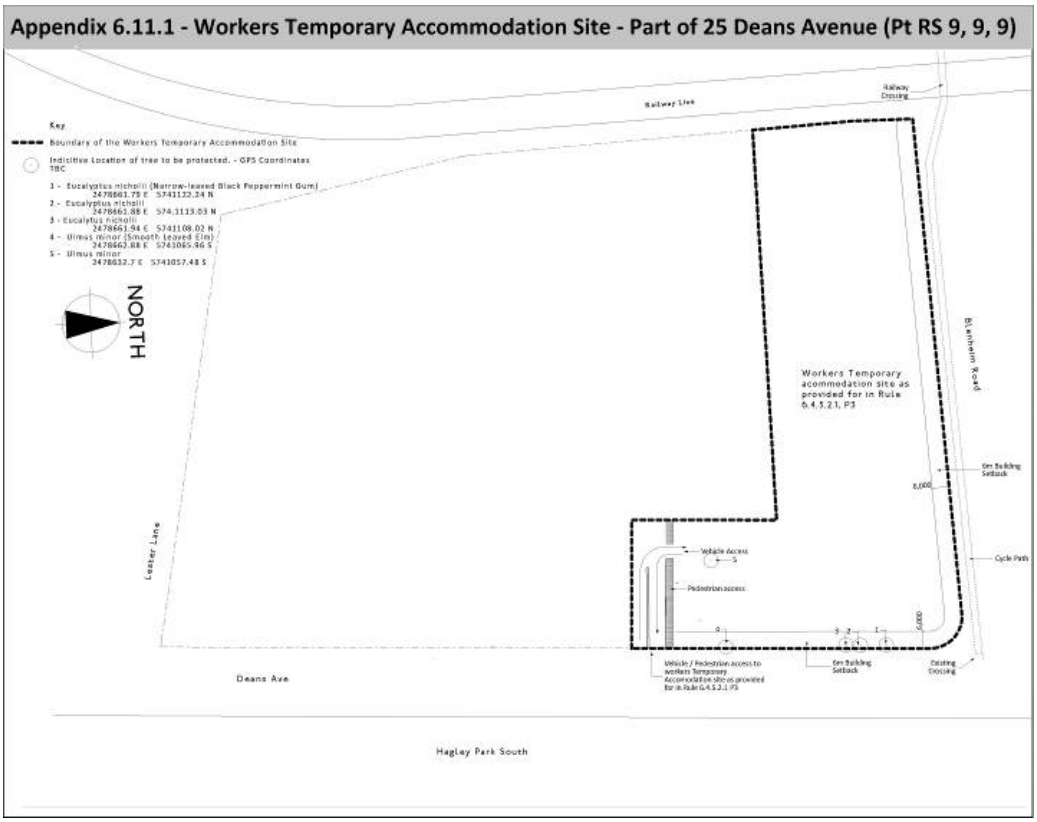
6.11 Appendices

Add the following to Sub-chapter **6.11 Appendices**:

Appendix 6.11.1 Workers Temporary Accommodation Site - Part of 25 Deans Avenue (Pt RS 9,9,9)



Appendix 6.11.2 Workers' Temporary Accommodation — Design Guide

1.1 Introduction

a. Why has this guide been developed?

i. This guide has been developed because special provision needs to be made to accommodate the additional workers and their families who will be in greater Christchurch for the rebuild. Housing demand analysis suggests additional accommodation will be needed for this substantial number of workers, many of whom will be coming from outside the region. Some will be accommodated in permanent housing (either existing or new), some in other types of accommodation

such as motels, and others will be accommodated in temporary housing buildings developed specifically to accommodate construction workers.

ii. An important part of meeting this housing demand will be to offer options for temporary accommodation. For example, bulk unit developments may be desirable for the large construction gangs who are expected to temporarily migrate to greater Christchurch. The demand for this type of development, particularly at the numbers anticipated, is unique in New Zealand.

iii. This imperative for workers' accommodation is for the short term only. At the same time, this accommodation still needs to be of high quality and suitably located, have minimal if any impacts on surrounding neighbourhoods, and be effectively operated. This guide therefore responds to the gap in current guidance on this unique type of accommodation.

iv. The purpose of this guide is to:

A. outline considerations for planning and designing workers' temporary accommodation in a way that encourages innovative and high-quality development
B. provide guidance to applicants and the Council on the key considerations in determining resource consent applications
C. provide information to existing residents and communities on critical considerations for workers' temporary accommodation.

b. How to use the guide

i. This guide complements District Plan provisions for workers' temporary accommodation in Rule 6.4.5. It sets out considerations and good practice examples. However, as each case will be different, the various considerations and examples may be more relevant in some situations than in others.

c. Other consents and approvals

i. This guide is specifically about design and planning considerations for workers' temporary accommodation. It is to assist in assessments by the Council under the Act. It is not intended to apply to building consents or other regulatory assessments. In addition to resource consent, a workers' accommodation project may require consent or approval under the Building Act, Health Regulations, or under the Act from Canterbury Regional Council. A separate information sheet is available on broader regulatory requirements.

d. Principles

i. This guide has four overarching principles for the development of workers' temporary accommodation.

A. Workers' temporary accommodation is designed to respond to the characteristics of the locality and avoid, remedy or mitigate significant adverse effects on the characteristics of local neighbourhoods.
B. Workers' temporary accommodation provides high-quality accommodation with good on-site amenity.

C. On-site management and operation of workers' temporary accommodation effectively contribute to high-quality accommodation for occupants and minimise impacts on surrounding neighbourhoods.
D. Workers' temporary accommodation is genuinely temporary, in place no longer than 31 December 2022.

1.2 Guidelines for location suitability

a. It is acknowledged that workers' temporary accommodation is temporary and may be of a modular, repeated or re-locatable style that would not normally be expected in a residential or commercial environment. It is not expected that temporary accommodation can fully integrate into an existing community, nor is it expected that temporary accommodation will have only minor effects. However, selection and design pf the site and design of the building can help to avoid significant adverse effects on existing neighbourhoods and to provide suitable accommodation for occupants.

Location suitability considerations	**Examples of good practice**
Consideration 1: Location suitability a. Whether a site is suitable for workers' temporary accommodation will be assessed on a case by case basis, taking into account: i. the scale of the development ii. who will occupy the development and the nature/location of the occupants' work iii. transport options iv. adjoining uses v. the availability and capacity of infrastructure to service the site vi. physical constraints and hazards such as flood risk	1. Key measures a. Location in the Christchurch Central City is encouraged. b. Location within existing urban areas, particularly in existing residential or commercial areas, is encouraged. c. Locations within incompatible adjoining or nearby uses should be avoided. Large developments should not be undertaken next to sensitive activities such as schools, because they may affect the amenity values, character or social aspects of the area. Sites should not be chosen if adjoining uses generate significant effects on the workers that are not mitigated (eg noise, discharges or hazardous substance risk). d. Water (including a water supply for firefighting consistent with the New Zealand Fire Service Firefighting Water Supplies Code of Practice (SNZ PAS 4509:2008), wastewater and stormwater infrastructure should be available to the site and have the capacity required for the number of workers in the accommodation. Locations within the existing urban area have more infrastructure availability. Areas where infrastructure capacity is not currently available or is particularly fragile is shown as the EQ damaged area on the Christchurch Wastewater Overview Map below. This information is subject to change over time. Current information on the capacity of the wastewater network is available from Council. e. The land should be physically suitable for this type of accommodation. It will usually be necessary to avoid areas of flood risk, sensitive aquifer zones, sites on the listed land-use register, or other sites with physical constraints, unless the specific site, design or duration of the accommodation provides exceptions for developing there. 2. Other considerations a. Location in medium or high density residential zones may be more appropriate than low density residential zones. b. Location near to the work site(s) and near to public services and facilities such as retail and entertainment areas is encouraged c. The suitability of the location will depend on the scale, nature and term of the development. For example, if migrant workers

Location suitability considerations	Examples of good practice
	are living in accommodation on short-term rotation, (eg three month rotation for a five year period), a development may be acceptable in an industrial zone or close to the airport, but this location is less likely to be acceptable for workers who are employed for a continuous 10 year period. d. Sites should not displace permanent uses that are planned within an overlapping timeframe. For example, it would be inappropriate to choose a greenfield residential site that will be needed for permanent residential development before the temporary accommodation units are due for removal. Similarly, it would be inappropriate to use a commercial building if that type of building is in high demand due to displacement. e. An acceptable size of development will be smaller in a low density residential area than in a high density residential, commercial or mixed use area. f. The nature of transport arrangements to be provided for occupants will determine the appropriate distance between the accommodation site and the primary work site(s). For example, a distance within 5km would be desirable if no transport is to be provided between the two sites, but a distance of up to 10km would be acceptable if transport is provided. g. Selecting a location where public transport options are available, such as to work sites and commercial centres, is encouraged. h. The traffic and transport effects of a location include how the development will affect amenity values, traffic safety and transport efficiency. The nature of the effects depends on the size of the development and the type of road used for access to the project site. Selecting a site which avoids significant traffic or transport effects is encouraged.

1.3 Guidelines for site layout and building design

a. The standard of the design of buildings and the layout and orientation of buildings and activities on the site are a major influence on both the quality of the accommodation and its effects on the surrounding neighbourhood. Although the development is temporary, it may be the primary residence for an occupant for a number of months or years. A temporary accommodation project may be larger and more intense than anticipated and may have some temporary adverse effects, but design of the site can help to minimise the effects on the surrounding neighbourhood.

Site layout and building design considerations	Examples of good practice
Consideration 2: Minimising effects on existing neighbourhoods a. It is desirable that developments are compatible with the streetscape and mitigate	1. Key measures a. Buildings such as the manager's residence, site office, communal facility, or other buildings that are not individual units should be located on a road frontage if they assist in creating a compatible road frontage and a 'street address'. b. Facilities or services on the site that are to be available for public or community use should be located on road frontages to limit public access through the site. This will also help to

Site layout and building design considerations	Examples of good practice
potential effects on the amenity of an established environment. This is a particular consideration for residential environments.	create a 'street address'. c. Fencing and landscaping along road boundaries should be provided. Road boundary fencing should not provide extensive lengths of solid screening. Any fencing above 1m height should be at least 50 per cent transparent. d. Placement and orientation of buildings should internalise effects such as noise or lighting rather than directing effects towards neighbouring sites. Design and layout should achieve the noise standards for the zone in the District Plan. Screening or landscaping around outdoor activities that generate effects also helps to internalise effects. 2. Other considerations a. Screen fencing between 1.8m and 2m should be provided along boundaries adjoining residential neighbours. Fencing should be designed to be compatible with the adjoining use; for example, security fencing is not compatible with a residential environment. Landscaping along boundaries is also encouraged. b. A separation between residential site boundaries and buildings, service areas and recreation areas is encouraged. For example, it might take the form of a 3m setback. c. The site can be designed to link with existing neighbourhood services, for example by providing an appropriate location for vehicle and pedestrian access points. d. The working patterns of the occupants and the timing of traffic movements will influence how compatible the development is with surrounding uses. For example, a large site with shift workers travelling late at night may not be suitable in a residential area. e. Location and design of parking areas and vehicle access should minimise internal traffic movement, minimise vehicle movements and avoid locations next to neighbouring sites.
Consideration 3: District Plan guidance on design of the site and building a. The District Plan provides relevant guidance on appropriate design of the site and building to achieve the outcomes anticipated for the zone.	1. Key measures a. If buildings and related services comply with the standards in the District Plan for permanent buildings, the project design is more likely to be similar to what the District Plan anticipates for the location. This measure is particularly relevant in the residential environment, and should be given particular attention near site boundaries, for example, in relation to height and setbacks from boundaries.
Consideration 4: Design of unit and building a. The appearance and design of workers' temporary units and buildings is not expected to be to the standard anticipated for permanent accommodation. However, the choice of materials, type of construction, building size, design, and	1. Other considerations a. Where communal facilities are provided (for example, cooking, dining, showers or recreational facilities), individual units can be small, for example a floor area of 14m² may be appropriate. b. Where units are completely self-contained with no communal or on-site facilities, individual units should be larger to provide more living space within each unit. c. Buildings that are highly visible from adjoining residential sites can use materials, finishes, designs and techniques to minimise effects. For example, large continuous walls could be broken, or changes in building height and scale could be used to be more compatible with the bulk of buildings anticipated by the District Plan. d. The design and appearance of large communal facility buildings

Site layout and building design considerations	Examples of good practice
layout can contribute to a development that minimises impact on the neighbourhood while providing quality living space for occupants.	are of particular importance as these buildings are often a focus and significant visual feature of a site. e. There may be location-specific considerations relevant to the design of the building. For example, design, construction and operation to reduce noise may be relevant in some locations near the airport or heavy industry for noise insulation. Another example of location-specific considerations would be effects relevant to a character area identified in the District Plan. f. Providing weather protection at unit and building entrances is encouraged. g. Units can be designed, constructed and located to make the most of the sun and to provide a warm and dry living environment. h. Design should facilitate removal or relocation of the building as proposed in the decommissioning strategy.
Consideration 5: On-site facilities and services a. The need for on-site facilities and services will be identified on a case-by-case basis depending on the nature and size of the development. On-site facilities will help to improve the quality of accommodation, contribute to the successful operation of the site, and reduce any impact beyond the site.	1. Other considerations a. Sites should either be connected to Council water, stormwater and wastewater networks, or be self-contained. Each site will need to determine the expected demand on services and how that demand will be met. b. Communal facilities and services provided on-site will depend on the needs of the occupants. For example, a recreation facility may be warranted on a site of more than 100 workers. Alternatively, on-site facilities may not be necessary where public services and facilities are operating close by. c. Where communal recreation or open space is provided, it is not necessary to provide open space with each unit, but this design is encouraged. d. There needs to be servicing arrangements and adequate space for this. For example, the site may manage its own solid waste or may rely on the Council service. The site may offer laundry service or laundry facilities may be contained in each unit.
Consideration 6: Parking and access a. Providing appropriate parking and access contributes to meeting the needs of occupants while also avoiding or mitigating effects on the streetscape. Parking needs will depend on the characteristics of the occupants and the transport services provided.	1. Key measures a. Where communal transport services are provided or public transport will be used between the accommodation site and work site, a minimum of one parking space per four occupants should be provided. Where no transport services are provided, the District Plan parking requirements provide relevant guidance. b. Where transport services are provided, a bus or van drop-off/pick-up area should be provided within the site. c. Communal transport services to both work sites and other activities should be provided on sites with more than 100 occupants. 2. Other considerations a. Where developments accommodating over 200 people have road frontage to the Strategic Road Network (as defined in the Canterbury Regional Land Transport Strategy), access should be provided to another road unless this is not reasonably practicable. b. Grouping parking spaces together will reduce vehicle movements within the site. c. Avoid parking areas and access ways that adjoin residential neighbours as far as possible. d. Providing secure, covered cycle parking is encouraged.
Consideration 7: Incorporating safety and security into design	1. Key measures a. Site layout and features should incorporate key crime prevention through environmental design (CPTED) principles.

Site layout and building design considerations	Examples of good practice
a. Adopting the principles of crime prevention through environmental design (CPTED) and limiting the potential for hazards and risks will contribute to providing accommodation that is safe for the occupants and local community.	For example, they should provide good internal site lighting, and avoid high fencing or planting at the road frontage. A reference to the national CPTED guidelines is provided at the end of this guideline. 2. Other considerations a. A locking system for the doors and windows of each unit will provide security. b. There should be suitable access for emergency vehicles and on-site emergency management procedures.

1.4 Guidelines for on-site management and operation

b. The quality of workers' temporary accommodation projects will be improved through comprehensive management. In addition, the potential adverse impacts are likely to be reduced where accommodation is comprehensively managed as a 'complex'. Depending on the size and nature of the accommodation, management as a complex may include providing services such as cleaning, catering, security, transport, health services, social support and communal recreation facilities.

On-site management considerations	Examples of good practice
Consideration 8: On-site management arrangements a. Effective on-site management contributes significantly to the quality and successful operation of accommodation, and minimises potential impacts on the local community. a. On-site management linked to employment arrangements can be most effectively maintained and administered on an on-going basis.	1. Key measures a. On-site management arrangements should be in place. The type of on-site management involved will depend on the size and nature of the complex. For example, for accommodation for less than 10 people, a nominated occupant could provide the on-site management role. For medium sized complexes, an appointed professional property manager could provide management services. For larger complexes, a full time live-in manager would be required. 2. Other considerations a. Depending on the size and nature of the project, a written management plan will set out all site management procedures and 'rules' including: i. roles and responsibilities ii. procedures for communication with neighbours and community iii. servicing, cleaning and maintenance arrangements iv. security and crime prevention measures v. drug and alcohol policy vi. management of transport of workers vii. health and safety measures viii. emergency management ix. animal control x. catering arrangements xi. noise management xii. on-site behaviour expectations xiii. management of disturbances

On-site management considerations	Examples of good practice
	xiv. parking management xv. public facility management xvi. management of requests and complaints. xvii. linking the on-site 'rules' to employment arrangements increases the status of those rules. It is possible to make this more formal link if occupancy is arranged through a specific employer.
Consideration 9: Support services a. Providing workers with broader support will help to improve the overall quality of accommodation and help to integrate them into the local community.	1. Other considerations a. Providing appropriate support services - for example, pastoral care and migrant support - is encouraged.

1.5 Guidelines for decommissioning

c. As the standard District Plan expectations are being varied to provide for this special type of accommodation, it is critical that the temporary buildings are removed so that each development is indeed temporary and does not permanently affect the environment. A decommissioning strategy will provide confidence that these buildings are genuinely temporary and will set up the mechanisms for their removal.

Decommissioning considerations	Examples of good practice
Consideration 10: Decommissioning strategy a. Workers' temporary accommodation will be assessed on the basis that it does not become permanent accommodation. b. An enforceable decommissioning strategy is a critical component of any workers' temporary accommodation project.	1. Key measures a. A decommissioning strategy should be in place to confirm the long-term plan for buildings, phasing of decommissioning and removal of buildings and how the site will be reinstated ready for its anticipated permanent use. b. All temporary units must be removed by 31 December 2022, or earlier. 2. Other considerations a. Building design should be a consideration in the decommissioning strategy to ensure design does not inhibit the implementation of the strategy. b. Use of legal instruments to assist making future owners aware of the removal requirement or provide an additional means of assuring removal are encouraged, for example an encumbrance may be registered. c. After it has been used for workers' temporary accommodation, a site may need to be remediated to make it suitable for its anticipated long-term use. d. If landscaping of the site has been completed, it may be possible to retain some or all of the landscaping at the reinstatement stage.

1.6 Guidelines for communicating with neighbours

d. It is important to keep adjoining neighbours and the wider neighbourhood informed about the project as it develops and also during operation so that a project can respond to perceived or actual concerns about the accommodation. Communication procedures will normally be part of the site management plan but are also a consideration during the design phase. While the new District Plan provisions may not require the approval of affected parties and may not require limited notification for a workers' temporary accommodation project, communicating with neighbours is encouraged.

Communication considerations	**Examples of good practice**
Consideration 11: Communication a. Communicating with neighbours throughout the design, development and operation of the accommodation project will help to contribute positively to the local neighbourhood and minimise effects on neighbours.	1. Other considerations a. A written communication statement or plan can identify: i. key points of contact for the accommodation project during the design, development and operation of the complex ii. contact details of immediate neighbours and any local neighbourhood groups iii. when neighbours will be notified and about what. b. Key times to notify neighbours may be during selection of the site, when the design is complete, when construction is due to start, when occupation commences, key phases of occupancy changes, and when decommissioning commences. More regular communication during operations may be appropriate depending on the size of the accommodation complex. c. Information that may be of interest to neighbours includes the design of the site, occupancy numbers, staffing, site management rules, on-site management arrangements, safety/security arrangements and occupants' employment locations. d. Information that may be of interest to occupants includes opportunities to participate in or support community activities, sport and other recreation activities or cultural activities. e. Larger accommodation projects may hold regular meetings or events with neighbours to discuss operational matters.

1.7 References for further information and guidance

The following information and guidance are either referred to in this guide or provided as additional references in considerations for the design, assessment and operation of temporary accommodation for workers.

Council information on planning and resource consent applications

Christchurch City Council:
http://www.ccc.govt.nz/homeliving/buildingplanning/resourceconsents/index.aspx

Selwyn District Council:
http://www.selwyn.govt.nz/services/planning

Waimakariri District Council:
http://www.waimakariri.govt.nz/services/planning-resource-consents.aspx

Information about the New Zealand Building Code

http://www.dbh.govt.nz/bcr-about-the-building-code

CPTED guidelines

National Guidelines for Crime Prevention through Environmental Design in New Zealand (Ministry of Justice, November 2005)

Part 1: Seven Qualities of Safer Places: http://www.justice.govt.nz/publications/global-publications/n/national-guidelines-for-crime-prevention-through-environmental-design-in-new-zealand-part-1-seven-qualities-of-safer-places-part-2-implementation-guide-november-2005/publication

Part 2: National Guidelines for Crime Prevention through Environmental Design in New Zealand Part 2: Implementation Guide: http://www.justice.govt.nz/publications/global-publications/n/national-guidelines-for-crime-prevention-through-environmental-design-in-new-zealand-part-2-implementation-guide

Other design guides

Non-resident worker accommodation: Guideline for locating and designing high quality accommodation facilities (Queensland Urban Land Development Authority, Guideline No. 3, August 2011)

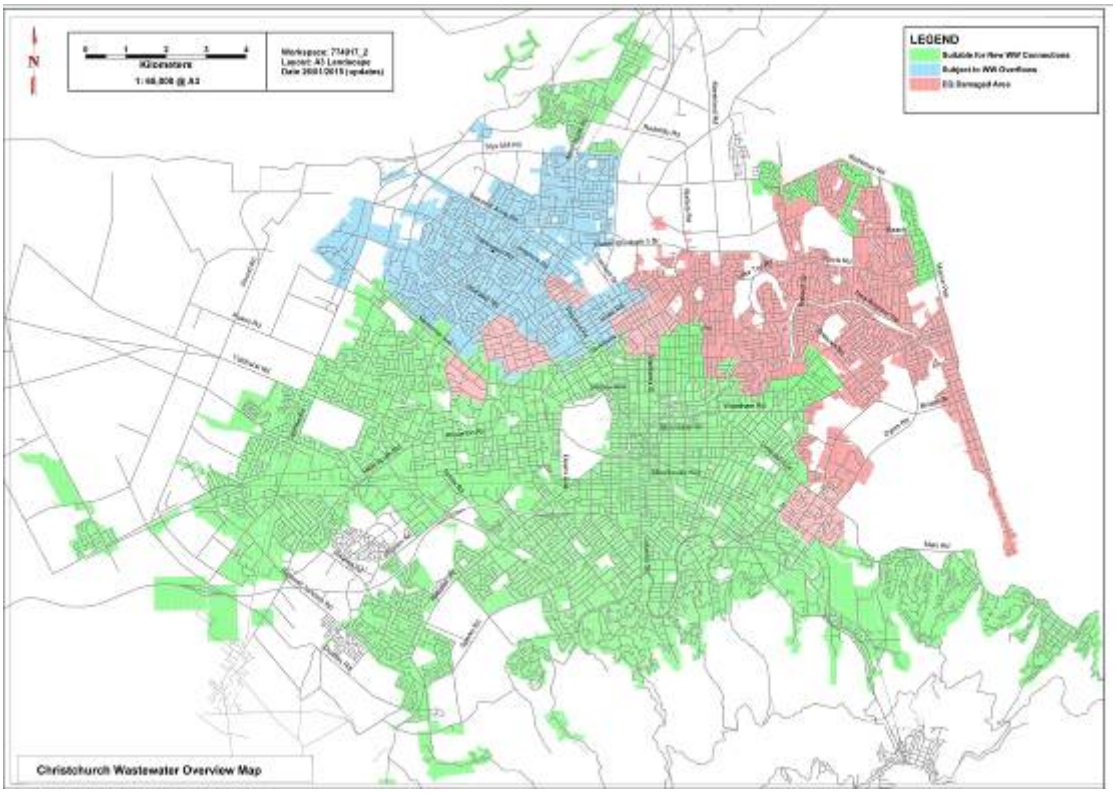
http://www.ulda.qld.gov.au/01_cms/details.asp?ID=157

Workers' accommodation, Processes and standards (International Finance Corporation and European Bank, November 2009)

http://www1.ifc.org/wps/wcm/connect/topics_ext_content/ifc_external_corporate_site/ifc+sustainability/publications/publications_gpn_workersaccommodation

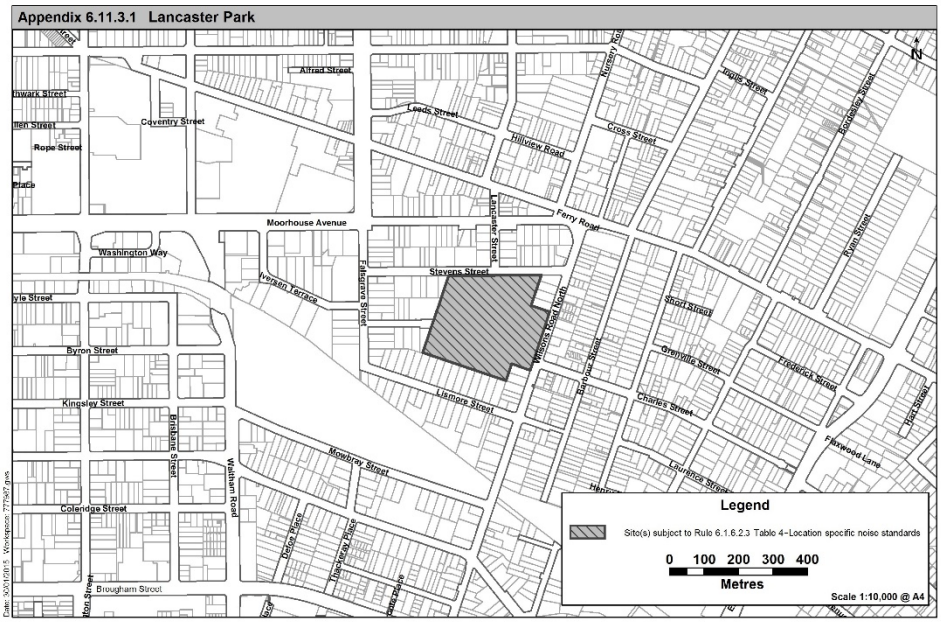
1.8 Christchurch Wastewater Overview Map

e. The following map is intended to provide general guidance on the status of the wastewater network as of January 2015. This information is subject to change over time. Current information on the capacity of the wastewater network is available from Council and should be sought at the time of application.

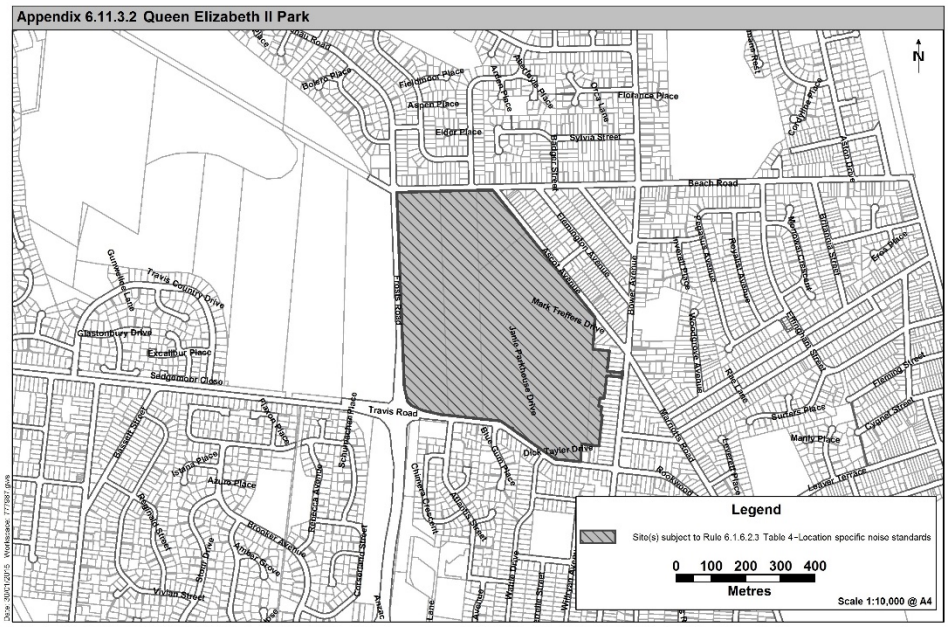

N
0 1 2 3 4
Kilometers
1:48,000 @ A3
Workspace: 774HT_2
Layout: A3 Landscape
Date 2001/2015 (updates)
LEGEND
Suitable for New WW Connections
Subject to WW Overflows
EQ Damaged Area
Christchurch Wastewater Overview Map

Appendix 6.11.3 Sites with Location-Specific Noise Rules — Maps

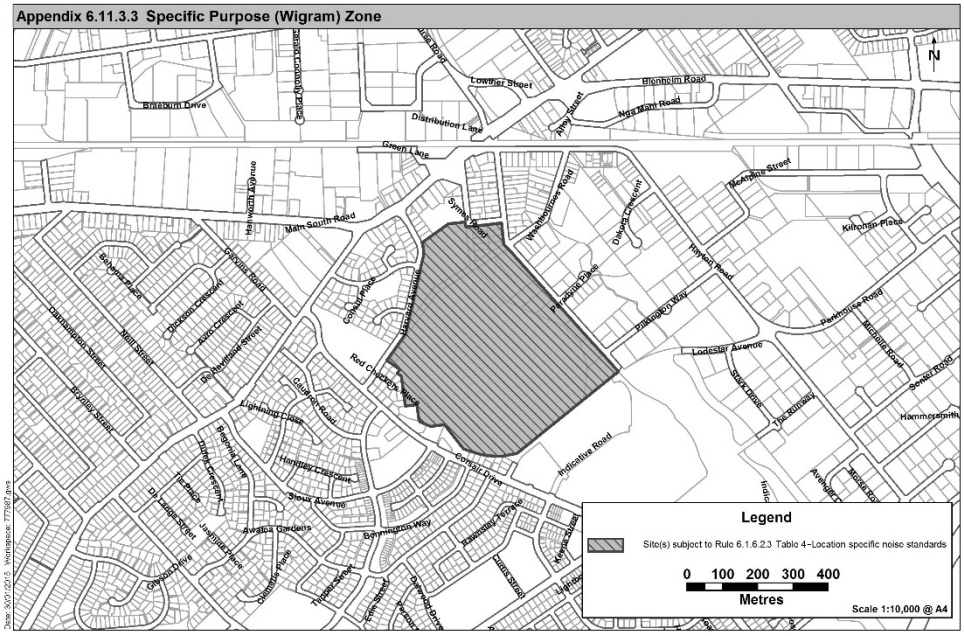
Appendix 6.11.3.1 Lancaster Park



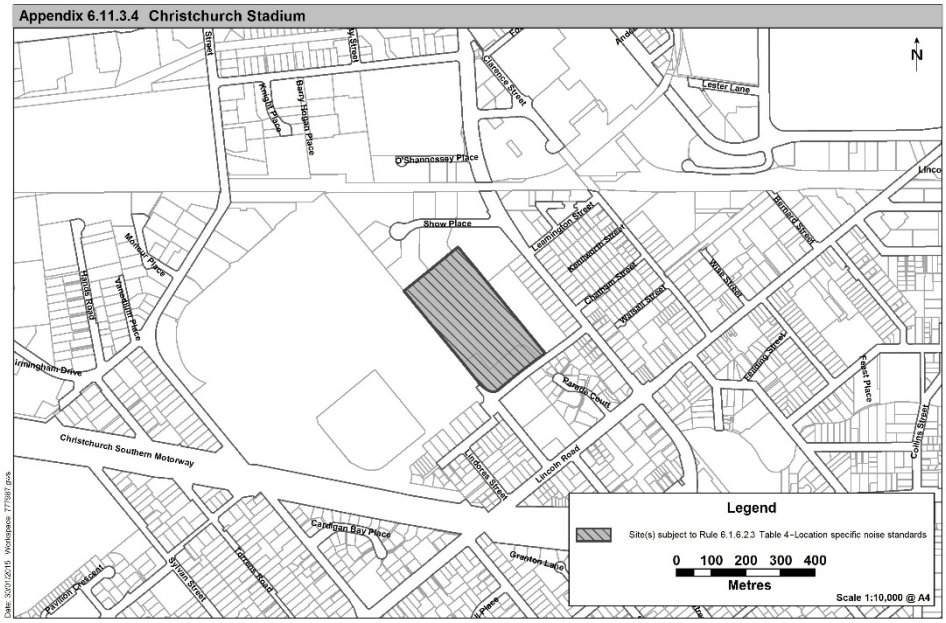
Appendix 6.11.3.2 Queen Elizabeth II Park



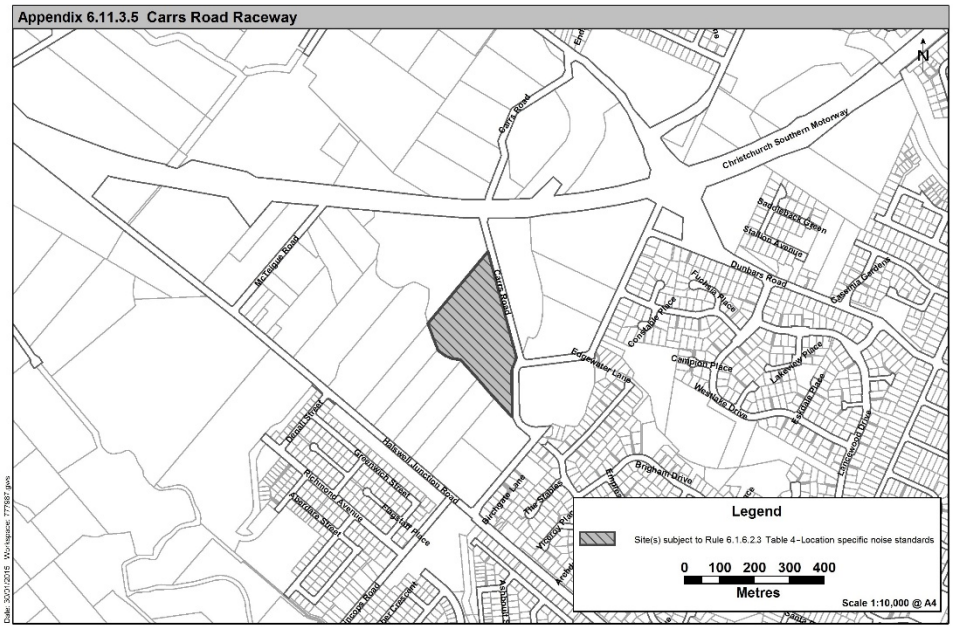
Appendix 6.11.3.3 Specific Purpose (Wigram) Zone



Appendix 6.11.3.4 Temporary Christchurch Stadium



Appendix 6.11.3.5 Christchurch Kart Club Raceway at Carrs Road



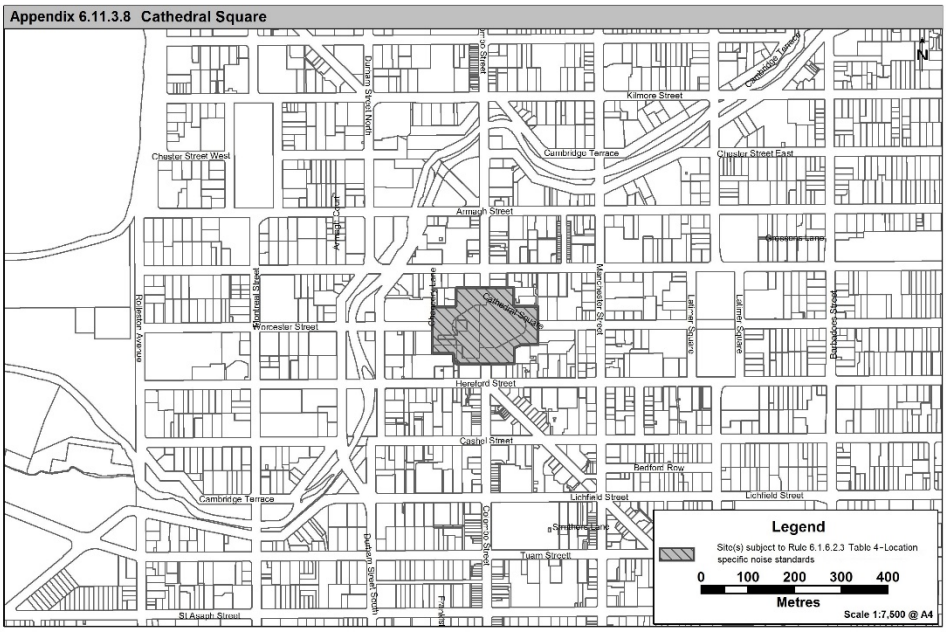
Appendix 6.11.3.6 Ruapuna Motorsport Park - Specific Purpose (Ruapuna Motorsport) Zone

For Ruapuna Motorsport Park - Specific Purpose (Ruapuna Motorsport) Zone, refer to Planning Maps 29A and 36A.

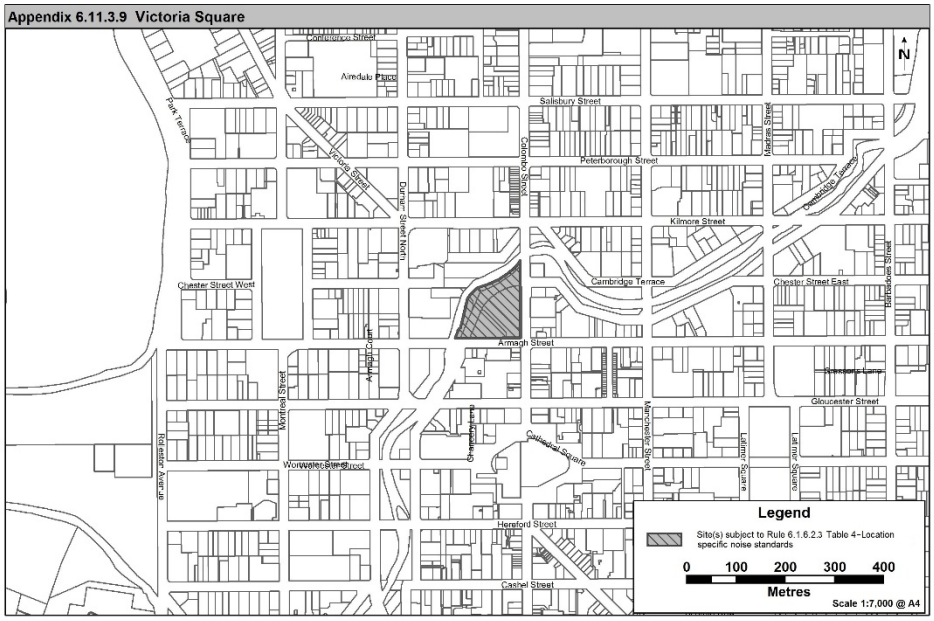
Appendix 6.11.3.7 Hagley Park and Botanic Gardens

Appendix 6.11.3.7 Hagley Park and Botanic Gardens

Appendix 6.11.3.8 Cathedral Square



Appendix 6.11.3.9 Victoria Square



Appendix 6.11.4 Noise Attenuation Construction Requirements

Appendix 6.11.4.1 Noise Attenuation Construction Requirements to achieve 30 dB Dtr,2m,nT,w + Ctr

Building Element	Minimum Construction Requirement
External walls of habitable spaces (refer Note 1)	Walls with cladding: Minimum not to be less than 25 kg/m2 being the combined mass of external and internal linings excluding structural elements (e.g. window frames or wall studs). Assumes minimum 100mm wall cavity. Minimum exterior cladding to be 20mm timber or 9mm compressed fibre cement sheet over timber frame (100mm x 200mm). Fibrous acoustic blanket (Batts or similar) required in cavity for all exterior walls. Interior: One layer of 13mm gypsum plasterboard (refer to Note 1 below). Mass walls: 190mm concrete block, strapped and lined internally with 9.5mm gypsum plaster board OR 150mm concrete wall.
Windows of habitable spaces (refer Note 2)	Windows of up to 35% of floor area: 10/12/6 double glazing or 14 mm laminate glass or glazing systems of equivalent acoustic performance.
	Window areas greater than 35% of floor area will require a specialist acoustic report to show conformance with the insulation rule.
	Frames to be new aluminium window frames with compression seals or equivalent.
Pitched roof (refer Note 3)	Cladding: 0.55mm profiled steel or tiles or 6mm corrugated fibre cement. Frame: Timber truss with 100mm acoustic blanket. Fibrous acoustic blanket (Batts or similar) required for all ceilings with combined mass of less than 25 kg/m2. Ceiling: 13mm gypsum plaster board.
Skillion roof (refer Note 3)	Cladding: 0.55mm profiled steel of 6mm fibre cement Sarking: 20mm particle board (no gaps). Frame: 100mm gap with acoustic blanket. Ceiling: two layers of 9.5mm gypsum plaster board (no through ceiling lighting penetrations unless correctly acoustically rated). Fibrous acoustic blanket (Batts or similar) required for all ceilings with combined mass 25kg/m2.
External Door to habitable spaces	Solid core door (min 24kg/m2) with weather seals (where the door is exposed to exterior noise).

Advice note:

1. Where exterior wall cladding has a mass of greater than 25kg/m2 (e.g. brick veneer or minimum 25mm stucco plaster), internal wall linings need to be no thicker than 10mm gypsum plasterboard.

2. Ventilation requirements shall be in compliance with Rule 6.1.7.2.1 a.viii.

3. In determining the insulation performance of roof/ceiling arrangements, roof spaces are assumed to have no more than the casual ventilation typical of the jointing, capping and guttering detail used in normal construction.

Appendix 6.11.4.2 Noise Attenuation Construction Requirements to achieve 35 dB Dtr,2m,nT,w + Ctr

Building Element	**Minimum Construction Requirement**
External walls of habitable spaces (refer Note 1)	Either: External cladding with a surface mass not less than 23 kg/m2; Ex 100 x 50 timber framing at 600 mm centres; Fibrous thermal insulation; Internal lining of one layer 13mm thick high density Gypsum board (minimum 12 kg/m2). Or: Any wall construction utilising at least 50 mm thick concrete; Secondary timber strapping or wall framing not less than 50 mm thick lined with at least 10 mm thick gypsum board; and Fibrous thermal insulation.
Windows of habitable spaces (refer Note 2)	4/12/4 thermal double glazing; with 6mm thick secondary pane at least 75mm from the outer glazing; and Windows to be new aluminium frames with fixed panes or opening sashes with full compression seals.
Pitched roof (refer Note 3)	Profiled longrun steel or tiles, with minimum steel thickness of 0.4mm; Timber trusses at minimum 800mm centres; Fibrous thermal insulation; and Ceiling lining of one layer 13mm thick high density Gypsum board (minimum 12kg/m2).
Skillion roof (refer Note 3)	Profiled long-run steel or tiles, with minimum steel thickness of 0.4mm; Timber framing at minimum 600 centres; Fibrous thermal insulation; Ceiling lining of two layers 13mm thick high density Gypsum board (minimum 12kg/m2 each layer); and Minimum cavity between roof and ceiling 200mm.
External door to habitable spaces	Specific acoustic design required.

Advice note:

1. Where exterior wall cladding has a mass of greater than 25kg/m2 (e.g. brick veneer or minimum 25mm stucco plaster), internal wall linings need to be no thicker than 10mm gypsum plasterboard.

2. Ventilation requirements shall be in compliance with 6.1.7.2.1 a.viii..

3. In determining the insulation performance of roof/ceiling arrangements, roof spaces are assumed to have no more than the casual ventilation typical of the jointing, capping and guttering detail used in normal construction.

Appendix 6.11.5 Water Body Classifications and Interpretation

Appendix 6.11.5.1 Characteristics of water body classifications

	Classification	Characteristics of water body
i.	Downstream waterway	• Downstream sections of large rivers with wide beds, continuous flow, extensive floodplains and, in many cases, tidal reaches. • Significant ecological values; or part of a catchment with significant ecological values and capable of enhancement or restoration. • Contribute significantly to the character and amenity values of the surrounding area and the district for the benefit of both the general public and private property owners. This contribution could include: landscape values; sense of openness and spaciousness; and recreational opportunities. • In many cases, significant cultural values and associations and either existing or the potential for mahinga kai and customary use.
ii.	Upstream waterway	• The upper to middle reaches of rivers and major streams with wide floodplains. The upper reaches may be intermittently dry but the middle reaches have continuous flow. • High ecological values including significant riparian planting; or part of a catchment with high ecological values and capable of enhancement or restoration. • High amenity values and landscape values providing a sense of openness and spaciousness; and, in some instances, recreational opportunities. • Potential cultural values and associations and opportunities for mahinga kai or customary use.
iii.	Environmental asset waterway	• Tributary or engineered waterways with some identifiable ecological and amenity values and/or a strong potential for enhancement. Some are intermittently dry. • Most environmental asset waterways have identifiable floodplains and may be susceptible to flood risk. • Moderate amenity values including spaciousness, privacy, tranquillity and natural landscape values.
iv.	Network waterway	• Generally engineered or modified waterways with limited existing ecological values but some potential for enhancement. • Flooding of surrounding land is generally a result of obstruction of the waterway rather than a significant natural floodplain. • Amenity values for property owners and immediate neighbours are generally incidental to the drainage functions of the waterway.
v.	Hill waterway	• See also the definition of "Hill waterway". • Steep waterways sometimes with seasonally dry channels.

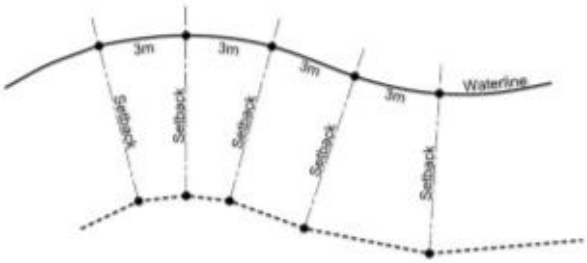
	Classification	Characteristics of water body
		• Wildlife values may be limited because of the steep gradient, past erosion and rapid and/or ephemeral flow of some of these waterways, however, well-developed riparian planting is necessary to control erosion. • Some hill waterways provide habitat and support ecological corridors to downstream receiving environments. • Hill waterways contribute to the open space and natural landscape character of the Port Hills and Banks Peninsula. • Potential in some instances for recreational and customary use opportunities.
vi.	Environmental asset standing water body	• Lakes or ponds with significant existing ecological values (or part of a catchment with significant ecological values and capable of restoration). • High amenity values and landscape values for the general public as well as private landowners, providing a sense of openness and spaciousness and recreational opportunities. • Potential cultural values and associations including opportunities for mahinga kai or customary use. • Provides water treatment, and therefore ecosystem functioning to immediate and downstream receiving environments
vii.	Banks Peninsula waterway	• This is an interim classification for rivers and streams on Banks Peninsula that do not meet the definition of hill waterways and have not already been otherwise classified.

Appendix 6.11.5.2 Measurement of water body setbacks

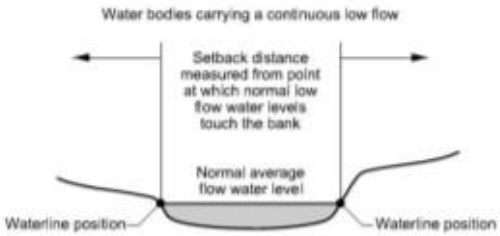
All water body setbacks specified shall be measured from:

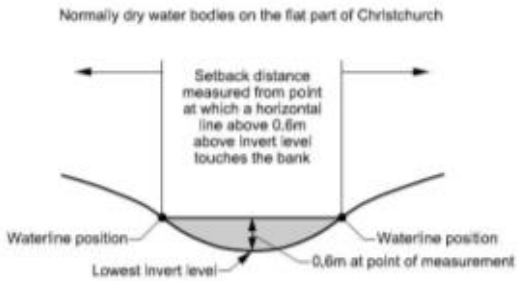
	Water body classification	Water body setback measured from:
a.	Upstream waterway; Downstream waterway; Environmental asset waterway; Network waterway	The bank of the water body (see Appendix 6.11.5.3 for interpretation)
b.	Hill waterway	The centreline of the waterway
c.	Environmental asset standing water body	The bank of the water body (see Appendix 6.11.5.3 for interpretation) except for constructed water bodies where the point at which the peak 1/50-year design water surface touches the banks should be used.

Appendix 6.11.5.3 Interpretation of banks of water bodies



Where the waterline position follows a meandering alignment setback distance shall be measured along a line that is as nearly as practicable radial to the curvature of the waterline, and at 3m intervals along the waterline as illustrated.

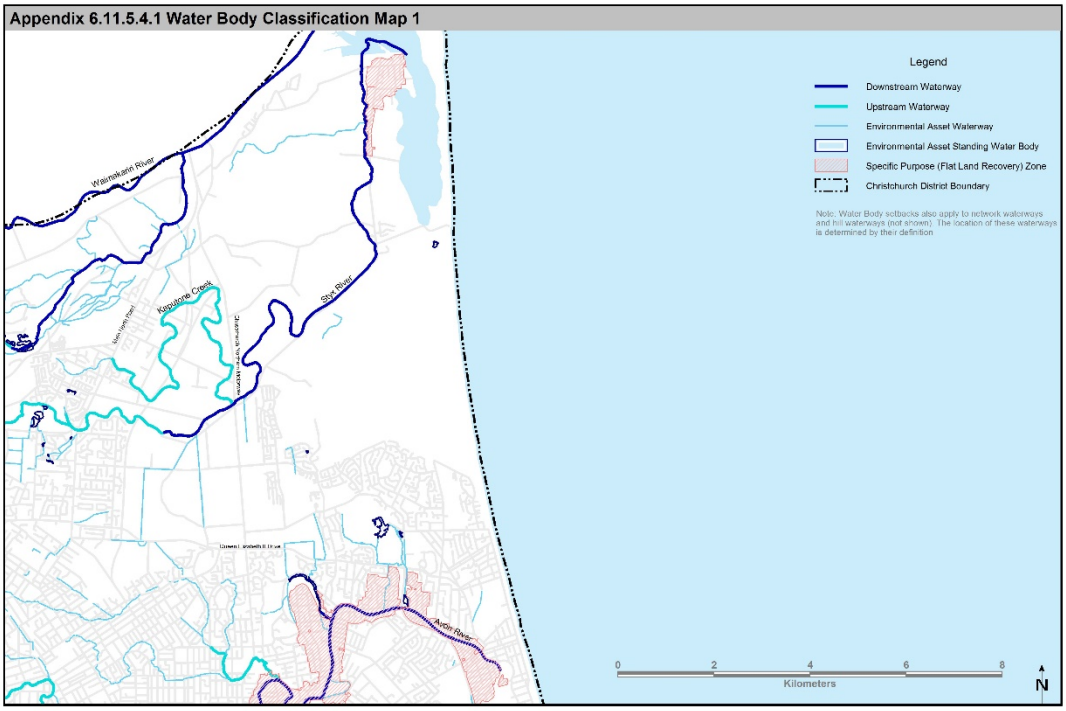




Measurement of bank of an environmental asset standing water body - The bank of an environmental asset standing water body shall be measured from the edge of the bed as defined in Section 2 of the Act.

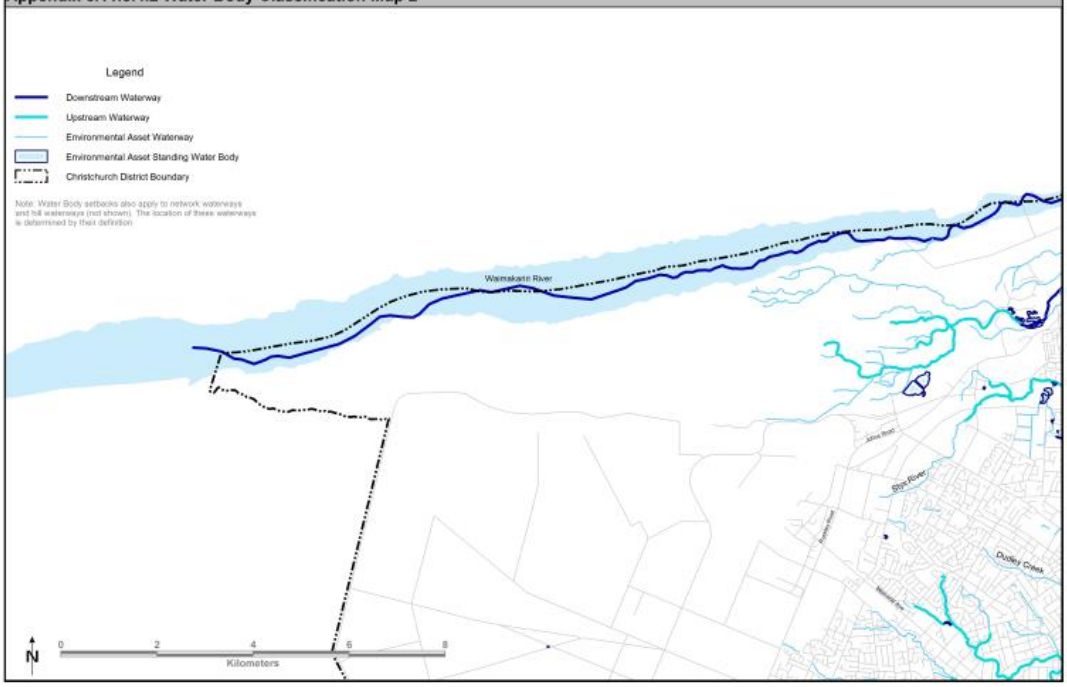
Appendix 6.11.5.4 Maps of Water Body Classifications

Appendix 6.11.5.4.1 Water Body Classification Map 1



784543.gws

Appendix 6.11.5.4.2 Water Body Classification Map 2



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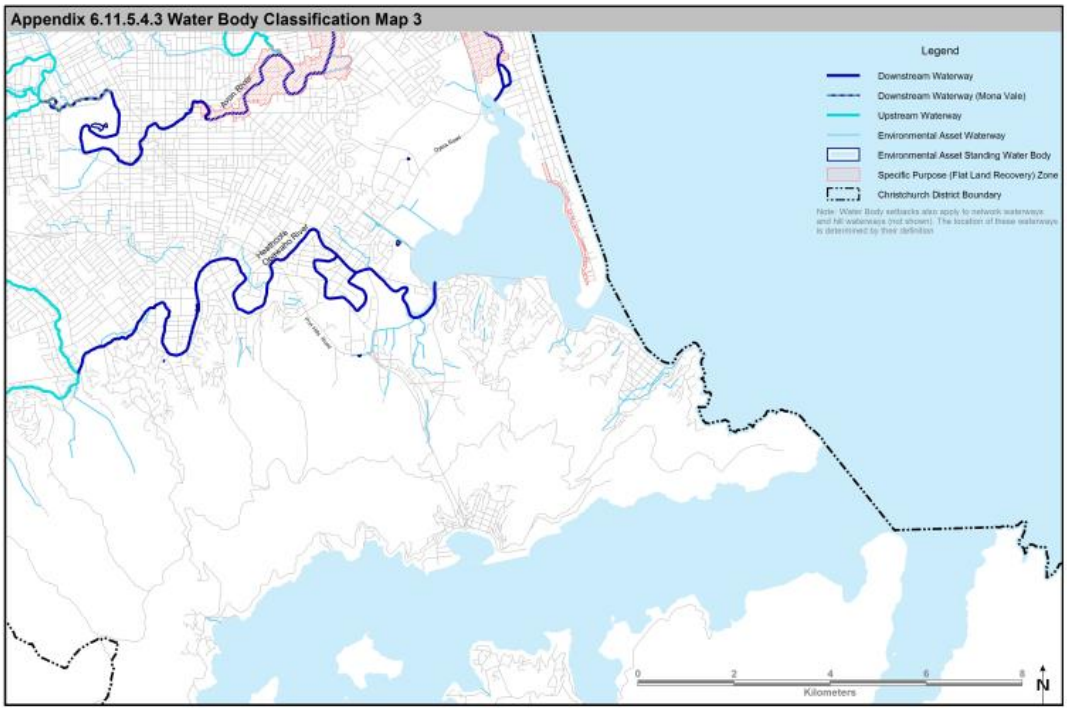
Appendix 6.11.5.4.3 Water Body Classification Map 3



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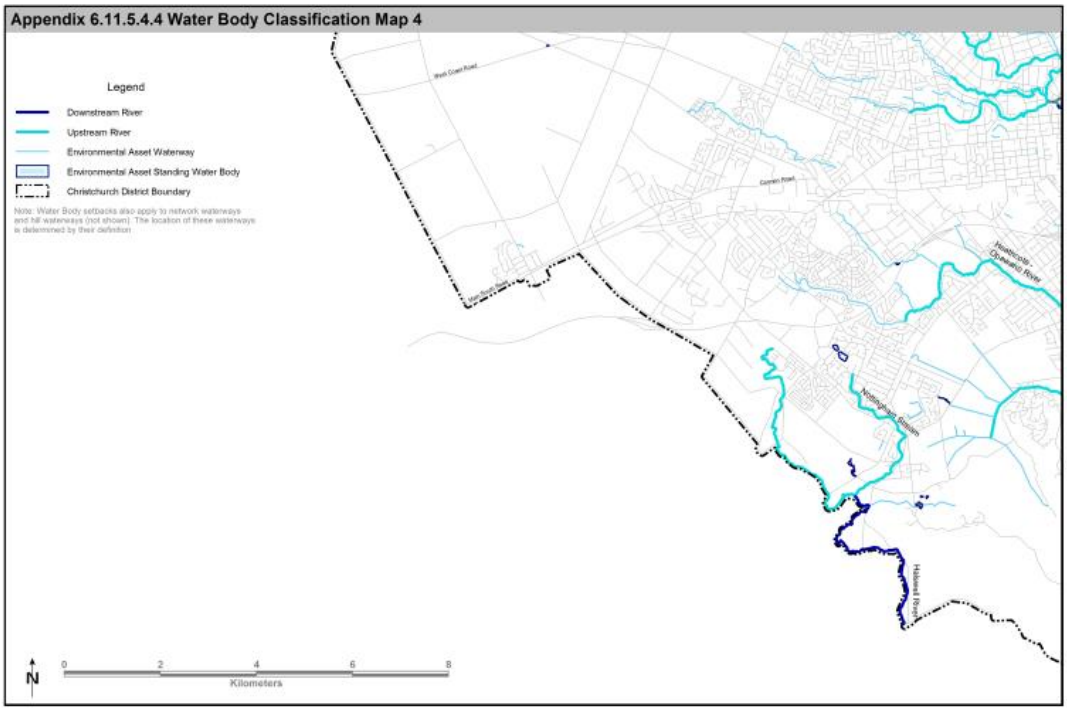
Appendix 6.11.5.4.4 Water Body Classification Map 4



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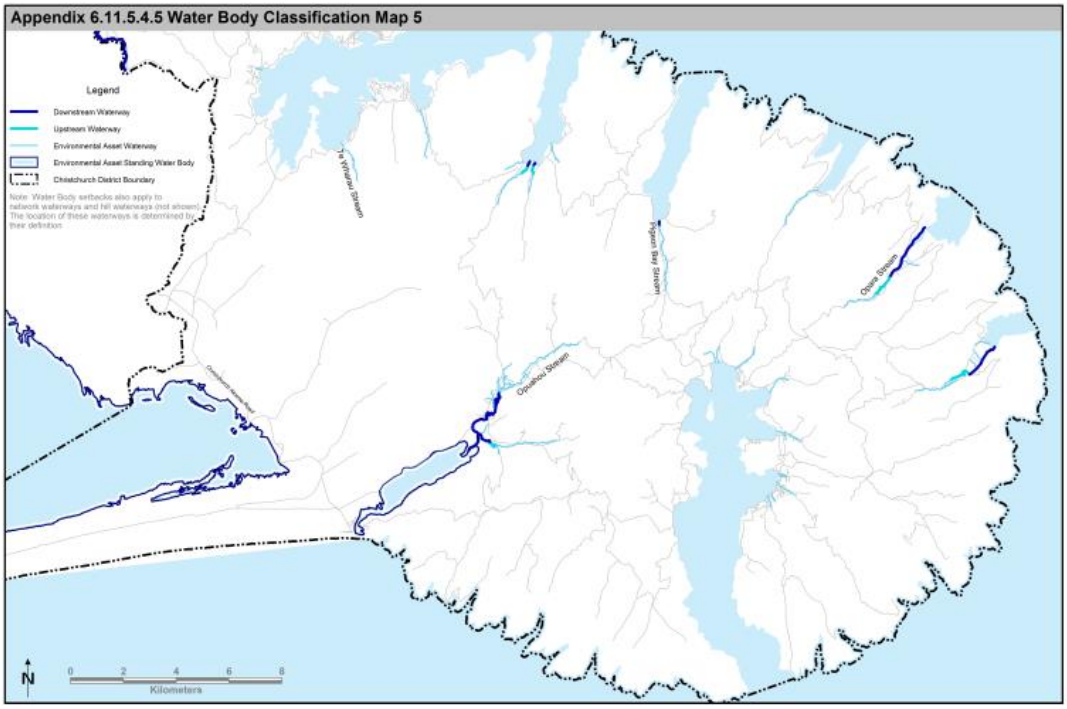
Appendix 6.11.5.4.5 Water Body Classification Map 5



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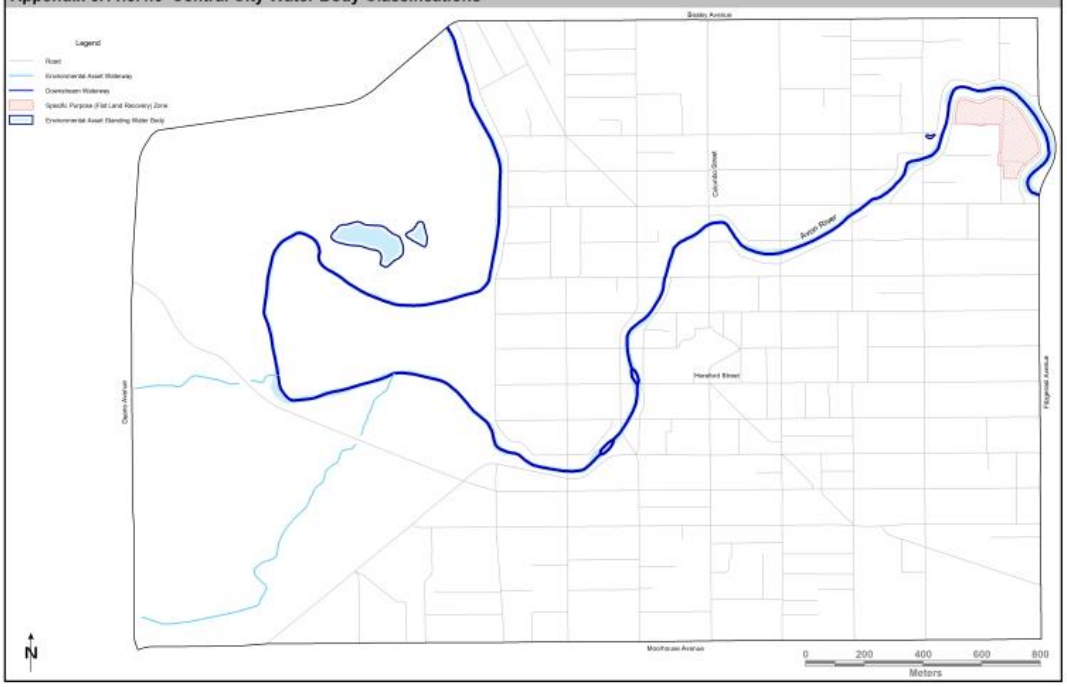
Appendix 6.11.5.4.6 Central City Water Body Classifications



Appendix 6.11.6 Landscaping and Tree Planting – Rules and Guidance

The provisions in Part B of this Appendix are for information and guidance only and are not statutory rules. They have been incorporated to assist in the choice of species suitable for planting in particular site conditions, and to help ensure the Council's requirements are successfully achieved.

Part A: Tree requirements - statutory requirements

1. Tree Size

a. Any tree required under landscaped area rules shall be:

   i. not less than two metres high at the time of planting;

   ii. a species capable of reaching a minimum height at maturity of eight metres.

Advice note: Trees listed in Part B of this appendix would meet this clause.

2. Tree protection

a. Any trees required under landscaped area rules shall be located within a landscaping strip, or within a planting protection area, with a minimum dimension or diameter of 1.5 metres.

b. No more than 10% of any landscaping strip required under landscaped area rules, or any planting protection area, shall be covered with any impervious surfaces.

c. Landscaping strips or planting protection areas adjacent to a road boundary, or adjacent to or within a parking area, shall be provided with wheel stop barriers to prevent damage from vehicles. Such wheel stop barriers shall be located at least one metre from any tree.

3. Maintenance of trees and landscaping

a. Any landscaping or trees required under landscaped area rules shall be maintained, and if dead, diseased, or damaged, shall be replaced.

4. Trees in the vicinity of the National Grid

a. Trees and vegetation planted in the vicinity of the National Grid shall be selected and maintained to ensure that the Electricity (Hazards from Trees) Regulations 2003 are not breached.

Part B: Tree species — information and guidance only, non-statutory requirements

a. The lists of trees and shrubs contained in Sections 1 to 3 of this Part are considered suitable for Christchurch conditions.

b. Section 2 of this Part specifies the suitability of the trees that meet the requirements in Part A for particular conditions, these being:

   i. trees suitable for moist/wet soil conditions;

   ii. trees suitable for dry soil conditions;

   iii. frost tender trees;

   iv. trees suitable for coastal areas;

   v. trees suitable for parking areas/paved areas etc;

   vi. trees susceptible to wind damage/breakages;

   vii. trees with an aggressive root system (relevant to driveways and underground services);

   viii. trees prone to common diseases.

c. More detailed descriptions and requirements for each tree can be obtained from various plant manuals or by seeking advice from the Council's City Arborist or Nursery Supervisor. It should be noted that the tree size ranges are estimates for trees that are planted in highly modified environments, e.g. streets, car parking areas, pedestrian malls, storm water swales. Trees planted in parks or large gardens are expected to grow larger.

d. The shrubs listed in Section 3 are considered suitable for planting between trees in landscaped strips.

Section 1 — Trees considered suitable for Christchurch conditions

1.1 Deciduous broadleaved trees

Common name	Botanical name	Height range	Canopy spread range
English oak	Quercus robur	15m-20m	10m-15m
Red oak	Quercus rubra	15m-20m	10m-15m
Hills oak	Quercus elipsoidalis	15m-20m	10m-15m
Scarlet oak	Quercus coccinea	15m-20m	10m-15m
Evergreen oak	Quercus ilex	15m-20m	10m-15m
Turkey oak	Quercus cerris	15m-20m	10m-15m
Algerian oak	Quercus canariensis	15m-20m	10m-15m
Willow oak	Quercus phellos	15m-20m	10m-15m

Common name	Botanical name	Height range	Canopy spread range
Sawtooth oak	Quercus acutissima	15m-20m	10m-15m
Turkish hazel	Corylus collurna	10m-15m	6m-10m
European beech	Fagus sylvatica	15m-20m	10m-15m
Copper or purple beech	Fagus sylvatica purpureum (and 'Riversii')	15m-20m	10m-15m
Weeping beech	Fagus sylvatica pendula	15m-20m	6m-10m
Dawyck beech	Fagus sylvatica 'Dawyck'	10m-15m	3m-6m
Purple Dawyck beech	Fagus sylvatica 'Dawyck Purple'	10m-15m	3m-6m
American beech	Fagus grandifolia	15m-20m	10m-15m
Common ash	Fraxinus excelsior	15m-20m	10m-15m
American ash	Fraxinus americana	15m-20m	10m-15m
Fraxinus 'Green Glow'	Fraxinus 'Green Glow'	15m-20m	10m-15m
Green ash	Fraxinus pennsylvanica	15m-20m	10m-15m
Golden ash	Fraxinus excelsior 'Jaspidea' (or 'Aurea')	15m-20m	10m-15m
Tupelo	Nyssa sylvatica	15m-20m	6m-10m
Horsechestnut	Aesculus hippocastanum	15m-20m	10m-15m
Seedless horsechestnut	Aesculus plantierensis	15m-20m	10m-15m
Walnut	Juglans regia	15m-20m	10m-15m
Common lime	Tilia x europaea	15m-20m	10m-15m
Large leaved lime	Tilia platyphyllos	15m-20m	10m-15m
Small leaved lime	Tilia cordata	15m-20m	10m-15m
Weeping silver lime	Tilia petiolaris	15m-20m	10m-15m
Silver lime	Tilia tomentosa	15m-20m	10m-15m
Liquidambar 'Worplesdon'	Liquidambar 'Worplesdon'	15m-20m	10m-15m
London plane	Platanus acerifolia	15m-20m	10m-15m
Oriental plane	Platanus orientalis	15m-20m	10m-15m
Autumn glory plane	Platanus orientalis insularis	15m-20m	10m-15m
Cut leaf plane	Platanus orientalis digitata	15m-20m	10m-15m
Norway maple	Acer platanoides	15m-20m	10m-15m
Variegated Norway maple	Acer platanoides 'Drummondii'	10m-15m	10m-15m
Acer 'Bloodgood'	Acer 'Bloodgood'	3m-10m	6m-10m
Trident maple	Acer burgerianum	15m-20m	10m-15m
Paper bark maple	Acer griseum	3m-10m	6m-10m

Common name	Botanical name	Height range	Canopy spread range
Field maple	Acer campestris	10m-15m	10m-15m
Red maple	Acer rubrum	15m-20m	10m-15m
Paper birch	Betula papyrifera	15m-20m	10m-15m
Black birch	Betula nigra	15m-20m	10m-15m
Swedish birch	Betula pendula dalecarlica	15m-20m	10m-15m
Himalayan birch	Betula jaquemontii	15m-20m	10m-15m
Tulip tree	Liriodendron tulipfera	15m-20m	15m-20m
Chinese tulip tree	Liriodendron chinensis	15m-20m	15m-10m
Maidenhair tree (male only)	Ginkgo biloba	15m-20m	6m-10m
Hornbeam	Carpinus betulus	15m-20m	10m-15m
Common alder	Alnus glutinosa	15m-20m	10m-15m
Italian alder	Alnus cordata	15m-20m	10m-15m
Grey alder	Alnus incana	15m-20m	10m-15m
Red alder	Alnus rubra	15m-20m	10m-15m
Indian bean tree	Catalpa bignonioides	15m-20m	10m-15m
Weeping willow	Salix babylonica	15m-20m	15m-20m
Golden weeping willow	Salix x chrysocoma	15m-20m	15m-10m

1.2 Coniferous trees

Common name	Botanical name	Height	Canopy spread range
Wellingtonia	Sequoiadendron giganteum	20m-25m	10m-15m
Californian redwood	Sequoia sempervirens	20m-25m	10m-15m
Spanish fir	Abies pinsapo	10m-15m	6m-10m
Atlantica cedar	Cedrus atlantica	15m-20m	10m-15m
Western red cedar	Thuja plicata	15m-20m	6m-10m
Swamp cypress	Taxodium distichum	15m-20m	6m-10m
Bhutan cypress	Cupressus torulosa	15m-20m	6m-10m
Monkey puzzle/ Chile pine	Araucaria araucana	15m-20m	6m-10m
Totara	Podocarpus totara	10m-15m	6m-10m
Dawn redwood	Metasequioia glyptostuoboides	15m-20m	6m-10m
Japanese cedar	Cryptomaria japonica	15m-20m	6m-10m

1.3 Other evergreens

Common name	Botanical name	Height range	Canopy spread range
Bay laurel	Laurus nobilis	10m-15m	6m-10m
Cork oak	Quercus suber	15m-20m	10m-15m
Evergreen or holm oak	Quercus Ilex	15m-20m	10m-15m
Bull bay	Magnolia grandiflora	10m-15m	6m-10m
Chusan palm	Trachycarpus fortunii	10m-15m	3m-6m

1.4 Palms

Common name	Botanical name	Height range	Canopy spread range
Chusan palm	Trachycarpus fortunii	10m-15m	3m-6m

1.5 Native trees

Common name	Botanical name	Height range	Canopy spread range
Totara	Podocarpus totara	10m-15m	6m-10m
Kahikatea/white pine	Podocarpus dacrydioides	10m-15m	6m-10m
Rimu	Dacrydium cupressinum	10m-15m	6m-10m
Red beech	Nothofagus fusca	10m-15m	6m-10m
Silver beech	Nothofagus menziesii	10m-15m	6m-10m
Black beech	Nothofagus solandri var. solandri	10m-15m	6m-10m
Mountain beech	Nothofagus solandri var. cliffortiodes	10m-15m	6m-10m
Miro	Prumnopitys ferruginea	10m-15m	3m-6m
Matai	Prumnopitys taxifolia	10m-15m	3m-6m
Pohutukawa	Metrosideros excelsa	TBC	TBC

Section 2- Suitability of trees for particular conditions

2.1 Trees for wet soil conditions

(in order of tolerance to wetness)

Common name	Botanical name	Height range	Canopy spread range
Swamp cypress	Taxodium distichum	15m-20m	6m-10m
Moosewood	Acer pensylvanicum	15m-20m	10m-15m
Red maple	Acer rubrum	15m-20m	10m-15m
Tupelo	Nyssa sylvatica	15m-20m	6m-10m
Kahikatea/ White pine	Dacrycarpus acrydioides	10m-15m	6m-10m
Alder (most species)	Alnus species	15m-20m	10m-15m
Hills oak	Quercus elipsoidalis	15m-20m	10m-15m
English oak	Quercus robur	15m-20m	10m-15m
Black birch	Betula nigra	15m-20m	10m-15m
Willow (most species)	Salix species	15m-20m	15m-20m
Lombardy poplar(shelterbelts)	Populus italica ‘Nigra’	15m-20m	6m-10m
Common ash	Fraxinus excelsior	15m-20m	10m-15m
Green ash	Fraxinus pennsylvanica	15m-20m	10m-15m
Dawn redwood	Metasequoia glyptostroboides	15m-20m	6m-10m

2.2 Trees suitable for dry soil

Common name	Botanical name	Height range	Canopy spread range
Native			
Totara	Podocarpus totara	10m-15m	6m-10m
Exotic			
Field maple	Acer campestre	10m-15m	10m-15m
Norway maple	Acer platanoides	15m-20m	10m-15m
Indian horse chestnut	Aesculus indica	15m-20m	10m-15m
Hornbeam	Carpinus betulus	10m-15m	10m-15m
Atlantic cedar	Cedrus atlantica	15m-20m	10m-15m
Hop hornbeam	Ostrya carpinifolia	10m-15m	6m-10m
Mediterranean hackberry	Celtis australis	15m-20m	6m-10m

Common name	Botanical name	Height range	Canopy spread range
American hackberry	Celtis occidentalis	15m-20m	6m-10m
Bay laurel	Laurus nobilis	10m-15m	6m-10m
Algerian oak	Quercus canariensis	15m-20m	10m-15m
Hills oak	Quercus elipsoidalis	15m-20m	10m-15m
Turkey oak	Quercus cerris	15m-20m	10m-15m
Cork oak	Quercus suber	15m-20m	10m-15m
Evergreen oak	Quercus ilex	15m-20m	10m-15m
Californian redwood	Sequoia sempervirens	15m-20m	10m-15m
Alder (tolerant of dry and wet soils)	Alnus species	15m-20m	10m-15m
Arizona ash	Fraxinus velutina	15m-20m	10m-15m

2.3 Frost tender trees suitable for Sumner, Redcliffs and frost free hill areas

Common name	Botanical name	Height range	Canopy spread range
Scarlet gum	Eucalyptus ficifolia	3m-10m	6m-10m
Monkey puzzle	Araucaria araucana	15m-20m	6m-10m
Pohutukawa	Metrosideros excelsa	10m-15m	10m-15m

2.4 Trees suitable for Christchurch coastal areas

Common name	Botanical name	Height range	Canopy spread range
Native			
Totara	Podocarpus totara	10m-15m	6m-10m
Matai	Prumnopitys taxifolia	10m-15m	3m-6m
Exotic			
Field maple	Acer campestre	10m-15m	10m-15m
Horse chestnut	Aesculus hippocastanum	15m-20m	10m-15m
Monkey puzzle	Araucaria araucana	15m-20m	6m-10m
Japanese cedar	Cryptomeria japonica	15m-20m	6m-10m
Common ash	Fraxinus excelsior	15m-20m	10m-15m
Bay laurel	Lauris nobilis	10m-15m	6m-10m
Bull bay	Magnolia grandiflora	10m-15m	6m-10m
Oriental plane	Platanus orientalis	15m-20m	10m-15m

Common name	Botanical name	Height range	Canopy spread range
Cork oak	Quercus suber	15m-20m	10m-15m
Evergreen holm oak	Quercus ilex	15m-20m	10m-15m
Algerian oak	Quercus canariensis	15m-20m	10m-15m
English oak	Quercus robur	15m-20m	10m-15m
Cork oak	Quercus suber	15m-20m	10m-15m
Californian redwood	Sequoia sempervirens	20m-25m	10m-15m
Macrocarpa (shelterbelts only)			
Western red cedar			
Monterey pine (shelterbelts only)	Pinus radiata	15m-20m	15m-20m
Maritime pine (shelterbelts only)	Pinus pinaster	15m-20m	10m-15m
Stone pine (shelter belts only)	Pinus pinea	15m-20m	10m-15m
Norfolk pine	Araucaria heterophylla	15m-20m	10m-15m
Whitebeam	Sorbus aria‘Lutescens’	10m-15m	6m-10m

2.5 Trees suitable for car parks, paved surfaces and buildings

Common name	Botanical name	Height range	Canopy spread range
Common lime	Tilia x europaea	15m-20m	10m-15m
Large leaved lime	Tilia platyphyllos	15m-20m	10m-15m
Silver lime	Tilia tomentosa	15m-20m	10m-15m
Tulip tree	Liriodendron tulipfera	15m-20m	15m-20m
Mediterranean hackberry	Celtis australis	15m-20m	6m-10m
American hackberry	Celtis occidentalis	15m-20m	6m-10m
Field maple	Acer campestre	15m-20m	10m-15m
Norway maple	Acer platanoides	15m-20m	10m-15m
Variegated norway maple	Acer platanoides‘Drumondii’	10m-15m	10m-15m
Red maple	Acer rubrum	15m-20m	10m-15m
Fraxinus ‘Green Glow’	Fraxinus ‘Green Glow’	15m-20m	10m-15m
Green ash	Fraxinus pennsylvanica	15m-20m	10m-15m
American ash	Fraxinus americana	15m-20m	10m-15m
Common ash	Fraxinus excelsior	15m-20m	10m-15m
London plane	Platanus acerifolia	15m-20m	10m-15m
Oriental plane	Platanus orientalis	15m-20m	10m-15m

Common name	Botanical name	Height range	Canopy spread range
Algerian oak	Quercus canariensis	15m-20m	10m-15m
English oak	Quercus robur	15m-20m	10m-15m
Liquidambar‘Worplesdon’	Liquidambar ‘Worplesdon’	15m-20m	10m-15m
Tupelo	Nyssa sylvatica	15m-20m	6m-10m

2.6 Trees particularly susceptible to wind damage/branch breakage

Common name	Susceptibility
Wattle	Weak branch unions
Acer negundo (box elder)	Brittle branches, weak branch unions
Agonis (myrtle)	Weak branch unions
Banksia integrifolia	Weak branch unions
Eucalyptus	Heavy end weighted branches can cause branch breakage, summer branch drop
Gleditsia triacanthos (honey locust)	Weak branches
Paulownia tomentosa (epaulette tree)	Weak branch unions, brittle branches
Poplar	Weak branch unions
Liquidambar	Heavy weak branch forks and brittle timber prone to wind damage when in full leaf
Claret ash (and other ash species excepting common and manna ash)	Weak forks, brittle timber
Willow (all species)	Brittle timber, heavy foliage, summer branch drop
Pinus radiata	Wind and snow damage
Cupressus macrocarpa	Wind and snow damage
Cedar (all species)	May suffer loss of large branches in winds and snow when mature

The above trees should not be precluded from plantings entirely but thought should be given to siting them in more sheltered positions away from buildings and public thoroughfares.

2.7 Trees with particularly aggressive root systems

a. The roots of all trees have the potential to cause damage to structures, underground services and sealed/paved surfaces if planted too close to them. For example, most trees have a tendency to develop roots under shallow sealed surfaces often causing cracking or lifting.

b. Properly constructed planting pits that allow for adequate root growth along with the use of a combination of structural soils (or root cells) and permeable asphalt

surrounding the planting pit will alleviate this problem. Please contact the Council's City Arborist for more information.

c. The roots of all trees will follow moisture trails from leaking drainage systems (usually old earthenware pipes) and enter them. However, most modern drainage pipes made of synthetic materials with greatly improved joint sealing should be able to withstand all but the direct expansion pressure of trees growing right next to them. In addition tree roots will not extend in to heavily compacted soils. Soils around underground services need to be heavily compacted so that roots will not enter them. To be on the safe side, medium to large sized trees should be situated at least 3.0 metres from all drainage pipes except that if a tree root barrier is used then trees can be planted up to 1.5 metres from drainage pipes. A modern reinforced concrete slab building foundation constructed to withstand earthquake forces should not be affected by tree roots, except possibly where a larger tree is growing right against it. The older type of foundation, which ran around the perimeter of the building only, is much more at risk and even smaller growing trees should not be planted too close.

d. Commonly planted tree species more frequently associated with damage to the above structures are as follows:

   i. Willows

   ii. Poplars

   iii. Eucalyptus

   iv. Pinus radiata

   v. Cuppressus macrocarpa

   vi. Horsechestnut

   vii. Maples and sycamore

   viii. Ash.

2.8 Trees prone to diseases common in Christchurch

Common name	**Diseases prone to**
Ornamental crabapples, plums, cherries and rowans etc	Silver leaf disease, particularly when pruned or wounded
Cypress, thuja, juniper (and forms)	Leaf webber insect
Cypress, thuja, juniper (and forms)	Cypress canker
Native lacebark	Gall mite
London plane	Anthracnose (leaf and twig blight)
Cherry, pear, plum	Flowering thorns and white beam cherry/pear slug
Weeping willow	Honey fungus root rot
Upright willow	Bacterial die-back
Spruce	Needle/leaf defoliating insect

Common name	Diseases prone to
Wattles (Racosperma dealbata & baileyana)	Rust fungi galls
Maple	Formopsis (twig dieback)

2.9 Trees suitable for shelter belts and tree planting for visual screening of quarry activities

Common Name	Botanical Name
Atlantic cedar	Cedrus atlantica
Deodar Cedar	Cedrus deodara
Lawsons Cypress	Chamaecyparis lawsoniana
Japanese Red Cedar	Cryptomeria japonica
Monterey Cypress	Cupressus macrocarpa
Southern Mahogany	Eucalyptus botrioides
White Peppermint Gum	Eucalyptus linearis
Monterey Pine	Pinus radiata
Lemonwood	Pittosporum eugenioides
Kohuhu	Pittosporum tenuifolium
Totara	Podocarpus totara
Lombardy Poplar	Populus italica
Chinese Willow	Salix matsudana
Leyland Cypress	X Cuprocyparis leylandii

Section 3: Species of shrubs for planting in landscaping strips – information and guidance only, non-statutory requirements

Common name	Botanical Name
Native Shrubs	
	Astelia spp
	Brachyglottis greyi
	Chionocloa flavicans
	Coprosma spp
	Corokia spp
	Hebe spp
Whiteywood	Melicytus ramiflorus
Red matipo	Myrsine australis

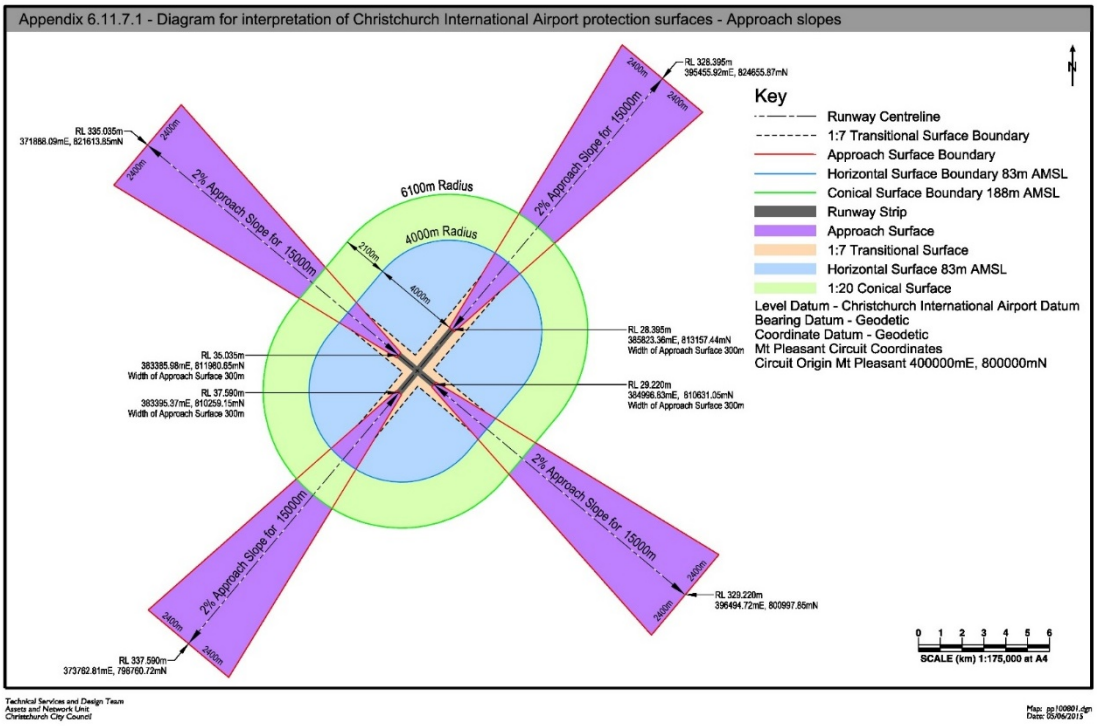
Common name	Botanical Name
Kawakawa	Piper excelsum
	Pittosporum ‘Mountain Green’
Five finger	Pseudopanax arboreus
	Pseudopanax ‘Cyril Watson’
Lancewood	Pseudopanax crassifolius
Toothed Lancewood	Pseudopanax ferox
	Pseudowintera ‘Red Leopard’
Prostrate Kowhai	Sophora prostrata
Exotic Shrubs	
	Abelia spp
	Acer spp
Japanese laurel	Aucuba japonica
Barbary	Berberis spp
	Boronia spp
Bottlebrush	Callistemon spp
Camelia	Camelia spp
Carpet rose	Rosa ‘Carpet Rose’
	Ceanothus spp
Chinese plumbago	Ceratostigma willmotianum
Mexican orange blossom	Choisya ternata
Breath of heaven	Coleonema pulchrim
	Correa spp
Winter Hazel	Corylopsis spicata
Smoke bush	Cotinus spp
	Daphne spp
	Deutzia spp
	Erica spp
	Escallonia spp
Japanese laurel	Fatsia japonica
	Forsythia spp
	Gardenia spp
	Hydrangea spp
	Leucodendron spp

Common name	Botanical Name
	Leucospermum spp
	Loropetalum spp
Star Magnolia	Magnolia stallata
	Michelia doltsopa
Port Wine Michelia	Michelia figo
	Nandina ‘Gulf Stream’
Red Robin	Photonia x fraseri
Lily of the Valley	Pieris japonica
	Protea spp
	Rhododendron
Rosemary	Rosmarinus officinalis
Waratah	Telopea spp
	Weigelia florida
Shrubs for Low Screening (3 metres-5 metres height)	
Natives	
Taupata	Coprosma repens
Ake ake	Dodonea viscosa
Purple ake ake	Dodonea viscosa ‘Purpurea’
Broadleaf	Griselinia spp
Narrow leafed houhere	Hoheria angustifolia
Kanuka	Kunzea ericoides
Whiteywood	Melicytus ramiflorus
Manuka	Leptospermum scoparium
Fragrant olearia	Olearia fragrantissima
Mountain holly	Olearia ilicifolia
Golden akeake	Olearia paniculata
Kawakawa	Piper excelsum
Lemonwood	Pittosporum eugenoides
Kohupu	Pittosporum tenuifolium
Karo	Pittosporum crassifolium
Exotics	
Bottlebrush	Callistemon spp
Camelia	Camelia spp

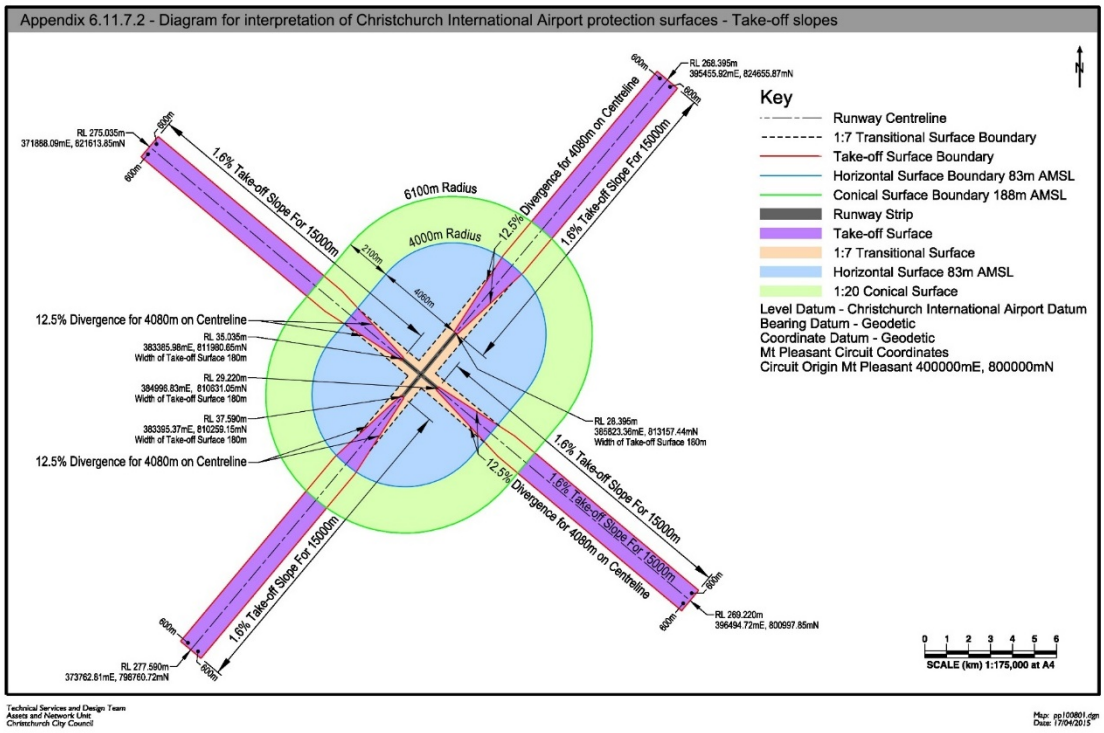
Common name	Botanical Name
	Ceanothus spp
Smoke bush	Cotinus spp
Japanese aralia	Fatsia japonica
	Michelia doltsopa
Red robin	Photonia x fraseri
	Protea spp
	Rhododendron

Appendix 6.11.7 Aircraft Protection – Diagrams and Maps

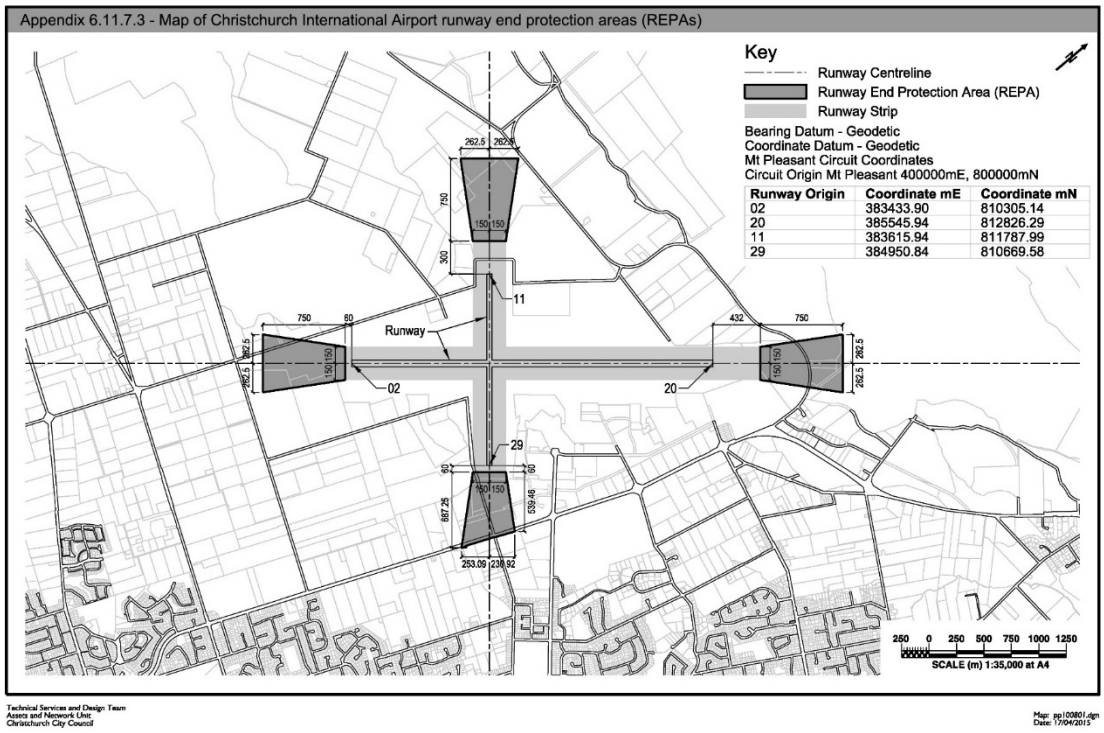
Appendix 6.11.7.1 Diagram for Interpretation of Christchurch International Airport Protection Surfaces - Approach Slopes



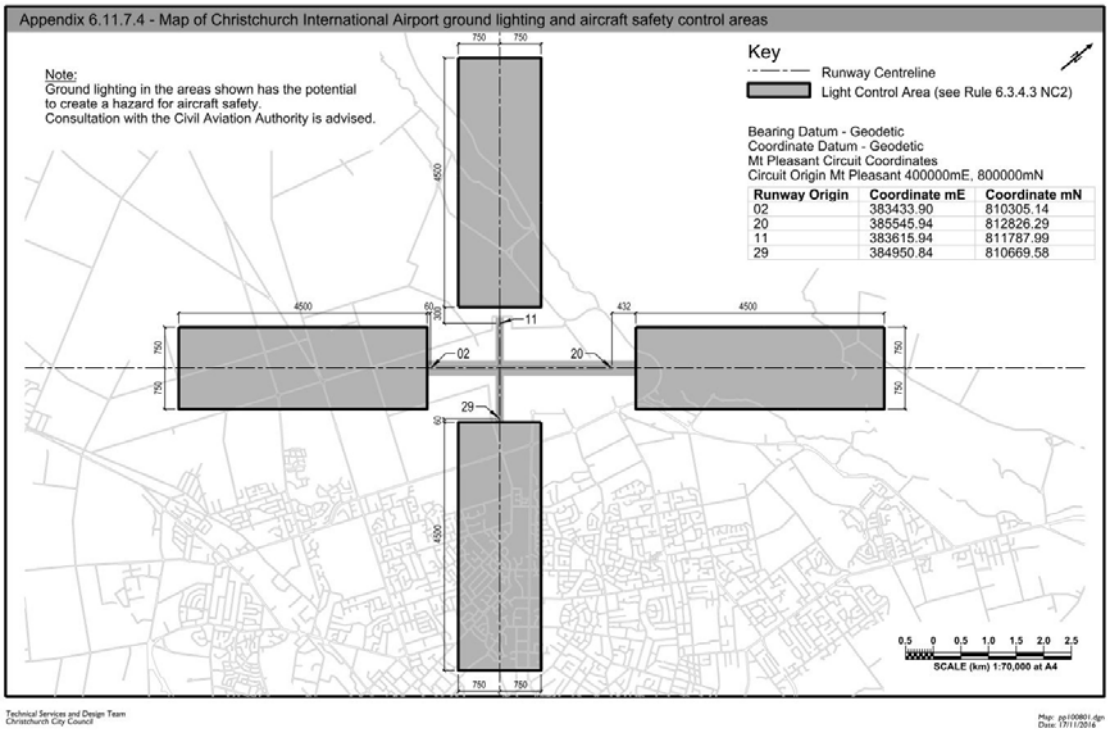
Appendix 6.11.7.2 Diagram for Interpretation of Christchurch International Airport Protection Surfaces – Take-off Slopes



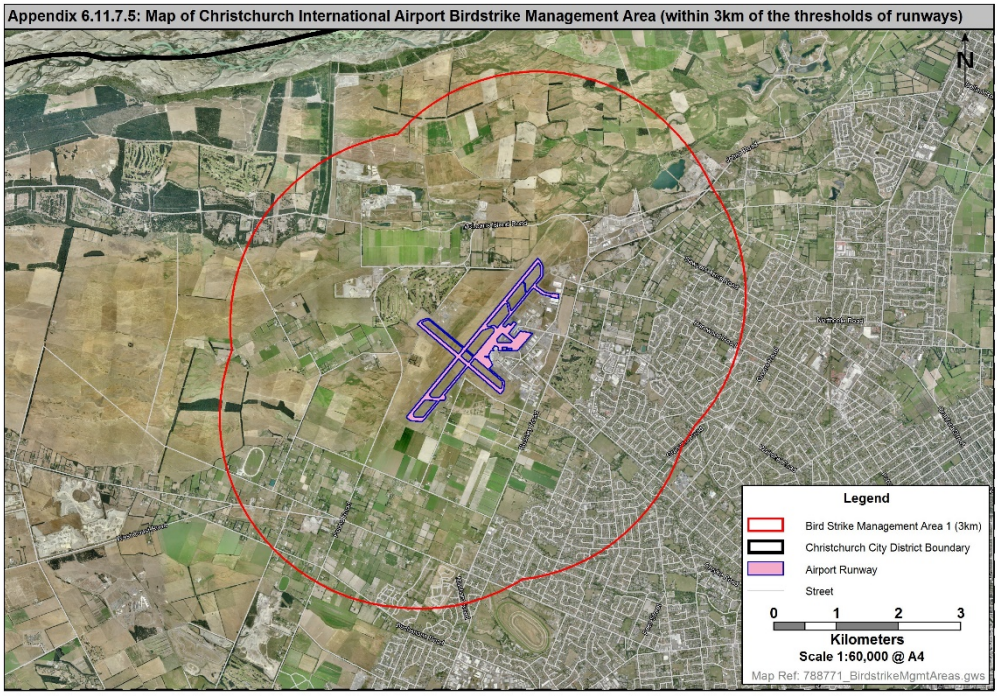
Appendix 6.11.7.3 Map of Christchurch International Airport Runway End Protection Areas (REPAs)



Appendix 6.11.7.4 Map of Christchurch International Airport Ground Lighting and Aircraft Safety Control Areas

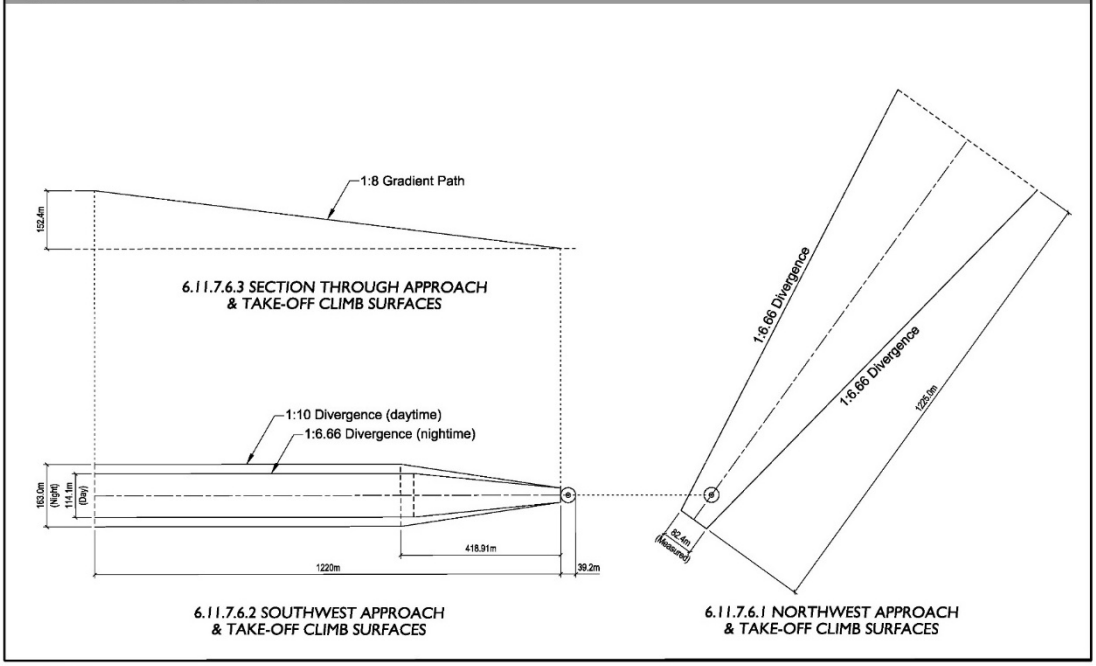


Appendix 6.11.7.5 Map of Christchurch International Airport Birdstrike Management Area (within 3km of the thresholds of the runways)



Appendix 6.11.7.6 Diagram of Defence Wigram Protection Surfaces

Appendix 6.11.7.6 - Diagram of Wigram Airfield protection surfaces

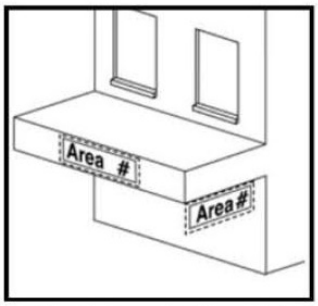


Capital Assets Delivery Team
Off-Assets and Network Unit
Christchurch City Council

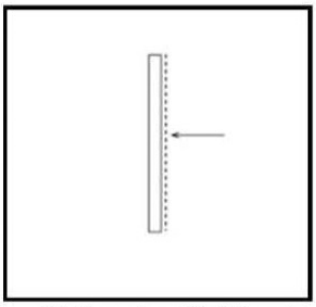
Map: pp101401.dgn
Date: 05/06/2015

Appendix 6.11.8 Signage

Diagrams



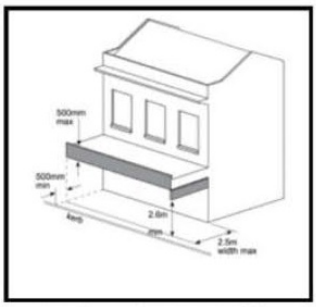
1. Imaginary rectangle enclosing a sign



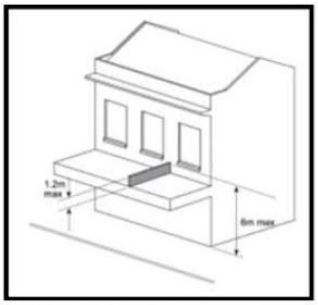
2. Display on two sided sign where area calculated as being one side or face only.

Note: Plan view looking on top of display

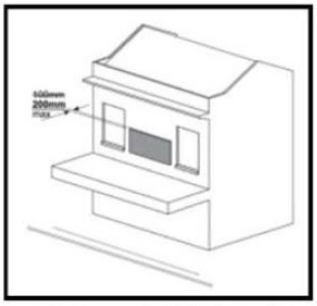
3. Sign conflicts with architectural features



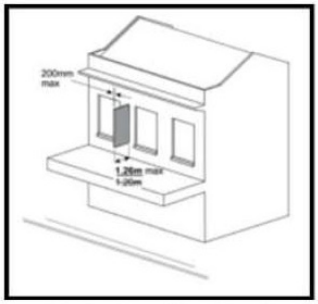
4. Display under a verandah
Display on the face of a verandah



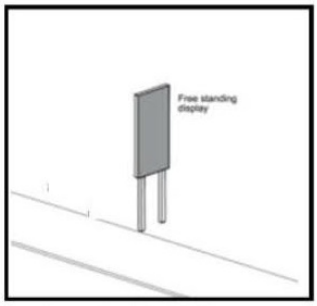
5. Display fixed above a verandah



6. Display against the face of a building



7. Display projecting from the face of a building



8. Free standing display

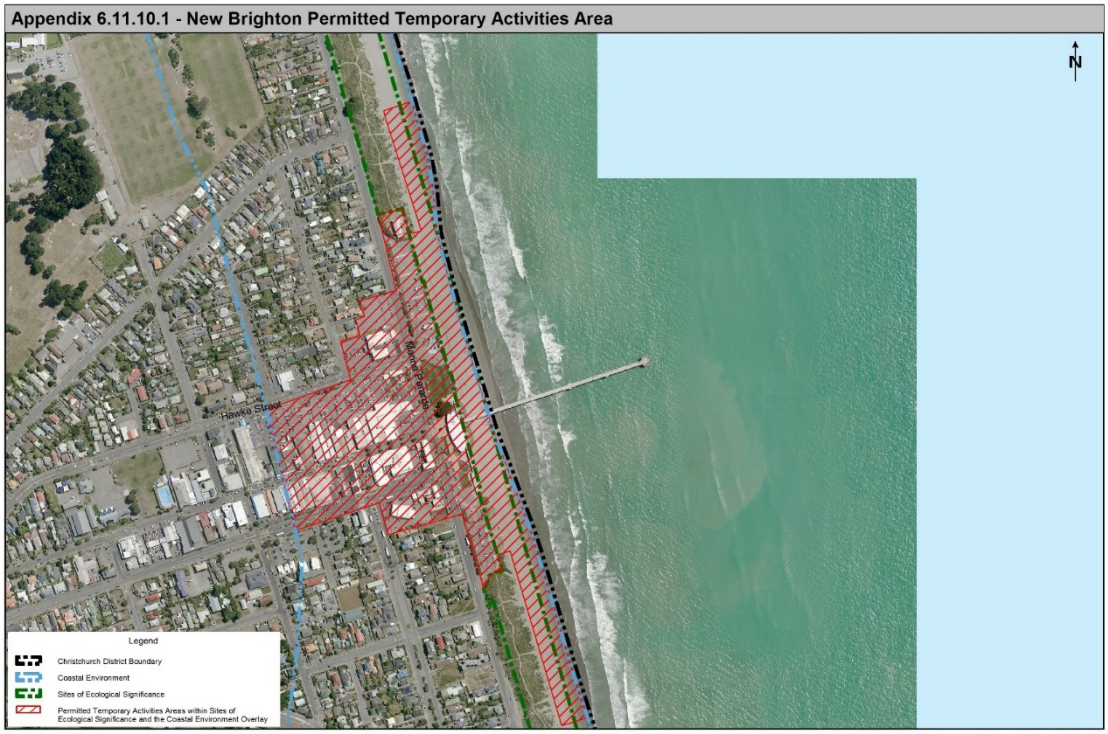
Appendix 6.11.9 Plant Species for Water Bodies and Stormwater Basins in the Birdstrike Management Area in Appendix 6.11.7.5

Edge of Water body / Stormwater basin	
Botanical name	**Common name**
Schoenoplectus validus / tabernaemontani	lake club rush / kapungawha
Eleocharis acuta	spike sedge
Carex germinata	makura
Schoenus pauciflorus	bog rush
Polystichum vestitum	prickly shield fern
Juncus pallidus	tussock rush / wiwi
Cyperus ustulatus	umbrella sedge
Lower Bank	
Botanical name	**Common name**
Anemanthele lessoniana	wind grass
Astelia fragrans	bush lily / kakaha
Coprosma propinqua	mikimiki
Dianella nigra	ink berry / turutu
Plagianthus divaricatus	swamp ribbonwood
Upper Bank	
Botanical name	**Common name**
Aristotelia serrata	makomako / wineberry
Carpodetus serratus	marbleleaf / putaputaweta
Coprosma rotundifolia	roundleaved coprosma
Dodonea viscosa (frost tender)	akeake
Eleocarpus hookerianus	pokaka
Griselinia littoralis	kapuka / broadleaf
Hebe salicifolia	koromiko
Hoheria angustifolia	narrow leaved lacebark
Kunzea ericoides	kanuka
Leptospermum scoparium	manuka
Lophomyrtus obcordata	rohutu / NZ myrtle
Myrsine australis	mapou
Myrsine divaricata	weeping mapou

Pittosporum eugenioides	lemonwood
Pittosporum tenuifolium	matipo
Plagianthus regius	lowland ribbonwood
Podocarpus totara	totara
Prumnopitys taxifolia	matai
Pseudowintera colorata	peppertree
Sophora microphylla	kowhai

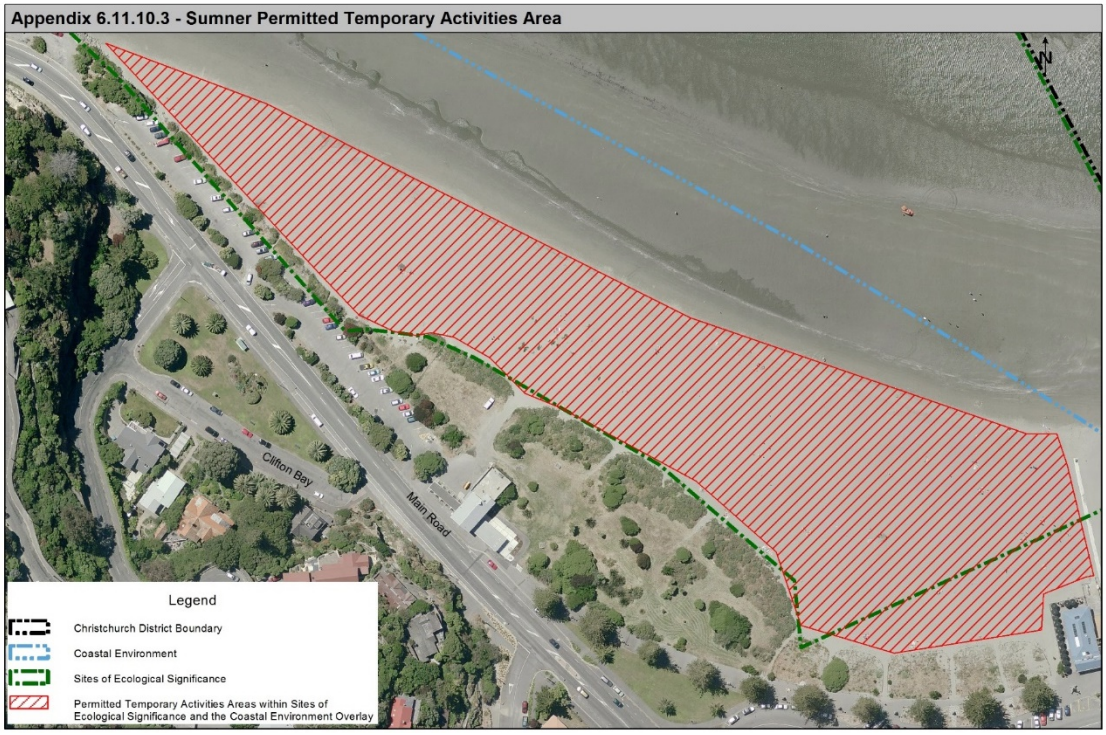
Appendix 6.11.10 Sites with Location-Specific Temporary Activities Rules - Maps

Appendix 6.11.10.1 New Brighton Permitted Temporary Activities Area



Appendix 6.11.10.2 Taylors Mistake Permitted Temporary Activities Area

Appendix 6.11.10.3 Sumner Permitted Temporary Activities Area



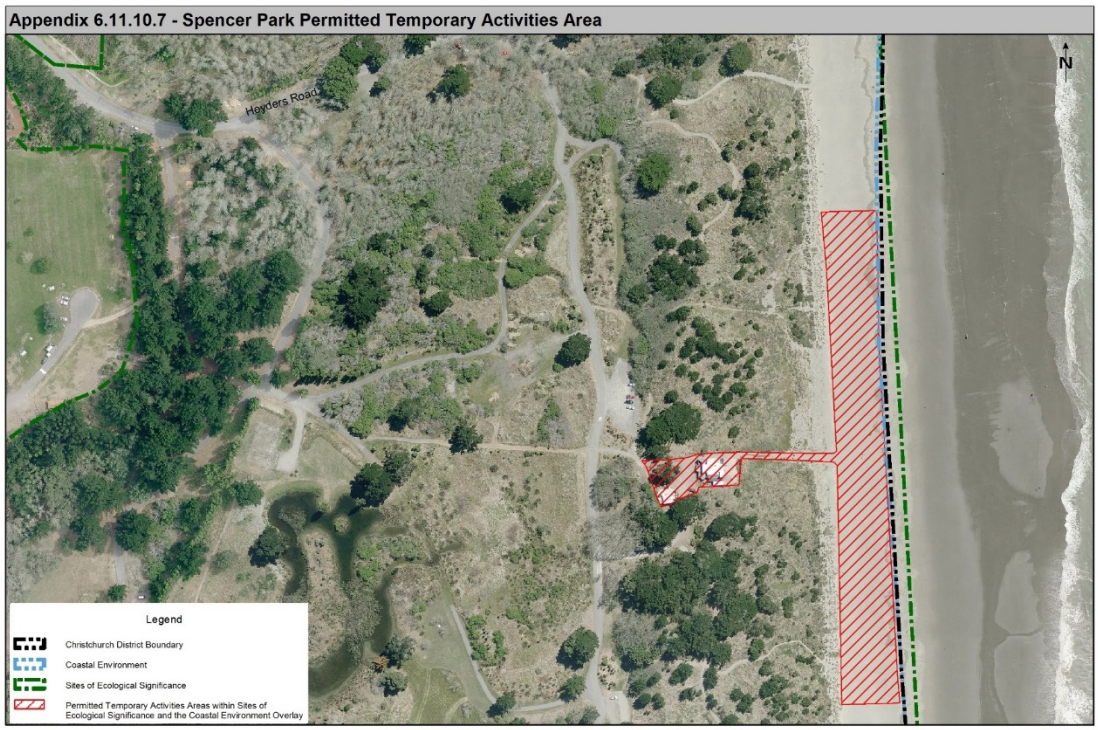
Appendix 6.11.10.4 South Brighton Permitted Temporary Activities Area

Appendix 6.11.10.5 North Beach Permitted Temporary Activities Area

Appendix 6.11.10.6 Waimairi Permitted Temporary Activities Area

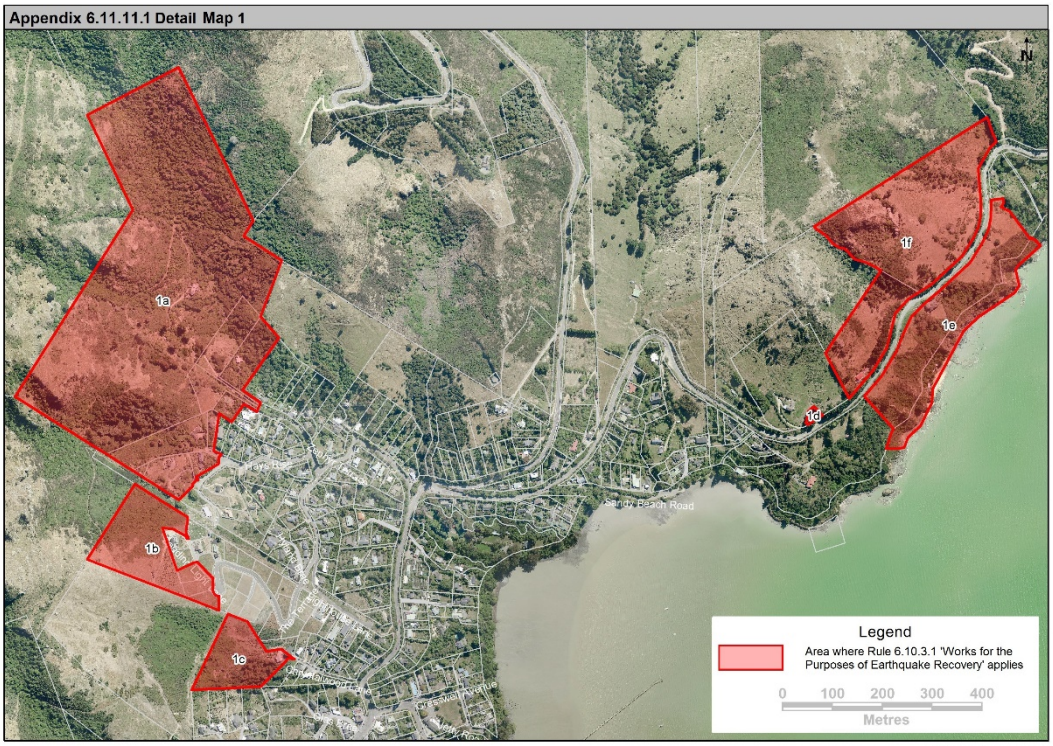
[Refer to Directions for amendments]

Appendix 6.11.10.7 Spencer Park Permitted Temporary Activities Area



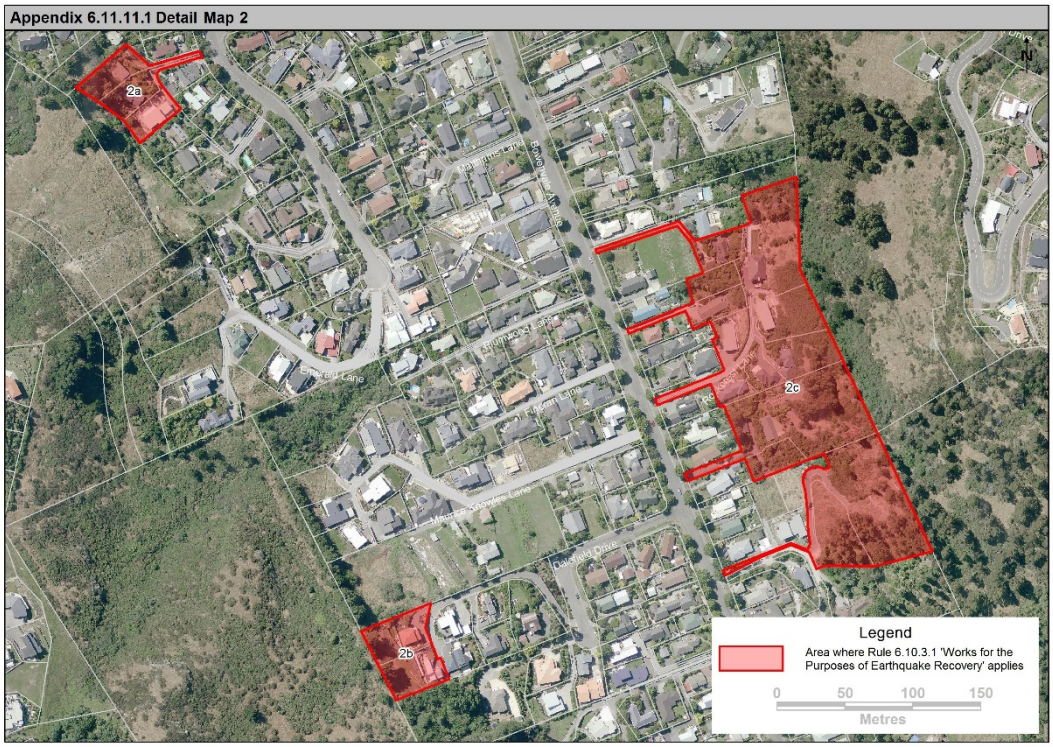
Appendix 6.11.11 Maps for Works for the Purposes of Earthquake Recovery

Appendix 6.11.11.1 Detail Map 1



854695_RedZonePortHill6.gwa

Appendix 6.11.11.1 Detail Map 2

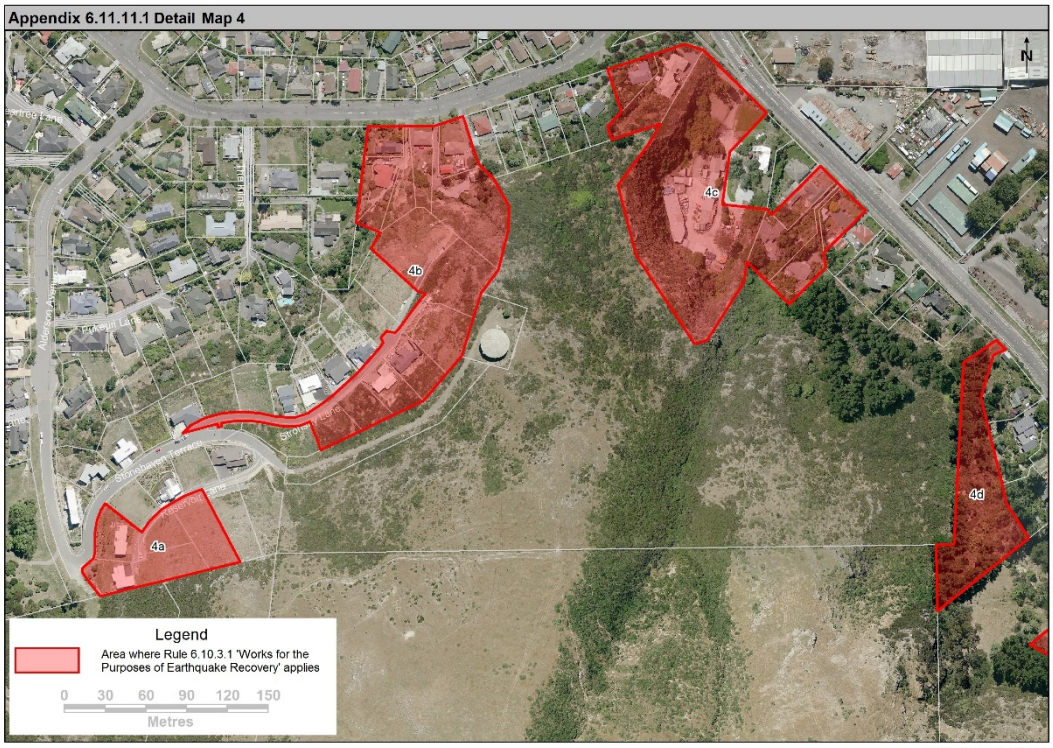


854695_RedZonePortHill6.gwa

Appendix 6.11.11.1 Detail Map 3

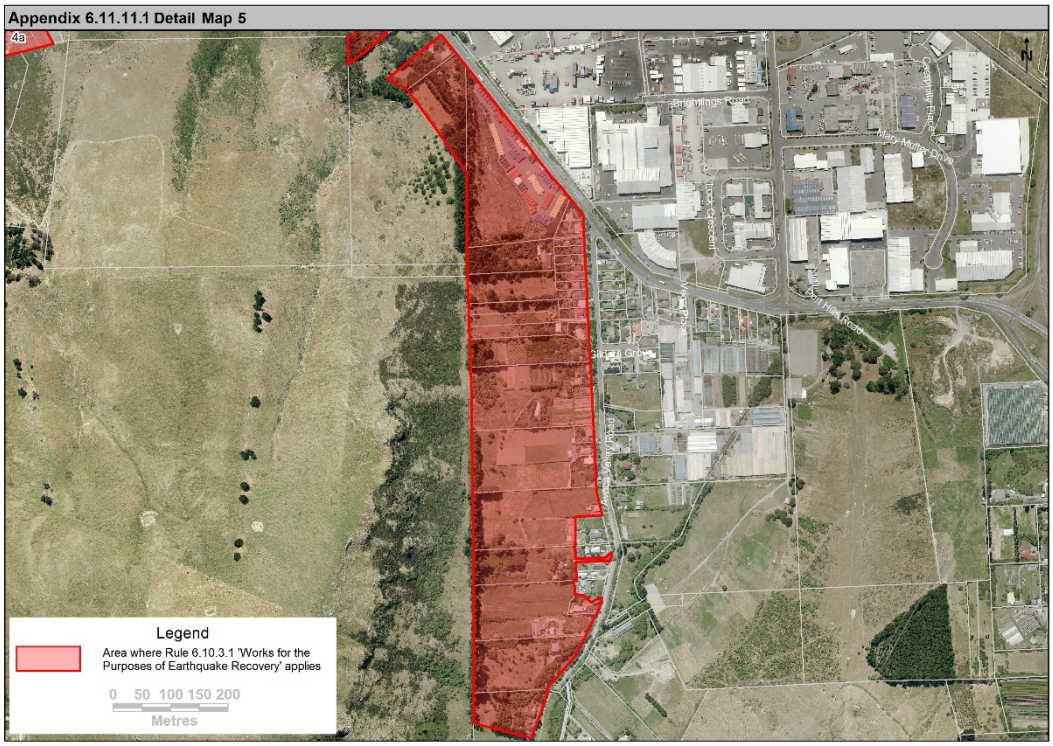
854693_RedZonePortHills.gws

Appendix 6.11.11.1 Detail Map 4



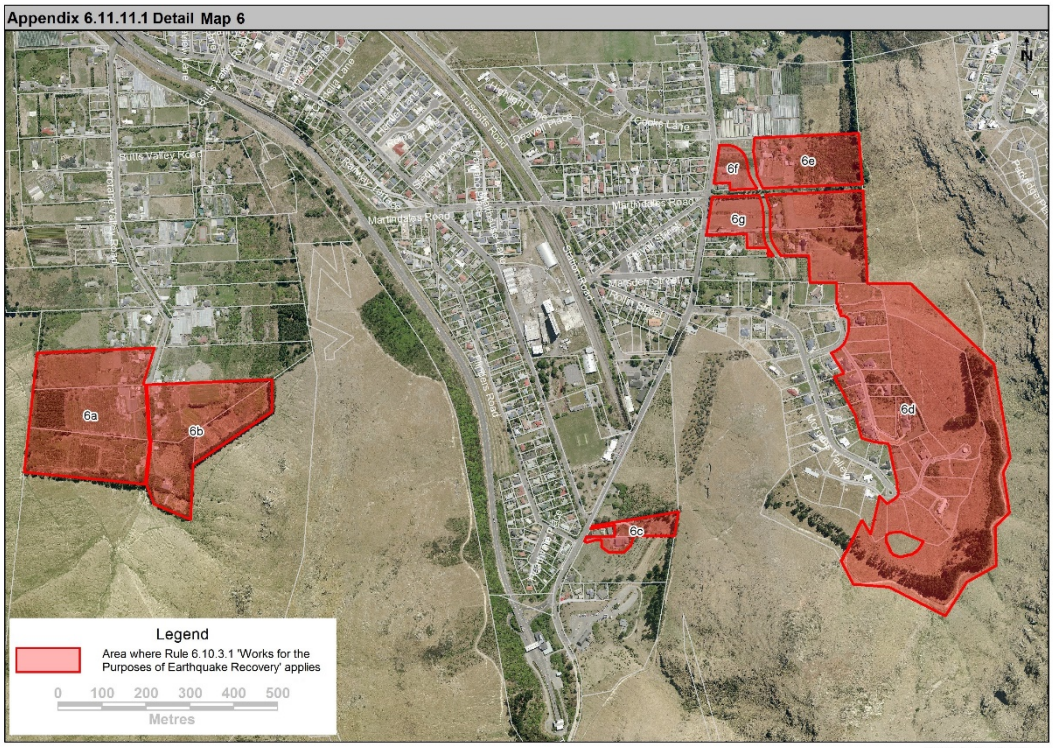
854693_RedZonePortHills.gws

Appendix 6.11.11.1 Detail Map 5



854693_RedZonePortHills.gws

Appendix 6.11.11.1 Detail Map 6



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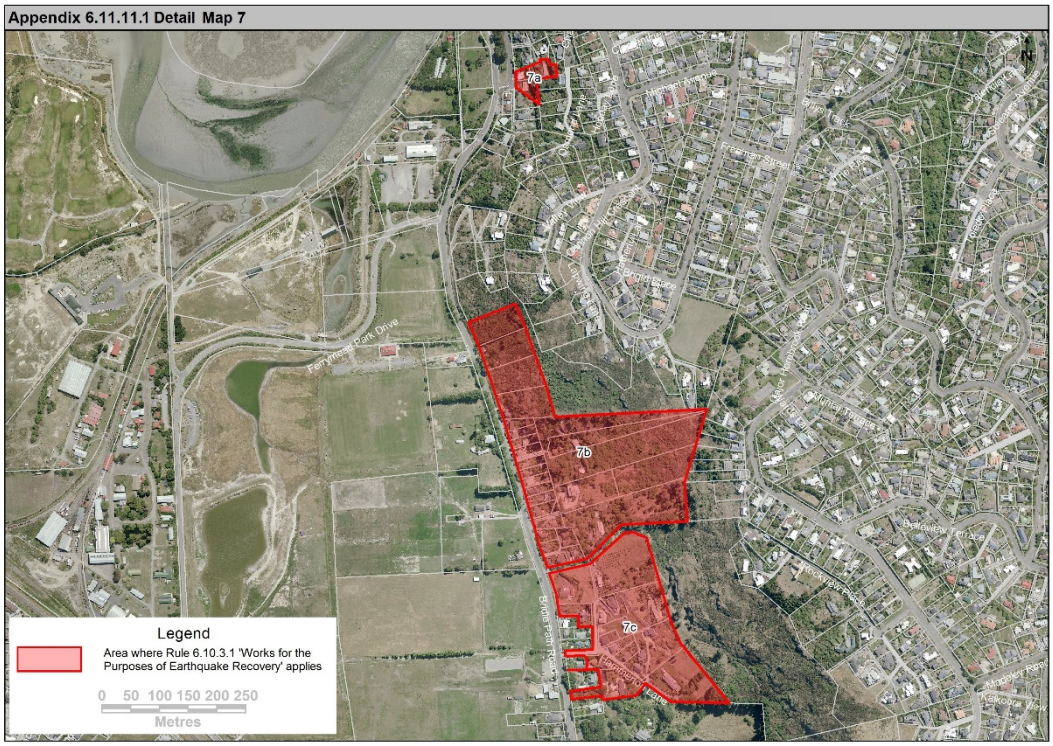
Appendix 6.11.11.1 Detail Map 7



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Appendix 6.11.11.1 Detail Map 8

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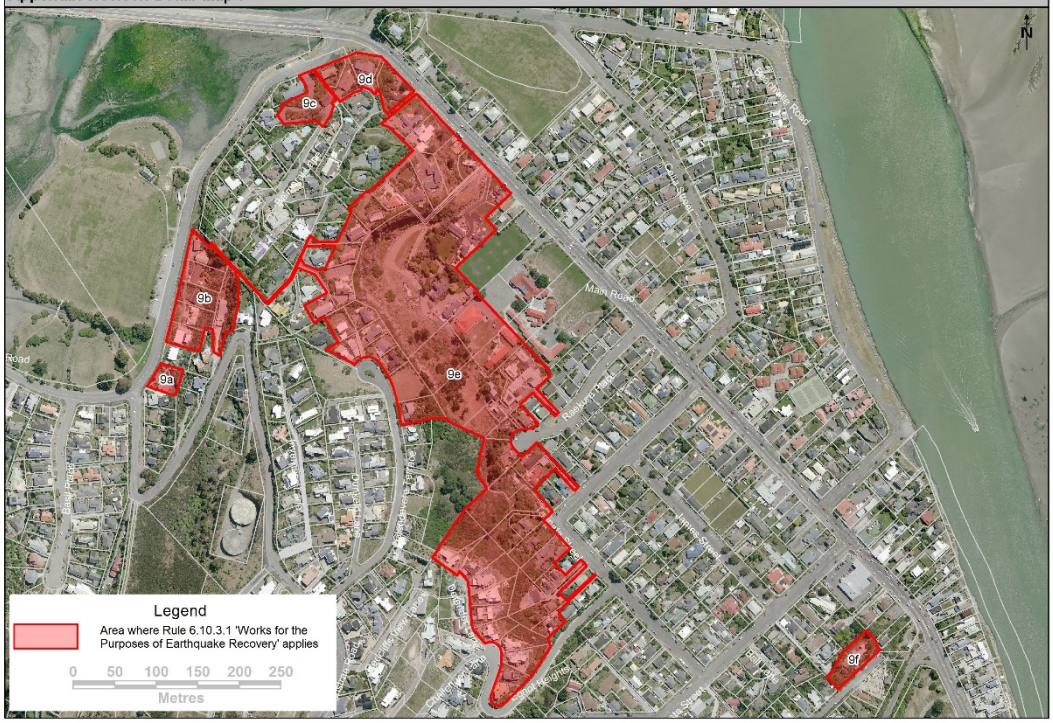
Appendix 6.11.11.1 Detail Map 9



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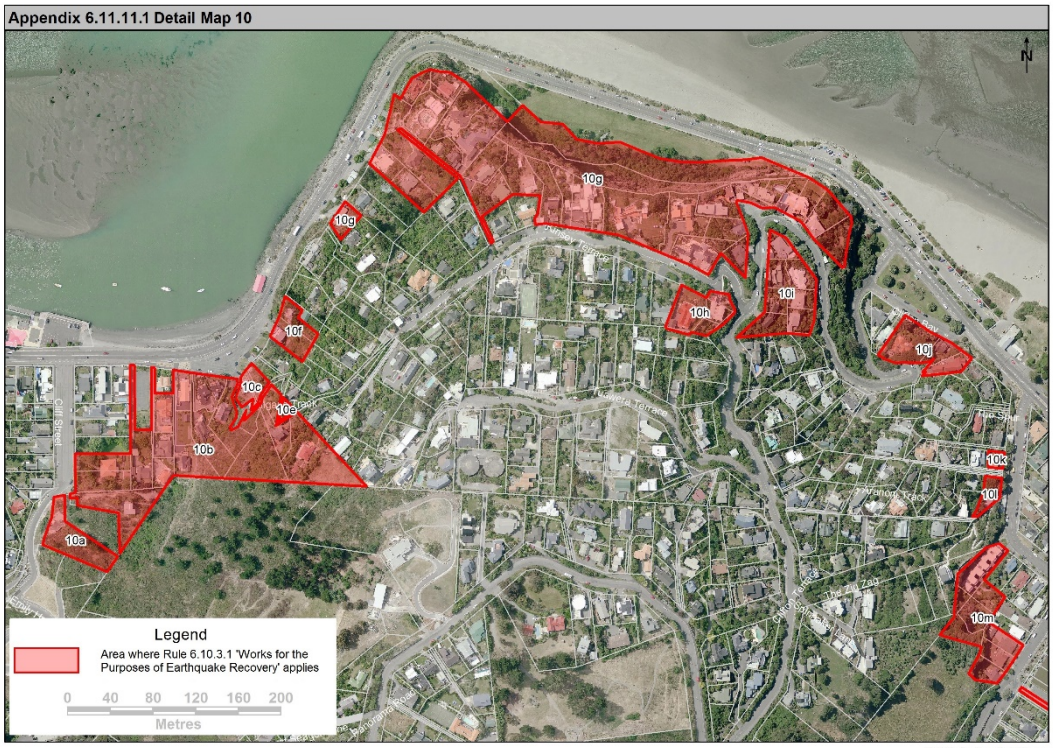
Appendix 6.11.11.1 Detail Map 10



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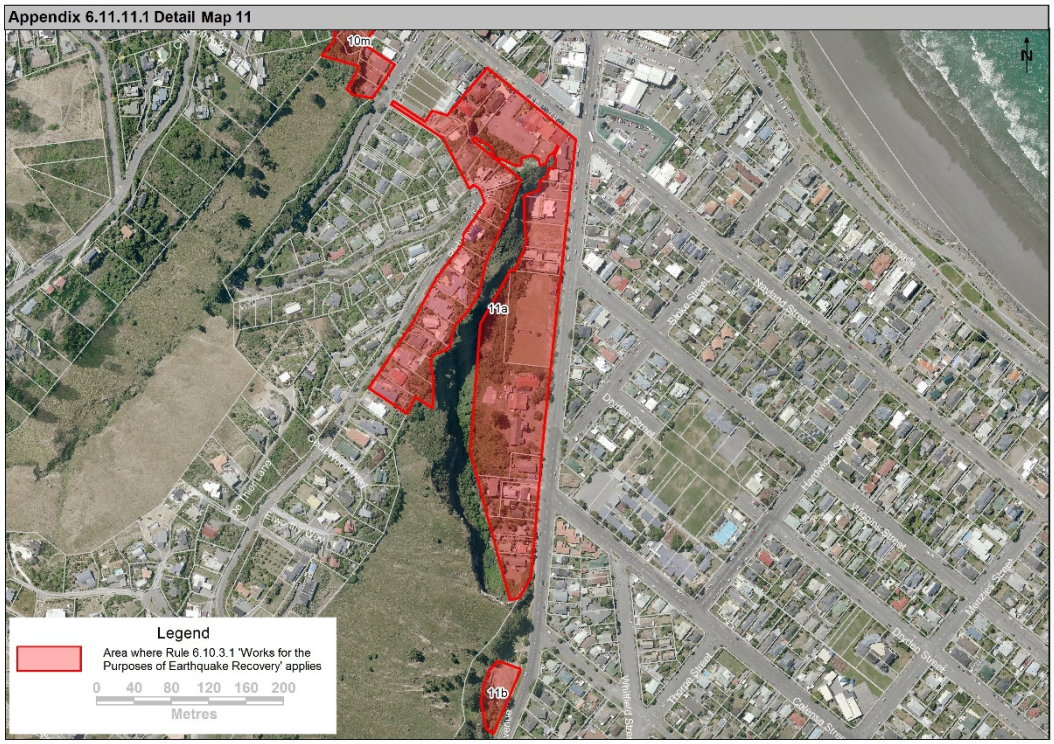
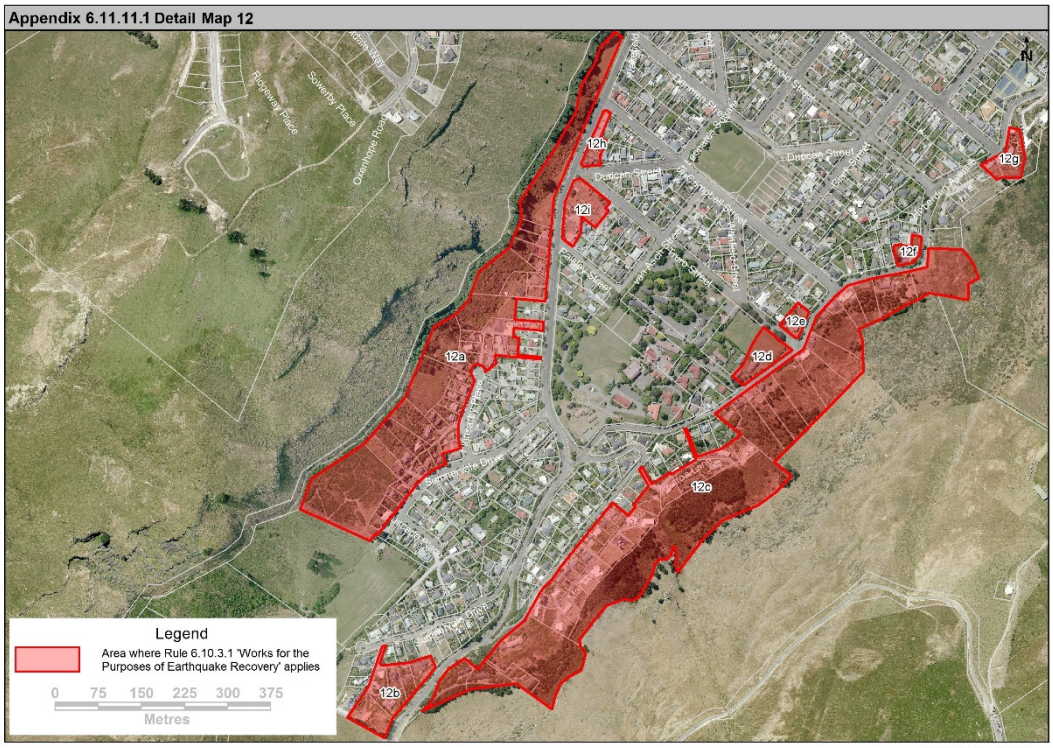
Appendix 6.11.11.1 Detail Map 11



554693_RedZonePortHills.gws

Appendix 6.11.11.1 Detail Map 12



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Appendix 6.11.11.1 Detail Map 13

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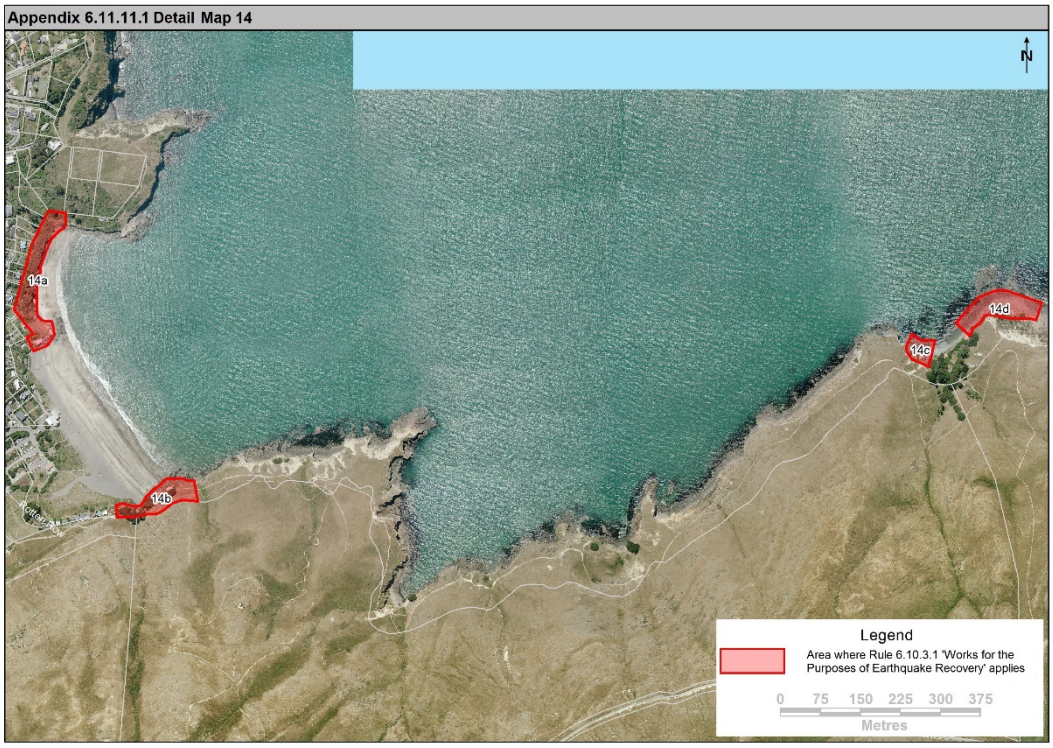
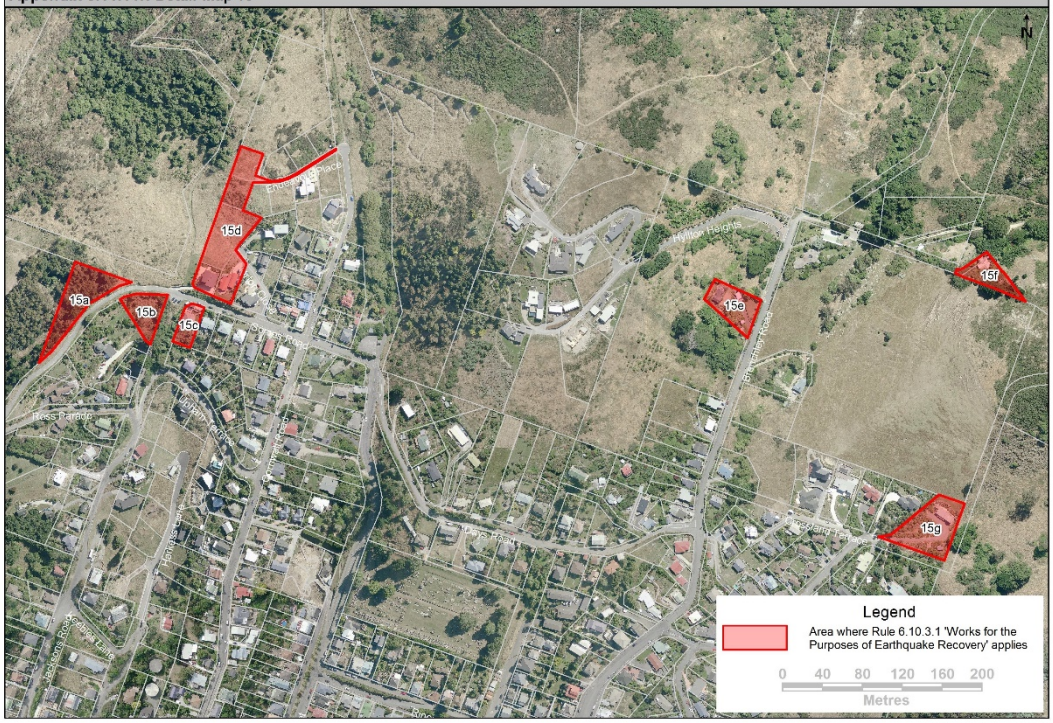
Appendix 6.11.11.1 Detail Map 14



854693_RedZonePortHills.gws

Appendix 6.11.11.1 Detail Map 15



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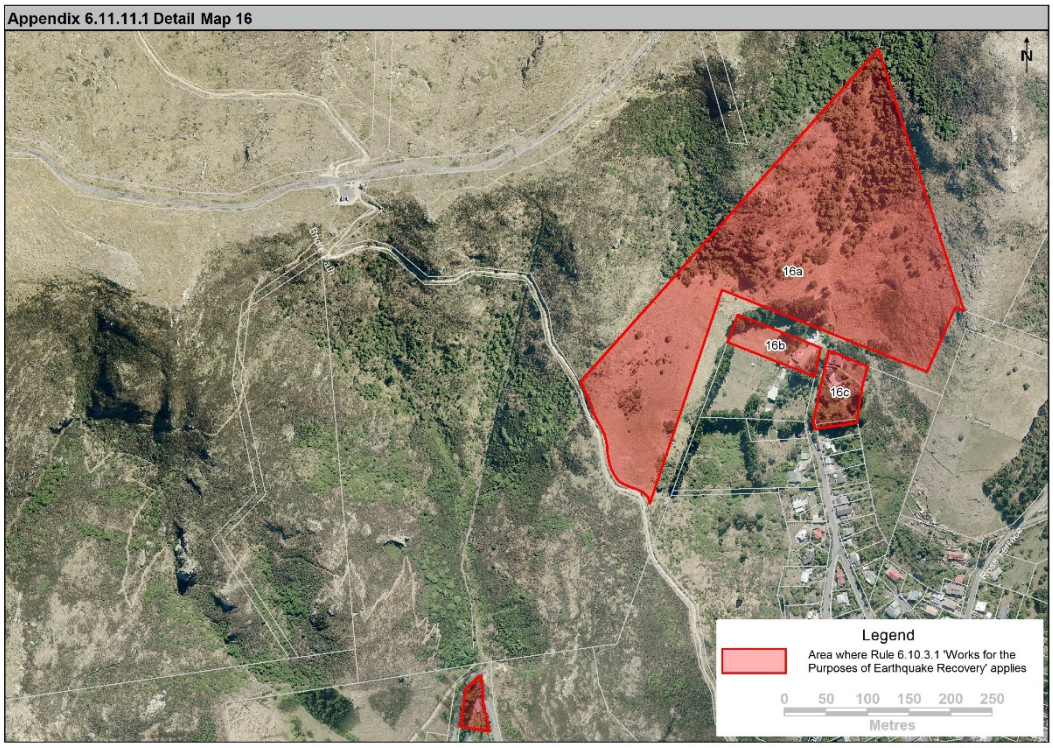
Appendix 6.11.11.1 Detail Map 16



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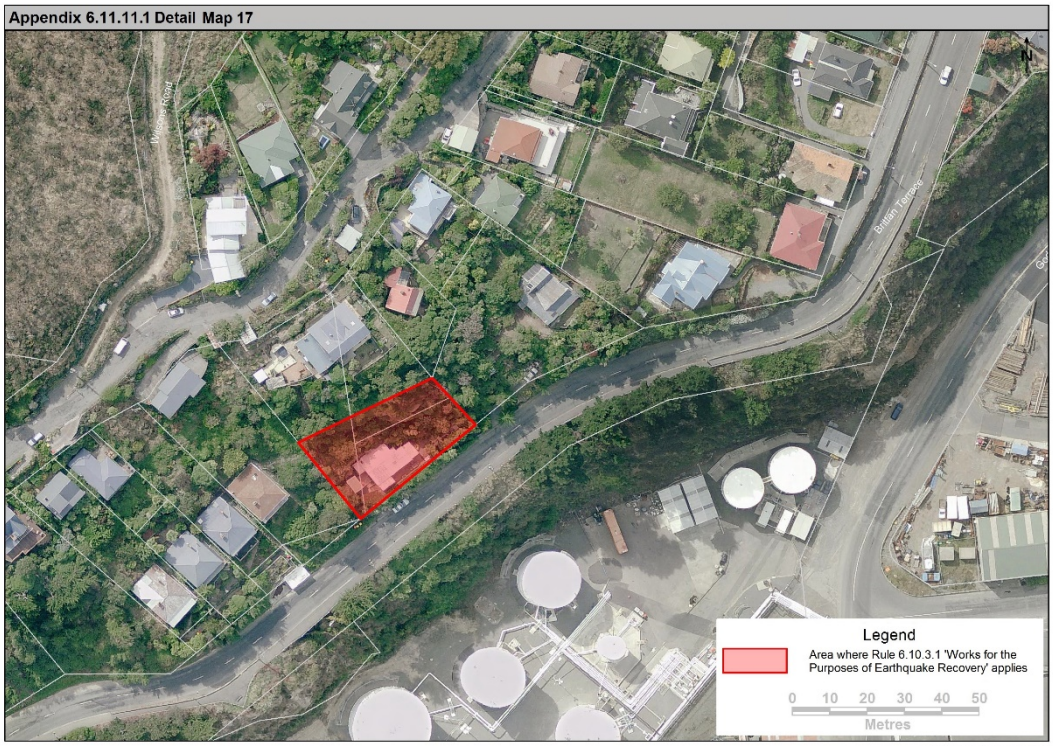
Appendix 6.11.11.1 Detail Map 17



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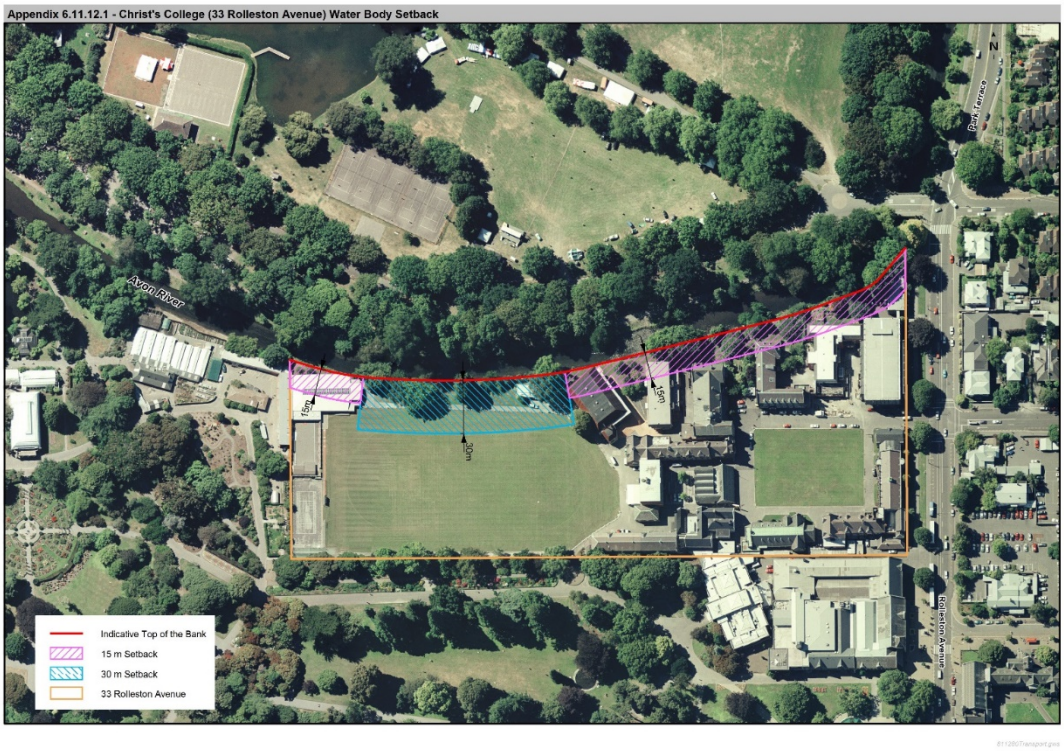
Appendix 6.11.11.1 Detail Map 18

854693_RedZonePortHills.gws

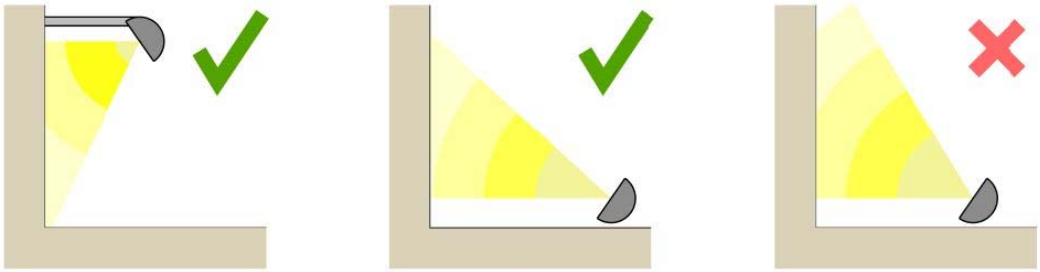
Appendix 6.11.12 Sites with Location-Specific Water Body Setback Rules – Maps

Appendix 6.11.12.1 Christ's College

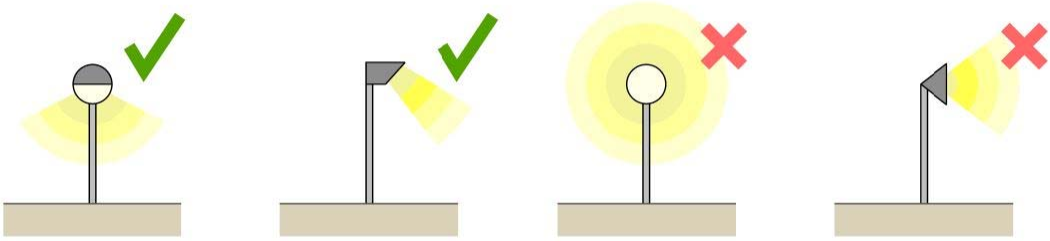


Appendix 6.11.13 Lighting Design Guidance

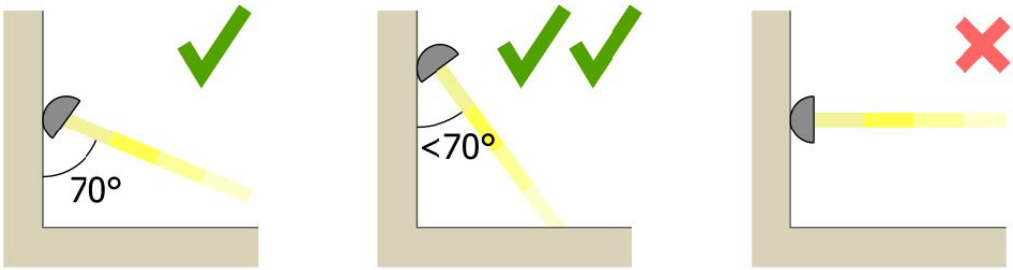
1. Lighting should be directed to illuminate the target area. Preferably lighting should be directed downwards, but where there is no alternative shields and baffles can be used to minimise light spill.



2. Lighting should minimise unnecessary spread of light near to or above the horizontal.



3. Where there is a risk of glare to a potential observer, the main beam angle should be directed at or below 70˚.



Appendix 6.11.14 Airport Noise Management Plan

a. The Airport Noise Management Plan required by Rule 6.1.6.2.7.1 shall:

i. document noise management actions including ongoing investigations, methods, processes and resources to provide for:

A. the management of aircraft operations and on-aircraft engine testing to ensure compliance with Rules 6.1.6.2.5 a.i. and ii. and 6.1.6.2.6 a.i.-iv.; and

B. consideration of alternative methods of noise management and mitigation to achieve the reduction of noise effects from all aspects of aircraft operations including on-aircraft engine testing; and

C. engine maintenance ground run procedures to be implemented in conjunction with all aircraft operators or their agents, including:

1. compliance with Rule 6.1.6.2.6 a.i.-iv., including documentation required by Rule 6.1.6.2.6 a.v.-vii.; and

2. procedures which will encourage Antarctic and NZDF engine testing on the wing to occur between the hours of 0700 to 1900.

ii. provide the details of a noise monitoring programme to maintain compliance with Rules 6.1.6.2.5 a.iii.-iv. and 6.1.6.2.6 a.v.-vii. and, in particular, the following:

A. the monitoring, recording, verification and calculation of aircraft operation and on-aircraft engine testing noise levels;

B. the preparation of the annual Aircraft Operations and On-aircraft Engine Testing Noise Monitoring Reports and quarterly On-aircraft Engine Testing Report;

C. the preparation of the AANC maps, showing actual noise contours in 1 dB increments from 55 dB to 70 dB Ldn; and

D. the review of the software used for predicting aircraft operation noise and the software used for predicting engine testing noise, at least once every five years to determine whether the models and/or software require updating.

iii. establish dispute resolution procedures.

iv. establish a procedure for transparently and expediently responding to any complaints received in relation to noise from aircraft operations and on-aircraft engine testing.

v. require the maintenance of a website that provides for the transparent and accessible display of:

A. the current version of the Airport Noise Management Plan as required by Rule 6.1.6.2.7.1;

B. the Aircraft Operations Noise Monitoring Report, On-aircraft Engine Testing Report, and On-aircraft Engine Testing Noise Monitoring Report, for the previous year, required by Rules 6.1.6.2.5 and 6.1.6.2.6, including a summary of noise monitoring conducted, and the AANC;

C. a 7-day rolling report of noise from on-aircraft engine testing over the previous seven days updated daily and identifying all tests undertaken both within the Ldn limits and those exempted, including reasons for the tests exempted;

D. a summary of complaints received annually and a description of actions taken to address complaints.

vi. document schedules of:

A. acoustic treatment implemented over the last calendar year as required by Rule 6.1.6. 2.7.2; and

B. acoustic treatment offered, where the conditions of the offer required by section b. of Appendix 6.11.15 have not yet been met.

Appendix 6.11.15 Acoustic Treatment Programme

a. The Acoustic Treatment Programme shall include the following:

i. a future aircraft operations contour map showing projected one decibel contours from 55 dB Ldn to 70 dB Ldn as based on the Air Noise Contour lines shown on the Planning Maps;

ii. calculation of indoor design sound levels based on the external noise environment taken from the nearest Ldn contour line shown on the map produced under a. above, and/or on the Engine Testing Noise Contour lines shown on the Planning Maps;

iii. a schedule of residential units existing as at [*the date of this Chapter becoming operative*] and located within the Rural Urban Fringe and Rural Waimakariri Zones, that are partly or wholly located within either:

A. the 65 dB Ldn Annual Aircraft Noise Contour as shown in the Aircraft Operations Noise Monitoring Report provided annually to the Council in accordance with Rule 6.1.6.2.5 a.iv.; or

B. the 65 dB and 60 dB Ldn Engine Testing Noise Contours shown on the Planning Maps,

identifying the external design sound level for each residential unit, those properties that have received treatment and those properties yet to be treated, including the likely timeframe for this to occur;

iv. procedures for communicating to owners of existing residential units when their property becomes eligible for acoustic treatment, and for making the formal offers for that treatment in accordance with Rule 6.1.6.2.7.2 b. - d.;

v. procedures for installation of acoustic treatment in accordance with Rule 6.1.6.2.7.2 c. - f., and for documenting correspondence with property owners;

vi. a schedule of standard acoustic treatment options and approved installers;

vii. procedures for reviewing and updating the Acoustic Treatment Plan for existing residential units.

b. The formal offers of acoustic treatment by the airport operator shall include conditions requiring that the owners of the residential units shall:

i. authorise the proposed acoustic treatment, including any construction details associated with the proposed acoustic treatment, before any treatment commences;

ii. provide reasonable access to the property to enable the installation work to be scoped and carried out efficiently;

iii. notify the airport operator when the work has been signed off as completed;

iv. enter into a covenant with the airport operator, which shall apply to existing and successive property owners and occupiers. The covenant shall include the following:

A. obligations on the airport operator for the installation of acoustic treatment up to and including the noise levels anticipated from future aircraft operations;

B. obligations on property owners and occupiers and their successors to ensure that treatment measures are not lessened nor removed from the premises after installation.

Appendix 6.11.16 Sign Maintenance Plan

A maintenance plan shall be prepared in accordance with the following:

c. Principles:

   i. The maintenance plan shall ensure that works are undertaken in accordance with the objectives and policies of the District Plan;

d. The maintenance plan shall:

   i. Specify the first date of inspection by the operator(s)/providers(s) of the sign.

   ii. Specify the maximum intervening period between inspections of the sign by the operator(s)/providers(s) of the sign.

   iii. Specify that the operator(s)/providers(s) of the sign will make a record of any observed damage, including but not limited to graffiti, vandalism, and water damage, during inspections required under b.i. and b.ii. and provide a copy of that record to the Council within 5 working days of the inspections under b.i. and b.ii..

   iv. Provide an undertaking by the operator(s)/providers(s) of the sign to the Council, that any damage, including but not limited to graffiti, vandalism, and water damage, will be rectified by the sign's operator(s)/providers(s) within 5 working days of the inspections under b.i. and b.ii..

e. Preparation:

   i. The maintenance plan shall be prepared and signed by the operator(s)/provider(s) of the sign.

f. Certification / Approval:

   i. The Council shall certify that the maintenance plan (or any subsequent amendments) is in accordance with Clauses a. - c. above.