



Community Response Plan

Hydro Inundation

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Community Response Plan

Hydro Inundation

REVISION HISTORY

Date Created:	August 2024
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Department:	Civil Defence Emergency Management
Responsible Officer:	Joe Rush
Sponsor:	
Approved by:	Chief Executive Officer
New Review Date:	August 2025

Hydro Inundation Hazard

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.1. Introduction

The Mackenzie District Council is a member of the Canterbury Civil Defence Emergency Management (CDEM) Group established under the Civil Defence Emergency Management Act 2002 (CDEM Act). CDEM Group member Councils work together to identify Canterbury's hazards so that communities can understand them, and informed decisions can be made about acceptable levels of risk.

Arrangements for managing emergencies in a coordinated, multi-agency manner are specified in the Canterbury CDEM group plan. The Mackenzie District Council works with our communities and partner agencies to ensure that we plan for all potential events that could impact on this district. The way we do this is by comprehensive emergency management aligned with the 4 R's: Reduction, Readiness, Response, and Recovery.

The dam break hazard inundation zones for the Pukaki – Ohau Canal system are intended for use by agencies involved with emergency planning and response should a dam safety emergency event arise or if a canal failure cannot be prevented.

The potential dam break/canal failure inundation maps provided in this plan do not in any way reflect adversely on the condition or integrity of the canals which retain the Ohau A Reservoir. Modern water retaining structures such as canals have an extremely low likelihood of failure.

This high level of safety is achieved by close attention and management by the owner, throughout the operational life of the canal through a comprehensive Dam Safety Assurance Programme.

.2. Purpose

This Civil Defence Community Response Plan provides information to residents of the Flanagan's Lane, Manuka Terrace, Lyford/Hocken Lane and the Pūkaki Airport sub-divisions of the Dam Break flood Inundation Hazard for these areas.

It also provides Emergency Response preparation and evacuation guidance for this hazard, for potentially impacted residents, visitors and properties.

.3. Background

As part of their Dam Safety Assurance Programmes, owners of 'High' and 'Medium' Potential Impact Classification (PIC) dams are required to provide Potential Dam Break inundation mapping to the agencies involved with emergency planning and response.

This mapping shows the extent and depth of inundation that could occur in the extremely unlikely event of a breach of one of these structures, and the period from start of breach to 'Initial Flood arrival time', and to 'Peak flood arrival time' in the potential inundation areas.

The potential dam break inundation maps provided do not in any way reflect adversely on the condition or integrity of the dams for which they are provided.

Modern water retaining structures have an extremely low likelihood of failure. This high level of safety is achieved by close attention and management by the owner, throughout the operational life of the dam through a comprehensive Dam Safety Assurance Programme.

However, in view of the high potential consequences of a dam break, it is appropriate for the CDEM agencies to make communities aware of the hazard, and to have appropriate community emergency response plans

High PIC - Extremely low Risk

measures only
mitigation

Mackenzie District Civil Defence Emergency Plan – Hydro Inundation

in place so that the likelihood of harm to people can be minimised in the extremely unlikely event of a dam breach or dam safety incident.



.4. Potentially Impacted Areas (This Community Response Plan)

The land surrounding Flanagan's Lane, Manuka Terrace, Lyford/Hocken Lane and the Pūkaki Airport have been identified in the MDC district plans as the 'hydro-electricity generation inundation hazard area', as shown on map Figure 1.

.5. Dam Hazards

The Pukaki Dam and Ohau A Reservoir are part of the Upper Waitaki Hydro-electricity Generation Scheme.

The Pukaki Dam consists of a Main Dam and a Canal Inlet dam.

The Ohau A Reservoir consists of the Pukaki, Ohau and Ohau A Canal system.

The Pukaki Main and Canal Inlet Dam are both High PIC dams.

The canals that make up the Ohau A reservoir are constructed in cut and fill reaches along their length. The reaches of fill embankment are dams, some of these fill embankments are High or Medium PIC dams.

The Pukaki Canal begins immediately downstream of the Pukaki Canal Inlet dam and is approximately 12 km long to the junction with the Ohau Canal. The Ohau Canal begins immediately downstream of the Ohau Canal Inlet Structure and is approximately 9 km long to the junction with the Pukaki Canal. Ohau A Canal starts at the junction of the Pukaki and Ohau canals, is approximately 1 km long and conveys combined flow from Pukaki and Ohau Canals to Ohau A Power Station.

.6. Dam Break Inundation Maps

The overall 'hydro-electricity generation inundation hazard area', and the Dam Break Inundation Maps potentially impacting the Flanagan's Lane, Manuka Terrace, Lyford/Hocken Lane and the Pūkaki Airport sub-divisions are provided in these sections.

These are:

Section 5.1- hydro-electricity generation inundation hazard area'

Figure 1 - hydro-electricity generation inundation hazard area'

Section 5.2 – Lyford/Hocken Lane and the Pūkaki Airport sub-divisions

Figure 2 - Pukaki Canal Inlet Dam - Dam Break Inundation Map

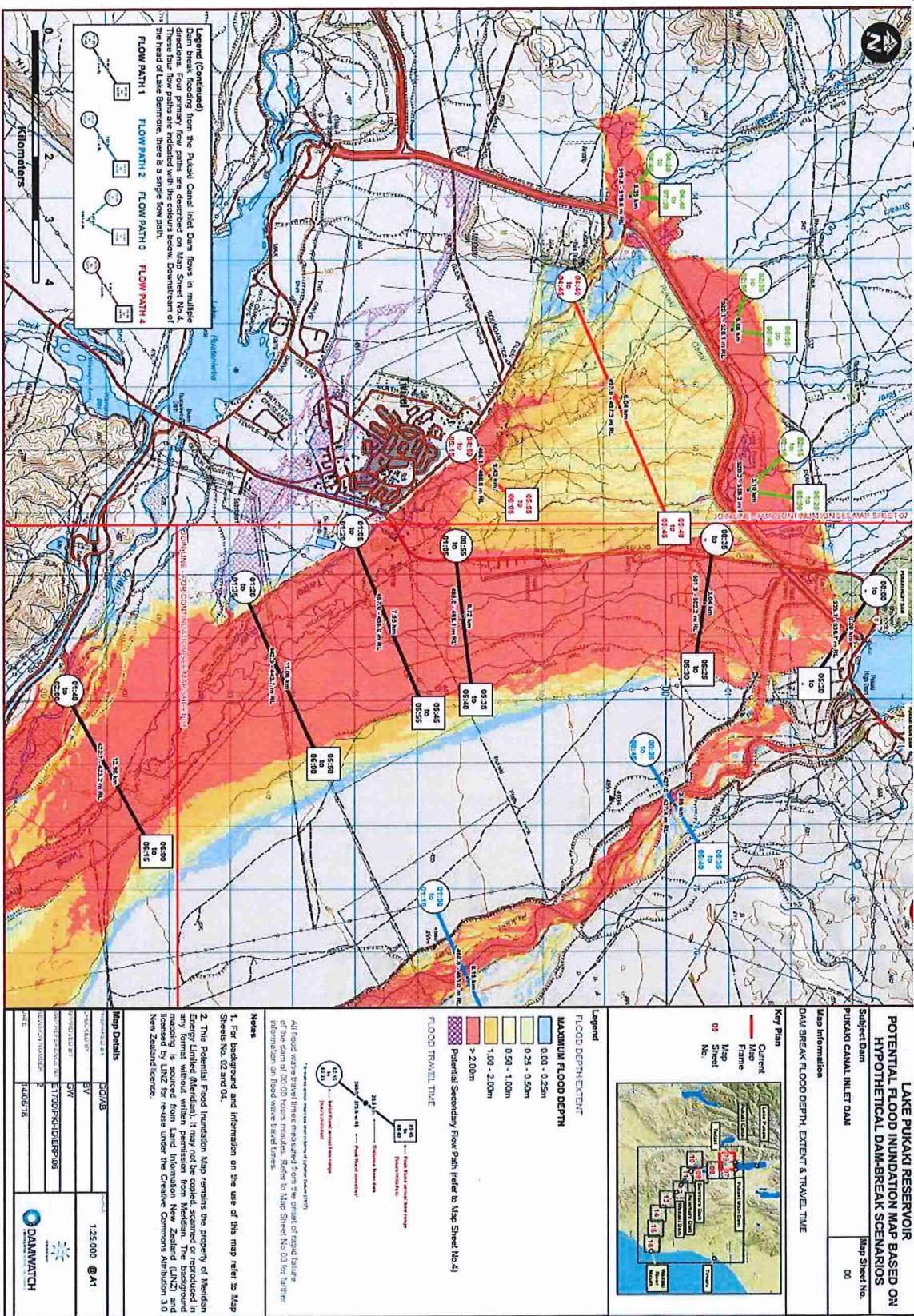
Section 5.3 - Flanagan's Lane, Manuka Terrace

Figure 3 – Ohau A Reservoir - Pukaki Canal TR - Dam Break Inundation Map

Mackenzie District Civil Defence Emergency Plan – Hydro Inundation

Section 5.1- MDC Plan - 'Hydro-electricity generation inundation hazard area'

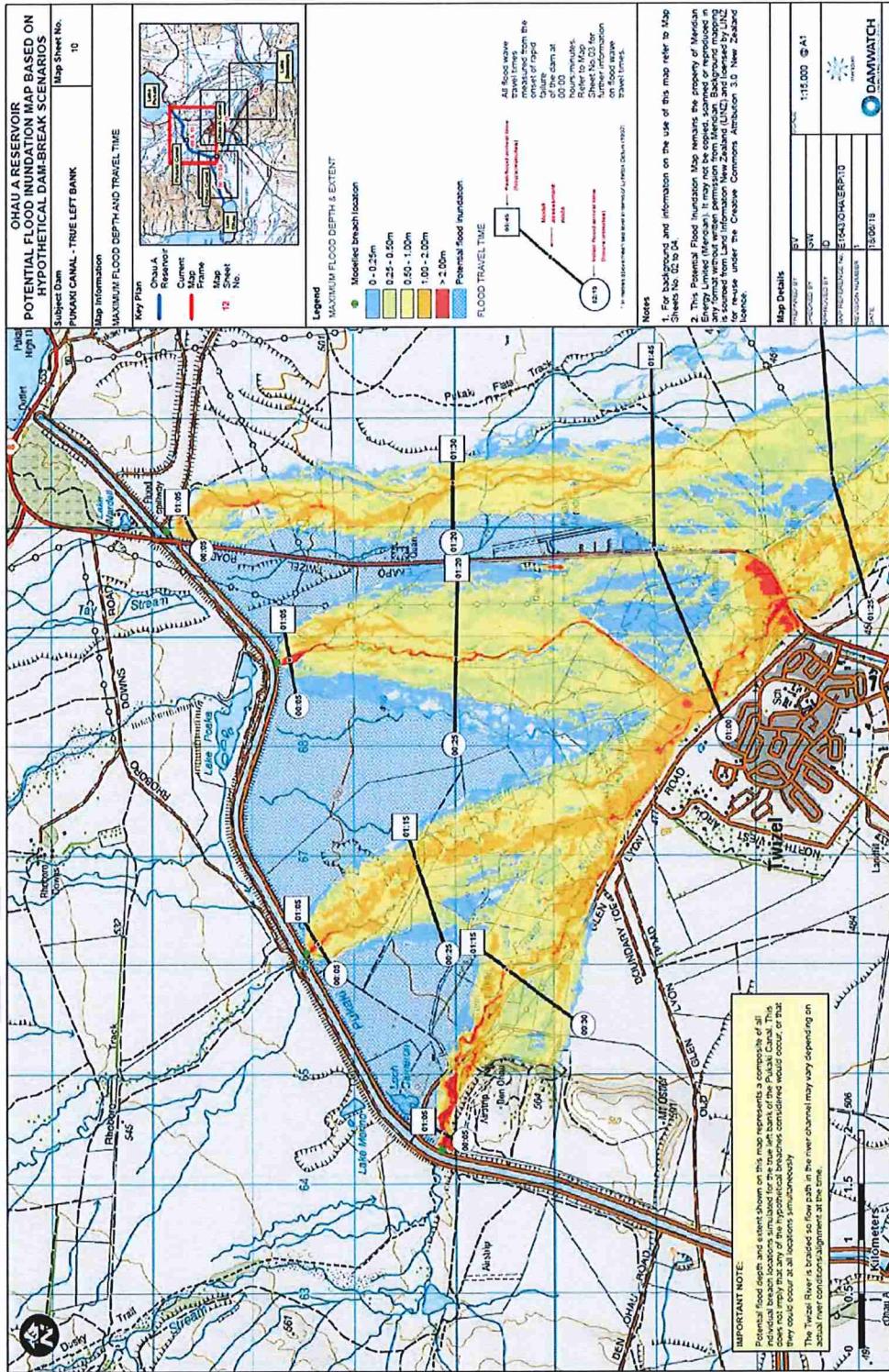
Figure 1 - hydro-electricity generation inundation hazard area'



Mackenzie District Civil Defence Emergency Plan – Hydro Inundation

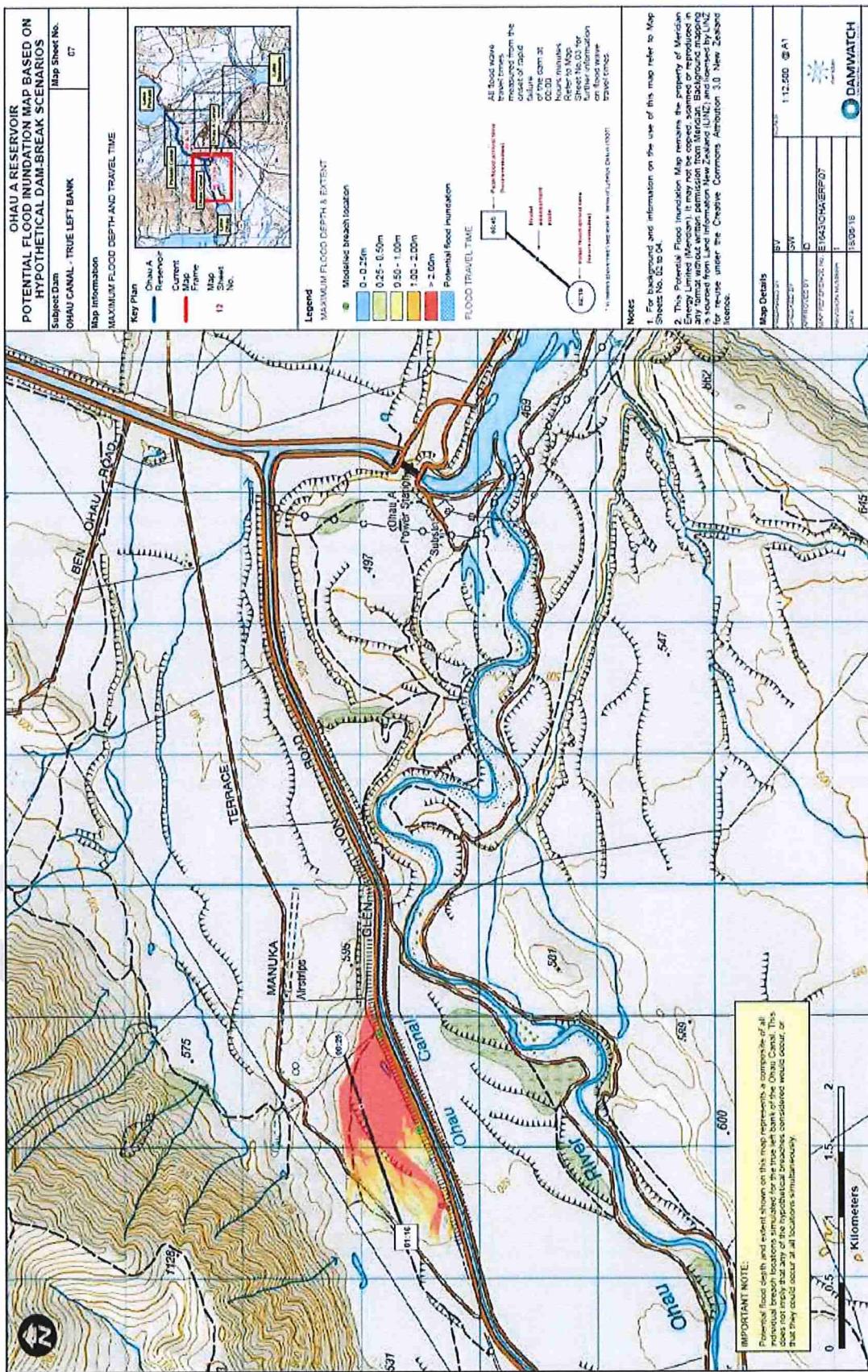
Section 5.2 – Lyford/Hocken Lane and the Pūkaki Airport sub-divisions

Section 5.2 – Lyford/Hocken Lane and the Pūkaki Airport sub-district
Figure 2 – Pūkaki Canal Inlet Dam – Dam Break Inundation Map



Section 5.3 - Flanagan's Lane: Manuka Terrace

Figure 3 - Ohau A Reservoir – Ohau Canal TL - Dam Break Inundation Map



1. Emergency Evacuation Plan – Flanagan's Lane/Manuka Terrace, Twizel

Introduction

This Emergency Evacuation Plan (*the Plan*) is designed to,

- allow potentially impacted parties to plan for evacuation of themselves and others who may be on their property should one of the Evacuation Triggers occur
- provide guidance on evacuation timeframes, routes and assembly points

Preparation and following an effective Emergency Evaluation Plan can assure the safety of people in the event of a Dam Safety Emergency.

The Plan details the procedures, routes, and responsibilities for a swift evacuation to minimise risk to life and property.

The dam break flood inundation area contains a mixture of permanent and non-permanent residents, vacant land, mobile homes and minor dwellings.

Evacuation Objectives:

- Provide clear, timely instructions for evacuation.
- Coordinate with emergency services to facilitate a safe evacuation.
- Ensure the efficient use of resources during the evacuation process.
- Assure the safety of residents and visitors.

Evacuation Triggers:

Immediate self-evacuation or pre planned evacuation orders are required if any of the following Evacuation Trigger conditions are met:

- A 'long and strong earthquake' has been experienced (>30 sec strong shaking >MM7 felt in the potential inundation area).
- Official directives from emergency management authorities.
- Structural issues or a canal failure are reported.
- Water levels reach critical thresholds indicating imminent risk.

Roles and Responsibilities:

Residents

Prior to an event

- Prepare an emergency kit with essentials such as identification, medications, food, water, clothing, and important documents.
- Be aware of the evacuation routes and assembly locations for this hazard
- Inform visitors of the hazard and Emergency Response Plan

In an event

- Self-evacuate if a 'long and strong' earthquake event occurs
- Follow evacuation orders immediately upon receiving them.
- Immediately evacuate to higher ground.
- Stay informed about potential flood risks.
- Assist neighbours who may need help evacuating, particularly vulnerable individuals.

Mackenzie Civil Defence Emergency Management

Prior to an event

- Establish Evacuation Plan for location
- Regularly update residents on Hazards and Community Response Plans

In an event

- Monitor Dam Safety event in conjunction with the Meridian Generation Emergency Response.
- Support and coordinate evacuation warnings and orders.
- Coordinate with emergency services to manage the evacuation process.
- Establish communication channels to keep residents informed
-

Emergency Services (Police, Fire, Ambulance)

Prior to an event

In an event

- Assist in disseminating evacuation orders.
- Support the evacuation of residents, including providing transportation for those without vehicles.
- Manage traffic and ensure clear evacuation routes.
- Conduct search and rescue operations if necessary.

Evacuation Routes

- Primary Evacuation Route: (Refer to specific areas included in this plan)
- Secondary Evacuation Route: (Refer to specific areas included in this plan)
- If the primary route is inaccessible due to flooding or other hazards, use the designated secondary roads leading to higher ground or shelter in place if safe to do so. (Two level property that is structurally sound)
- Emergency personnel will direct traffic to these alternative routes as needed.

Assembly Points

- Primary Assembly/Evacuation Point: (Refer to specific areas included in this plan)
- Alternate Assembly Points: (Refer to specific areas included in this plan)
- Twizel Event Centre: The main Twizel - Civil Defence Centre offering shelter, food, water, and medical assistance.
- Designated based on real-time conditions. Additional Civil Defence Centres may be established at the Te Whare Te Manahuna, Ostler Road, Twizel Area School or other such place that is safe and secure. (This will be communicated via Mackenzie Emergency Management)

Evacuation Procedures

Notification Process

- **Experiencing a “long and Strong EQ* in the potential Inundation area is a trigger to self-evacuate**
- Evacuation orders will be communicated through multiple channels, these may include,
- EMA Text message (Emergency Mobile Alert)
- Local radio broadcasts
- Social media updates
- Door-to-door notifications by emergency services

Evacuation of Vulnerable Residents

Prior to Event

Do vulnerable residents need to inform MDC who and where they are?

In an Event

- Priority will be given to evacuating elderly, disabled, or medically dependent individuals.
- Emergency services will provide assistance, including transportation if necessary.

Transportation Assistance

Emergency services will coordinate alternative vehicle options to transport evacuees to assembly points if required.

Civil Defence Centres

- Civil Defence Centres are managed by the Mackenzie District Council and supported by volunteers and relief organisations.
- Provide basic needs: food, water, medical care, and sleeping arrangements.
- Pets may be accommodated at designated shelters if space allows; otherwise, alternative arrangements should be made.

Communication

Information Channels

Residents will potentially receive updates via:

- Local radio stations
- Social media platforms managed by the Mackenzie District Council or associated emergency services
- Direct EMA (Emergency Mobile text Alerts)
- Community notice boards at Civil Defence Centres

Contact Information

Mackenzie Civil Defence Emergency Management: 03 68508514

Emergency Services Police Fire and Emergency NZ, St John: 111 (NZ emergency number)

Local Radio Station:

- Radio NZ 92.6/93.4
- More FM on 93.1 or 95.0 FM
- The Breeze on 99.8 FM
- The Sound on 104.6 FM
- Brian FM 104.5
- Radio Twizel on 95.8 FM

Post-Evacuation Actions

- Return Protocol
- Residents will be notified when it is safe to return to their homes.
- Return will be coordinated by Mackenzie Civil Defence Emergency Management to ensure safety.
- Infrastructure and safety inspections will be conducted before allowing re-entry

2. Evacuation Assembly Points and Routes – Flanagan's Lane

Flanagan's Lane Properties: 15 properties – rapid numbers 10,12,24,36,44,53,64,71,74,76,78,80 Flanagan's Lane, Twizel (3 properties – no rapid numbers displayed)

Manuka Terrace Properties: 10 properties – rapid numbers 429,431,565,595,594,625,626,629,633,662

Evacuation Routes – DO NOT RE ENTER GLEN LYON ROAD CANAL AREA

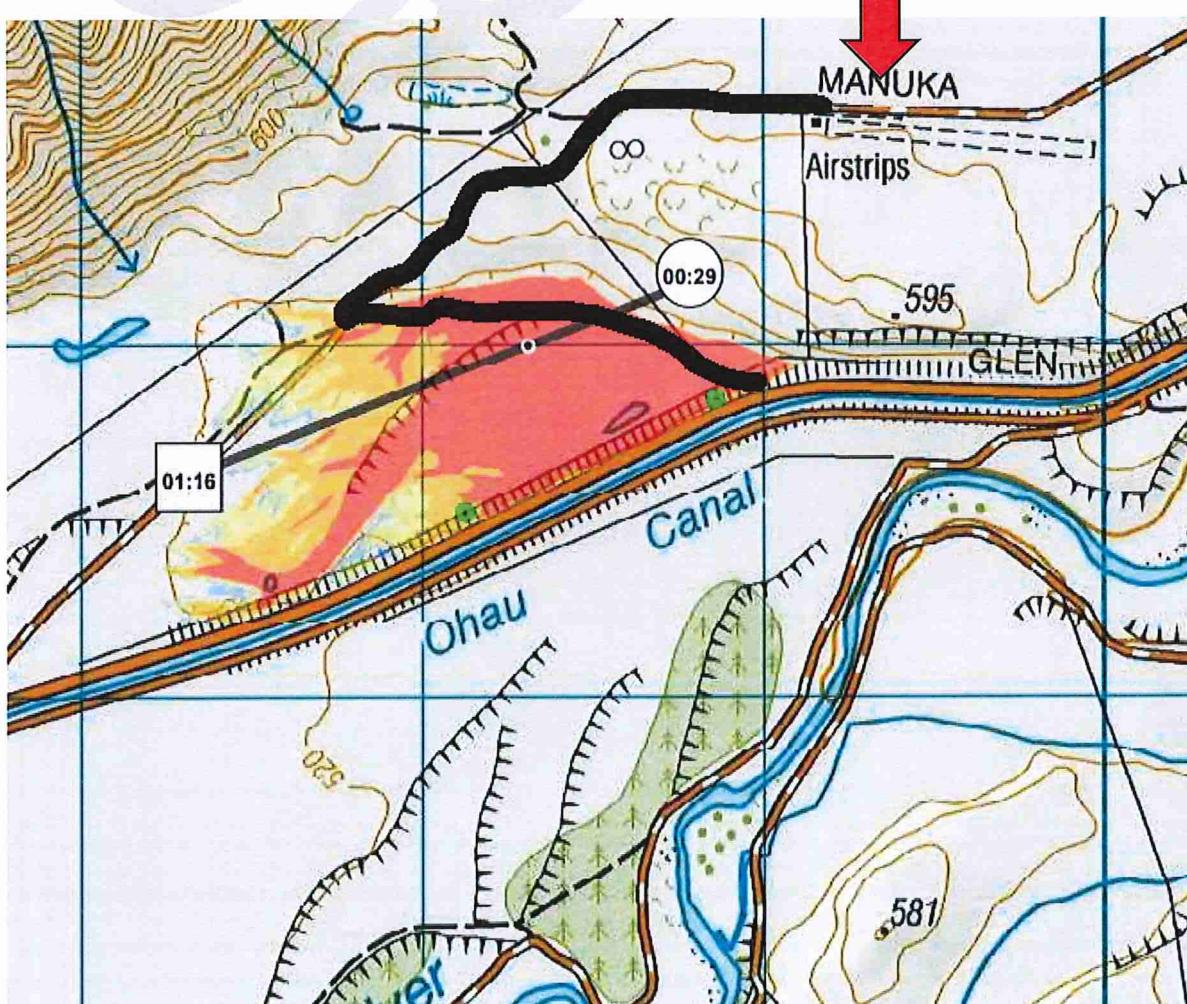
- **Primary Evacuation Route:** Following a long and strong earthquake **IMMEDIATELY** evacuate to higher ground. Evacuate following Flanagan's Lane to Manuka Terrace then assemble at the top of the hill as indicated on the map.
- If the primary route is inaccessible due to flooding or other hazards, use any route leading to higher ground in the **IMMEDIATE** vicinity or shelter in place if safe to do so. (Two level property that is structurally sound)
- Call 111 (Police) to advise that you have safely evacuated.

Assembly Points

Primary Assembly/Evacuation Point:

Manuka Terrace at the top of the hill (See arrow on map)

Evacuation Assembly Area
Outside rapid number 508



3. Evacuation Assembly Points and Routes – Lyford/Hocken Lane

Lyford/Hocken Lane Properties: 22 properties – rapid numbers 48, 58, 65, 86, 107, 108, 115, 116, 138a, 138b, 140a, 140b, 140c, 140d, 147, 158, 170, 186a, 187 (3 properties – no rapid numbers)

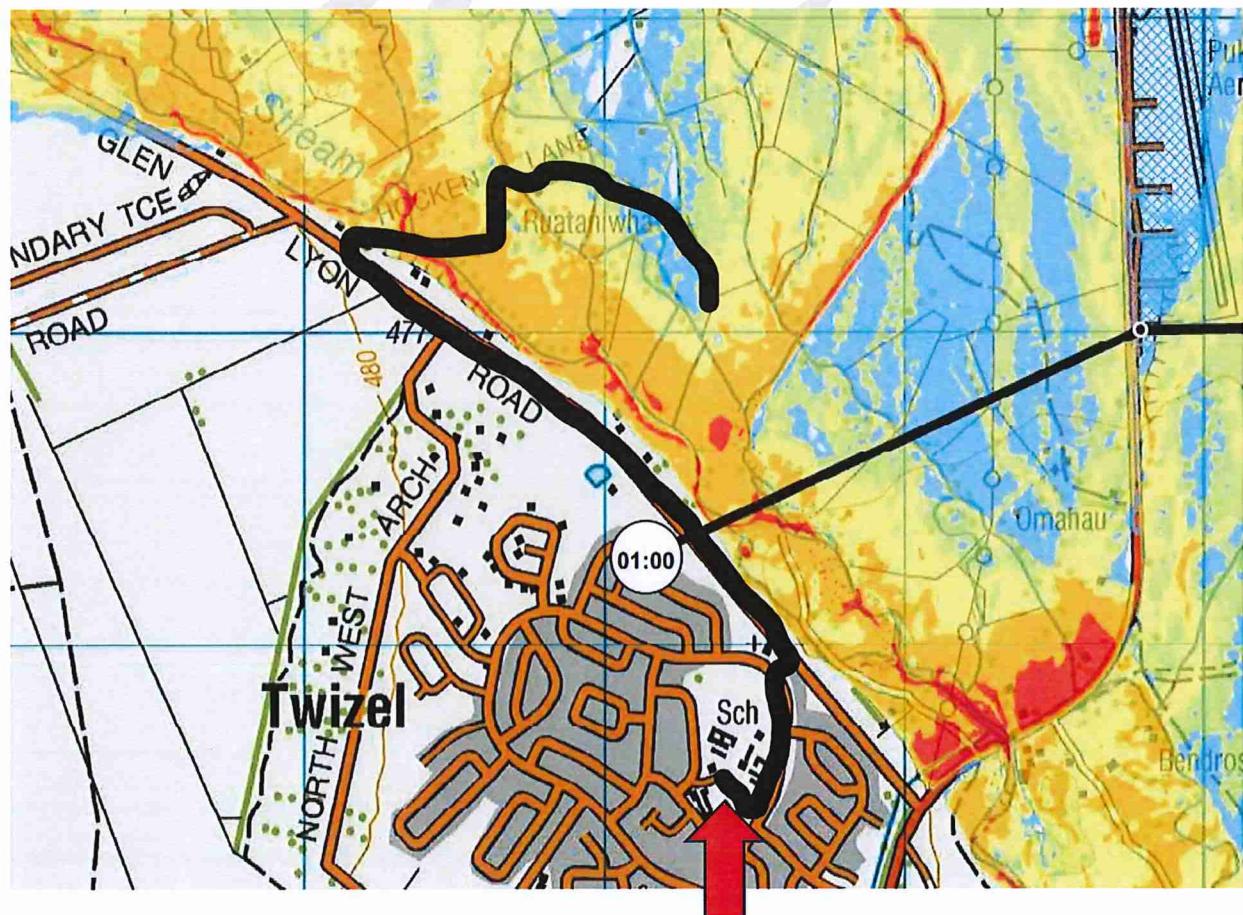
Evacuation Routes

- **Primary Evacuation Route:** Following a long and strong earthquake **IMMEDIATELY** evacuate to higher ground.
- 0-30 mins following a canal failure - Evacuate following Lyford/Hocken Lane to Glen Lyon Road then assemble at the Twizel Event Centre.
- If the primary route is inaccessible due to flooding or other hazards, use any route leading to higher ground in the **IMMEDIATE** vicinity or shelter in place if safe to do so. (Two level property that is structurally sound).
- Call 111 (Police) to advise that you have safely evacuated.

Assembly Points

Primary Assembly/Evacuation Point -Twizel Even Centre

Alternate Assembly Points – Advised by Mackenzie Emergency Management.



Evacuation Assembly Area
Twizel Event Centre

3.4. Evacuation Assembly Points and Routes – Pukaki Airport

Pukaki Airport

Avro Avenue Properties: 10 properties – rapid numbers 1,2,3,4,5,6,7,8,9,10

Dekota Drive Properties: 10 properties – rapid numbers 1,2,3,4,5,6,7,8,9,10

De Havilland Drive Properties: 6 properties - rapid numbers 2,3,4,5,6,8,

Piper Place Properties: 7 properties – rapid numbers 1,2,3,4,5,6,7,

Swallow Drive Properties: 6 properties – rapid numbers 1,2,3,4 ,5,6,

Auster Avenue Properties: 6 properties – rapid numbers 1,2,3,4,5,6,

Harry Wigley Drive Properties: 7 properties – rapid numbers 1,15,17,19,21,23,73,

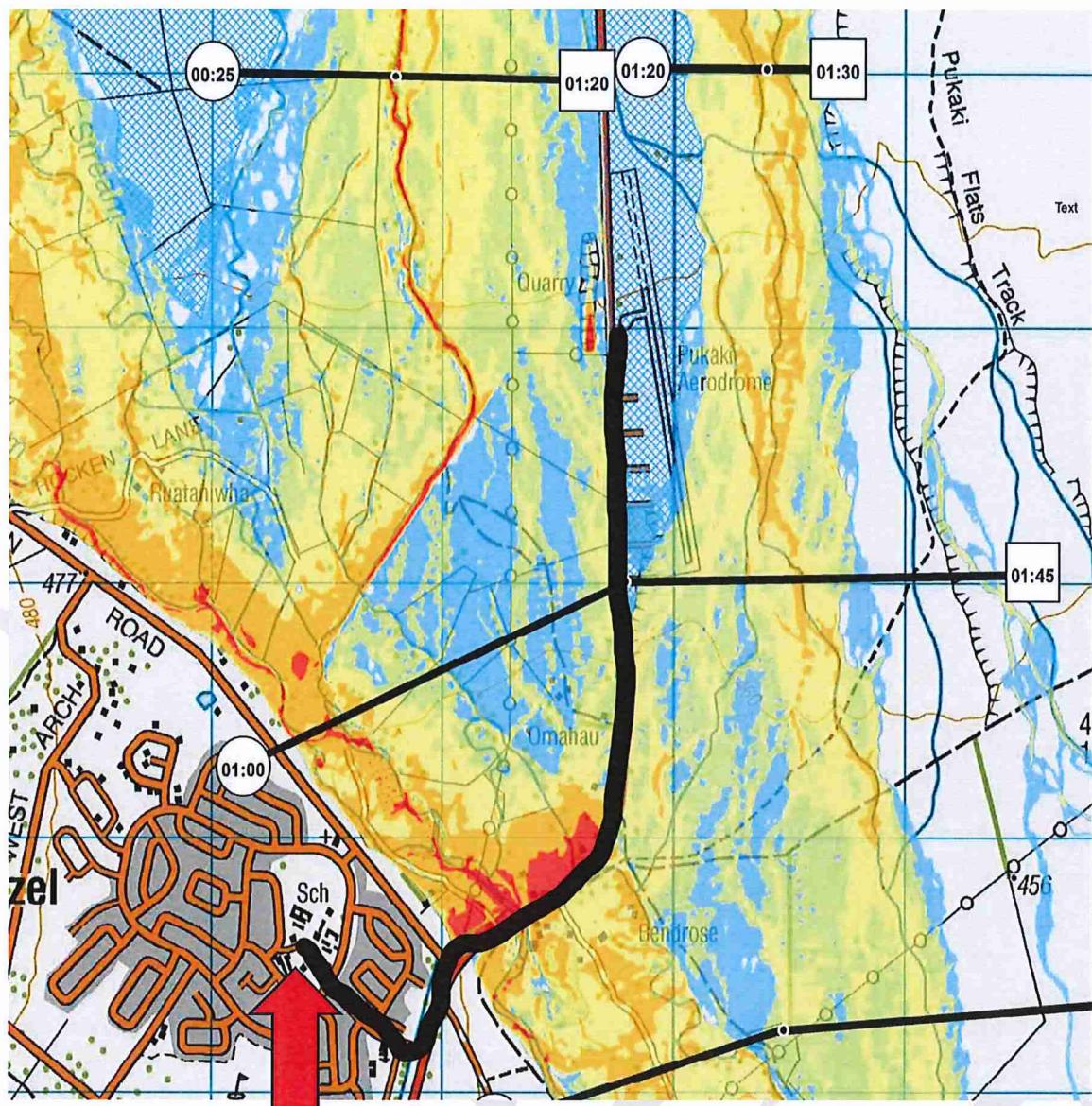
Evacuation Routes

- **Primary Evacuation Route:** Following a long and strong earthquake **IMMEDIATELY** evacuate to higher ground.
- 0-30 mins following a canal failure - Evacuate following Twizel-Tekapo Road to Ruataniwha Road then assemble at the Twizel Event Centre.
- If the primary route is inaccessible due to flooding or other hazards, use any route leading to higher ground in the **IMMEDIATE** vicinity or shelter in place if safe to do so. (Two level property that is structurally sound).
- Call 111 (Police) to advise that you have safely evacuated.

Assembly Points

Primary Assembly/Evacuation Point -Twizel Event Centre

See map below:

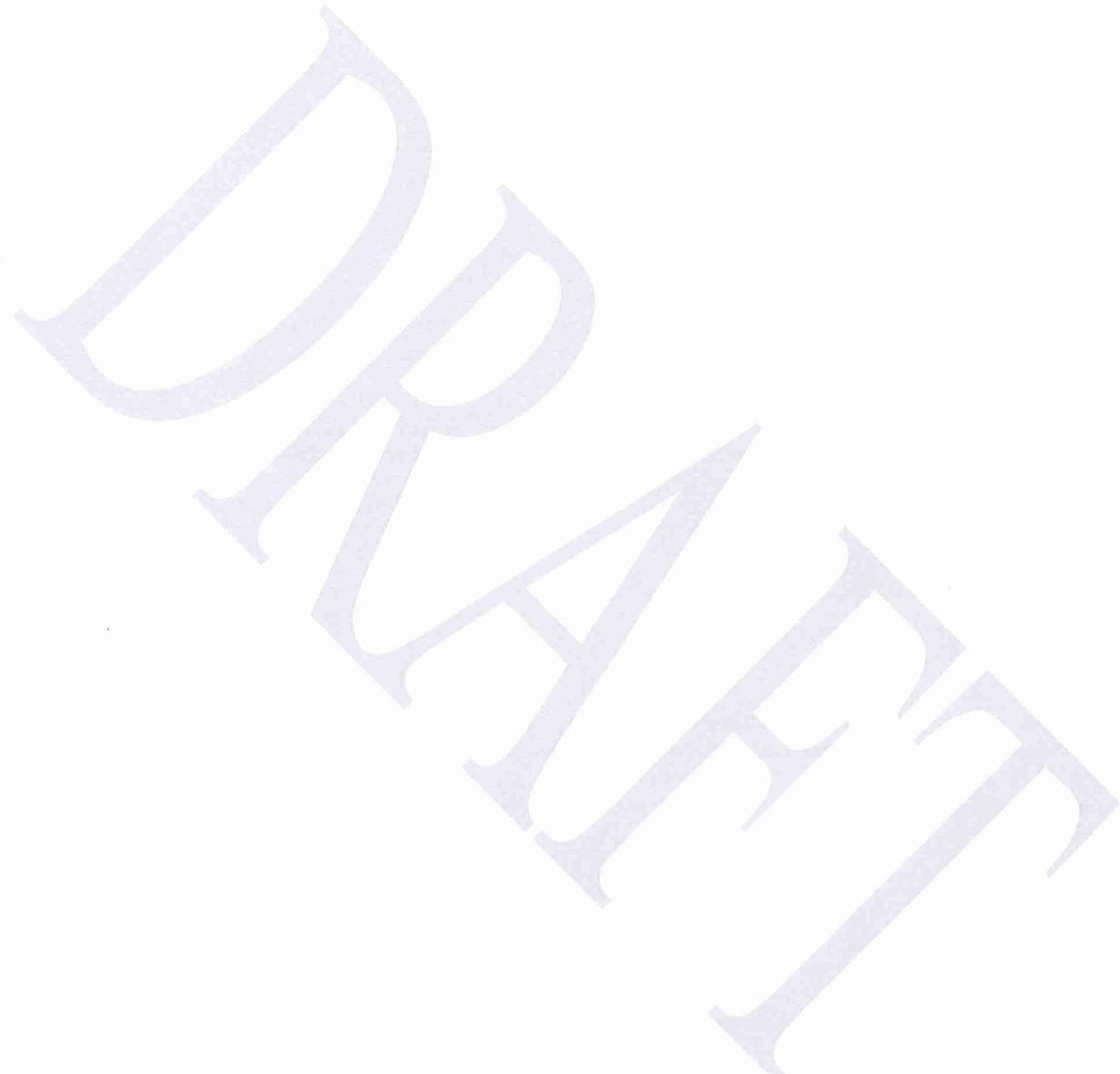


Evacuation Assembly Area
Twizel Event Centre

Prepared by: Joe Rush, Mackenzie District Council Emergency Management Advisor
Date: 29/09/24

Note: This plan should be reviewed and updated annually or after any major event to ensure its effectiveness and relevance.

Regular drills and community education are recommended to maintain preparedness.





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