DUNEDIN CITY COUNCIL | kaunihera a-rohe o Ōtepoti

Notice of Meeting:

I hereby give notice that an ordinary meeting of the Dunedin City Council will be held on:

Date:	**Tuesday 30 May 2023**
Time:	**10.00 am**
Venue:	**Council Chamber, Dunedin Public Art Gallery, The Octagon, Dunedin**

Sandy Graham
Chief Executive Officer

Council

PUBLIC AGENDA

MEMBERSHIP

Mayor	Mayor Jules Radich	
Deputy Mayor	Cr Sophie Barker	
Members	Cr Bill Acklin	Cr David Benson-Pope
	Cr Christine Garey	Cr Kevin Gilbert
	Cr Carmen Houlahan	Cr Marie Laufiso
	Cr Cherry Lucas	Cr Mandy Mayhem
	Cr Jim O'Malley	Cr Lee Vandervis
	Cr Steve Walker	Cr Brent Weatherall
	Cr Andrew Whiley	
Senior Officer	Sandy Graham, Chief Executive Officer	
Governance Support Officer	Lynne Adamson	

Lynne Adamson
Governance Support Officer

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Note: *Reports and recommendations contained in this agenda are not to be considered as Council policy until adopted.*

ITEM TABLE OF CONTENTS **PAGE**

1 OPENING

Rev Shari Roy, Otago University Māori Chaplain will open the meeting with a Karakia.

2 PUBLIC FORUM

AT THE CLOSE OF THE AGENDA PUBLIC FORUM REGISTRATIONS WERE STILL BEING TAKEN. THE SPEAKERS WILL BE CONFIRMED FOLLOWING CLOSURE OF REGISTRATIONS 24 HOURS BEFORE THE MEETING STARTS.

3 APOLOGIES

At the close of the agenda no apologies had been received.

4 CONFIRMATION OF AGENDA

Note: Any additions must be approved by resolution with an explanation as to why they cannot be delayed until a future meeting.

DECLARATION OF INTEREST

EXECUTIVE SUMMARY

1. Members are reminded of the need to stand aside from decision-making when a conflict arises between their role as an elected representative and any private or other external interest they might have.

2. Elected members are reminded to update their register of interests as soon as practicable, including amending the register at this meeting if necessary.

3. Staff are reminded to update their register of interests as soon as practicable.

RECOMMENDATIONS

That the Council:

a) **Notes/Amends** if necessary the Elected Members' Interest Register attached as Attachment A; and

b) **Confirms/Amends** the proposed management plan for Elected Members' Interests.

c) **Confirms** the proposed management plan for the Executive Leadership Team's Interests.

Attachments

Councillor Register of Interest - Current as at 25 May 2023				
Councillors are members of all committees				
Name	**Responsibility (i.e. Chairperson etc)**	**Declaration of Interests**	**Nature of Potential Interest**	**Member's Proposed Management Plan**
Mayor Jules Radich	Shareholder	Izon Science Limited	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Shareholder	Taurikura Drive Investments Ltd	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Shareholder	Golden Block Developments Ltd	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Director	Cambridge Terrace Properties Ltd	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Director/Shareholder	Southern Properties (2007) Ltd	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Director	Arrenway Drive Investments Limited	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Director	Golden Centre Holdings Ltd	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Director/Shareholder	IBMS Ltd	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Director/Shareholder	Raft Holdings Ltd	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Director/Shareholder	Otago Business Coaching Ltd	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Director	Effectivise Ltd	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Director	Athol Street Investments Ltd	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Director/Shareholder	Allandale Trustee Ltd	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Shareholder	Aberdeen St No2 Ltd	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	Road Safety Action Plan	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	100% Shareholder/Director	Panorama Developments Limited	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	Dunedin Hospital Local Advisory Group (Council Appointment)	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	Dunedin Council of Social Services (Council Appointment)	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	Tertiary Precinct Planning Group (Council Appointment)	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	Tertiary Sector Steering Group (Council Appointment)	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	Dunedin Club	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	Local Government New Zealand (Zone 6 Committee) (Council Appointment)	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.

Name	Responsibility (i.e. Chairperson etc)	Declaration of Interests	Nature of Potential Interest	Member's Proposed Management Plan
	Member	Connecting Dunedin (Council Appointment)	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
Cr Bill Acklin	Shareholder/Director	Dunedin Brokers Limited	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	APRA - AMCOS	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Entertainer	Various functions	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	Strath Taieri Community Board (Council Appointment)	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	Craigieburn Reserve Committee (Council Appointment)	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	Toitū Otago Settlers Museum Board (Council Appointment)	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
Cr Sophie Barker	Director	Ayrmed Limited	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Shareholder	Various publicly listed companies	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Property Owner	Residential Property Owner - Dunedin	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Beneficiary	Sans Peur Trust (Larnach Castle)	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Mentor	Business Mentors NZ	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	Southern Heritage Trust	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	Friends Otago Museum	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	Otago Peninsula Trust	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	Orokonui Ecosanctuary	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Volunteer	Blue Penguins Pukekura	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	Dunedin Vegetable Growers Club	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Committee Member	Otago Anniversary Day Dinner	No conflict Identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Chairperson	Dunedin Heritage Fund (Council Appointment)	No conflict Identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	Dunedin Gasworks Museum Trust (Council Appointment)	No conflict Identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	Dunedin Otaru Sister City Society (Council Appointment)	No conflict Identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	Hereweka Harbour Cone Trust (Council Appointment)	No conflict Identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	Local Government New Zealand (Zone 6 Committee) (Council Appointment)	No conflict Identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.

Name	Responsibility (i.e. Chairperson etc)	Declaration of Interests	Nature of Potential Interest	Member's Proposed Management Plan
	Member	Te Ao Tūroa Partnership (Council Appointment)	No conflict Identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	Connecting Dunedin (Council Appointment)	No conflict Identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
Cr David Benson-Pope	Owner	Residential Property Ownership in Dunedin	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Trustee and Beneficiary	Blind Investment Trusts	Duty to Trust may conflict with duties of Council Office	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	Yellow-eyed Penguin Trust	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	New Zealand Labour Party	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	Dunedin Heritage Fund (Council Appointment)	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	Dunedin Public Art Gallery Acquisitions Committee (Council Appointment)	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	Otago Museum Trust Board (Council Appointment)	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
Cr Christine Garey	Trustee	Garey Family Trust - Property Ownership - Dunedin	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	Women of Ōtepoti	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member (alternate)	Grow Dunedin Partnership (Council Appointment)	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	Otago Museum Trust Board (Council Appointment)	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	Sophia Charter (Council Appointment)	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Chairperson	Study Dunedin	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	St Paul's Cathedral Foundation (Council Appointment)	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	Theomin Gallery Management Committee (Olveston) (Council Appointment)	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
Cr Kevin Gilbert	Owner	Gipfel Limted - Bakery	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Trustee	Schlubert Trust - Residential Property	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Trustee	Schlup Family Trust	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	BNI	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	Business South	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Shareholder	Air New Zealand	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.

Name	Responsibility (i.e. Chairperson etc)	Declaration of Interests	Nature of Potential Interest	Member's Proposed Management Plan
	Trustee	Kevin Gilbert and Esther Gilbert Partnership - Residental Rental Property	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Trustee	Biddies Trust	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Advisors	Ronald McDonald House Supper Club Committee	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	Dunedin Fair Trading Committee (Council Appointment)	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	Local Government New Zealand (Zone 6 Committee) (Council Appointment)	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member (alternate)	Otago Regional Transport Committee (Council Appointment)	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	Toitū Otago Settlers Museum Board (Council Appointment)	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	Keep Dunedin Beautiful (Council Appointment)	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	Otago Settlers Association (Council Appointment)	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	Saddle Hill Community Board (Council Appointment)	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	National Industry Advisors Group Food and Beverage (Workforce Development Council)	No conflict indentified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	Connecting Dunedin (Council Appointment)	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
Cr Carmen Houlahan	Owner	Residential Property - Dunedin	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Owner	Rental Property - North Dunedin	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Part Owner	Adobe Group Ltd, Wanaka	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	Dunedin Rotary Club	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	Institute of Directors	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	Otago Property Investors Association	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	Dunedin Public Art Gallery Society (Council Appointment)	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	Dunedin Public Art Gallery Acquisitions Committee (Council Appointment)	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	Creative Dunedin Partnership (Council Appointment)	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Trustee	KBCLR Family Trust	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	Otago Theatre Trust (Council Appointment)	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
Cr Marie Laufiso	Property Owner	Residential Property	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.

Name	Responsibility (i.e. Chairperson etc)	Declaration of Interests	Nature of Potential Interest	Member's Proposed Management Plan
	Trustee	Moray Place Community Building Trust - Trust Owner of Property 111 Moray Place	Duty to Trust may conflict with duties of Council Office	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Chair	Otago Mental Health Support Trust	Potential grants applicant which would result in pecuniary interest. Duty to Trust may conflict with duties of Council Office	Do not participate in consideration of grants applications. If the meeting is in public excluded, to leave the room.
	Member	Women of Ōtepoti Recognition Initiative	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Family Member	Staff member a relative	Potential conflict depending on level of staff member involvement	Managed by staff at officer level if a perceived conflict of interest arises.
	Secretary	Brockville Improvements and Amenities Society (BIAS)	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Trustee	Corso Ōtepoti Dunedin Trust	Potential grants recipient	Withdraw from discussion and leave the table. If in public excluded leave the room. Seek advice prior to the meeting.
	Member	Dunedin Manufacturing Holdings Inc	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Secretary	BIAS Charitable Trust	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Dunedin Branch Treasurer	P.A.C.I.F.I.C.A Inc	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	Green Party of Aotearoa New Zealand	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	Dunedin Abrahamic Interfaith Group (Council Appointment)	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	Dunedin Refugee Steering Committee (Council Appointment)	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	Social Wellbeing Advisory Group (Council Appointment)	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	District Licensing Committee (Council Appointment)	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Chairperson	Grants Subcommittee (Council Appointment)	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
Cr Cherry Lucas	Trustee	Otago Farmers Market	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	Otago A & P Society	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Trustee	Henderson Lucas Family Trust - Residential Dunedin Property	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	NZ Institute of Chartered Accountants	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	Otago Museum Trust Board (Council Appointment)	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	Dunedin Chinese Garden Advisory Board (Council Appointment)	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	Toitū Otago Settlers Museum Board (Council Appointment)	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member (alternate)	Grow Dunedin Partnership (Council Appointment)	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.

Name	Responsibility (i.e. Chairperson etc)	Declaration of Interests	Nature of Potential Interest	Member's Proposed Management Plan
	Member	Mosgiel Taieri Community Board (Council Appointment)	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	Te Poāri a Pukekura Partnership (Council Appointment)	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
Cr Mandy Mayhem	Chairperson	Waitati Hall Society Inc	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Chairperson	Blueskin News Committee	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Co-ordinator	Waitati Market	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Co-ordinator	Emergency response group, Blueskin area	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	FENZ Local Advisory Committee for Otago	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	Waitati Music Fesitval Committee	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	Blueskin Bay Amenities Society	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	Blueskin A & P Society	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Chairperson	Keep Dunedin Beautiful (Council Appointment)	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Deputy Chairperson	Keep New Zealand Beautiful	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	Coastal Community Cycleway Network	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	West Harbour Community Board (Council Appointment)	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	Disability Issues Advisory Group (Council Appointment)	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	Social Wellbeing Advisory Group (Council Appointment)	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
Cr Jim O'Malley	Owner	Biocentrix Ltd	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Director	Ocho Newco Limited	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Owner	Residential Property Dunedin	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Owner	Ayrmed Limited	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	Northern AFC	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	Ice Sports Dunedin Incorporated (Council Appointment)	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	Connecting Dunedin (Council Appointment)	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	Dunedin Hospital Local Advisory Group (Council Appointment)	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.

Name	Responsibility (i.e. Chairperson etc)	Declaration of Interests	Nature of Potential Interest	Member's Proposed Management Plan
	Member	Otago Regional Transport Committee (Council Appointment)	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	Okia Reserve Management Committee (Council Appointment)	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	Tertiary Precinct Planning Group (Council Appointment)	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	Waikouaiti Coast Community Board (Council Appointment)	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
Lee Vandervis	Director	Lee Vandervis, Antonie Alm-Lequeux and Cook Allan Gibson Trustee Company Ltd - Residential Property Ownership - Dunedin	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Director	Bunchy Properties Ltd - Residential Property Ownership - Dunedin	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Owner	Vandervision Audio and Lighting - Hire, Sales and Service Business	May contract and provide service to DCC	Withdraw from discussion and leave the table. If the meeting is in public excluded leave the room. Seek advice prior to the meeting.
	Member	District Licensing Committee (Council Appointment)	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	Okia Reserve Management Committee (Council Appointment)	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
Steve Walker	Board Member	Dunedin Wildlife Hospital Trust	Potential grants recipient	Withdraw from discussion and leave the table. If the meeting is in public excluded leave the room. Seek advice prior to the meeting.
	Chairperson	West Harbour Beautification Trust	Potential conflict WHBT work with Parks and Reserves to co-ordinate volunteer activities	Withdrawal from all West Harbour Beautification Trust/ DCC discussions involving this relationship.
	Member	Orokonui Ecosanctuary	Potential grants recipient	Withdraw from discussion and leave the table. If the meeting is in public excluded leave the room. Seek advice prior to the meeting.
	Member	Port Chalmers Golf Club	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	Society of Beer Advocates	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	New Zealand Labour Party	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	Port Chalmers Historical Society	Potential grants recipient	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Owner	Residential Property - Dunedin	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Shareholder	Various publicly listed companies	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	NZ Sea Lion Trust	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	Dunedin Edinburgh Sister City Society (Council Appointment)	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	Predator Free Dunedin (Council Appointment)	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
Cr Brent Weatherall	Member	Urban Access	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Owner	Residential Property	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.

Name	Responsibility (i.e. Chairperson etc)	Declaration of Interests	Nature of Potential Interest	Member's Proposed Management Plan
	Owner	Business George Street, Dunedin	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Trustee	Brent Weatherall Jeweller Limited	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Trustee	Weatherall Trustee Company	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Trustee	Residential Rental Properties	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	Craigieburn Reserve Committee (Council Appointment)	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	Dunedin Public Art Gallery Society (Council Appointment)	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
Andrew Whiley	Owner/Operator	Whiley Golf Inc and New Zealand Golf Travel Ltd	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Director/Shareholder 22 May 2017	Estate of Grace Limited	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Trustee	Japek (Family Trust) - Property Ownership - Dunedin	Duties to Trust may conflict with duties of Council Office.	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	Otago Golf Club	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	Dunedin South Rotary Club	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	Institute of Directors	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	National Party	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Chairman	Volunteer South	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	President	New Zealand PGA (Professional Golf Association)	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Chair	Dunedin Community House Executive Committee	Potential grants recipient	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	Otago Property Investors Association	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	Chisholm Links Golf Club	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	Hereweka Harbour Cone Trust (Council Appointment)	No conflict Identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	Otago Peninsula Community Board (Council Appointment)	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	Dunedin Shanghai Association (Sister City Society) (Council Appointment)	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	Grow Dunedin Partnership (Council Appointment)	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	NZ Masters Games Trust Board (Council Appointment)	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	Member	Puketai Residential Centre Liaison Committee (Council Appointment	No conflict identified	Seek advice prior to the meeting if actual or perceived conflict of interest arises.

Executive Leadership Team - Register of Interest - current as at 5 May 2023					
Name	**Date of Entry**	**Responsibility (i.e. Chairperson etc)**	**Declaration of Interests**	**Nature of Potential Interest**	**Member's Proposed Management Plan**
Sandy Graham		Owner	Residential property Dunedin	No conflict identified.	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	19/09/2018	Trustee	Trustee of the Taieri Airport Facilities Trust	No conflict identified.	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	25/07/2019	Member	St Clair Golf Club	No conflict identified.	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	02/03/2023		Family member works as a life guard at Moana Pool	No conflict identified.	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
Simon Pickford		Owner	Residential property, Dunedin	No conflict identified.	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	21/02/2020	Wife	Owns residential properties, Dunedin	No conflict identified.	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
John Christie		Wife is a member	Taieri Community Facilities Trust	No conflict identified.	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
		Wife employee (Community Connector)	Taieri Network	DCC has provided Place Based Funding to the Taieri Network. Potential future grants applicant.	Does not participate in grant funding decisions.
		Investor/Director	Saddle Hill Investment Trust	No conflict identified.	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
		Owner	Residential Properties Mosgiel	No conflict identified.	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	10/02/2022	Trustee	Otago Southland Manufacturers Association Trust	No conflict identified.	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	15/09/2017	Trustee	Diversity Works NZ	No conflict identified.	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	09/07/2018	Member	Society of Local Government Managers	No conflict identified.	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	16/11/2020	Trustee	Sister Cities New Zealand	No conflict identified.	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
Simon Drew		Owner	Residential property Dunedin	No conflict identified.	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
		Chartered Member	Engineering New Zealand	No conflict identified.	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
		Judge	ACENZ (Association of Consulting Engineers NZ) Innovate Awards Judge	ACENZ have own conflict of interest policies.	Would not be allowed to judge a DCC project.
	17/04/2019	Member	Society of Local Government Managers	No conflict identified.	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
Robert West		Owner	Residential property Dunedin	No conflict identified.	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
		Trustee	Caselberg Trust	No conflict identified.	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
Gavin Logie		Owner	Residential property Dunedin	No conflict identified.	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
		Owner	Residential property Wanaka	No conflict identified.	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
		Minority shareholder	Southern Hospitality	No conflict identified.	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	17/07/2020	Director	Golden Block Investments Limited	No conflict identified.	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	17/07/2020	Director	Five Council-owned non-trading companies	No conflict identified.	Seek advice prior to the meeting if actual or perceived conflict of interest arises.

Executive Leadership Team - Register of Interest - current as at 5 May 2023					
Name	**Date of Entry**	**Responsibility (i.e. Chairperson etc)**	**Declaration of Interests**	**Nature of Potential Interest**	**Member's Proposed Management Plan**
			Wife works in a senior financial position in the Finance Department, University of Otago	No conflict identified.	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
	14/01/2021		Son works for Tregaskis Brown who provide consultancy services to Central Government	No conflict identified.	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
Jeanette Wikaira		Trustee	Dunedin North Intermediate School	No conflict identified.	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
		Member	Otago Institute of Arts and Science	No conflict identified.	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
		Trustee	Hone Tuwhare Charitable Trust	No conflict identified.	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
Claire Austin	17/09/2021	Owner	Residential property Dunedin	No conflict identified.	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
		Member	Institute of Directors	No conflict identified.	Seek advice prior to the meeting if actual or perceived conflict of interest arises.
		Fellow	Australia and New Zealand School of Government	No conflict identified.	Seek advice prior to the meeting if actual or perceived conflict of interest arises.

CONFIRMATION OF MINUTES

ORDINARY COUNCIL MEETING - 27 APRIL 2023

RECOMMENDATIONS

That the Council:

a) **Confirms** the public part of the minutes of the Ordinary Council meeting held on 27 April 2023 as a correct record.

Attachments

	Title	Page
A⇩	Minutes of Ordinary Council meeting held on 27 April 2023	17

DUNEDIN CITY COUNCIL | kaunihera a-rohe o Ōtepoti

Council

MINUTES

Minutes of an ordinary meeting of the Dunedin City Council held in the Council Chamber, Dunedin Public Art Gallery, The Octagon, Dunedin on Thursday 27 April 2023, commencing at 10.00 am

PRESENT

Mayor	Mayor Jules Radich	
Deputy Mayor	Cr Sophie Barker	
Members	Cr Bill Acklin	Cr David Benson-Pope
	Cr Christine Garey	Cr Kevin Gilbert
	Cr Carmen Houlahan	Cr Marie Laufiso
	Cr Cherry Lucas	Cr Mandy Mayhem
	Cr Jim O'Malley	Cr Lee Vandervis
	Cr Steve Walker	Cr Brent Weatherall
	Cr Andrew Whiley	

IN ATTENDANCE Sandy Graham (Chief Executive Officer), Simon Pickford (General Manager Community Services), John Christie (Manager Enterprise Dunedin), Simon Drew (General Manager Infrastructure and Development), Jeanette Wikaira (Manahautū (General Manager Māori, Partnerships and Policy)), and Clare Sullivan (Principal Committee Advisor). Paul Henderson, Anna Nilsen

Governance Support Officer Lynne Adamson

The Mayor acknowledged the passing of Mr Trevor Williams, Dunedin City Council retired civil engineer following 35 years of work. He spoke of his significant and lasting contribution to the modernisation and development of Dunedin's engineering infrastructure.

1 OPENING

Martin Genet of the Dunedin Baha'i Community opened the meeting with a prayer.

2 PUBLIC FORUM

Dark Skies

Mr Broughton spoke to his circulated information on Dark Skies and Sustainability which outlined restoring and preserving Dunedin's Night Sky using responsible outdoor lighting.

Mr Broughton responded to questions.

2023 Dunedin Fringe Festival Update

Ms Ruth Harvey and Ms Kate Schrader (Co-Directors Dunedin Fringe Festival) provided an update on the 2023 Dunedin Fringe Festival, and responded to questions.

3 APOLOGIES

There were no apologies.

4 CONFIRMATION OF AGENDA

Moved (Mayor Jules Radich/Cr Bill Acklin):

That the Council:

Confirms the agenda without addition or alteration.

Motion carried (CNL/2023/081)

5 DECLARATIONS OF INTEREST

Members were reminded of the need to stand aside from decision-making when a conflict arose between their role as an elected representative and any private or other external interest they might have.

Moved (Mayor Jules Radich/Cr Mandy Mayhem):

That the Council:

a) **Notes** the Elected Members' Interest Register; and

b) **Confirms** the proposed management plan for Elected Members' Interests.

c) **Notes** the Executive Leadership Team Members' Interest Register.

Motion carried (CNL/2023/082)

6 CONFIRMATION OF MINUTES

6.1 ORDINARY COUNCIL MEETING - 27 MARCH 2023

Moved (Mayor Jules Radich/Cr Sophie Barker):

That the Council:

a) **Confirms** the public part of the minutes of the Ordinary Council meeting held on 27 March 2023 as a correct record.

Motion carried (CNL/2023/083)

6.2 EXTRAORDINARY COUNCIL MEETING - 6 APRIL 2023

Moved (Mayor Jules Radich/Cr Sophie Barker):

That the Council:

a) **Confirms** the public part of the minutes of the Extraordinary Council meeting held on 06 April 2023 as a correct record.

Motion carried (CNL/2023/084)

REPORTS

7 ACTIONS FROM RESOLUTIONS OF COUNCIL MEETINGS

A report from Civic provided an update on the progress on implementing resolutions made at Council meetings.

The Chief Executive Officer (Sandy Graham) spoke to the report and responded to questions.

Moved (Mayor Jules Radich/Cr Mandy Mayhem):

That the Council:

a) **Notes** the Open and Completed Actions from resolutions of Council meetings.

Motion carried (CNL/2023/085)

8 FORWARD WORK PROGRAMME FOR COUNCIL - APRIL 2023

A report from Civic provided the updated forward work programme for the 2022-2023 year.

The Chief Executive Officer (Sandy Graham) spoke to the report and responded to questions.

Moved (Mayor Jules Radich/Cr Andrew Whiley):

That the Council:

a) **Notes** the updated Council forward work programme.

Motion carried (CNL/2023/086)

9 INTRODUCING CAR SHARE TO DUNEDIN

A report from the Sustainability Group provided an update on plans to introduce a car share service to Dunedin to offer visitors and residents an additional transport option.

The General Manager Infrastructure and Development (Simon Drew) and Manahautū (General Manager Māori Partnerships and Policy) (Jeanette Wikaira) spoke to the report and responded to questions.

Cr Carmen Houlahan left the meeting at 10.54 am and returned at 10.57 am.

Moved (Cr Steve Walker/Cr Christine Garey):

That the Council:

a) **Notes** the intention to issue a Request for Proposal to identify a preferred car share supplier for Dunedin.

Division

The Council voted by division

For: Crs Bill Acklin, Sophie Barker, David Benson-Pope, Christine Garey, Kevin Gilbert, Carmen Houlahan, Marie Laufiso, Cherry Lucas, Mandy Mayhem, Jim O'Malley, Steve Walker, Brent Weatherall, Andrew Whiley and Mayor Jules Radich (14).
Against: Cr Lee Vandervis (1).
Abstained: Nil

The division was declared CARRIED by 14 votes to 1

Motion carried (CNL/2023/087)

Cr Gilbert left the meeting at 11.27 am and returned at 11.29 am.

10 FIFA WOMEN'S WORLD CUP 2023 UPDATE

A report from Events and Community Development provided an overview of the DCC activity preparing for the FIFA Women's World Cup. This tournament is being hosted in Dunedin from 21 July until 1 August 2023.

The General Manger Community Services (Simon Pickford) and Team Leader – Events (Dan Hendra) spoke to the report and responded to questions.

Cr Christine Garey left the meeting at 11.42 am and returned at 11.44 am.

Moved (Mayor Jules Radich/Cr Mandy Mayhem):

That the Council:

a) **Notes** the FIFA Women's World Cup 2023 Update report.

Motion carried (CNL/2023/088)

Moved (Mayor Jules Radich/Cr Andrew Whiley):

That the Council:

Adjourns the meeting until 12.30 pm.

Motion carried

The meeting adjourned at 11.52 am and reconvened at 12.31 pm.

11 MOSGIEL RECREATION AREA RESERVE MANAGEMENT PLAN - NOTICE OF INTENT

A report from Parks and Recreation sought approval to commence the public consultation process required by Section 41(5) of the Reserves Act 1977 to enable preparation of the Mosgiel Recreation Area Reserve Management Plan.

The General Manager Community Services (Simon Pickford), Group Manager Parks and Planning and Partnerships Manager (John Brenkley) spoke to the report and responded to questions.

Moved (Mayor Jules Radich/Cr Sophie Barker):

That the Council:

a) **Approves** the Statement of Proposal and the Stage 1 Engagement Questions for Mosgiel Recreation Area, and the commencement of the public consultation process required by Section 41(5) of the Reserves Act 1977.

Motion carried (CNL/2023/089)

12 LOGAN PARK RECREATION RESERVE - RESERVE MANAGEMENT PLAN - NOTICE OF INTENT

A report from Parks and Recreation sought approval to commence the public consultation process required by section 41(5) of the Reserves Act 1977 to enable the preparation of the Local Park Recreation Reserve - Reserve Management Plan.

The General Manager Community Services (Simon Pickford) and Planning and Partnerships Manager (John Brenkley) spoke to the report and responded to questions.

Moved (Cr Andrew Whiley/Cr Jim O'Malley):

That the Council:

a) **Approves** the Statement of Proposal and the Stage 1 Engagement Questions for Logan Park Recreation Reserve, and the commencement of the public consultation process required by section 41(5) of the Reserves Act 1977.

Motion carried (CNL/2023/090)

13 LAND TRANSPORT MANAGEMENT (REGULATION OF PUBLIC TRANSPORT) AMENDMENT BILL - SUBMISSION

A report from Transport sought approval for a submission on the Land Transport Management (Regulation of Public Transport) Amendment Bill.

The General Manager Infrastructure and Development (Simon Drew), Group Manager Transport (Jeanine Benson) and Senior Transport Planner (Helen Chapman) spoke to the report and responded to questions.

Moved (Mayor Jules Radich/Cr Sophie Barker):

That the Council:

Adjourns the meeting for five minutes.

Motion carried

The meeting adjourned at 1.01 pm and reconvened at 1.09 pm.

Moved (Cr Jim O'Malley/Cr Kevin Gilbert):

That the Council:

a) **Approves t**he draft submission to the Land Transport Management (Regulation of Public Transport) Amendment Bill with the addition of the following point:

   i) that the Land Transport Management Act (2003) is amended to enable Territorial Authorities to deliver public transport.

b) **Authorises t**he Mayor or his delegate to speak to the DCC submission at the Transport and Infrastructure Select Committee

c) **Authorises** the Chief Executive to make any minor editorial changes to the submission if required.

Motion carried (CNL/2023/091)

14 REVIEW OF THE ELECTRICITY (HAZARDS FROM TREES) REGULATIONS 2003 - SUBMISSION

A report from Parks and Recreation sought approval of a submission to the Ministry of Business Innovation and Employment on the discussion document 'Review of the Electricity (Hazards from Trees) Regulations 2003'.

The General Manager Community Services (Simon Pickford) and Parks Operations Manager (Aidan Battrick) spoke to the report and responded to questions.

Moved (Cr Christine Garey/Cr Marie Laufiso):

That the Council:

a) **Approves** the submission to the Ministry of Business Innovation and Employment on the discussion document 'Review of the Electricity (Hazards from Trees) Regulations 2003'.

b) **Authorises** the Chief Executive to make any minor editorial changes to the submission if required.

Motion carried (CNL/2023/092)

15 2022 ANNUAL REPORT FOR DUNEDIN VENUES MANAGEMENT LTD

A report from Dunedin City Holdings Ltd provided the 2022 Annual Report of Dunedin Venues Management Limited.

The Chair, Dunedin City Holdings Ltd (Keith Cooper) and General Manager (Jemma Adams) spoke to the report and responded to questions.

Moved (Cr Sophie Barker/Cr Cherry Lucas):

That the Council:

a) **Notes** the 2022 Annual Reports of Dunedin Venues Management Limited.

Motion carried (CNL/2023/093)

RESOLUTION TO EXCLUDE THE PUBLIC

Moved (Mayor Jules Radich/Cr Sophie Barker):

That the Council:

Pursuant to the provisions of the Local Government Official Information and Meetings Act 1987, exclude the public from the following part of the proceedings of this meeting namely:

General subject of the matter to be considered	Reasons for passing this resolution in relation to each matter	Ground(s) under section 48(1) for the passing of this resolution	Reason for Confidentiality
C1 Ordinary Council meeting - 27 March 2023 - Public Excluded	S7(2)(a) The withholding of the information is necessary to protect the privacy of natural persons, including that of a deceased person.	.	

	S7(2)(g) The withholding of the information is necessary to maintain legal professional privilege. S7(2)(h) The withholding of the information is necessary to enable the local authority to carry out, without prejudice or disadvantage, commercial activities. S7(2)(i) The withholding of the information is necessary to enable the local authority to carry on, without prejudice or disadvantage, negotiations (including commercial and industrial negotiations). S7(2)(b)(i) The withholding of the information is necessary to protect information where the making available of the information would disclose a trade secret.	
C2 Confidential Council Actions from Resolutions at Council Meetings	S7(2)(a) The withholding of the information is necessary to protect the privacy of natural persons, including that of a deceased person. S7(2)(g) The withholding of the information is necessary to maintain	S48(1)(a) The public conduct of the part of the meeting would be likely to result in the disclosure of information for which good reason for withholding exists under section 7.

	legal professional privilege. S7(2)(h) The withholding of the information is necessary to enable the local authority to carry out, without prejudice or disadvantage, commercial activities. S7(2)(i) The withholding of the information is necessary to enable the local authority to carry on, without prejudice or disadvantage, negotiations (including commercial and industrial negotiations).		
C3 Confidential Council Forward Work Programme - April 2023	S7(2)(h) The withholding of the information is necessary to enable the local authority to carry out, without prejudice or disadvantage, commercial activities.	S48(1)(a) The public conduct of the part of the meeting would be likely to result in the disclosure of information for which good reason for withholding exists under section 7.	
C4 Director Remuneration - Dunedin City Holdings Limited Group Companies	S7(2)(a) The withholding of the information is necessary to protect the privacy of natural persons, including that of a deceased person. S7(2)(b)(i) The withholding of the information is necessary to protect information where the making available of the information would disclose a trade secret.	S48(1)(a) The public conduct of the part of the meeting would be likely to result in the disclosure of information for which good reason for withholding exists under section 7.	This report is confidential because the information contained in this report remains confidential until Council has determined the level of fees and advised Dunedin City Holdings Limited of the outcome at which point the information can be made public..

C5 Appointment of District Licensing Committee Members	S7(2)(a) The withholding of the information is necessary to protect the privacy of natural persons, including that of a deceased person.	S48(1)(a) The public conduct of the part of the meeting would be likely to result in the disclosure of information for which good reason for withholding exists under section 7.

This resolution is made in reliance on Section 48(1)(a) of the Local Government Official Information and Meetings Act 1987, and the particular interest or interests protected by Section 6 or Section 7 of that Act, or Section 6 or Section 7 or Section 9 of the Official Information Act 1982, as the case may require, which would be prejudiced by the holding of the whole or the relevant part of the proceedings of the meeting in public are as shown above after each item.

That Mr Keith Cooper (Chairperson, Dunedin City Holdings Limited) and Ms Jemma Adams (General Manager, Dunedin City Holdings Limited) be permitted to attend the meeting to speak to Item C4 – Director Remuneration – Dunedin City Holdings Limited Group Companies to provide assistance in relation to the matters to be discussed.

That the meeting adjourn to enable members of the public and media to leave.

Motion carried (CNL/2023/094)

The meeting moved into confidential at 2.10 pm and closed at 3.12 pm.

.....
MAYOR

ORDINARY COUNCIL MEETING - 22 MAY 2023

RECOMMENDATIONS

That the Council:

a) **Confirms** the public part of the minutes of the Ordinary Council meeting held on 22 May 2023 as a correct record.

Attachments

	Title	Page
A⇩	Minutes of Ordinary Council meeting held on 22 May 2023	28

DUNEDIN CITY COUNCIL | kaunihera a-rohe o Ōtepoti

Council

MINUTES

Minutes of an ordinary meeting of the Dunedin City Council held in the Council Chamber, Dunedin Public Art Gallery, The Octagon, Dunedin on Monday 22 May 2023 and Tuesday 23 May 2023 commencing at 10.00 am

PRESENT

Mayor	Mayor Jules Radich	
Deputy Mayor	Cr Sophie Barker	
Members	Cr Bill Acklin	Cr David Benson-Pope
	Cr Christine Garey	Cr Kevin Gilbert
	Cr Carmen Houlahan	Cr Marie Laufiso
	Cr Cherry Lucas	Cr Mandy Mayhem
	Cr Jim O'Malley	Cr Lee Vandervis
	Cr Steve Walker	Cr Brent Weatherall
	Cr Andrew Whiley	

IN ATTENDANCE Sandy Graham (Chief Executive Officer), Simon Pickford (General Manager Community Services), John Christie (Manager Enterprise Dunedin), Simon Drew (General Manager Infrastructure and Development), Jeanette Wikaira (Manahautū (General Manager Māori, Partnerships and Policy)), Gavin Logie (Chief Financial Officer), Robert West (General Manager Corporate and Quality), Paul Henderson (Acting General Manager Customer and Regulatory), Carolyn Allan (Senior Management Accountant), Scott MacLean (Group Manager Parks and Recreation), David Ward (Group Manager 3 Waters), Chris Henderson (Group Manager Waste and Environmental Solutions), Jeanine Benson (Group Manager Transport), Anna Nilsen (Group Manager Property), Gina Hu'akau (Corporate Policy Manager), Leanne Mash (Communication and City Marketing Manager) and Clare Sullivan (Principal Committee Advisor)

Governance Support Officer Lynne Adamson

1 PUBLIC FORUM

There was no Public Forum.

2 APOLOGIES

There were no apologies.

3 CONFIRMATION OF AGENDA

Moved (Mayor Jules Radich/Cr Steve Walker):

That the Council:

Confirms the agenda without addition or alteration

Motion carried (CNL/2023/099)

4 DECLARATIONS OF INTEREST

Members were reminded of the need to stand aside from decision-making when a conflict arose between their role as an elected representative and any private or other external interest they might have.

Moved (Mayor Jules Radich/Cr Cherry Lucas):

That the Council:

a) **Notes** the Elected Members' Interest Register; and

b) **Confirms** the proposed management plan for Elected Members' Interests.

c) **Confirms** the proposed management plan for the Executive Leadership Team's interests.

Motion carried (CNL/2023/100)

5 CONFIRMATION OF MINUTES

5.1 ORDINARY COUNCIL MEETING - 1 MAY 2023

Moved (Mayor Jules Radich/Cr Mandy Mayhem):

That the Council:

a) **Confirms** the minutes of the Ordinary Council meeting held on 01 May 2023 as a correct record.

Motion carried (CNL/2023/101)

REPORTS

6 CEO OVERVIEW REPORT - ANNUAL PLAN DELIBERATIONS 2023/24

A report from Finance and the Executive Leadership Team provided an overview of the 2023/24 Annual Plan process to date, decisions to be made at this deliberations meeting, and the process to complete the Annual Plan through to its adoption by 27 June 2023.

The Chief Executive Officer (Sandy Graham) and Chief Financial Officer (Gavin Logie) spoke to the report and responded to questions.

Moved (Mayor Jules Radich/Cr Bill Acklin):

That the Council:

a) **Notes** the CEO Overview Report – Annual Plan Deliberations 2023/24.

b) **Notes** that any resolution made in this section of the meeting, pursuant to Standing Order 23.5 may be subject to further discussion and decision by the meeting.

Division

The Council voted by division

For: Crs Bill Acklin, Sophie Barker, David Benson-Pope, Christine Garey, Kevin Gilbert, Carmen Houlahan, Marie Laufiso, Cherry Lucas, Mandy Mayhem, Jim O'Malley, Steve Walker, Brent Weatherall, Andrew Whiley and Mayor Jules Radich (14).
Against: Cr Lee Vandervis (1).
Abstained: Nil

The division was declared CARRIED by 14 votes to 1

Motion carried (CNL/2023/102)

7 ANNUAL PLAN 2023/24 - REQUESTS FOR FUNDING

A report from Civic summarised the 12 funding requests received from submitters during the community engagement period on the Annual Plan.

The Chief Executive Officer (Sandy Graham) spoke to the report.

Cr Carmen Houlahan left the meeting at 10.35 am and returned at 10.38 am.
Cr Mandy Mayhem left the meeting at 11.06 am and returned at 11.09 am.

Moved (Mayor Jules Radich/Cr Marie Laufiso):

That the Council:

Adjourns the meeting for 15 minutes.

Motion carried

The meeting adjourned at 11.32 am and reconvened at 11.50 am.

Submission 964883 - Dunedin Theatre Network

There was a discussion on the request from the Dunedin Theatre Network for funding to complete structural assessments on the Playhouse, Athenaeum Building and Mayfair Theatre.

Moved (Cr Christine Garey/Cr Mandy Mayhem):

That the Council:

a) **Approves** funding the Dunedin Theatre Network $100,000 toward costed design options from the Property budget.

Division

The Council voted by division

For:	Crs Bill Acklin, Sophie Barker, David Benson-Pope, Christine Garey, Kevin Gilbert, Marie Laufiso, Mandy Mayhem, Steve Walker, Brent Weatherall, Andrew Whiley and Mayor Jules Radich (11)
Against:	Crs Carmen Houlahan, Cherry Lucas, Jim O'Malley and Lee Vandervis (4)
Abstained:	Nil

The division was declared CARRIED by 11 votes to 4

Motion carried (CNL/2023/103)

Moved (Cr Christine Garey/Cr Mandy Mayhem):

That the Council:

b) **Enters** into a Memorandum of Understanding with the Dunedin Theatre Network.

Division

The Council voted by division

For:	Crs Bill Acklin, Sophie Barker, David Benson-Pope, Christine Garey, Kevin Gilbert, Marie Laufiso, Cherry Lucas, Mandy Mayhem, Steve Walker, Brent Weatherall, Andrew Whiley and Mayor Jules Radich (12).
Against:	Crs Carmen Houlahan, Jim O'Malley and Lee Vandervis (3).
Abstained:	Nil

The division was declared CARRIED by 12 votes to 3

Motion carried (CNL/2023/104)

Moved (Cr Christine Garey/Cr Mandy Mayhem):

That the Council:

c) **Notes** that updates on the work of the Dunedin Theatre Network will be reported in the Community Services Committee Forward Work Programme.

Division

The Council voted by division

For: Crs Bill Acklin, Sophie Barker, David Benson-Pope, Christine Garey, Kevin Gilbert, Carmen Houlahan, Marie Laufiso, Cherry Lucas, Mandy Mayhem, Jim O'Malley, Lee Vandervis, Steve Walker, Brent Weatherall, Andrew Whiley and Mayor Jules Radich (15).
Against: Nil
Abstained: Nil

The division was declared CARRIED by 15 votes to 0

Motion carried (CNL/2023/105)

Moved (Cr Christine Garey/Cr Mandy Mayhem):

That the Council:

d) **Requests** a report updating the work that has been undertaken on Council's decision to retain $17.1 million for a mid sized theatre development in time to inform options for the 10 Year Plan 2024-34.

Division

The Council voted by division

For: Crs Bill Acklin, Sophie Barker, David Benson-Pope, Christine Garey, Kevin Gilbert, Carmen Houlahan, Marie Laufiso, Cherry Lucas, Mandy Mayhem, Jim O'Malley, Lee Vandervis, Steve Walker, Brent Weatherall, Andrew Whiley and Mayor Jules Radich (15).
Against: Nil
Abstained: Nil

The division was declared CARRIED by 15 votes to 0

Motion carried (CNL/2023/106)

Moved (Mayor Jules Radich/Cr Mandy Mayhem):

That the Council:

Adjourns the meeting until 1.20 pm.

Motion carried

The meeting adjourned at 12.50 pm and resumed at 1.25 pm.

Submission 964854 - Saddle Hill Community Board – Waldronville Cycleway
There was a discussion on the submission from the Saddle Hill Community Board for the extension of the shared pathway from Green Island to Waldronville to Ocean View.

Moved (Cr Kevin Gilbert/Cr Andrew Whiley):

That the Council:

a) **Asks** staff to work with the Saddle Hill Community Board to include a shared path between Waldronville and Ocean View in the strategic pedestrian and cycleway network plan that will be considered in the 2024 – 2034 10-Year plan.

Motion carried (CNL/2023/107)

Moved (Mayor Jules Radich/Cr Steve Walker):

That the Council:

Adjourns the meeting for five minutes.

Motion carried

The meeting adjourned at 1.38 pm and reconvened at 1.44 pm.

Submission 964840 - Dunedin Gymnastics Academy
There was a discussion on the submission from the Dunedin Gymnastics Academy (DGA) for funding to support building costs for their proposed new gymnastic facility.

Moved (Cr Andrew Whiley/Cr Carmen Houlahan):

That the Council:

a) **Notes** that Sidey Park was the Dunedin Gymnastic Association's preferred site for a new gymnastic facility.

b) **Asks** staff to work with the Dunedin Gymnastic Association to outline any Council processes required to enable the DGA to carry out due diligence on the potential use of Sidey Park in time for the 2024 – 2034 10-Year plan.

Motion carried (CNL/2023/108)

Submitter 964678 - Orokonui Ecosanctuary
Cr Steve Walker withdrew from this item.

There was a discussion on the funding request from the Orokonui Ecosanctuary.

Moved (Cr Mandy Mayhem/Cr Carmen Houlahan):

That the Council:

a) **Approves** $70,000 funding to the Orokonui Ecosanctuary towards their education programme in the 2023-24 Annual Plan.

Division

The Council voted by division

For: Crs Carmen Houlahan, Marie Laufiso, Mandy Mayhem and Mayor Jules Radich (4).

Against: Crs Bill Acklin, Sophie Barker, David Benson-Pope, Christine Garey, Kevin Gilbert, Cherry Lucas, Jim O'Malley, Lee Vandervis, Brent Weatherall and Andrew Whiley (10).
Abstained: Nil

The division was declared LOST by 4 votes to 10

Moved (Cr Mandy Mayhem/Cr Carmen Houlahan):

That the Council:

b) **Ask** staff to work with the Orokonui Ecosanctuary to explore longer term funding options.

Division

The Council voted by division

For: Crs Bill Acklin, Sophie Barker, David Benson-Pope, Christine Garey, Kevin Gilbert, Carmen Houlahan, Marie Laufiso, Cherry Lucas, Mandy Mayhem, Jim O'Malley, Lee Vandervis, Brent Weatherall, Andrew Whiley and Mayor Jules Radich (14).
Against: Nil
Abstained: Nil

The division was declared CARRIED by 14 votes to 0

Motion carried (CNL/2023/109)

Submitter 964503 - Tūhura Otago Museum
Crs Cherry Lucas and Christine Garey withdrew from this item.

Moved (Mayor Jules Radich/Cr Mandy Mayhem):

That the Council:

Adjourns the meeting for 5 minutes.

Motion carried

The meeting adjourned at 2.59 pm and reconvened at 3.07 pm.

There was a discussion on Tūhura Otago Museum's request for a 7% increase in funding.

Moved (Cr Steve Walker/Cr Andrew Whiley):

That the Council:

a) **Approves** a museum levy increase of 5%.

Division

The Council voted by division

For: Crs David Benson-Pope, Kevin Gilbert, Carmen Houlahan, Marie Laufiso, Steve Walker, Andrew Whiley and Mayor Jules Radich (7).
Against: Crs Bill Acklin, Sophie Barker, Mandy Mayhem, Jim O'Malley, Lee Vandervis and Brent Weatherall (6).
Abstained: Nil
The division was declared CARRIED by 7 votes to 6

Motion carried (CNL/2023/110)

Cr Kevin Gilbert withdrew from discussion and consideration of resolution b).

Moved (Cr Steve Walker/Cr Andrew Whiley):

That the Council:

b) **Confirms** the rates rebate increase at 1.6%; and

Division

The Council voted by division

For: Crs Sophie Barker, David Benson-Pope, Carmen Houlahan, Marie Laufiso, Mandy Mayhem, Jim O'Malley, Steve Walker, Brent Weatherall, Andrew Whiley and Mayor Jules Radich (10).
Against: Crs Bill Acklin and Lee Vandervis (2).
Abstained: Nil

The division was declared CARRIED by 10 votes to 2

Motion carried (CNL/2023/111)

Moved (Cr Steve Walker/Cr Andrew Whiley):

That the Council:

c) **Supports** the campaign asking government to provide a level of funding that recognises the importance of their collections.

Division

The Council voted by division

For: Crs Bill Acklin, Sophie Barker, David Benson-Pope, Kevin Gilbert, Carmen Houlahan, Marie Laufiso, Mandy Mayhem, Jim O'Malley, Lee Vandervis, Steve Walker, Brent Weatherall, Andrew Whiley and Mayor Jules Radich (13).
Against: Nil
Abstained: Nil

The division was declared CARRIED by 13 votes to 0

Motion carried (CNL/2023/112)

Moved (Cr Steve Walker/Cr Andrew Whiley):

That the Council:

d) **Requests** that staff review the DCC funding approach for the Otago Museum and the reporting requirements of the Otago Museum Act 1996 and report back by December 2023 in time for the 10 Year Plan 2024-34.

Division

The Council voted by division

For: Crs Bill Acklin, Sophie Barker, David Benson-Pope, Kevin Gilbert, Carmen Houlahan, Marie Laufiso, Mandy Mayhem, Jim O'Malley, Lee Vandervis, Steve Walker, Brent Weatherall, Andrew Whiley and Mayor Jules Radich (13).
Against: Nil
Abstained: Nil

The division was declared CARRIED by 13 votes to 0

Motion carried (CNL/2023/113)

Moved (Mayor Jules Radich/Cr Steve Walker)

That the Council:

Extends the meeting beyond 6 hours.

Motion carried

8 ANNUAL PLAN 2023/24 - AMENITY REQUESTS

A report from Civic summarised requests for new amenities and projects received from submitters.

The Chief Executive Officer (Sandy Graham) spoke to the report.

Discussions were held on the Amenity Requests for Sports Facilities and Parks and Reserves.

Cr Houlahan left the meeting at 3.48 pm and returned at 3.51 pm.

Moved (Mayor Jules Radich/Cr Steve Walker)

That the Council:

Adjourns the meeting for 5 minutes.

Motion carried

The meeting adjourned at 4.16 pm and reconvened at 4.27 pm.

Discussions were held on the Property and Transport Amenity Requests.

Moved (Cr Carmen Houlahan/Cr Jim O'Malley):

That the Council:

a) **Request** that in preparing for the 10 Year Plan 2024-34, staff ensure that commuter rail is a topic for consideration in the formation of the consultation document.

Motion carried (CNL/2023/114)

Moved (Mayor Jules Radich/Cr Steve Walker):

That the Council:

Adjourns the meeting until 10.00 am on Tuesday 23 May 2023.

Motion carried

The meeting adjourned at 4.56 pm and reconvened at 10.00 am on Tuesday 23 May 2023.

Cr Lee Vandervis entered the meeting at 10.01 am.

The discussions continued on the Transport Amenity Requests.

Cr Houlahan left the meeting at 10.42 am and returned at 10.44 am.

There was a discussion on the Peninsula Connection Project.

Moved (Cr Christine Garey/Cr Andrew Whiley):

That the Council:

a) **Request** staff to include the unfunded sections of the peninsula connection project (from Portobello township to Harrington Point) into the Regional Land Transport Plan 2024 – 2034.

b) **Request** staff prepare a report in time for the 10 Year Plan 2024-34 on the unfunded sections of the Peninsula Connection, including:

i. Updated costs for completion of these sections
ii Funding options

Division

The Council voted by division

For:	Crs Bill Acklin, Sophie Barker, David Benson-Pope, Christine Garey, Kevin Gilbert, Carmen Houlahan, Marie Laufiso, Cherry Lucas, Mandy Mayhem, Jim O'Malley, Steve Walker, Brent Weatherall, Andrew Whiley and Mayor Jules Radich (14).
Against:	Cr Lee Vandervis (1).
Abstained:	Nil

The division was declared CARRIED by 14 votes to 1

Motion carried (CNL/2023/115)

Moved (Mayor Jules Radich/Cr Jim O'Malley):

That the Council:

Adjourns the meeting for 5 minutes.

Motion carried

The meeting adjourned at 11.22 am and reconvened at 11.30 am.

There was a discussion on the Climate Adaption Plan.

Moved (Cr Sophie Barker/Cr Kevin Gilbert):

That the Council:

a) **Adds** the development of a Climate Adaptation Plan to its forward work plan.

b) **Notes** that progress updates will be reported to the Strategy Planning and Engagement Committee.

c) **Notes** the first report will provide a stocktake of the current work and outline next steps including resourcing requirements.

d) **Notes** that the first report will be to the November 2023 Strategy Planning and Engagement Committee meeting.

Following discussion it was moved (Cr Bill Acklin/Cr Cherry Lucas):

That the Council:

a) **Pursuant** to Standing Orders 24.2 (b) that the motion under debate should now be put.

Motion carried (CNL/2023/116)

The substantive motion was then put:

Moved (Cr Sophie Barker/Cr Kevin Gilbert):

That the Council:

a) **Adds** the development of a Climate Adaptation Plan to its forward work plan.

b) **Notes** that progress updates will be reported to the Strategy Planning and Engagement Committee.

c) **Notes** the first report will provide a stocktake of the current work and outline next steps including resourcing requirements.

d) **Notes** that the first report will be to the November 2023 Strategy Planning and Engagement Committee meeting.

Motion carried (CNL/2023/117) with Cr Lee Vandervis recording his vote against

There were discussions on the Waste Amenity Requests.

Moved (Mayor Jules Radich/Cr Marie Laufiso):

That the Council:

Adjourns the meeting until 1.00 pm.

Motion carried

The meeting adjourned at 12.26 pm and reconvened at 1.02 pm.

There was a discussion on Mosgiel Heavy Transport Bypass.

Moved (Cr Cherry Lucas/Cr Carmen Houlahan):

That the Council:

a) **Request** a report on the Mosgiel Heavy Transport Bypass to the Infrastructure Services Committee by October 2023.

Motion carried (CNL/2023/118)

9 CAPITAL EXPENDITURE REPORT - 2023/24 ANNUAL PLAN

The Chief Executive Officer withdrew the Capital Expenditure Report – 2023/24 Annual Plan and advised it would be presented to the Council meeting to be held on Tuesday 30 May 2023.

11 FEES AND CHARGES FOR 2023/24

A report from Civic provided the schedule of fees and charges for the 2023/24 financial year for adoption.

The Chief Financial Officer (Gavin Logie) spoke to the report and responded to questions on the fees and charges.

Moved (Mayor Jules Radich/Cr Andrew Whiley):

That the Council:

a) **Approves** the 2023/24 Fees and Charges Schedules.

Motion carried (CNL/2023/119) with Cr Lee Vandervis recording his vote against

10 SUMMARY OF SUBMISSIONS ON ANNUAL PLAN

A report from Corporate Policy summarised the submissions received on the draft 2023-24 Annual Plan.

The Manahautū (General Manager Māori Partnerships and Policy) Jeanette Wikaira and Corporate Policy Manager (Gina Hu'akau) spoke to the report and responded to questions.

Moved (Mayor Jules Radich/Cr Mandy Mayhem):

That the Council:

a) **Notes** the feedback received from the community through the Annual Plan community engagement process.

Motion carried (CNL/2023/120)

12 COMPLETION OF ANNUAL PLAN 2023/24 DELIBERATIONS AND DECISION-MAKING

A report from Civic provided the recommendations to be taken at the completion of Council consideration of feedback and final decision-making on the budgets for the annual plan 2023/24.

The Chief Executive Officer (Sandy Graham) spoke to the report and responded to questions. .

Moved (Mayor Jules Radich/Cr Kevin Gilbert):

That the Council:

Adjourns the meeting.

Motion carried

The meeting adjourned at 1.50 pm and reconvened at 1.58 pm.

There was a discussion on how Council would fund the increase in the Tūhura Otago Museum levy to 5% and rates rebate increase of 1.6%.

Moved (Cr Lee Vandervis/Cr Bill Acklin):

That the Council:

Approves the draft rates increase at 6.6% for 2023/24.

Motion carried (CNL/2023/121)

Moved (Cr Bill Acklin/Cr Steve Walker):

That the Council:

a) **Approves** staff comments for feedback topics as shown in the consultation database (or as amended during Annual Plan decision-making) for the purposes of:

i) providing feedback on Annual Plan engagement and decision-making to the community;

ii) inclusion in the Annual Plan 2023/24 as appropriate; and

iii) further follow-up or action by staff, if required.

Motion carried (CNL/2023/122)

Moved (Cr Bill Acklin/Cr Steve Walker):

That the Council:

b) **Approves** the changes to draft 2023/24 budgets resolved at this meeting for inclusion in the Annual Plan 2023/24, for adoption by the Council on 27 June 2023.

Motion carried (CNL/2023/123) with Cr Lee Vandervis recording his vote against.

The meeting closed at 2.14 pm

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MAYOR

REPORTS

ACTIONS FROM RESOLUTIONS OF COUNCIL MEETINGS

Department: Civic

EXECUTIVE SUMMARY

1 The purpose of this report is to show progress on implementing resolutions made at Council meetings.

2 As this report is an administrative report only, there are no options or Summary of Considerations.

RECOMMENDATIONS

That the Council:

a) **Notes** the Open and Completed Actions from resolutions of Council meetings as attached.

DISCUSSION

3 This report also provides an update on resolutions that have been actioned and completed since the last Council meeting. Note that items on the Forward Work Programme are not included in the attached schedules.

NEXT STEPS

4 Updates will be provided at future Council meetings.

Signatories

Author:	Lynne Adamson - Governance Support Officer
Authoriser:	Sharon Bodeker - Manager Governance

Attachments

	Title	Page
⇩A	Council Open Action List	43
⇩B	Council Completed Action List	45

Key	
Changes to timeframes	
Progress to date update	Bold

COUNCIL PUBLIC RESOLUTIONS 2022-2025 OPEN ACTIONS – MAY 2023					
OPEN ACTIONS					
Meeting Date	**Resolution**	**Report**	**Resolution or Action to be Taken**	**Group**	**Status**
22/02/2023	**CNL/2023/039**	**Annual Plan Budget Update – Waste Management**	**Directs** staff to write to the Ministry of the Environment seeking an explanation as to why the Waste Disposal Levy is applied to material that is used in the operation of the Green Island Landfill.	Waste Management	**May 2023 – Staff have contacted the Ministry seeking an explanation as to why the Waste Disposal Levy is applied to material that is used in the operation of the landfill.**
27/03/2023	**CNL/2023/073**	**Approval to Grant Stormwater Easement to Aurora Energy Ltd – Kane Street Local Purpose Reserve (Esplanade)**	**Grants**, as administering body of the Kane Street Local Purpose Reserve (Esplanade), pursuant to Section 48 of the Reserves Act 1977, an easement in gross to Aurora Energy Limited for the installation of a stormwater pipe and associated streambank protection over part of the Kane Street Local Purpose Reserve (Esplanade) (part Record of Title 561979). **Decides** the criteria for exemption from public notification had been met. **Acting** under its delegation from the Minister of Conservation dated 12 June 2013 and pursuant to Section 48 of the Reserves Act 1977, approves an easement in gross to Aurora Energy Limited for the installation of a stormwater pipe and associated streambank protection over part of Kane Street Local Purpose Reserve (Esplanade) (part Record of Title 561979).	Parks and Recreation	**May 2023 – the agreement has been drafted and is being reviewed in-house. It is expected that the agreement will be sent to Aurora for review and execution by the end of May.** **Aurora has advised that their design work for the streambank protection structure is behind schedule.**
27/03/2023	**CNL/2023/075**	**Naming of a Legal Road and a Private Way**	**Approves** the naming of the legal road located at 157 Dukes Road North as **'Enterprise Place'**. **Approves** the naming of the private way located at 219 Gladstone Road North as **'Magnolia Lane**'.	Transport	**May 2023 – LINZ has been notified of the approval of the road names for addressing matters and inclusion in their database. The road signs will be installed in coordination with the developers once developments are completed.**
PUBLIC NOTICE OF MOTION RESOLUTIONS 2022-2025 OPEN ACTIONS - MAY 2023					
Meeting Date	**Resolution**	**Report**	**Resolution or Action to be Taken**	**Group**	**Status**
31/01/2023	**CNL/2023/013**	**Notice of Motion - Dunedin Hospital**	**Supports** the New Dunedin Hospital being built to the specifications in the Final Detailed Business Case approved by Cabinet, and that the Dunedin City Council will not accept changes that reduce the long-term capacity of the New Dunedin Hospital, or that compromise in any way the clinical services available to residents of the city and the wider region.		**May 2023 – The campaign continues.**

Key	
Changes to timeframes	
Progress to date update	Bold

			Seeks the commitment of all parliamentary parties to adequately fund that work. **Engages** with stakeholders to support this advocacy position. **Commits** to fund a public campaign in support of 1 – 3 above, up to $130,400 and seek support funding from other sources.		

Key	
Changes to timeframes	
Progress to date update	Bold

PUBLIC COUNCIL RESOLUTIONS 2022-2025

COMPLETED ACTIONS – MAY 2023

Meeting Date	Resolution	Report	Resolution or Action to be Taken	Group	Completion
27/04/2023	**CNL/2023/091**	**Land Transport Management (Regulation of Public Transport) Amendment Bill - Submission**	**Approves t**he draft submission to the Land Transport Management (Regulation of Public Transport) Amendment Bill with the addition of the following point: i) that the Land Transport Management Act (2003) is amended to enable Territorial Authorities to deliver public transport. **Authorises t**he Mayor or his delegate to speak to the DCC submission at the Transport and Infrastructure Select Committee **Authorises** the Chief Executive to make any minor editorial changes to the submission if required.	Transport	**May 2023 – the submission was lodged on 27 April 2023.**
27/04/2023	**CNL/2023/092**	**Review of the Electricity (Hazards from Trees) Regulations 2003 – Submission**	**Approves** the submission to the Ministry of Business Innovation and Employment on the discussion document 'Review of the Electricity (Hazards from Trees) Regulations 2003'. **Authorises** the Chief Executive to make any minor editorial changes to the submission if required.	Parks and Recreation	**May 2023 - The submission was lodged on 28 April 2023.**
27/03/2023	**CNL/2023/074**	**Proposed Event Road Closures for April-May 2023**	**Resolves** to close the roads detailed below (pursuant to Section 319, Section 342, and Schedule 10 clause 11(e) of the Local Government Act 1974): **City Activation Rod Stewart** – 5 April 2023 **FIFA 100 days to go** – 11 April 2023 **Hyde Street Party** – 28 April 2023 **May Graduation Parades** – 13 and 20 May 2023	Transport	**May 2023 – the roads were closed as resolved.**
27/03/2023	**CNL/2023/069**	**State Highway 1 – Discussion of Options**	**Endorses** the State Highway 1 (P1) one-way option through Dunedin City	Transport	**May 2023 – DCC advised Waka Kotahi of their endorsement for the one way option for SH1.**
27/03/2023	**CNL/2023/072**	**Proposed Interim Speed Management Plan – Report from Hearing Committee**	**Approves** the Dunedin interim Speed Management Plan, as recommended by the Hearings Committee. **Authorises** the Chief Executive to make any minor editorial changes to the Draft Interim Speed Management Plan if required. **Notes** that the Interim Speed Management Plan would be submitted to the Director of Land Transport for certification. **Notes** speed limits would come into effect when submitted into the National Speed Limit Register.	Transport	**May 2023 – The Draft Interim Speed Management plan has been submitted to Waka Kotahi for inclusion in the national speed limits register.**

Key	
Changes to timeframes	
Progress to date update	Bold

27/4/2023	**CNL/2023/089**	**Mosgiel Recreation Area Reserve Management Plan – Notice of Intent**	**Approves** the Statement of Proposal and the Stage 1 Engagement Questions for Mosgiel Recreation Area, and the commencement of the public consultation process required by Section 41(5) of the Reserves Act 1977.	Parks and Recreation	**May 2023 – The public consultation process with drop-in sessions will be held from 8 – 25 May 2023. The next steps will be determined by the feedback received during the consultation process. This action will now be captured in the Forward Work Programme for the Strategy, Planning and Environment Committee meeting.**
27/4/2023	**CNL/2023/090**	**Logan Park Recreation Reserve – Reserve Management Plan – Notice of Intent**	**Approves** the Statement of Proposal and the Stage 1 Engagement Questions for Logan Park Recreation Reserve, and the commencement of the public consultation process required by section 41(5) of the Reserves Act 1977.	Parks and Recreation	**May 2023 – The public consultation process with drop-in sessions will be held from 8 – 25 May 2023. The next steps will be determined by the feedback received during the consultation process. This action will now be captured in the Forward Work Programme for the Strategy, Planning and Environment Committee meeting.**
NON- PUBLIC COUNCIL RESOLUTIONS 2022-2025 RELEASED– MAY 2023					
Meeting Date	**Resolution**	**Report**	**Resolution or Action to be Taken**	**Group**	**Completion**
27/4/2023	**CNL/2023/099**	**Director Remuneration – Dunedin City Holdings Limited Group Companies**	**Approves** adjusting the DCHL Group Chair and director remuneration to the levels set out in Table 1 of the attached report, to be applied for the two years commencing 1 October 2022. **Agrees** that the information contained in the report remains confidential until Council has determined the level of fees and advised Dunedin City Holdings Limited of the outcome at which point the information can be made public.	**DCHL**	**May 2023 – Completed. The General Manager, DCHL was advised of the approval.** **The report and minute extract have been released and published on the Council website.**
27/4/2023	**CNL/2023/100**	**Appointment of District Licensing Committee Members**	**Recommends** that the Chief Executive renews Colin Weatherall's appointment as a commissioner of the District Licensing Committee for the period commencing on 1 June 2023 and ending 31 May 2025. **Recommends** that the Chief Executive appoints Mr Rakei Amohau as a commissioner of the District Licensing Committee from 1 June 2023 until 31 May 2026. **Extends** the membership of Ms Katie Lane and Ms Karen Elliot as community representative members for the District Licensing Committee until 31 May 2026. **Notes** that expressions of interest for new community members for the District Licensing Committee will be sought.	**Chief Executive Office and Civic**	**8 May 2023 – letters were sent to the members advising of their reappointments.** **The report and minute extract have been published on the Council website and the DLC membership page has been updated to reflect the change.**

FORWARD WORK PROGRAMME FOR COUNCIL - APRIL 2023

Department: Civic

EXECUTIVE SUMMARY

1 The purpose of this report is to provide the updated forward work programme for the 2022-2023 year (Attachment A).

2 As this is an administrative report only, there are no options or Summary of Considerations.

RECOMMENDATIONS

That the Council:

a) **Notes** the updated Council forward work programme as shown in Attachment A.

DISCUSSION

3 The forward work programme is a regular agenda item which shows areas of activity, progress and expected timeframes for Council decision making across a range of areas of work.

4 As an update report, the purple highlight shows changes to timeframes. New items added to the schedule are highlighted in yellow. Items that have been completed or updated are shown as bold.

NEXT STEPS

5 An updated report will be presented to future Council meetings.

Signatories

Author:	Sharon Bodeker - Manager Governance
Authoriser:	Sandy Graham - Chief Executive Officer

Attachments

	Title	Page
⇩A	Council Forward Work Programme - May 2023	49

Key	
New item	
Changes to timeframes	
Completed; progress to date update	**Bold**

Council Forward Work Programme 2022/2023 - May 2023														
Area of Work	**Reason for Work**	**Council role (decision and/or direction)**	**Expected timeframe**											
			May	**June**	**July**	**August**	**Sept**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**
Annual Report	Statutory requirement under the LGA.	Decision to adopt the Annual Report. **Progress to date:** Work on developing the 2022/23 Annual Report will commence in July 23.		Interim Audit		Final audit of 2022/23 Annual Report									
Committee Structure Delegations Manual	Council may delegate to committees those powers necessary for them to carry out their responsibilities in an efficient and effective way. Any changes to the Committee Structure Delegations manual must be done by Council.	Consider and decide on proposed changes to the Committee and Structure Delegations Manual. **Progress to date:** Proposed changes to the Committee Structure and Delegations Manual will be presented as required.		As and when required											
Electoral matters	Council may make a resolution on the electoral system by Tuesday 12 September 2023.	Consider the electoral system to be used				Decide									
Māori ward	Statutory provision, Council may make a resolution on a Māori ward by November 2023.	Consider whether to make a decision			Consideration by Te Pae	Decide									
Investment Plan	Develop an Investment Plan	Consider and decide on an investment plan. **Progress to date:** A draft of the Investment Plan is being finalised. The draft Plan has been referenced in the Letter of Expectation to DCHL. The Plan will go to the Finance & CCO committee in June 2023.		Finance & CCO											

Area of Work	Reason for Work	Council role (decision and/or direction)	Expected timeframe											
			May	June	July	August	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
LGNZ AGM Remits and Rules	Remits and rule changes to be considered at the AGM.	Consider and decide on remits and rule changes. **Progress to date:** Remits will be considered in June or July 2023, in time for the next LGNZ Annual General Meeting. Some remits have already been considered at the 16 May 2023 Infrastructure Services Committee and the Civic Affairs Committee.		Consider										
Review of Strategic Framework, incorporating Sustainability Framework and aligned levels of service	Review, update and align strategies	Ongoing decision making throughout the review process. **Progress to date:** **A workshop programme on the Strategic Framework work was considered at the Strategy, Planning & Engagement Committee in May 2023.**	**Report to Committee Workshops**	Workshop Series		Ongoing work									
Submissions to central government and other external parties.	Provide feedback on proposals from central government and other external parties.	Consider and decide on draft submission on central government and other external parties proposals. **Progress to date:** 20 submissions have been considered by Council since 1 July 22.		As and when required											
3 Waters reform	The Government has initiated changes to the service delivery arrangements for 3 waters.	**Progress to date:** **On 13 April 2023, Government announced changes to the 3 Waters service delivery reforms and the withdrawal of the Better Off Funding Tranche 2. Staff are considering the impacts and implications of the changes. A report will be prepared for a future Council meeting.** (Council - 31 May 22; CNL/2022/029).	Ongoing work												
Masters Games	Staff to review the trust deed considering matters including the length of term, remuneration, the appointment process and the number of trustees. **(Council - 31 May 22 - Confidential; CNL/2022/033)**	Considers the review of the Trust Deed for the NZ Masters Games. **Progress to date** **A report will be presented to the June 2023 Council meeting following legal review, previously scheduled for May.**		**Report**											

Area of Work	Reason for Work	Council role (decision and/or direction)	Expected timeframe												
			May	June	July	August	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Masters Games	Statement of Intent and Service Level Agreement	Present documents for approval. **Progress to date:** **A report will be presented to the June 2023 Council meeting, alongside the Trust Deed, previously scheduled for May.**		**Report**											
Annual Plans and 10 year plans															
Annual Plan	Statutory requirement under the LGA	Consider and make decisions as necessary on the development and adoption of the Annual Plan. **Progress to date:** **Hearings were held on 1/2 May 2023, and deliberations were held on 22/23 May 2023. A Capital budgets report is on this agenda. The final Annual Plan will be presented to the 27 June 2023 Council meeting for adoption.**	**Hearings and deliberations**	Adoption											
Vacant inner city space	Notice of motion for report on possible initiatives to further incentivise the residential conversion of vacant inner city space, as part of Annual Plan discussions. **(Council - 27 March 23; CNL/2023/076)**	**Progress to date:** A project plan and resourcing requirements for this work is being developed. This work will inform the 10 year plan.	Ongoing work							Report					
Targeted rates for kerbside collection	Look at targeted rates, fixed and progressive targeted rates for 2023/24 Annual Plan. **(Council - 31 Jan 22; CAPCC/2022/009)**	Consider and decide on a preferred option for charging targeted rates for kerbside collection. **Progress to date:** With the delay in the start to the new kerbside collection programme, options for charging targeted rates will now be considered in time for the 10 year plan 2024-34.			Ongoing work					Report					
Destination playground	Prepare an options report for the development of a new destination playground, in time for the 2022/23 Annual Plan. **(Council - 31 May 21; CNL/2021/130)**	Consider options for a destination playground. **Progress to date:** A Destination Playground report was presented to the 22 February 2023 Council meeting, where Council approved developing concept plans for three existing destination playspaces.	Ongoing work							Report					
Aquatics review	Include discussions with the Therapeutic Pool Trust as part of the Aquatics Network Review **(Council 23 May 22; CAPCC/2022/034)**.	**Progress to date:** A report was presented to the 22 February 2023 Annual Plan meeting. Council requested investigating potential co-investment options with the Ministry of Education, and to report back in time for the 10 year plan.	Ongoing work							Report					

Area of Work	Reason for Work	Council role (decision and/or direction)	Expected timeframe												
			May	June	July	August	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Heritage	**Develop a Heritage Action Plan in time for the 10 year plan in January 2024.** (CNL/2023/035)	Heritage Action Plan will inform the 10 year plan 2024-34. **Progress to date:** A report will be prepared for consideration in time for the 10 year plan. Timeframes are subject to confirmation.	Ongoing work						Report						
Coastal management options	Continue with technical investigations and identify other coastal management options, including groynes, to inform the 10 year plan. **(Council 27 March 23; CNL/2023/070)**	**Progress to date:** A report will be prepared in time for the 10 year plan.	Ongoing work							Report					
Otago Hockey	Working with Otago Hockey to investigate options for the replacement of the hockey turfs at Harbour Terrace.	**Progress to date:** Options will be identified in time for the 10 year plan.		Ongoing work						Report					
Dunedin Gymnastics	Work with Dunedin Gymnastics Association (DGA) to enable the Association to carry out due diligence on the potential use of Sidey Park for a new gymnastic facility. **(CNL/2023/108)**	**Progress to date:** Due diligence by DGA to be carried out in time to inform the 10 year plan.		Ongoing work						Report					
Orokonui	Staff to work with the Orokonui Ecosanctuary to explore longer term funding options. **(CNL/2023/109)**	**Progress to date:** Progress will be report to the Community Services Committee.						Update report to Committee							
Mosgiel Heavy Transport Bypass	Staff to report on the Mosgiel Heavy Transport Bypass **(CNL/2023/118)**	**Progress to date:** A report will be presented to the Infrastructure Services Committee by October 2023.						Report to Committee							
Otago Museum Act 1996	Review the DCC funding approach for the Museum and reporting requirements of the Act.	**Progress to date:** The review to be completed and reported on by December 2023.		Ongoing work						Report					

Area of Work	Reason for Work	Council role (decision and/or direction)	Expected timeframe											
			May	June	July	August	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Tūhura Otago Museum	Support the campaign asking government to provide a level of funding that recognises the importance of their collection. **(CNL/2023/112)**	**Progress to date:** Progress will be reported back as part of the item above.								Report					
Peninsula Connection	Report on funding options for the completion of the unfunded sections of the Peninsula Connection, including updated costs. **(CNL/2023/115)**	**Progress to date:** Options to be identified in time for the 10 year plan.		Ongoing work						Report					
Commuter rail	Commuter Rail to be a topic for consideration in the 10 year plan consultation document. **(CNL/2023/114)**	**Progress to date:** The topic will be included for consideration in the Consultation Document.								Consider					
Shared pathway	Staff to work with the Saddle Hill Community Board to include a shared path between Waldronville and Ocean View, in the strategic pedestrian and cycleway network plan. **(CNL/2023/107)**	**Progress to date:** The network plan will be considered in time for the 10 year plan.		Ongoing work						Report					
Performing Arts	Following approval of funding to the Dunedin Theatre Network (DTN) towards costed design options, enter into a Memorandum of Understanding with the DTN. **(CNL/2023/104)** Update report on work undertaken on Council's decision to retain $17.1 million for a mid sized theatre development. **(CNL/2023/106)**	**Progress to date:** An update on the project will be reported to inform options in time for the 10 year plan.		Ongoing work						Report					
Council Controlled Organisations															
Council controlled organisations - letter of expectation for DCHL	Provides Council's annual direction to DCHL, outlining accountabilities, roles and responsibilities.	Decides on the content of the Letter of Expectation to the Board of DCHL. **Progress to date:** The letter of expectation for the 2024/25 year will be considered at the November 2023 Council meeting.					Workshop	Letter of expectation							

Area of Work	Reason for Work	Council role (decision and/or direction)	Expected timeframe												
			May	June	July	August	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Council controlled organisations - Statements of Intent	Statutory requirement under section 64 of the LGA, and the Energy Companies Act, to provide statements of intent to its shareholders. Section 65 of the LGA requires local authorities to agree to the statements of intent, or if not agreed to, take steps to have them notified.	Provide feedback on draft statements of intent. Agree to the final statements of intent adopted by the Boards of each CCO. **Progress to date:** **A report on the draft statements of intent was presented to the 9 May Finance and CCO committee meeting. Final statements of intent will be presented to the 27 June 2023 Council meeting.**	**Report F&CCO**	Approve											
Company Annual Reports	Notes the DCHL parent financial statements for the financial year.	**Progress to date:** **The parent financial report for the year ended 30 June 23 will be presented to the Finance & CCO committee in February 2024.**										Report			
Dunedin Railways	Support the Otago Central Rail Trust to seek funding for feasibility work on possible extensions to the Otago Central Rail Trail between Middlemarch and Wingatui, in collaboration with mana whenua and other interested parties. **(Council - 31 May 21; CNL/2021/101)**	Update report **Progress to date:** DCC continues to engage with the Otago Central Rail Trail Trust on the development of a cycle trail feasibility study along the Taieri Gorge. **Feasibility study is still to commence.**	Ongoing work												
Dunedin Railways	Options for long term operations and governance of Dunedin Railways Ltd. **(Council - 31 January 23; CNL/2023/019)**	Decide on options. **Progress to date:** Work on the future of DRL is in line with the resolutions made at the 31 January 2023 Council meeting. The current model of operations will be sustained for the 2023/24 summer season. Options are currently being developed for long term operations and will be considered in time for the 10 year plan.	Ongoing work						Report						
Climate Change Work Programme incorporating:															
Zero Carbon 2030	Working across departments and Dunedin City to reduce DCC's emissions and achieve the city-wide Zero Carbon 2030 target	**Progress to date:** **A workshop was held on 29 May 2023. An update report will be presented to the June 2023 Strategy, Planning & Engagement Committee.**	**Workshop**	Update report - committee	Ongoing work										
District Energy Scheme	Final decision to be made on whether to progress with Octagon Area DES or connection to the existing PEL DES, prior to construction commencing on the George Street upgrade. **(Council - 15 Dec 20)**	Decide on options for a district energy scheme **Progress to date:** An update report will be presented at a future date.													

Area of Work	Reason for Work	Council role (decision and/or direction)	Expected timeframe												
			May	June	July	August	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Climate Adaptation Plan	Develop a Climate Adaptation Plan **(CNL/2023/116)**	**Progress to date:** Progress updates will be reported to the Strategy Planning & Engagement Committee, with the first report going to the November 2023 meeting. The first report will provide a stocktake of the current work and outline next steps including resourcing requirements.							Report to Committee						
South Dunedin Future	Working with the community and Otago Regional Council on the future of South Dunedin	Ongoing decision making throughout the process. **Progress to date:** **A workshop was held on 29 May 2023. A joint Councillor workshop is being held in June, and an update report will be presented to the June 2023 Strategy, Planning & Engagement Committee.**	**Workshop**	DCC & ORC joint workshop Update report - committee	Ongoing work and workshops										
Bylaws Work Programme and Plans															
Speed Management Plan	Development of a Dunedin Speed Management Plan.	Consider and decide on proposed changes to speed limits. **Progress to date:** Changes will be presented as and when required.		As and when required											
Waste Minimisation and Management Bylaw	Bylaw prepared under the Local Government Act 2002, Waste Minimisation Act 2008, and the Litter Act 1979	Decision to adopt/amend/revoke the bylaw. **Progress to date:** On hold pending completion of the Otago Regional Waste Assessment and possible subsequent amendment to the Waste Minimisation and Management Plan.													
Food Grading Bylaw	Proposal to revoke this bylaw	Decision to revoke the bylaw. **Progress to date:** **A report to consider revoking this bylaw is planned to be presented to Council in August 2023.**				Report									

Area of Work	Reason for Work	Council role (decision and/or direction)	Expected timeframe												
			May	June	July	August	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Second Generation District Plan (2GP) Work Programme															
Second Generation District Plan (2GP) Work Programme	To deal with appeals received on the 2GP.	Ratify the final plan. **Progress to date:** **Over 90% of appeal points have been resolved or withdrawn. Staff are working through remaining appeals, including the Gordon Road spillway, with 1 appeal currently set down for an Environment Court hearings, and a very small number awaiting a court date or mediation.**	Ongoing work												
Variation 2 - Second Generation District Plan (2GP)	Variations to the 2GP - Growth	Resolve appeals on Variation 2 to the 2GP. **Progress to date:** Decisions on Hearing 4 were released on 8 February 2023 and 16 appeals were received. **Informal meetings with appellants have commenced and will continue throughout May / June 2023.**													
Variation 3 - Second Generation District Plan	Variations to the 2GP - implement parts of the National Policy Statement - Urban Development, and other minor amendments	Decide on variation 3 to the 2GP to be notified for consultation purposes. Decision to adopt the variation to the 2GP. **Progress to date:** Issue and option identification is continuing to be progressed by staff. **Notification is expected to be in early 2024, previously scheduled for late 2023.**	Ongoing work									Notify			
NPS - Urban Development															
Future Development Strategy	Required to be completed under the National Policy Statement - Urban Development, in conjunction with the Otago Regional Council, by 2024.	Consider and make decisions as required on the development of the strategy. **Progress to date:** **Community engagement workshops are progressing well, with workshops occurring until the end of May. A joint Governors workshop with ORC was held on 5 May 2023 on strategic directions.**	Community engagement workshops	Ongoing work											
Policies Work Programme:															
Naming Rights and Sponsorship Policy	Develop a policy that will give clarity to naming rights on DCC assets.	Consider and decide on a proposed Naming Rights policy. **Progress to date:** This work has not been scheduled.													

KETTLE PARK INVESTIGATION OF HISTORIC LANDFILL

Department: Transport

EXECUTIVE SUMMARY

1 The purpose of this report is to present the findings from the investigation on the contamination and physical extent of the historic Kettle Park landfill and to outline the next steps that will now be undertaken.

RECOMMENDATIONS

That the Council:

a) **Notes** the Kettle Park Investigation of Historic Landfill report.

BACKGROUND

2 In February 2022, Council adopted Whakahekerau – Rakiātea Rautaki Tai, The St Clair – St Kilda Coastal Plan (Coastal Plan).

3 During the development of the Coastal Plan, it was identified that not enough was known about the historic landfill site which exists beneath the Kettle Park recreational area.

4 Historic records indicate the Kettle Park site was used as a waste landfill between 1900 and 1960.

5 The Coastal Plan included a short-term action to undertake an 'Investigation of Kettle Park landfill composition and extent'.

6 Tonkin and Taylor Limited was engaged to undertake 60 borehole investigations and to analyse soil samples for contaminants. Their Kettle Park Landfill – Factual Report dated May 2023 is attached as Attachment A.

DISCUSSION

7 The investigation has identified the presence of landfill waste over an area of approximately 48,000 m^2 to the east of Moana Rua Road, approximately 3,000 m^2 west of Moana Rua Road, and highlights the possibility of landfill material beneath Moana Rua Road itself.

8 Landfill material extended to at least 7 metres below ground level in the north-eastern part of Kettle Park.

9 Volume estimates of the three contaminated ground layers were:

- Capping material = 50,000 m^3
- Landfill material = 245,000 m^3
- Impacted beach sands = 24,000 m^3.

10 In general, the types of waste present indicate the successive filling of the area over a period of approximately three decades (<1942 to <1967), primarily comprising industrial waste with various pockets of gasworks, forge, and demolition types of waste heterogeneously mixed throughout.

11 As expected, sampling results have identified concentrations of metals, hydrocarbons, Polycyclic Aromatic Hydrocarbons (PAH) compounds and asbestos within the landfill materials. Asbestos fibres were also found in the capping materials. Asbestos was not detected in the layer of topsoil/turf.

12 While contaminants in the landfill and capping materials are at concentrations that present a potential health risk, these materials are covered by a layer of topsoil/turf which provides a physical barrier to the contaminated materials. Therefore, the health risk to users of the sports fields remains low.

13 If the landfill material requires disturbance (eg as part of any bulk offsite disposal of material), health and safety controls would need to be implemented to protect contractors and the public.

14 Small discharge/s of landfill material at the seaward dune face due to storm surge erosion events present a low risk to human and environmental health because they would be cleaned up and repaired quickly. A more significant risk to human and environmental health could occur if a large volume of landfill material was exposed from the seaward dune following sustained and substantial erosion events.

15 The results from Tonkin and Taylor Limited's testing indicate any disposal of landfill material would require pre-treatment prior to disposal at a Class A facility.

OPTIONS

16 As this is a report for noting, there are no options for consideration.

NEXT STEPS

17 Further targeted investigations will be undertaken to determine the extent and content of materials within the dune face, which will inform planning for management of the dune face.

18 Groundwater borehole investigations will be explored to test for potential contamination.

19 Information gathered will inform risk management strategies as follows:

- Short-term management options needed to protect the dunes from erosion, notably to mitigate the risk of failure during winter storms and reactive remediation.

- Long-term erosion rate analysis will inform coastal management options for erosion mitigation and dune remediation as stated in the Coastal Management Plan. The selected options will be presented to Council to consider for the 2024-2034 10-year plan.

Signatories

Author:	Raphael Krier-Mariani - Coastal Specialist Ben Hogan - Transport Delivery Manager
Authoriser:	Simon Drew - General Manager Infrastructure and Development

Attachments

	Title	Page
⇩A	Kettle Park Landfill - Factual Report	62

SUMMARY OF CONSIDERATIONS

Fit with purpose of Local Government

This report enables democratic local decision making and action by, and on behalf of communities. This report promotes the social, economic, environmental, and cultural well-being of communities in the present and for the future.

Fit with strategic framework

	Contributes	Detracts	Not applicable
Social Wellbeing Strategy	☒	☐	☐
Economic Development Strategy	☐	☐	☒
Environment Strategy	☒	☐	☐
Arts and Culture Strategy	☐	☐	☒
3 Waters Strategy	☒	☐	☐
Spatial Plan	☒	☐	☐
Integrated Transport Strategy	☐	☐	☒
Parks and Recreation Strategy	☒	☐	☐
Other strategic projects/policies/plans	☒	☐	☐

The Coastal Plan project contributes to key elements of Council's Strategic Framework.

Māori Impact Statement

Ōtākou Rūnaka have been involved in the process of Coastal Plan development but have not contributed to this investigation. Mana whenua will be consulted on further investigation work and on the development of management plans.

Sustainability

Social and environmental impact and considerations will be identified as further investigation work is undertaken and will be reported to Council in time to inform the 2024-2034 Long Term Plan deliberations.

LTP/Annual Plan / Financial Strategy /Infrastructure Strategy

Any impact on the financial strategy and infrastructure strategy will be identified as further investigation work is undertaken and will be reported to Council in time to inform the 2024-2034 Long Term Plan deliberations.

Financial considerations

Any financial considerations will be identified as further investigation work is undertaken and will be reported to Council in time to inform the 2024-2034 Long Term Plan deliberations.

Significance

The noting of this report is considered 'Low' in terms of Council's Significance and Engagement Policy. The report will inform the assessment and selection of Coastal Plan implementation pathways.

Engagement – external

There has been no external engagement regarding this investigation report.

Engagement - internal

Internal engagement has been undertaken with Waste Management and Parks and Recreation staff.

SUMMARY OF CONSIDERATIONS
Risks: Legal / Health and Safety etc. Short term risks include small discharge/s of material at the seaward dune face due to storm surge erosion events. Long term risks include larger volumes of contaminate to the environment due to sea level rise. These risks are prescribed as low if any potential discharge is controlled and mitigated. As noted in Next Steps, staff are working on short and long term risk management strategies.
Conflict of Interest There are no known conflicts of interest.
Community Boards Kettle Park and St Clair beach is of interest to the wider community including those areas covered by Community Boards.

Tonkin+Taylor

Kettle Park Landfill - Task 1 Factual Report

Prepared for
Dunedin City Council
Prepared by
Tonkin & Taylor Ltd
Date
May 2023
Job Number
27226.0070 v3

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Document control

Title: Kettle Park Landfill - Task 1 Factual Report					
Date	**Version**	**Description**	**Prepared by:**	**Reviewed by:**	**Authorised by:**
13/03/23	1	Draft factual report	K Stephenson	A Tuohy/P Walker	T Morris
19/05/23	2	Revised draft factual report	K Stephenson	A Tuohy/P Walker	T Morris
22/05/23	3	Final version	K Stephenson	A Tuohy/P Walker	T Morris

Distribution:

Dunedin City Council	1 electronic copy
Tonkin & Taylor Ltd (FILE)	1 electronic copy

Table of contents

1 Introduction

Tonkin & Taylor Ltd (T+T) has been engaged by Dunedin City Council (DCC) to undertake a ground contamination investigation of the historical landfill at Kettle Park in St Clair, Dunedin (referred to as the site). The location of the site is presented below in Figure 1.1.

The persons undertaking, managing reviewing, and certifying this investigation are suitably qualified and experienced practitioners (SQEP), as required by the NES CS[1] and defined in the NES Soil Users' Guide (April 2012).

This investigation was undertaken in accordance with our scope of works executed 16 December 2022 [2].

Figure 1.1: Site location, indicated in red. NZ Aerial Imagery Sourced from LINZ via Eagle Technology Ltd. under CC-BY 4.0.

1.1 Background and objectives

The Kettle Park historical landfill is located landward of the St Clair-St Kilda Beach dune system and waste was placed within the landfill from around 1900 to the early 1950s. The landfill was capped in the 1960s and developed into sports fields which remain today. A series of storm events occurring over the last 10-15 years has eroded the dune system that provides seaward protection of the landfill and continued erosion risks exposure of the waste itself.

In 2011, T+T completed a contamination and risk assessment at the site[3] to assess erosion protection options focussed on managing exposed waste in the seaward dune face. During this assessment, asbestos containing materials (ACM) and some fill materials were identified in the dune crest and

[1] Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011.
[2] Kettle Park landfill investigation and remediation planning, DCC contract reference 10388.
[3] T+T (May 2011) *Ocean Beach, Dunedin Coastal Buffer Zone Ground Contamination Assessment.* Prepared for the Dunedin City Council (T+T Ref 27226).

dune face. Concentrations of chemical contaminants (metals and polycyclic aromatic hydrocarbons [PAHs]) were detected at levels exceeding the human health-based criteria (parkland land use) in effect at the time. This investigation also identified the presence of landfill material within Kettle Park, primarily along the foredunes and within the eastern portion of Kettle Park. A former DCC landfill was identified and thought to cover an area approximately 17,000 m^2. However, the investigation did not identify the depth or the northern extent of waste across Kettle Park.

A subsequent investigation was undertaken by T+T in 2019 to assess risk to human health and the environment from the contaminants which were exposed in the dunes at the time, following the introduction of new asbestos guidelines[4], health and safety regulations[5] and human health-based criteria[6]. This investigation was primarily focussed on assessing the fill material on the dune crest and dune face, and identified the placement of waste material along the dune crest between the 1960s and 1980s to assist with dune stabilisation.

The extent (both laterally and vertically) of landfill material in Kettle Park behind the dune system remains unknown. DCC is currently exploring options for the remediation and sustainable management of the landfill. Whilst some characterisation of the waste material was provided in the 2011 report, further detail regarding the volume, nature and contamination of landfill material is needed to inform DCC's decision-making process.

T+T has undertaken an investigation to build on the information from the previous investigations with the following objectives:

- Further identifying the lateral and vertical extent of waste material associated with the landfill;
- Characterise the waste material and variability of contamination; and
- At a high level, assess the risk that the landfill poses to human health and the environment, and consider possible off-site disposal options.

1.2 Scope of work

The scope of work for this investigation comprised:

- Review of site history for information that indicates extent of landfill;
- Machine excavation of 60 boreholes across Kettle Park (east and west of Moana Rua Road) and Marlow Park, to a maximum depth of 7 metres below ground level (m bgl);
- Logging of materials encountered;
- Collection of a total of 254 soil samples from a range of depths and material types, with laboratory testing of a sub-set of samples for likely contaminants of concern;
- Field screening of soil samples for volatile gasses using a photo-ionisation detector (PID);
- Comparing laboratory analytical results to relevant human health-based criteria, environmental criteria, and published landfill acceptance criteria; and
- Preparation of this report (scope item Task 1).

[4] BRANZ (November 2017) *New Zealand Guidelines for Assessing and Managing Asbestos in Soil.*
[5] Health and Safety at Work (Asbestos) Regulation 2016.
[6] Ministry for the Environment (April 2012) Users' Guide National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health. Soil contaminant standards.

2 Site description

2.1 Site description

Kettle Park is comprised of a series of sports fields, and is located between the St. Kilda and St. Clair beaches, Victoria Road and Marlow Park, and is bisected by Moana Rua Road. The site is within land legally described as Sec 15, Blk XII, Dunedin. It is within a 36 hectare DCC landholding referred to on the District Plan planning maps as consisting of the Ocean Beach Domain.

Kettle Park, to the east of Moana Rua Road, has a grassed surface and has a slight gradual incline towards the east (up to 1.7 m over 465 m) These sports fields also dip northwards up to 1 m (over 70-100 m). A steep contoured slope marks a ~7 m decrease in elevation between Kettle Park and the Victoria flats/residential area and the Dunedin Ice Stadium to the north, and similarly to the east between Kettle Park and Marlow Park. A small recreational train track is located between Kettle Park and the residential area/Dunedin Ice Stadium.

The sports fields west of Moana Rua Road are stepped, comprising two generally flat grassed platforms. The lower platform is adjacent to Moana Rua Road and lies approximately 1.75 m below the lower end of the Kettle Park fields to the east. The western-most platform is approximately 2.5 m higher than the lower platform. The relative elevation profile across the site is shown in Figure 2.1, below.

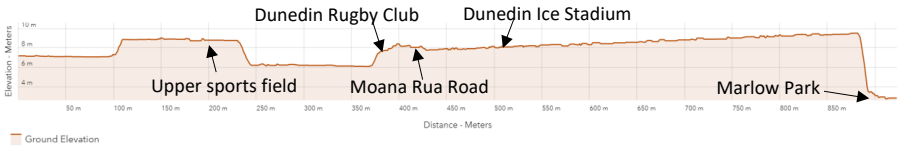

Figure 2.1: Schematic ground elevation profile across the investigated area at Kettle Park running parallel to the coast; west (left) to east (right), key locations are annotated (elevation data from Land Information New Zealand (LINZ).

The historical landfill is known to underlie at least a portion of the sports fields to the east of Moana Rua Road. The stepped topography of the sports fields suggests potential historical filling has also occurred to the west of Moana Rua Road.

The beach and sports fields are under relatively high, year-round use by the public for recreational purposes. Access to the beach is open via the end of Moana Rua Road and from Kettle Park Road and members of the public can walk along or traverse the dune crest. While the steep topography of the dunes (approximately 9.5 m drop down from the dune crest to the beach) likely discourages traversing to some degree, T+T personnel observed footprints on the dune face along the exposure, indicating that people are potentially coming into direct contact with the soil in the dunes.

2.2 Geology and hydrogeology

The published geology of the area[7] indicates that the site is underlain by Holocene aged loess-covered marine sand and beach deposits of the Hillgrove Formation and flood plain lacustrine, estuarine, dune and storm beach deposits.

[7] McKellar I.C, 1966: Sheet 25, Dunedin (1st edition) *"Geological Map of New Zealand, Scale* 1:250,000, Department of Scientific and Industrial Research.

Groundwater is anticipated to be at sea level (approximately 9 m below the Kettle Park sports fields) and to be subject to tidal fluctuations. There are no groundwater users downgradient of the site as the downgradient boundary is the coast (Pacific Ocean).

3 Site history

A number of information sources have been reviewed to understand the development of the landfill and the potential nature and extent of landfill waste. A summary of the information reviewed is provided below.

3.1 Historical aerial imagery and drawings

The site history has been developed by observations made during a review of readily available historical aerial photography and an 1890 cross-sectional map of the area (provided in Appendix A), along with site history material provided in the previous T+T investigations including a geomorphological assessment of the Ocean Beach dune system[8]. A description of the changes over time relating to landfilling activities as indicated by aerial imagery is included in Appendix A.

A drawing signed by E. R. Assher dated 6 August 1901 (surveyed August 1890) (Appendix A) shows Victoria Road and its position in relation to the coast, and indicates that the Kettle Park area formerly comprised a large lagoon with low dunes present on the landward side. The geomorphology report suggests that during the early 20th Century a lagoon may have been permanently or ephemerally present with a low (0.5 m high) sand ridge on the seaward side of the lagoon, with the area defined as a deflation surface (where wind is removing sand). The reports mentions records of several occasions where the sea passed through the dune system and inundated the adjacent housing in St Kilda/St Clair.

Modification of the dune system progressed through the early 20th Century including the removal of the Victoria Road (landward) dunes, and vegetation of the seaward sand areas. This promoted the creation of a new foredune system. The former lagoon area appears to have then been used as landfill/backfilled with waste material, potentially to provide support for the dunes and to mitigate against coastal inundation.

Of note with regard to the landfilling activities at the site, an area of ground disturbance can be seen in the area of Kettle Park east of Moana Rua Road between 1942 and 1947, and the present-day configuration of sports fields east and west of Moana Rua Road is shown to be present from 1967. The 1942 and 1947 images also show the Ocean Beach army battery located to the north of Kettle Park, and what is possibly a rifle range adjacent to the eastern end of Kettle Park (where the sealed skating area in Marlow Park is now). The army facilities appear to have been expanded to include barracks and storage huts during the mid-1940s, and the site was disestablished during the 1950s.

In summary, the primary period of landfilling activities within the Kettle Park area appears to have begun some time after 1900 and was mostly complete by the 1960s with the sports fields remaining largely the same since this time. As the dis-establishment of the army facility to the north of Kettle Park likely occurred during the 1950s or early 1960s, there is a chance that some material from the army camp may have been disposed of within the landfill.

[8] Hilton, M., 2010: The Geomorphology of the Ocean Beach dune system – Implications for future management of Ocean Beach Domain. Department of Geography, University of Otago, Prepared for Dunedin City Council.

3.2 Anecdotal information

Additional commentary from a member of the public was recorded during the site investigation in 2022. These comments, while anecdotal (and not corroborated), provide some degree of agreement with the site development history as inferred from the aerial photographs and drawings:

- A railway track linking the site with the former Dunedin gasworks was dismantled towards the end of the 1800's;
- The landfill area was used as a sand quarry pre-WWII;
- A very tall sand dune was present at the current site of Marlow Park, which formed an eastern boundary for the landfill when it was generated;
- An ocean inlet/breach in the dunes (in front of the very tall sand dune) occurred following a storm event, which caused inundation of the quarry;
- Landfilling began in 1946, on the northern side and progressed southward towards the beach.
- Landfill composition at Kettle Park is largely gasworks waste;
- The landfill did not extend west of Moana Rua Road/Dunedin Rugby Club buildings, the rugby fields to the west consist of levelled sand dunes and 'clean' imported fill; and
- A wax-wrapped box of WWII machine guns and live ammunition was found in a bank adjacent to the Dunedin Ice Stadium during site development works (recreational railway track construction) in the 1980's. Given the proximity of the Ocean Beach army battery and suspected shooting range, the potential for munitions and unexploded ordinance to have been buried elsewhere at the site cannot be discounted.

3.3 Summary of previous T+T site investigations

T+T undertook an investigation in 2011 to assess landfill material exposed in the seaward dune face, which included a ground contamination assessment to inform engineered and non-engineered solutions for beach erosion protection, and to determine the width of the coastal buffer zone. The report included some shallow investigation of the landfill material within Kettle Park in short transects behind the dune crest.

The site investigation included 25 shallow (up to 3 m bgl) machine boreholes, excavated in transects perpendicular to the dunes, each transect being 100-200 m apart. The borehole logs identified the presence of boiler ash. Gasworks clinker, and demolition materials (brick, glass and occasional ACM) beneath dune sands and silty clay. Soil sampling was also completed where waste materials had been exposed on the dune face.

The investigation showed that layered landfill materials were exposed in the dunes between Kettle Park Road and the western extent of the lower platform in the western fields (i.e., 150 m west of Moana Rua Road). The landfill materials were generally exposed in the upper (up to 5 m) of the dune face, consisting of organic silt and sand, gravel and minor demolition material, over gravelly/sandy silt with landfill material including ash and clinker and demolition materials, over an organic silt/sand layer with minor demolition material. In one dune face outcrop located at the end of Moana Rua Road the fill material was observed to contain blue billy (cyanide-rich gasworks waste).

No landfill materials were observed in the fields to the west of Moana Rua Road. Landfill materials were found along the beach-adjacent length of the sports fields between Moana Rua Road and Marlow Park. The northern (i.e. landward) extent of the landfill and the depth of landfill material behind the dunes was not investigated.

The 2011 report concluded that:

- Contaminant concentrations in the dune face and the boreholes were assessed (using prevailing guidance available at the time) to not present a significant risk to human (public) health given the likely short duration of exposure; and
- The assessment of the effects of landfill material on ecological receptors was not within the scope of the 2011 investigation.

Further investigation work was completed in 2019[9] to aid DCC in exploring their options for the future management of contaminated materials exposed in the dune face by further characterising the fill materials and assessing their risk to human health and the environment.

Additional sampling of the beach front and dune face in the stretch between Marlow Park in the east and the esplanade in the west (covering approximately 1 km) was completed. Fill materials were identified along the length of the dunes between Marlow Park in the east and the esplanade in the west, although a detailed review of historical aerial imagery supplemented with field observations of the fill suggested that at least some of the fill observed in the dunes was of more recent origin than the landfill. The report indicated the possible placement of fill materials along the dune crest in multiple stages associated with the development of the playing fields and parking/accessways near Moana Rua Road, and along the dune crest during the 1970s and 1980s. ACM was observed in parts of the dunes adjacent to the sports fields east and west of Moana Rua Road, and at the bottom of the dune face from Moana Rua Road to approximately 300 m to the west.

The assessment of laboratory results against the NES CS for recreational land use[10] (metals and PAH) and the Asbestos in Soil Guidelines[11] concluded that the fill materials exposed along the crest of the sand dunes generally did not contain any contaminant concentrations at levels exceeding the human health-based criteria for recreational land use and outdoor worker exposure. However, asbestos fragments were observed in parts of the dunes adjacent to the sports fields east and west of Moana Rua Road, and at the bottom of the dune face from Moana Rua Road to approximately 300 m west.

4 Contamination investigation

As the lateral and vertical extent of landfill material was not well defined in the previous investigations the approach adopted for the 2022 drilling project was to complete additional investigation to reduce the uncertainty regarding the lateral and vertical extents of waste, as well as to provide more information on the waste types and contamination concentrations.

4.1 Investigation methodology

This investigation comprised drilling and sampling from 60 boreholes, as shown in Figures 4.1-4.3.

In the Kettle Park sports fields bounded to the east and west by Marlow Park and Moana Rua Road respectively, a total of 45 boreholes were driven in a generally grid-based pattern to provide coverage of data across the known landfill area, to investigate the lateral extent of the landfill.

One borehole (BH57) was driven in Marlow Park to investigate the eastern extent of the landfill/whether the landfill extends east of the Kettle Park sports fields.

To the west of Moana Rua Road, one borehole (BH32) was driven within the lower platform of the rugby fields, adjacent to the carpark for the Dunedin Rugby Club. Following observations of similar landfill materials and capping layer as seen in the eastern fields, a further five boreholes were driven

[9] T+T (November 2020) *Ocean Beach Dunes, Ground Contamination and Management Options Assessment.* Prepared for the Dunedin City Council (T+T Ref 27226).

(BH28, BH35-37, BH40) in a general grid pattern across the lower platform. Seven additional boreholes (BH41-BH45, BH58-59) were driven in the upper platform in a targeted approach to investigate the western extent of fill materials.

One borehole (BH60) was driven approximately 400 metres west of Moana Rua Road at the request of DCC to assess for the presence of fill in an area identified by DCC as at increased risk of erosion.

Boreholes were machine-driven by Geotechnics Ltd. using a small, tracked, percussive borehole rig (Dando Terrier). Service clearance using ground penetrating radar was completed at all boreholes locations prior to ground-breaking.

Drilling and soil sampling was completed as follows:

- Core was retrieved in new plastic liners, which were placed onto plastic sheet before opening to prevent the spread of landfill contaminants across the site's surface;
- A tarpaulin was used to collect incidental soil spillage during removal of plastic-lined core from the drill barrels;
- Core was photographed and logged in detail, with particular note to evidence of contaminants such as colour, staining, odour, and asbestos-containing materials;
- Core samples were collected using freshly gloved hands and a trowel, and placed directly into laboratory-supplied containers;
- Samples for chemical analysis were placed into chilled containers for transport to the analysing laboratory;
- All re-usable equipment (e.g., hand-trowel, drill-shoe) required for the collection of core samples was decontaminated between contact with each sample/drill-core using diluted Decon-90 (a phosphate-free detergent) and rinsed with tap water;
- Headspace gas readings were collected from core samples using a photoionisation detector (PID);
- Boreholes were reinstated with arisings in the approximate reverse-order of excavation and topped up with coarse sand/fine gravel fill. The original core of grass/topsoil was replaced at the surface where possible (see photographs in Appendix B), for example of reinstatement); and
- Samples were delivered to IANZ-accredited Analytica Laboratories in Dunedin, under chain of custody documentation.

4.2 Field observations

A summary of the field observations, including layer descriptions, and landfill extent and depth are included below. Please refer also to the site plans and the cross sections included in Appendix C.

4.2.1 Surface observations

Patches of landfill material (brick, glass, boiler ash, clinker, and suspected ACM were visible within surface soils on the north-facing slopes immediately above the train tracks between the Dunedin Ice Stadium and Marlow Park. Additional observations of brick fragments at the surface were recorded in places along the dune crest. No observations of waste at the surface within the sport fields were recorded.

4.2.2 Encountered materials

The material encountered within the boreholes was highly variable, vertically and laterally. The variability in the composition of the waste is reflected in the high level of detail within the borelogs included in Appendix D.

Because of this complexity, and in order to consider the presence of patterns within the waste material at a practical level (i.e. such as could potentially allow material segregation during remedial works), descriptions are provided below of the general material types encountered.

Layer descriptions

Several distinct layer types were observed in the soil profile during the investigation works:

- **Windblown beach sand** on the surface, typically up to a few centimetres thick (reaching a maximum of 0.45 m thickness at BH10) in the locations directly adjacent to the sand dunes present along the southern edge of the site and up to 30 m north of the dunes . Beach sand was also present across the site interbedded with the cap and landfill layers at various depths and in layers up to 0.85 m thick (likely either windblown/washed in or deposited during landfilling activities, e.g., used as cover or caved-in from edges);
- **Topsoil** consisting of brown silty sand or sandy silt, from the surface or below windblown beach sand at most investigation locations across the site and ranging from 0.05 to 0.3 m thick, and in a small number of locations (BH22, BH23, BH28, BH34) up to 0.4 m thick (not present at some locations typically where windblown beach sand was thicker);
- **Capping** material consisting of clayey silt/silty clay with sand, gravel and/or cobbles in places, and trace to minor levels of waste materials such as brick, ash, coal, coke, glass, shell, and concrete. This was present at the majority of locations below windblown beach sand and/or topsoil, to depths of 0.2 to 2.2 m bgl. In a limited number of locations the thickness of capping material extended to 2 m thick, however, in general this layer was less than 1 m thick. The defining characteristic of this layer is the clay content with minimal waste material present. Notably the capping layer was absent from the north-eastern corner of Kettle Park adjacent to Marlow park, and from two smaller areas immediately south of the Dunedin Ice Stadium and the south-east corner of the sports field adjacent to the west side of Moana Rua Road, meaning that where capping was absent, the landfill materials are covered by 0.2 m to 0.4 m of topsoil/sand only; and
- **Landfill** comprised of highly variable materials with individual layer thicknesses on the order of centimetres, in general consisting of:
  - Gasworks waste (e.g., ash, coal, coke, clinker, slag, wood shavings, one small piece of suspected blue billy, rare tar/coal tar);
  - Forge/smelter waste (e.g., metallic clinker and slag [with bright green inclusions, bright royal blue inclusions and/or bright green patches of soil], metal scrap, metal shards, metallic sand/dust, fire brick); and
  - Demolition materials (e.g., brick, concrete, timber, glass, metal, slate, tile, clay pipe, nails, loosely cemented gravel (e.g., piles) and occasional fibrous cement sheet ACM [observed at BH02 at 1 m bgl, BH46 at 1.8 m bgl, BH54 at 1.9 m bgl]).

  Gasworks waste, forge/smelter waste and demolition materials were present either in concentrated layers typically not exceeding 50 cm thickness and often interbedded with or containing patches of other layers, or occurring in a matrix of sand, silt, clayey silt and/or gravel. In several locations the drill met early refusal on hard objects or did not retrieve core for several metres due to objects blocking the end of the drill barrel (e.g., cobbles, concrete, metal, wood).

  In isolated pockets, fuel/oil/grease indicators were observed (i.e., odour, staining and/or separate-phase oil/grease), often within or adjacent to sawdust and/or workshop detritus. Organic-rich layers were observed in places at varying levels of decay, which were either largely sawdust/woodchip (e.g., as used in gasworks for scrubbing, or in workshops as spill soakage) or of natural origin (e.g., remnants of the former lagoon environment – e.g., black organic sand). Small pockets of general waste were present in layers in some boreholes which

also contained gasworks/furnace waste (e.g., burnt bone, newspaper/carboard, glass bottle pieces, porcelain pieces, plastic, oyster shell and eggshell). Layers of crushed glass were observed in three locations in Kettle Park east of Moana Rua Road (BH07, BH15, BH38) and one location in the west (BH32). The landfill layer was likely more than 7 m thick in the north-eastern part of Kettle Park, becoming thinner towards both the seaward dunes, and west towards Moana Rua Road. Spatial variations in the landfill layer are discussed further below.

- **Impacted beach sand** was present below landfill materials across much of the site, consisting of beach sand with brown to grey/black discolouration, orange staining and/or lenses of brown to grey/black. Impacted beach sands varied between 0.3 m and 0.5 m in thickness; and
- **Natural soils** consisting of light grey to creamy white coloured beach sand were encountered below landfill/impacted beach sand at locations where the full depth of landfill was penetrated (and where no landfill was present).

In summary, while it is possible to distinguish between general material types (windblown sand/topsoil/capping/waste/natural sand), it is not possible to identify distinct layers or spatial patterns within the landfill waste since material identified as waste contains proportions of industrial waste and non-waste material that vary considerably over small vertical and lateral distances.

4.2.3 Landfill extent

East of Moana Rua Road

The thickness and depth of landfill materials encountered in boreholes varied across Kettle Park (see cross sections in Appendix C), with the greatest thicknesses occurring at the northern end of Kettle Park adjacent to the change in slope down to the railway line/other buildings, and becoming thinner towards the seaward dunes.

The inferred extents and thickness of the capping and landfill layers are displayed on Figures C1 to C3 in Appendix C. The thickness of layers recorded in the borehole logs has been used to interpolate between borehole locations to infer areas of thicker waste/capping materials versus thinner areas. We also note that the external edges of inferred areas are uncertain, and that waste material and/or capping material could be present outside of the inferred areas.

On the eastern side of Kettle Park (towards Marlow Park) the thickness of landfill materials exceeded 7 m at the bottom limit of the borehole (i.e., the drill rig could not penetrate further to determine the full thickness of landfill material present) (see cross section C-D). The landfill layer becomes thinner towards the dunes, and also towards Kettle Park Road, with no landfill waste layer observed in BH01 (though brick fragments are noted within the capping layer). Landfill layer thickness in the boreholes closest to the dunes ranged from 3 m to 4 m.

We note that no capping layer was observed in six boreholes located at the north-eastern extent of Kettle Park, meaning that landfill layers were present beneath 0.2 m to 0.5 m of topsoil and beach sand.

Towards Moana Rua Road the landfill layer becomes thinner west of the Dunedin Ice Stadium with patches of thicker capping (more than 1 m) above landfill materials. Landfill material was 4 m thick at BH19 between the railway and Moana Rua Road, and at BH05 adjacent to the road. Landfill material was absent from BH16 at the seaward end of Moana Rua Rd.

In an area in the west of the Kettle Park sports fields between Moana Rua Road and the Dunedin Ice Stadium to the east, moderate diesel/hydrocarbon or oil/grease odour and elevated PID readings were recorded (BH49, BH06, BH50, BH30, BH13, BH29, BH38, BH31, BH11, BH46 and BH27); although, the odour descriptions, depths, PID readings and landfill descriptions varied greatly and this cannot be defined as a layer. ACM was observed in three locations spread across the sports fields east of Moana Rua Road between 1-1.9 m depth, either within silt/clayey silty sand layers

containing other demolition materials (e.g., concrete, brick, glass) or within gasworks materials (i.e., sawdust with ash, black angular gravel, slag, slag and coal or charcoal.

Forge/smelter waste was found in landfill materials distributed across the site, although slightly more concentrated east of the Dunedin Ice Stadium, at a range of depths and interbedded with layers containing demolition materials and gasworks waste.

A small piece of suspected blue billy was found at 0.75 m bgl at BH04 (in the eastern half of Kettle Park), in a layer which contained ash, coke, clinker and bright green patches in the soil.

Although the borehole logs closest to the dune crest indicate the landfill layer thins towards the dunes, it remains between 3 m and 5 m thick near the southern boundary fence. The landfill layer could be expected to continue to thin into the dunes, as a vertical dune face is very unlikely in the scenario of waste being backfilled against the dunes to assist with dune stabilisation. Based on this assumption, it is possible for landfill material to be daylighting, or close to the seaward dune surface, at least in places, along the dunes (see cross sections in Appendix C).

West of Moana Rua Road

Landfill materials were identified in five borehole locations grouped in two areas west of Moana Rua Road; two on the lower platform within 40 m of Moana Rua Road (BH28 and BH32) and three on the upper platform along the southern side of the sports field (BH41, BH44 and BH45). The landfill material closest to Moana Rua Road is oriented north-south adjacent to the road and the depth of waste ranged from 0.3 m in thickness at the northern end to 1.3 m thick at the southern (seaward) end. It is possible that this material represents the western-most extent of the landfill material from Kettle Park (rather than a distinct landfill pocket), and there is a possibility that at least some waste material could remain beneath Moana Rua Road.

The landfill material within the upper sports field is oriented east-west behind the dunes and the depth of waste ranged from 1.5 m at either end and up to 2 m thick in the middle. The orientation of this waste area and the location close to the dune crest suggests that it could have been placed during the periods of additional dune stabilisation/construction of access paths occurring after the 1960s (as described in the 2019 report).

The landfill layer in both the lower and upper sports fields contained similar materials to those observed in Kettle Park to the east, e.g., gasworks waste, forge/smelter waste, and demolition materials within a sand/silt/clay matrix. ACM was not observed in the boreholes driven west of Moana Rua Road.

Capping material was observed above the landfill layer in these locations and was similar in composition to that observed east of Moana Rua Road (except BH28 (at the seaward end of Moana Rua Road) where topsoil/beach sand was directly underlain by landfill at 0.6 m).

In the boreholes where no landfill layer was observed, a fill/capping layer consisting of sand/silt with clay patches and trace amounts of brick, glass, ash, and/or gravel was observed below topsoil and/or beach sand typically 0.05 to 0.3 m thick. At BH60 (400 m west of Moana Rua Road), the fill/capping layer was present between 0.23-0.45 m bgl, and consisted only of clayey silt/silty clay.

Groundwater

Groundwater was encountered in two of the 60 investigation locations (BH13 and BH19, both located east of Moana Rua Road) at depths of 6.83 m bgl and 5.83 m bgl, respectively. Standing water was also observed at 6.7 m bgl at BH06 on completion of drilling, however this was likely due to perched water (in coarse granular landfill materials) draining into the excavation from 1.45 m bgl (beach sand recovered from 6.9 m bgl was moist only). Although some landfill layers became moist to wet at various elevations within the soil profile, no other perched water was encountered.

In the areas of deepest waste (i.e. where the waste layer was encountered at 7 m bgl), the landfill layer extended to within 1-2 m of sea level.

West of Moana Rua Road, the maximum depth of excavation was 4 m bgl, excavated materials did not become wet, no perched water was observed, and groundwater was not encountered.

Discharge (leachate, landfill gas)

In the project planning stages DCC advised that a leachate collection pipe was present at the site and that leachate may be able to be collected from a manhole, however this was not identified prior to the investigation, and the manhole was not found onsite. No evidence of leachate discharge within the site nor along the beachfront was observed.

No evidence of landfill gas was observed (e.g., hydrogen sulphide odours, patches of stressed vegetation).

4.3 Conceptual site model

The conceptual site model (CSM) for the Kettle Park landfill identifies sources of contamination, exposure pathways and receptors. A risk exists where a receptor is exposed to a contaminant via a complete exposure pathway, however, a CSM does not quantify the effect of a risk.

Sources of contaminants:

- Capping material – contains trace to minor demolition material and may contain contaminants that exceed default environmental protection guidelines;
- Landfill material beneath capping/topsoil – contains industrial and demolition waste, including ACM that is likely to contain contaminants that exceed human health and environmental protection guidelines/standards;
- Landfill material at the surface (e.g. dune face, exposed on north-facing slopes near the Dunedin Ice Stadium); and
- Direct discharge of landfill material and/or indirect leaching of contaminants into the marine environment.

Exposure pathways:

- Dermal contact – direct contact between the skin and contaminated material;
- Inhalation – of vapour (in the case of volatile compounds) or of dust particulates;
- Ingestion – eating of particulates (e.g. if food is consumed and particulate material is inadvertently mixed with food being consumed); and
- Biological uptake – into vegetation and/or into marine organisms.

Receptors:

- People using the sports fields for recreational activities (e.g. walking, sport, picnics);
- People using the beach for recreational activities (e.g. walking picnics, swimming);
- Construction workers (if excavation of material from Kettle Park is required); and
- Coastal marine ecosystems along the St Kilda/St Clair coast.

Complete pathways:

Potentially complete exposure pathways exist for:

- People using the beach for recreational activities through inhalation, dermal contact, and ingestion from landfill material at the surface;

- Construction workers if material is excavated from Kettle Park through inhalation and dermal contact, from landfill material beneath capping/topsoil; and
- Coastal marine ecosystems through ingestion and biological uptake of contaminants either directly entering the marine environment or through indirect contaminants leaching into the marine environment.

We note that no direct exposure pathway exists for people using the sports fields from the landfill material or the capping material as the topsoil and surface beach sands currently provide a physical barrier.

4.4 Laboratory testing results

As a total of 254 samples were collected from the 60 boreholes, a subset of samples from across the different layers and locations were selected for laboratory analysis, with the bulk of analyses targeted within the landfill layer. A total of 116 samples were analysis for a range of contaminants including:

- Heavy metals and metalloids;
- Semi volatile organic compounds (SVOC), including polycyclic aromatic hydrocarbons (PAH);
- Volatile organic compounds (VOC);
- Total petroleum hydrocarbons (TPH);
- Asbestos (semi-quantitative New Zealand guideline method);
- Other compounds – total and free cyanide, sulphur, and sulphate; and
- Leachability of metals (via TCLP).

Note that not every sample was tested for all analytes.

4.4.1 Assessment criteria

Laboratory analytical results were assessed against the following criteria:

Human Health

To assess the human health risk due to exposure to landfill materials derived for recreational land use (for the protection of users of the beach that could come into contact with the landfill material if exposed by future erosion) and commercial/industrial land use guidelines (for the protection of workers involved with future site remediation):

- NES Soil Contaminant Standards (SCS)[12] for metals and semi-volatile organic compounds (SVOC);
- MfE Gasworks guidelines[13] for cyanide, volatile organic compounds (VOC) and SVOC;
- MfE Petroleum Hydrocarbons guidelines [14] for total petroleum hydrocarbons (TPH); and
- Asbestos in Soil guidelines [15] for ACM, fibrous asbestos (FA) and asbestos fibres (AF).

[12] Ministry for the Environment (April 2012) Users' Guide National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health. Soil contaminant standards.
[13] Ministry for the Environment (August 1997) Guidelines for Assessing and Managing Contaminated gasworks Sites in New Zealand. Part One: User's Guide.
[14] Ministry for the Environment (August 1999) Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand. Module 4 – Tier 1 soil acceptance criteria.
[15] BRANZ (November 2017) *New Zealand Guidelines for Assessing and Managing Asbestos in Soil.*

Environmental

To provide a preliminary assessment of the risk to ecological receptors from erosion, runoff and leaching from the landfill:

- Marine water guidelines[16] for metal leachability; and
- Sediment Quality guidelines[17] for metals, TPH and SVOC

We understand that the closest available landfill (Green Island Landfill) is no longer accepting industrial waste, therefore the following criteria have been used to consider disposal options should removal of landfill material from the site be considered:

- Landcare Background Soil Concentrations (95% UCL) [18,19], to assess suitability for disposal as cleanfill; and
- Acceptance criteria for Burnside Landfill[20], MfE Class A landfills and Class B landfills[21] to assess disposal options for contaminated materials.

4.4.2 Quality control

Duplicate samples were collected in the field with five of these tested at the laboratory to provide a quality control check on reproducibility of sampling methods and handling techniques.

The Relative Percentage Difference (RPD) across the duplicates was highly variable (up to a maximum of 103.9%), which likely indicates the heterogeneity of the landfill materials tested. Table E6 provided in Appendix E presents the results of the duplicate testing.

The laboratory misplaced several of the samples sent to them under chain of custody documentation. Some were recovered, however, the delay meant that some tests were performed outside of the holding time for the parameters being analysed. This affected seven samples in total as follows:

- Cyanide – 1 sample, with non-detect of free cyanide and detection of total cyanide (in landfill material);
- TPH – 3 samples, with non-detects of all TPH compounds in 1 sample of impacted beach sand;
- SVOCs – 4 samples, with detects of some SVOCs in all 4 samples (1 from capping material, 3 from landfill material); and
- VOCs – 2 samples, with non-detects of all VOCs in 1 sample of capping material.

Performing laboratory tests for the above parameters outside of the holding time risks under-reporting the concentration of the analyte, this is due to volatilisation and potential loss to the atmosphere of the compounds in question. The samples with non-detects for the parameters analysed outside of holding times are indicated in the list above, and we note that there is a possibility that detection of the analyte may have been possible if the sample had been analysed within the correct holding time. It is also possible that higher concentrations than reported may

[16] ANZG 2018. Australian and New Zealand Guidelines for Fresh and Marine Water Quality. Australian and New Zealand Governments and Australian state and territory governments, Canberra ACT, Australia. Available at www.waterquality.gov.au/anz-guidelines.
[17] ANZG 2018; Toxicant default guideline values for sediment quality. Available at https://www.waterquality.gov.au/anz-guidelines/guideline-values/default/sediment-quality-toxicants.
[18] https://lris.scinfo.org.nz/layer/48470-pbc-predicted-background-soil-concentrations-new-zealand/.
[19] Landcare Research (November 2015) *Background soil concentrations of selected trace elements and organic contaminants in New Zealand*. Urban category values, Table 19.
[20] Consent No. RM17.198.01 V2. Appendix 1 Waste Acceptance Criteria.
[21] 11 - MfE, Module 2 - Hazardous Waste Guidelines: Landfill Waste Acceptance Criteria and Landfill Classification. Appendix A: Total concentration and leachability limits for Class A and Class B landfills.

have been detected in the other samples had analysis occurred within the holding times. This has been considered during our assessment of the laboratory analytical results, though we would note that this applies to a small proportion of the samples analysed and does not significantly adversely affect our interpretation.

4.4.3 Results summary

The full results table is provided in Appendix C along with laboratory transcripts. In summary the results indicate:

East of Moana Rua Road

Topsoil/surface sands – two samples analysed within the main Kettle Park area.

Results indicate no exceedances of background levels or sediment quality guidelines for metals, exceedances of landfill Class B screening criteria for arsenic, chromium, and zinc. No detection of asbestos. No TPH detected in the one sample tested.

Results from surface sampling of 29 samples in 2011 indicated that one sample contained zinc slightly exceeding background, and 8 samples slightly exceeded background for lead. In 2011, lead was detected in one sample also slightly exceeding Class A landfill screening criteria.

Capping – 9 samples analysed within the main Kettle Park area.

Metals/Other – concentrations of metals within the capping layer generally exceeded background levels and Class B landfill screening criteria. One sample contained an elevated lead concentration that exceeded Class A landfill screening criteria. No exceedances of recreational or commercial human health guideline values. One sample contained concentrations that exceeded default sediment quality guidelines for lead, mercury, and nickel.

SVOC/VOC – low level detection of some SVOC compounds.

Asbestos – Chrysotile free fibres were present at trace concentrations (<0.001 % w/w) in three samples, and present at 0.003 % w/w in one sample (i.e. one sample exceeded human health guideline values).

Landfill material – 84 samples analysed within the main Kettle Park area.

Metals – Concentrations of all metals generally exceeded background levels, sediment quality guidelines, and Class B landfill screening criteria. A limited number of arsenic results slightly exceeded the commercial human health guidelines (but not recreational). Concentrations of copper, lead, and zinc were generally elevated across all locations, with several very high reported concentrations. The majority of results for these three metals exceeded Burnside and Class A landfill screening criteria. Several samples contained copper concentrations that exceeded recreational and commercial human health guideline values, while more than half of the lead results recreational and commercial human health guideline values.

TCLP testing for leachability of metals was undertaken on 8 samples with high total metal concentrations. Leachable concentrations of cadmium, copper, lead, and zinc exceeded default ANZG 80% marine water quality guidelines, nickel exceeded 90% protection guideline values in some samples, while leachable concentrations of copper, lead, and zinc also exceeded Burnside and Class A landfill acceptance criteria in most of the samples tested.

Other – while there are no applicable guideline values for sulphur/sulphate, the concentrations in landfill samples ranged from 400 to 31,800 mg/kg (sulphur) and 11 to 3200 mg/kg (sulphate) respectively. Concentrations of total cyanide were below 5 mg/kg, with the exception of one sample which contained 26 mg/kg. Free cyanide concentrations were all below the laboratory reporting limit.

TPH – Laboratory results indicated generally low concentrations (though above the reporting limit) of light end (C7-C9) hydrocarbons were present, with one exceedance of the commercial human health guideline values for medium (C10-C14) hydrocarbons, and several exceedances of heavy end (C15-C36) hydrocarbon commercial human health guideline values. Concentrations of heavy end TPH were detected across the entire eastern Kettle Park area (i.e., no discernible pattern).

SVOC/VOC – PAH compounds were the primary type of SVOC detected, with concentrations of Benzo[a]pyrene (BaP) exceeding recreational and commercial human health guideline values in approximately 50% of samples tested.

The most common VOC compounds detected were those associated with heavy end fuels, oils, and coal tar (e.g., Isopropylbenzene, and 1,2,4-Trimethylbenzene), and the majority of these compounds have no guideline values. The highest concentrations were detected in those locations with high PID readings and hydrocarbon odour.

Asbestos – More than half of the samples tested contained asbestos fines/fibres at concentrations that exceeded the recreational/commercial human health guideline value, primarily chrysotile fibres, but crocidolite and amosite recorded at a small number of locations. At approximately 8 locations spread out over Kettle Park and at varying depths the concentration of asbestos fines exceeded 0.01 % w/w (trigger-level for Class B health and safety controls).

Impacted beach sand – five samples analysed within the main Kettle Park area.

Metals – Metals were generally below background, except for copper, lead, and zinc, which generally exceeded Class A and B landfill screening criteria (though not Burnside screening criteria), and also sediment quality guidelines.

Other analytes – TPH compounds were generally not detected, except for low level heavy end hydrocarbons in one sample. No samples were analysed for asbestos or SVOCs/VOCs.

Natural soils – 2 samples analysed within the main Kettle Park area.

Metals – concentrations of all metals were below background levels and no hydrocarbons were detected.

West of Moana Rua Road

Topsoil – no samples were analysed west of Moana Rua Road.

Capping – 4 samples were analysed.

Concentrations of metals were generally below background concentrations, with the exception of copper, lead, and zinc, which exceeded background, and Class B landfill screening criteria. Concentrations of copper (in one sample) and lead (in two samples) also exceeded Class A landfill screening criteria. PAH compounds were detected at concentrations below recreational human health guideline values, and no VOC compounds were detected. Asbestos was present in one sample as free fibres, below the human health and safety guidelines (0.001 % w/w).

Landfill material – 6 samples were analysed.

Concentrations of most metals were generally above background, sediment quality guidelines and Class B landfill screening criteria. Concentrations of copper, lead and zinc generally also exceeded Class A landfill and Burnside screening criteria. No exceedances of human health guidelines for metals were detected west of Moana Rua Road. Low level concentrations of heavy end hydrocarbons were recorded in three samples. Concentrations of most SVOC/VOCs were low, with the exception of PAHs, of which BaP exceeded recreational and commercial human health guideline values in three samples. Asbestos was not detected in most samples, with the exception detection of chrysotile fibres below human health guideline values in one sample.

Impacted beach sand – no samples were analysed.

Natural soil – 1 sample analysed.

Concentrations of metals were analysed, with all results below background and all guideline values.

5 Discussion

5.1 Nature and extent of landfill material

The general understanding of the Kettle Park landfill prior to this investigation suggested that some landfill material was present within a limited part of Kettle Park near Marlow Park, and that fill materials were identified along the length of the dunes between Marlow Park in the east and the esplanade in the west.

Borehole information now indicates the presence of landfill material throughout the Kettle Park sports fields, and additional pockets of landfill within the lower and upper sports fields to the west of Moana Rua Road. Borehole logs did not identify the presence of landfill material within Marlow Park, or in the western-most sports field near the Victoria Road tennis courts.

The in-ground layers across the site indicate the presence of topsoil and wind-blown sand which appear to contain minimal contaminants (some metals slightly above background), a capping layer containing a moderate clay component and minor to moderate fragments of demolition material. The landfill material predominantly comprised industrial types of waste including gasworks materials, ash, forge waste, and demolition materials within a silty/sandy matrix that in places also contained gravels. Contaminants (for example lead, zinc, TPH, and PAH compounds) within the landfill material were present at elevated concentrations that exceeded human health standards. Asbestos is also prevalent within the landfill material and to a lesser extent in the capping layer, and should be assumed to potentially be present anywhere these materials are found.

The deepest sections of landfill material were identified within the north-eastern part of Kettle Park, where waste was encountered at 7 m bgl (the limit of the drilling equipment) meaning that landfill material may extend deeper than 7 m below ground level in the north-east of Kettle Park.

Landfill material became thinner towards the dunes, and towards Moana Rua Road (between the road and the Dunedin Ice Stadium). However, the landfill material immediately to the west of Moana Rua Road is likely the western extent of the Kettle Park landfill, and may be present beneath Moana Rua Road. The westernmost landfill material identified close to the dune crest may consist of material placed along the dunes to stabilise and create a platform for access pathways constructed after the main Kettle Park landfill was capped and vegetated.

With the suggestion of the former natural environment containing a lagoon in at least part of the site prior to the development of the beach front area, and with anecdotal information of possible sand-quarrying activities, it is reasonable to assume that in the deepest parts of Kettle Park the landfill material could be more than 8 m thick (assuming at least one metre more than observations).

The thickness of landfill material in the boreholes closest to the dunes in Kettle Park (east of Moana Rua Road) ranged from 3 m to 5 m. There is approximately 20 m horizontal distance between these boreholes and the beach proper. We have assumed that the landfill will thin further beneath the dunes, however, given the small horizontal distance to the dune face, and coupled with the observations of landfill material in the dune face from previous investigations there is a high chance that landfill material is being exposed in the dunes. With the indication from previous investigations that there may have been additional material placed at the dune crest following the cessation of the primary filling phase, it seems likely that are multiple layers of waste within the dune system, with an unknown volume of sand between the waste layers and the dune face. As the over-steepened

dune face leads to mass wasting of material down the seaward dune slope (particularly during storm events) the surficial layers of the dune face may include waste of varying age and type mixed with dune and wind-blown sand. We also note that any landfill material exposed in the dune face will have been subject to weathering which may lead to some attenuation of contaminants (particularly the loss of volatile compounds, and the wind-blown removal of fine particulates).

5.2 Environmental and human health implications

5.2.1 Human health

The discharge of landfill material onto the beach and present within the landfill poses a potential risk to human health through contact with any material present at the surface, and poses a risk to construction workers if landfill material requires excavation. The laboratory results gathered through this investigation have been compared to recreational and commercial (outdoor worker) human health guidelines.

The laboratory results indicate the level of contaminants within the capping layer did not exceed recreational or commercial human health guidelines, although the presence of asbestos was noted which would require implementation of health and safety procedures to control. However, the concentrations of several types of contaminants present in landfill materials did exceed human health guidelines. In particular, copper and lead, heavy end hydrocarbons, PAHs, and asbestos.

Intermittent and short-term exposure to landfill waste as it is exposed on the dune face is unlikely to present a significant risk to the public. However, if significant volumes of the landfill waste is exposed, then the risk to users of the beach, particularly from asbestos, will intuitively be greater. The same low risk applies to workers currently involved in the collection of waste materials as they accumulate on the beach, versus the potential for greater exposure during bulk disturbance of the landfill during remediation. Contamination-related health and safety controls would be required to protect workers involved in disturbance of the landfill - based on the concentrations detected, as a minimum, asbestos -specific health and safety controls commensurate with those for Class B Licensed Asbestos Works would be required.

A further consideration is the unsightly nature of landfill material on a beach and the effect that discharges of waste onto the beach may have on amenity value. Whilst small volumes of waste (e.g. small areas that are easy for recreational users to avoid) are unlikely to pose a significant health risk to most recreational users it detracts from the natural and recreational values of the beach environment.

The implications of this for human health is to consider management and monitoring options that limit the discharge of landfill material onto the beach, and potentially to also install signs or walkways that guide recreational users away from the dune crest and base of the dune slope where exposure to landfill material may be higher.

5.2.2 Environmental receptors

The discharge of landfill material into the beach and marine environment poses a perceived risk to the receiving environment and constitutes an ongoing contaminant discharge.

The laboratory results gathered through this investigation have been compared to default guideline values for environmental receptors to provide a screening-level assessment of potential effects on environmental receptors. While this preliminary assessment identifies that there are contaminants present in both capping material and in landfill material at concentrations that exceed default environmental guidelines, this does not necessarily mean that a significant adverse effect on the coastal marine environment is currently present from the intermittent discharge of materials onto the beach. This is because the coastal marine environment in the St Kilda/St Clair area is an active,

high-energy system and further assessment of coastal processes will be needed to inform an assessment of whether an effect is occurring from the discharge of material from the Kettle Park landfill. Similarly, further assessment would be required to understand the potential adverse effects that could result from a large-scale discharge of landfill waste into the marine environment.

We note that the presence of the clay-containing capping material over a significant portion of the landfill area, as well as the observations of minimal moisture through most of the borehole profiles indicates that infiltration of surface water through the landfill material appears to be minimal. While there is likely to be periodic interaction of the deepest sections of waste with groundwater (e.g. due to tidal fluctuations), the potential for leachate generation from this portion only of the waste profile is likely to be relatively low.

While no groundwater samples were able to be collected and tested, the leachable concentrations detected within samples with elevated total metal concentrations indicated that ANZG 80% marine water quality guidelines were exceeded for cadmium, copper, lead, and zinc, with nickel exceeding 90% protection guideline values in some samples. Leachable concentrations of copper, lead and zinc were particularly high, though it is noted that this was based on the TCLP method, which simulates leaching in an acidic environment and is likely to overestimate concentrations in leachate compared to what may be being generated at the site (in less acidic conditions). Nevertheless, the magnitude of copper, lead and zinc detected in the landfill materials indicates that concentrations in leachate could easily exceed ANZG marine water quality values.

Further information regarding the fluctuation in groundwater levels (through the installation of monitoring wells close to the dunes, and potentially also closer to the sea) and the relative level with landfill material, as well as modelling the discharge and potential dilution effects under a range of scenarios within the coastal marine system would be required to inform a more detailed assessment of risk to the marine environment from the generation and discharge of landfill leachate.

5.2.3 Offsite disposal implications

One of the options being considered by DCC is the removal and offsite disposal of all or part of the landfill material from Kettle Park.

The analytical results have been compared to soil background concentrations to consider suitability of any layers/areas for disposal to cleanfill, to MfE Class B and Class A managed fill/landfill facilities, and to Burnside landfill screening criteria and acceptance criteria based on leaching limits. Burnside landfill is likely to be the closest operational landfill at the time that material from the site may require disposal. We note that MfE Class A and B landfill screening criteria have been included for assessment general options for landfill facilities outside of the region.

While minimal sampling of the topsoil was undertaken the available results indicate that it may be suitable for disposal as cleanfill if offsite disposal is required. However, further testing would likely be required depending on the volumes of material involved, and at the discretion of the cleanfill operator.

While limited sampling of the capping material was undertaken, the layer includes concentrations of contaminants (particularly asbestos) that would not be suitable for disposal as cleanfill. Capping material may be suitable for disposal to Burnside or a Class A landfill facility without pre-treatment, however, as only limited testing within the capping layer was undertaken it is likely that additional testing would be required to inform disposal options if these are required.

The concentrations of some contaminants within the landfill layer both within the main Kettle Park area and in the two landfill pockets to the west of Moana Rua Road exceeded all disposal screening criteria. In particular, total concentrations of copper, lead and zinc exceeded Burnside and Class A screening criteria in most tested samples. Heavy-end hydrocarbons also exceeded Burnside

screening criteria in several samples. Leachability testing of metals indicated that the high total concentrations of copper, lead and zinc were related to concentrations of the same metals in leachate that were well above Class A and Burnside acceptance criteria. These results indicate that it is likely that landfill materials would require some form of pre-treatment to reduce the leachability of metals, and possibly to stabilise the heavy-end hydrocarbons before the material would be considered acceptable at a Class A landfill facility or Burnside landfill. The pre-treatment options would need to consider the management of asbestos in soil during the treatment process.

5.2.3.1 Volume estimate

The inferred lateral and vertical extents of contaminated material encountered during this investigation allow a high-order estimate of the volume of waste present at Kettle Park to be calculated. We note that the following assumptions have been made for this estimation:

- The volume calculation includes the capping, landfill, and impacted beach sand layers, but excludes topsoil/wind-blown surface sands. This is because the three contaminated layers are most likely to require disposal to a Class A landfill facility, with the landfill material likely also requiring pre-treatment;
- We have assumed lateral extents are more-or-less bound by topographical boundaries (e.g. changes in slope), unless borehole logs indicate otherwise. Areas used for this calculation are illustrated in Figures C1-C3, Appendix C; and
- The volumes provided below includes the assumption that the layers have the same vertical extent (thickness) across the entire area. This assumption has been made to average out the changes in thickness, and to provide a minimum volume given the uncertainty and variability in layer depths.

Capping layer:

East of Moana Rua Road – capping estimated to be present overran area approximately 38,300 m^2, with an average thickness of 1.25 m = a minimum volume of 47,900 m^3 (rounded to nearest 100 m^3).

West of Moana Rua Road – capping estimated to be present over an area approximately 920 m^2, with an average thickness of 0.4 m = a minimum volume of 370 m^3 (rounded to nearest 10 m^3).

Capping layer estimated minimum volume ~50,000 m^3.

Landfill layer:

East of Moana Rua Road – landfill material estimated to be present within an area approximately 48,000 m^2, with an average thickness of 5 m = a minimum volume of 240,000 m^3 (rounded to nearest 1000 m^3).

West of Moana Rua Road – landfill material estimated to be present within an area of approximately 3,000 m^2, with an average thickness of 1.5 m = a minimum volume of 4,500 m^3 (rounded to the nearest 100 m^3).

Landfill layer estimated minimum volume ~245,000 m^3.

Impacted beach sands:

East of Moana Rua Road – the extent of impacted material is not well understood as the vertical extent of impacted sand could not be assessed due to the maximum depth of drilling. Where impacted material was encountered it ranged from 0.1 m to 1.2 m thick. Estimated to be present within an area of approximately 48,000 m^2, with an average thickness of 0.5 m = a minimum volume of 24,000 m^3 (rounded to the nearest 1000 m^3).

West of Moana Rua Road – impacted material estimated to be present within an area of approximately 500 m^2 (only recorded in BH32), with an average thickness of 0.2 m = a minimum volume of 100 m^3 (rounded to the nearest 10 m^3).

Impacted beach sands estimated minimum volume ~24,000 m^3.

6 Uncertainties

Whilst this investigation has increased our understanding of the nature and extent of the landfill, significant uncertainties remain which could impact on the level of environmental/human health risk that the landfill represents, and the volume of landfill material present. The most significant uncertainties are:

- The potential for higher concentrations of contaminants to exist than identified to date, noting that due to the current sample spacing (approximately 25 m), hotspots of up to 30 m diameter are possible;
- Uncertainty remains regarding the presence of waste disposed of in the landfill during the disestablishment of the army camp to the north of Kettle Park during the 1950s/1960s, which may have health and safety implications for excavation of the landfill material (for example potential for munitions, and potential for unexploded ordinance);
- The northern extent of landfill waste was not confirmed. Whilst it is assumed to be bound by the 7 m change in elevation north of Kettle Park, the potential for waste to extend further north than the steep slope that forms the northern edge of the sports fields cannot be discounted;
- The presence of substantial thicknesses of waste in the most seaward boreholes indicates that waste is likely to extend beneath the dunes and is being exposed in the dune face. In other words, the waste exposed in the dune face is not solely dune crest capping material that was placed after the sports fields were formed;
- The presence of waste to the west of Moana Rua Road indicates that waste may have historically (and may even currently) extend below Moana Rua Road;
- The potential for waste (and for capping material) to be present outside of the investigated area in the western fields cannot be discounted; and
- The potential for contaminated leachate to be generated, principally by tidally fluctuating groundwater is uncertain, but is assumed to be occurring to some extent. The actual effect that the discharge of leachate (if it is occurring) may have on the marine environment is uncertain given that the frequency, extent, and duration of leachate discharge is unknown, and the degree to which attenuation through dilution (within the sea) may be occurring.

7 Summary and conclusions

7.1 Landfill extent and composition

In summary, the investigation has identified the presence of landfill waste over an area approximately 48,000 m^2 to the east of Moana Rua Road, with the edge of the waste extending to the west of Moana Rua Road (and potentially beneath Moana Rua Road). An additional area of waste was identified behind the dune crest possibly relating to post-landfilling placement of waste to stabilise the dune crest and create access/pathways – with the waste area identified west of Moana Rua Road covering approximately 3000 m^2.

In general, the types of waste present indicate successive filling of the area over a period of approximately 3 decades (<1942 to <1967) primarily comprising industrial waste with various pockets of gasworks, forge, and demolition types of waste heterogeneously mixed throughout.

There does not appear to be a coherent pattern that would indicate some areas of waste contain lower concentrations of contaminants than others that would allow for practical methods of waste segregation.

Landfill material extended to at least 7 m bgl in the north-eastern part of Kettle Park (likely somewhat deeper due to drilling limitations). Landfill is overlain by a spatially inconsistent 'capping layer' beneath the current topsoil/turf layer.

Minimum volume estimates of the three contaminated ground layers were:

- Capping material = 50,000 m^3;
- Landfill material = 245,000 m^3; and
- Impacted beach sands = 24,000 m^3.

7.2 Disposal considerations

Contaminant concentrations present in the capping and impacted beach sands would require disposal to a Class A landfill facility, while landfill material would require pre-treatment prior to disposal at a Class A landfill facility.

7.3 Managing health risks

Contaminants including asbestos have been detected in the landfill and capping material at concentrations that present a potential risk to human health. However, these materials are typically covered by a topsoil/turf layer in which asbestos was not detected and in which other contaminants were detected below levels that are likely to present a risk to human health. This means that users of the sports field are unlikely to be exposed to contaminants at concentrations that would present a risk to health as the topsoil and surface beach sands currently provide a physical barrier.

If the landfill material requires disturbance (e.g. as part of the offsite disposal of material), health and safety controls to protect workers and the public would need to be implemented to manage exposure to contaminants in the capping, landfill, and impact beach sand materials Such controls would include asbestos-specific health and safety controls at least commensurate with those for Class B licensed asbestos works.

While exposure to contaminants beneath the sports fields is unlikely, there remains some potential for public exposure to contamination through the discharge of small volumes of material at the seaward dune face. The risk to the public due to exposure to contaminants from the eroding dune face has previously been assessed as low due to the combination of likely low frequency and duration of exposure, and the measures that DCC is taking to further limit exposure (signage and periodic material removal from the beach). We note that a more significant potential risk to human health could occur if a large volume of landfill material was exposed.

7.4 Risks to environmental receptors

While elevated concentrations of contaminants, above environmental assessment criteria were detected, further work would be required to assess the actual effect to ecological systems in the marine environment from the current low discharge of landfill material and leachate. The risk of more significant adverse environmental effects exists in the event of a large discharge of landfill material into the marine environment.

8 Applicability

This report has been prepared for the exclusive use of our client Dunedin City Council, with respect to the particular brief given to us and it may not be relied upon in other contexts or for any other purpose, or by any person other than our client, without our prior written agreement.

Recommendations and opinions in this report are based on data from discrete investigation locations. The nature and continuity of subsoil away from these locations are inferred but it must be appreciated that actual conditions could vary from the assumed model.

We understand and agree that this report will be used by Dunedin City Council in undertaking its regulatory functions in connection with the management of the Kettle Park site.

Tonkin & Taylor Ltd
Environmental and Engineering Consultants

Report prepared by:	Authorised for Tonkin & Taylor Ltd by:
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Environmental Scientist	Project Director

Technical reviewer – Paul Walker (Technical Director – Contaminated Land)

KPS
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Appendix A Historical aerial imagery

Year	Key observations
1942	An area of disturbed ground can be observed behind the sand dunes, presumed to be the location of quarrying/landfilling. Ground disturbance is also visible in smaller zones with small road/path access within the site in the eastern portion, including to the east of Moana Rua Road. A bowling green is present to the north of the northern boundary of the sports fields west of Moana Rua Road, an iteration of which is still present today. An area that appears to be either a quarry or a pond is present directly north of Kettle Park and adjacent to Moana Rua Road. A large warehouse building is present along the western side of Marlow Park. A tree-belt separates the Kettle Park filling area from the area of ground disturbance to the north (adjacent to Victoria Road).
1947	The area of disturbed ground within Kettle Park has expanded. The area north of the tree-belt has been developed with many huts and small buildings, as well as a vegetated central area.
1967	The Kettle Park sports fields have been developed behind the sand dunes, bisected by Moana Rua Road. The former Moana Rua/Warrington surf club building is located at the seaward end of Moana Rua Road. A small carpark is located adjacent to Moana Rua Road, opposite the surf club building. A small building which may have been the Dunedin Rugby Football Club clubroom is present on the western side of Moana Rua Road (same size and shape as an old looking building still present). Where there was a quarry or pond in the earlier image, a large area containing tennis courts is now present. John Wilson Ocean Drive has been extended to follow the coast around to the east, some small buildings are present on the Marlow Park site, and where there was a large warehouse building a smaller structure is present. To the north of Kettle Park the tree-belt remains and the buildings of the Victoria Flats are now visible.
1970	A small carpark is located outside the surf club building. The carpark observed in the 1967 photograph has been extended to provide vehicle parking/access along the dune crest, approximately 250 m east of Moana Rua Road. The Dunedin Ice Stadium building has been constructed adjacent to the tennis courts to the north of the site, and there are two additional buildings to the Dunedin Rugby Football Club. Trains and a station building are present to the north-east on John Wilson Ocean Drive, though it is unclear how much track has been constructed along the northern boundary of Kettle Park.
1975	The vehicle access observed in the 1970 photograph no longer appears to be in use. Stockpiles are located along the dune crest near the Marlow Park carpark.
1982	The playing fields have been extended seaward near the Marlow Park carpark, in the area of the stockpiles (1975 photograph). A carpark/accessway has been established west of the surf club building, extending to approximately 150 m west of Moana Rua Road. The building that is now the Dunedin Ice Stadium has been extended to the south and the Kettle Park sports fields have been re-contoured around this building. The tree-belt to the north of Kettle Park has been removed.
1985	A walking path has been extended from the end of the westward carpark/accessway. The track linking the surf club hut to Kettle Park Road incorporated into the Kettle Park sports fields. The train track along the northern boundary of Kettle Park extends to a second station building/shed to the east of the Dunedin Ice Stadium.
2000	The former western accessway (1982 photograph) is no longer visible.
2005	The surf club building has been demolished.

1942 Historical aerial photograph (Sourced from http://retrolens.nz and licensed by LINZ CC-BY 3.0).

1947 Historical aerial photograph (SN399-52—-54 Sourced from http://retrolens.nz and licensed by LINZ CC-BY 3.0).

1967 Historical aerial photograph showing the surf club building/car park at the end of Moana Rua (red arrow) (#1876_5170_21 Sourced from http://retrolens.nz and licensed by LINZ CC-BY 3.0).

1970 Historical aerial photograph showing parking/accessway east of the surf club (red arrows) (#3236_4347_20 Sourced from http://retrolens.nz and licensed by LINZ CC-BY 3.0).

1975 Historical aerial photograph showing general area of stockpiling (red arrows) (#3833_E_9 Sourced from http://retrolens.nz and licensed by LINZ CC-BY 3.0).

1982 Historical aerial photograph showing playing field expansion (red arrow) and carpark/accessways west of the surf club (yellow arrow) (#8040_H_10 Sourced from http://retrolens.nz and licensed by LINZ CC-BY 3.0).

1985 Historical aerial photograph showing no substantial changes of the Kettle Park sports fields (#8479_F_13 Sourced from http://retrolens.nz and licensed by LINZ CC-BY 3.0).

1990 Historical aerial photograph (#144_6_4 Sourced from www.flickr.com/photos/dccgis/albums/72157667238149071 © DCC/LINZ and licensed by LINZ CC-BY 3.0).

2000 Historical aerial photograph with the westward parking/accessway/walking path no longer visible (#9937_D_8 Sourced from http://retrolens.nz and licensed by LINZ CC-BY 3.0).

2005 Historical aerial photograph with the surf club building no longer visible (Sourced from Google Earth ©2020 Maxar Technologies/Google Earth, CC-BY 3.0).

Appendix B Field photographs

- **Selected field photographs**

Photograph B1: from the terminus of Kettle Park Road, looking north-west over Marlow Park (taken 1.11.22).

Photograph B2: Kettle Park, looking west. Beach dunes visible along the southern edge of the park left of frame, Dunedin Ice Stadium and Badminton Centre visible right of frame (taken 1.11.22).

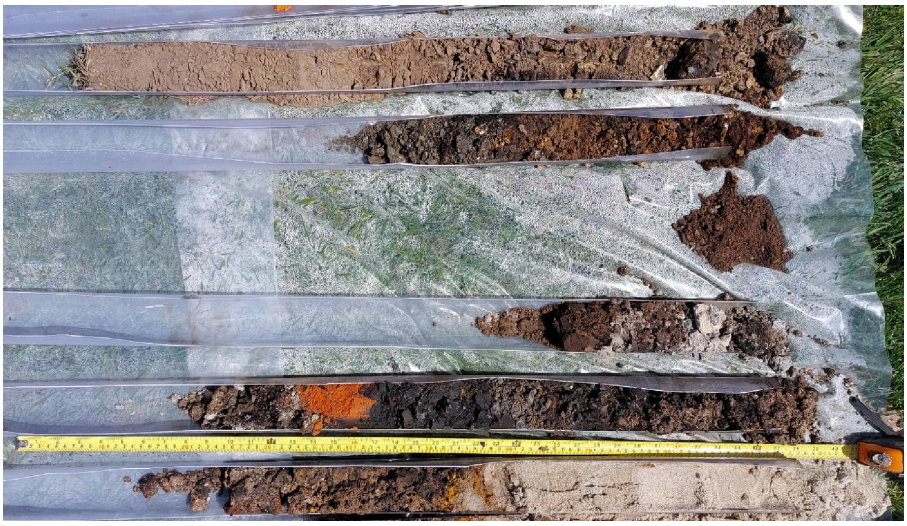
Photograph B3: BH05 borehole location showing site set-up, with Moana Rua Road behind (taken 2.11.22).

Photograph B4: Sports fields west of Moana Rua Road, looking south-west. Sand dunes visible centre-left of frame, change in elevation between the two fields centre-right (taken 14.11.22).

Photograph B5: Dunedin Ice Stadium cooling system overflow eroding bank materials below the railway track at the northern boundary of Kettle Park, landfill materials such as brick, glass, concrete, timber daylighting (taken 3.11.22).

Photograph B6: Landfill materials such as brick, glass, concrete, timber, ash/charcoal daylighting among sleepers within the railway track at the northern boundary of Kettle Park (taken 3.11.22).

Photographs B7 (top) and B8 (bottom): Landfill materials such as brick, glass, concrete, timber, ash/charcoal and suspected ACM (shown in B8) daylighting on the bank south of the railway track, at the northern boundary of Kettle Park (taken 3.11.22).

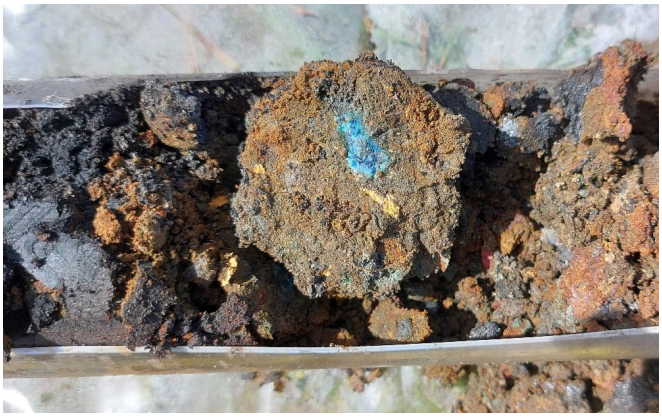


Photograph B9: Example of retrieved core, BH21. Ground level at top left, bottom of borehole at bottom right (taken 8.11.22).

Photograph B10: Example of retrieved core, BH48. Ground level at top left, 4 m bgl at bottom right (taken 18.11.22).

Photograph B11 (top): Example of retrieved core, BH54. Ground level at top left, bottom of borehole at bottom right (taken 24.11.22).

Photograph B12 (left): Suspected ACM from 1.9 m bgl at BH54.



Photograph B13: Suspected blue billy at BH04 (taken 1.11.22).

Photograph B14: BH30, bright green patches in soil with coke and timber (taken 14.11.22).

Photographs B15 (left) and B16 (right): Metallic forge/smelter waste at BH48 (left, taken 18.11.22) and BH38 (right taken 16.11.22).

Photographs B17 (left) and B18 (right): example of reinstatement on completion of drilling, BH03 (taken 1.11.22).

Appendix C Site plans and cross sections

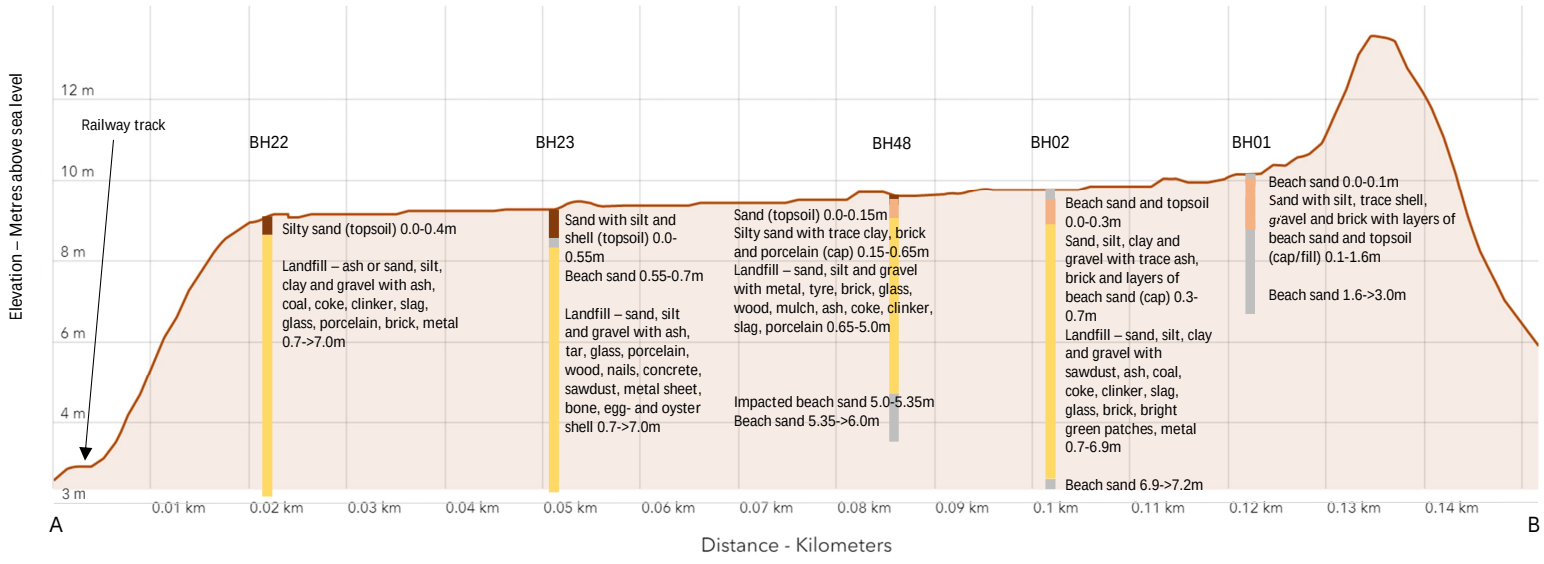
- **Site plans**
- **Cross sections**


BH22
BH34
BH23
BH33
BH21
BH03
BH57
BH53
KETTLE PARK
BH54
BH48
BH55
BH24
BH56
KETTLE PARK ROAD
BH15
BH02
BH39
BH04
BH01
BH47
BH18
BH52
BH17
BH25
MARLOW PARK
LEGEND
BH01
Investigation location
Notes:
1. Aerial image sourced from LINZ Data Service under CC-BY 4.0
Tonkin+Taylor
www.tonkintaylor.co.nz
DRAWN KPS NOV 22
DRAFTING CHECKED
APPROVED
FILE: 27226.007_Site plan
APPROX. SCALE (AT A3 SIZE) NTS
PROJECT No. 27226.007
DUNEDIN CITY COUNCIL
OCEAN BEACH DUNES RESTORATION - CONTAM
KETTLE PARK AND MARLOW PARK
Investigation locations
FIG. No. Figure 1
REV. 1

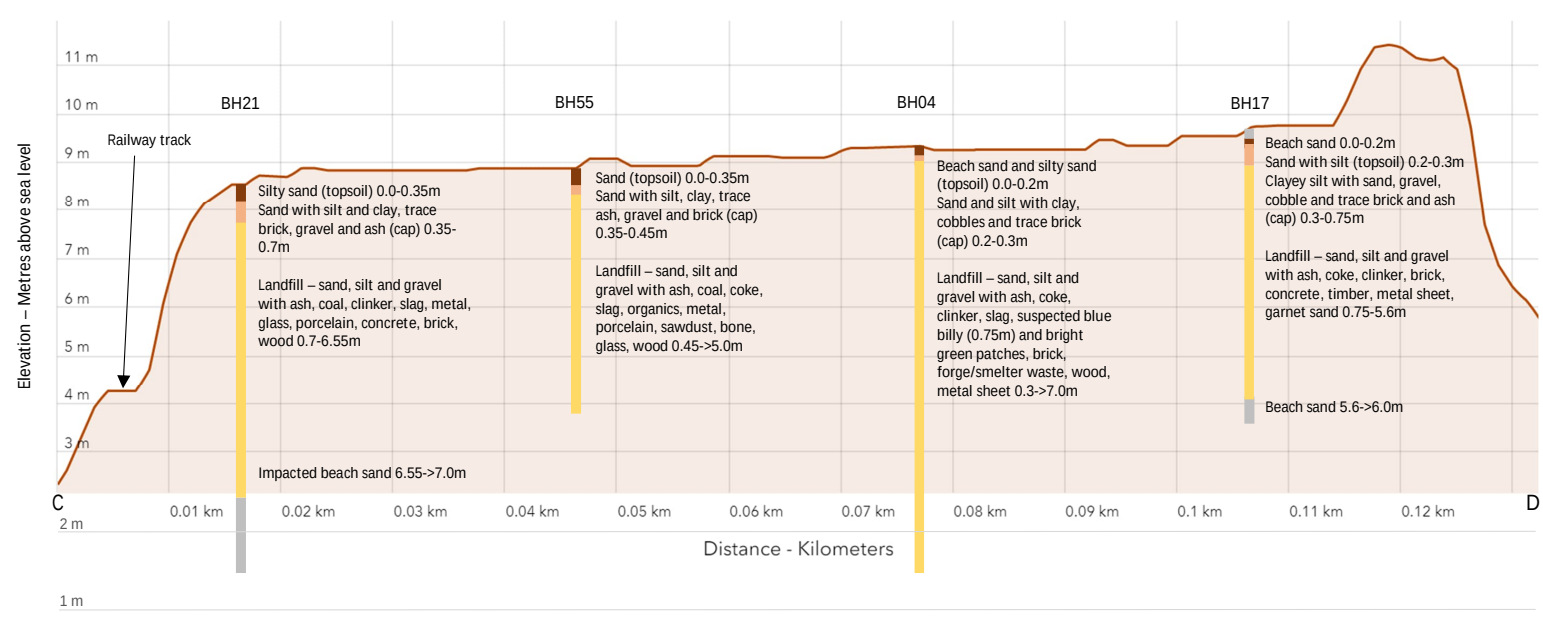

KETTLE PARK
Mosgiel Rural Rd
BH50
BH06
BH19
BH07
BH51
BH14
BH30
BH11
BH13
BH49
BH27
BH31
BH05
BH29
BH38
BH46
BH12
BH20
BH26
BH16
BH09
BH08
BH10
LEGEND
BH01
Investigation location
Notes:
1. Aerial image sourced from LINZ Data Service under CC-BY 4.0
Tonkin+Taylor
www.tonkintaylor.co.nz
DRAWN KPS NOV 22
DRAFTING CHECKED
APPROVED
FILE: 27226.007_Site plan
APPROX. SCALE (AT A3 SIZE) NTS
PROJECT No. 27226.007
DUNEDIN CITY COUNCIL
OCEAN BEACH DUNES RESTORATION - CONTAM
KETTLE PARK
Investigation locations
FIG. No. Figure 2
REV. 1


VICTORIA ROAD
MOANA RUA ROAD
KETTLE PARK
BH32
BH35
BH42
BH36
BH59
BH40
BH28
BH58
BH37
BH41
BH43
BH45
BH44
BH60
LEGEND
BH01
Investigation location
Notes:
1. Aerial image sourced from LINZ Data Service under CC-BY 4.0
Tonkin+Taylor
www.tonkintaylor.co.nz
DRAWN KPS NOV 22
DRAFTING CHECKED
APPROVED
FILE: 27226.007_Site plan
APPROX. SCALE (AT A3 SIZE) NTS
PROJECT No. 27226.007
DUNEDIN CITY COUNCIL
OCEAN BEACH DUNES RESTORATION - CONTAM
KETTLE PARK – WESTERN FIELDS
Investigation locations
FIG. No. Figure 3
REV. 1

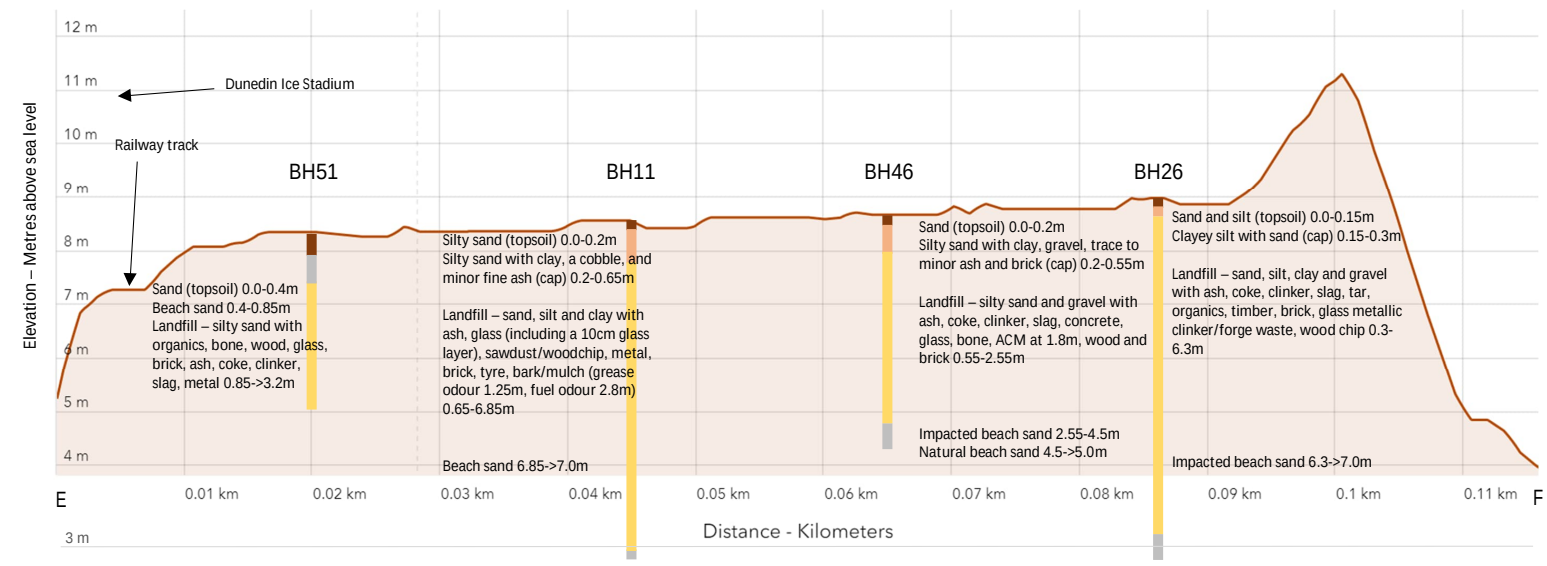
Cross Section A to B



Cross Section C to D

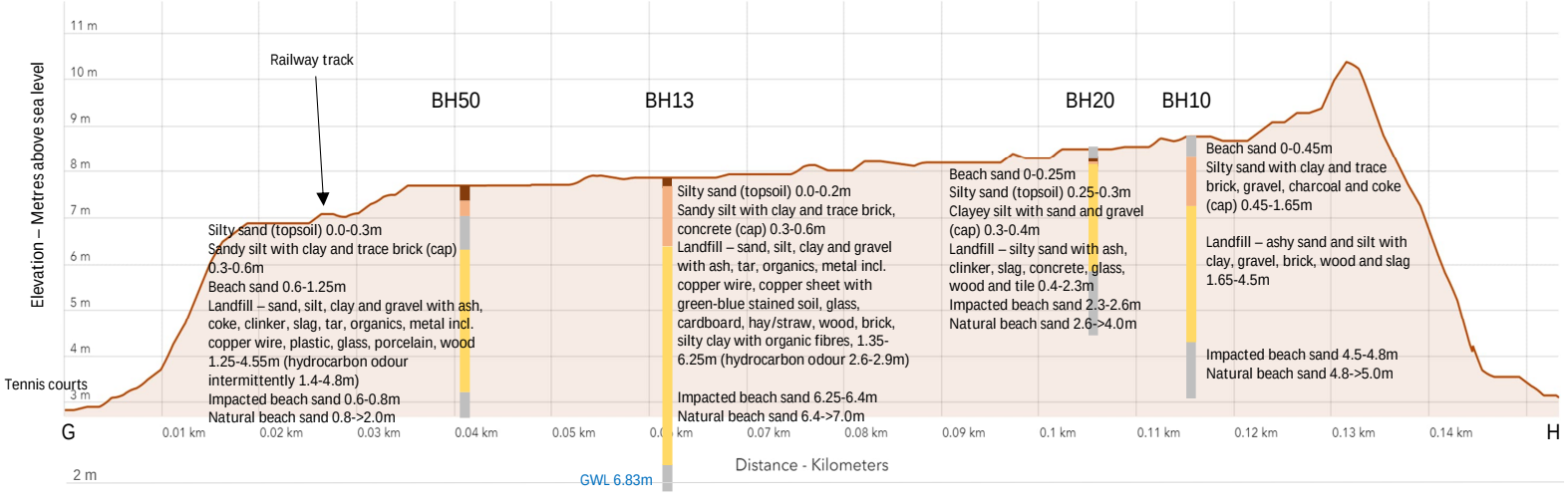


Cross Section E to F

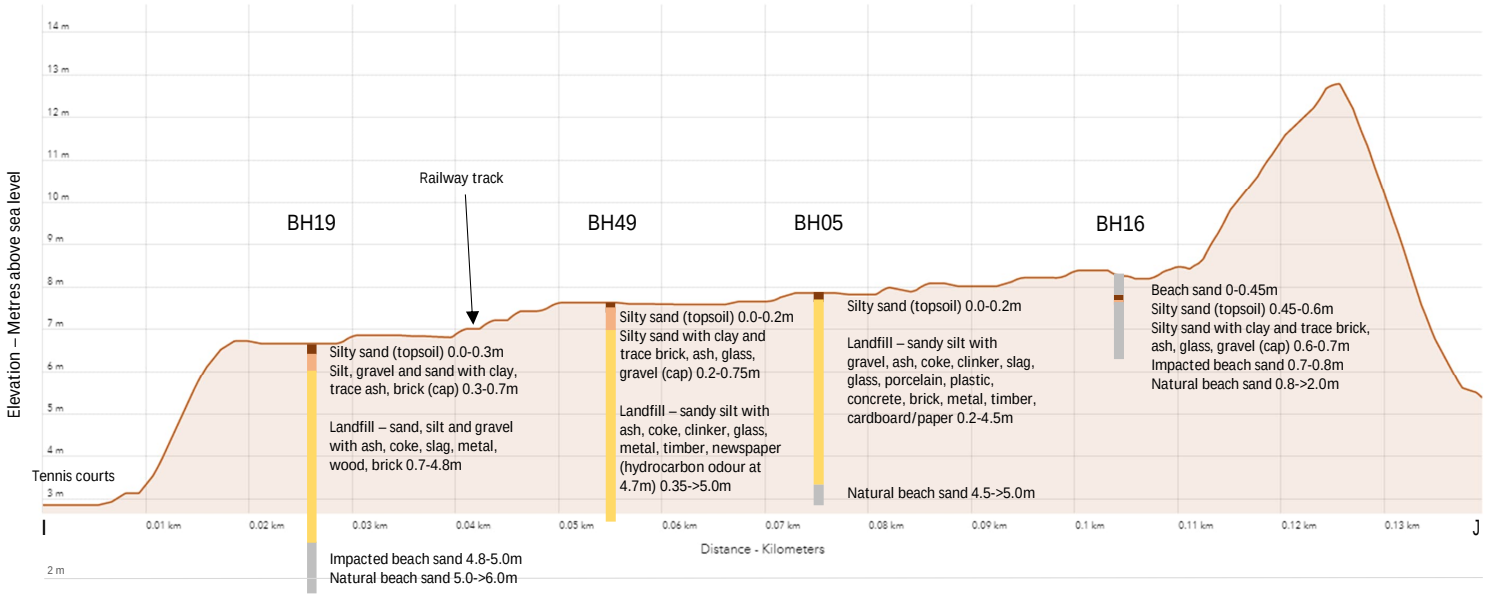


Key
- Beach sand or impacted beach sand
- Topsoil
- Cap
- Landfill

Cross Section G to H

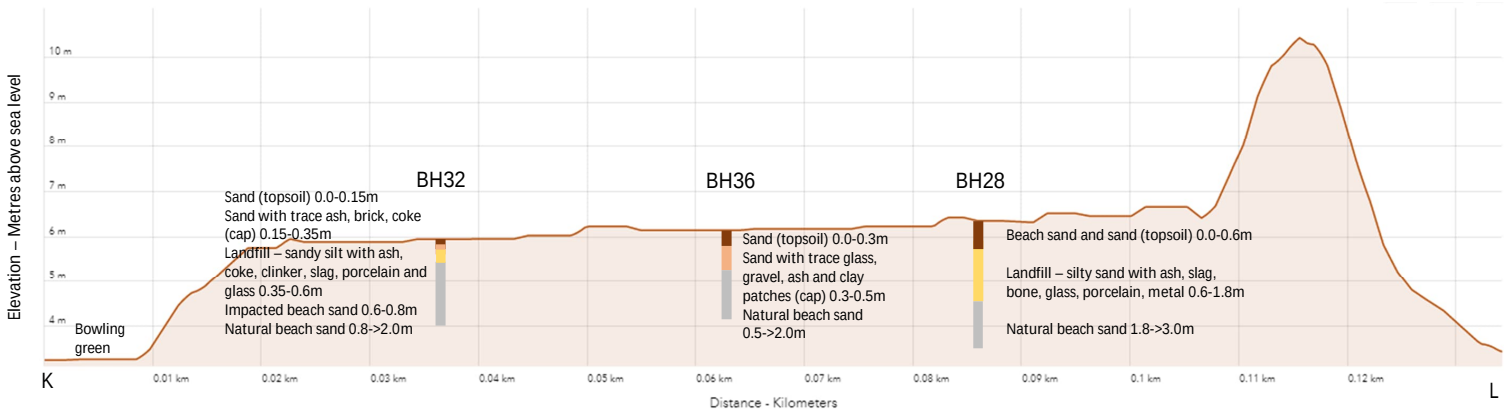


Cross Section I to J

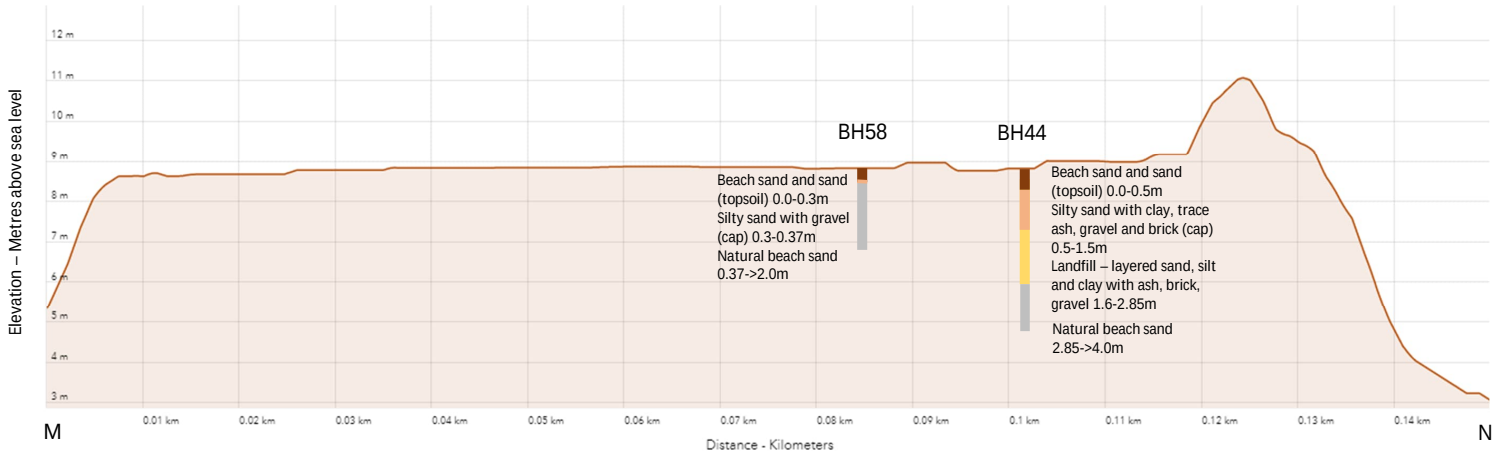


Key
- Beach sand or impacted beach sand
- Topsoil
- Cap
- Landfill

Cross Section K to L



Cross Section M to N



Key
- Beach sand or impacted beach sand
- Topsoil
- Cap
- Landfill

Appendix D Borehole logs

Borehole Logs

BH01

Depth (m bgl)	Soil description	Layer
0.00	Fine to medium sand, light brownish grey. Loosely packed, dry to moist.	Beach sand
0.10	Fine to medium sand with some silt, trace oyster shell, gravel and brick; brown. Loosely packed, moist. Contains layers of beach sand and topsoil 0.45-1.0m.	Fill/cap
1.60	Fine to medium sand, light brownish grey. Loosely packed, moist.	Beach sand
3.00	End of hole (target depth). Groundwater not encountered.	

BH02

Depth (m bgl)	Soil description	Layer
0.00	Fine to medium sand, light brownish grey. Loosely packed, dry to moist. 0.1m some silt.	Beach sand
0.30	Sandy silt/silty sand with trace gravel, brick and/or ash/charcoal; brown. Soft to firm/loosely packed, moist. Contains a layer of beach sand (10cm thick). 0.6m brown mottled black. 0.66m silty clay with ash; yellowish brown with orange and black smears. Firm, moist.	Cap
0.70	Soft, loose, compressible material - may be sawdust? Reddish brown and orange. Contains layers with fine to medium angular gravel, slag, coal/charcoal; pieces of fibrous cement sheet at 1.0m; metal sheet and brick; ash; sandy silt with gravel, ash and patches of yellowish fine to coarse quartz sand with silt/clay; ash and coke with trace clinker/slag; clayey silt with ash and coke, trace gravel, brown and black; occasional cobbles, shell and glass; silty ash with clay, ash and coke patches, orange rust staining layers or patches; patchy clay/silt with gravel, ash, clinker, coke and metal shards, dark brown to grey and orange-brown. 4.3m wet. 4.4m silty ash with coke, clinker, gravel and brick, black with a bright green patch. Loosley packed, saturated. Trace glass and trace bright green patches 4.7-4.85m. Contains layers of silty sand with minor gravel, cream to reddish orange; orange-brown fine to coarse sand; slate in layers; sandy gravel with slag, dark grey, cream and reddish brown (crunchy) with a bright green patch at 5.85m.	Landfill
6.90	Fine to medium sand, light brownish grey. Loosely packed, moist.	Beach sand
7.20	End of hole (maximum depth). Groundwater not encountered.	

BH03

Depth (m bgl)	Soil description	Layer
0.00	Silty sand topsoil, brown.	Topsoil
0.33	Coal/coke/ash with layers of patchy coloured clayey silt, yellowish brown and brown with orange and dark grey mottle; dark brown silty sand; thin layers fibrous organic silt; beach sand layers (15cm thick). Trace rusted metal pieces, glass, oyster shell, tile/porcelain in places. 1.8m ash and coke with silt/sand, trace glass and brick; black, wet. 2.2m buried grass or wood shavings/paper or cardboard strips (decomposing), followed by pale bluish grey silt, moist. 2.4m silty sand with some organics and trace brick; dark brown becoming black. Loosely packed, wet. trace slate from 2.6m. 2.9m large piece brick with glass and coke/clinker, a nail. 3.0m sand and silt with ash, coke, clinker, brick, concrete, fibrous organics.	Landfill
4.00	End of hole (driller error - casing advanced ahead of barrel). Groundwater not encountered.	

BH04

Depth (m bgl)	Soil description	Layer
0.00	Silty sand topsoil (brown) and windblown beach sand; brown and light greyish brown. Loosely packed, dry to moist.	Topsoil
0.20	Sand and silt with cobbles and brick, patches cream/grey clayey silt; dark brown.	Cap
0.30	Contains ash/coke/clinker. 0.75m contains a small piece blue billy and small bright green patches. Trace brick and shell. Becoming clayey by 1.0m. 1.28m ash with coke and clinker/forge waste, very crunchy and shiny. Layers of sand/silt (up to 0.15m thick), becomes mixed with sand and silt in layers with brick, mudstone gravel, oyster shell and wood. 4.6m moist to wet. 4.7m blackened wood followed by silty sand with minor to some gravel (subrounded but crunchy/rough texture), trace nail and clay pipe; orange-brown. Loose, moist. 5.0-7.0m Poor recovery - sheet metal pushed downhole. Silty gravelly sand ; reddish to greyish brown. Moist to wet.	Landfill
7.00	End of hole (maximum depth). Groundwater not encountered.	

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27226.007

Borehole Logs

BH05

Depth (m bgl)	Soil description	Layer
0.00	Silty sand topsoil; brown. Tightly packed, moist.	Topsoil
0.20	Gravelly lens followed by sandy silt with minor gravel and trace to minor slag, ash and brick; patchy brown, yellowish brown and dark grey. Firm to stiff, moist. 1.4m clayey silt, brown. Soft, moist. 1.7m becoming organic (fibrous and amorphous organics, contains buried wood, peat odour, dark grey to black). 2.4m organic silty sand with trace to minor man made materials (general rubbish) including porcelain, glass, paper/cardboard, scrap metal, plastic, a wooden hand tool handle, decomposing concrete, wood; dark brownish grey to black. 2.85m general rubbish absent, contains concrete, wood, ash/coal dust/coke/clinker; ashy odour. 3.84m sandy silt with minor concrete, trace brick and wood, dark brownish grey. Tightly packed, dry to moist. 4.05m concrete, brick and wood absent; dark brown. 4.25m brown.	Landfill
4.50	Fine to medium sand; light brownish grey. Loosely packed, dry to moist.	Beach sand
5.00	End of hole (target depth). Groundwater not encountered.	

BH06

Depth (m bgl)	Soil description	Layer
0.00	Silty sand topsoil, some silt/clay clumps and gravel from 0.12m; brown. Tightly packed, moist.	Topsoil
0.35	Trace ash pieces.	Cap
0.40	Silt, clay and sand with trace brick, gravel and small coal pieces; yellowish brown mottled orange. Firm to loosely packed, moist. 0.73m layer of beach sand (10cm thick).	
0.83	Silt with minor sand, minor to some ash, trace glass, shell and slag; yellowish brown mottled orange. Loosely packed, moist. 1.25m contains ashy, dark grey to black layers (some layers containing fibrous and amorphous organics); clayey silt layers with organics, ash, tar pieces; sand and gravelly layers; concrete, timber, sawdust, scrap metal, coke/clinker, glass, brick, porcelain, yellow fibrous insulation, clay patches, newspaper, bright green inclusions in places. 1.45m layer of brick and gravel, with perched water (layer 0.35m thick). 5.6m layer of glass (6cm thick), followed by black sawdust and ash layer with moderate hydrocarbon odour, followed by thin gravel layer and brown sawdust. 5.8-6.5m moderate hydrocarbon odour (somewhere between bitumen and diesel), from dark brown to black layer of sand with ash/coal dust. PID reading downhole 23ppm when pulling up casing between 5.0 and 6.5m.	Landfill
6.50	Grades to grey beach sand, no odour. Loosely packed, moist.	Impacted beach sand
7.00	End of hole (maximum depth). Standing water measured at 6.7m, although perched water infiltrating from 1.45m.	

BH07

Depth (m bgl)	Soil description	Layer
0.00	Silty sand topsoil; brown. Tightly packed, moist.	Topsoil
0.25	Sandy silt with clay, minor gravel, trace small brick pieces, concrete and ash; brown with light brown and dark grey patches, orange mottle. Stiff, moist.	Cap
0.65	Fine to medium sand; light brownish grey/creamy white. Loosely packed, dry to moist. Orange stained lens on lower boundary.	Beach sand
1.25	Silty sand, trace rootlets, gravelly organic patches, clay patches; black. Tightly packed, moist to wet. Black layer has a musty odour. 1.6m contains layers of gravelly sand with glass patches and coke/clinker, orange with brown, light brown and dark brownish grey patches; fine ash/coal dust; silty sand with gravel and porcelain pieces, orange; clayey silt with some coke/clinker; glass, slag, and scrap metal. 4.0-6.0m no recovery, barrel potentially blocked/pushing metal downhole.	Landfill
6.00	End of hole (refusal). Groundwater not encountered.	

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27226.007

Borehole Logs

BH08

Depth (m bgl)	Soil description	Layer
0.00	Silty sand topsoil; brown. Tightly packed, moist.	Topsoil
0.02	Fine to medium sand; light brownish grey/creamy white. Loosely packed, dry to moist.	Beach sand
0.30	Silty sand with a cobble and timber planks, minor gravel, small brick pieces, and trace to minor coke/clinker; dark brown with dark grey to back patches. Clayey in places. Tightly packed, dry to moist.	Cap
0.65	Ashy sandy silt, with layers of ashy sand with trace brick and coal pieces; cement pipe and fine wire; pockets of cemented gravel; clayey silt with some sand, yellowish to greenish brown mottled orange and dark grey, or dark reddish brown with trace coke and wood, or dark brown with light brown patches and orange mottle; sand with coke/coke/clinker pieces, brown or reddish grey; glass, wood, gravel and brick in places. 2.9 to 3.55m contains tar pieces. 4.1m cobble jammed barrel. Wet.	Landfill
4.16	End of hole (refusal, bouncing). Groundwater not encountered.	

BH09

Depth (m bgl)	Soil description	Layer
0.00	Fine to medium sand; light brownish grey/creamy white. Loosely packed, dry to moist.	Beach sand
0.20	Silty sand topsoil; brown. Loosely packed, dry to moist.	Topsoil
0.35	Contains clay, brown mottled orange. 0.5m gravel with some clayey silt and sand; brown mottled orange and light brown to light brownish grey. Tightly packed, dry.	Cap
0.75	Ash with silt and sand, trace brick, wood pieces, newspaper and white paint; dark greyish brown to black. Loosely packed, moist to wet, burnt odour. 1.5-4.0m no recovery.	Landfill
4.00	End of hole (refusal, bouncing). Groundwater not encountered.	

BH10

Depth (m bgl)	Soil description	Layer
0.00	Fine to medium sand; light brownish grey/creamy white. Loosely packed, dry to moist. Trace fine, black angular gravel in top 10cm.	Beach sand
0.45	Sand with some silt, brown. 0.6m contains clay patches with trace small pieces of brick and charcoal; followed by clay with brown silt laminations. 0.66m layer of beach sand (15 to 20cm thick). 0.8/0.85m sandy silt with clay and clay patches, minor gravel and brick, trace coke and shell; brown to dark brown with light brown and reddish brown patches. Becoming yellowish brown at 1.1m and grading to bluish grey by 1.3m. Firm, moist.	Cap
1.65	Ashy sand and silt with clay, gravel, brick, wood, glass and slag in places; dark grey to dark brown. Loosely packed, moist, slight musty burnt odour. Contains beach sand layers (15 to 25 cm thick).	Landfill
4.50	Fine to medium sand; light brownish grey/creamy white with dark brownish grey bands (3 to 5cm thick). Loosely packed, dry to moist.	Impacted beach sand
4.78	Dark brownish grey bands absent.	Beach sand
5.00	End of hole (maximum depth). Groundwater not encountered.	

BH11

Depth (m bgl)	Soil description	Layer
0.00	Silty sand topsoil; brown. Loosely packed, dry to moist. 0.2m light yellowish brown to gey patches, orange mottle. 0.4m cobble.	Topsoil
0.50	Contains minor fine ash/coal dust and gravel; dark brownish grey.	Cap
0.65	Ashy silt and sand with minor glass; dark grey to black. Loosely packed, dry to moist. 0.73m various types of glass e.g. reinforced glass pane pieces, bottle glass (10cm thick). 0.85m clayey silt with trace to minor sand; dark grey to reddish brown with orange, green and light brownish grey patches. 1.1m some sawdust/woodchip, trace gravel, a small metal machinery piece; dark brownish grey. Soft, wet, moderate oil/grease odour. 1.3-2.65m beach sand with layers/patches of above material; brownish grey. 2.65m interbedded ash; silt and sand with scrap metal; sawdust; ashy sand and silt with brick, a spark plug/bolt, MDF and a strong fuel odour (PID reading 25.7 ppm at 2.8m); rubber tyre pieces, landscaping bark and mulch, plasterboard, donut shaped mica layers, and glass in places.	Landfill
6.85	Fine to medium sand; light brownish grey/creamy white. Loosely packed, dry to moist. Trace fine, black angular gravel in top 10cm.	Beach sand
7.00	End of hole (maximum depth). Groundwater not encountered.	

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Borehole Logs

BH12

Depth (m bgl)	Soil description	Layer
0.00	Fine to medium sand; light brownish grey/creamy white. Loosely packed, dry to moist.	Beach sand
0.15	Silty sand topsoil; brown. Loosely packed, dry to moist.	Topsoil
0.25	Clayey silt with sand; yellowish brown to grey mottled orange and dark greyish brown. Firm to stiff, moist.	Cap
0.58	Contains minor man-made materials including clay pipe pieces, cement, small brick pieces, charcoal/ash; minor gravel; dark brown mottled orange. Contains layers of ashy clayey silt with trace tile/porcelain; ash; garnet sand; greenish grey clayey silt with sand and gravel; reddish brown organic silt with sand; timber, coke/clinker, sandstone cobbles, black angular gravel in places. Layers 10 to 50 cm thick. 2.9-3.6m suspected coal tar cobbles and small brittle pieces.	Landfill
5.15	End of hole (max depth). Groundwater not encountered.	

BH13

Depth (m bgl)	Soil description	Layer
0.00	Silty sand topsoil; brown. Loosely packed, dry to moist.	Topsoil
0.18	Sandy silt with clay, concrete, trace brick and black angular gravel; patchy brown, yellowish orange-brown and dark grey. Stiff, moist. 0.6m beach sand layer (15cm thick); orange stained lens at lower boundary.	Cap
1.35	Fibrous organics with sand and trace concrete; brownish black. Soft, moist. 1.9m beach sand layer (5cm thick). 2.3m clayey silt with minor to some sand, minor fibrous organics, trace gravel; dark greyish brown. Interbedded with clay with silt, yellowish brown mottled orange; silty clay with clay pipe pieces, light greyish brown and dark grey, and a slight hydrocarbon odour; gravelly silty clay with moderate to strong coal tar-like odour (PID reading 6.3ppm at 3.0m); organic fibres with sand sand silt, trace to minor nails, glass, copper sheet with patches of green-blue stained soil, cardboard, newspaper and hay/straw (PID reading 12.4ppm at 3.6-3.8m); weathered bluish grey mudstone; organic sandy silt with timber, dark greyish brown; ash with scrap metal; brick and wood; ashy sand and sand and silt with fibrous organics and brick.	Landfill
6.25	Fine to medium SAND, brown with dark grey lenses. Loosely packed, moist to wet.	Impacted beach sand
6.40	Light brownish grey/creamy white.	Beach sand
6.60	Wet.	
6.75	Grey, wet to saturated.	
7.00	End of hole (maximum depth). Groundwater encountered at 6.83 m bgl.	

BH14

Depth (m bgl)	Soil description	Layer
0.00	Sandy silt topsoil; brown. Loosely packed, dry to moist. 0.02m silty sand topsoil.	Topsoil
0.18	Sandy silt with clay, trace gravel and brick, clay patches; patchy brown mottled orange, dark grey and light yellowish grey. Firm to stiff, moist.	Cap
0.40	Some ash and gravel. 0.55-0.77m brick and sandstone cobble. 0.77m silty ash with trace brick and glass. Interbedded with ashy silty clay with fine to coarse sand and fine gravel, trace coke/clinker and/or thin metal sheet in places, greenish brown-grey with black mottle; brick with metal and oyster shell; crushed brick with sand and angular black gravel, wood, coke, slad and white flecks, orange and black to dark grey; silty sand with coke/cliner and ash, slag and ash in places, brown with orange patches and staining to dark sdark grey; glass in places; beach sand layers (5 to 15cm thick); coal pieces with hard white plastic, reddish brown; orange-brown layers; silty gravelly sand with clay and ash, patchy orange brown with dark grey mottle and light grey; shell and fine ash; clay and ash with gravel, brick tile and slag, cream and orange; porcelain pieces in places. 6.7m wet.	Landfill
6.83	Silty sand; dark brown. Loosely packed, moist to wet.	Impacted beach sand
6.90	Grey; moist.	
7.05	End of hole (maximum depth). Groundwater not encountered.	

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Borehole Logs

BH15

Depth (m bgl)	Soil description	Layer
0.00	Silty sand topsoil; brown. Loosely packed, dry to moist.	Topsoil
0.15	Sandy silt with trace gravel and brick; brown mottled orange. Firm to stiff, dry to moist. 0.25-0.35m clayey; light grey-brown patches. 0.35m minor ash; dark greyish brown. 0.4m cobble, minor to some gravel, minor ash and glass, trace concrete; orange-brown with black patches. 0.6m light brown to orange patches. 0.8 silty clay, yellowish brown mottled orange. Stiff, dry to moist.	Cap
0.95	Sandy silt with minor to some ash, coke and gravel; brown with dark greyish brown patches and orange mottle. Interbedded with beach sand layers (6-35cm thick); black spongy organics; ashy silty sand with trace slag and coke; silty sand with trace organic fibres and wood, greyish brown; ash with coke and clinker, trace to minor wood; silty clay/clayey silt with trace wood and ash, patchy brown mottled orange and dark grey; wood and glass; silty sand with ash and clay, some glass, shredded paper, trace to minor brick and gravel; gravelly sandy silt with some ash, trace to minor glass and scrap metal, dark greyish brown and orange. 5.7m some shells, a layer of newspaper, animal rib bone, egg shells and trace slag, coke and clinker. 6.4m becomes clayey.	Landfill
7.00	End of hole (maximum depth). No groundwater encountered.	

BH16

Depth (m bgl)	Soil description	Layer
0.00	Fine to medium sand; light brownish grey/creamy white. Loosely packed, dry to moist. 0.35m dark brown laminations of fibrous organics.	Beach sand
0.45	Silty sand; brown. Loosely packed, moist.	Topsoil
0.60	Silty sand with trace clay and clay patches, brick, charcoal/ash, glass and gravel; brown with light yellowish brown patches. Tightly packed, dry to moist.	Cap
0.68	Fine to medium sand; brown with darker brown lenses. Loosely packed, dry to moist.	Impacted beach sand
0.80	Light brownish grey/creamy white.	Beach sand
2.00	End of hole (target depth). No groundwater encountered.	

BH17

Depth (m bgl)	Soil description	Layer
0.00	Fine to medium sand; brown to light brownish grey/creamy white. Loosely packed, dry to moist.	Beach sand
0.20	Minor silt; brown motted orange. Moist.	Topsoil
0.32	Clayey silt with sand; brown mottled orange with yellowish brown patches. Firm, moist. 0.55m sandy; dark greyish brown patches. Firm tos tiff, dry to moist. 0.57-0.63m cobble, trace brick and ash, minor gravel.	Cap
0.75	Becomes ashy. 0.75-1.3m brittle gravel sized pieces with aged asphalt odour. Brick in places. 1.3m layers of sand and silt containing varying levels of ash and/or clay, gravel, coke, clinker, brick, shell, cement/concrete, thin sheet metal, timber; yelowish brown mottled orange, dark grey, dark brown, grey mottled orange, and/or black. Dry to moist. 4.45m beach sand with clay patches, trace to minor gravel, trace ash, and pinkish red sand (potentially garnet) in layers (7 to 30cm thick).	Landfill
5.60	Fine to medium sand; light brownish grey/creamy white. Loosely packed, dry to moist.	Beach sand
6.00	End of hole (target depth). No groundwater encountered.	

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Borehole Logs

BH18

Depth (m bgl)	Soil description	Layer
0.00	Fine to medium sand; brown to light brownish grey/creamy white. Loosely packed, dry.	Beach sand
0.23	Silty sand; brown. Loosely packed, moist.	Topsoil
0.27	Grades to creamy white; moist. 0.4m orange-brown stained lens, followed by brownish grey beach sand.	Beach sand
0.48	Clayey silt/silty clay with trace to minor sand; patchy yellowish brown, dark grey and orange-brown. Firm to stiff, dry to moist. Contains layers with sand, trace ash, wood and/or brick, orange mottle and dark brownish grey patches. 1.67m contains patches of ash, clay and gravel.	Cap
2.20	Contains concrete and brick, orange patches with slag, lenses of dark grey-brown sand, light grey clay, gravelly with minor ash in places. 2.9m ashy silty sand with minor brick and trace to minor gravel and concrete; dark brown-grey. Contains layers of gravelly ashy sand with minor slag, dark brown-grey to black with yellowish patches; brick; light grey to pale bluish mudstone; clayey silt with some sand, brown; sand with trace to minor wood and brick, dark brown. 4.55m orange stained beach sand grading to brown and then light brownish grey/creamy white. 4.66m contains large pieces of slag (sand surround slag pieces are orange stained). 4.85m clay with some sand and minor gravel; orange-brown with dark brownish grey patches. Soft, moist.	Landfill
5.30	Fine to medium sand; light brownish grey/creamy white. Loosely packed, moist to wet. 5.75m wood (natural).	Beach sand
6.05	End of hole (target depth). Groundwater not encountered.	

BH19

Depth (m bgl)	Soil description	Layer
0.00	Silty sand topsoil; brown. Tightly packed, dry to moist. 0.15m some gravel.	Topsoil
0.27	Silty gravelly sand with clay patches; brown with light yellowish brown patches. Tightly packed, dry to moist. 0.38m dark brown with yellowish brown patches. 0.5m trace brick and ash.	Cap
0.70	Some ash; patchy dark brownish grey, yellowish brown and orange. 1.55m ashy sand and gravel; dark grey to black. Loosely packed, moist. Contains layers with trace metal and glass; wood with decomposing putty; trace brick, slag, coke, wood and glass with moderate musty burnt/ash odour (PID reading 5.4 ppm at 3.5m); beach sand; clayey silt with slag and ash, brownish grey to yellowish brown and orange; silty sand with minor to some ash, dark reddish brown.	Landfill
4.77	Fine to medium sand; dark brown and slightly orange stained at upper boundary. Loosely packed, moist to wet.	Impacted beach sand
4.98	Fine to medium sand; brown to light brownish grey/creamy white. Loosely packed, moist. 5.25m dark brown organic lens. 5.4m wet. 5.65m saturated.	Beach sand
6.00	End of hole (target depth). Groundwater encountered at 5.83 m bgl.	

BH20

Depth (m bgl)	Soil description	Layer
0.00	Fine to medium sand; brown to light brownish grey/creamy white. Loosely packed, dry.	Beach sand
0.25	Silty sand with trace gravel; brown mottled orange (orange staining around gravel). Loosely packed, dry to moist.	Topsoil
0.30	Clayey silt with trace to minor sand and gravel, brown mottled dark grey and light yellowish brown. Firm, moist.	Cap
0.40	Silty sand with ash patches, trace brick, concrete, glass, slag and clinker. 0.8m ashy, minor wood and trace tile. Poor core recovery.	Landfill
2.28	Fine to medium sand; grey with occasional dark grey lenses. Loosely packed, moist.	Impacted beach sand
2.60	Light brownish grey/creamy white.	Beach sand
4.00	End of hole (target depth). Groundwater not encountered.	

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27226.007

Borehole Logs

BH21

Depth (m bgl)	Soil description	Layer
0.00	Silty sand topsoil; brown. Loosely packed, dry to moist.	Topsoil
0.32	Sandy silt with clay patches, trace brick; brown mottled orange. Soft to firm, moist. 0.47m minor gravel, contains patches of ash; patchy brown, dark brown, orange, yellowish brown and black.	Cap
0.70	Minor to some ash, trace slag, porcelain, glass, and coal. Slight hydrocarbon odour (PID reading 8.5 ppm at 2.0m). 1.9 to 4.8m very poor recovery; recovered material is crunchy/rusty. Small amount of cemented gravel and sandstone. 4.95m silty sand with minor gravel and ash, trace clay patches and glass; dark brownish black with light grey and yellowish brown patches. Loosely packed, moist. Contains layers with up to some concrete, ash, brick, glass, trace metal; gravelly in places. 5.35 moist to wet. 6.3 trace trace slag, clinker and porcelain; bright orange patches and lenses.	Landfill
6.56	Fine to medium sand; brownish grey with occasional bright orange lenses. Loosely packed, moist to wet. 6.59m light brownish grey/creamy white.	Impacted beach sand
7.00	End of hole (maximum depth). Groundwater not encountered.	

BH22

Depth (m bgl)	Soil description	Layer
0.00	Silty sand topsoil; brown. Loosely packed, dry to moist. 0.35m trace silt; dry.	Topsoil
0.40	Ash. Followed by layers of sand with some silt, brown; ashy sand with brick; beach sand; brown beach sand with silt patches, trace brick and coal, dark brownish grey to black; sandy silt with trace gravel, patches with trace ash and porcelain, orange patches and/or mottle in places. 2.54 Interbeded layers of silty sand, sand trace silt and clayey silt with some same sand, ash and coke in patches and/or layers, trace glass, porcelian, string, brick, metal with green patina; patchy/layered yellowish brown mottled orange, dark grey to black, orange stained patches, and dark greyish brown. Loosely packed, moist. 4.85m contains slag. 5.45m sand, silt and clay with trace glass, clinker and porcelain; orange with light grey and black mottles. 6.3m large clay pipe pieces, minor glass, trace brick; reddish orange-brown. 6.6m patchy/layered as at 2.54m, with a layer of white crumbly material at 7.05m.	Landfill
7.05	End of hole (maximum depth). Groundwater not encountered.	

BH23

Depth (m bgl)	Soil description	Layer
0.00	Sand with minor silt; brown. Loosely packed, dry to moist. 0.4m trace silt, some shell; dark orange-brown staining on upper and lower boundaries. 0.53m light brownish grey/creamy white.	Beach sand
0.68	Coarse orange-stained gravel followed by silty sand with trace to minor ash and brick, a few pieces suspected coal tar; dark greyish brown. Contains layers of ash; sand with trace glass, brown with reddish orange mottles and patches; sand with some ash and trace porcelain, brown with orange patches; sandy ash with trace glass, wood and egg shell, black; sawdust; beach sand; ash with brick, grey burnt bone, newspaper, concrete, nails, wood, jeans buttons and thin sheet metal; silty sand with clay and gravel, minor to some ash, trace egg and oyster shells, orange mottled dark brown and light grey.	Landfill
7.00	End of hole (maximum depth). Groundwater not encountered.	

BH24

Depth (m bgl)	Soil description	Layer
0.00	Sand with minor silt topsoil; brown. Loosely packed, dry to moist.	Topsoil
0.22	Sand with minor to some ash; dark greyish brown mottled orange. Loosely packed, dry to moist. 0.3m contains some slag/clinker and coke, metal rust; patchy orange-brown, orange, yellowish brown and dark brownish grey to black. Contains layers with some shell or ash and coke; sandy silt with minor to some ash, mottled greyish orange, dark grey to black and light grey; shiny grey clinker/slag/forge waste; fine gravel sized crystalline substance and a rusted railway bolt; rusted metal with gravel, porcelain and ceramic tile; brick; plaster; blackened timber with wire, sheet metal and brick; fire brick; ash with slate, glass, shell, wood and bone. 5.9m silty sand with trace ash and coke; brown with orange staining on upper boundary. Loosely packed, moist to wet.	Landfill
6.10	Fine to medium sand; light brownish grey/creamy white. Loosely packed, moist to wet.	Beach sand
7.00	End of hole (maximum depth). Groundwater not encountered.	

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Borehole Logs

BH25

Depth (m bgl)	Soil description	Layer
0.00	Fine to medium sand; light brownish grey/creamy white. Loosely packed, dry to moist.	Beach sand
0.28	Sand with minor to some silt; brown. Loosely packed, dry to moist.	Topsoil
0.30	Silty sand with some clay patches, minor gravel and trace to minor ash and brick; dark brown. Tightly packed, moist. 0.4m clayey with minor brick; stiff. 0.75m silty clay/clayey silt with minor to some sand and trace ash; greenish to yellowish brown mottled orange and light brown. Contains lenses of dark brownish grey between 0.85-1.05m. 1.45m grey mottled orange, light grey and dark grey. 1.5m trace buried grass; dark brown. 1.6m some sand and gravel with clay patches, orange and reddish staining. 1.8m trace to minor sand; dark brownish grey mottled orange with orange staining on lower boundary. 1.93m fine to coarse sand; yellowish orange-brown to brown. Loosely packed, moist.	Cap
2.15	Clayey silt with minor to some sand, grey to brown mottled orange, soft, moist. 2.15 to 2.3m, vertical split in core, half is ash. Contains lenses of fine to coarse sand, yellowish orange-brown; layers of clayey silt with some gravel, brick and ash; silty sandy gravel, light brownish grey; concrete in places; clayey silt, greenish brown-grey; sand with trace gravel, coke/clinker, and shell, greyish brown with a pinkish patch; moist to wet from 4.2m; ashy sandy silt with clay, brick, terracotta/brick roof tile, minor clinker, trace white tile; garnet sand, light reddish pink with orange staining on upper and lower boundaries; sand, dark brownish grey with orange staining. 6.0-7.0m core jammed in barrel, came out mixed; 6.0-6.1m, extremely densely packed sand and silt, brown with dark grey to black swirl; approximately 6.1-6.5m sand brick and asphalt, greyish brown to slightly orange.	Landfill
6.50	Fine to medium sand; light brownish grey/creamy white. Loosely packed, moist.	Beach sand
7.00	End of hole (maximum depth). Groundwater not encountered.	

BH26

Depth (m bgl)	Soil description	Layer
0.00	Sand with some silt; brown. Tightly packed, dry to moist.	Topsoil
0.17	Clayey silt with minor to some sand; grey to yellowish brown mottled orange. Firm to stiff, moist.	Cap
0.30	Silty sand with ash and trace glass; dark brown to grey mottled orange. Loosely packed, moist. Contains patches of cap to 0.5m; beach sand; gravelly sand with trace brick, dark brown; suspected coal tar with beach sand at 0.55m; silty sand with some gravel, minor wood, trace brick and glass, dark brown; sand with blackened wood; sandy crushed brick; beach sand with some ash, clinker and wood, clay patches (greenish to yellowish brown mottled orange), trace cobbles and/or cemented gravel; buried grass and dark grey swirls at 3.7m; sandy silt with amorphous and fibrous organics and trace gravel, dark brown; timber pieces with white paint; brick with cement/mortar, sandstone and shiny clinker/forge waste; organic sandy silt with minor brick and stone, trace porcelain, dark brown to black, soft/spongy; silty clay; clinker; silty clay with minor sand, some blackened wood chip and coke. 5.28m thin lens of suspected coal tar followed by beach sand; light grey. Loosely packed, moist to wet. Contains a gravel layer from 5.4m, trace wood, brick and gravel from 5.75-5.9m. Reddish orange-brown staining on bottom of layer. 6.0m light brown mottled orange. 6.15-6.25m trace metal and gravel.	Landfill
6.30	Fine to medium sand; light brownish grey/creamy white with orange-brown bands to 6.7m. Loosely packed, moist.	Impacted beach sand
7.00	End of hole (aximum depth). Groundwater not encountered.	

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27226.007

Borehole Logs

BH27

Depth (m bgl)	Soil description	Layer
0.00	Sand with minor to some silt; brown. Tightly packed, moist. 0.2m silty, brown mottled orange and light orange-brown.	Topsoil
0.25	Clayey silt/silty clay with minor sand and a cobble; yellowish brown mottled orange, light grey and dark grey. Stiff, dry to moist. 0.38m sandy with minor brick, ash, gravel and cobbles; firm, moist. 0.6m trace glass.	Cap
0.70	Ash with minor sand, silt, coke, clinker and brick, trace glass and nail; black with cream/white to orange inclusions. Loosely packed, moist. Contains lenses of beach sand and layers of ash with some man made materials including porcelain, glass, egg shells, burnt bone and thin formed metal; silty sand with clay, trace glass, timber and plaster; organic clayey ash with wood fibres; sandy ash with thin sheet metal and wire, brick, gravel and shiny grey clinker/forge waste; clayey sand with ash patches and white crystaline material, pale orange with black spots followed by beach sand, light grey stained brown and dark grey in bands and swirls (concentrated ocean odour); ashy sand with some silt and gravel, dark brownish grey to black (strong burnt/ash odour); timber slivers, chip/veneer, and gravel; concrete, sheet metal; sand with some metal and trace brick, dark greyish brown; and ashy sand, black.	Landfill
5.90	Fine to medium sand; whitish grey with dark grey bands/swirls to 6.7m. Loosely packed, moist to wet.	Impacted beach sand
7.00	End of hole (maximum depth). Groundwater not encountered. Strong hydrocarbon/fuel odour noted when pulling up drill barrels (downhole PID reading 1.5 ppm).	

BH28

Depth (m bgl)	Soil description	Layer
0.00	Thin layer beach sand followed by sand with minor silt; brown. Tightly packed, dry to moist. 0.4m some silt, moist.	Topsoil
0.60	Silty sand with some ash, a cow bone, minor glass and porcelain, trace metal and slag; patchy orange-brown, light grey, brown and dark grey to black. Loosely packed, dry to moist. 1.6m beach sand with a piece of metal; light brownish grey/creamy white with orange staining around metal and upper boundary.	Landfill
1.80	Fine to medium sand; light brownish grey/creamy white. Loosely packed, dry.	Beach sand
3.00	End of hole (target depth). Groundwater not encountered.	

BH29

Depth (m bgl)	Soil description	Layer
0.00	Fine to medium sand; light brownish grey/creamy white. Loosely packed, dry.	Beach sand
0.18	Silty sand with trace gravel, shell and brick, patches of yellowish fine to coarse sand; brown. Tightly packed, dry to moist.	Cap
0.40	Silty sand with minor slag, trace glass, metal, shell, clay pipe, concrete, cobble, ash layers (5 to 10cm thick), yellowish fine to coarse sand patches, clay patches; tightly packed, moist. Contains layers of clayey sand with minor to some fine ash patches, brown mottled dark grey and orange; trace wood, gravel, plastic sheet and fibrous organics, dark grey to black; sand with bluish grey silt patches, yellowish clay patches, some wire and blackened/burnt paper/wood, dark brownish grey.	Landfill
5.00	End of hole (3m no recovery). Groundwater not encountered.	

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Borehole Logs

BH30

Depth (m bgl)	Soil description	Layer
0.00	Silty sand topsoil; brown. Tightly packed, dry.	Topsoil
0.16	Contains trace brick, gravel, plastic sheet and clay patches (yellowish brown to dark brown mottled orange). Contains layers of beach sand; silty clay, yellowish brown to brown motted orange; silty sand, dark brown mottled orange; gravelly clayey sand, brown mottled orange and dark grey; beach sand stained brownish orange.	Cap
1.55	Ashy sand with minor gravel, trace wire including very fine copper wire, brick, fibrous organics, shiny grey and black coke/clinker/forge waste, trace glass; dark grey to black. Loosely packed, moist, slight musty hydrocarbon odour (PID reading 5.4 ppm at 1.55m). Contains layers of silty sandy clay with ash lenses, trace brick, patchy yellowish brown, orange-red, greenish and bluish grey; ash with minor to some silt and sand, wood fibres and clay patches; wire and metal; some timber, trace yellowish white crystalline material; clayey sandy silt with trace to minor ash, some rubber and timber, orange-brown, wet at 2.15m; gravelly sand with silt and clay, trace plastic and slag/coke; sand with some silt, trace clay, some gravel, black shiny vesicular coke/clinker, trace slag and timber, orange-brown to brown with bright green patches, moist to wet; beach sand patches; reddish brown sand; clayey sand with silt, some metal sheet, minor ash and porcelain, trace glass, leather and string, patchy orange-brown and dark grey; dark grey to black sand with ashy odour; grey beach sand with timber and slag, with a dark grey band (moderate diesel/oil odour, PID reading 6.6ppm at 4.9m); a piece of tar; dark grey to black sand with metal sheet, slight musty motor oil odour (PID reading 10.2ppm at 5.8m).	Landfill
6.30	Fine to medium sand; grey mottled dark grey. Loosely packed, wet, no odour (PID reading 5.4m).	Impacted beach sand
7.00	End of hole (maximum depth). Groundwater not encountered.	

BH31

Depth (m bgl)	Soil description	Layer
0.00	Fine to medium sand; light brownish grey. Loosely packed, dry. 0.2m minor silt; light brown mottled orange.	Beach sand
0.30	Silty sand with trace gravel, glass and ash; dark brown mottled orange. Loosely packed, dry to moist. 0.51-0.56m beach sand, orange stained at upper boundary.	Cap
0.65	Sand with some ash; dark brown to grey. 0.7m silty sandy clay with trace to minor ash and coke, trace brick and yellowish fine to coarse sand patches; brown mottled orange and dark grey. Firm to moist. Contains layers of ashy sand with cobbles, minor gravel, trace brick and coke; dark greyish brown mottled orange; dark brownish grey sand with ashy odour, trace gravel and clay. 1.3m sand with trace glass and painted timber, dark grey, moist to wet. 1.5m trace brick, tile, bone and yellowish brown clay patches, wet. 1.65m drill bouncing.	Landfill
1.65	End of hole (refusal). Groundwater not encountered.	

BH32

Depth (m bgl)	Soil description	Layer
0.00	Sandy silt topsoil; brown. Tightly packed, dry.	Topsoil
0.15	Sandy silt with trace to minor ash, trace brick and coke; brown. Tightly packed, dry.	Cap
0.35	Sandy silt with minor to some slag and a bright green inclusion, minor porcelain, some glass. 0.42m sandy crushed glass. 0.52m silty sand with some gravel, minor ash/coke/clinker, trace porcelain; orange-brown. Loosely packed, moist.	Landfill
0.60	Fine to medium sand, brown mottled orange. Loosely packed, moist.	Impacted beach sand
0.80	Light brownish grey/creamy white.	Beach sand
2.00	End of hole (target depth). Groundwater not encountered.	

Tonkin Taylor Ltd
27226.007

Borehole Logs

BH33

Depth (m bgl)	Soil description	Layer
0.00	Silty sand topsoil; brown. Tightly packed, dry.	Topsoil
0.15	Sand with trace to minor silt, trace glass and brick; brown. Loosely packed, dry to moist. 0.2m minor gravel, yellowish brown mottle dorange clay patches, trace porcelain. 0.35m clayey, firm to stiff.	Cap
0.47	Ashy sand with minor to some coke/clinker/slag and porcelain, trace wood; dark brown and orange. Loosely packed, moist. Contains layers with fire brick; silty sand with some ash, slag and coke/clinker, brown mottled dark brown and dark grey to black; orange-brown clay; clayey sand with some ash, coke/clinker, minor wood and trace brick, patchey orange-brown with orange and black mottle, bluish grey to light grey; yellow and dark red patches, ashy and rusty black banding; bright green inclusions in places; slag with bright green spots; some glass and wood; trace sheet metal and brick; ash, with gravel in places; crushed concrete and fire brick; very dense ash with slate and/or timber; ashy sandy clay witht trace metal, bone, brick, porcelain, glass, wire, gib board and clinker/coke, pale orange-brown and dark grey with black spots, moist.	Landfill
7.22	End of hole (maximum depth). Groundwater not encountered.	

BH34

Depth (m bgl)	Soil description	Layer
0.00	Sand with some silt; brown. Loosely packed, dry. 0.3m trace clay patches. 0.4m beach sand layer (10cm thick).	Topsoil
0.50	Silty sand with minor gravel, ash and slag, trace glass, shell, bone, metal and rust pieces; dark brown mottled orange. Becomes orange-brown by 0.62m. Contains layers of beach sand; ash; ash and sand with minor to some glass and slag and trace metal. 1-3.5m no recovery. 3.5m ash and coke/clinker with patches of sand and clay, thin sheet metal. 4.7m moderate diesel odour (PID reading 32.3 ppm); core is vertically split, one half is clay with trace glass and slate, grey to yellowish brown to orange, soft, moist. 4.95m gravelly sand with clay, minor to some ash, trace to minor brick and glass, trace bone; orange-brown mottled orange and black. Loosely packed, moist.	Landfill
5.00	Drill rod sheared at 3m bgl, recovered core from 5-6.5m is jumbled. Similar to 4.95m, with minor bright green inclusions and bright royal blue lenses and patches.	
6.50	End of hole (sheared drill rod). Groundwater not encountered.	

BH35

Depth (m bgl)	Soil description	Layer
0.00	Silty sand topsoil; brown. Loosely packed, dry.	Topsoil
0.30	Fine to medium sand with 1 piece of ash/coke, 1 piece brick; brown with brown lenses. Loosely packed, dry.	Fill/cap
0.40	Fine to medium sand; light brownish grey/creamy white. 0.85-0.9m silty, brown mottled orange. 1.6m brown organic lens.	Beach sand
2.00	End of hole (target depth). Groundwater not encountered.	

BH36

Depth (m bgl)	Soil description	Layer
0.00	Sand with minor silt; brown. Loosely packed, dry.	Topsoil
0.27	Sand with trace glass, gravel, ash and yellowish brown and grey clay patches; brown.	Fill/cap
0.40	Sand with minor silt; brown. Loosely packed, dry.	Topsoil
0.46	Fine to medium sand; light brownish grey/creamy white.	Beach sand
2.00	End of hole (target depth). Groundwater not encountered.	

BH37

Depth (m bgl)	Soil description	Layer
0.00	Fine to medium sand; light brownish grey/creamy white. Loosely packed, dry.	Beach sand
0.15	Sand with minor silt; brown. Loosely packed, dry.	Topsoil
0.40	Sand with clayey patches, trace brick and gravel; brown. Tightly packed, dry to moist. 0.5m beach sand. 0.62-0.72m clayey silt with some sand and trace shells; brown to bluish grey mottled orange. Firm, moist.	Fill/cap
0.72	Fine to medium sand; light brownish grey/creamy white.	Beach sand
2.00	End of hole (target depth). Groundwater not encountered.	

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Borehole Logs

BH38

Depth (m bgl)	Soil description	Layer
0.00	Sand with trace to minor silt; brown. Loosely packed, dry to moist.	Topsoil
0.18	Silty sand with clay patches, trace brick and gravel, and a rusted hinge; patchy dark brown mottled orange with yellowish brown and dark grey. 0.45m ashy patches. 0.55m clayey; firm, moist.	Cap
0.90	Ashy sand with minor to some gravel and coke/clinker/slag, trace glass and timber; dark brown and dark grey to black with orange mottles. Loosely packed, moist. Contains layers with varying quantities of ash and/or clay; clayey silt with minor sand and some fibrous organics (decomposing buried grasses), grey to black; ash with slag/coke/clinker; sandy silt with some fibrous organics/wood fibres/buried sticks, trace glass and brick, black; concrete and timber (PID reading 8.6ppm at 3.0m); clayey sand with organic fibres and some glass, light grey/whitish and black; glass with trace to minor clay; glass in spongy organic matrix, underlain by a thin layer of oil/grease with slight odour, followed by thin layer of sawdust/mulch then beach sand with dark grey to black patches (PID reading 11.1ppm at 3.9m); sand with some ash and clay patches, trace metal sheet, wire, slag and bark/wood; silty clay with trace to minor porcelain, glass, brick, brown with black spots and orange staining; black fibrous organics (punga husk); bark; clayey ash; orange slag; shiny blue-grey sand and clumps of thin brittle layers of metal (potential forge waste) with trace glass.	Landfill
5.80	Fine to medium sand; light brownish grey/creamy white with dark grey staining, lenses and patches. Loosely packed, moist. 6.45m grey. 6.7m dark grey lens. 6.9m dark grey.	Impacted beach sand
7.00	End of hole (maximum depth). Groundwater not encountered.	

BH39

Depth (m bgl)	Soil description	Layer
0.00	Sand with trace to minor silt; brown. Loosely packed, dry to moist.	Topsoil
0.08	Fine to medium sand; light brownish grey/creamy white. Loosely packed, dry to moist.	Beach sand
0.28	Sand with some ash; brown and dark grey to black. Loosley packed, dry to moist. Contains layers of clayey sand; cobbles with metal; ash and shiny gunmetal grey coke/clinker/forge waste, trace slag; silty sand with ash patches, trace metal, glass and bone, yellowish brown with black spots and brownish patches to reddish orange to dark brownish grey; crushed brick; fine ash with trace wire; ash and coke, black and shiny grey, with occasional yellowish fine to coarse sand patches; silty sand with minor to some ash, brown; ashy sand with trace glass, nails and screws, dark grey to black; clayey silt with sand, trace to minor brick, trace glass, concrete, metal, porcelain and gravel, pale orange and black; moist to wet with large brick pieces at 6.55m; silty sand, brownish to yellowish grey with black spots.	Landfill
7.00	End of hole (maximum depth). Groundwater not encountered.	

BH40

Depth (m bgl)	Soil description	Layer
0.00	Sand with trace to minor silt; brown. Loosely packed, dry to moist.	Topsoil
0.20	Sand with minor to some silt, trace clayey patches, ash and gravel; brown with yellowish brown patches. Loosely packed, dry to moist.	Fill/cap
0.40	Fine to medium sand; light brownish grey/creamy white.	Beach sand
2.00	End of hole (target depth). Groundwater not encountered.	

BH41

Depth (m bgl)	Soil description	Layer
0.00	Sand and silt; brown. Loosely packed, dry.	Topsoil
0.35	Sand with trace clay patches, brick and gravel; brown. Tightly packed, dry to moist.	Cap
0.45	Brick followed by sand with minor to some ash; dark brown to black. Contains layers of clayey topsoil, brown, light grey mottled orange and dark grey; ashy sand with trace brick; beach sand with a whitish siltstone cobble; beach sand with ash patches/lenses.	Landfill
2.05	Fine to medium sand; light brownish grey/creamy white. Loosely packed, dry to moist.	Beach sand
4.00	End of hole (target depth). Groundwater not encountered.	

BH42

Depth (m bgl)	Soil description	Layer
0.00	Sand with minor silt; brown. Loosely packed, dry.	Topsoil
0.20	Clayey sand; yellowish brown mottled orange. Stiff, dry.	Fill/cap
0.25	Fine to medium sand; light brownish grey/creamy white. Loosely packed, dry. 0.3m dark brown organic lens.	Beach sand
2.00	End of hole (target depth). Groundwater not encountered.	

Tonkin Taylor Ltd
27226.007

Borehole Logs

BH43

Depth (m bgl)	Soil description	Layer
0.00	Sand with trace silt; brown. Loosely packed, dry to moist.	Topsoil
0.03	Fine to medium sand; light brownish grey/creamy white. Loosely packed, dry.	Beach sand
0.20	Silty sand with clayey silt patches and trace gravel; brown with creamy yellowish brown mottled orange patches. Tightly packed, dry to moist.	Fill/cap
0.40	Fine to medium sand; light brownish grey/creamy white. Loosely packed, dry to moist.	Beach sand
2.00	End of hole (target depth). Groundwater not encountered.	

BH44

Depth (m bgl)	Soil description	Layer
0.00	Sand with trace to minor silt; brown. Loosley packed, dry to moist. Contains layers of beach sand (5 to 10cm thick).	Topsoil
0.51/0.54	Silty sand with clay patches; brown with light brownish grey mottled orange patches. Tightly packed, dry to moist. 0.68m orange band, followed by trace ash, gravel and brick. Loosely packed, moist. 1.4m dark greyish brown. 1.5m beach sand. 1.6m interbedded layers of silty clay with trace brick and ash; clayey silt with minor to some sand with trace brick and gravel; beach sand; clayey silt with some gravel and trace ash; dark grey sand. Yellowish brown, brown, dark brown and dark grey to black with orange mottle and/or orange staining in places. Loosely packed, moist.	Cap
2.85	Fine to medium sand; greyish brown. Loosely packed, dry to moist. 2.95m light brownish grey/creamy white.	Beach sand
4.00	End of hole (target depth). Groundwater not encountered.	

BH45

Depth (m bgl)	Soil description	Layer
0.00	Sand with trace to minor silt; brown. Loosely packed, dry to moist.	Topsoil
0.05	Fine to medium sand; light greyish brown/creamy white. Loosely packed, dry to moist.	Beach sand
0.30	Sand with trace to minor silt; brown. Loosely packed, dry to moist.	Topsoil
0.50	Clayey sand; yellowish brown mottled orange and grey. Tightly packed, dry to moist. 0.65m sand with trace silt and gravel, greyish brown.	
0.75	Fine to medium sand; light brownish grey/creamy white. Loosely packed, dry to moist.	Beach sand
0.85	Silty sand with minor to some ash, minor gravel, trace glass, coke, brick and yellowsih orange-brown fine to coarse sand; dark brown mottled orange and black. Loosely packed, moist. Contains layers of silty sand with clay, trace ash and brick, patchy dark brown and yellowish brown mottled dark grey to black; ashy sand with minor brick and gravel, trace glass and organics; bluish grey siltstone cobbles; silty sand with clay patches and trace to minor ash and brick, brown with dark grey patches.	Landfill
2.45/2.5	Fine to medium sand; light brownish grey/creamy white. Loosely packed, moist.	Beach sand
4.00	End of hole (target depth). Groundwater not encountered.	

BH46

Depth (m bgl)	Soil description	Layer
0.00	Sand with trace to minor silt; brown Tightly packed, dry to moist.	Topsoil
0.22	Silty sand with grey to yellowish brown mottled orange clay patches; brown. 0.35m some gravel (some orange stained). 0.4m cobble. 0.45m trace to minor ash, trace brick; dark brown mottled orange and dark grey.	Cap
0.55	Silty sand with gravel, some ash, trace glass. 0.65m becomes with trace porcelain and a bright green inclusion, trace to minor coke; layers contain concrete cobbles with trace nail, clinker and slag; clayey silty sand with minor gravel and ash, trace to minor glass, a red rubber ring, trace bone, whitish stone and brick, brown mottled yellowish brown and dark grey; several pieces fibrous cement sheet at 1.8m; ashy sand with minor gravel and some wood.	Landfill
2.55	Fine to medium sand; greyish brown. Loosely packed, moist. 2.8m whitish grey with dark grey spots and lenses.	Impacted beach sand
4.50	Light brownish grey/creamy white.	Beach sand
5.00	End of hole (target depth). Groundwater not encountered.	

Tonkin Taylor Ltd
27226.007

Borehole Logs

BH47

Depth (m bgl)	Soil description	Layer
0.00	Sand with trace to minor silt; brown Tightly packed, dry.	Topsoil
0.19	Some silt, minor gravel, trace brick and ash; brown mottled orange.	Cap
0.35	Patchy/layered sand and silt, up to some gravel, minor to some ash in patches and layers, trace clay patches, brick, metal (a nail, copper wire, metal sheet), layers with some glass (6 to 7cm thick); dark brown to dark greyish brown with orange mottle, orange- brown, dark reddish brown or dark greyish brown. 0.8 some slag/clinker, trace to minor porcelain, trace glass, wood, plastic sheet, scrap metal. 1.1m clayey sand and silt with some ash, trace brick and whitish grey siltstone; yellowish brown mottled orange with black spots. 1.45-1.55m ashy. 2.7m trace to minor ash, trace bright green inclusions, coke and porcelain; wet. 3.65m silty sand with some gravel, minor brick, trace to minor scrap metal, porcelain, clinker and ash; reddish brown. Loosely packed, moist to wet. 4.3m wire and sheet metal.	Landfill
4.30	End of hole (refusal). Groundwater not encountered.	

BH48

Depth (m bgl)	Soil description	Layer
0.00	Sand with trace to minor silt; brown Tightly packed, dry.	Topsoil
0.15	Silty sand with trace brick and porcelain; brown. 0.3m sand; whitish grey with dark grey to black spots/lenses. 0.6m brown, trace clay patches. 0.63m orange, tightly packed.	Cap
0.65	Fine black subrounded gravel in paper matrix, grassy odour (PID reading 4.8ppm). 0.8m some metal, layered and rusted wire and pieces of scrap metal sheet. 1.0m sandy silt with some sheet metal, tyre pieces, minor to some gravel; brown. Tightly packed, wet. Contains layers with trace brick and wire; ashy sandy silt with some brick and trace wood, porcelain, and timber/mulch in patches; trace coke in places; sandy silt with trace ash and oyster shell; some concrete, trace metal; occasional sulfuric yellow patches (no odour); pale reddish brown vesicular crushed stone/clinker; some metal and slag with slightly melted screws; silty sand with gravel, some clinker/slag, rusted metal, minor brick and trace glass, orange-brown; silt and sand with minor ash and coke, trace porcelain, brick, wood, oyster shell and a rubber ring, patchy brown and yellowish brown mottled orange; some porcelain.	Landfill
5.00	Fine to medium sand; greyish brown with dark grey spots/lenses. Loosely packed. 2.8m whitish grey with dark grey spots and lenses.	Impacted beach sand
5.35	Light brownish grey/creamy white.	Beach sand
6.03	End of hole (target depth). Groundwater not encountered.	

BH49

Depth (m bgl)	Soil description	Layer
0.00	Silty sand topsoil; brown. Tightly packed, dry.	Topsoil
0.19	Silty sand with trace brick and gravel; brown. Tightly packed, dry. 0.3m trace plaster, ash, glass and yellowish brown to grey mottled orange silt/clay patches. 0.35 sandy silt with gravel, trace brick and ash, grey to yellowish brown clay patches; dark brown mottled orange. Tightly packed, moist. 0.68m lens of beach sand.	Cap
0.73	Sandy silt with gravel, minor ash and glass; dark brown mottled orange. Contains =layers with occasional patches of crystalline material, trace wood and dark orange patches; silt with some sand, trace lass and gravel, grey with orange mottle and orange-brown patches; silty sandy ash with trace gravel and glass, dark brown-grey to black; metal with orange stained soil; ashy silty sand with minor gravel, dark grey to orange-brown mottled reddish brown; ash with sand, silt, minor coke and clinker, part of a rubber seal and trace glass, gravelly in places. 4.7m gravelly ash with silt and sand, trace to minor newspaper, metal, timber and oyster shell, slight hydrocarbon odour (PID reading 18.9ppm). 4.9m minor coke and timber pieces.	Landfill
5.06	End of hole (maximum depth). Groundwater not encountered.	

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27226.007

Borehole Logs

BH50

Depth (m bgl)	Soil description	Layer
0.00	Silty sand topsoil; brown. Tightly packed, dry to moist. 0.15m trace gravel, yellowish brown silt patches.	Topsoil
0.33	Sandy silt with trace brick, gravel and yellowish brown clay; brown. Tightly packed, moist.	Cap
0.60	Fine to medium sand; light greyish brown/creamy white. Loosely packed, dry to moist.	Beach sand
1.23	Silty clayey sand with trace gravel, wood, porcelain, glass and fibrous organics; brown mottled dark grey with orange staining. Tightly packed, moist. Contains layers of ash; clayey sand with trace fibrous organics, metal and paper, yellowish brown; ash with trace fine copper wire, hard palstic, plaster and fibrous organics, black and white (slight hydrocarbon odour - musty and like chlorine, PID reading 26.4ppm at 1.4m); silty gravel with sand and ash, trace brick, coke and fine copper wire, dark grey-brown; a few tarry pieces with bitumen odour; sand with trace to minor gravel and glass, trace porcelain and paper, orange with black patches; wood, egg shells and metal; clay pipe; brick; sand with some crushed brick, minor gravel and ash, trace silt, brownish grey; ash/charcoal with blackened wood; silt/sand/clay with some clinker/slag, orange-brown; silty sand with trace porcealin, ash and shell, pale orange-brown, wet; sheet metal with clinker, slag and fine copper wire.	Landfill
4.55	Fine to medium sand; grey. Loosely packed, dry to moist. 4.75-4.85m black patches, slight hydrocarbon odour (PID reading 5.4ppm).	Impacted beach sand
5.05	End of hole (maximum depth). Groundwater not encountered.	

BH51

Depth (m bgl)	Soil description	Layer
0.00	Sand with minor silt; brown. Loosely packed, moist.	Topsoil
0.40	Fine to medium sand; light greyish brown/creamy white. Loosely packed, moist.	Beach sand
0.85	Silty sand with minor fibrous organics; dark grey to black with orange-stained upper boundary. Tightly packed, moist. 1.45m large piece bone, minor blackened wood, trace gravel. Contains layers with some silty sand with trace shell, glass and brick, grey to dark grey; coke in places; ashy sand with trace glass, moist to wet at 1.95m; brownish grey clay; sandy silty clay with minor gravel, ash and mica; sand with gravel, clinker, slag and trace glass, brownish orange. 2.95m some wire and scrap metal; orange-brown.	Landfill
3.20	End of hole (refusal). Groundwater not encountered.	

BH52

Depth (m bgl)	Soil description	Layer
0.00	Fine to medium sand; light greyish brown/creamy white. Loosely packed, moist.	Beach sand
0.30	Sand with minor silt; brown. Loosely packed, moist.	Topsoil
0.43	Sandy silty clay; dark brown mottled orange and yellowish brown mottled dark grey and/or orange. Firm to stiff, moist. 0.65m sandy gravel; dark brown. Loosely packed, dry to moist. 0.69m sand with minor silt; brown. Tightly packed, moist.	Cap
0.73	Sand and silt in layers with clayey silt/silty clay, trace to minor ash in layers with trace brick, shells, and/or bone; orange-brown sand; dark grey sand with ashy odour; silty sand with minor gravel, trace brick, clinker and ash, dark orange-brown to dark grey; concrete with gravel and trace string; grey, brown or brownish grey sand; silty ashy sand, black, moist to wet at 2.75m; silty sand with some gravel, minor to some ash and patches of clay; asphalt; cobble and timber.	Landfill
4.30	Fine to medium sand; light brownish grey with brown lenses. Loosely packed, moist to wet.	Impacted beach sand
4.70	Light brownish grey/creamy white.	Beach sand
5.07	End of hole (maximum depth). Groundwater not encountered.	

BH53

Depth (m bgl)	Soil description	Layer
0.00	Silty sand; brown. Tightly packed, dry. 0.1m minor to some silt, trace gravel, loosely packed.	Topsoil
0.35	Silty sand, trace brick and ash; brown. Loosely packed, dry. 0.5m contains clay/silt patches, trace white stone. 0.55m beach sand.	Cap
0.60	Sand with minor to some silt, minor ash, trace gravel; dark brown with orange-brown patches and dark orange stained upper boundary. Tightly packed, moist. 0.8m a bone, some ash. 1.35m contains ashy layers with fire brick; sand with silt and some ash and gravel, trace glass, rubber, brick and/or fibrous organics; weakly cemented gravel; sandy ash with coke and gravel; crushed brick; dark grey beach sand; silty sand with ash and clay, trace porcelain and brick, brown to yellowish brown with black spots; sand and silt with trace ash, brick, burnt bone, trace bright green inclusion, up to some porcelain with minor glass orange stained clinker; sand with white sandstone cobble and fine wire.	Landfill
5.00	End of hole (maximum depth). Groundwater not encountered.	

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BH54

Depth (m bgl)	Soil description	Layer
0.00	Sand with minor to some silt; brown. Loosely packed, dry. 0.2m silty, tightly packed.	Topsoil
0.30	Silty sand with some gravel, clay/silt patches and trace brick; brown with yellowish brown to grey mottled orange patches. Tightly packed, dry.	Cap
0.65	Silty sand with some gravel, some charcoal and ash, minor brick; orange-brown mottled black with grey to yellowish brown patches, one bright green patch of soil at 0.75m. Contains layers with rusty metal sheet and porcelain; silty sand with ash and coke; concrete; sand with minor brick, glass and gravel, patchy brown, grey, cream and orange; fibrous cement sheet at 1.9m; brick pieces; beach sand; ashy sand with clay patches, trace to minor coke and a brass cylinder, dark reddish brown-grey; fine black ash; a metal car/machinery part; silty sand with organic fibres, trace glass and clay patches; shiny grey clinker/forge waste; beach sand patches with trace brick and sheet metal.	Landfill
5.05	End of hole (maximum depth). Groundwater not encountered.	

BH55

Depth (m bgl)	Soil description	Layer
0.00	sand with some silt; brown. Tightly packed, moist. 0.23m gravelly with a cobble.	Topsoil
0.35	Sand with some silt, yellowish brown clay/silt patches, trace gravel, ash and brick; brown. Tightly packed/stiff, dry.	Cap
0.45	Sand and silt with gravel and some ash; dark brownish grey. Loosely packed, dry to moist. Contains patches of fine black ash; layers with rusted metal, slag and minor porcelain, brown with orange and orange-brown patches, moist; fine orange decomposing sawdust with patches of clayey silt and ash, pale orange-brown with black spots; ash with minor coke and trace coal, black; sandy silt with clay patches, trace bone, glass and metal scrap, pale orange-brown; trace gravel and fibrous organics. 2.0-3.0m poor recovery (5cm) crunchy sandy ash/silt with trace glass, wire and a rounded wooden hand-tool handle, whitish grey, wet to saturated.	Landfill
5.05	End of hole (refusal). Groundwater not encountered. Moderate odour when pulling up drill barrels, 8.7ppm downhole.	

BH56

Depth (m bgl)	Soil description	Layer
0.00	Sand with minor to some silt; brown. Loosley packed, dry to moist.	Topsoil
0.25	Sand with minor to some silt, trace brick and gravel; brown with orange staining. Loosley packed, dry to moist. 0.33m trace glass, ash and coke; dark brown. 0.45m trace brick, minor ash and gravel, patches of yellowish brown fine to coarse sand. 0.55m silty sand, brown.Loosley packed, moist. 0.56m beach sand; orange stained upper boundary.	Cap
1.40	Clayey silty sand with some ash; orange-brown with black spots. Loosely packed, moist. Contains layers of beach sand; silty sand with minor to some ash and trace glass, dark brown to dark reddish orange; ash with coke and shiny vesicular grey and black clinker/forge waste; brown silty sand; silty clayey sand with porcelain, orange-brown; silty sand with trace fine copper wire, sawdust and wood fibres, fibreglass plasterboard, porcelain, glass and white siltstone; sawdust; silty sand with clay and some ash, minor clinker/forge waste (shiny grey, vesicular), pale brown and dark grey to black mottled; silty sand with clinker and minor ash, brown mottled orange and dark grey.	Landfill
5.05	End of hole (maximum depth). Groundwater not encountered.	

BH57

Depth (m bgl)	Soil description	Layer
0.00	Sand with minor silt; brown. Loosley packed, dry. 0.2m trace gravel. 0.26m some gravel. 0.27m beach sand with brown lenses.	Topsoil
0.53	Clay with trace brick; yellowish brown with dark grey mottles/patches. Tightly packed, dry to moist.	Fill/cap
0.60	Fine to medium sand; light brownish grey/creamy white. Loosely packed, moist to wet.	Beach sand
2.00	End of hole (target depth). Groundwater not encountered.	

BH58

Depth (m bgl)	Soil description	Layer
0.00	Sand with trace to minor silt; brown. Loosley packed, dry to moist. Contains layers of beach sand with shells (5cm thick).	Topsoil
0.30	Silty sand with minor gravel; brown mottled dark brown and orange. Tightly packed, dry to moist.	Fill/cap
0.37	Fine to medium sand; light brownish grey/creamy white. Loosely packed, dry to moist.	Beach sand
2.00	End of hole (target depth). Groundwater not encountered.	

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Borehole Logs

BH59

Depth (m bgl)	Soil description	Layer
0.00	Sand with trace to minor silt; brown. Loosley packed, dry to moist.	Topsoil
0.30	Fine to medium sand; light brownish grey/creamy white. Loosely packed, dry to moist.	Beach sand
0.40	Silty sand with clay and trace gravel; brown with orange staining. Tightly packed, dry to moist.	Fill/cap
0.45	Fine to medium sand; light brownish grey/creamy white. Loosely packed, dry to moist.	Beach sand
2.00	End of hole (target depth). Groundwater not encountered.	

BH60

Depth (m bgl)	Soil description	Layer
0.00	Sand with trace to minor silt; brown. Loosley packed, dry to moist.	Topsoil
0.19	Fine to medium sand; light brownish grey/creamy white. Loosely packed, dry to moist.	Beach sand
0.23	Clayey silt/silty clay; brown with yellowish brown patches, dark grey and orange mottle. Stiff, dry. 0.3m soft, moist.	Fill/cap
0.45	Fine to medium sand; light brownish grey/creamy white. Loosely packed, dry to moist. 1.0-2.0m trace dark brown organic banding.	Beach sand
2.00	End of hole (target depth). Groundwater not encountered.	

Appendix E Laboratory results and transcripts

- **Results Table**
- **Laboratory transcripts**

Table E1 - Kettle Park results summary, east of Moana Rua Road (non-organic)

Sample ID		BH01 1.2-1.6	BH02 0.3	BH02 0.7-1.2	BH02 4.5-4.8	BH02 5.6-7.2	BH03 1.35-1.5	BH03 3-3.2	BH04 0.7-0.9	BH04 1.3-1.6	BH04 4.8-5.0	BH05 0.2-0.5	BH05 2.4-2.8							
Sample Depth (m bgl)		1.2-1.6	0.3	0.7-1.2	4.5-4.8	5.6-7.2	1.35-1.5	3.0-3.2	0.7-0.9	1.3-1.6	4.8-5.0	0.2-0.5	2.4-2.8							
Layer	Units	landfill	cap	landfill	landfill	landfill	landfill	landfill	landfill	landfill	landfill	cap	landfill	Background [2]	Recreational [3]	Commercial/ industrial outdoor worker [7]	*Sediment quality guidelines* [10]	Class A Landfill [11]	Class B Landfill [11]	Burnside Landfill [12]
PID reading	ppm	1.1	1.8	2.1	3.1	3.8	2.2	4.4	2.0	2.9	4.0	1.9	4.5							
Asbestos																				
Asbestos form	-	-	-	Chrysotile Free Fibres, Fibre Bundle, Fibre cement sheet	-	-	-	-	-	-	-	Chrysotile Free Fibres	-	NAD	NGV	NGV	NGV	NGV	NGV	NGV
ACM (>10mm)	w/w %	NAD	NAD	1.91		NAD	NAD				NAD	NAD			0.02 [4]	0.05 [4]				
FA/AF (<10mm)	w/w %	NAD	NAD	0.539		NAD	NAD				NAD	<0.001			0.001 [4]	0.001 [4]				
Metals and metalloids																				
Arsenic	mg/kg	3.9	-	*76.9*	*38.2*	-	13.8	-	*31.5*	-	*54.7*	6.3	*36.6*	12.67	80	70	20	100	10	100
Cadmium	mg/kg	0.083	-	*6.67*	*6.29*	-	1.21	-	*7.11*	-	*3.41*	0.29	1.15	0.28	400	1,300	1.5	20	2	20
Chromium	mg/kg	6.7	-	*147*	66.9	-	12	-	13.8	-	33.6	24	52.7	60.5	2,700	6,300	80	100	10	400
Copper	mg/kg	13.1	-	*302*	*4,560*	-	*101*	-	*64,000*	-	*23,500*	47.8	*219*	40.17	>10,000	>10,000	65	100	10	400
Lead	mg/kg	*54.5*	-	*1,450*	*3,900*	-	*342*	-	*3,150*	-	*5,480*	*191*	*3,980*	30.08	880	3,300	50	100	10	400
Mercury	mg/kg	0.13	-	*0.57*	0.033	-	0.045	-	*0.24*	-	0.041	*0.16*	*0.22*	NGV	1,800	4,200	0.15	4	0.4	4
Nickel	mg/kg	8.73	-	*121*	*131*	-	16.7	-	*103*	-	*120*	19.1	*74.7*	32.88	1,200 [5]	6,000 [5]	21	200	20	200
Zinc	mg/kg	59.9	-	*5,710*	*1,660*	-	*747*	-	*29,000*	-	*13,200*	187	*1,270*	101.8	30,000 [5]	40,0000 [5]	200	200	20	800
Sulfur	mg/kg	-	-	-	2,300	1,000	-	5,300	-	-	-	-	-	NGV	NGV	NGV	NGV	NGV	NGV	NGV
Other																				
Free Cyanide	mg/kg	-	-	-	<0.20	<0.2	-	<0.20	<0.20	-	-	-	-	NGV	NGV	>10,000 [6]	NGV	NGV	NGV	500
Total Cyanide	mg/kg	-	-	-	<0.40	<0.2	-	0.71	1.6	-	-	-	-	NGV	NGV		NGV	NGV	NGV	
Sulfate-S	mg/kg	-	-	-	502.7	381.9	-	1,102.3	-	-	-	-	-	NGV	NGV	NGV	NGV	NGV	NGV	NGV
Total Petroleum Hydrocarbons (TPH)																				
C7-C9	mg/kg	-	-	-	<10	-	-	-	-	-	-	-	-	<LOR	NGV	SAND; 120 [m] (<1 m), 120 [m] (1-4 m), 12,000 [v] (>4m) SILT; 500 [m] (<1 m), 500 [m] (1-4 m), 12,000 [v] (>4m) SILTY CLAY; 8,800 [v] (<1m), 20,000 [m] (1-4m), >20,000 (>4m) [8]	NGV	NGV	NGV	500
C10-C14	mg/kg	-	-	-	<15	-	-	-	-	-	-	-	-	<LOR	NGV	SAND; 1,500 [x] (<1m), 1,900 [x] (1-4 m), 2,100 [x] (>4m) SILT; 1,700 [x] (<1 m), 2,200 [x] (1-4m), 3,400 [x] (>4m) SILTY CLAY; 1,900 [x] (<1m), 8,900 [x] (1-4m), >20,000 (>4m) [8]	NGV	NGV	NGV	20,000
C15-C36	mg/kg	-	-	-	<25	-	-	-	-	-	-	-	-	<LOR	NGV	>20,000 [8]	NGV	NGV	NGV	20,000
C7-C36 (Total)	mg/kg	-	-	-	<50	-	-	-	-	-	-	-	-	<LOR	NGV	NGV	280	NGV	NGV	20,000

Notes:
ACM - asbestos containing material; FA - fibrous asbestos; AF - asbestos fines.
NAD - No Asbestos Detected.
NGV - No Guideline Value.
LOR - Laboratory reporting limit.
- Denotes not analysed or not applicable
Bold indicates that the published background concentration for the site is exceeded.
Underlined indicates that the Recreational criterion is exceeded
Italics indicate that the Sediment Quality Guideline is exceeded.
Green highlight indicates that the Class B landfill screening criterion is exceeded.
Orange highlight indicates that the Class A landfill screening criterion is exceeded.
Yellow highlight indicates that the Burnside Landfill screening criterion is exceeded.
Red indicates that the NES SCS for commercial/industrial land use or NZ Asbestos in Soil 'all site uses' criterion is exceeded.
* Samples were lost by the analysing laboratory; VOC/SVOC/TPH/PAH/cyanide were analysed outside of standard holding times.
1- Benzo[a]pyrene potency equivalence (PEF) is laboratory calculated based on the LOR, in accordance with the NES Soil Methodology for Deriving Standards in Soil to Protect Human Health, MfE 2011.
2- Background soil concentrations of selected trace elements and organic contaminants in New Zealand. Landcare Research 2016, seen on https://lris.scinfo.org.nz/layer/48470-pbc-predicted-background-soil-concentrations-new-zealand/
3 - MfE, 2012 - National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health, Recreational SCS (unless otherwise stated).
4 - BRANZ 2017, New Zealand Guidelines for Assessing and Managing Asbestos in Soil.
5 - ASC NEPM Toolbox - Update Febrary 2014 - www.nepc.gov.au/nepms/assessment-site-contamination/toolbox
6 - MfE, 1997 - Guidelines for Assessing and Managing Contaminated Gasworks Sites in New Zealand.
7 - MfE, 2012 - National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health, Commercial/industrial outdoor worker (unpaved) SCS (unless otherwise stated).
8- MfE 2011, Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand. Tier 1 soil acceptance criteria for TPH, BTEX and naphthalene commercial/industrial land use. All pathways. The following notes denote the limiting pathway for each criterion: v-volatilisation, m-maintenance/excavation, x- PAH surrogate.
9 - USEPA Regional Soil Screening Values, hazard quotient of 1, target risk value of 10-5, outdoor worker, chronic effects.
10 - Australia and New Zealand Water Quality Guidelines 2018 - Recommended default guideline values for toxicants in sediment.
11 - MfE, Module 2 - Hazardous Waste Guidelines: Landfill Waste Acceptance Criteria and Landfill Classification. Appendix A: Total concentration and leachability limits for Class A and Class B landfills. Screening criterion - 20 x TCLP criteria.
12 - Consent No. RM17.198.01 V2. Appendix 1 Waste Acceptance Criteria; Total Concentration Screening.

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Table E1 - Kettle Park results summary, east of Moana Rua Road (non-organic)

Sample ID		BH06 1.8-2.0	BH06 3.9-4.6	BH06 5.6-6.0	BH06 6.8-7.0	BH07 0.25-0.65	BH07 1.25-1.4	BH07 2.7-3.0	BH08 0.45-0.8	BH08 2.9-3.6	BH08 3.8-4.0	BH09 0.75-1.4	BH10 1.65-2.3	Background [2]	Recreational [3]	Commercial/ industrial outdoor worker [7]	*Sediment quality guidelines* [10]	Class A Landfill [11]	Class B Landfill [11]	Burnside Landfill [12]
Sample Depth (m bgl)		1.8-2.0	3.9-4.6	5.6-6.0	6.8-7	0.25-0.65	1.25-1.4	2.7-3.0	0.45-0.8	2.9-3.6	3.8-4.0	0.75-1.4	1.65-2.3							
Layer	Units	landfill	landfill	landfill	impacted beach sand	cap	landfill	landfill	landfill	landfill	landfill	landfill	landfill							
PID reading	ppm	11.8	4.1	32.1	3.4	2.5	2.8	3.2	3.1	3.1	3.9	1.4	1.3							
Asbestos																				
Asbestos form	-	-	-	-	-	Chrysotile Free Fibres	-	-	-	-	-	-	-	NAD	NGV	NGV	NGV	NGV	NGV	NGV
ACM (>10mm)	w/w %		NAD			NAD		NAD	NAD		NAD	NAD	NAD		0.02 [4]	0.05 [4]				
FA/AF (<10mm)	w/w %		NAD			<0.001		NAD	NAD		NAD	NAD	NAD		0.001 [4]	0.001 [4]				
Metals and metalloids																				
Arsenic	mg/kg	-	12	-	3.8	3.2	-	-	-	-	2.9	16.4	4.8	12.67	80	70	20	100	10	100
Cadmium	mg/kg	-	0.719	-	0.026	0.061	-	-	-	-	0.29	0.32	0.29	0.28	400	1,300	1.5	20	2	20
Chromium	mg/kg	-	44.9	-	5.7	9.1	-	-	-	-	5.5	29.9	11	60.5	2,700	6,300	80	100	10	400
Copper	mg/kg	-	*113*	-	1.7	22.6	-	-	-	-	*131*	*145*	25.4	40.17	>10,000	>10,000	65	100	10	400
Lead	mg/kg	-	*4,360*	-	2.2	48.6	-	-	-	-	*76.1*	*1,230*	*197*	30.08	880	3,300	50	100	10	400
Mercury	mg/kg	-	*0.26*	-	<0.025	0.055	-	-	-	-	0.055	0.072	0.14	NGV	1,800	4,200	0.15	4	0.4	4
Nickel	mg/kg	-	*64.9*	-	6.19	6.39	-	-	-	-	4.8	*64.9*	10.1	32.88	1,200 [5]	6,000 [5]	21	200	20	200
Zinc	mg/kg	-	*867*	-	14.5	52.8	-	-	-	-	167	*294*	*510*	101.8	30,000 [5]	40,0000 [5]	200	200	20	800
Sulfur	mg/kg	-	-	-	-	-	-	-	-	2,200	-	-	-	NGV	NGV	NGV	NGV	NGV	NGV	NGV
Other																				
Free Cyanide	mg/kg	-	-	-	-	-	-	-	-	<0.20	-	-	-	NGV	NGV	>10,000 [6]	NGV	NGV	NGV	500
Total Cyanide	mg/kg	-	-	-	-	-	-	-	-	1.3	-	-	-	NGV	NGV		NGV	NGV	NGV	
Sulfate-S	mg/kg	-	-	-	-	-	-	-	-	272.5	-	-	-	NGV	NGV	NGV	NGV	NGV	NGV	NGV
Total Petroleum Hydrocarbons (TPH)																				
C7-C9	mg/kg	-	-	<10	<10	-	-	-	-	-	-	-	-	<LOR	NGV	SAND; 120 [m] (<1 m), 120 [m] (1-4 m), 12,000 [v] (>4m) SILT; 500 [m] (<1 m), 500 [m] (1-4 m), 12,000 [v] (>4m) SILTY CLAY; 8,800 [v] (<1m), 20,000 [m] (1-4m), >20,000 (>4m) [8]	NGV	NGV	NGV	500
C10-C14	mg/kg	-	-	116	<15	-	-	-	-	-	-	-	-	<LOR	NGV	SAND; 1,500 [x] (<1m), 1,900 [x] (1-4 m), 2,100 [x] (>4m) SILT; 1,700 [x] (<1 m), 2,200 [x] (1-4m), 3,400 [x] (>4m) SILTY CLAY; 1,900 [x] (<1m), 8,900 [x] (1-4m), >20,000 (>4m) [8]	NGV	NGV	NGV	20,000
C15-C36	mg/kg	-	-	5,378	<25	-	-	-	-	-	-	-	-	<LOR	NGV	>20,000 [8]	NGV	NGV	NGV	20,000
C7-C36 (Total)	mg/kg	-	-	*5,494*	<50	-	-	-	-	-	-	-	-	<LOR	NGV	NGV	280	NGV	NGV	20,000

Notes:
ACM - asbestos containing material; FA - fibrous asbestos; AF - asbestos fines.
NAD - No Asbestos Detected.
NGV - No Guideline Value.
LOR - Laboratory reporting limit.
- Denotes not analysed or not applicable
Bold indicates that the published background concentration for the site is exceeded.
Underlined indicates that the Recreational criterion is exceeded
Italics indicate that the Sediment Quality Guideline is exceeded.
Green highlight indicates that the Class B landfill screening criterion is exceeded.
Orange highlight indicates that the Class A landfill screening criterion is exceeded.
Yellow highlight indicates that the Burnside Landfill screening criterion is exceeded.
Red indicates that the NES SCS for commercial/industrial land use or NZ Asbestos in Soil 'all site uses' criterion is exceeded.
* Samples were lost by the analysing laboratory; VOC/SVOC/TPH/PAH/cyanide were analysed outside of standard holding times.
1- Benzo[a]pyrene potency equivalence (PEF) is laboratory calculated based on the LOR, in accordance with the NES Soil Methodology for Deriving Standards in Soil to Protect Human Health, MfE 2011.
2- Background soil concentrations of selected trace elements and organic contaminants in New Zealand. Landcare Research 2016, seen on https://lris.scinfo.org.nz/layer/48470-pbc-predicted-background-soil-concentrations-new-zealand/
3 - MfE, 2012 - National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health, Recreational SCS (unless otherwise stated).
4 - BRANZ 2017, New Zealand Guidelines for Assessing and Managing Asbestos in Soil.
5 - ASC NEPM Toolbox - Update Febrary 2014 - www.nepc.gov.au/nepms/assessment-site-contamination/toolbox
6 - MfE, 1997 - Guidelines for Assessing and Managing Contaminated Gasworks Sites in New Zealand.
7 - MfE, 2012 - National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health, Commercial/industrial outdoor worker (unpaved) SCS (unless otherwise stated).
8- MfE 2011, Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand. Tier 1 soil acceptance criteria for TPH, BTEX and naphthalene commercial/industrial land use. All pathways. The following notes denote the limiting pathway for each criterion: v-volatilisation, m-maintenance/excavation, x- PAH surrogate.
9 - USEPA Regional Soil Screening Values, hazard quotient of 1, target risk value of 10-5, outdoor worker, chronic effects.
10 - Australia and New Zealand Water Quality Guidelines 2018 - Recommended default guideline values for toxicants in sediment.
11 - MfE, Module 2 - Hazardous Waste Guidelines: Landfill Waste Acceptance Criteria and Landfill Classification. Appendix A: Total concentration and leachability limits for Class A and Class B landfills. Screening criterion - 20 x TCLP criteria.
12 - Consent No. RM17.198.01 V2. Appendix 1 Waste Acceptance Criteria; Total Concentration Screening.

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Table E1 - Kettle Park results summary, east of Moana Rua Road (non-organic)

Sample ID		BH10 4.6-4.75	BH11 0-0.2	BH11 1.1-1.25	BH11 2.8-3.0	BH11 3.58-3.76	BH12 0.7-1.0	BH12 1.55	BH12 2.2	BH12 3.0	BH13 2.8-3.0	BH13 3.6-3.8	BH13 4.8-6.25							
Sample Depth (m bgl)		4.6-4.75	0.0-0.2	1.1-1.25	2.8-3.0	3.58-3.76	0.7-1.0	1.55	2.2	3.0	2.8-3.0	3.6-3.8	4.8-6.25							
Layer	Units	impacted beach sand	topsoil	landfill	landfill	landfill	landfill	landfill	landfill	landfill	landfill	landfill	landfill	Background [2]	Recreational [3]	Commercial/ industrial outdoor worker [7]	*Sediment quality guidelines* [10]	Class A Landfill [11]	Class B Landfill [11]	Burnside Landfill [12]
PID reading	ppm	2.1	4.2	7.2	25.7	-	3.9	16.3	2.2	3.9	6.3	12.4	6.3							
Asbestos																				
Asbestos form	-	-	-	-	-	-	Chrysotile Free Fibres, Fibre Bundle	-	-	-	-	-	Chrysotile Fibre Bundle	NAD	NGV	NGV	NGV	NGV	NGV	NGV
ACM (>10mm)	w/w %		NAD			NAD	NAD						NAD		0.02 [4]	0.05 [4]				
FA/AF (<10mm)	w/w %		NAD			NAD	0.001						0.032		0.001 [4]	0.001 [4]				
Metals and metalloids																				
Arsenic	mg/kg	6.3	2.8	-	6.8	-	-	-	1.4	-	-	15.0	-	12.67	80	70	20	100	10	100
Cadmium	mg/kg	0.27	0.072	-	*1.99*	-	-	-	0.0072	-	-	*59.6*	-	0.28	400	1,300	1.5	20	2	20
Chromium	mg/kg	9.1	6.9	-	64.9	-	-	-	2.3	-	-	*87.2*	-	60.5	2,700	6,300	80	100	10	400
Copper	mg/kg	47.9	7.93	-	*463*	-	-	-	1.3	-	-	*2,290*	-	40.17	>10,000	>10,000	65	100	10	400
Lead	mg/kg	*108*	17.1	-	*678*	-	-	-	1.5	-	-	*1,960*	-	30.08	880	3,300	50	100	10	400
Mercury	mg/kg	0.055	0.036	-	*0.25*	-	-	-	<0.025	-	-	*55.1*	-	NGV	1,800	4,200	0.15	4	0.4	4
Nickel	mg/kg	5.58	4.5	-	*94.4*	-	-	-	1.9	-	-	*30.0*	-	32.88	1,200 [5]	6,000 [5]	21	200	20	200
Zinc	mg/kg	*221*	29.7	-	*480*	-	-	-	5.12	-	-	*31,400*	-	101.8	30,000 [5]	40,0000 [5]	200	200	20	800
Sulfur	mg/kg	-	-	-	-	-	-	-	-	410	-	6,800	-	NGV	NGV	NGV	NGV	NGV	NGV	NGV
Other																				
Free Cyanide	mg/kg	-	-	-	-	-	-	-	-	<0.20	-	<0.20	-	NGV	NGV	>10,000 [6]	NGV	NGV	NGV	500
Total Cyanide	mg/kg	-	-	-	-	-	-	-	-	<0.2	-	26	-	NGV	NGV		NGV	NGV	NGV	
Sulfate-S	mg/kg	-	-	-	-	-	-	-	-	25.4	-	10.8	-	NGV	NGV	NGV	NGV	NGV	NGV	NGV
Total Petroleum Hydrocarbons (TPH)																				
C7-C9	mg/kg	-	-	112	55	-	-	11	-	-	22	125	-	<LOR	NGV	SAND; 120 [m] (<1 m), 120 [m] (1-4 m), 12,000 [v] (>4m) SILT; 500 [m] (<1 m), 500 [m] (1-4 m), 12,000 [v] (>4m) SILTY CLAY; 8,800 [v] (<1m), 20,000 [m] (1-4m), >20,000 (>4m) [8]	NGV	NGV	NGV	500
C10-C14	mg/kg	-	-	1,507	528	-	-	780	-	-	365	3,562	-	<LOR	NGV	SAND; 1,500 [x] (<1m), 1,900 [x] (1-4 m), 2,100 [x] (>4m) SILT; 1,700 [x] (<1 m), 2,200 [x] (1-4m), 3,400 [x] (>4m) SILTY CLAY; 1,900 [x] (<1m), 8,900 [x] (1-4m), >20,000 (>4m) [8]	NGV	NGV	NGV	20,000
C15-C36	mg/kg	-	-	19,115	497	-	-	14,592	-	-	10,838	34,717	-	<LOR	NGV	>20,000 [8]	NGV	NGV	NGV	20,000
C7-C36 (Total)	mg/kg	-	-	*20,733*	*1,080*	-	-	*15,383*	-	-	*11,224*	*38,404*	-	<LOR	NGV	NGV	280	NGV	NGV	20,000

Notes:

ACM - asbestos containing material; FA - fibrous asbestos; AF - asbestos fines.
NAD - No Asbestos Detected.
NGV - No Guideline Value.
LOR - Laboratory reporting limit.
- Denotes not analysed or not applicable
Bold indicates that the published background concentration for the site is exceeded.
Underlined indicates that the Recreational criterion is exceeded
Italics indicate that the Sediment Quality Guideline is exceeded.
Green highlight indicates that the Class B landfill screening criterion is exceeded.
Orange highlight indicates that the Class A landfill screening criterion is exceeded.
Yellow highlight indicates that the Burnside Landfill screening criterion is exceeded.
Red indicates that the NES SCS for commercial/industrial land use or NZ Asbestos in Soil 'all site uses' criterion is exceeded.
* Samples were lost by the analysing laboratory; VOC/SVOC/TPH/PAH/cyanide were analysed outside of standard holding times.
1- Benzo[a]pyrene potency equivalence (PEF) is laboratory calculated based on the LOR, in accordance with the NES Soil Methodology for Deriving Standards in Soil to Protect Human Health, MfE 2011.
2- Background soil concentrations of selected trace elements and organic contaminants in New Zealand. Landcare Research 2016, seen on https://lris.scinfo.org.nz/layer/48470-pbc-predicted-background-soil-concentrations-new-zealand/
3 - MfE, 2012 - National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health, Recreational SCS (unless otherwise stated).
4 - BRANZ 2017, New Zealand Guidelines for Assessing and Managing Asbestos in Soil.
5 - ASC NEPM Toolbox - Update Febrary 2014 - www.nepc.gov.au/nepms/assessment-site-contamination/toolbox
6 - MfE, 1997 - Guidelines for Assessing and Managing Contaminated Gasworks Sites in New Zealand.
7 - MfE, 2012 - National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health, Commercial/industrial outdoor worker (unpaved) SCS (unless otherwise stated).
8- MfE 2011, Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand. Tier 1 soil acceptance criteria for TPH, BTEX and naphthalene commercial/industrial land use. All pathways. The following notes denote the limiting pathway for each criterion: v-volatilisation, m-maintenance/excavation, x- PAH surrogate.
9 - USEPA Regional Soil Screening Values, hazard quotient of 1, target risk value of 10-5, outdoor worker, chronic effects.
10 - Australia and New Zealand Water Quality Guidelines 2018 - Recommended default guideline values for toxicants in sediment.
11 - MfE, Module 2 - Hazardous Waste Guidelines: Landfill Waste Acceptance Criteria and Landfill Classification. Appendix A: Total concentration and leachability limits for Class A and Class B landfills. Screening criterion - 20 x TCLP criteria.
12 - Consent No. RM17.198.01 V2. Appendix 1 Waste Acceptance Criteria; Total Concentration Screening.

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Table E1 - Kettle Park results summary, east of Moana Rua Road (non-organic)

Sample ID		BH13 7.0	BH14 0.2-0.5	BH14 4.3-5.0	BH14 6.3-6.7	BH15 1.5-1.7	BH16 0.5-0.7	BH17 0.75-1.3	BH17 5.3-5.6	BH18 3.35-4.0	BH18 4.7	BH19 0.3-0.7	BH19 3.4-3.8	Background [2]	Recreational [3]	Commercial/ industrial outdoor worker [7]	*Sediment quality guidelines* [10]	Class A Landfill [11]	Class B Landfill [11]	Burnside Landfill [12]
Sample Depth (m bgl)		7.0	0.2-0.5	4.3-5.0	6.3-6.7	1.5-1.7	0.5-0.7	0.75-1.3	5.3-5.6	3.35-4.0	4.7	0.3-0.7	3.4-3.8							
Layer	Units	beach sand	cap	landfill	landfill	landfill	cap	landfill	landfill	landfill	landfill	cap	landfill							
PID reading	ppm	0.9	4.1	4.0	4.7	7.2	2.7	2.6	3.2	4	4.2	1.8	2.3							
Asbestos																				
Asbestos form	-	-	-	Chrysotile Fibre Bundle	-	Chrysotile Fibre Bundle	-	-	-	-	-	-	Chrysotile Free fibres, Fibre bundle	NAD	NGV	NGV	NGV	NGV	NGV	NGV
ACM (>10mm)	w/w %		NAD	NAD	NAD	NAD	NAD		NAD	NAD		NAD	NAD		0.02 [4]	0.05 [4]				
FA/AF (<10mm)	w/w %		NAD	0.008	NAD	<0.001	NAD		NAD	NAD		NAD	<0.001		0.001 [4]	0.001 [4]				
Metals and metalloids																				
Arsenic	mg/kg	2.9	8.4	-	*20.7*	11	-	-	2.1	-	-	-	-	12.67	80	70	20	100	10	100
Cadmium	mg/kg	0.027	0.18	-	*1.96*	0.556	-	-	0.046	-	-	-	-	0.28	400	1,300	1.5	20	2	20
Chromium	mg/kg	7.0	34.3	-	32.6	15.7	-	-	3.6	-	-	-	-	60.5	2,700	6,300	80	100	10	400
Copper	mg/kg	2.7	29	-	*139*	*181*	-	-	8.48	-	-	-	-	40.17	>10,000	>10,000	65	100	10	400
Lead	mg/kg	2.6	*87.3*	-	*10,000*	*477*	-	-	*35.8*	-	-	-	-	30.08	880	3,300	50	100	10	400
Mercury	mg/kg	*0.2*	*0.59*	-	*0.61*	*0.2*	-	-	<0.025	-	-	-	-	NGV	1,800	4,200	0.15	4	0.4	4
Nickel	mg/kg	13.1	*26.3*	-	*40.9*	*24.8*	-	-	3.2	-	-	-	-	32.88	1,200 [5]	6,000 [5]	21	200	20	200
Zinc	mg/kg	14.6	135	-	*1,570*	*269*	-	-	29.1	-	-	-	-	101.8	30,000 [5]	40,0000 [5]	200	200	20	800
Sulfur	mg/kg	-	-	-	-	-	-	1,800	-	-	-	-	-	NGV	NGV	NGV	NGV	NGV	NGV	NGV
Other																				
Free Cyanide	mg/kg	-	-	-	-	-	-	<0.20	-	-	-	-	-	NGV	NGV	>10,000 [6]	NGV	NGV	NGV	500
Total Cyanide	mg/kg	-	-	-	-	-	-	<0.2	-	-	-	-	-	NGV	NGV		NGV	NGV	NGV	
Sulfate-S	mg/kg	-	-	-	-	-	-	106	-	-	-	-	-	NGV	NGV	NGV	NGV	NGV	NGV	NGV
Total Petroleum Hydrocarbons (TPH)																				
C7-C9	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	<LOR	NGV	SAND; 120 [m] (<1 m), 120 [m] (1-4 m), 12,000 [v] (>4m) SILT; 500 [m] (<1 m), 500 [m] (1-4 m), 12,000 [v] (>4m) SILTY CLAY; 8,800 [v] (<1m), 20,000 [m] (1-4m), >20,000 (>4m) [8]	NGV	NGV	NGV	500
C10-C14	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	<LOR	NGV	SAND; 1,500 [x] (<1m), 1,900 [x] (1-4 m), 2,100 [x] (>4m) SILT; 1,700 [x] (<1 m), 2,200 [x] (1-4m), 3,400 [x] (>4m) SILTY CLAY; 1,900 [x] (<1m), 8,900 [x] (1-4m), >20,000 (>4m) [8]	NGV	NGV	NGV	20,000
C15-C36	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	<LOR	NGV	>20,000 [8]	NGV	NGV	NGV	20,000
C7-C36 (Total)	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	<LOR	NGV	NGV	280	NGV	NGV	20,000

Notes:

ACM - asbestos containing material; FA - fibrous asbestos; AF - asbestos fines.
NAD - No Asbestos Detected.
NGV - No Guideline Value.
LOR - Laboratory reporting limit.
- Denotes not analysed or not applicable
Bold indicates that the published background concentration for the site is exceeded.
Underlined indicates that the Recreational criterion is exceeded
Italics indicate that the Sediment Quality Guideline is exceeded.
Green highlight indicates that the Class B landfill screening criterion is exceeded.
Orange highlight indicates that the Class A landfill screening criterion is exceeded.
Yellow highlight indicates that the Burnside Landfill screening criterion is exceeded.
Red indicates that the NES SCS for commercial/industrial land use or NZ Asbestos in Soil 'all site uses' criterion is exceeded.
* Samples were lost by the analysing laboratory; VOC/SVOC/TPH/PAH/cyanide were analysed outside of standard holding times.
1- Benzo[a]pyrene potency equivalence (PEF) is laboratory calculated based on the LOR, in accordance with the NES Soil Methodology for Deriving Standards in Soil to Protect Human Health, MfE 2011.
2- Background soil concentrations of selected trace elements and organic contaminants in New Zealand. Landcare Research 2016, seen on https://lris.scinfo.org.nz/layer/48470-pbc-predicted-background-soil-concentrations-new-zealand/
3 - MfE, 2012 - National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health, Recreational SCS (unless otherwise stated).
4 - BRANZ 2017, New Zealand Guidelines for Assessing and Managing Asbestos in Soil.
5 - ASC NEPM Toolbox - Update Febrary 2014 - www.nepc.gov.au/nepms/assessment-site-contamination/toolbox
6 - MfE, 1997 - Guidelines for Assessing and Managing Contaminated Gasworks Sites in New Zealand.
7 - MfE, 2012 - National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health, Commercial/industrial outdoor worker (unpaved) SCS (unless otherwise stated).
8- MfE 2011, Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand. Tier 1 soil acceptance criteria for TPH, BTEX and naphthalene commercial/industrial land use. All pathways. The following notes denote the limiting pathway for each criterion: v-volatilisation, m-maintenance/excavation, x- PAH surrogate.
9 - USEPA Regional Soil Screening Values, hazard quotient of 1, target risk value of 10-5, outdoor worker, chronic effects.
10 - Australia and New Zealand Water Quality Guidelines 2018 - Recommended default guideline values for toxicants in sediment.
11 - MfE, Module 2 - Hazardous Waste Guidelines: Landfill Waste Acceptance Criteria and Landfill Classification. Appendix A: Total concentration and leachability limits for Class A and Class B landfills. Screening criterion - 20 x TCLP criteria.
12 - Consent No. RM17.198.01 V2. Appendix 1 Waste Acceptance Criteria; Total Concentration Screening.

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Table E1 - Kettle Park results summary, east of Moana Rua Road (non-organic)

Sample ID		BH19 3.8	BH19 5.8	BH20 1.4-2.3	BH21 1.4-2.0	BH22 4.3-4.6	BH22 6.4-7.0	BH23 1.15-1.45	BH23 3.35-4.0	BH23 6.5	BH24 0.3-0.5	BH25 0.3-0.75	BH25 6.1							
Sample Depth (m bgl)		3.8	5.8	1.4-2.3	1.4-2.0	4.3-4.6	6.4-7.0	1.15-1.45	3.35-4.0	6.5	0.3-0.5	0.3-0.75	6.1							
Layer	Units	landfill	beach sand	landfill	landfill	landfill	landfill	landfill	landfill	landfill	landfill	cap	landfill	Background [2]	Recreational [3]	Commercial/ industrial outdoor worker [7]	*Sediment quality guidelines* [10]	Class A Landfill [11]	Class B Landfill [11]	Burnside Landfill [12]
PID reading	ppm	3.3	3.3	4.1	3.8	4.7	6.3	3.3	4.1	6.2	5.2	0.9	6.8							
Asbestos																				
Asbestos form	-	-	-	Chrysotile Fibre bundle	-	-	Chrysotile Fibre bundle	-	Crocidolite, Chrysotile	-	Chrysotile Fibre bundle	Chrysotile Free fibres	-	NAD	NGV	NGV	NGV	NGV	NGV	NGV
ACM (>10mm)	w/w %			NAD	NAD	NAD	NAD		NAD		NAD	NAD			0.02 [4]	0.05 [4]				
FA/AF (<10mm)	w/w %			0.003	NAD	NAD	0.003		0.002		<0.001	<0.001			0.001 [4]	0.001 [4]				
Metals and metalloids																				
Arsenic	mg/kg	6.3	1.8	-	*28.6*	*40.2*	-	-	-	*74.4*	*69*	-	2.9	12.67	80	70	20	100	10	100
Cadmium	mg/kg	*1.61*	0.019	-	0.904	1.15	-	-	-	*25.9*	*17.6*	-	0.051	0.28	400	1,300	1.5	20	2	20
Chromium	mg/kg	23.6	2.7	-	41.9	51.9	-	-	-	65.1	68.1	-	9.3	60.5	2,700	6,300	80	100	10	400
Copper	mg/kg	*214*	1.5	-	*144*	*797*	-	-	-	*669*	*560*	-	16.3	40.17	>10,000	>10,000	65	100	10	400
Lead	mg/kg	*254*	1.6	-	*2,600*	*1,650*	-	-	-	*6,690*	*3,620*	-	39.5	30.08	880	3,300	50	100	10	400
Mercury	mg/kg	*0.3*	<0.025	-	*0.4*	*0.2*	-	-	-	*2.85*	*0.4*	-	0.056	NGV	1,800	4,200	0.15	4	0.4	4
Nickel	mg/kg	*31.1*	3.1	-	*66.5*	*72.3*	-	-	-	*73.7*	*89.7*	-	5.98	32.88	1,200 [5]	6,000 [5]	21	200	20	200
Zinc	mg/kg	*1,010*	19.8	-	*2,620*	*1,120*	-	-	-	*20,400*	*6,110*	-	54.8	101.8	30,000 [5]	40,0000 [5]	200	200	20	800
Sulfur	mg/kg	-	-	-	-	15,000	-	1,600	-	-	-	-	-	NGV	NGV	NGV	NGV	NGV	NGV	NGV
Other																				
Free Cyanide	mg/kg	-	-	-	-	<0.20	-	<0.03	-	-	-	-	-	NGV	NGV	>10,000 [6]	NGV	NGV	NGV	500
Total Cyanide	mg/kg	-	-	-	-	<0.30	-	4.05	-	-	-	-	-	NGV	NGV		NGV	NGV	NGV	
Sulfate-S	mg/kg	-	-	-	-	3,238.2	-	90.3	-	-	-	-	-	NGV	NGV	NGV	NGV	NGV	NGV	NGV
Total Petroleum Hydrocarbons (TPH)																				
C7-C9	mg/kg	-	<10	-	-	-	-	-	-	-	-	-	<10	<LOR	NGV	SAND; 120 [m] (<1 m), 120 [m] (1-4 m), 12,000 [v] (>4m) SILT; 500 [m] (<1 m), 500 [m] (1-4 m), 12,000 [v] (>4m) SILTY CLAY; 8,800 [v] (<1m), 20,000 [m] (1-4m), >20,000 (>4m) [8]	NGV	NGV	NGV	500
C10-C14	mg/kg	-	<15	-	-	-	-	-	-	-	-	-	<15	<LOR	NGV	SAND; 1,500 [x] (<1m), 1,900 [x] (1-4 m), 2,100 [x] (>4m) SILT; 1,700 [x] (<1 m), 2,200 [x] (1-4m), 3,400 [x] (>4m) SILTY CLAY; 1,900 [x] (<1m), 8,900 [x] (1-4m), >20,000 (>4m) [8]	NGV	NGV	NGV	20,000
C15-C36	mg/kg	-	<25	-	-	-	-	-	-	-	-	-	83	<LOR	NGV	>20,000 [8]	NGV	NGV	NGV	20,000
C7-C36 (Total)	mg/kg	-	<50	-	-	-	-	-	-	-	-	-	83	<LOR	NGV	NGV	280	NGV	NGV	20,000

Notes:
ACM - asbestos containing material; FA - fibrous asbestos; AF - asbestos fines.
NAD - No Asbestos Detected.
NGV - No Guideline Value.
LOR - Laboratory reporting limit.
- Denotes not analysed or not applicable
Bold indicates that the published background concentration for the site is exceeded.
Underlined indicates that the Recreational criterion is exceeded
Italics indicate that the Sediment Quality Guideline is exceeded.
Green highlight indicates that the Class B landfill screening criterion is exceeded.
Orange highlight indicates that the Class A landfill screening criterion is exceeded.
Yellow highlight indicates that the Burnside Landfill screening criterion is exceeded.
Red indicates that the NES SCS for commercial/industrial land use or NZ Asbestos in Soil 'all site uses' criterion is exceeded.
* Samples were lost by the analysing laboratory; VOC/SVOC/TPH/PAH/cyanide were analysed outside of standard holding times.
1- Benzo[a]pyrene potency equivalence (PEF) is laboratory calculated based on the LOR, in accordance with the NES Soil Methodology for Deriving Standards in Soil to Protect Human Health, MfE 2011.
2- Background soil concentrations of selected trace elements and organic contaminants in New Zealand. Landcare Research 2016, seen on https://lris.scinfo.org.nz/layer/48470-pbc-predicted-background-soil-concentrations-new-zealand/
3 - MfE, 2012 - National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health, Recreational SCS (unless otherwise stated).
4 - BRANZ 2017, New Zealand Guidelines for Assessing and Managing Asbestos in Soil.
5 - ASC NEPM Toolbox - Update Febrary 2014 - www.nepc.gov.au/nepms/assessment-site-contamination/toolbox
6 - MfE, 1997 - Guidelines for Assessing and Managing Contaminated Gasworks Sites in New Zealand.
7 - MfE, 2012 - National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health, Commercial/industrial outdoor worker (unpaved) SCS (unless otherwise stated).
8- MfE 2011, Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand. Tier 1 soil acceptance criteria for TPH, BTEX and naphthalene commercial/industrial land use. All pathways. The following notes denote the limiting pathway for each criterion: v-volatilisation, m-maintenance/excavation, x- PAH surrogate.
9 - USEPA Regional Soil Screening Values, hazard quotient of 1, target risk value of 10-5, outdoor worker, chronic effects.
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11 - MfE, Module 2 - Hazardous Waste Guidelines: Landfill Waste Acceptance Criteria and Landfill Classification. Appendix A: Total concentration and leachability limits for Class A and Class B landfills. Screening criterion - 20 x TCLP criteria.
12 - Consent No. RM17.198.01 V2. Appendix 1 Waste Acceptance Criteria; Total Concentration Screening.

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27226.007

Table E1 - Kettle Park results summary, east of Moana Rua Road (non-organic)

Sample ID		BH26 0.55-0.65	BH26 4.25-4.7	BH27 5.4-5.65	BH27 6.9	BH29 0.4-0.5	BH30 1.52-1.8	BH30 5.5-5.8	BH31 1.3-1.65	BH33 2.9-3.35	BH33 6.8-7.0	Background [2]	Recreational [3]	Commercial/ industrial outdoor worker [7]	*Sediment quality guidelines* [10]	Class A Landfill [11]	Class B Landfill [11]	Burnside Landfill [12]
Sample Depth (m bgl)		0.55-0.65	4.25-4.7	5.4-5.65	6.9	0.4-0.5	1.52-1.8	5.5-5.8	1.3-1.65	2.9-3.35	6.8-7.0							
Layer	Units	landfill	landfill	landfill	impacted beach sand	landfill	landfill	landfill	landfill	landfill	landfill							
PID reading	ppm	1.7	2	3.1	3.7	2.8	5.4	10.2	4.6	4	4.5							
Asbestos																		
Asbestos form	-	-	Chrysotile Free fibres	Chrysotile Fibre bundle	-	Chrysotile Fibre bundle, Free fibres	Chrysotile Fibre bundle, Free fibres	-	-	-	-	NAD	NGV	NGV	NGV	NGV	NGV	NGV
ACM (>10mm)	w/w %		NAD	NAD		NAD	NAD		NAD	NAD	NAD		0.02 [4]	0.05 [4]				
FA/AF (<10mm)	w/w %		<0.001	0.001		0.006	0.057		NAD	NAD	NAD		0.001 [4]	0.001 [4]				
Metals and metalloids																		
Arsenic	mg/kg	-	12	-	2.5	12	-	11	-	*39.2*	-	12.67	80	70	20	100	10	100
Cadmium	mg/kg	-	0.713	-	0.085	1.00	-	0.517	-	*18.3*	-	0.28	400	1,300	1.5	20	2	20
Chromium	mg/kg	-	18.3	-	4.4	36.8	-	63.1	-	*371*	-	60.5	2,700	6,300	80	100	10	400
Copper	mg/kg	-	*71.7*	-	*80.5*	*4,160*	-	*312*	-	*29,000*	-	40.17	>10,000	>10,000	65	100	10	400
Lead	mg/kg	-	*567*	-	*60.2*	*743*	-	*492*	-	*1,920*	-	30.08	880	3,300	50	100	10	400
Mercury	mg/kg	-	*0.43*	-	<0.025	*0.76*	-	0.082	-	*0.24*	-	NGV	1,800	4,200	0.15	4	0.4	4
Nickel	mg/kg	-	16.5	-	9.65	*33.1*	-	*24.1*	-	*704*	-	32.88	1,200 [5]	6,000 [5]	21	200	20	200
Zinc	mg/kg	-	*529*	-	*308*	1,690	-	*396*	-	5,090	-	101.8	30,000 [5]	40,0000 [5]	200	200	20	800
Sulfur	mg/kg	980	-	-	-	-	-	-	-	-	-	NGV	NGV	NGV	NGV	NGV	NGV	NGV
Other																		
Free Cyanide	mg/kg	<0.03	-	-	-	-	-	-	-	-	-	NGV	NGV	>10,000 [6]	NGV	NGV	NGV	500
Total Cyanide	mg/kg	1.5	-	-	-	-	-	-	-	-	-	NGV	NGV		NGV	NGV	NGV	
Sulfate-S	mg/kg	37.9	-	-	-	-	-	-	-	-	-	NGV	NGV	NGV	NGV	NGV	NGV	NGV
Total Petroleum Hydrocarbons (TPH)																		
C7-C9	mg/kg	-	-	-	<10	-	-	<10	-	-	-	<LOR	NGV	SAND; 120 [m] (<1 m), 120 [m] (1-4 m), 12,000 [v] (>4m) SILT; 500 [m] (<1 m), 500 [m] (1-4 m), 12,000 [v] (>4m) SILTY CLAY; 8,800 [v] (<1m), 20,000 [m] (1-4m), >20,000 (>4m) [8]	NGV	NGV	NGV	500
C10-C14	mg/kg	-	-	-	<15	-	-	120	-	-	-	<LOR	NGV	SAND; 1,500 [x] (<1m), 1,900 [x] (1-4 m), 2,100 [x] (>4m) SILT; 1,700 [x] (<1 m), 2,200 [x] (1-4m), 3,400 [x] (>4m) SILTY CLAY; 1,900 [x] (<1m), 8,900 [x] (1-4m), >20,000 (>4m) [8]	NGV	NGV	NGV	20,000
C15-C36	mg/kg	-	-	-	<25	-	-	304	-	-	-	<LOR	NGV	>20,000 [8]	NGV	NGV	NGV	20,000
C7-C36 (Total)	mg/kg	-	-	-	<50	-	-	*424*	-	-	-	<LOR	NGV	NGV	280	NGV	NGV	20,000

Notes:

ACM - asbestos containing material; FA - fibrous asbestos; AF - asbestos fines.
NAD - No Asbestos Detected.
NGV - No Guideline Value.
LOR - Laboratory reporting limit.
- Denotes not analysed or not applicable
Bold indicates that the published background concentration for the site is exceeded.
Underlined indicates that the Recreational criterion is exceeded
Italics indicate that the Sediment Quality Guideline is exceeded.
Green highlight indicates that the Class B landfill screening criterion is exceeded.
Orange highlight indicates that the Class A landfill screening criterion is exceeded.
Yellow highlight indicates that the Burnside Landfill screening criterion is exceeded.
Red indicates that the NES SCS for commercial/industrial land use or NZ Asbestos in Soil 'all site uses' criterion is exceeded.
* Samples were lost by the analysing laboratory; VOC/SVOC/TPH/PAH/cyanide were analysed outside of standard holding times.
1- Benzo[a]pyrene potency equivalence (PEF) is laboratory calculated based on the LOR, in accordance with the NES Soil Methodology for Deriving Standards in Soil to Protect Human Health, MfE 2011.
2- Background soil concentrations of selected trace elements and organic contaminants in New Zealand. Landcare Research 2016, seen on https://lris.scinfo.org.nz/layer/48470-pbc-predicted-background-soil-concentrations-new-zealand/
3 - MfE, 2012 - National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health, Recreational SCS (unless otherwise stated).
4 - BRANZ 2017, New Zealand Guidelines for Assessing and Managing Asbestos in Soil.
5 - ASC NEPM Toolbox - Update Febrary 2014 - www.nepc.gov.au/nepms/assessment-site-contamination/toolbox
6 - MfE, 1997 - Guidelines for Assessing and Managing Contaminated Gasworks Sites in New Zealand.
7 - MfE, 2012 - National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health, Commercial/industrial outdoor worker (unpaved) SCS (unless otherwise stated).
8- MfE 2011, Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand. Tier 1 soil acceptance criteria for TPH, BTEX and naphthalene commercial/industrial land use. All pathways. The following notes denote the limiting pathway for each criterion: v-volatilisation, m-maintenance/excavation, x- PAH surrogate.
9 - USEPA Regional Soil Screening Values, hazard quotient of 1, target risk value of 10-5, outdoor worker, chronic effects.
10 - Australia and New Zealand Water Quality Guidelines 2018 - Recommended default guideline values for toxicants in sediment.
11 - MfE, Module 2 - Hazardous Waste Guidelines: Landfill Waste Acceptance Criteria and Landfill Classification. Appendix A: Total concentration and leachability limits for Class A and Class B landfills. Screening criterion - 20 x TCLP criteria.
12 - Consent No. RM17.198.01 V2. Appendix 1 Waste Acceptance Criteria; Total Concentration Screening.

Tonkin + Taylor
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Table E1 - Kettle Park results summary, east of Moana Rua Road (non-organic)

Sample ID	Units	BH34 0.5-0.7	BH34 4.7-4.9	BH38 1.6-1.9	BH38 3.8	BH38 5.8-6.2	BH39 2.8	BH39 4.8-5.8	BH46 0.2-0.4	BH46 1.55-1.85	BH47 2.7-3.0	BH48 0.7	BH48 1.4-1.8	Background [2]	Recreational [3]	Commercial/ industrial outdoor worker [7]	*Sediment quality guidelines* [10]	Class A Landfill [11]	Class B Landfill [11]	Burnside Landfill [12]
Sample Depth (m bgl)		0.5-0.7	4.7-4.9	1.6-1.9	3.8	5.8-6.2	2.8	4.8-5.8	0.2-0.4	1.55-1.85	2.7-3.0	0.7	1.4-1.8							
Layer		landfill	landfill	landfill	landfill	impacted beach sand	landfill	landfill	cap	landfill	landfill	landfill	landfill							
PID reading	ppm	7.5	32.3	6.4	11.1	6.1	0.4	0.7	1.2	2	3.1	4.8	1.3							
Asbestos																				
Asbestos form	-	Chrysotile Fibre bundle	-	Chrysotile Fibre bundle	-	-	-	Chrysotile, Amosite, Crocidolite Fibre bundle, Free fibres	-	Chrysotile, Amosite Fibre cement sheet, Fibre bundle	-	-	Chrysotile Fibre bundle	NAD	NGV	NGV	NGV	NGV	NGV	NGV
ACM (>10mm)	w/w %	NAD	NAD	NAD			NAD	<0.001	NAD	0.263	NAD		NAD		0.02 [4]	0.05 [4]				
FA/AF (<10mm)	w/w %	0.027	NAD	0.003			NAD	0.015	NAD	0.029	NAD		0.006		0.001 [4]	0.001 [4]				
Metals and metalloids																				
Arsenic	mg/kg	-	-	-	-	1.6	-	-	4.1	-	13.7	18.7	-	12.67	80	70	20	100	10	100
Cadmium	mg/kg	-	-	-	-	0.025	-	-	0.14	-	*2.43*	0.37	-	0.28	400	1,300	1.5	20	2	20
Chromium	mg/kg	-	-	-	-	1.3	-	-	16.4	-	41.8	34.2	-	60.5	2,700	6,300	80	100	10	400
Copper	mg/kg	-	-	-	-	5	-	-	13.5	-	*167*	*453*	-	40.17	>10,000	>10,000	65	100	10	400
Lead	mg/kg	-	-	-	-	2.2	-	-	16	-	*3,350*	*642*	-	30.08	880	3,300	50	100	10	400
Mercury	mg/kg	-	-	-	-	<0.025	-	-	0.067	-	*0.18*	*1.1*	-	NGV	1,800	4,200	0.15	4	0.4	4
Nickel	mg/kg	-	-	-	-	1.3	-	-	12.7	-	*62.8*	*277*	-	32.88	1,200 [5]	6,000 [5]	21	200	20	200
Zinc	mg/kg	-	-	-	-	9.09	-	-	56.5	-	*992*	*1,440*	-	101.8	30,000 [5]	40,0000 [5]	200	200	20	800
Sulfur	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	NGV	NGV	NGV	NGV	NGV	NGV	NGV
Other																				
Free Cyanide	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	NGV	NGV	>10,000 [6]	NGV	NGV	NGV	500
Total Cyanide	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	NGV	NGV		NGV	NGV	NGV	
Sulfate-S	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	NGV	NGV	NGV	NGV	NGV	NGV	NGV
Total Petroleum Hydrocarbons (TPH)																				
C7-C9	mg/kg	-	63	-	46	<10	-	-	-	-	-	<10	-	<LOR	NGV	SAND; 120 [m] (<1 m), 120 [m] (1-4 m), 12,000 [v] (>4m) SILT; 500 [m] (<1 m), 500 [m] (1-4 m), 12,000 [v] (>4m) SILTY CLAY; 8,800 [v] (<1m), 20,000 [m] (1-4m), >20,000 (>4m) [8]	NGV	NGV	NGV	500
C10-C14	mg/kg	-	3,059	-	2,430	<15	-	-	-	-	-	<15	-	<LOR	NGV	SAND; 1,500 [x] (<1m), 1,900 [x] (1-4 m), 2,100 [x] (>4m) SILT; 1,700 [x] (<1 m), 2,200 [x] (1-4m), 3,400 [x] (>4m) SILTY CLAY; 1,900 [x] (<1m), 8,900 [x] (1-4m), >20,000 (>4m) [8]	NGV	NGV	NGV	20,000
C15-C36	mg/kg	-	22,463	-	33,554	116	-	-	-	-	-	3,703	-	<LOR	NGV	>20,000 [8]	NGV	NGV	NGV	20,000
C7-C36 (Total)	mg/kg	-	*25,585*	-	*36,030*	116	-	-	-	-	-	*3,703*	-	<LOR	NGV	NGV	280	NGV	NGV	20,000

Notes:

ACM - asbestos containing material; FA - fibrous asbestos; AF - asbestos fines.
NAD - No Asbestos Detected.
NGV - No Guideline Value.
LOR - Laboratory reporting limit.
- Denotes not analysed or not applicable
Bold indicates that the published background concentration for the site is exceeded.
Underlined indicates that the Recreational criterion is exceeded
Italics indicate that the Sediment Quality Guideline is exceeded.
Green highlight indicates that the Class B landfill screening criterion is exceeded.
Orange highlight indicates that the Class A landfill screening criterion is exceeded.
Yellow highlight indicates that the Burnside Landfill screening criterion is exceeded.
Red indicates that the NES SCS for commercial/industrial land use or NZ Asbestos in Soil 'all site uses' criterion is exceeded.
* Samples were lost by the analysing laboratory; VOC/SVOC/TPH/PAH/cyanide were analysed outside of standard holding times.
1- Benzo[a]pyrene potency equivalence (PEF) is laboratory calculated based on the LOR, in accordance with the NES Soil Methodology for Deriving Standards in Soil to Protect Human Health, MfE 2011.
2- Background soil concentrations of selected trace elements and organic contaminants in New Zealand. Landcare Research 2016, seen on https://lris.scinfo.org.nz/layer/48470-pbc-predicted-background-soil-concentrations-new-zealand/
3 - MfE, 2012 - National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health, Recreational SCS (unless otherwise stated).
4 - BRANZ 2017, New Zealand Guidelines for Assessing and Managing Asbestos in Soil.
5 - ASC NEPM Toolbox - Update Febrary 2014 - www.nepc.gov.au/nepms/assessment-site-contamination/toolbox
6 - MfE, 1997 - Guidelines for Assessing and Managing Contaminated Gasworks Sites in New Zealand.
7 - MfE, 2012 - National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health, Commercial/industrial outdoor worker (unpaved) SCS (unless otherwise stated).
8- MfE 2011, Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand. Tier 1 soil acceptance criteria for TPH, BTEX and naphthalene commercial/industrial land use. All pathways. The following notes denote the limiting pathway for each criterion: v-volatilisation, m-maintenance/excavation, x- PAH surrogate.
9 - USEPA Regional Soil Screening Values, hazard quotient of 1, target risk value of 10-5, outdoor worker, chronic effects.
10 - Australia and New Zealand Water Quality Guidelines 2018 - Recommended default guideline values for toxicants in sediment.
11 - MfE, Module 2 - Hazardous Waste Guidelines: Landfill Waste Acceptance Criteria and Landfill Classification. Appendix A: Total concentration and leachability limits for Class A and Class B landfills. Screening criterion - 20 x TCLP criteria.
12 - Consent No. RM17.198.01 V2. Appendix 1 Waste Acceptance Criteria; Total Concentration Screening.

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Table E1 - Kettle Park results summary, east of Moana Rua Road (non-organic)

Sample ID		BH48 3.7	BH48 3.95	BH48 4.5-4.8	BH49 0.2-0.5*	BH49 1.7-1.85*	BH49 3.9*	BH49 4.7-4.9*	BH50 1.4-1.55*	BH50 1.65*	BH50 3.65-3.8	BH51 0.1-0.3	BH51 2.85-3.0*							
Sample Depth (m bgl)		3.7	3.95	4.5-4.8	0.2-0.5	1.7-1.85	3.9	4.7-4.9	1.4-1.55	1.65	3.65-3.8	0.1-0.3	2.85-3.0							
Layer	Units	landfill	landfill	landfill	cap	landfill	landfill	landfill	landfill	landfill	landfill	topsoil	landfill	Background [2]	Recreational [3]	Commercial/ industrial outdoor worker [7]	*Sediment quality guidelines* [10]	Class A Landfill [11]	Class B Landfill [11]	Burnside Landfill [12]
PID reading	ppm	1.7	2.2	2.2	5.4	10.1	6	18.9	26.4	5.5	5.9	3.4	4.0							
Asbestos																				
Asbestos form	-	-	-	-	Chrysotile Fibre bundle	-	-	-	Chrysotile Fibre bundle	-	Chrysotile Fibre bundle	-	-	NAD	NGV	NGV	NGV	NGV	NGV	NGV
ACM (>10mm)	w/w %			NAD	NAD		NAD		NAD		NAD	NAD			0.02 [4]	0.05 [4]				
FA/AF (<10mm)	w/w %			NAD	0.003		NAD		0.012		0.004	NAD			0.001 [4]	0.001 [4]				
Metals and metalloids																				
Arsenic	mg/kg	-	*80*	-	-	-	6.9	-	-	-	-	2.7	-	12.67	80	70	20	100	10	100
Cadmium	mg/kg	-	*8.04*	-	-	-	*3.07*	-	-	-	-	0.074	-	0.28	400	1,300	1.5	20	2	20
Chromium	mg/kg	-	*84*	-	-	-	17	-	-	-	-	8.2	-	60.5	2,700	6,300	80	100	10	400
Copper	mg/kg	-	*402*	-	-	-	*8,090*	-	-	-	-	13.2	-	40.17	>10,000	>10,000	65	100	10	400
Lead	mg/kg	-	*1,960*	-	-	-	*367*	-	-	-	-	24.7	-	30.08	880	3,300	50	100	10	400
Mercury	mg/kg	-	*2.86*	-	-	-	*1.5*	-	-	-	-	0.055	-	NGV	1,800	4,200	0.15	4	0.4	4
Nickel	mg/kg	-	*104*	-	-	-	*96.2*	-	-	-	-	6.83	-	32.88	1,200 [5]	6,000 [5]	21	200	20	200
Zinc	mg/kg	-	*10,500*	-	-	-	*4,740*	-	-	-	-	39.6	-	101.8	30,000 [5]	40,0000 [5]	200	200	20	800
Sulfur	mg/kg	31,800	-	-	-	-	-	-	-	2,700	-	-	-	NGV	NGV	NGV	NGV	NGV	NGV	NGV
Other																				
Free Cyanide	mg/kg	-	-	-	-	-	-	-	-	<0.20	-	-	-	NGV	NGV	>10,000 [6]	NGV	NGV	NGV	500
Total Cyanide	mg/kg	-	-	-	-	-	-	-	-	0.72	-	-	-	NGV	NGV		NGV	NGV	NGV	
Sulfate-S	mg/kg	-	-	-	-	-	-	-	-	496.4	-	-	-	NGV	NGV	NGV	NGV	NGV	NGV	NGV
Total Petroleum Hydrocarbons (TPH)																				
C7-C9	mg/kg	-	-	-	-	-	-	<10	-	-	-	-	<10	<LOR	NGV	SAND; 120 [m] (<1 m), 120 [m] (1-4 m), 12,000 [v] (>4m) SILT; 500 [m] (<1 m), 500 [m] (1-4 m), 12,000 [v] (>4m) SILTY CLAY; 8,800 [v] (<1m), 20,000 [m] (1-4m), >20,000 (>4m) [8]	NGV	NGV	NGV	500
C10-C14	mg/kg	-	-	-	-	-	-	1,894	-	-	-	-	<15	<LOR	NGV	SAND; 1,500 [x] (<1m), 1,900 [x] (1-4 m), 2,100 [x] (>4m) SILT; 1,700 [x] (<1 m), 2,200 [x] (1-4m), 3,400 [x] (>4m) SILTY CLAY; 1,900 [x] (<1m), 8,900 [x] (1-4m), >20,000 (>4m) [8]	NGV	NGV	NGV	20,000
C15-C36	mg/kg	-	-	-	-	-	-	8,408	-	-	-	-	149	<LOR	NGV	>20,000 [8]	NGV	NGV	NGV	20,000
C7-C36 (Total)	mg/kg	-	-	-	-	-	-	*10,302*	-	-	-	-	149	<LOR	NGV	NGV	280	NGV	NGV	20,000

Notes:
ACM - asbestos containing material; FA - fibrous asbestos; AF - asbestos fines.
NAD - No Asbestos Detected.
NGV - No Guideline Value.
LOR - Laboratory reporting limit.
- Denotes not analysed or not applicable
Bold indicates that the published background concentration for the site is exceeded.
Underlined indicates that the Recreational criterion is exceeded
Italics indicate that the Sediment Quality Guideline is exceeded.
Green highlight indicates that the Class B landfill screening criterion is exceeded.
Orange highlight indicates that the Class A landfill screening criterion is exceeded.
Yellow highlight indicates that the Burnside Landfill screening criterion is exceeded.
Red indicates that the NES SCS for commercial/industrial land use or NZ Asbestos in Soil 'all site uses' criterion is exceeded.
* Samples were lost by the analysing laboratory; VOC/SVOC/TPH/PAH/cyanide were analysed outside of standard holding times.
1- Benzo[a]pyrene potency equivalence (PEF) is laboratory calculated based on the LOR, in accordance with the NES Soil Methodology for Deriving Standards in Soil to Protect Human Health, MfE 2011.
2- Background soil concentrations of selected trace elements and organic contaminants in New Zealand. Landcare Research 2016, seen on https://lris.scinfo.org.nz/layer/48470-pbc-predicted-background-soil-concentrations-new-zealand/
3 - MfE, 2012 - National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health, Recreational SCS (unless otherwise stated).
4 - BRANZ 2017, New Zealand Guidelines for Assessing and Managing Asbestos in Soil.
5 - ASC NEPM Toolbox - Update Febrary 2014 - www.nepc.gov.au/nepms/assessment-site-contamination/toolbox
6 - MfE, 1997 - Guidelines for Assessing and Managing Contaminated Gasworks Sites in New Zealand.
7 - MfE, 2012 - National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health, Commercial/industrial outdoor worker (unpaved) SCS (unless otherwise stated).
8- MfE 2011, Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand. Tier 1 soil acceptance criteria for TPH, BTEX and naphthalene commercial/industrial land use. All pathways. The following notes denote the limiting pathway for each criterion: v-volatilisation, m-maintenance/excavation, x- PAH surrogate.
9 - USEPA Regional Soil Screening Values, hazard quotient of 1, target risk value of 10-5, outdoor worker, chronic effects.
10 - Australia and New Zealand Water Quality Guidelines 2018 - Recommended default guideline values for toxicants in sediment.
11 - MfE, Module 2 - Hazardous Waste Guidelines: Landfill Waste Acceptance Criteria and Landfill Classification. Appendix A: Total concentration and leachability limits for Class A and Class B landfills. Screening criterion - 20 x TCLP criteria.
12 - Consent No. RM17.198.01 V2. Appendix 1 Waste Acceptance Criteria; Total Concentration Screening.

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27226.007

Table E1 - Kettle Park results summary, east of Moana Rua Road (non-organic)

Sample ID		BH52 1.45-1.6	BH52 5.0*	BH53 1.35-1.55	BH53 3.8-4.0	BH54 1.7-2.0	BH54 2.9-3.7*	BH55 1.5-1.7	BH56 2.7-2.9	Background [2]	Recreational [3]	Commercial/ industrial outdoor worker [7]	*Sediment quality guidelines* [10]	Class A Landfill [11]	Class B Landfill [11]	Burnside Landfill [12]
Sample Depth (m bgl)		1.45-1.6	5.0	1.35-1.55	3.8-4.0	1.7-2.0	2.9-3.7	1.5-1.7	2.7-2.9							
Layer	Units	landfill	impacted beach sand	landfill	landfill	landfill	landfill	landfill	landfill							
PID reading	ppm	6.7	8.0	2.8	2.8	5.2	11.8	5.3	4.5							
Asbestos																
Asbestos form	-	-	-	-	-	Chrysotile Fibre cement sheet, Fibre bundle	-	-	-	NAD	NGV	NGV	NGV	NGV	NGV	NGV
ACM (>10mm)	w/w %	NAD		NAD	NAD	0.059		NAD	NAD		0.02 [4]	0.05 [4]				
FA/AF (<10mm)	w/w %	NAD		NAD	NAD	0.105		NAD	NAD		0.001 [4]	0.001 [4]				
Metals and metalloids																
Arsenic	mg/kg	*66.8*	-	-	*22.2*	*42.2*	-	*43.4*	13.4	12.67	80	70	20	100	10	100
Cadmium	mg/kg	1.1	-	-	*2.01*	1.21	-	*2.73*	*1.91*	0.28	400	1,300	1.5	20	2	20
Chromium	mg/kg	41	-	-	74.9	42.6	-	37.3	47.4	60.5	2,700	6,300	80	100	10	400
Copper	mg/kg	*456*	-	-	*1,140*	*417*	-	*305*	*864*	40.17	>10,000	>10,000	65	100	10	400
Lead	mg/kg	*358*	-	-	*4,750*	*1,220*	-	*517*	*1,720*	30.08	880	3,300	50	100	10	400
Mercury	mg/kg	*0.96*	-	-	0.056	*1.5*	-	*0.18*	*0.64*	NGV	1,800	4,200	0.15	4	0.4	4
Nickel	mg/kg	*49.5*	-	-	*68.3*	*53.9*	-	*59.6*	*442*	32.88	1,200 [5]	6,000 [5]	21	200	20	200
Zinc	mg/kg	*1,110*	-	-	*2,610*	*1,870*	-	*4,560*	*1,320*	101.8	30,000 [5]	40,0000 [5]	200	200	20	800
Sulfur	mg/kg	-	-	-	-	-	-	-	-	NGV	NGV	NGV	NGV	NGV	NGV	NGV
Other																
Free Cyanide	mg/kg	-	-	-	-	-	-	-	-	NGV	NGV	>10,000 [6]	NGV	NGV	NGV	500
Total Cyanide	mg/kg	-	-	-	-	-	-	-	-	NGV	NGV		NGV	NGV	NGV	
Sulfate-S	mg/kg	-	-	-	-	-	-	-	-	NGV	NGV	NGV	NGV	NGV	NGV	NGV
Total Petroleum Hydrocarbons (TPH)																
C7-C9	mg/kg	-	<10	-	-	-	<10	-	-	<LOR	NGV	SAND; 120 [m] (<1 m), 120 [m] (1-4 m), 12,000 [v] (>4m) SILT; 500 [m] (<1 m), 500 [m] (1-4 m), 12,000 [v] (>4m) SILTY CLAY; 8,800 [v] (<1m), 20,000 [m] (1-4m), >20,000 (>4m) [8]	NGV	NGV	NGV	500
C10-C14	mg/kg	-	<15	-	-	-	733	-	-	<LOR	NGV	SAND; 1,500 [x] (<1m), 1,900 [x] (1-4 m), 2,100 [x] (>4m) SILT; 1,700 [x] (<1 m), 2,200 [x] (1-4m), 3,400 [x] (>4m) SILTY CLAY; 1,900 [x] (<1m), 8,900 [x] (1-4m), >20,000 (>4m) [8]	NGV	NGV	NGV	20,000
C15-C36	mg/kg	-	<25	-	-	-	4,262	-	-	<LOR	NGV	>20,000 [8]	NGV	NGV	NGV	20,000
C7-C36 (Total)	mg/kg	-	<50	-	-	-	*4,995*	-	-	<LOR	NGV	NGV	280	NGV	NGV	20,000

Notes:
ACM - asbestos containing material; FA - fibrous asbestos; AF - asbestos fines.
NAD - No Asbestos Detected.
NGV - No Guideline Value.
LOR - Laboratory reporting limit.
- Denotes not analysed or not applicable
Bold indicates that the published background concentration for the site is exceeded.
Underlined indicates that the Recreational criterion is exceeded
Italics indicate that the Sediment Quality Guideline is exceeded.
Green highlight indicates that the Class B landfill screening criterion is exceeded.
Orange highlight indicates that the Class A landfill screening criterion is exceeded.
Yellow highlight indicates that the Burnside Landfill screening criterion is exceeded.
Red indicates that the NES SCS for commercial/industrial land use or NZ Asbestos in Soil 'all site uses' criterion is exceeded.
* Samples were lost by the analysing laboratory; VOC/SVOC/TPH/PAH/cyanide were analysed outside of standard holding times.
1- Benzo[a]pyrene potency equivalence (PEF) is laboratory calculated based on the LOR, in accordance with the NES Soil Methodology for Deriving Standards in Soil to Protect Human Health, MfE 2011.
2- Background soil concentrations of selected trace elements and organic contaminants in New Zealand. Landcare Research 2016, seen on https://lris.scinfo.org.nz/layer/48470-pbc-predicted-background-soil-concentrations-new-zealand/
3 - MfE, 2012 - National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health, Recreational SCS (unless otherwise stated).
4 - BRANZ 2017, New Zealand Guidelines for Assessing and Managing Asbestos in Soil.
5 - ASC NEPM Toolbox - Update Febrary 2014 - www.nepc.gov.au/nepms/assessment-site-contamination/toolbox
6 - MfE, 1997 - Guidelines for Assessing and Managing Contaminated Gasworks Sites in New Zealand.
7 - MfE, 2012 - National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health, Commercial/industrial outdoor worker (unpaved) SCS (unless otherwise stated).
8- MfE 2011, Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand. Tier 1 soil acceptance criteria for TPH, BTEX and naphthalene commercial/industrial land use. All pathways. The following notes denote the limiting pathway for each criterion: v-volatilisation, m-maintenance/excavation, x- PAH surrogate.
9 - USEPA Regional Soil Screening Values, hazard quotient of 1, target risk value of 10-5, outdoor worker, chronic effects.
10 - Australia and New Zealand Water Quality Guidelines 2018 - Recommended default guideline values for toxicants in sediment.
11 - MfE, Module 2 - Hazardous Waste Guidelines: Landfill Waste Acceptance Criteria and Landfill Classification. Appendix A: Total concentration and leachability limits for Class A and Class B landfills. Screening criterion - 20 x TCLP criteria.
12 - Consent No. RM17.198.01 V2. Appendix 1 Waste Acceptance Criteria; Total Concentration Screening.

Table E2 - Kettle Park results summary, east of Moana Rua Road (organic)

Sample ID	Units	BH02 4.5-4.8	BH03 1.35-1.5	BH03 3-3.2	BH04 1.3-1.6	BH05 2.4-2.8	BH06 1.8-2.0	BH06 5.6-6.0	BH07 1.25-1.4	BH08 2.9-3.6	BH08 3.8-4.0	Background [2]	Recreational [3]	Commercial/ industrial outdoor worker [7]	*Sediment quality guidelines* [10]	Class A Landfill [11]	Class B Landfill [11]	Burnside Landfill [12]
Sample Depth (m bgl)		4.5-4.8	1.35-1.5	3.0-3.2	1.3-1.6	2.4-2.8	1.8-2.0	5.6-6.0	1.25-1.4	2.9-3.6	3.8-4.0							
Layer		landfill	landfill	landfill	landfill	landfill	landfill	landfill	landfill	landfill	landfill							
PID reading	ppm	3.1	2.2	4.4	2.9	4.5	11.8	32.1	2.8	3.1	3.9							
*Semivolatile organic compounds (SVOC) ***																		
Phenol	mg/kg	<0.30	0.75	-	<0.42	<0.30	<0.30	-	-	<0.30	<0.30	NGV	>10,000 [6]	NGV	NGV	800	80	800
2-Chlorophenol	mg/kg	<0.30	<0.30	-	<0.42	<0.30	<0.30	-	-	<0.30	<0.30	NGV	NGV	NGV	NGV	0.1	0.01	1
2,4-Dichlorophenol	mg/kg	<0.30	<0.30	-	<0.42	<0.30	<0.30	-	-	<0.30	<0.30	NGV	NGV	NGV	NGV	0.1	0.01	1
2,4,6-Trichlorophenol	mg/kg	<5.0	<5.0	-	<5.0	<5.0	<5.0	-	-	<5.0	<5.0	NGV	NGV	NGV	NGV	2	0.2	2
4-Methylphenol	mg/kg	<0.30	<0.30	-	1.1	<0.30	<0.30	-	-	<0.30	<0.30	NGV	NGV	91,200 [9]	NGV	NGV	NGV	NGV
Naphthalene	mg/kg	<0.10	1.6	-	2.1	<0.10	0.37	-	-	0.21	<0.10	<LOR	200 [6]	200 [6]	NGV	200	20	200
2-Methylnaphthalene	mg/kg	<0.10	1.2	-	1.6	<0.10	0.31	-	-	0.12	<0.10	NGV	NGV	3,350 [9]	NGV	NGV	NGV	NGV
Benzo[a]pyrene	mg/kg	<0.10	120	-	<0.42	0.38	2.7	-	-	32	0.52	NGV	2.7 [6]	10 [6]	NGV	300	30	NGV
Benzo[a]pyrene PEF (LOR) [1]	mg/kg	0.2	170	-	1.1	0.6	3.9	-	-	46	0.8	<LOR	40	35	NGV	300	30	300
4,4'-DDD	mg/kg	<0.30	<0.30	-	<0.42	<0.30	<0.30	-	-	<0.30	<0.30	NGV	400	NGV	3.5	300	30	NGV
4,4'-DDE	mg/kg	<0.30	<0.30	-	<0.42	<0.30	<0.30	-	-	<0.30	<0.30	NGV		NGV	1.4	500	50	500
4,4'-DDT	mg/kg	<0.50	<0.50	-	<0.50	<0.50	<0.50	-	-	<0.50	<0.50	NGV		NGV	1.2	500	50	500
Aldrin	mg/kg	<0.30	<0.30	-	<0.42	<0.30	<0.30	-	-	<0.30	<0.30	NGV	NGV	NGV	NGV	0.00016	0.000016	0.0016
cis-Chlordane	mg/kg	<0.30	<0.30	-	<0.42	<0.30	<0.30	-	-	<0.30	<0.30	NGV	NGV	NGV	4.5	NGV	NGV	NGV
trans-Chlordane	mg/kg	<0.30	<0.30	-	<0.42	<0.30	<0.30	-	-	<0.30	<0.30	NGV	NGV	NGV		NGV	NGV	NGV
Dieldrin	mg/kg	<0.50	<0.50	-	<0.50	<0.50	<0.50	-	-	<0.50	<0.50	NGV	70	NGV	2.8	8	0.8	8
Endosulfan I	mg/kg	<0.30	<0.30	-	<0.42	<0.30	<0.30	-	-	<0.30	<0.30	NGV	NGV	NGV	NGV	6	0.6	6
Endosulfan II	mg/kg	<0.50	<0.50	-	<0.50	<0.50	<0.50	-	-	<0.50	<0.50	NGV	NGV	NGV	NGV			
Endosulfan sulfate	mg/kg	<0.50	<0.50	-	<0.50	<0.50	<0.50	-	-	<0.50	<0.50	NGV	NGV	NGV	NGV	NGV	NGV	NGV
Endrin	mg/kg	<0.50	<0.50	-	<0.50	<0.50	<0.50	-	-	<0.50	<0.50	NGV	NGV	NGV	2.7	NGV	NGV	NGV
Bis(2-ethylhexyl) phthalate	mg/kg	<0.50	<0.50	-	<0.50	<0.50	0.92	-	-	<0.50	<0.50	NGV	NGV	1,820 [9]	NGV	NGV	NGV	NGV
Di-n-butyl phthalate	mg/kg	<1.0	<1.0	-	<1.0	<1.0	<1.0	-	-	<1.0	<1.0	NGV	NGV	NGV	NGV	6000	600	6000
Diethyl phthalate	mg/kg	<0.30	<0.30	-	<0.42	<0.30	<0.30	-	-	<0.30	<0.30	NGV	NGV	NGV	NGV	2000	200	2000
Dimethyl phthalate	mg/kg	<0.30	<0.30	-	<0.42	<0.30	<0.30	-	-	<0.30	<0.30	NGV	NGV	NGV	NGV	8000	800	8000
Aniline	mg/kg	<1.0	<1.0	-	<1.0	<1.0	<1.0	-	-	<1.0	<1.0	NGV	NGV	NGV	NGV	4	0.4	4
Dibenzofuran	mg/kg	<0.30	14	-	0.61	<0.30	0.43	-	-	1.5	<0.30	NGV	NGV	1,000 [9]	NGV	NGV	NGV	NGV
Total polycyclic aromatic hydrocarbons (PAHs)	mg/kg	0	2,031	-	13.1	3.49	30.8	-	-	357.86	4.98	NGV	4,700 [6]	NGV	10,000	NGV	NGV	NGV
*Volatile organic compounds (VOC) ***																		
1,2-Dichloropropane	mg/kg	-	-	<0.050	-	<0.050	<0.050	<0.050	<0.050	-	-	NGV	NGV	NGV	NGV	20	2	20
Carbon disulfide	mg/kg	-	-	<0.050	-	<0.050	<0.050	<0.050	<0.050	-	-	NGV	NGV	NGV	NGV	60	6	60
Benzene	mg/kg	-	-	<0.050	-	<0.050	<0.050	<0.050	<0.050	-	-	NGV	8 [6]	8 [6]	NGV	10	1	10
Toluene	mg/kg	-	-	<0.10	-	<0.10	<0.10	<0.10	<0.10	-	-	NGV	600 [6]	600 [6]	NGV	2000	200	2000
Ethylbenzene	mg/kg	-	-	<0.050	-	<0.050	<0.050	<0.050	<0.050	-	-	NGV	3300 [6]	NGV	NGV	1000	100	1000
m,p-Xylene	mg/kg	-	-	<0.10	-	<0.10	<0.10	<0.10	<0.10	-	-	NGV	500 [6]	500 [6]	NGV	2000	200	2000
o-Xylene	mg/kg	-	-	<0.050	-	<0.050	<0.050	<0.050	<0.050	-	-	NGV			NGV			
Styrene	mg/kg	-	-	<0.050	-	<0.050	<0.050	<0.050	<0.050	-	-	NGV	NGV	NGV	NGV	120	12	120
Naphthalene	mg/kg	-	-	<0.10	-	<0.10	0.24	3.7	<0.10	-	-	<LOR	200 [6]	200 [6]	NGV	200	20	200
1,2-Dichlorobenzene	mg/kg	-	-	<0.050	-	<0.050	<0.050	<0.050	<0.050	-	-	NGV	NGV	NGV	NGV	4	0.4	4
1,3-Dichlorobenzene	mg/kg	-	-	<0.050	-	<0.050	<0.050	<0.050	<0.050	-	-	NGV	NGV	NGV	NGV	1000	100	1000
1,2,3-Trichlorobenzene	mg/kg	-	-	<0.10	-	<0.10	<0.10	<0.10	<0.10	-	-	NGV	NGV	NGV	NGV	1000	100	1000
1,2,4-Trichlorobenzene	mg/kg	-	-	<0.10	-	<0.10	<0.10	<0.10	<0.10	-	-	NGV	NGV	NGV	NGV	800	80	800
Methylene chloride (Dichloromethane)	mg/kg	-	-	<0.20	-	<0.20	<0.20	<0.20	<0.20	-	-	NGV	NGV	NGV	NGV	40	4	40
Trans-1,2-Dichloroethene	mg/kg	-	-	<0.050	-	<0.050	<0.050	<0.050	<0.050	-	-	NGV	NGV	NGV	NGV	200	20	200
Cis-1,2-Dichloroethene	mg/kg	-	-	<0.050	-	<0.050	<0.050	<0.050	<0.050	-	-	NGV	NGV	NGV	NGV			
1,1,1-Trichloroethane	mg/kg	-	-	<0.050	-	<0.050	<0.050	<0.050	<0.050	-	-	NGV	NGV	NGV	NGV	4000	400	4000
1,1,2-Trichloroethane	mg/kg	-	-	<0.10	-	<0.10	<0.10	<0.10	<0.10	-	-	NGV	NGV	NGV	NGV	10000	1000	10000
1,1,2,2-Tetrachloroethane	mg/kg	-	-	<0.20	-	<0.20	<0.20	<0.20	<0.20	-	-	NGV	NGV	NGV	NGV	1000	100	1000
1,2-Dibromo-3-chloropropane	mg/kg	-	-	<0.20	-	<0.20	<0.20	<0.20	<0.20	-	-	NGV	NGV	NGV	NGV	40	0.4	4
Bromodichloromethane	mg/kg	-	-	<0.050	-	<0.050	<0.050	<0.050	<0.050	-	-	NGV	NGV	NGV	NGV	20	0.2	20
Dibromochloromethane	mg/kg	-	-	<0.10	-	<0.10	<0.10	<0.10	<0.10	-	-	NGV	NGV	NGV	NGV	200	20	200
Bromoform (Tribromomethane)	mg/kg	-	-	<0.10	-	<0.10	<0.10	<0.10	<0.10	-	-	NGV	NGV	NGV	NGV	200	20	200
Vinyl chloride	mg/kg	-	-	<0.10	-	<0.10	<0.10	<0.10	<0.10	-	-	NGV	NGV	NGV	NGV	4	0.4	4

Notes to follow tables.

Table E2 - Kettle Park results summary, east of Moana Rua Road (organic)

Sample ID		BH09 0.75-1.4	BH11 1.1-1.25	BH11 2.8-3.0	BH12 3.0	BH13 2.8-3.0	BH13 4.8-6.25	BH15 1.5-1.7	BH17 0.75-1.3	BH17 5.3-5.6	BH18 3.35-4.0	BH18 4.7	Background [2]	Recreational [3]	Commercial/ industrial outdoor worker [7]	*Sediment quality guidelines* [10]	Class A Landfill [11]	Class B Landfill [11]	Burnside Landfill [12]
Sample Depth (m bgl)		0.75-1.4	1.1-1.25	2.8-3.0	3.0	2.8-3.0	4.8-6.25	1.5-1.7	0.75-1.3	5.3-5.6	3.35-4.0	4.7							
Layer	Units	landfill	landfill	landfill	landfill	landfill	landfill	landfill	landfill	landfill	landfill	landfill							
PID reading	ppm	1.4	7.2	25.7	3.9	6.3	6.3	7.2	2.6	3.2	4	4.2							
*Semivolatile organic compounds (SVOC) **																			
Phenol	mg/kg	<0.30	<0.30	<0.30	<0.30	0.35	<0.30	0.43	<0.30	<0.30	<0.30	<0.30	NGV	>10,000 [6]	NGV	NGV	800	80	800
2-Chlorophenol	mg/kg	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	NGV	NGV	NGV	NGV	0.1	0.01	1
2,4-Dichlorophenol	mg/kg	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	NGV	NGV	NGV	NGV	0.1	0.01	1
2,4,6-Trichlorophenol	mg/kg	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	NGV	NGV	NGV	NGV	2	0.2	2
4-Methylphenol	mg/kg	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	NGV	NGV	91,200 [9]	NGV	NGV	NGV	NGV
Naphthalene	mg/kg	<0.10	1.3	0.66	3.9	8.9	0.96	0.6	<0.10	<0.10	<0.10	<0.10	<LOR	200 [6]	200 [6]	NGV	200	20	200
2-Methylnaphthalene	mg/kg	<0.10	4.3	1.5	6	9.9	0.34	0.62	<0.10	<0.10	<0.10	<0.10	NGV	NGV	3,350 [9]	NGV	NGV	NGV	NGV
Benzo[a]pyrene	mg/kg	<0.10	1.5	1.6	76	110	12	30	4.1	0.65	8.5	<0.10	NGV	2.7 [6]	10 [6]	NGV	300	30	NGV
Benzo[a]pyrene PEF (LOR) [1]	mg/kg	0.2	2.4	2.2	110	150	18	45	6	1	13	0.2	<LOR	40	35	NGV	300	30	300
4,4'-DDD	mg/kg	<0.30	*8.1*	1.4	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	NGV	400	NGV	3.5	300	30	NGV
4,4'-DDE	mg/kg	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	NGV		NGV	1.4	500	50	500
4,4'-DDT	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NGV		NGV	1.2	500	50	500
Aldrin	mg/kg	4.2	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	NGV	NGV	NGV	NGV	0.00016	0.000016	0.0016
cis-Chlordane	mg/kg	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	NGV	NGV	NGV	4.5	NGV	NGV	NGV
trans-Chlordane	mg/kg	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	NGV	NGV	NGV		NGV	NGV	NGV
Dieldrin	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NGV	70	NGV	2.8	8	0.8	8
Endosulfan I	mg/kg	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	NGV	NGV	NGV	NGV	6	0.6	6
Endosulfan II	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NGV	NGV	NGV	NGV			
Endosulfan sulfate	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NGV	NGV	NGV	NGV	NGV	NGV	NGV
Endrin	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NGV	NGV	NGV	2.7	NGV	NGV	NGV
Bis(2-ethylhexyl) phthalate	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NGV	NGV	1,820 [9]	NGV	NGV	NGV	NGV
Di-n-butyl phthalate	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NGV	NGV	NGV	NGV	6000	600	6000
Diethyl phthalate	mg/kg	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	NGV	NGV	NGV	NGV	2000	200	2000
Dimethyl phthalate	mg/kg	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	NGV	NGV	NGV	NGV	8000	800	8000
Aniline	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NGV	NGV	NGV	NGV	4	0.4	4
Dibenzofuran	mg/kg	<0.30	0.46	<0.30	32	29	1	3.6	<0.30	<0.30	<0.30	<0.30	NGV	NGV	1,000 [9]	NGV	NGV	NGV	NGV
Total polycyclic aromatic hydrocarbons (PAHs)	mg/kg	0	21.34	15.26	1362.4	1538.9	127.93	436.7	40.35	6.47	85.8	0	NGV	4,700 [6]	NGV	10,000	NGV	NGV	NGV
*Volatile organic compounds (VOC) **																			
1,2-Dichloropropane	mg/kg	-	-	-	-	-	-	-	-	-	-	-	NGV	NGV	NGV	NGV	20	2	20
Carbon disulfide	mg/kg	-	-	-	-	-	-	-	-	-	-	-	NGV	NGV	NGV	NGV	60	6	60
Benzene	mg/kg	-	-	-	-	-	-	-	-	-	-	-	NGV	8 [6]	8 [6]	NGV	10	1	10
Toluene	mg/kg	-	-	-	-	-	-	-	-	-	-	-	NGV	600 [6]	600 [6]	NGV	2000	200	2000
Ethylbenzene	mg/kg	-	-	-	-	-	-	-	-	-	-	-	NGV	3300 [6]	NGV	NGV	1000	100	1000
m,p-Xylene	mg/kg	-	-	-	-	-	-	-	-	-	-	-	NGV	500 [6]	500 [6]	NGV	2000	200	2000
o-Xylene	mg/kg	-	-	-	-	-	-	-	-	-	-	-	NGV			NGV			
Styrene	mg/kg	-	-	-	-	-	-	-	-	-	-	-	NGV	NGV	NGV	NGV	120	12	120
Naphthalene	mg/kg	-	-	-	-	-	-	-	-	-	-	-	<LOR	200 [6]	200 [6]	NGV	200	20	200
1,2-Dichlorobenzene	mg/kg	-	-	-	-	-	-	-	-	-	-	-	NGV	NGV	NGV	NGV	4	0.4	4
1,3-Dichlorobenzene	mg/kg	-	-	-	-	-	-	-	-	-	-	-	NGV	NGV	NGV	NGV	1000	100	1000
1,2,3-Trichlorobenzene	mg/kg	-	-	-	-	-	-	-	-	-	-	-	NGV	NGV	NGV	NGV	1000	100	1000
1,2,4-Trichlorobenzene	mg/kg	-	-	-	-	-	-	-	-	-	-	-	NGV	NGV	NGV	NGV	800	80	800
Methylene chloride (Dichloromethane)	mg/kg	-	-	-	-	-	-	-	-	-	-	-	NGV	NGV	NGV	NGV	40	4	40
Trans-1,2-Dichloroethene	mg/kg	-	-	-	-	-	-	-	-	-	-	-	NGV	NGV	NGV	NGV	200	20	200
Cis-1,2-Dichloroethene	mg/kg	-	-	-	-	-	-	-	-	-	-	-	NGV	NGV	NGV	NGV			
1,1,1-Trichloroethane	mg/kg	-	-	-	-	-	-	-	-	-	-	-	NGV	NGV	NGV	NGV	4000	400	4000
1,1,2-Trichloroethane	mg/kg	-	-	-	-	-	-	-	-	-	-	-	NGV	NGV	NGV	NGV	10000	1000	10000
1,1,2,2-Tetrachloroethane	mg/kg	-	-	-	-	-	-	-	-	-	-	-	NGV	NGV	NGV	NGV	1000	100	1000
1,2-Dibromo-3-chloropropane	mg/kg	-	-	-	-	-	-	-	-	-	-	-	NGV	NGV	NGV	NGV	40	0.4	4
Bromodichloromethane	mg/kg	-	-	-	-	-	-	-	-	-	-	-	NGV	NGV	NGV	NGV	20	0.2	20
Dibromochloromethane	mg/kg	-	-	-	-	-	-	-	-	-	-	-	NGV	NGV	NGV	NGV	200	20	200
Bromoform (Tribromomethane)	mg/kg	-	-	-	-	-	-	-	-	-	-	-	NGV	NGV	NGV	NGV	200	20	200
Vinyl chloride	mg/kg	-	-	-	-	-	-	-	-	-	-	-	NGV	NGV	NGV	NGV	4	0.4	4

Notes to follow tables.

Table E2 - Kettle Park results summary, east of Moana Rua Road (organic)

Sample ID		BH19 3.8	BH20 1.4-2.3	BH22 4.3-4.6	BH23 1.15-1.45	BH24 0.3-0.5	BH26 0.55-0.65	BH26 4.25-4.7	BH30 1.52-1.8	BH33 2.9-3.35	Background [2]	Recreational [3]	Commercial/ industrial outdoor worker [7]	*Sediment quality guidelines* [10]	Class A Landfill [11]	Class B Landfill [11]	Burnside Landfill [12]
Sample Depth (m bgl)	Units	3.8	1.4-2.3	4.3-4.6	1.15-1.45	0.3-0.5	0.55-0.65	4.25-4.7	1.52-1.8	2.9-3.35							
Layer		landfill	landfill	landfill	landfill	landfill	landfill	landfill	landfill	landfill							
PID reading	ppm		4.1	4.7	3.3	5.2	1.7	2	5.4	4							
*Semivolatile organic compounds (SVOC) **																	
Phenol	mg/kg	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	NGV	>10,000 [6]	NGV	NGV	800	80	800
2-Chlorophenol	mg/kg	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	NGV	NGV	NGV	NGV	0.1	0.01	1
2,4-Dichlorophenol	mg/kg	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	NGV	NGV	NGV	NGV	0.1	0.01	1
2,4,6-Trichlorophenol	mg/kg	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	NGV	NGV	NGV	NGV	2	0.2	2
4-Methylphenol	mg/kg	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	NGV	NGV	91,200 [9]	NGV	NGV	NGV	NGV
Naphthalene	mg/kg	1.3	0.18	<0.10	0.36	0.28	0.32	0.2	<0.10	<0.10	<LOR	200 [6]	200 [6]	NGV	200	20	200
2-Methylnaphthalene	mg/kg	0.36	<0.10	<0.10	0.27	0.64	0.32	0.11	<0.10	<0.10	NGV	NGV	3,350 [9]	NGV	NGV	NGV	NGV
Benzo[a]pyrene	mg/kg	8.6	1.2	0.33	13	0.61	77	12	7.9	<0.10	NGV	2.7 [6]	10 [6]	NGV	300	30	NGV
Benzo[a]pyrene PEF (LOR) [1]	mg/kg	13	1.8	0.6	20	1	110	18	12	0.2	<LOR	40	35	NGV	300	30	300
4,4'-DDD	mg/kg	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	NGV	400	NGV	3.5	300	30	NGV
4,4'-DDE	mg/kg	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	NGV		NGV	1.4	500	50	500
4,4'-DDT	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NGV		NGV	1.2	500	50	500
Aldrin	mg/kg	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	NGV	NGV	NGV	NGV	0.00016	0.000016	0.0016
cis-Chlordane	mg/kg	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	NGV	NGV	NGV	4.5	NGV	NGV	NGV
trans-Chlordane	mg/kg	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	NGV	NGV	NGV		NGV	NGV	NGV
Dieldrin	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NGV	70	NGV	2.8	8	0.8	8
Endosulfan I	mg/kg	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	NGV	NGV	NGV	NGV	6	0.6	6
Endosulfan II	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NGV	NGV	NGV	NGV			
Endosulfan sulfate	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NGV	NGV	NGV	NGV	NGV	NGV	NGV
Endrin	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NGV	NGV	NGV	2.7	NGV	NGV	NGV
Bis(2-ethylhexyl) phthalate	mg/kg	<0.50	0.56	<0.50	<0.50	0.58	<0.50	<0.50	<0.50	<0.50	NGV	NGV	1,820 [9]	NGV	NGV	NGV	NGV
Di-n-butyl phthalate	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NGV	NGV	NGV	NGV	6000	600	6000
Diethyl phthalate	mg/kg	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	NGV	NGV	NGV	NGV	2000	200	2000
Dimethyl phthalate	mg/kg	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	NGV	NGV	NGV	NGV	8000	800	8000
Aniline	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NGV	NGV	NGV	NGV	4	0.4	4
Dibenzofuran	mg/kg	2.3	<0.30	<0.30	1.1	<0.30	3.9	0.47	0.35	<0.30	NGV	NGV	1,000 [9]	NGV	NGV	NGV	NGV
Total polycyclic aromatic hydrocarbons (PAHs)	mg/kg	105.7	11.53	2.92	145.54	6.59	818.52	133.49	96.98	0	NGV	4,700 [6]	NGV	10,000	NGV	NGV	NGV
*Volatile organic compounds (VOC) **																	
1,2-Dichloropropane	mg/kg	-	-	-	-	-	-	-	-	-	NGV	NGV	NGV	NGV	20	2	20
Carbon disulfide	mg/kg	-	-	-	-	-	-	-	-	-	NGV	NGV	NGV	NGV	60	6	60
Benzene	mg/kg	-	-	-	-	-	-	-	-	-	NGV	8 [6]	8 [6]	NGV	10	1	10
Toluene	mg/kg	-	-	-	-	-	-	-	-	-	NGV	600 [6]	600 [6]	NGV	2000	200	2000
Ethylbenzene	mg/kg	-	-	-	-	-	-	-	-	-	NGV	3300 [6]	NGV	NGV	1000	100	1000
m,p-Xylene	mg/kg	-	-	-	-	-	-	-	-	-	NGV	500 [6]	500 [6]	NGV	2000	200	2000
o-Xylene	mg/kg	-	-	-	-	-	-	-	-	-	NGV			NGV			
Styrene	mg/kg	-	-	-	-	-	-	-	-	-	NGV	NGV	NGV	NGV	120	12	120
Naphthalene	mg/kg	-	-	-	-	-	-	-	-	-	<LOR	200 [6]	200 [6]	NGV	200	20	200
1,2-Dichlorobenzene	mg/kg	-	-	-	-	-	-	-	-	-	NGV	NGV	NGV	NGV	4	0.4	4
1,3-Dichlorobenzene	mg/kg	-	-	-	-	-	-	-	-	-	NGV	NGV	NGV	NGV	1000	100	1000
1,2,3-Trichlorobenzene	mg/kg	-	-	-	-	-	-	-	-	-	NGV	NGV	NGV	NGV	1000	100	1000
1,2,4-Trichlorobenzene	mg/kg	-	-	-	-	-	-	-	-	-	NGV	NGV	NGV	NGV	800	80	800
Methylene chloride (Dichloromethane)	mg/kg	-	-	-	-	-	-	-	-	-	NGV	NGV	NGV	NGV	40	4	40
Trans-1,2-Dichloroethene	mg/kg	-	-	-	-	-	-	-	-	-	NGV	NGV	NGV	NGV	200	20	200
Cis-1,2-Dichloroethene	mg/kg	-	-	-	-	-	-	-	-	-	NGV	NGV	NGV	NGV			
1,1,1-Trichloroethane	mg/kg	-	-	-	-	-	-	-	-	-	NGV	NGV	NGV	NGV	4000	400	4000
1,1,2-Trichloroethane	mg/kg	-	-	-	-	-	-	-	-	-	NGV	NGV	NGV	NGV	10000	1000	10000
1,1,2,2-Tetrachloroethane	mg/kg	-	-	-	-	-	-	-	-	-	NGV	NGV	NGV	NGV	1000	100	1000
1,2-Dibromo-3-chloropropane	mg/kg	-	-	-	-	-	-	-	-	-	NGV	NGV	NGV	NGV	40	0.4	4
Bromodichloromethane	mg/kg	-	-	-	-	-	-	-	-	-	NGV	NGV	NGV	NGV	20	0.2	20
Dibromochloromethane	mg/kg	-	-	-	-	-	-	-	-	-	NGV	NGV	NGV	NGV	200	20	200
Bromoform (Tribromomethane)	mg/kg	-	-	-	-	-	-	-	-	-	NGV	NGV	NGV	NGV	200	20	200
Vinyl chloride	mg/kg	-	-	-	-	-	-	-	-	-	NGV	NGV	NGV	NGV	4	0.4	4

Notes to follow tables.

Table E2 - Kettle Park results summary, east of Moana Rua Road (organic)

Sample ID	Units	BH38 3.8	BH49 0.2-0.5*	BH49 1.7-1.85	BH49 3.9*	BH50 1.4-1.55*	BH50 1.65*	Background [2]	Recreational [3]	Commercial/ industrial outdoor worker [7]	*Sediment quality guidelines* [10]	Class A Landfill [11]	Class B Landfill [11]	Burnside Landfill [12]
Sample Depth (m bgl)		3.8	0.2-0.5	1.7-1.85	3.9	1.4-1.55	1.65							
Layer		landfill	cap	landfill	landfill	landfill	landfill							
PID reading	ppm	11.1	5.4	10.1	6	26.4	5.5							
*Semivolatile organic compounds (SVOC) **														
Phenol	mg/kg	<0.30	<0.30	-	<0.30	<0.30	<0.30	NGV	>10,000 [6]	NGV	NGV	800	80	800
2-Chlorophenol	mg/kg	<0.30	<0.30	-	<0.30	<0.30	<0.30	NGV	NGV	NGV	NGV	0.1	0.01	1
2,4-Dichlorophenol	mg/kg	<0.30	<0.30	-	<0.30	<0.30	<0.30	NGV	NGV	NGV	NGV	0.1	0.01	1
2,4,6-Trichlorophenol	mg/kg	<5.0	<5.0	-	<5.0	<5.0	<5.0	NGV	NGV	NGV	NGV	2	0.2	2
4-Methylphenol	mg/kg	<0.30	<0.30	-	<0.30	<0.30	<0.30	NGV	NGV	91,200 [9]	NGV	NGV	NGV	NGV
Naphthalene	mg/kg	<0.10	0.12	-	1.2	4.6	4.2	<LOR	200 [6]	200 [6]	NGV	200	20	200
2-Methylnaphthalene	mg/kg	0.96	<0.10	-	1.2	1.4	4.5	NGV	NGV	3,350 [9]	NGV	NGV	NGV	NGV
Benzo[a]pyrene	mg/kg	3.2	4.3	-	12	0.45	85	NGV	2.7 [6]	10 [6]	NGV	300	30	NGV
Benzo[a]pyrene PEF (LOR) [1]	mg/kg	3.5	7.1	-	20	0.7	140	<LOR	40	35	NGV	300	30	300
4,4'-DDD	mg/kg	<0.30	<0.30	-	<0.30	<0.30	<0.30	NGV	400	NGV	3.5	300	30	NGV
4,4'-DDE	mg/kg	<0.30	<0.30	-	<0.30	<0.30	<0.30	NGV		NGV	1.4	500	50	500
4,4'-DDT	mg/kg	<0.50	<0.50	-	<0.50	<0.50	<0.50	NGV		NGV	1.2	500	50	500
Aldrin	mg/kg	<0.30	<0.30	-	<0.30	<0.30	<0.30	NGV	NGV	NGV	NGV	0.00016	0.000016	0.0016
cis-Chlordane	mg/kg	<0.30	<0.30	-	<0.30	<0.30	<0.30	NGV	NGV	NGV	4.5	NGV	NGV	NGV
trans-Chlordane	mg/kg	<0.30	<0.30	-	<0.30	<0.30	<0.30	NGV	NGV	NGV		NGV	NGV	NGV
Dieldrin	mg/kg	<0.50	<0.50	-	<0.50	<0.50	<0.50	NGV	70	NGV	2.8	8	0.8	8
Endosulfan I	mg/kg	<0.30	<0.30	-	<0.30	<0.30	<0.30	NGV	NGV	NGV	NGV	6	0.6	6
Endosulfan II	mg/kg	<0.50	<0.50	-	<0.50	<0.50	<0.50	NGV	NGV	NGV	NGV			
Endosulfan sulfate	mg/kg	<0.50	<0.50	-	<0.50	<0.50	<0.50	NGV	NGV	NGV	NGV	NGV	NGV	NGV
Endrin	mg/kg	<0.50	<0.50	-	<0.50	<0.50	<0.50	NGV	NGV	NGV	2.7	NGV	NGV	NGV
Bis(2-ethylhexyl) phthalate	mg/kg	<0.50	<0.50	-	<0.50	1.2	<0.50	NGV	NGV	1,820 [9]	NGV	NGV	NGV	NGV
Di-n-butyl phthalate	mg/kg	<1.0	<1.0	-	<1.0	<1.0	<1.0	NGV	NGV	NGV	NGV	6000	600	6000
Diethyl phthalate	mg/kg	<0.30	<0.30	-	<0.30	<0.30	<0.30	NGV	NGV	NGV	NGV	2000	200	2000
Dimethyl phthalate	mg/kg	<0.30	<0.30	-	<0.30	<0.30	<0.30	NGV	NGV	NGV	NGV	8000	800	8000
Aniline	mg/kg	7	<1.0	-	<1.0	<1.0	<1.0	NGV	NGV	NGV	NGV	4	0.4	4
Dibenzofuran	mg/kg	<0.30	<0.30	-	2.7	<0.30	19	NGV	NGV	1,000 [9]	NGV	NGV	NGV	NGV
Total polycyclic aromatic hydrocarbons (PAHs)	mg/kg	15.28	44.78	-	154.35	10.69	1256.2	NGV	4,700 [6]	NGV	10,000	NGV	NGV	NGV
*Volatile organic compounds (VOC) **														
1,2-Dichloropropane	mg/kg	-	<0.050	-	-	<0.050	-	NGV	NGV	NGV	NGV	20	2	20
Carbon disulfide	mg/kg	-	<0.050	-	-	<0.050	-	NGV	NGV	NGV	NGV	60	6	60
Benzene	mg/kg	-	<0.050	-	-	<0.050	-	NGV	8 [6]	8 [6]	NGV	10	1	10
Toluene	mg/kg	-	<0.10	-	-	<0.10	-	NGV	600 [6]	600 [6]	NGV	2000	200	2000
Ethylbenzene	mg/kg	-	<0.050	-	-	<0.050	-	NGV	3300 [6]	NGV	NGV	1000	100	1000
m,p-Xylene	mg/kg	-	<0.10	-	-	1.7	-	NGV	500 [6]	500 [6]	NGV	2000	200	2000
o-Xylene	mg/kg	-	<0.050	-	-	<0.050	-	NGV			NGV			
Styrene	mg/kg	-	<0.050	-	-	<0.050	-	NGV	NGV	NGV	NGV	120	12	120
Naphthalene	mg/kg	-	<0.10	-	-	1.6	-	<LOR	200 [6]	200 [6]	NGV	200	20	200
1,2-Dichlorobenzene	mg/kg	-	<0.050	-	-	<0.050	-	NGV	NGV	NGV	NGV	4	0.4	4
1,3-Dichlorobenzene	mg/kg	-	<0.050	-	-	<0.050	-	NGV	NGV	NGV	NGV	1000	100	1000
1,2,3-Trichlorobenzene	mg/kg	-	<0.10	-	-	<0.10	-	NGV	NGV	NGV	NGV	1000	100	1000
1,2,4-Trichlorobenzene	mg/kg	-	<0.10	-	-	<0.10	-	NGV	NGV	NGV	NGV	800	80	800
Methylene chloride (Dichloromethane)	mg/kg	-	<0.20	-	-	<0.20	-	NGV	NGV	NGV	NGV	40	4	40
Trans-1,2-Dichloroethene	mg/kg	-	<0.050	-	-	<0.050	-	NGV	NGV	NGV	NGV	200	20	200
Cis-1,2-Dichloroethene	mg/kg	-	<0.050	-	-	<0.050	-	NGV	NGV	NGV	NGV			
1,1,1-Trichloroethane	mg/kg	-	<0.050	-	-	<0.050	-	NGV	NGV	NGV	NGV	4000	400	4000
1,1,2-Trichloroethane	mg/kg	-	<0.10	-	-	<0.10	-	NGV	NGV	NGV	NGV	10000	1000	10000
1,1,2,2-Tetrachloroethane	mg/kg	-	<0.20	-	-	<0.20	-	NGV	NGV	NGV	NGV	1000	100	1000
1,2-Dibromo-3-chloropropane	mg/kg	-	<0.20	-	-	<0.20	-	NGV	NGV	NGV	NGV	40	0.4	4
Bromodichloromethane	mg/kg	-	<0.050	-	-	<0.050	-	NGV	NGV	NGV	NGV	20	0.2	20
Dibromochloromethane	mg/kg	-	<0.10	-	-	<0.10	-	NGV	NGV	NGV	NGV	200	20	200
Bromoform (Tribromomethane)	mg/kg	-	<0.10	-	-	<0.10	-	NGV	NGV	NGV	NGV	200	20	200
Vinyl chloride	mg/kg	-	<0.10	-	-	<0.10	-	NGV	NGV	NGV	NGV	4	0.4	4

Notes to follow tables.

Table E2 - Kettle Park results summary, east of Moana Rua Road (organic)

Notes:
NGV - No Guideline Value.
LOR - Laboratory reporting limit.
- Denotes not analysed or not applicable
Bold indicates that the published background concentration for the site is exceeded.
Underlined indicates that the Recreational criterion is exceeded
Italics indicate that the Sediment Quality Guideline is exceeded.
Green highlight indicates that the Class B landfill screening criterion is exceeded.
Orange highlight indicates that the Class A landfill screening criterion is exceeded.
Yellow highlight indicates that the Burnside Landfill screening criterion is exceeded.
Red indicates that the NES SCS for commercial/industrial land use or NZ Asbestos in Soil 'all site uses' criterion is exceeded.
* Samples were lost by the analysing laboratory; VOC/SVOC/TPH/PAH/cyanide were analysed outside of standard holding times.
** Full suite analysed, selected compounds presented in table. Refer laboratory certificates of analysis for full results.

1- Benzo[a]pyrene potency equivalence (PEF) is laboratory calculated based on the LOR, in accordance with the NES Soil Methodology for Deriving Standards in Soil to Protect Human Health, MfE 2011.
2- Background soil concentrations of selected trace elements and organic contaminants in New Zealand. Landcare Research 2016, seen on https://lris.scinfo.org.nz/layer/48470-pbc-predicted-background-soil-concentrations-new-zealand/
3 - MfE, 2012 - National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health, Recreational SCS (unless otherwise stated).
6 - MfE, 1997 - Guidelines for Assessing and Managing Contaminated Gasworks Sites in New Zealand.
7 - MfE, 2012 - National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health, Commercial/industrial outdoor worker (unpaved) SCS (unless otherwise stated).
8- MfE 2011, Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand. Tier 1 soil acceptance criteria for TPH, BTEX and naphthalene commercial/industrial land use. All pathways. The following notes denote the limiting pathway for each criterion: v-volatilisation, m-maintenance/excavation, x- PAH surrogate.
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10 - Australia and New Zealand Water Quality Guidelines 2018 - Recommended default guideline values for toxicants in sediment.
11 - MfE, Module 2 - Hazardous Waste Guidelines: Landfill Waste Acceptance Criteria and Landfill Classification. Appendix A: Total concentration and leachability limits for Class A and Class B landfills. Screening criterion - 20 x TCLP criteria.
12 - Consent No. RM17.198.01 V2. Appendix 1 Waste Acceptance Criteria; Total Concentration Screening.

Table E3 - Kettle Park results summary, west of Moana Rua Road

Sample Location		Fields west of Moana Rua Rd												
Sample ID		BH28 0.6-1.6	BH32 0.2	BH32 0.3-0.4	BH36 0.25-0.4	BH37 0.4-0.5	BH37 0.62-0.72	BH40 0.2-0.4	Background [2]	Recreational [3]	Commercial/ industrial outdoor worker [7]	*Sediment quality guidelines* [10]	Class A Landfill [11]	Class B Landfill [11]	Burnside Landfill [12]
Sample Depth (m bgl)		0.6-1.6	0.2	0.3-0.4	0.25-0.4	0.4-0.5	0.62-0.72	0.2-0.4							
Layer	Units	landfill	cap	landfill	cap	cap	clean fill	cap							
PID reading	ppm	2.4-3.0	4.6	4.9	3.5	4.0	4.6	0.1							
Asbestos															
Asbestos form	-	-	Chrysotile Free fibres	-	-	-	-	-	NAD	NGV	NGV	NGV	NGV	NGV	NGV
ACM (>10mm)	w/w %	NAD	<0.001	NAD	NAD	NAD		NAD		0.02 [4]	0.05 [4]				
FA/AF (<10mm)	w/w %	NAD	NAD	NAD	NAD	NAD		NAD		0.001 [4]	0.001 [4]				
Metals and metalloids															
Arsenic	mg/kg	18.6	8.5	16.1	4.8	-	-	2.7	12.67	80	70	20	100	10	100
Cadmium	mg/kg	0.795	0.46	0.839	0.21	-	-	0.085	0.28	400	1,300	1.5	20	2	20
Chromium	mg/kg	36.9	30.1	44.9	17.9	-	-	11	60.5	2,700	6,300	80	100	10	400
Copper	mg/kg	*651*	*135*	*265*	55.2	-	-	11.5	40.17	>10,000	>10,000	65	100	10	400
Lead	mg/kg	*1,070*	*1,450*	*2,030*	*236*	-	-	*54.9*	30.08	880	3,300	50	100	10	400
Mercury	mg/kg	*1.3*	*1.1*	*1.7*	*0.21*	-	-	0.098	NGV	1,800	4,200	0.15	4	0.4	4
Nickel	mg/kg	*56.2*	*31.6*	*57.2*	16.7	-	-	7.75	32.88	1,200 [5]	6,000 [5]	21	200	20	200
Zinc	mg/kg	*1,230*	*486*	*922*	144	-	-	61.1	101.8	30,000 [5]	40,0000 [5]	200	200	20	800
Total Petroleum Hydrocarbons (TPH)															
C7-C9	mg/kg	<10	-	<10	-	-	<10	-	<LOR	NGV	SAND; 120 [m] (<1 m), 120 [m] (1-4 m), 12,000 [v] (>4m) SILT; 500 [m] (<1 m), 500 [m] (1-4 m), 12,000 [v] (>4m) SILTY CLAY; 8,800 [v] (<1m), 20,000 [m] (1-4m), >20,000 (>4m) [8]	NGV	NGV	NGV	500
C10-C14	mg/kg	<15	-	<15	-	-	<15	-	<LOR	NGV	SAND; 1,500 [x] (<1m), 1,900 [x] (1-4 m), 2,100 [x] (>4m) SILT; 1,700 [x] (<1 m), 2,200 [x] (1-4m), 3,400 [x] (>4m) SILTY CLAY; 1,900 [x] (<1m), 8,900 [x] (1-4m), >20,000 (>4m) [8]	NGV	NGV	NGV	20,000
C15-C36	mg/kg	460	-	161	-	-	<25	-	<LOR	NGV	>20,000 [8]	NGV	NGV	NGV	20,000
C7-C36 (Total)	mg/kg	*460*	-	161	-	-	<50	-	<LOR	NGV	NGV	280	NGV	NGV	20,000

Notes:
ACM - asbestos containing material; FA - fibrous asbestos; AF - asbestos fines.
NAD - No Asbestos Detected.
NGV - No Guideline Value.
LOR - Laboratory reporting limit.
- Denotes not analysed or not applicable
Bold indicates that the published background concentration for the site is exceeded.
Underlined indicates that the Recreational criterion is exceeded.
Italics indicate that the Sediment Quality Guideline is exceeded.
Green highlight indicates that the Class B landfill screening criterion is exceeded.
Orange highlight indicates that the Class A landfill screening criterion is exceeded.
Yellow highlight indicates that the Burnside Landfill screening criterion is exceeded.
Red indicates that the NES SCS for commercial/industrial land use or NZ Asbestos in Soil 'all site uses' criterion is exceeded.
* Full suite analysed, selected compounds presented in table. Refer laboratory certificates of analysis for full results.

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Table E3 - Kettle Park results summary, west of Moana Rua Road

Sample Location		Fields west of Moana Rua Rd				Far west point		Marlow Park	Background [2]	Recreational [3]	Commercial/ industrial outdoor worker [7]	*Sediment quality guidelines* [10]	Class A Landfill [11]	Class B Landfill [11]	Burnside Landfill [12]
Sample ID		BH41 0.4-0.9	BH44 0.7-1.35	BH44 2.55	BH45 1.5-1.7	BH60 0.25-0.5	BH60 1.85	BH57 0.5-0.6							
Sample Depth (m bgl)		0.4-0.9	0.7-1.35	2.55	1.5-1.7	0.25-0.5	1.85	0.5-0.6							
Layer	Units	landfill	landfill	landfill	landfill	clean fill	beach sand	cap							
PID reading	ppm	0.2	0.4	1.1	0.3	-	-	-							
Asbestos															
Asbestos form	-	-	Chrysotile Free fibres	-	-	-	-	-	NAD	NGV	NGV	NGV	NGV	NGV	NGV
ACM (>10mm)	w/w %	NAD	NAD		NAD	NAD		NAD		0.02 [4]	0.05 [4]				
FA/AF (<10mm)	w/w %	NAD	<0.001		NAD	NAD		NAD		0.001 [4]	0.001 [4]				
Metals and metalloids															
Arsenic	mg/kg	6.1	5.6	1.8	9.2	11	2	-	12.67	80	70	20	100	10	100
Cadmium	mg/kg	0.37	0.4	0.04	0.797	0.061	0.012	-	0.28	400	1,300	1.5	20	2	20
Chromium	mg/kg	29.8	49.8	5.4	28.8	28.5	2.6	-	60.5	2,700	6,300	80	100	10	400
Copper	mg/kg	51.3	60.9	5.2	*103*	7.1	0.88	-	40.17	>10,000	>10,000	65	100	10	400
Lead	mg/kg	*292*	*458*	32.4	*1,220*	7.93	1.8	-	30.08	880	3,300	50	100	10	400
Mercury	mg/kg	*0.7*	*0.69*	0.028	*1.7*	0.029	<0.025	-	NGV	1,800	4,200	0.15	4	0.4	4
Nickel	mg/kg	*32.7*	*24*	6.72	*25*	14.7	2	-	32.88	1,200 [5]	6,000 [5]	21	200	20	200
Zinc	mg/kg	*279*	*455*	28.6	*847*	38.6	5.26	-	101.8	30,000 [5]	40,0000 [5]	200	200	20	800
Total Petroleum Hydrocarbons (TPH)															
C7-C9	mg/kg	-	-	<10	-	-	-	-	<LOR	NGV	SAND; 120 [m] (<1 m), 120 [m] (1-4 m), 12,000 [v] (>4m) SILT; 500 [m] (<1 m), 500 [m] (1-4 m), 12,000 [v] (>4m) SILTY CLAY; 8,800 [v] (<1m), 20,000 [m] (1-4m), >20,000 (>4m) [8]	NGV	NGV	NGV	500
C10-C14	mg/kg	-	-	<15	-	-	-	-	<LOR	NGV	SAND; 1,500 [x] (<1m), 1,900 [x] (1-4 m), 2,100 [x] (>4m) SILT; 1,700 [x] (<1 m), 2,200 [x] (1-4m), 3,400 [x] (>4m) SILTY CLAY; 1,900 [x] (<1m), 8,900 [x] (1-4m), >20,000 (>4m) [8]	NGV	NGV	NGV	20,000
C15-C36	mg/kg	-	-	203	-	-	-	-	<LOR	NGV	>20,000 [8]	NGV	NGV	NGV	20,000
C7-C36 (Total)	mg/kg	-	-	203	-	-	-	-	<LOR	NGV	NGV	280	NGV	NGV	20,000

Notes:
ACM - asbestos containing material; FA - fibrous asbestos; AF - asbestos fines.
NAD - No Asbestos Detected.
NGV - No Guideline Value.
LOR - Laboratory reporting limit.
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Bold indicates that the published background concentration for the site is exceeded.
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Red indicates that the NES SCS for commercial/industrial land use or NZ Asbestos in Soil 'all site uses' criterion is exceeded.
* Full suite analysed, selected compounds presented in table. Refer laboratory certificates of analysis for full results.

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Table E4 - Kettle Park results summary, west of Moana Rua Road (organic)

Sample Location		Fields west of Moana Rua Rd							Background [2]	Recreational [3]	Commercial/ industrial outdoor worker [7]	*Sediment quality guidelines* [10]	Class A Landfill [11]	Class B Landfill [11]	Burnside Landfill [12]
Sample ID		BH28 0.6-1.6	BH32 0.2	BH32 0.3-0.4	BH36 0.25-0.4	BH37 0.4-0.5	BH37 0.62-0.72	BH40 0.2-0.4							
Sample Depth (m bgl)		0.6-1.6	0.2	0.3-0.4	0.25-0.4	0.4-0.5	0.62-0.72	0.2-0.4							
Layer	Units	landfill	cap	landfill	cap	cap	clean fill	cap							
PID reading	ppm	2.4-3.0	4.6	4.9	3.5	4.0	4.6	0.1							
Semivolatile organic compounds (SVOC)															
Phenol	mg/kg	<0.30	-	<0.30	<0.30	-	-	<0.30	NGV	>10,000 [6]	NGV	NGV	800	80	800
2-Chlorophenol	mg/kg	<0.30	-	<0.30	<0.30	-	-	<0.30	NGV	NGV	NGV	NGV	0.1	0.01	1
2,4-Dichlorophenol	mg/kg	<0.30	-	<0.30	<0.30	-	-	<0.30	NGV	NGV	NGV	NGV	0.1	0.01	1
2,4,6-Trichlorophenol	mg/kg	<5.0	-	<5.0	<5.0	-	-	<5.0	NGV	NGV	NGV	NGV	2	0.2	2
4-Methylphenol	mg/kg	<0.30	-	<0.30	<0.30	-	-	<0.30	NGV	NGV	91,200 [9]	NGV	NGV	NGV	NGV
Naphthalene	mg/kg	<0.10	-	<0.10	<0.10	-	-	<0.10	<LOR	200 [6]	200 [6]	NGV	200	20	200
2-Methylnaphthalene	mg/kg	<0.10	-	<0.10	<0.10	-	-	<0.10	NGV	NGV	3,350 [9]	NGV	NGV	NGV	NGV
Benzo[a]pyrene	mg/kg	1.3	-	4.4	0.28	-	-	1.1	NGV	2.7 [6]	10 [6]	NGV	300	30	NGV
Pyrene	mg/kg	0.7	-	6.6	0.27	-	-	1.5	NGV	NGV	NA [6]	NGV	NGV	NGV	NGV
Benzo[a]pyrene TEQ (LOR)	mg/kg	2	-	6.3	0.5	-	-	1.6	<LOR	40	35	NGV	300	30	300
4,4'-DDD	mg/kg	<0.30	-	<0.30	<0.30	-	-	<0.30	NGV	400	NGV	3.5	300	30	NGV
4,4'-DDE	mg/kg	<0.30	-	<0.30	<0.30	-	-	<0.30	NGV		NGV	1.4	500	50	500
4,4'-DDT	mg/kg	<0.50	-	<0.50	<0.50	-	-	<0.50	NGV		NGV	1.2	500	50	500
Aldrin	mg/kg	<0.30	-	<0.30	<0.30	-	-	<0.30	NGV	NGV	NGV	NGV	0.00016	0.000016	0.0016
cis-Chlordane	mg/kg	<0.30	-	<0.30	<0.30	-	-	<0.30	NGV	NGV	NGV	4.5	NGV	NGV	NGV
trans-Chlordane	mg/kg	<0.30	-	<0.30	<0.30	-	-	<0.30	NGV	NGV	NGV		NGV	NGV	NGV
Dieldrin	mg/kg	<0.50	-	<0.50	<0.50	-	-	<0.50	NGV	70	NGV	2.8	8	0.8	8
Endosulfan I	mg/kg	<0.30	-	<0.30	<0.30	-	-	<0.30	NGV	NGV	NGV	NGV	6	0.6	6
Endosulfan II	mg/kg	<0.50	-	<0.50	<0.50	-	-	<0.50	NGV	NGV	NGV	NGV			
Endosulfan sulfate	mg/kg	<0.50	-	<0.50	<0.50	-	-	<0.50	NGV	NGV	NGV	NGV	NGV	NGV	NGV
Endrin	mg/kg	<0.50	-	<0.50	<0.50	-	-	<0.50	NGV	NGV	NGV	2.7	NGV	NGV	NGV
Bis(2-ethylhexyl) phthalate	mg/kg	<0.50	-	<0.50	<0.50	-	-	<0.50	NGV	NGV	1,820 [9]	NGV	NGV	NGV	NGV
Di-n-butyl phthalate	mg/kg	<1.0	-	<1.0	<1.0	-	-	<1.0	NGV	NGV	NGV	NGV	6000	600	6000
Diethyl phthalate	mg/kg	<0.30	-	<0.30	<0.30	-	-	<0.30	NGV	NGV	NGV	NGV	2000	200	2000
Dimethyl phthalate	mg/kg	<0.30	-	<0.30	<0.30	-	-	<0.30	NGV	NGV	NGV	NGV	8000	800	8000
Aniline	mg/kg	<1.0	-	<1.0	<1.0	-	-	<1.0	NGV	NGV	NGV	NGV	4	0.4	4
Dibenzofuran	mg/kg	<0.30	-	<0.30	<0.30	-	-	<0.30	NGV	NGV	1,000 [9]	NGV	NGV	NGV	NGV
Total polycyclic aromatic hydrocarbons (PAHs)	mg/kg	8.91	-	40.01	1.79	-	-	9.89	NGV	4,700 [6]	NGV	10,000	NGV	NGV	NGV

Notes:

NGV - No Guideline Value.

LOR - Laboratory reporting limit.

- Denotes not analysed or not applicable

Bold indicates that the published background concentration for the site is exceeded.

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Italics indicate that the Sediment Quality Guideline is exceeded.

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* Full suite analysed, selected compounds presented in table. Refer laboratory certificates of analysis for full results.

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Table E4 - Kettle Park results summary, west of Moana Rua Road (organic)

Sample Location		Fields west of Moana Rua Rd				Far west point		Marlow Park	Background [2]	Recreational [3]	Commercial/ industrial outdoor worker [7]	*Sediment quality guidelines* [10]	Class A Landfill [11]	Class B Landfill [11]	Burnside Landfill [12]
Sample ID		BH41 0.4-0.9	BH44 0.7-1.35	BH44 2.55	BH45 1.5-1.7	BH60 0.25-0.5	BH60 1.85	BH57 0.5-0.6							
Sample Depth (m bgl)		0.4-0.9	0.7-1.35	2.55	1.5-1.7	0.25-0.5	1.85	0.5-0.6							
Layer	Units	landfill	landfill	landfill	landfill	clean fill	beach sand	cap							
PID reading	ppm	0.2	0.4	1.1	0.3	-	-	-							
Semivolatile organic compounds (SVOC)															
Phenol	mg/kg	<0.30	<0.30	<0.30	-	-	-	-	NGV	>10,000 [6]	NGV	NGV	800	80	800
2-Chlorophenol	mg/kg	<0.30	<0.30	<0.30	-	-	-	-	NGV	NGV	NGV	NGV	0.1	0.01	1
2,4-Dichlorophenol	mg/kg	<0.30	<0.30	<0.30	-	-	-	-	NGV	NGV	NGV	NGV	0.1	0.01	1
2,4,6-Trichlorophenol	mg/kg	<5.0	<5.0	<5.0	-	-	-	-	NGV	NGV	NGV	NGV	2	0.2	2
4-Methylphenol	mg/kg	<0.30	<0.30	<0.30	-	-	-	-	NGV	NGV	91,200 [9]	NGV	NGV	NGV	NGV
Naphthalene	mg/kg	<0.10	0.16	<0.10	-	-	-	-	<LOR	200 [6]	200 [6]	NGV	200	20	200
2-Methylnaphthalene	mg/kg	<0.10	<0.10	<0.10	-	-	-	-	NGV	NGV	3,350 [9]	NGV	NGV	NGV	NGV
Benzo[a]pyrene	mg/kg	4.2	17	0.71	-	-	-	-	NGV	2.7 [6]	10 [6]	NGV	300	30	NGV
Pyrene	mg/kg	6.4	31	0.93	-	-	-	-	NGV	NGV	NA [6]	NGV	NGV	NGV	NGV
Benzo[a]pyrene TEQ (LOR)	mg/kg	5.9	26	1	-	-	-	-	<LOR	40	35	NGV	300	30	300
4,4'-DDD	mg/kg	<0.30	<0.30	<0.30	-	-	-	-	NGV	400	NGV	3.5	300	30	NGV
4,4'-DDE	mg/kg	<0.30	<0.30	<0.30	-	-	-	-	NGV		NGV	1.4	500	50	500
4,4'-DDT	mg/kg	<0.50	<0.50	<0.50	-	-	-	-	NGV		NGV	1.2	500	50	500
Aldrin	mg/kg	<0.30	<0.30	<0.30	-	-	-	-	NGV	NGV	NGV	NGV	0.00016	0.000016	0.0016
cis-Chlordane	mg/kg	<0.30	<0.30	<0.30	-	-	-	-	NGV	NGV	NGV	4.5	NGV	NGV	NGV
trans-Chlordane	mg/kg	<0.30	<0.30	<0.30	-	-	-	-	NGV	NGV	NGV		NGV	NGV	NGV
Dieldrin	mg/kg	<0.50	<0.50	<0.50	-	-	-	-	NGV	70	NGV	2.8	8	0.8	8
Endosulfan I	mg/kg	<0.30	<0.30	<0.30	-	-	-	-	NGV	NGV	NGV	NGV	6	0.6	6
Endosulfan II	mg/kg	<0.50	<0.50	<0.50	-	-	-	-	NGV	NGV	NGV	NGV			
Endosulfan sulfate	mg/kg	<0.50	<0.50	<0.50	-	-	-	-	NGV	NGV	NGV	NGV	NGV	NGV	NGV
Endrin	mg/kg	<0.50	<0.50	<0.50	-	-	-	-	NGV	NGV	NGV	2.7	NGV	NGV	NGV
Bis(2-ethylhexyl) phthalate	mg/kg	<0.50	<0.50	<0.50	-	-	-	-	NGV	NGV	1,820 [9]	NGV	NGV	NGV	NGV
Di-n-butyl phthalate	mg/kg	<1.0	<1.0	<1.0	-	-	-	-	NGV	NGV	NGV	NGV	6000	600	6000
Diethyl phthalate	mg/kg	<0.30	<0.30	<0.30	-	-	-	-	NGV	NGV	NGV	NGV	2000	200	2000
Dimethyl phthalate	mg/kg	<0.30	<0.30	<0.30	-	-	-	-	NGV	NGV	NGV	NGV	8000	800	8000
Aniline	mg/kg	<1.0	<1.0	<1.0	-	-	-	-	NGV	NGV	NGV	NGV	4	0.4	4
Dibenzofuran	mg/kg	<0.30	<0.30	<0.30	-	-	-	-	NGV	NGV	1,000 [9]	NGV	NGV	NGV	NGV
Total polycyclic aromatic hydrocarbons (PAHs)	mg/kg	38.91	177.6	6.07	-	-	-	-	NGV	4,700 [6]	NGV	10,000	NGV	NGV	NGV

Notes:

NGV - No Guideline Value.

LOR - Laboratory reporting limit.

- Denotes not analysed or not applicable

Bold indicates that the published background concentration for the site is exceeded.

Underlined indicates that the Recreational criterion is exceeded.

Italics indicate that the Sediment Quality Guideline is exceeded.

Green highlight indicates that the Class B landfill screening criterion is exceeded.

Orange highlight indicates that the Class A landfill screening criterion is exceeded.

Yellow highlight indicates that the Burnside Landfill screening criterion is exceeded.

Red indicates that the NES SCS for commercial/industrial land use or NZ Asbestos in Soil 'all site uses' criterion is exceeded.

* Full suite analysed, selected compounds presented in table. Refer laboratory certificates of analysis for full results.

1- Benzo[a]pyrene potency equivalence (PEF) is laboratory calculated based on the LOR, in accordance with the NES Soil Methodology for Deriving Standards in Soil to Protect Human Health, MfE 2011.
2- Background soil concentrations of selected trace elements and organic contaminants in New Zealand. Landcare Research 2016, seen on https://lris.scinfo.org.nz/layer/48470-pbc-predicted-background-soil-concentrations-new-zealand/
3 - MfE, 2012 - National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health, Recreational SCS (unless otherwise stated).
4 - BRANZ 2017, New Zealand Guidelines for Assessing and Managing Asbestos in Soil.
5 - ASC NEPM Toolbox - Update Febrary 2014 - www.nepc.gov.au/nepms/assessment-site-contamination/toolbox
6 - MfE, 1997 - Guidelines for Assessing and Managing Contaminated Gasworks Sites in New Zealand.
7 - MfE, 2012 - National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health, Commercial/industrial outdoor worker (unpaved) SCS (unless otherwise stated).
8- MfE 2011, Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand. Tier 1 soil acceptance criteria for TPH, BTEX and naphthalene commercial/industrial land use. All pathways. The following notes denote the limiting pathway for each criterion: v-volatilisation, m-maintenance/excavation, x- PAH surrogate.
9 - USEPA Regional Soil Screening Values, hazard quotient of 1, target risk value of 10-5, outdoor worker, chronic effects.
10 - Australia and New Zealand Water Quality Guidelines 2018 - Recommended default guideline values for toxicants in sediment.
11 - MfE, Module 2 - Hazardous Waste Guidelines: Landfill Waste Acceptance Criteria and Landfill Classification. Appendix A: Total concentration and leachability limits for Class A and Class B landfills. Screening criterion - 20 x TCLP criteria.
12 - Consent No. RM17.198.01 V2. Appendix 1 Waste Acceptance Criteria; Total Concentration Screening.

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Table E5: Analytical Results Summary - Leachate (TCLP)

Sample ID	Units	BH04 0.7-0.9	BH13 3.6-3.8	BH14 6.3-6.7	BH23 6.5	BH24 0.3-0.5	BH33 2.9-3.35	BH48 3.95	BH49 3.9	BH32 0.2	Marine water quality guidelines [1]			Class A Landfill [2]	Class B Landfill [2]	Burnside Landfill [3]
Sample Depth (m bgl)		0.7-0.9	3.6-3.8	6.3-6.7	6.5	0.3-0.5	2.9-3.35	3.95	3.9	0.2						
Layer		landfill	landfill	landfill	landfill	landfill	landfill	landfill	landfill	cap	80%	90%	95%			
Metals and metalloids by TCLP																
Arsenic	g/m^3	<0.0050	0.012	<0.0050	0.007	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	-	-	-	5	0.5	2.5
Cadmium	g/m^3	0.117	0.0579	0.00068	0.208	0.0675	0.0913	0.0655	0.018	0.0063	0.036	0.014	0.0055	1	0.1	0.5
Chromium	g/m^3	<0.005	<0.005	<0.005	0.02	<0.005	<0.005	<0.005	<0.005	0.007	0.085	0.020	0.0044	5	0.5	2.5
Copper	g/m^3	291	21.5	0.057	0.73	0.19	142	0.15	23.2	0.057	0.008	0.003	0.0013	5	0.5	2.5
Lead	g/m^3	17.5	5.86	0.15	5.7	0.32	0.57	0.16	0.38	0.59	0.012	0.0066	0.0044	5	0.5	2.5
Mercury	g/m^3	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0054	0.0019	0.0006	0.2	0.02	0.1
Nickel	g/m^3	0.32	0.15	0.026	0.09	0.064	0.923	0.064	0.314	0.014	0.56	0.2	0.07	10	1	5
Zinc	g/m^3	257	55.4	3.4	65.8	13	26	26	27	2.9	0.021	0.012	0.008	10	1	5

Notes:
TCLP - Toxicity Characteristic Leaching Procedure
Red text indicates that the marine water quality guideline for 80% species protection is exceeded.
Blue text indicates that the marine water quality guideline for 90% species protection is exceeded.
Green text indicates that the marine water quality guideline for 95% species protection is exceeded.
Green highlight indicates that Class B landfill screening criterion is exceeded.
Yellow highlight indicates that Class A landfill (including Burnside Landfill) screening criterion is exceeded.
1 - Australia and New Zealand Water Quality Guidelines 2018 - Recommended default guideline values for toxicants in Marine Water. 80% species protection, 90% species protection and 95% species protection presented.
2 - MfE, Module 2 - Hazardous Waste Guidelines: Landfill Waste Acceptance Criteria and Landfill Classification. Appendix A: Total concentration and leachability limits for Class A and Class B landfills. Screening criterion - 20 x TCLP criteria.
3 - Consent No. RM17.198.01 V2. Appendix 1 Waste Acceptance Criteria; Leachable Concentration.

Table E6: Relative Percentage Difference

	Arsenic	Cadmium	Chromium	Copper	Mercury	Lead	Nickel	Zinc
BH06 3.9-4.6	12	0.719	44.9	113	4360	0.26	64.9	867
DUP1	13.1	0.44	73.3	106	2820	0.27	92	522
RPD (%)	8.8	48.1	48.1	6.4	42.9	3.8	34.5	49.7
BH09 0.75-1.4	16.4	0.32	29.9	145	1230	0.072	64.9	294
DUP3	14.9	0.38	25.6	115	1350	0.36	61.4	445
RPD (%)	9.6	17.1	15.5	23.1	9.3	133.3	5.5	40.9
BH28 0.6-1.6	18.6	0.795	36.9	651	1070	1.3	56.2	1230
DUP10	17.8	0.531	44.7	206	691	2.1	47.2	572
RPD (%)	4.4	39.8	19.1	103.9	43.0	47.1	17.4	73.0
BH38 5.8-6.2	1.6	0.025	1.3	5	2.2	<0.025	1.3	9.09
DUP13	1.6	0.019	1.4	2.5	1.8	<0.025	1.9	9.02
RPD (%)	0.0	27.3	7.4	66.7	20.0	0.0	37.5	0.8
BH60 0.25-0.5	11	0.061	28.5	7.1	7.93	0.029	14.7	38.6
DUP19	6.3	0.062	25.2	6	8.67	0.047	14.1	32.7
RPD (%)	54.3	1.6	12.3	16.8	8.9	47.4	4.2	16.5

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CAPITAL EXPENDITURE REPORT - 2023/24 ANNUAL PLAN

Department: Finance

EXECUTIVE SUMMARY

1 This report seeks approval of the draft capital budget for inclusion in the 2023/24 Annual Plan ("Annual Plan").

2 The draft budget is an update of the capital budget provided for in the 10 year plan 2021-31 ("10 year plan"). The update has involved reviewing years 2 and 3 of the 10 year plan and amending for timing issues and changes in estimated costs.

3 The updated budget for 2023/24 is $177.310 million, compared to $145.050 million provided for in the 10 year plan, an increase of $32.260 million.

4 An option to advance the renewals programme in 3 Waters by a further $35.200 million is also provided for Council consideration.

RECOMMENDATIONS

a) **Approves** the proposed capital expenditure under either option 1 – Base 3 Waters or option 2 – Accelerated 3 Waters for inclusion in the 2023/24 Annual Plan.

BACKGROUND

5 Capital expenditure is funded as follows:

- Funded depreciation – for renewals
- Debt – for new capital, and any shortfall in funded depreciation for renewals
- Waka Kotahi NZTA grant funding – renewals and new capital for transport projects
- Other third party contributions for new capital – e.g., Government funding for FIFA upgrades
- Development contributions – for growth capital.

DISCUSSION

6 Capital budgets in the 10 year plan 2021-2031 have been reviewed and updated for all activities of council. Since completing the 10 year plan budgets, we have better information on the estimated costs of projects, and timing of delivery. This means that the level of spend at

$177.310 million is higher than originally anticipated but more accurately reflects the delivery phases of various projects. Staff will manage the capital programme closely and look for any savings during the course of the year. Regular reporting to the Finance & CCO committee on progress on the capital programme will continue, with close attention to actual vs budget, to ensure that the capital budget is not exceeded.

7 The revised capital budgets reflect the following:

- Update of costs to complete projects underway
- Ability to deliver – both internally and the available market capacity
- Timing of work – forecasting progress against the current 2022/23 year's budget, and how timing differences will impact on the budget for the 2023/24 year of the 10 year plan.

8 The draft capital budget for the Annual Plan provides for replacing existing assets and infrastructure. Across the Council's activities, the proposed budget is $177.310 million in the 2023/24 year, compared to $145.050 million provided for in year three of the 10 year plan. An option to advance the capital expenditure programme in 3 Waters by $35.200 million is provided for Council consideration. The draft capital budgets are provided at Attachment A.

9 Table 1 provides a capital expenditure summary for the financial year ended 30 June 2024 by activity group.

Table 1 – Capital Expenditure Year ended 30 June 2024

Capital Expenditure $000s 2023/2024	Budget	10 Year Plan 2021-31	Increase (Decrease)
Community and planning	505	405	100
Economic development	500	16	484
Galleries, libraries and museums	2,527	2,075	452
Governance and support services	4,224	4,914	(690)
Property	27,012	26,723	289
Reserves and recreational facilities	20,079	11,320	8,759
Regulatory services	605	343	262
Roading and footpaths	50,344	49,846	498
Three waters	59,808	41,642	18,166
Waste management	11,706	7,766	3,940
TOTAL (Option 1)	177,310	145,050	32,260
Additional funding Three Waters	35,200	-	35,200
TOTAL (Option 2)	212,510	145,050	67,460

Economic Development

10 The additional expenditure relates to the refresh of the iSite Octagon premises. This project will receive external funding of $200k.

Property

11 The budget includes an uplift in spend on the Civic Centre upgrade ($6.988 million). The revised budget for this project was considered by Council as part of the annual plan for 2022/2023.

12 This uplift in spend has been partially offset by deferral of the District Energy Scheme project and the previously signalled delay in timing of the construction of the South Dunedin Community Complex due to the tenancy of CCT which is in place until January 2025.

Reserves and recreational facilities

13 The additional expenditure primarily reflects funding for the upgrade of Moana Pool (including the installation of a new hydroslide) being brought forward from future financial years (majority being from 2024/2025).

Three Waters

14 The increased expenditure primarily reflects the acceleration of the renewals programme included in the current 10 year plan. The proposed level of expenditure reflects an increased ability for delivery – including scoping and design through to contractor capacity. An option has been included in this report to further increase renewals expenditure for 2023/2024, in particular, to fund improvements to treatment plant resilience. Both increases will require Department of Internal Affairs (DIA) approval as they represent a significant decision.

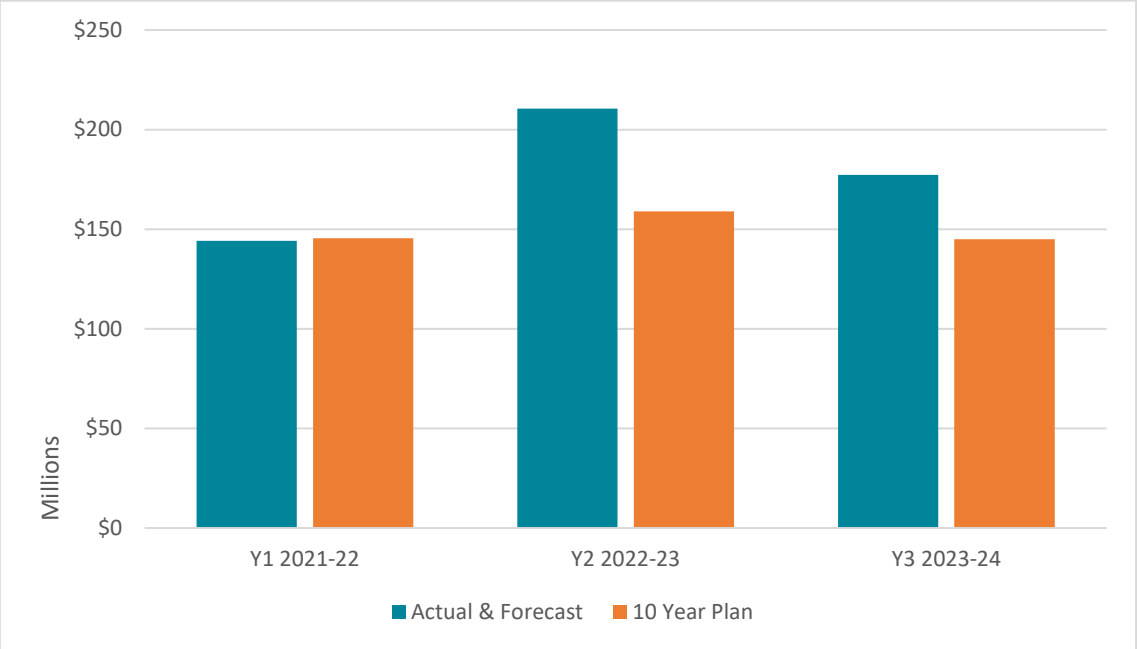
Waste Management

15 The increased expenditure in 2023/2024 reflects reprofiling of waste futures expenditure from 2022/2023. The construction of the new processing facilities will now begin in 2023/2024 pending finalisation of design and procurement activities.

Comparison with 10 year plan 2021-31

16 Chart 1 compares actual and forecast capital expenditure with the 10 year plan for the first three years from 2021/22 – 2023/24.

Chart 1 – Capital Expenditure Years 1 – 3 of the 10 Year plan 2021-2031



17 Over the three year period from 2021/22 – 2023/24, capital expenditure is forecast to be $82.576 million higher than the 10 year plan. This is made up as follows:

- the actual 2021/22 year expenditure was $1.352 million less than year one of the 10 year plan;
- the 2022/23 year is forecast to be $51.668 million ahead of that provided for in year two of the 10 year plan; and
- in 2023/24 the revised budget provides for an increase of $32.260 million compared to that provided for in year three of the 10 year plan.

18 Table 2 provides a capital expenditure summary for the financial years ended 30 June 2022, 2023 and 2024 by activity group.

Table 2 – Capital Expenditure Years 1 – 3 of the 10 Year plan 2021-2031

Capital Expenditure $000s Years 1-3 10 Year Plan	Actual + Forecast	10 Year Plan 2021-31	Increase (Decrease)
Community and planning	759	1,731	(972)
Economic development	517	286	231
Galleries, libraries and museums	6,081	6,690	(609)
Governance and support services	10,903	14,718	(3,815)
Property	60,981	72,204	(11,223)
Reserves and recreational facilities	59,419	56,674	2,745
Regulatory services	898	1,009	(111)
Roading and footpaths	151,177	132,798	18,379
Three waters	219,740	128,280	91,460
Waste management	21,568	35,077	(13,509)
TOTAL (Option 1)	532,043	449,467	82,576
Additional funding Three Waters	35,200	-	35,200
TOTAL (Option 2)	567,243	449,467	117,776

Governance and Support Services

19 The underspend reflects delayed IT projects while scoping and definition activities are completed.

20 This underspend is partially offset by the acceleration of the fleet replacement and the delayed delivery of the new electric bookbus. The budget assumed delivery of the bookbus in the year ended 30 June 2021.

Property

21 The main variance relates to expenditure on the District Energy Scheme and South Dunedin Library and Community Complex which hasn't occurred in the timeframe indicated in the 10 year plan. These are partially offset by renewals work on the Civic Centre.

Reserves and recreational facilities

22 The additional expenditure primarily reflects facility improvements in preparation for the FIFA World Cup. External funding was received in relation to this expenditure.

23 Renewals expenditure includes budget brought forward to complete the work currently underway at Moana Pool.

Roading and Footpaths

24 Timing of the Central City Upgrade project is ahead of that indicated in the 10 year plan. Completion costs of the Peninsula Connection project are higher than indicated in the 10 year plan. These are partially offset by delayed timing of the Shaping Future Dunedin projects.

Waste Management

25 The Waste Futures initiatives have been delayed with catch up in the 2023/24 and 2024/25 years.

Three Waters

26 The increased expenditure primarily reflects the acceleration of the renewals programme included in the current 10 year plan. An option has been included in this report to further increase capital expenditure for Three Waters.

OPTIONS

27 Two options are presented for consideration. There is the ability to deliver on both options including scoping and design through to contractor capacity.

28 As discussed above, the draft budget for the 2023/24 year for 3 Waters provides for an increase of $18.166 million to $59.808 million, subject to Council and DIA approval through the significant decision process. This is option 1.

29 Option 2 considers the opportunity to advance the capital expenditure programme by a further $35.200 million to $95.008 million. If this option was approved by Council, it would also be subject to DIA approval.

30 Council would borrow to fund the additional capital expenditure and interest cost for both options until the reform transition date. Although we don't yet know when 3 Waters will transition to Entity J, staff will work with DIA to get certainty on both the debt to be transferred incorporating both the capital expenditure and associated interest cost. Staff will provide an update on the DIA approval process at the Council meeting to adopt the 2023/24 Annual Plan in June 2023.

31 If approved, the additional debt will transfer to Entity J as part of the Government's 3 Waters reform programme.

32 The draft Funding Impact Statement for 2023/2024 has been included as an attachment for reference. It includes the forecast debt for each of options 1 and 2 and provides the debt to revenue % (250% limit per Financial Strategy).

Option One – Capital programme with Base 3 Waters

33 The proposed budget is $177.310 million in the 2023/24 year, compared to $145.050 million provided for in year three of the 10 year plan. This base option increases the capital expenditure programme for 3 Waters by $18.166 million to $59.808 million.

34 The majority of the 3 waters budget is contractually committed. This is an accelerated option compared to the 10 year plan but reflects a realistic ability to fix and renew aging infrastructure.

Advantages

- Renewing the infrastructure will reduce the risk of network failure and service interruptions.
- Renewals will become more aligned with the associated depreciation on 3 waters assets.

Disadvantages

- The lower level of acceleration from that provided in option 2 means the current market capacity would not be fully utilised.
- Higher level of debt than budgeted in the 2021-2031 10 year plan.
- This higher level of debt will remain with Council until the transfer to Entity J.

Option Two – Capital programme with Accelerated 3 Waters

35 An option to advance the capital expenditure programme in 3 Waters by $35.200 million would increase the total capital budget to $212.510 million in the 2023/24 year, compared to $145.050 million provided for in year three of the 10 year plan. This would increase the 3 Waters budget to $95.008 million.

Advantages

- Current market capacity would be fully utilised.
- Renewing the infrastructure will reduce the risk of network failure and service interruptions.

Disadvantages

- Higher level of debt than budgeted in the 2021-2031 10 year plan and the level of debt under option one.
- This higher level of debt will remain with Council until the transfer to Entity J.

NEXT STEPS

36 The decision of Council will be included in the Annual Plan 2023/24.

37 Staff will seek approval from the Department of Internal Affairs for the increased level of spend approved by Council and the resulting increased level of debt.

Signatories

Author:	Carolyn Allan - Senior Management Accountant
Authoriser:	Gavin Logie - Chief Financial Officer Sandy Graham - Chief Executive Officer

Attachments

	Title	Page
⇩A	Capital Expenditure Programme Years 1 - 3 of the 10 year plan 2021-31	161
⇩B	Funding Impact Statement for the year ended 30 June 2024	177

SUMMARY OF CONSIDERATIONS

Fit with purpose of Local Government

This decision enables democratic local decision making and action by, and on behalf of communities, and promotes the social, economic, environmental and cultural well-being of communities in the present and for the future.

Fit with strategic framework

	Contributes	Detracts	Not applicable
Social Wellbeing Strategy	☒	☐	☐
Economic Development Strategy	☒	☐	☐
Environment Strategy	☒	☐	☐
Arts and Culture Strategy	☒	☐	☐
3 Waters Strategy	☒	☐	☐
Spatial Plan	☒	☐	☐
Integrated Transport Strategy	☒	☐	☐
Parks and Recreation Strategy	☒	☐	☐
Other strategic projects/policies/plans	☒	☐	☐

The Activity Groups contribute to the delivery of all of the objectives and priorities of the strategic framework.

Māori Impact Statement

The 10 year plan and Annual Plan provides a mechanism for Māori to contribute to local decision-making. The Council's engagement with Mana Whenua and Mātāwaka is an ongoing and continuous process.

Sustainability

The Annual Plan budget is based on the 10 year plan 2021-31. Major issues and implications for sustainability were considered in the development of the 50 year Infrastructure Strategy and financial resilience was discussed in the Financial Strategy, both strategies being key to the development of the 10 year plan.

LTP/Annual Plan / Financial Strategy /Infrastructure Strategy

This report provides draft budgets for each Activity Group for inclusion in the Annual Plan.

Financial considerations

Financial considerations are detailed in the report.

Significance

The 10 year plan 2021-31 budgets were considered significant in terms of the Council's Significance and Engagement Policy, and were consulted on. Variations to those budgets as discussed in this report are not considered significant in terms of the policy.

Engagement – external

There has been no external engagement in developing the draft budgets for the Activity Groups.

Engagement - internal

Staff and managers from across council have been involved in the development of the draft budgets.

SUMMARY OF CONSIDERATIONS
Risks: Legal / Health and Safety etc. There are no identified risks.
Conflict of Interest There are no known conflicts of interest.
Community Boards Projects identified in Community Board Plans were considered in the development of the 10 year plan. Community Boards have engaged on the Annual Plan.

Dunedin City Council

Capital Expenditure Years 1 - 3 of the 10 Year plan 2021-2031

Activity Group	2021-2022			2022-2023			2023-2024			Three Year Total		
	Actual	10 Yr Plan	Increase (Dec)	Forecast	10 Yr Plan	Increase (Dec)	Annual Plan	10 Yr Plan	Increase (Dec)	Actual + Budget	10 Yr Plan	Increase (Dec)
New Capital												
Community and Planning	99	350	(251)	149	970	(821)	500	400	100	748	1,720	(972)
Economic Development	-	250	(250)	-	-	-	-	-	-	-	250	(250)
Galleries, Libraries and Museums	411	401	10	336	361	(25)	521	971	(450)	1,268	1,733	(465)
Governance and Support Services	118	1,100	(982)	500	2,009	(1,509)	2,018	2,058	(40)	2,636	5,167	(2,531)
Property	385	5,250	(4,865)	1,570	9,260	(7,690)	2,955	8,700	(5,745)	4,910	23,210	(18,300)
Reserves and Recreational Facilities	8,029	15,370	(7,341)	17,853	9,101	8,752	2,108	1,931	177	27,990	26,402	1,588
Regulatory Services	-	-	-	-	-	-	-	-	-	-	-	-
Roading and Footpaths	19,290	20,386	(1,096)	38,273	21,233	17,040	28,261	27,497	764	85,824	69,116	16,708
Three Waters	8,037	8,742	(705)	16,691	9,144	7,547	6,211	12,037	(5,826)	30,939	29,923	1,016
Waste Management	4,358	7,973	(3,615)	4,999	18,744	(13,745)	11,083	7,285	3,798	20,440	34,002	(13,562)
Total New Capital	**40,727**	**59,822**	**(19,095)**	**80,371**	**70,822**	**9,549**	**53,657**	**60,879**	**(7,222)**	**174,755**	**191,523**	**(16,768)**
Renewals												
Community and Planning	5	5	-	1	1	-	5	5	-	11	11	-
Economic Development	2	15	(13)	15	5	10	500	16	484	517	36	481
Galleries, Libraries and Museums	1,348	1,962	(614)	1,459	1,891	(432)	2,006	1,104	902	4,813	4,957	(144)
Governance and Support Services	3,183	3,552	(369)	2,878	3,143	(265)	2,206	2,856	(650)	8,267	9,551	(1,284)
Property	14,277	16,550	(2,273)	17,737	14,421	3,316	24,057	18,023	6,034	56,071	48,994	7,077
Reserves and Recreational Facilities	4,531	10,359	(5,828)	8,927	10,524	(1,597)	17,971	9,389	8,582	31,429	30,272	1,157
Regulatory Services	116	300	(184)	177	366	(189)	605	343	262	898	1,009	(111)
Roading and Footpaths	21,273	19,614	1,659	21,997	21,719	278	22,083	22,349	(266)	65,353	63,682	1,671
Three Waters	58,494	33,049	25,445	76,710	35,703	41,007	53,597	29,605	23,992	188,801	98,357	90,444
Waste Management	220	300	(80)	285	294	(9)	623	481	142	1,128	1,075	53
Total Renewals	**103,449**	**85,706**	**17,743**	**130,186**	**88,067**	**42,119**	**123,653**	**84,171**	**39,482**	**357,288**	**257,944**	**99,344**
Total Capital												
Community and Planning	104	355	(251)	150	971	(821)	505	405	100	759	1,731	(972)
Economic Development	2	265	(263)	15	5	10	500	16	484	517	286	231
Galleries, Libraries and Museums	1,759	2,363	(604)	1,795	2,252	(457)	2,527	2,075	452	6,081	6,690	(609)
Governance and Support Services	3,301	4,652	(1,351)	3,378	5,152	(1,774)	4,224	4,914	(690)	10,903	14,718	(3,815)
Property	14,662	21,800	(7,138)	19,307	23,681	(4,374)	27,012	26,723	289	60,981	72,204	(11,223)
Reserves and Recreational Facilities	12,560	25,729	(13,169)	26,780	19,625	7,155	20,079	11,320	8,759	59,419	56,674	2,745
Regulatory Services	116	300	(184)	177	366	(189)	605	343	262	898	1,009	(111)
Roading and Footpaths	40,563	40,000	563	60,270	42,952	17,318	50,344	49,846	498	151,177	132,798	18,379
Three Waters	66,531	41,791	24,740	93,401	44,847	48,554	59,808	41,642	18,166	219,740	128,280	91,460
Waste Management	4,578	8,273	(3,695)	5,284	19,038	(13,754)	11,706	7,766	3,940	21,568	35,077	(13,509)
Total Capital Expenditure Option 1	**144,176**	**145,528**	**(1,352)**	**210,557**	**158,889**	**51,668**	**177,310**	**145,050**	**32,260**	**532,043**	**449,467**	**82,576**
Additional funding Three Waters	-	-	-	-	-	-	35,200	-	35,200	35,200	-	35,200
Total Capital Expenditure Option 2	**144,176**	**145,528**	**(1,352)**	**210,557**	**158,889**	**51,668**	**212,510**	**145,050**	**67,460**	**567,243**	**449,467**	**117,776**

Community and Planning
Capital Expenditure 2022-2024

Activity	Project	2021-2022			2022-2023			2023-2024			Three Year Total		
		Actual	10 Yr Plan	Increase (Dec)	Forecast	10 Yr Plan	Increase (Dec)	Annual Plan	10 Yr Plan	Increase (Dec)	Actual + Budget	10 Yr Plan	Increase (Dec)
New Capital													
City Development	Minor Amenity Centres Upgrades	-	-	-	-	100	(100)	400	300	100	400	400	-
	Street Trees and Furniture	95	100	(5)	149	100	49	100	100	-	344	300	44
	Warehouse Precinct Upgrades	4	250	(246)	-	770	(770)	-	-	-	4	1,020	(1,016)
	Sub-Total City Development New Capital	**99**	**350**	**(251)**	**149**	**970**	**(821)**	**500**	**400**	**100**	**748**	**1,720**	**(972)**
Total New Capital		**99**	**350**	**(251)**	**149**	**970**	**(821)**	**500**	**400**	**100**	**748**	**1,720**	**(972)**
Renewals													
Community Development & Events	Task Force Green	5	5	-	1	1	-	5	5	-	11	11	-
	Sub-Total Community Development & Events Renewals	**5**	**5**	**-**	**1**	**1**	**-**	**5**	**5**	**-**	**11**	**11**	**-**
Total Renewals		**5**	**5**	**-**	**1**	**1**	**-**	**5**	**5**	**-**	**11**	**11**	**-**
Total Capital		**104**	**355**	**(251)**	**150**	**971**	**(821)**	**505**	**405**	**100**	**759**	**1,731**	**(972)**

Economic Development
Capital Expenditure 2022-2024

Activity	Project	2021-2022			2022-2023			2023-2024			Three Year Total		
		Actual	10 Yr Plan	Increase (Dec)	Forecast	10 Yr Plan	Increase (Dec)	Annual Plan	10 Yr Plan	Increase (Dec)	Actual + Budget	10 Yr Plan	Increase (Dec)
New Capital													
Economic Development	Virtual Production Studio	-	250	(250)	-	-	-	-	-	-	-	250	(250)
	Sub-Total Economic Development New Capital	**-**	**250**	**(250)**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**250**	**(250)**
Total New Capital		**-**	**250**	**(250)**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**250**	**(250)**
Renewals													
Destination Marketing	Digital Content - Camera and Video gear	2	15	(13)	15	5	10	-	16	(16)	17	36	(19)
	Sub-Total Destination Marketing Renewals	**2**	**15**	**(13)**	**15**	**5**	**10**	**-**	**16**	**(16)**	**17**	**36**	**(19)**
iSITE Visitor Centre	iSITE Octagon Premises Refresh	-	-	-	-	-	-	500	-	500	500	-	500
	Sub-Total iSITE Visitor Centre Renewals	**-**	**-**	**-**	**-**	**-**	**-**	**500**	**-**	**500**	**500**	**-**	**500**
Total Renewals		**2**	**15**	**(13)**	**15**	**5**	**10**	**500**	**16**	**484**	**517**	**36**	**481**
				-			-						
Total Capital		**2**	**265**	**(263)**	**15**	**5**	**10**	**500**	**16**	**484**	**517**	**286**	**231**

Galleries, Libraries and Museums
Capital Expenditure 2022-2024

Activity	Project	2021-2022			2022-2023			2023-2024			Three Year Total		
		Actual	10 Yr Plan	Increase (Dec)	Forecast	10 Yr Plan	Increase (Dec)	Annual Plan	10 Yr Plan	Increase (Dec)	Actual + Budget	10 Yr Plan	Increase (Dec)
New Capital													
Dunedin Public Art Gallery	Acquisitions - Donation Funded	-	35	(35)	35	35	-	35	35	-	70	105	(35)
	Acquisitions - DPAG Society Funded	35	30	5	30	30	-	30	30	-	95	90	5
	Acquisitions - Rates Funded	91	90	1	100	100	-	110	110	-	301	300	1
	Art in Public Places	63	-	63	-	-	-	100	100	-	163	100	63
	Collection Store Painting Racks	26	50	(24)	25	-	25	-	-	-	51	50	1
	Minor Capital Works	55	40	15	40	40	-	40	40	-	135	120	15
	Sub-Total Dunedin Public Art Gallery New Capital	**270**	**245**	**25**	**230**	**205**	**25**	**315**	**315**	**-**	**815**	**765**	**50**
											-	-	-
Toitū Otago Settlers Museum	Acquisitions - Rates Funded	9	50	(41)	-	50	(50)	100	50	50	109	150	(41)
	Minor Capital Works	87	40	47	40	40	-	40	40	-	167	120	47
	Sub-Total Toitū Otago Settlers Museum New Capital	**96**	**90**	**56**	**40**	**90**	**-**	**140**	**90**	**50**	**276**	**270**	**6**
Dunedin Public Libraries	Heritage Collection Purchases - Rates Funded	44	56	(12)	56	56	-	56	56	-	156	168	(12)
	Heritage Collection Purchases - Trust Funded	1	10	(9)	10	10	-	10	10	-	21	30	(9)
	South Dunedin Library Opening Collection	-	-	-	-	-	-	-	500	(500)	-	500	(500)
	Sub-Total Dunedin Public Libraries New Capital	**45**	**66**	**(21)**	**66**	**66**	**-**	**66**	**566**	**(500)**	**177**	**698**	**(521)**
Total New Capital		**411**	**401**	**10**	**336**	**361**	**(25)**	**521**	**971**	**(450)**	**1,268**	**1,733**	**(465)**
Renewals													
Dunedin Public Art Gallery	Exhibition Lighting	10	25	(15)	26	26	-	49	26	23	85	77	8
	Heating and Ventilation System	-	30	(30)	31	31	-	62	32	30	93	93	-
	Sub-Total Dunedin Public Art Gallery Renewals	**10**	**55**	**(45)**	**57**	**57**	**-**	**111**	**58**	**53**	**178**	**170**	**8**
Dunedin Public Libraries	Acquisitions - Operational Collection	952	915	37	942	942	-	967	967	-	2,861	2,824	37
	Minor Capital Equipment	51	55	(4)	57	57	-	58	58	-	166	170	(4)
	RFID Replacement	223	717	(494)	322	-	322	-	-	-	545	717	(172)
	Sub-Total Dunedin Public Libraries Renewals	**1,226**	**1,687**	**(461)**	**1,321**	**999**	**322**	**1,025**	**1,025**	**-**	**3,572**	**3,711**	**(139)**
Toitū Otago Settlers Museum	Gallery Furniture and Office/Gallery Renewal	-	-	-	-	515	(515)	515	-	515	515	515	-
	Minor Equipment Renewals	2	-	2	-	196	(196)	196	-	196	198	196	2
	Plant Renewal	78	150	(72)	81	103	(22)	82	-	82	241	253	(12)
	Sub-Total Toitū Otago Settlers Museum Renewals	**80**	**150**	**(70)**	**81**	**814**	**(733)**	**793**	**-**	**793**	**954**	**964**	**(10)**
Olveston House	Minor Capital Works	32	70	(38)	-	21	(21)	77	21	56	109	112	(3)
	Sub-Total Olveston House Renewals	**32**	**70**	**(38)**	**-**	**21**	**(21)**	**77**	**21**	**56**	**109**	**112**	**(3)**
Total Renewals		**1,348**	**1,962**	**(614)**	**1,459**	**1,891**	**(432)**	**2,006**	**1,104**	**902**	**4,813**	**4,957**	**(144)**
Total Capital		**1,759**	**2,363**	**(604)**	**1,795**	**2,252**	**(457)**	**2,527**	**2,075**	**452**	**6,081**	**6,690**	**(609)**

Governance and Support Services
Capital Expenditure 2022-2024

Activity	Project	2021-2022			2022-2023			2023-2024			Three Year Total		
		Actual	10 Yr Plan	Increase (Dec)	Forecast	10 Yr Plan	Increase (Dec)	Annual Plan	10 Yr Plan	Increase (Dec)	Actual + Budget	10 Yr Plan	Increase (Dec)
New Capital													
BIS	Value Added External Services Workstream	44	750	(706)	300	1,250	(950)	1,150	1,250	(100)	1,494	3,250	(1,756)
	Internal Legacy Corrections	-	-	-	-	175	(175)	100	175	(75)	100	350	(250)
	Internal Services Workstream	74	300	(226)	200	584	(384)	668	583	85	942	1,467	(525)
	Sub-Total BIS New Capital	**118**	**1,050**	**(932)**	**500**	**2,009**	**(1,509)**	**1,918**	**2,008**	**(90)**	**2,536**	**5,067**	**(2,531)**
Fleet Operations	EV Charging Infrastructure	-	50	(50)	-	-	-	100	50	50	100	100	-
	Sub-Total Fleet Operations New Capital	**-**	**50**	**(50)**	**-**	**-**	**-**	**100**	**50**	**50**	**100**	**100**	**-**
Total New Capital		**118**	**1,100**	**(982)**	**500**	**2,009**	**(1,509)**	**2,018**	**2,058**	**(40)**	**2,636**	**5,167**	**(2,531)**
Renewals													
Customer Services Agency	Self Service Kiosks	-	-	-	52	52	-	-	-	-	52	52	-
	Sub-Total Customer Services Agency Renewals	**-**	**-**	**-**	**52**	**52**	**-**	**-**	**-**	**-**	**52**	**52**	**-**
BIS	Internal Legacy Corrections	959	1,100	(141)	1,103	979	124	1,106	1,004	102	3,168	3,083	85
	Internal Services Workstream	925	1,700	(775)	440	1,545	(1,105)	600	1,374	(774)	1,965	4,619	(2,654)
	Sub-Total BIS Renewals	**1,884**	**2,800**	**(916)**	**1,543**	**2,524**	**(981)**	**1,706**	**2,378**	**(672)**	**5,133**	**7,702**	**(2,569)**
Fleet Operations	Fleet Replacement	993	450	543	874	464	410	500	476	24	2,367	1,390	977
	Mobile Library Replacement	306	200	106	407	-	407	-	-	-	713	200	513
	Heavy Vehicle Replacement	-	100	(100)	-	103	(103)	-	-	-	-	203	(203)
	Sub-Total Fleet Operations Renewals	**1,299**	**750**	**549**	**1,281**	**567**	**714**	**500**	**476**	**24**	**3,080**	**1,793**	**1,287**
CCM	Replacement of Webcams	-	2	(2)	2	-	2	-	2	(2)	2	4	(2)
	Sub-Total CCM Renewals	**-**	**2**	**(2)**	**2**	**-**	**2**	**-**	**2**	**(2)**	**2**	**4**	**(2)**
Total Renewals		**3,183**	**3,552**	**(369)**	**2,878**	**3,143**	**(265)**	**2,206**	**2,856**	**(650)**	**8,267**	**9,551**	**(1,284)**
Total Capital		**3,301**	**4,652**	**(1,351)**	**3,378**	**5,152**	**(1,774)**	**4,224**	**4,914**	**(690)**	**10,903**	**14,718**	**(3,815)**

Property
Capital Expenditure 2022-2024

Activity	Project	2021-2022			2022-2023			2023-2024			Three Year Total		
		Actual	10 Yr Plan	Increase (Dec)	Forecast	10 Yr Plan	Increase (Dec)	Annual Plan	10 Yr Plan	Increase (Dec)	Actual + Budget	10 Yr Plan	Increase (Dec)
New Capital													
Community	New Public Toilets	10	250	(240)	-	200	(200)	1,505	200	1,305	1,515	650	865
	Sub-Total Community New Capital	**10**	**250**	**(240)**	**-**	**200**	**(200)**	**1,505**	**200**	**1,305**	**1,515**	**650**	**865**
Operational	District Energy Scheme	28	1,000	(972)	-	2,000	(2,000)	-	2,000	(2,000)	28	5,000	(4,972)
	South Dunedin Library and Community Complex	210	2,000	(1,790)	260	5,060	(4,800)	100	4,500	(4,400)	570	11,560	(10,990)
	Sub-Total Operational New Capital	**238**	**3,000**	**(2,762)**	**260**	**7,060**	**(6,800)**	**100**	**6,500**	**(6,400)**	**598**	**16,560**	**(15,962)**
Housing	Housing Growth	6	2,000	(1,994)	460	2,000	(1,540)	1,350	2,000	(650)	1,816	6,000	(4,184)
	Sub-Total Housing New Capital	**6**	**2,000**	**(1,994)**	**460**	**2,000**	**(1,540)**	**1,350**	**2,000**	**(650)**	**1,816**	**6,000**	**(4,184)**
Commercial	Commercial Property Purchases	131	-	131	850	-	850	-	-	-	981	-	981
	Sub-Total Commercial New Capital	**131**	**-**	**131**	**850**	**-**	**850**	**-**	**-**	**-**	**981**	**-**	**981**
Total New Capital		**385**	**5,250**	**(4,865)**	**1,570**	**9,260**	**(7,690)**	**2,955**	**8,700**	**(5,745)**	**4,910**	**23,210**	**(18,300)**

Activity	Project	2021-2022			2022-2023			2023-2024			Three Year Total		
		Actual	10 Yr Plan	Increase (Dec)	Forecast	10 Yr Plan	Increase (Dec)	Annual Plan	10 Yr Plan	Increase (Dec)	Actual + Budget	10 Yr Plan	Increase (Dec)
Renewals													
Community	Asset Renewals	377	780	(403)	800	587	213	350	159	191	1,527	1,526	1
	Edgar Centre Refurbishment	-	600	(600)	200	-	200	-	264	(264)	200	864	(664)
	Public Toilet Renewals	4	100	(96)	20	103	(83)	250	106	144	274	309	(35)
	Railway Station Exterior and Lift	2,423	1,020	1,403	1,800	1,370	430	1,100	-	1,100	5,323	2,390	2,933
	Community Hall Renewals	269	500	(231)	700	515	185	250	529	(279)	1,219	1,544	(325)
	Tarpits	21	-	21	-	-	-	-	2,114	(2,114)	21	2,114	(2,093)
	Sub-Total Community Renewals	**3,094**	**3,000**	**94**	**3,520**	**2,575**	**945**	**1,950**	**3,172**	**(1,222)**	**8,564**	**8,747**	**(183)**
Housing	Asset Renewals	1,935	2,000	(65)	1,141	2,060	(919)	1,000	2,114	(1,114)	4,076	6,174	(2,098)
	Palmyra Refurbishment	2,583	2,000	583	-	2,060	(2,060)	-	-	-	2,583	4,060	(1,477)
	Fitzroy St Housing Upgrade	75	-	75	100	-	100	1,500	-	1,500	1,675	-	1,675
	Healthy Homes Upgrades	500	1,000	(500)	1,300	1,030	270	1,100	1,057	43	2,900	3,087	(187)
	Sub-Total Housing Renewals	**5,093**	**5,000**	**93**	**2,541**	**5,150**	**(2,609)**	**3,600**	**3,171**	**429**	**11,234**	**13,321**	**(2,087)**
Investment	Asset Renewals	1,239	646	593	1,200	979	221	650	2,452	(1,802)	3,089	4,077	(988)
	414 Moray Place (seismic strengthening)	468	-	468	2,500	-	2,500	3,300	-	3,300	6,268	-	6,268
	Lift Renewals	-	354	(354)	52	52	-	719	719	-	771	1,125	(354)
	Sub-Total Investment Renewals	**1,707**	**1,000**	**707**	**3,752**	**1,031**	**2,721**	**4,669**	**3,171**	**1,498**	**10,128**	**5,202**	**4,926**
Operational	Asset Renewals	1,485	3,220	(1,735)	1,692	3,018	(1,326)	2,414	3,203	(789)	5,591	9,441	(3,850)
	Asbestos Remediation	-	-	-	-	-	-	250	-	250	250	-	250
	Civic Centre	2,529	3,000	(471)	5,329	-	5,329	6,988	-	6,988	14,846	3,000	11,846
	Dunedin Library Refurbishment	-	-	-	27	-	27	-	1,691	(1,691)	27	1,691	(1,664)
	Dunedin Public Art Gallery Refurbishment	22	30	(8)	15	484	(469)	221	21	200	258	535	(277)
	Olveston House Renewal	-	-	-	-	103	(103)	600	423	177	600	526	74
	Seismic Remediation	-	-	-	-	-	-	-	-	-	-	-	-
	Town Hall/Municipal Chamber Exterior and Lift	347	300	47	656	-	656	2,300	1,057	1,243	3,303	1,357	1,946
	Sub-Total Operational Renewals	**4,383**	**6,550**	**(2,167)**	**7,719**	**3,605**	**4,114**	**12,773**	**6,395**	**6,378**	**24,875**	**16,550**	**8,325**
Commercial	Asset Renewals	-	1,000	(1,000)	205	2,060	(1,855)	2,065	2,114	(49)	2,270	5,174	(2,904)
	Sub-Total Commercial Renewals	**-**	**1,000**	**(1,000)**	**205**	**2,060**	**(1,855)**	**2,065**	**2,114**	**(49)**	**2,270**	**5,174**	**(2,904)**
	Timing Adjustment	-	-	-	-	-	-	(1,000)	-	(1,000)	(1,000)	-	(1,000)
Total Renewals		**14,277**	**16,550**	**(2,273)**	**17,737**	**14,421**	**3,316**	**24,057**	**18,023**	**6,034**	**56,071**	**48,994**	**7,077**
Total Capital		**14,662**	**21,800**	**(7,138)**	**19,307**	**23,681**	**(4,374)**	**27,012**	**26,723**	**289**	**60,981**	**72,204**	**(11,223)**

Reserves and Recreational Facilities
Capital Expenditure 2022-2024

Activity	Project	2021-2022			2022-2023			2023-2024			Three Year Total		
		Actual	10 Yr Plan	Increase (Dec)	Forecast	10 Yr Plan	Increase (Dec)	Annual Plan	10 Yr Plan	Increase (Dec)	Actual + Budget	10 Yr Plan	Increase (Dec)
New Capital													
Aquatic Services	Mosgiel Pool	6,996	10,605	(3,609)	10,189	5,119	5,070	-	-	-	17,185	15,724	1,461
	Mosgiel Pool Consequential	-	1,720	(1,720)	1,720	1,720	-	-	-	-	1,720	3,440	(1,720)
	Moana Pool Improvements	18	873	(855)	-	378	(378)	625	20	605	643	1,271	(628)
	Sub-Total Aquatic Services New Capital	**7,014**	**13,198**	**(6,184)**	**11,909**	**7,217**	**4,692**	**625**	**20**	**605**	**19,548**	**20,435**	**(887)**
Botanic Garden	Botanic Garden Improvements	65	60	5	44	125	(81)	125	125	-	234	310	(76)
	Sub-Total Botanic Garden New Capital	**65**	**60**	**5**	**44**	**125**	**(81)**	**125**	**125**	**-**	**234**	**310**	**(76)**
Cem & Crem	Cemetery Strategic Development Plan	-	-	-	-	475	(475)	250	500	(250)	250	975	(725)
	City Wide Beam Expansion	49	40	9	75	40	35	40	40	-	164	120	44
	Cemeteries and Crematorium Improvements	-	-	-	60	-	60	45	-	45	105	-	105
	Sub-Total Cem & Crem New Capital	**49**	**40**	**9**	**135**	**515**	**(380)**	**335**	**540**	**(205)**	**519**	**1,095**	**(576)**
Parks and Recreation	Playground Improvements	594	500	94	629	774	(145)	761	744	17	1,984	2,018	(34)
	Track Network Development	35	1,520	(1,485)	17	50	(33)	50	50	-	102	1,620	(1,518)
	Recreation Facilities Improvements	272	50	222	5,119	420	4,699	210	450	(240)	5,601	920	4,681
	Sub-Total Parks and Recreation New Capital	**901**	**2,070**	**(1,169)**	**5,765**	**1,244**	**4,521**	**1,021**	**1,244**	**(223)**	**7,687**	**4,558**	**3,129**
St Clair - St Kilda Coastal Plan	St Kilda Transition Plan	-	2	(2)	-	-	-	2	2	-	2	4	(2)
	Sub-Total St Clair - St Kilda Coastal Plan New Capital	**-**	**2**	**(2)**	**-**	**-**	**-**	**2**	**2**	**-**	**2**	**4**	**(2)**
Total New Capital		**8,029**	**15,370**	**(7,341)**	**17,853**	**9,101**	**8,752**	**2,108**	**1,931**	**177**	**27,990**	**26,402**	**1,588**

Activity	Project	2021-2022			2022-2023			2023-2024			Three Year Total		
		Actual	10 Yr Plan	Increase (Dec)	Forecast	10 Yr Plan	Increase (Dec)	Annual Plan	10 Yr Plan	Increase (Dec)	Actual + Budget	10 Yr Plan	Increase (Dec)
Renewals													
Aquatic Services	Hydroslide Renewal	60	3,790	(3,730)	875	-	875	7,550	-	7,550	8,485	3,790	4,695
	Moana Pool Renewals	1,014	1,532	(518)	3,459	4,645	(1,186)	4,874	3,975	899	9,347	10,152	(805)
	Mosgiel Pool Renewals	-	-	-	-	-	-	-	21	(21)	-	21	(21)
	Port Chalmers Pool Renewals	58	50	8	-	82	(82)	53	53	-	111	185	(74)
	St Clair Pool Renewals	139	540	(401)	22	723	(701)	1,097	53	1,044	1,258	1,316	(58)
	Sub-Total Aquatic Services Renewals	**1,271**	**5,912**	**(4,641)**	**4,356**	**5,450**	**(1,094)**	**13,574**	**4,102**	**9,472**	**19,201**	**15,464**	**3,737**
Botanic Garden	Botanic Garden Renewals	166	302	(136)	55	380	(325)	402	292	110	623	974	(351)
	Sub-Total Botanic Garden Renewals	**166**	**302**	**(136)**	**55**	**380**	**(325)**	**402**	**292**	**110**	**623**	**974**	**(351)**
Cem & Crem	Structures Renewals	23	84	(61)	24	112	(88)	368	156	212	415	352	63
	Sub-Total Cem & Crem Renewals	**23**	**84**	**(61)**	**24**	**112**	**(88)**	**368**	**156**	**212**	**415**	**352**	**63**
Parks and Recreation	Greenspace Renewals	567	386	181	428	547	(119)	480	568	(88)	1,475	1,501	(26)
	Playground Renewals	700	1,359	(659)	1,214	1,360	(146)	1,051	1,132	(81)	2,965	3,851	(886)
	Recreation Facilities Renewals	1,728	2,108	(380)	2,848	2,325	523	1,938	2,981	(1,043)	6,514	7,414	(900)
	Sub-Total Parks and Recreation Renewals	**2,995**	**3,853**	**(858)**	**4,490**	**4,232**	**258**	**3,469**	**4,681**	**(1,212)**	**10,954**	**12,766**	**(1,812)**
St Clair - St Kilda	St Clair Beach Transition Plan	-	50	(50)	2	129	(127)	-	-	-	2	179	(177)
Coastal Plan	Kettle Park Transition Plan	76	158	(82)	-	221	(221)	158	158	-	234	537	(303)
	Sub-Total St Clair - St Kilda Coastal Plan Renewals	**76**	**208**	**(132)**	**2**	**350**	**(348)**	**158**	**158**	**-**	**236**	**716**	**(480)**
Total Renewals		**4,531**	**10,359**	**(5,828)**	**8,927**	**10,524**	**(1,597)**	**17,971**	**9,389**	**8,582**	**31,429**	**30,272**	**1,157**
Total Capital		**12,560**	**25,729**	**(13,169)**	**26,780**	**19,625**	**7,155**	**20,079**	**11,320**	**8,759**	**59,419**	**56,674**	**2,745**

Regulatory Services
Capital Expenditure 2022-2024

Activity	Project	2021-2022			2022-2023			2023-2024			Three Year Total		
		Actual	10 Yr Plan	Increase (Dec)	Forecast	10 Yr Plan	Increase (Dec)	Annual Plan	10 Yr Plan	Increase (Dec)	Actual + Budget	10 Yr Plan	Increase (Dec)
Renewals													
Compliance Solutions	Animal Services Body Worn Cameras	-	-	-	-	12	(12)	12	-	12	12	12	-
	Noise Meter Renewals	3	-	3	-	19	(19)	-	-	-	3	19	(16)
	Sub-Total Compliance Solutions Renewals	**3**	**-**	**3**	**-**	**31**	**(31)**	**12**	**-**	**12**	**15**	**31**	**(16)**
Parking Operations	Parking Meter Renewals	103	300	(197)	164	309	(145)	317	317	-	584	926	(342)
	Car Park Building Equipment	10	-	10	-	-	-	250	-	250	260	-	260
	Sub-Total Parking Operations Renewals	**113**	**300**	**(187)**	**164**	**309**	**(145)**	**567**	**317**	**250**	**844**	**926**	**(82)**
Parking Services	Electronic Ticket Writers Renewals	-	-	-	13	26	(13)	-	-	-	13	26	(13)
	Parking Services Body Worn Camera Renewals	-	-	-	-	-	-	26	26	-	26	26	-
	Sub-Total Parking Services Renewals	**-**	**-**	**-**	**13**	**26**	**(13)**	**26**	**26**	**-**	**39**	**52**	**(13)**
Total Renewals		**116**	**300**	**(184)**	**177**	**366**	**(189)**	**605**	**343**	**262**	**898**	**1,009**	**(111)**
Total Capital		**116**	**300**	**(184)**	**177**	**366**	**(189)**	**605**	**343**	**262**	**898**	**1,009**	**(111)**

Roading and Footpaths
Capital Expenditure 2022-2024

Activity	Project	2021-2022			2022-2023			2023-2024			Three Year Total		
		Actual	10 Yr Plan	Increase (Dec)	Forecast	10 Yr Plan	Increase (Dec)	Annual Plan	10 Yr Plan	Increase (Dec)	Actual + Budget	10 Yr Plan	Increase (Dec)
New Capital													
Transport	Central City Upgrade	6,074	1,000	5,074	19,795	7,775	12,020	10,915	14,745	(3,830)	36,784	23,520	13,264
	Dunedin Urban Cycleways (note 1)	2,170	1,000	1,170	3,419	1,005	2,414	3,494	2,100	1,394	9,083	4,105	4,978
	Mosgiel East & West Plan Change Areas	1,987	608	1,379	173	-	173	-	-	-	2,160	608	1,552
	Peninsula Connection	2,396	9,728	(7,332)	9,299	-	9,299	1,500	-	1,500	13,195	9,728	3,467
	Low Cost, Low Risk Improvements	2,469	2,000	469	3,096	2,000	1,096	2,000	2,000	-	7,565	6,000	1,565
	LED Street Lights	583	-	583	(52)	-	(52)	-	-	-	531	-	531
	Other	126	-	126	41	-	41	-	-	-	167	-	167
	Sub-Total Transport New Capital	**15,805**	**14,336**	**1,469**	**35,771**	**10,780**	**24,991**	**17,909**	**18,845**	**(936)**	**69,485**	**43,961**	**25,524**
Shaping Future Dunedin	Harbour Arterial Efficiency Improvements	1,720	1,650	70	502	660	(158)	3,202	3,202	-	5,424	5,512	(88)
	Princes St Bus Priority & Corridor Safety Plan	-	450	(450)	-	3,143	(3,143)	200	2,800	(2,600)	200	6,393	(6,193)
	Central City Parking Management	-	700	(700)	950	1,800	(850)	1,550	-	1,550	2,500	2,500	-
	Mosgiel and Burnside Park and Ride	1,627	2,750	(1,123)	500	2,200	(1,700)	1,600	-	1,600	3,727	4,950	(1,223)
	Central City Bike Hubs - Parking and Facilities	-	200	(200)	250	750	(500)	750	750	-	1,000	1,700	(700)
	Central City Cycle & Pedestrian Improvements	138	300	(162)	300	1,900	(1,600)	3,050	1,900	1,150	3,488	4,100	(612)
							-						
	Sub-Total Shaping Future Dunedin New Capital	**3,485**	**6,050**	**(2,565)**	**2,502**	**10,453**	**(7,951)**	**10,352**	**8,652**	**1,700**	**16,339**	**25,155**	**(8,816)**
Total New Capital		**19,290**	**20,386**	**(1,096)**	**38,273**	**21,233**	**17,040**	**28,261**	**27,497**	**764**	**85,824**	**69,116**	**16,708**
Renewals													
Transport	Footpath Renewals	2,824	2,000	824	4,161	4,386	(225)	4,514	4,514	-	11,499	10,900	599
	Gravel Road Re-Metaling	885	1,250	(365)	898	1,290	(392)	1,326	1,326	-	3,109	3,866	(757)
	Major Drainage Control	3,944	3,714	230	2,705	3,833	(1,128)	3,944	3,944	-	10,593	11,491	(898)
	Pavement Rehabilitations	931	1,500	(569)	1,098	1,548	(450)	1,593	1,593	-	3,622	4,641	(1,019)
	Pavement Renewals	9,369	7,400	1,969	9,967	7,637	2,330	7,859	7,859	-	27,195	22,896	4,299
	Structure Component Replacement	2,078	1,930	148	2,196	2,250	(54)	2,050	2,316	(266)	6,324	6,496	(172)
	Traffic Services Renewal	1,242	1,820	(578)	972	775	197	797	797	-	3,011	3,392	(381)
Total Renewals		**21,273**	**19,614**	**1,659**	**21,997**	**21,719**	**278**	**22,083**	**22,349**	**(266)**	**65,353**	**63,682**	**1,671**
Total Capital		**40,563**	**40,000**	**563**	**60,270**	**42,952**	**17,318**	**50,344**	**49,846**	**498**	**151,177**	**132,798**	**18,379**

Note 1 - the 10 Year Plan 2021-31 includes a budget of $21.925 million for Dunedin Urban Cycleways. On 31 January 2022, Council approved an increase to this budget of $11.400 million to deliver the Tunnels Trail from Mosgiel to Dunedin .

Three Waters
Capital Expenditure 2022-2024

Activity	Project	2021-2022			2022-2023			2023-2024			Three Year Total		
		Actual	10 Yr Plan	Increase (Dec)	Forecast	10 Yr Plan	Increase (Dec)	Annual Plan	10 Yr Plan	Increase (Dec)	Actual + Budget	10 Yr Plan	Increase (Dec)
New Capital													
Stormwater	New Capital Supporting Growth	-	502	(502)	634	915	(281)	362	905	(543)	996	2,322	(1,326)
	New Resource Consents	-	250	(250)	-	-	-	-	-	-	-	250	(250)
	South Dunedin Flood Alleviation	40	500	(460)	109	2,500	(2,391)	119	3,250	(3,131)	268	6,250	(5,982)
	Stormwater New Capital Other	2,399	1,000	1,399	6,519	1,000	5,519	3,600	1,000	2,600	12,518	3,000	9,518
	Sub-Total Stormwater New capital	**2,439**	**2,252**	**187**	**7,262**	**4,415**	**2,847**	**4,081**	**5,155**	**(1,074)**	**13,782**	**11,822**	**1,960**
Wastewater	New Capital Supporting Growth	-	546	(546)	98	1,046	(948)	288	1,686	(1,398)	386	3,278	(2,892)
	Wastewater New Capital Other	2,119	650	1,469	2,467	50	2,417	554	-	554	5,140	700	4,440
	Metro Wastewater Treatment Plant Resilience	969	1,550	(581)	3,915	2,046	1,869	1,000	3,407	(2,407)	5,884	7,003	(1,119)
	Sub-Total Wastewater New Capital	**3,088**	**2,746**	**342**	**6,480**	**3,142**	**3,338**	**1,842**	**5,093**	**(3,251)**	**11,410**	**10,981**	**429**
Water Supply	New Capital Supporting Growth	405	241	164	85	797	(712)	288	999	(711)	778	2,037	(1,259)
	Port Chalmers Water Supply	-	-	-	157	-	157	-	-	-	157	-	157
	Water New Capital Other	568	517	51	2,202	40	2,162	-	40	(40)	2,770	597	2,173
	Water Supply Resilience	1,537	2,986	(1,449)	505	750	(245)	-	750	(750)	2,042	4,486	(2,444)
	Sub-Total Water Supply New Capital	**2,510**	**3,744**	**(1,234)**	**2,949**	**1,587**	**1,362**	**288**	**1,789**	**(1,501)**	**5,747**	**7,120**	**(1,373)**
Total New Capital		**8,037**	**8,742**	**(705)**	**16,691**	**9,144**	**7,547**	**6,211**	**12,037**	**(5,826)**	**30,939**	**29,923**	**1,016**

Activity	Project	2021-2022			2022-2023			2023-2024			Three Year Total		
		Actual	10 Yr Plan	Increase (Dec)	Forecast	10 Yr Plan	Increase (Dec)	Annual Plan	10 Yr Plan	Increase (Dec)	Actual + Budget	10 Yr Plan	Increase (Dec)
Renewals													
Stormwater	Central City Renewals	3,166	731	2,435	9,887	8,844	1,043	3,333	8,111	(4,778)	16,386	17,686	(1,300)
	Mosgiel Stormwater Pumpstations and Network	99	1,000	(901)	93	2,575	(2,482)	-	2,643	(2,643)	192	6,218	(6,026)
	South Dunedin Flood Alleviation	-	500	(500)	-	2,101	(2,101)	-	655	(655)	-	3,256	(3,256)
	Stormwater Pumpstation Renewals	1	75	(74)	1	386	(385)	-	233	(233)	2	694	(692)
	Stormwater System Planning	-	300	(300)	-	567	(567)	-	159	(159)	-	1,026	(1,026)
	Tertiary Precinct Renewals	(168)	-	(168)	-	-	-	-	-	-	(168)	-	(168)
	Other Stormwater Renewals	4,163	1,464	2,699	5,267	457	4,810	970	423	547	10,400	2,344	8,056
	Renewals Supporting Growth	-	998	(998)	137	1,818	(1,681)	233	1,799	(1,566)	370	4,615	(4,245)
	Sub-Total Stormwater New Capital	**7,261**	**5,068**	**2,193**	**15,385**	**16,748**	**(1,363)**	**4,536**	**14,023**	**(9,487)**	**27,182**	**35,839**	**(8,657)**
Wastewater	Biofilter Media Replacement	2,158	-	2,158	(3)	-	(3)	250	-	250	2,405	-	2,405
	Central City Renewals	2,666	728	1,938	9,612	1,958	7,654	3,333	1,722	1,611	15,611	4,408	11,203
	Other Wastewater Renewals	12,220	4,788	7,432	12,115	4,244	7,871	6,938	1,823	5,115	31,273	10,855	20,418
	Rural Wastewater Schemes	282	1,200	(918)	1,434	1,545	(111)	2,513	2,114	399	4,229	4,859	(630)
	Tertiary Precinct Renewals	(119)	-	(119)	-	-	-	-	-	-	(119)	-	(119)
	Wastewater Pumpstation Renewals	1,560	555	1,005	3,934	618	3,316	3,473	634	2,839	8,967	1,807	7,160
	Metro Wastewater Treatment Plant Resilience	4,005	3,450	555	3,018	3,022	(4)	9,000	939	8,061	16,023	7,411	8,612
	Renewals Supporting Growth	-	454	(454)	78	871	(793)	234	1,404	(1,170)	312	2,729	(2,417)
	Sub-Total Wastewater New Capital	**22,772**	**11,175**	**11,597**	**30,188**	**12,258**	**17,930**	**25,741**	**8,636**	**17,105**	**78,701**	**32,069**	**46,632**
Water Supply	Careys Bay Renewals	398	546	(148)	150	464	(314)	-	396	(396)	548	1,406	(858)
	Central City Renewals	2,938	581	2,357	9,452	2,603	6,849	3,333	2,632	701	15,723	5,816	9,907
	Dam Safety Action Plan	45	2,063	(2,018)	-	-	-	-	-	-	45	2,063	(2,018)
	Other Water Renewals	24,373	9,677	14,696	20,919	773	20,146	14,753	793	13,960	60,045	11,243	48,802
	Tertiary Precinct Renewals	(60)	-	(60)	-	-	-	-	-	-	(60)	-	(60)
	Water Supply Resilience	767	3,680	(2,913)	538	1,998	(1,460)	5,000	2,051	2,949	6,305	7,729	(1,424)
	Renewals Supporting Growth	-	259	(259)	78	859	(781)	234	1,074	(840)	312	2,192	(1,880)
	Sub-Total Water Supply New Capital	**28,461**	**16,806**	**11,655**	**31,137**	**6,697**	**24,440**	**23,320**	**6,946**	**16,374**	**82,918**	**30,449**	**52,469**
Total Renewals		**58,494**	**33,049**	**25,445**	**76,710**	**35,703**	**41,007**	**53,597**	**29,605**	**23,992**	**188,801**	**98,357**	**90,444**
Total Capital Expenditure Option 1		**66,531**	**41,791**	**24,740**	**93,401**	**44,847**	**48,554**	**59,808**	**41,642**	**18,166**	**219,740**	**128,280**	**91,460**
	Additional funding Three Waters New Capital	-	-	-	-	-	-	6,627	-	6,627	6,627	-	6,627
	Additional funding Three Waters Renewals	-	-	-	-	-	-	28,573	-	28,573	28,573	-	28,573
	Sub-Total Additional funding Three Waters	**-**	**-**	**-**	**-**	**-**	**-**	**35,200**	**-**	**35,200**	**35,200**	**-**	**35,200**
Total Capital Expenditure Option 2		**66,531**	**41,791**	**24,740**	**93,401**	**44,847**	**48,554**	**95,008**	**41,642**	**53,366**	**226,367**	**128,280**	**98,087**

Waste Management
Capital Expenditure 2022-2024

Activity	Project	2021-2022			2022-2023			2023-2024			Three Year Total		
		Actual	10 Yr Plan	Increase (Dec)	Forecast	10 Yr Plan	Increase (Dec)	Annual Plan	10 Yr Plan	Increase (Dec)	Actual + Budget	10 Yr Plan	Increase (Dec)
New Capital													
WES	Community Recycling Hubs	4	90	(86)	110	-	110	90	90	-	204	180	24
	Green Island Landfill Aftercare	1,357	455	902	1,200	455	745	250	320	(70)	2,807	1,230	1,577
	Green Island Landfill Climate Change Adaption	-	-	-	-	-	-	-	-	-	-	-	-
	Green Island Landfill Educational Facility	-	50	(50)	-	-	-	50	-	50	50	50	-
	Green Island Landfill Land purchase	158	-	158	-	-	-	-	-	-	158	-	158
	Green Island Landfill Gas Collection System	29	-	29	43	3,040	(2,997)	2,500	210	2,290	2,572	3,250	(678)
	Green Island Landfill Community Walking Track	-	-	-	-	-	-	-	-	-	-	-	-
	Green Island Landfill Leachate System	515	500	15	-	250	(250)	500	200	300	1,015	950	65
	Green Island Landfill Solar Farm	-	-	-	-	-	-	-	-	-	-	-	-
	Middlemarch Transfer Station Entrance Booth	-	50	(50)	-	-	-	-	-	-	-	50	(50)
	Waikouaiti Transfer Station & Nth Taieri	447	-	447	27	-	27	-	-	-	474	-	474
	Sub-Total WES New Capital	**2,510**	**1,145**	**1,365**	**1,380**	**3,745**	**(2,365)**	**3,390**	**820**	**2,570**	**7,280**	**5,710**	**1,570**
Waste Futures	New Collection System (Waste, Recycling, Organics & Glass)	-	3,620	(3,620)	1,624	3,620	(1,996)	1,000	-	1,000	2,624	7,240	(4,616)
	Organics Facility	-	1,000	(1,000)	1,000	6,100	(5,100)	2,550	-	2,550	3,550	7,100	(3,550)
	Construction and Demolition Facility	-	451	(451)	-	1,805	(1,805)	300	-	300	300	2,256	(1,956)
	2nd Rummage Store	-	500	(500)	-	-	-	-	-	-	-	500	(500)
	Material Recovery Facility	-	1,257	(1,257)	-	3,000	(3,000)	3,143	2,028	1,115	3,143	6,285	(3,142)
	Granulation Facility	-	-	-	-	474	(474)	200	1,896	(1,696)	200	2,370	(2,170)
	Bulk Waste System	-	-	-	-	-	-	300	2,541	(2,241)	300	2,541	(2,241)
	Smooth Hill Landfill	1,848	-	1,848	995	-	995	200	-	200	3,043	-	3,043
	Sub-Total Waste Futures New Capital	**1,848**	**6,828**	**(4,980)**	**3,619**	**14,999**	**(11,380)**	**7,693**	**6,465**	**1,228**	**13,160**	**28,292**	**(15,132)**
Total New Capital		**4,358**	**7,973**	**(3,615)**	**4,999**	**18,744**	**(13,745)**	**11,083**	**7,285**	**3,798**	**20,440**	**34,002**	**(13,562)**

Activity	Project	2021-2022			2022-2023			2023-2024			Three Year Total		
		Actual	10 Yr Plan	Increase (Dec)	Forecast	10 Yr Plan	Increase (Dec)	Annual Plan	10 Yr Plan	Increase (Dec)	Actual + Budget	10 Yr Plan	Increase (Dec)
Renewals													
WES	Green Island Landfill and Transfer Station	222	150	72	100	155	(55)	159	159	-	481	464	17
	Public Place Recycling and Rubbish Bins	-	60	(60)	150	62	88	125	63	62	275	185	90
	Kerbside Bin Replacements	(7)	75	(82)	20	52	(32)	211	211	-	224	338	(114)
	Green Island Transfer Station	-	-	-	-	-	-	-	-	-	-	-	-
	Green Island Landfill Renewals	-	-	-	-	-	-	-	-	-	-	-	-
	Green Island Leachate System Pump and Pumpstation	-	15	(15)	15	15	-	16	16	-	31	46	(15)
	Waikouaiti Transfer Station	-	-	-	-	-	-	21	21	-	21	21	-
	Forester Park Landfill Culvert Pipe Renew/Line/Re-route	-	-	-	-	-	-	50	-	50	50	-	50
	Middlemarch Closed Landfill	-	-	-	-	-	-	-	-	-	-	-	-
	North Taieri Closed Landfill	5	-	5	-	-	-	11	11	-	16	11	5
	Sawyers Bay Closed Landfill	-	-	-	-	10	(10)	30	-	30	30	10	20
	Sub-Total WES Renewals	**220**	**300**	**(80)**	**285**	**294**	**(9)**	**623**	**481**	**142**	**1,128**	**1,075**	**53**
Total Renewals		**220**	**300**	**(80)**	**285**	**294**	**(9)**	**623**	**481**	**142**	**1,128**	**1,075**	**53**
Total Capital		**4,578**	**8,273**	**(3,695)**	**5,284**	**19,038**	**(13,754)**	**11,706**	**7,766**	**3,940**	**21,568**	**35,077**	**(13,509)**

Dunedin City Council
Funding Impact Statement
for the Year Ended 30 June 2024 (whole of council)

	Draft Budget Presented to Council February 23	Waste	Parking	Other Changes	Draft Budget Capex Option 1	Capex Option 2	Draft Budget Capex Option 2
	Annual Plan $000	Annual Plan $000	Annual Plan $000	Annual Plan $000	Annual Plan $000	Annual Plan $000	Annual Plan $000
Sources of operating funding							
General rates, uniform annual general charge, rates penalties	122,141	-	-	-	122,141	-	122,141
Targeted rates	82,026	-	-	-	82,026	-	82,026
Subsidies and grants for operating purposes	15,300	-	-	-	15,300	-	15,300
Fees and charges	67,821	(727)	844	(138)	67,800	-	67,800
Interest and dividends from investments	19,722	-	-	-	19,722	-	19,722
Local authorities fuel tax, fines, infringement fees, and other receipts	3,219	-	-	-	3,219	-	3,219
Total operating funding (A)	**310,229**	**(727)**	**844**	**(138)**	**310,208**	**-**	**310,208**
Applications of operating funding							
Payments to staff and suppliers	226,634	(1,533)	3	(275)	224,829	-	224,829
Finance costs	23,197	-	-	2,189	25,386	895	26,281
Other operating funding applications	-	-	-	-	-	-	-
Total application of operating funding (B)	**249,831**	**(1,533)**	**3**	**1,914**	**250,215**	**895**	**251,110**
Surplus/(deficit) of operating funding (A-B)	**60,398**	**806**	**841**	**(2,052)**	**59,993**	**(895)**	**59,098**
Sources of capital funding							
Subsidies and grants for renewals expenditure	7,272	-	-	-	7,272	-	7,272
Subsidies and grants for capital expenditure	9,445	670	-	3,275	13,390	-	13,390
Development and financial contributions	3,844	-	-	-	3,844	-	3,844
Increase/(decrease) in debt	67,903	(1,476)	(841)	29,655	95,241	36,095	131,336
Gross proceeds from sale of assets	120	-	-	-	120	-	120
Lump sum contributions	-	-	-	-	-	-	-
Other dedicated capital funding	-	-	-	-	-	-	-
Total sources of capital funding (C)	**88,584**	**(806)**	**(841)**	**32,930**	**119,867**	**36,095**	**155,962**
Application of capital funding							
Capital expenditure							
- to meet additional demand	10,833	-	-	-	10,833	-	10,833
- to improve the level of service	47,352	-	-	(4,528)	42,824	6,627	49,451
- to replace existing assets	88,247	-	-	35,406	123,653	28,573	152,226
Increase/(decrease) in reserves	-	-	-	-	-	-	-
Increase/(decrease) in investment (DCHL)	2,550	-	-	-	2,550	-	2,550
Increase/(decrease) of other investments	-	-	-	-	-	-	-
Total application of capital funding (D)	**148,982**	**-**	**-**	**30,878**	**179,860**	**35,200**	**215,060**
Surplus/(deficit) of capital funding (C-D)	**(60,398)**	**(806)**	**(841)**	**2,052**	**(59,993)**	**895**	**(59,098)**
Funding balance ((A-B)+(C-D))	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Total capital expenditure	146,432	-	-	30,878	177,310	35,200	212,510
Debt							
Opening Balance 1 July 2023 (Forecast)					475,473		475,473
Movement 2023/24					95,241		131,336
Closing Balance 30 June 2024					570,714		606,809
Revenue					339,147		339,147
Debt % Revenue					168.3%		178.9%

RESERVES MANAGEMENT PLAN GENERAL POLICIES - NOTICE OF INTENT

Department: Parks and Recreation

EXECUTIVE SUMMARY

1 Reserves that do not have a specific Reserve Management Plan are managed under the Reserves Management Plan General Policies (RMPGP). The RMPGP is a set of overarching policies that guide reserve management decisions.

2 This report seeks approval to commence the public consultation process required by Section 41(5) of the Reserves Act 1977 to enable to review the Reserves Management Plan General Policies 2005.

RECOMMENDATIONS

That the Council:

a) **Approves** the Statement of Proposal and the high-level Stage 1 engagement question topics for the Reserves Management Plan General Policies, and the commencement of the public consultation process required by section 41(5) of the Reserves Act 1977.

BACKGROUND

3 The RMPGP was adopted on 1 March 2005. The Act requires an administering authority keep reserve management plans under continuous review. The RMPGP has not had a comprehensive review since its adoption.

4 Management plans must be read in conjunction with the Reserves Act 1977, which is the primary statutory document outlining procedures for activities allowed under a management plan, and other relevant Acts should also be considered when determining appropriate reserve management.

5 The Reserves Act 1977 requires that a reserve management plan:

a) ensures that the principles that apply to a reserve of the relevant classification in the Reserves Act are complied with

b) provides for the use, enjoyment, maintenance, protection and preservation of the reserve as the case may require

c) provides for development of the reserve (as appropriate) for the purpose for which the reserve is classified.

6 Council prepares individual management plans for specific reserves according to identified priorities and unique or special values. The general policies of the DCC's RMPGP are an integral part of these specific management plans and are intended to be read alongside the specific management plan policies.

7 Where any issue on a reserve is addressed by both the RMPGP and a management plan specific to that reserve, then the policies in the specific management plan take precedence.

DISCUSSION

8 A comprehensive review would ensure the RMPGP is up to date and relevant regarding issues, opportunities, technology, and best practices.

9 The current RMPGP does not adequately recognise our mana whenua partners. There is no provision for recognising mana whenua cultural identity, values or narratives. There is little use of te reo in the document.

10 Feedback received through various engagement activities (e.g. Annual Plan engagement), or directly from members of the public, increasingly raise issues that are not addressed or provided for in the current RMPGP.

11 There is currently no framework in the RMPGP for evaluating applications for special or community events.

12 Accessibility is not adequately addressed in the current document.

13 New and emerging issues in recent years include long term parking in reserves, the provision of community gardens and the planting of fruit trees in reserves for food network resilience. This results in ad-hoc and sometimes inconsistent management decisions being made.

14 Climate change adaptability, net-carbon-zero measures and sustainability are other matters that are not adequately addressed in the current RMPGP.

15 A comprehensive review of the RMPGP provides the opportunity to introduce new policies that guide consistent decision making that address new and emerging issues.

16 The RMPGP provides administration, use, development and change policies across a range of issues and activities. Broadly, these policies include:

a) Conservation and Protection: Policy to ensure the conservation and protection of the natural, cultural, and recreational values of reserves. This includes preserving and enhancing biodiversity, protecting historic and cultural features, and management of natural resources.

b) Recreation and Access: Policy to ensure there are opportunities for recreational activities in reserves and equitable access for all members of the community. This includes providing a range of recreational facilities and activities and allowing the appropriate use of reserves for special events, research, education, and network utilities.

c) Planning and Development: Policy to ensure that planning and development of reserves is done in a coordinated and integrated manner. This includes preparing reserve management plans, undertaking appropriate assessments for development proposals,

and ensuring that reserves are developed in accordance with relevant legislation, policies, and standards.

d) Community Engagement and Partnership: Policy to ensure the community provides input in the planning, development, and management of reserves. This includes fostering partnerships with community groups, iwi/Māori, and other stakeholders to enhance the management and use of reserves.

e) Compliance and Enforcement: Policy to ensure reserves are managed in compliance with relevant laws, regulations, and other Council policies. This includes monitoring and enforcing compliance with reserve management plans, resource consents, bylaws, and other relevant requirements.

17 In Stage 2, submitters would be able to provide feedback on the draft reserve management plan. The Stage 2 feedback is considered by the Hearings Committee and is assimilated into the final plan.

18 This report seeks approval of the Statement of Proposal and commencement of Stage 1 of community engagement.

OPTIONS

Option One – Recommended Option – Commence Public Consultation to review the Reserves Management Plan General Policies

19 Council approves the proposal to publicly notify its intention to review the Reserves Management Plan General Policies, as required by Section 41(5) of the Reserves Act 1977.

Advantages

- Staff can begin the public and stakeholder consultation process, as required by section 41(5) of the Reserves Act 1977, allowing the public and other stakeholders to provide written suggestions on the proposal.
- Overarching policies would guide reserve management administration and use and address issues not provided for in the current RMPGP.

Disadvantages

- There would be costs for Council in the public and stakeholder consultation process required by section 41(5), and any subsequent processes to review and develop a new Management Plan.

Option Two – Status Quo – Do not Commence Public Consultation to review the Reserves Management Plan General Policies

20 The Council declines the proposal to publicly notify its intention to prepare a reserve management plan and does not initiate a public consultation process.

Advantages

- Council would not incur costs associated with public consultation or drafting of a new management plan.

Disadvantages

- The RMPGP would not be comprehensively reviewed and areas in the plan that are currently out of date would not be rectified and opportunities to create policies to address new issues are not realised.

- The public and key stakeholders would not have an opportunity to provide feedback through a formal public consultation process.

NEXT STEPS

21 If approved, staff would follow the public consultation process required by section 41(5) of the Reserves Act 1977:

- There will be a public notice appearing in the Otago Daily Times and a media release for the wider media outlets.

- There will be notices on Council's social media channels.

- The preparation of the reserve management plan will be listed as a consultation project on Council's website.

22 If the Notice of Intent is not approved, the existing RMPGP will remain unchanged and operative.

Signatories

Author:	Stephen Hogg - Parks and Recreation Planner
Authoriser:	John Brenkley - Planning and Partnerships Manager Scott MacLean - Group Manager Parks and Recreation Simon Pickford - General Manager Community Services

Attachments

	Title	Page
⇩A	RMPGP Statement of Proposal	184
⇩B	RMPGP Stage 1 Engagement Questions	187

SUMMARY OF CONSIDERATIONS

Fit with purpose of Local Government

This decision enables democratic local decision making and action by, and on behalf of communities.

Fit with strategic framework

	Contributes	Detracts	Not applicable
Social Wellbeing Strategy	☒	☐	☐
Economic Development Strategy	☐	☐	☒
Environment Strategy	☒	☐	☐
Arts and Culture Strategy	☐	☐	☒
3 Waters Strategy	☐	☐	☒
Spatial Plan	☒	☐	☐
Integrated Transport Strategy	☐	☐	☒
Parks and Recreation Strategy	☒	☐	☐
Other strategic projects/policies/plans	☒	☐	☐

The use of Dunedin's parks and reserves contribute to the wellbeing of the community. The public consultation process for preparing a new reserve management plan enables the community to provide input into the management of reserves. The Management Plan provides policy that will guide decisions with environmental considerations, including climate change and carbon emissions reduction.

Māori Impact Statement

The current RMPGP does not adequately recognise our mana whenua partners. Mana whenua, through Aukaha have been invited to advise on this project. The review will allow for recognition of mana whenua cultural identity, values or narratives.

Sustainability

Sustainability and the Council's Zero Carbon Policy will be considered through the review process.

LTP/Annual Plan / Financial Strategy /Infrastructure Strategy

There are no implications on the plans and strategies for preparing and engaging on reserve management plans, but upon their adoption projects may be generated, which may have implications on future operational and capital budgets.

Financial considerations

Review of the reserve management plan and community engagement can be resourced from within Parks and Recreation Services operating budget for the 2022/23 year and draft budget for the 2023/24 year

Significance

The decision is considered low in terms of the Council's Significance and Engagement Policy.

Engagement – external

The Reserves Act 1977 requires DCC to consult with the public when a reserve management plan is being created or reviewed.

SUMMARY OF CONSIDERATIONS
Engagement - internal Parks and Recreation Services staff will work closely with other departments (Legal, Transport, 3 Waters, Community Development, Corporate Policy, and Events) in reviewing the existing Management Plan and drafting a replacement.
Risks: Legal / Health and Safety etc. This report has been reviewed by Council's In-House Legal team.
Conflict of Interest There are no known conflicts of interest.
Community Boards Community Boards will have an interest in the policies which effect the management of reserves within their administrative areas. Community Boards will be invited to provide feedback on the existing management plan and any draft replacement.

DUNEDIN CITY COUNCIL | kaunihera a-rohe o Ōtepoti

Statement of Proposal
Reserve Management Plan General Policies
Review 2023

Introduction

The Dunedin City Council (DCC) is beginning a review of the Reserve Management Plan General Policies 2005 (General Policies) (link here). The purpose of this statement of proposal is to:

- provide background information
- outline the proposed review and reasons for the proposal
- explain how to give feedback; and
- layout the next steps in this review process.

Background

The DCC has a responsibility as an administering body under the Reserve Act 1977 (the Act) to prepare management plans for the reserves and parks that it manages. The General Policies were adopted by the Council in 2005 to outline policies and objectives that apply to all DCC reserves and are intended to be read alongside site-specific management plans. These policies, as an overarching policy document, provide a consistent approach to ensuring the proper use, development, maintenance, protection and preservation of reserves in Dunedin.

Under the Act, the DCC is required to regularly review reserve management plans and must consult with the public when we review them. The proposed review will update the policies and enable us to respond to the community's changing needs, introduce best practice models and follow current requirements.

What we're proposing for consultation

In accordance with the requirement of the Act, we will publicly notify our intention to review the General Policies and invite feedback from interested parties. As well as advertising in the Otago Daily Times public notices section, we will notify the media and encourage feedback through social media and the DCC's website.

Have your say

We would like to hear your thoughts on the current General Policies and their suitability for effectively managing Dunedin's reserves. We would also like you to identify any issues with the policies and suggest potential solutions. We're also interested in your recommendations for improving or updating policies and practices that may have emerged since the plan's adoption in 2005. Your feedback will help shape the draft management plan, which will undergo further public engagement later in 2023. Parks and Recreation Services staff will be available to discuss the proposal and explain how to make submissions.

The submission period runs from **Monday, 3 July to 5pm on Friday, 28 July.**

How to give feedback

Feedback can be made via:

- Online: www.dunedin.govt.nz/consultation
- Email to: parksconsulting@dcc.govt.nz
- Post to:
  Reserve Management Plan General Policies Submissions
  Parks and Recreation Services
  Attention: S Hogg
  Dunedin City Council PO Box 5045
  Dunedin 9054
- Hand delivery to a DCC service centre or library.

For any queries, please email parksconsulting@dcc.govt.nz.

What happens next?

- The submission period is from **Monday, 3 July to 5pm on Friday, 28 July 2023**.
- Parks and Recreation staff will review feedback and prepare a draft Reserve Management Plan General Policies.
- Later in 2023, the draft plan will be notified for public consultation, with details about how to make submissions.

Please note: Your name and submission will be made public as part of the DCC's decision-making process. This information will be included in papers available to the public and the media but will only be used for the Reserve Management Plan General Policies consultation.

Late submissions may not be accepted.

Thank you for your submission.

Key questions

1. How can we improve the Reserve Management Plan General Policies regarding:

   - Conservation and Protection (e.g. pest animal and plant control, heritage conservation, fire control)

     Comments:

   - Recreation and Access (e.g. commercial use of reserves, special events, public access and reserve closure)

     Comments:

   - Planning and Development (e.g. buildings and structures, toilet and shower facilities, changes in facility use)

     Comments:

   - Community Engagement and Partnership (e.g. community consultation, tangata whenua, mana whenua and iwi, volunteers working on reserves)

     Comments:

   - Compliance and Enforcement (e.g. encroachment, camping, liquor licenses)

     Comments:

   - Maintenance and Asset Management (e.g. tracks, signage, tree management)

     Comments:

   - Sustainability and Climate Change (e.g. carbon reduction initiatives, hazardous substances, litter control)

     Comments:

2. How do you think these policies could be improved? (50 words max)

3. Is there anything further you would like to see in the revised General Policies? (50 words max)

4. Do you want us to update you on the next stages of this project? *(required)

PROPOSED EVENT ROAD CLOSURES FOR JUNE - AUGUST 2023

Department: Transport

EXECUTIVE SUMMARY

1 The DCC has received temporary road closure applications relating to the following events:

a) Dunedin Midwinter Carnival.

b) FIFA Women's World Cup 2023.

2 This report recommends that Council approves the temporary closure of the affected roads.

RECOMMENDATIONS

That the Council:

a) **Resolves** to close the roads detailed below (pursuant to Section 319, Section 342, and Schedule 10 clause 11(e) of the Local Government Act 1974):

i) Dunedin Midwinter Carnival

Dates:
Friday 23 June and Saturday 24 June 2023.
Postponement dates (in the case of the event not going ahead) are Friday 30 June and Saturday 1 July 2023.

Roads and Times:
From 12noon to 5.00pm.

- Moray Place, in front of First Church only.

From 5.00pm to 9.00pm.

- Burlington Street, from SH1 to Moray Place.
- Moray Place, from Lower Stuart Street to Princes Street.

ii) FIFA Women's World Cup 2023

Dates:
Tuesday 18 July to Wednesday 2 August 2023.

Roads and Times:

- Harrop Street, full length - 9.00am to 5.00pm.

Dates:
Friday 21 July and Wednesday 26 July 2023.

Roads and Times:

- Anzac Avenue, between Logan Park Drive and Butts Road - 12 noon to 2.00pm.
- Anzac Avenue, between Ravensbourne Road and Butts Road - 2.00pm to 8.00pm.
- Union Street East, between Harbour Terrace and Anzac Avenue - 2.00pm to 8.00pm.
- Butts Road, between Anzac Avenue and Logan Park Drive - 2.00pm to 8.00pm.
- Logan Park Drive, from Anzac Avenue to Butts Road - 2.00pm to 8.00pm.
- Albany Street, from Anzac Avenue to Forth Street - 6.00pm to 8.00pm.
- Dundas Street, from Butts Road to Harbour Terrace - 6.00pm to 8.00pm.
- Minerva Street, from Anzac Avenue to Parry Street West - 6.00pm to 8.00pm.
- Parry Street West, from Minerva Street to end - 6.00pm to 8.00pm.

Dates:
Sunday 23 July 2023.

Roads and Times:

- Anzac Avenue, between Logan Park Drive and Butts Road - 2.30pm to 4.30pm.
- Anzac Avenue, between Ravensbourne Road and Butts Road - 4.30pm to 10.30pm.
- Union Street East, between Harbour Terrace and Anzac Avenue - 4.30pm to 10.30pm.
- Butts Road, between Anzac Avenue and Logan Park Drive - 4.30pm to 10.30pm.
- Logan Park Drive, from Anzac Avenue to Butts Road - 4.30pm to 10.30pm.
- Albany Street, from Anzac Avenue to Forth Street - 8.30pm to 10.30pm.
- Dundas Street, from Butts Road to Harbour Terrace - 8.30pm to 10.30pm.
- Minerva Street, from Anzac Avenue to Parry Street West - 8.30pm to 10.30pm.
- Parry Street West, from Minerva Street to end - 8.30pm to 10.30pm.

Dates:
Friday 28 July 2023.

Roads and Times:

- Anzac Avenue, between Logan Park Drive and Butts Road - 7.00am to 9.00am.
- Anzac Avenue, between Ravensbourne Road and Butts Road - 9.00am to 3.00pm.
- Union Street East, between Harbour Terrace and Anzac Avenue - 9.00am to 3.00pm.
- Butts Road, between Anzac Avenue and Logan Park Drive - 9.00am to 3.00pm.
- Logan Park Drive, from Anzac Avenue to Butts Road - 9.00am to 3.00pm.
- Albany Street, from Anzac Avenue to Forth Street - 1.00pm to 3.00pm.

- Dundas Street, from Butts Road to Harbour Terrace - 1.00pm to 3.00pm.
- Minerva Street, from Anzac Avenue to Parry Street West - 1.00pm to 3.00pm.
- Parry Street West, from Minerva Street to end - 1.00pm to 3.00pm.

Dates:
Sunday 30 July and Tuesday 1 August 2023.

Roads and Times:

- Anzac Avenue, between Logan Park Drive and Butts Road - 2.00pm to 4.00pm.
- Anzac Avenue, between Ravensbourne Road and Butts Road - 4.00pm to 10pm.
- Union Street East, between Harbour Terrace and Anzac Avenue - 4.00pm to 10pm.
- Butts Road, between Anzac Avenue and Logan Park Drive - 4.00pm to 10pm.
- Logan Park Drive, from Anzac Avenue to Butts Road - 4.00pm to 10pm.
- Albany Street, from Anzac Avenue to Forth Street - 8.00pm to 10.00pm.
- Dundas Street, from Butts Road to Harbour Terrace - 8.00pm to 10.00pm.
- Minerva Street, from Anzac Avenue to Parry Street West - 8.00pm to 10.00pm.
- Parry Street West, from Minerva Street to end - 8.00pm to 10.00pm.

BACKGROUND

3 Events support Council's 10 Year Plan goal of a successful city with a diverse, innovative, and productive economy and a hub for skill and talent. They also contribute to the Festival and Events Plan 2018-2023.

4 The areas proposed to be used for these events are legal roads and can therefore be temporarily closed to normal traffic if statutory temporary road closure procedures are followed. The procedures are set out in Section 319 of the LGA 1974 and give Council the power to stop or close any road (or part of a road) within the parameters of Section 342 and Schedule 10 of the LGA 1974 (Schedule 10 is included as Attachment A).

5 These procedures include:

- Consultation with Waka Kotahi (New Zealand Transport Agency) and the Police.
- Public notice being given of the proposal to close any road (or part of a road), and public notice of a decision to close the road.
- Council being satisfied that traffic is not likely to be unreasonably impeded.

6 A resolution of Council is required where a proposal to temporarily close a road relates to public functions.

7 Council is required to give public notice of its decision. This notice will be published after this meeting and prior to the event, if approved.

DISCUSSION

Consultation and Notification

8 The Police and Waka Kotahi have no objections to the proposed road closures.

9 On 15 April 2023, the proposed temporary road closures were advertised in the Otago Daily Times (Attachment B) with a deadline for feedback.

10 The event organisers contacted those considered affected prior to submitting their application, and no objections were received.

11 Schedule 10 section 11(e) states a road cannot be closed more than 31 days in the aggregate in any one year. This limit will not be exceeded by the approval of the proposed temporary road closures.

Traffic Impacts

12 The Midwinter Carnival has been held in prior years without causing unreasonable delays to the travelling public.

13 The Events team have worked closely with stakeholders to ensure that disruption to the traveling public will be minimised during the FIFA event.

14 The Events team have held affected persons workshops for the FIFA events around the stadium area. Around 70 stakeholders have been consulted including the University of Otago, The Otago Polytechnic, and various student and sporting associations who utilise Logan Park.

15 Staff have worked closely with ORC over the past few months to develop public transport options for the FIFA event including park and rides (which were successfully trialled during recent stadium events).

16 Staff will continue to work to remind the public of the road closures during the FIFA events including letter drops to key locations and further media advertising.

17 All FIFA ambassadors will be briefed in the changes taking place in the transport corridor during this event, including details on public transport and walking and cycling routes in the given area(s).

18 ODT advertisements are not normally taken out for stadium events. Given the scale of the FIFA event it was decided to advertise the amount of road taken for closures in this instance.

19 Emergency Services and Public transport services will be managed through the temporary traffic management process.

20 The temporary traffic management plan process ensures that other issues such as temporary relocation of certain parking (e.g. taxi, mobility and Authorised Vehicles Only) are managed.

OPTIONS

21 Any amendment to this report's recommendations cannot be implemented without further consultation with the affected parties, Waka Kotahi, the Police, and verifying that traffic impacts are acceptable.

Option One – Recommended Option

22 That the Council closes the sections of roads as recommended in this report.

Advantages

- The roads will be able to be closed and the events will be able to proceed.
- The closure will assist in realising the economic, social, and cultural benefits associated with the events.

Disadvantages

- There will be temporary loss of vehicular access through the closed areas. However, there are detours available, and safety can be assured using temporary traffic management.

Option Two – Status Quo

23 That the Council decides not to close the roads in question.

Advantages

- There would be no detour required for travelling public, and the road would be able to be used as normal.

Disadvantages

- The events would not be able to go ahead, and the benefits of the events would be lost.

NEXT STEPS

24 Should the resolution be made to temporarily close the roads, Council staff will accept the temporary traffic management plan and notify the public of the closures.

Signatories

Author:	Simon Smith - Asset and Funding Manager Leesa Seatter - Personal Assistant/Administration Team Leader - Transport
Authoriser:	Jeanine Benson - Group Manager Transport Simon Drew - General Manager Infrastructure and Development

Attachments

	Title	Page
⇩A	Local Government Act 1974, Schedule 10	195
⇩B	ODT Advertisement - 15 April 2023	200

SUMMARY OF CONSIDERATIONS

Fit with purpose of Local Government

This decision promotes the social and economic well-being of communities in the present and for the future.

Fit with strategic framework

	Contributes	Detracts	Not applicable
Social Wellbeing Strategy	☒	☐	☐
Economic Development Strategy	☒	☐	☐
Environment Strategy	☐	☐	☒
Arts and Culture Strategy	☒	☐	☐
3 Waters Strategy	☐	☐	☒
Spatial Plan	☐	☐	☒
Integrated Transport Strategy	☐	☐	☒
Parks and Recreation Strategy	☐	☐	☐
Other strategic projects/policies/plans	☒	☐	☐

Events contribute to the Strategic Framework. Events contribute to the Economic Development Strategy, the Social Wellbeing Strategy. There is a Festival and Events Plan 2018-2023.

Māori Impact Statement

Mana whenua have not been directly engaged with in relation to these road closures.

Sustainability

There are no implications for sustainability.

LTP/Annual Plan / Financial Strategy /Infrastructure Strategy

There are no implications, the decision is a regulatory one and there are no direct costs to Council.

Financial considerations

There are no financial implications. The cost of the proposed road closures is not a cost to Council.

Significance

This decision is considered low in terms of the Council's Significance and Engagement Policy.

Engagement – external

There has been external engagement as required by the LGA 1974, with the Police and Waka Kotahi. Affected parties were notified and provided a time period for feedback.

Engagement - internal

There has been engagement with DCC Events, In-House Legal, and Transport. There is support for the events to proceed.

Risks: Legal / Health and Safety etc.

There are no identified risks should the recommended resolution be made.

Conflict of Interest

There are no known conflicts of interest.

SUMMARY OF CONSIDERATIONS
Community Boards There are no implications for Community Boards.

Schedule 10
Conditions as to stopping of roads and the temporary prohibition of traffic on roads

ss 319(h), 342

Schedule 10: inserted, on 1 April 1979, by section 3(1) of the Local Government Amendment Act 1978 (1978 No 43).

Stopping of roads

1 The council shall prepare a plan of the road proposed to be stopped, together with an explanation as to why the road is to be stopped and the purpose or purposes to which the stopped road will be put, and a survey made and a plan prepared of any new road proposed to be made in lieu thereof, showing the lands through which it is proposed to pass, and the owners and occupiers of those lands so far as known, and shall lodge the plan in the office of the Chief Surveyor of the land district in which the road is situated. The plan shall separately show any area of esplanade reserve which will become vested in the council under section 345(3).

Schedule 10 clause 1: amended, on 1 October 1991, by section 362 of the Resource Management Act 1991 (1991 No 69).

2 On receipt of the Chief Surveyor's notice of approval and plan number the council shall open the plan for public inspection at the office of the council, and the council shall at least twice, at intervals of not less than 7 days, give public notice of the proposals and of the place where the plan may be inspected, and shall in the notice call upon persons objecting to the proposals to lodge their objections in writing at the office of the council on or before a date to be specified in the notice, being not earlier than 40 days after the date of the first publication thereof. The council shall also forthwith after that first publication serve a notice in the same form on the occupiers of all land adjoining the road proposed to be stopped or any new road proposed to be made in lieu thereof, and, in the case of any such land of which the occupier is not also the owner, on the owner of the land also, so far as they can be ascertained.

3 A notice of the proposed stoppage shall, during the period between the first publication of the notice and the expiration of the last day for lodging objections as aforesaid, be kept fixed in a conspicuous place at each end of the road proposed to be stopped:

provided that the council shall not be deemed to have failed to comply with the provisions of this clause in any case where any such notice is removed without the authority of the council, but in any such case the council shall, as soon as conveniently may be after being informed of the unauthorised removal of the notice, cause a new notice complying with the provisions of this clause to be affixed in place of the notice so removed and to be kept so affixed for the period aforesaid.

4 If no objections are received within the time limited as aforesaid, the council may by public notice declare that the road is stopped; and the road shall, subject to the council's compliance with clause 9, thereafter cease to be a road.

5 If objections are received as aforesaid, the council shall, after the expiration of the period within which an objection must be lodged, unless it decides to allow the objections, send the objections together with the plans aforesaid, and a full description of the proposed alterations to the Environment Court.

Schedule 10 clause 5: amended, on 2 September 1996, pursuant to section 6(2)(a) of the Resource Management Amendment Act 1996 (1996 No 160).

6 The Environment Court shall consider the district plan, the plan of the road proposed to be stopped, the council's explanation under clause 1, and any objection made thereto by any person, and confirm, modify, or reverse the decision of the council which shall be final and conclusive on all questions.

Schedule 10 clause 6: replaced, on 1 October 1991, by section 362 of the Resource Management Act 1991 (1991 No 69).

Schedule 10 clause 6: amended, on 2 September 1996, pursuant to section 6(2)(a) of the Resource Management Amendment Act 1996 (1996 No 160).

7 If the Environment Court reverses the decision of the council, no proceedings shall be entertained by the Environment Court for stopping the road for 2 years thereafter.

Schedule 10 clause 7: amended, on 2 September 1996, pursuant to section 6(2)(a) of the Resource Management Amendment Act 1996 (1996 No 160).

8 If the Environment Court confirms the decision of the council, the council may declare by public notice that the road is stopped; and the road shall, subject to the council's compliance with clause 9, thereafter cease to be a road.

Schedule 10 clause 8: amended, on 2 September 1996, pursuant to section 6(2)(a) of the Resource Management Amendment Act 1996 (1996 No 160).

9 Two copies of that notice and of the plans hereinbefore referred to shall be transmitted by the council for record in the office of the Chief Surveyor of the land district in which the road is situated, and no notice of the stoppage of the road shall take effect until that record is made.

10 The Chief Surveyor shall allocate a new description of the land comprising the stopped road, and shall forward to the Registrar-General of Land or the Registrar of Deeds, as the case may require, a copy of that description and a copy of the notice and the plans transmitted to him by the council, and the Registrar shall amend his records accordingly.

Schedule 10 clause 10: amended, on 12 November 2018, by section 250 of the Land Transfer Act 2017 (2017 No 30).

Temporary prohibition of traffic

11 The council may, subject to such conditions as it thinks fit (including the imposition of a reasonable bond), and after consultation with the Police and the New Zealand Transport Agency, close any road or part of a road to all traffic or any specified type of traffic (including pedestrian traffic)—

(a) while the road, or any drain, water race, pipe, or apparatus under, upon, or over the road is being constructed or repaired; or

(b) where, in order to resolve problems associated with traffic operations on a road network, experimental diversions of traffic are required; or

(c) during a period when public disorder exists or is anticipated; or

(d) when for any reason it is considered desirable that traffic should be temporarily diverted to other roads; or

(e) for a period or periods not exceeding in the aggregate 31 days in any year for any exhibition, fair, show, market, concert, film-making, race or other sporting event, or public function:

provided that no road may be closed for any purpose specified in paragraph (e) if that closure would, in the opinion of the council, be likely to impede traffic unreasonably.

Schedule 10 clause 11: replaced, on 14 August 1986, by section 14(1) of the Local Government Amendment Act (No 3) 1986 (1986 No 50).

Schedule 10 clause 11: amended, on 26 March 2015, by section 5 of the Local Government Act 1974 Amendment Act 2015 (2015 No 20).

11A The council shall give public notice of its intention to consider closing any road or part of a road under clause 11(e); and shall give public notice of any decision to close any road or part of a road under that provision.

Schedule 10 clause 11A: inserted, on 14 August 1986, by section 14(1) of the Local Government Amendment Act (No 3) 1986 (1986 No 50).

11B Where any road or part of a road is closed under clause 11(e), the council or, with the consent of the council, the promoter of any activity for the purpose of which the road has been closed may impose charges for the entry of persons and vehicles to the area of closed road, any structure erected on the road, or any structure or area under the control of the council or the promoter on adjoining land.

Schedule 10 clause 11B: inserted, on 14 August 1986, by section 14(1) of the Local Government Amendment Act (No 3) 1986 (1986 No 50).

11C Where any road or part of a road is closed under clause 11(e), the road or part of a road shall be deemed for the purposes of—

(a) *[Repealed]*

(b) the Traffic Regulations 1976:

(c) the Transport (Drivers Licensing) Regulations 1985:

(d) *[Repealed]*

(e) the Transport (Vehicle Registration and Licensing) Notice 1986:

(ea) the Land Transport Act 1998:

(f) any enactment made in substitution for any enactment referred to in paragraphs (a) to (ea)—

not to be a road; but nothing in this clause shall affect the status of the road or part of a road as a public place for the purposes of this or any other enactment.

Schedule 10 clause 11C: inserted, on 14 August 1986, by section 14(1) of the Local Government Amendment Act (No 3) 1986 (1986 No 50).

Schedule 10 clause 11C(a): repealed, on 10 May 2011, by section 100(3) of the Land Transport (Road Safety and Other Matters) Amendment Act 2011 (2011 No 13).

Schedule 10 clause 11C(d): repealed, on 1 May 2011, by section 35(4) of the Land Transport Amendment Act 2009 (2009 No 17).

Schedule 10 clause 11C(ea): inserted, on 1 March 1999, by section 215(1) of the Land Transport Act 1998 (1998 No 110).

Schedule 10 clause 11C(f): amended, on 1 March 1999, by section 215(1) of the Land Transport Act 1998 (1998 No 110).

12 The powers conferred on the council by clause 11 (except paragraph (e)) may be exercised by the chairman on behalf of the council or by any officer of the council authorised by the council in that behalf.

13 Where it appears to the council that owing to climatic conditions the continued use of any road in a rural area, other than a State highway or government road, not being a road generally used by motor vehicles for business or commercial purposes or for the purpose of any public work, may cause damage to the road, the council may by resolution prohibit, either conditionally or absolutely, the use of that road by motor vehicles or by any specified class of motor vehicle for such period as the council considers necessary.

14 Where a road is closed under clause 13, an appropriate notice shall be posted at every entry to the road affected, and shall also be published in a newspaper circulating in the district.

15 A copy of every resolution made under clause 13 shall, within 1 week after the making thereof, be sent to the Minister of Transport, who may at any time, by notice to the council, disallow the resolution, in whole or in part, and thereupon the resolution, to the extent that it has been disallowed, shall be deemed to have been revoked.

16 No person shall—

(a) use a vehicle, or permit a vehicle to be used, on any road which is for the time being closed for such vehicles pursuant to clause 11; or

(aa) without the consent of the council or the promoter of any activity permitted by the council, enter or attempt to enter, or be present, on any road or part of a road that is for the time being closed to pedestrian traffic pursuant to clause 11; or

(b) use a motor vehicle, or permit a motor vehicle to be used, on any road where its use has for the time being been prohibited by a resolution under clause 13.

Schedule 10 clause 16(aa): inserted, on 14 August 1986, by section 14(2) of the Local Government Amendment Act (No 3) 1986 (1986 No 50).

Schedule 11
Width of roads, access ways, and service lanes

[Expired]

s 325(1)

Schedule 11: expired, on 1 January 1993, by section 325(3).

DCC NOTICEBOARD

DUNEDIN CITY COUNCIL | kaunihera a-rohe o Ōtepoti

DCC CUSTOMER SERVICE CALL CENTRE | Hours: 8am to 5.30pm Monday to Friday | 9am to 5pm Saturday | 50 The Octagon, Dunedin 9016
PO Box 5045, Dunedin 9054 | Phone 03 477 4000 | www.dunedin.govt.nz

Dunedin Midwinter Carnival

The Dunedin City Council is considering closing Moray Place, in front of First Church only, from 12pm to 5pm, and Burlington Street, between SH1 and Moray Place, and Moray Place, between lower Stuart Street and Princes Street, from 5pm to 9pm on Friday, 23 June and Saturday, 24 June for the above event. Postponement dates will be Friday, 30 June and Saturday, 1 July.

This will be considered at a meeting of The Dunedin City Council on Tuesday, 30 May at 10am. Please provide any feedback on the proposal by emailing tmp@dcc.govt.nz before 5pm on Saturday, 29 April.

FIFA Women's World Cup 2023

The Council is considering closing roads as detailed below on the following dates and times for this event:

All of Harrop Street from 9am to 5pm on Tuesday, 18 July until Wednesday, 2 August - Anzac Avenue, between Logan Park Drive and Butts Road, from 12pm to 2pm, Anzac Avenue, between Ravensbourne and Butts Roads, Union Street East, between Harbour Terrace and Anzac Avenue, Butts Road, between Anzac Avenue and Logan Park Drive, and Logan Park Drive, between Anzac Avenue and Butts Road, from 2pm to 8pm, Albany Street, between Anzac Avenue and Forth Street, Dundas Street, between Butts Road and Harbour Terrace, Minerva Street, between Anzac Avenue and Parry Street West, and Parry Street West, between Minerva Street and end, from 6pm to 8pm on Friday, 21 July and Wednesday 26 July. - Anzac Avenue, between Logan Park Drive and Butts Road, from 2.30pm to 4.30pm, Anzac Avenue, between Ravensbourne and Butts Roads, Union Street East, between Harbour Terrace and Anzac Avenue, Butts Road, between Anzac Avenue and Logan Park Drive, Logan Park Drive, between Anzac Avenue and Butts Road, from 4.30pm to 10.30pm, Albany Street, between Anzac Avenue and Forth Street, Dundas Street, between Butts Road and Harbour Terrace, Minerva Street, between Anzac Avenue and Parry Street West, and Parry Street West, from Minerva Street to end, from 8.30pm to 10.30pm on Sunday, 23 July. - Anzac Avenue, between Logan Park Drive and Butts Road, 7am to 9am, Anzac Avenue, between Ravensbourne Road and Butts Road, Union Street East, between Harbour Terrace and Anzac Avenue, Butts Road, between Anzac Avenue and Logan Park Drive, Logan Park Drive, between Anzac Avenue and Butts Road, from 9am to 3pm, Albany Street, between Anzac Avenue and Forth Street, Dundas Street, between Butts Road and Harbour Terrace, Minerva Street, between Anzac Avenue and Parry Street West, and Parry Street West, between Minerva Street and end, from 1pm to 3pm on Friday, 28 July. - And, Anzac Avenue, between Logan Park Drive and Butts Road, from 2pm to 4pm, Anzac Avenue, between Ravensbourne and Butts Roads, Union Street East, between Harbour Terrace and Anzac Avenue, Butts Road, between Anzac Avenue and Logan Park Drive, Logan Park Drive, between Anzac Avenue and Butts Road, from 4pm to 10pm, Albany Street, between Anzac Avenue and Forth Street, Dundas Street, between Butts Road and Harbour Terrace, Minerva Street, between Anzac Avenue and Parry Street West, and Parry Street West, between Minerva Street and end, from 8pm to 10pm on Sunday, 30 July and Tuesday, 1 August.

Closure of on street parking spaces as follows:

Logan Park Drive and Anzac Avenue (stadium frontage) will be closed from 10am on Friday, 21 July and Wednesday, 26 July, from 12.30pm on Sunday 23 July, from 5am on Friday, 28 July, and from 12pm on Sunday 30 July and Tuesday, 1 August. Magnet Street will be closed from 11am on Friday, 21 July and Wednesday, 26 July, from 1.30pm on Sunday, 23 July, from 6am on Friday, 28 July, and from 1pm on Sunday, 30 July and Tuesday, 1 August. Butts Road, Minerva Street and Parry Street West will be closed from 2pm on Friday, 21 July and Wednesday, 26 July, from 4.30pm on Sunday, 23 July, from 9am on Friday, 28 July, and from 4pm on Sunday, 30 July and Tuesday, 1 August. And, Forth Street, between Albany Street and Union Street East, will be closed from 2pm on Friday 21 July and Wednesday, 26 July, from 4.30pm on Sunday, 23 July, from 10am on Friday, 28 July, and from 4pm on Sunday, 30 July and Tuesday, 1 August.

Victoria Road, by Tahuna Park, will be closed from Friday, 14 July until Wednesday, 2 August. Caledonian Ground, Logan Park Drive and Butts Road near Caledonian Ground, Logan Park Drive, and the carparks outside Sargood Centre and Butts Rod by University Oval will be closed on Thursday, 20 July, Saturday, 22 July, Tuesday, 25 July, Thursday, 27 July, Saturday, 29 July, and Monday, 31 July. Logan Park Drive, outside University Oval, will be closed from Wednesday, 28 June until Wednesday, 2 August.

VEHICLE TOW NOTICE

Please be advised that the streets listed above, including Victoria Road by Tahuna Park, will be subject to a full road closure and/or closure of on street parking spaces, on the dates listed above.

All vehicles parked in the closed or restricted parking areas will be towed at the owner's expense.

This will be considered at a meeting of The Dunedin City Council on Tuesday 30 May 2023 at 10am. Please provide any feedback on the proposal by emailing tmp@dcc.govt.nz before 5pm on Saturday, 29 April.