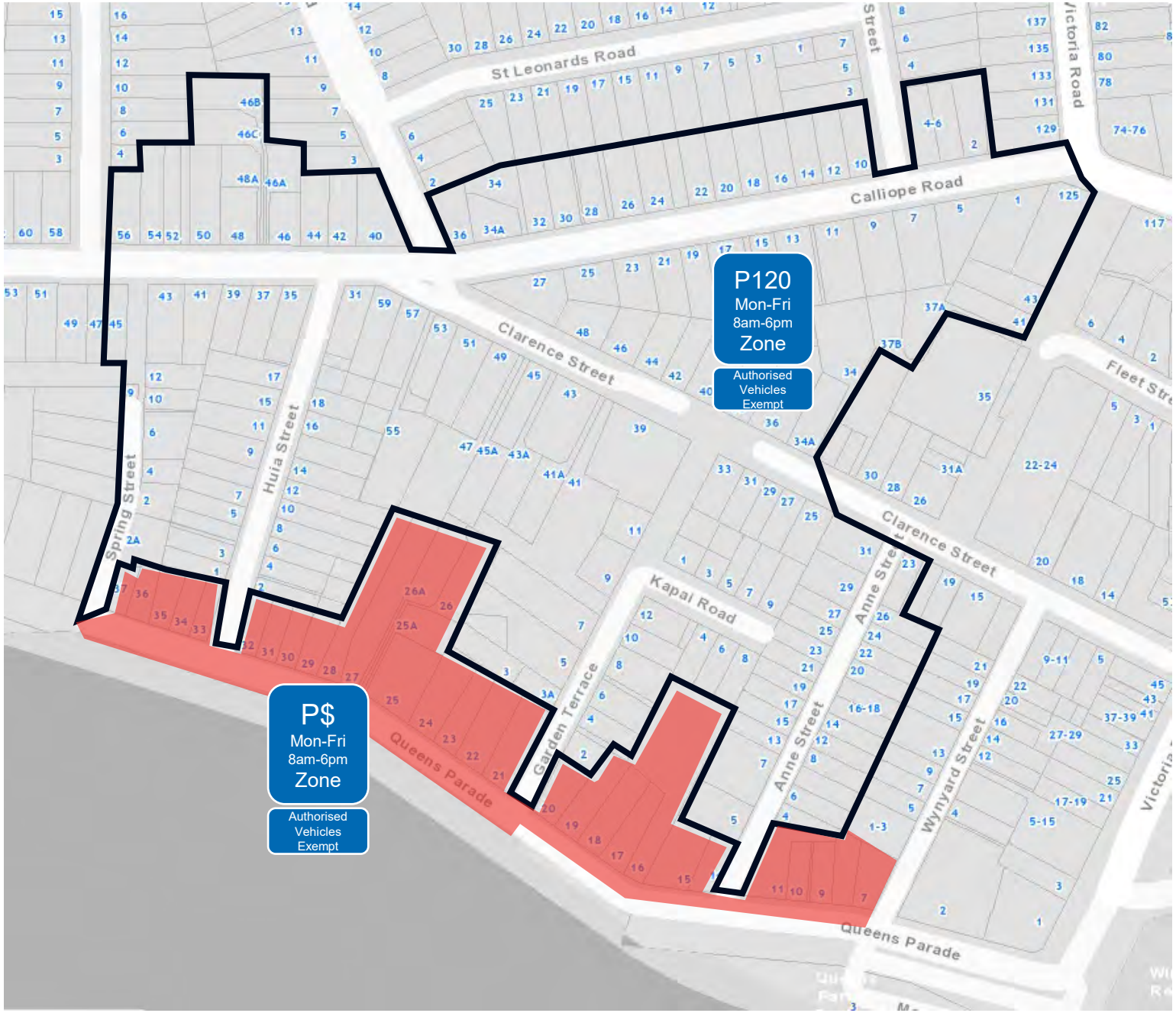
- Propose a Residential Parking Zone (RPZ)

- The RPZ will be split into two restrictions, most of the streets will have a P120 time restriction, while we recommend paid parking with residents exempt on King Edward Parade and Queens Parade

- Operational Monday to Friday, 8am-6pm

- Eligible properties within the zone boundary will be able to apply for a permit that provides an exemption from the proposed restrictions

- The objectives of this are to improve parking availability for residents, visitors of residents, and customers of local businesses and other visitors to the area



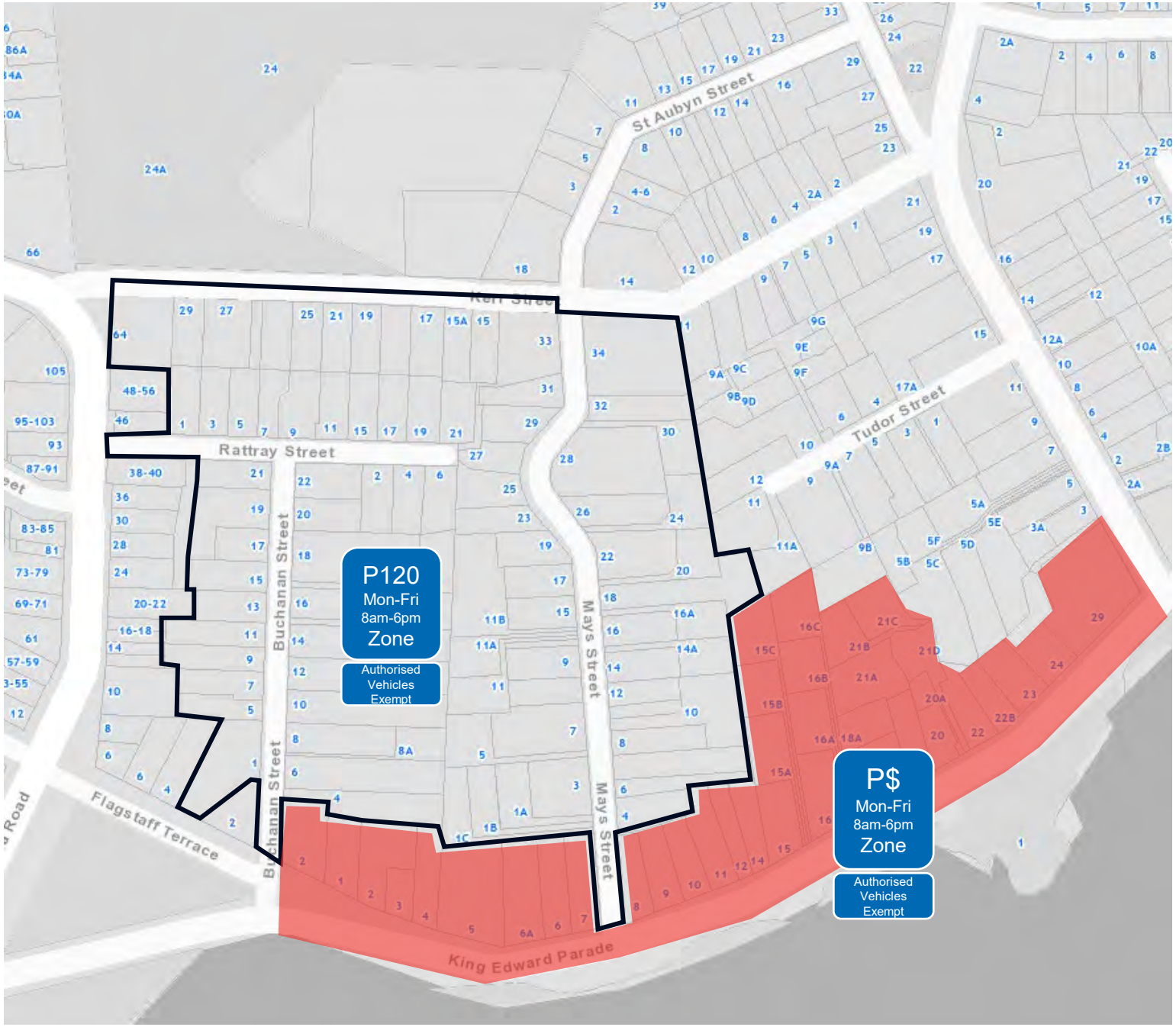
Area 1: West

P120, Monday-Friday, 8am-6pm, Authorised Vehicles Exempt:

- Spring Street
- Huia Street
- Garden Terrace
- Kapai Road
- Anne Street
- Clarence Street (from Calliope Rd to the where the town centre zoning begins)
- Calliope Road (from Roslyn Tce to Vic Rd)

Paid Parking, Monday-Friday, 8am-6pm, Authorised Vehicles Exempt:

- Queens Parade (from Spring St to Wynyard St)



Area 2: East

P120, Monday-Friday, 8am-6pm, Authorised Vehicles Exempt:

- Kerr Street (one side from Vic Rd to Mays St)
- Rattray Street
- Buchanan Street
- Mays Street

Paid Parking, Monday-Friday, 8am-6pm, Authorised Vehicles Exempt:

- King Edward Parade (from Buchanan St to Church St)

Thank you

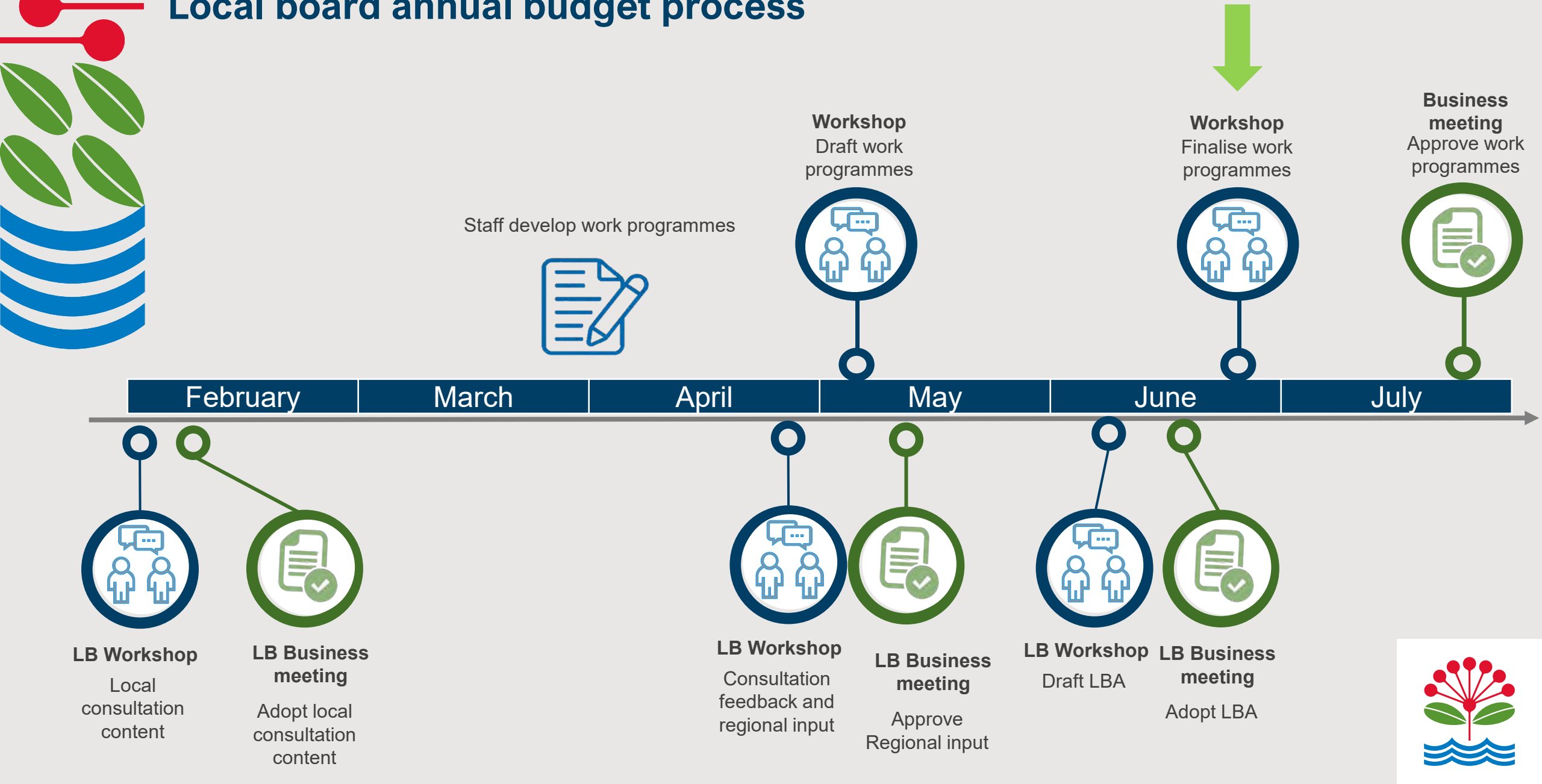
Let's go there

Local board work programme 2023/2024

Devonport-Takapuna Local Board

4 July 2023

Local board annual budget process



Purpose of today's workshop

- To provide an opportunity for staff to update local board members on outstanding matters related to the development of the 2023/2024 work programmes.

Purpose of workshop

- To finalise and balance local board work programmes.

➢Local board work programmes have been revised in response to the local board's feedback in May workshops.

➢Annual Budget decision 8 June 2023

Next: local board work programmes will be presented at 18 July 2023 business meetings for approval.

Annual Budget 2023/2024 decisions

The Governing Body made decisions on the Annual Budget on 9 June 2023.

This included a reduction in local board funding of $4 million (down from $16 million in the consultation document)

This is equal to a $126,240.00 reduction for the Devonport-Takapuna Local Board - $684,250.00 more funding is now available than the amount considered in WS5 in May 2023.

Opex

Local Board direction for changes to Opex

The Devonport-Takapuna Local Board considered the feedback received through the Annual Budget 2023/2024 consultation process to guide decisions for changes to the annual work programmes.

- Prioritise programmes and services that protect and enhance the environment
- Look for opportunities to meet the needs of youth, new and emerging communities and those that have been underrepresented in the local board area
- Seek opportunities to partner with other organisations who can help to deliver against the objectives in the Devonport-Takapuna Local Board Plan 2020

Additional activities to be added to WPs

- Customer and Community Services - Local Crime Fund
  - Local Boards have been allocated an amount from the proceeds of the Local Crime Fund via Ministry of Social Development for spend in 2023/2024. This will be allocated using the LDI distribution model. This fund can be allocated to crime prevention through environmental design (CPTED) and/or youth crime prevention initiatives.
  - The allocation for Devonport-Takapuna Local Board is $32,076
- Auckland Emergency Management - Local board response plans and resilience
  - This will be funded regionally so does not need to be adopted as a work programme
- There will be more information and advice provided on both in Q1 and they will be reported on quarterly.

Recommended changes to the proposed Customer and Community Services work programme – LDI Opex

ID	Activity Name	Approved in principle 2022/2023	Direction following Workshop 27 June 2023	Comments
83	Operational grant Devonport Museum	20,000	10,000	
80	Operational grant North Shore Brass	17,000	10,000	Targeted to music programmes and tuition and attendance at Anzac Services in the DTLB area
91	Age friendly approach	10,000	10,000	
94	ANCAD Operational capacity building	60,000	20,000	Targeted to governance and other training opportunities with direct and demonstrable impacts and benefits in the DTLB area e.g. Open and Connect
87	Inclusion and participation of cultural and diverse communities	10,000	15,000	

Recommended changes to the proposed Customer and Community Services work programme –LDI Opex

ID3854	Activity Name	Approved in principle 2022/2023	Direction following Workshop 27 June 2023	Comments
95	Maori outcomes	10,000	15,000	
New	Recognise and communicate history and importance of Rahopara Pa.	_	10,000	Collaborate with Ngā Mātārae to develop an engagement plan and action recommendations to reflect significance of the site.
3854	Food security initiatives	_	20,000	
3939	Community activator Raki	_	103,000	Includes salary, set-up, administration, compliance, activations budget, and transition costs
3940	Community Activator Taitonga	_	98,000	Includes salary, set-up, administration, compliance, activations budget, and transition costs

Recommended changes to the proposed Customer and Community Services work programme -LDI

ID	Activity Name	Approved in principle 2022/2023	Direction following Workshop 27 June 2023	Comments
106	Anzac services Devonport-Takapuna	49,000	42,700	
100	Community grants Devonport-Takapuna	245,000	200,000	
103	Citizenship Ceremonies DT	13,413	(13,413)	Local Board will no longer be required to fund this activity. Service levels to remain unchanged
92	Youth: Youth development Shore Junction and Younite	60,000	50,000	$10,000 Younite $40,000 Shore Junction

Recommended changes to the proposed Customer and Community Services work programme -LDI

ID	Activity Name	Approved in principle 2022/2023	Direction following Workshop 27 June 2023	Comments
525	DT:Ecological and environmental programme FY23	51,000	51,000	
3001	DT: Urban Ngahere Strategy local implementation	15,000	15,000	
1008	DT Activation of parks, places and open spaces	25,000	15,000	Seek opportunities to work with Line 3821 Play Advocacy.
3821	Play Advocacy - Devonport Takapuna	-	5,000	

Recommended changes to the proposed Customer and Community Services work programme - ABS

ID	Activity Name	Approved in principle	Direction following Workshop 27 June 2023
1218	Library services – Devonport and Takapuna	1,736,039	Confirm seven-day service at both locations
84	Operational grant - Michael King Writers Centre	39,306	30,000
83	Operational grant - The Depot Artspace	87,792	80,000
77	Operational grant - The Lake House Arts Centre	73,861	70,000
89	Operational grant - The Rose Centre	62,016	60,000
88	Operational grant - The Pumphouse Theatre	93,024	85,000

Recommended changes to the proposed Customer and Community Services work programme - NEW

ID	Activity Name	Direction following Workshop 27 June 2023	Comments
New	27 Lake Rd assessment	10,000	
New	Walking/cycling guide including printing costs	15,000	
New	Volunteer/good citizen recognition event	10,000	
New	Kauri Kids		Further information requested regarding options for future use of the site in Takapuna
New	Placemaking Takapuna	50,000	Further information requested regarding the scope and options for delivery of this activity

Recommended changes to proposed work programmes - IES

ID	Activity Name	Approved in principle 2022/2023	Direction following Workshop 27 June 2023	Comments
3012	Pest-free environmental coordinator - Devonport	60,000	70,000	Change name to Restoring Takarunga Hauraki
3013	Pest-free environmental coordinator - Takapuna	50,000	70,000	Change name to Pupuke Birdsong Project
550	Wairau Catchment Project	20,000	20,000	Further information was requested regarding the scope of this activity line.

Recommended changes to proposed work programmes – dept/CCO etc

ID	Activity Name	Approved in principle 2022/2023	Direction following Workshop 27 June 2023	Additional advice
1260	Young Enterprise Scheme (DT)	2,000	2,000	
1349	Supporting BIDs - Takapuna Beach Business Association	38,000	20,000	
1351	Supporting BIDs - Milford Village Business Association	25,000	20,000	
1352	Supporting BIDs - Devonport Business Association	25,000	20,000	
New	Sunnynook Shopping Centre - Investigation of issues/opportunities		2,500	2,500 budget. Ext Partnership team to recommend a contractor. Community Broker to manage funding agreement

Transitional Rate Grant Recipient	Address	Direction following Workshop 27 June 2023
Milford Cruising Club Inc	9 Omana Rd	Reduce grant by 33%
Milford Cruising Club Inc	7 Omana Rd	Reduce grant by 33%
North Shore Rugby Football Club Inc	7 Beaconsfield St	Reduce grant by 33%
North Shore Squash and Racquets Club Inc	21 Shea Terrace	Reduce grant by 33%
Stanley Bay Bowling Club Inc	20 Stanley Point Rd	Reduce grant by 33%
Takapuna Bowling Club Inc	9-17 Bracken Ave	Reduce grant by 33%
Tupuna Maunga o Tamaki Makaurau Authority (Michael King Writers Centre)	24 Kerr St	Reduce grant by 33%

2023/2024 Transitional Rates Grant $64,518.00

Capex

Capex work programme challenges

- Current capex delivery challenges:
  - increased cost & shortages of labour and materials will lead to increased project costs.
  - current supply chain issues (i.e. obtaining building materials) may lead to delays in delivery
- Increased cost and delays will be managed as part of the ongoing management of work programmes i.e. via:
  - additional RAP projects
  - rephasing of projects to accommodate increased budget & shortage of materials

Proposed capex budget allocation

Work programme Budget Summary	2023/2024	2024/2025	2025/2026
Capex Local Asset Renewals - Budget (ABS)	***$4,786,219***	***$4,293,412***	***$6,047,311***
Local Asset Renewals - Proposed Allocation (ABS)	$4,288,360	$4,292,450	$6,046,935
Advance Delivery (RAP)	$492,631		
Capex Local Asset Renewals - Unallocated budget (ABS)	***$5,229***	***$962***	***$376***
Local Discretionary Initiatives (LDI Capex) - Budget	***$168,000***	***$432,664***	***$661,916***
Local Discretionary Initiatives (LDI Capex) - Proposed Allocation	$161,000	$426,000	$380,000
Advance Delivery (RAP)	$6,719		
Local Discretionary Initiatives (LDI Capex) - Unallocated budget	***$281***	***$6,664***	***$281.916***
Growth projects Allocation			
Coastal projects Allocation			
Landslide Prevention projects Allocation			
Specific Purpose Funding Allocation			
External Funding Allocation	$150,000		
One Local Initiative (OLI) project Allocation			
Long Term Plan (LTP) Discrete Projects Allocation			
Kauri Dieback (NETR) Funding Allocation			
Related LDI Opex - Proposed Allocation			

Major changes to capex work programme

ID	Activity Name	Budget Change	Additional advice
35	Kennedy Park – renew carpark and alleviate drainage issues	No change in budget amount	The budget for this project has been Re-allocated over the next 2 years FY24 ($391,000) FY25 ($550,000) **Total cost $1,040,000**
36	Kennedy Park – renew World War II tunnels	+$100,000	Added funds to enable project to continue. Investigation and options to be brought back to local board for approval. **Total cost $212,900**
37	Knightsbridge Reserve – renew playground	+$100,000	Added funds to project to renew as an Asian inspired playspace FY24 ($75,600) FY25 ($230,000) **Total cost $316,644**
42	Ngataringa Park – investigate the skatepark use and relocation	+$100,000	Added funds to enable project to continue with investigation. Options to be brought to local board for approval. **Total cost $946,000**
49	Sylvan Park – renew pathways	+$83,000	Added funds to enable investigation of options, which will be brought to the local board for approval. **Total cost $650,000**

LDI Capex

ID	Work programme Budget Summary	2023/2024	2024/2025	2025/2026	WP Planning Status
	Devonport Takapuna – new swimming pontoons	$3,000	$0	$50,000	new
	Milford Beach Front Reserve – pathway between playground and toilets		$15,000	$50,000	new
	Milford Beach Front Reserve – road end upgrades investigation			$15,000	new
	Devonport cemeteries improvements		$6,000	$50,000	new

Next steps

Work programmes approved in July business meeting

Recommended changes to the proposed Customer and Community Services work programme - NEW

ID	Activity Name	Direction following Workshop 27 June 2023	Comments
New	Placemaking Takapuna	50,000	Further information requested regarding the scope and options for delivery of this activity

Spread funding across 3 Delivery Streams:

- Out and About- cost effective activations with systems already in place to deliver around 15 tamariki play days in the square
- Art Installation- giving one of our arts partners funding to work with an artist to deliver an Instagram worthy installation people will want a photo in front of
- Activations- funding for TBBA to deliver activations that target general population such as buskers, pop-ups, etc.