

Christchurch International Airport Limited

Landscape Protocol



October 2007





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This report has been prepared in accordance with the scope of services as agreed between Opus and CIAL. The report is based on information taken from studies supplied by the client, undertaken by parties external to this report, as well as site research, visual surveys and analysis conducted by Opus.

This document is to be reviewed on a 3-yearly basis to ensure content is up to date and relevant.

This document is available on the CIAL website.

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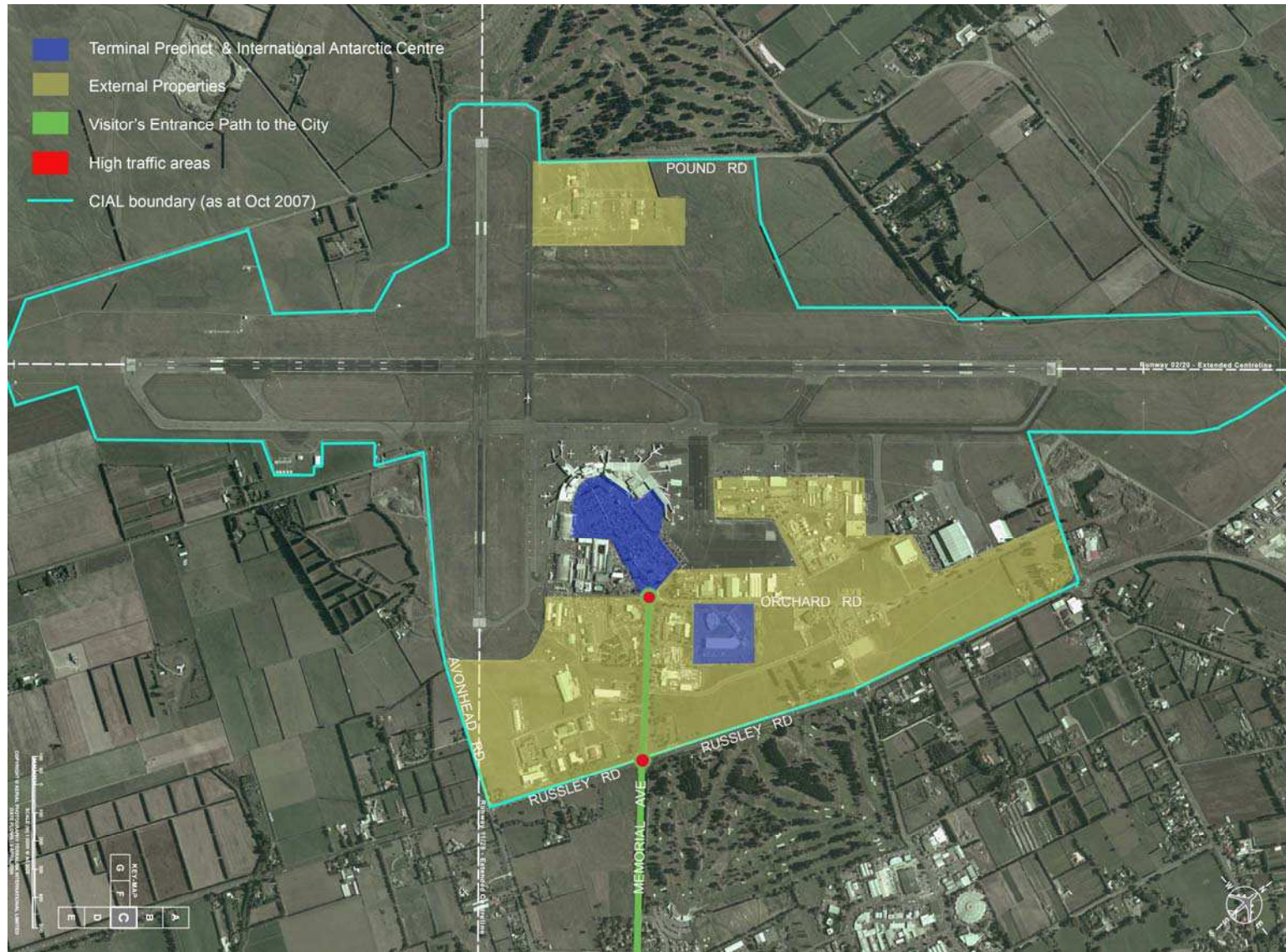
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Reference:
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CHRISTCHURCH INTERNATIONAL AIRPORT PLANTING CONCEPT AREAS (not to scale)



1 OVERVIEW

1.1 Purpose

The Landscape Protocol provides guidance on a minimum set of standards to be applied throughout the Airport with regard to the landscape design, implementation, establishment and maintenance phases of any project. These standards will apply to both CIAL and tenanted land. The intention is to ensure that landscape issues are considered early in the design process while providing consistent guidance for CIAL, external Design Consultants and Contractors to follow. Below are the primary objectives driving the Landscape Protocol which should be addressed in landscape design throughout the Airport:

- 1. Character**
The physical landscape will reflect the natural and historic character of the region, providing a distinctive local identity that will enhance the experience of travel and use of the airport.
- 2. Amenity & Aesthetics**
To create a sense of place and promote a sense of community through the improvement of the amenity of public space in and around the Airport.
- 3. Birdstrike**
To ensure that the environment is designed, maintained & protected in such a way that birdstrike¹ risk is reduced to the lowest practicable level.
- 4. Costs & Management**
To be cognisant of the commercial and business interests of leasehold tenants by integrating superior design in both CIAL and tenanted land.



Local identity



Birdstrike issues



Commercial & business interests

¹ See Appendix 5.4

1.2 Approval Process

1.2.1 Existing landscaping

Before any submission for alteration to the existing landscape, consultation shall take place between the party proposing the alteration and the General Manager, Facilities Services or his representatives.

1.2.2 New landscaping

To ensure proposals meet management requirements, CIAL require a number of reviews during key phases of the design process. The review stages will involve consultation and sign off by CIAL and the relevant general managers of the following departments:

Facilities Services, Property, Quality & Compliance, Planning & Environment, and Services & Operations

1.2.3 Checklist

All Landscape Plans, including alterations to the existing landscape, must be approved by CIAL. As part of the internal review process, a checklist will be made available to submitters prior to development (**Appendix 5.10**). CIAL staff from the aforementioned departments will use the checklist to review landscape plans prior to the commencement of any work, to ensure CIAL landscape guidelines have been met.

Landscape Plans must be submitted for approval at each of the following stages:

Landscape Plan Documentation

- Schematic Design
 - Including the design brief, if any
 - Sketch details of drainage, paving, planting, signage, areas to be irrigated and lighting as appropriate
- Developed Design
 - Only if required as part of Client's brief
- Contract Documentation
 - Plans and specification
- Review during implementation/construction
 - Regular liaison with CIAL during construction, particularly with respect to variations
- As built
 - Supply of 'as built' plans are to be provided to CIAL on completion of project

1.3 Excavation

An excavation permit, approved by CIAL's Facilities Services Manager is required prior to any excavation being carried out on CIAL land.

Depending on the scale of excavation, a Resource Consent may be required by Ecan

2 LANDSCAPE DESIGN GUIDELINES

This section outlines specific landscape requirements that should be considered in all landscaped areas of CIAL grounds.

The following headings are outlined in further detail, giving both written and graphic interpretations of the landscape requirements for the Airport grounds:

- Landscape Character & Design**
- Access, Safety & Security**
- Drainage**
- Plant Selection and Planting**
- Soft Landscape Works**
- Irrigation**
- Hard Landscape Works**
- Carparks**
- Site Clean Up**
- Maintenance**

2.1 Landscape Character & Design

The landscape character of Christchurch International Airport is intended to be representative of the wider landscape of the Canterbury Plains within which it sits. In addition, Christchurch's reputation as the Garden City expresses the English heritage of its founding settlers. It is within these two distinctive contexts that planting themes at the Airport have the potential to express the natural character of the broader landscape of the Canterbury Plains as well as the picturesque character of Christchurch city. A cohesiveness of these contrasting characters is achievable through predominantly indigenous planting complimented by pockets of exotic species.

The New Zealand Urban Design Protocol (Ministry for the Environment, 2005) identifies essential design qualities that together create quality urban design. The seven key qualities are:

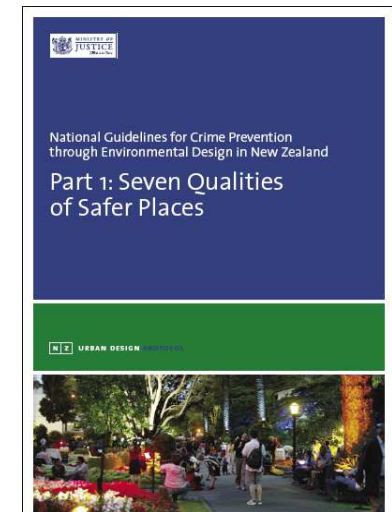


- **Context:** seeing buildings, places and spaces as part of whole towns and cities
- **Character:** reflecting and enhancing the distinctive character, heritage and identity of our urban environment
- **Choice:** ensuring diversity and choice for people
- **Connections:** enhancing how different networks link together for people
- **Creativity:** encouraging innovative and imaginative solutions
- **Custodianship:** ensuring design is environmentally sustainable, safe and healthy
- **Collaboration:** communicating and sharing knowledge across sectors, professions and with communities.

Website: <http://www.mfe.govt.nz/publications/urban/design-protocol-mar05/index.html>

2.2 Access Safety & Security

- Landscape plans and designs must comply with the relevant sections and rules of the Christchurch City District Plan and all other relevant standards including: The Resource Management Act (1991), The Building Act (2004), NZS 3910:2003 Building Code, NZ Public Health & Disability Act (2000) and The Christchurch City Council Infrastructure Design Standard (2007). A description of each standard is outlined in **Appendix 5.1**.
- Crime Prevention Through Environmental Design (CPTED) is based on the use of environmental design principles that eliminate or reduce criminal behaviour while encouraging passive surveillance by people.
- Crime Prevention Through Environmental Design (CPTED) principles should be incorporated in all landscape designs. The 4 key principles are:
 - **Surveillance** – people are present and can see what is going on
 - **Access management** – methods are used to attract people and vehicles to some places and restrict them from others



- **Territorial reinforcement** – clear boundaries encourage community ‘ownership’ of the space
- **Quality environments** – good quality, well maintained places attract people and support surveillance.

The CPTED principles also outline seven qualities that characterise well designed, safer places. The seven qualities are as follows:

- **Access** - Safe movement and connections
- **Surveillance and sightlines** - See and be seen
- **Layout** - Clear and logical orientation
- **Activity mix** - Eyes on the street
- **Sense of ownership** - Showing a space is cared for
- **Quality environments** - Well designed, managed and maintained environments
- **Physical protection** - Using active security measures

National Guidelines can be obtained from the Ministry of Justice.

Website: <http://www.justice.govt.nz/pubs/reports/2005/cpted-part-1/cpted-part-1.pdf>

2.3 Drainage

- Grading and drainage should be dealt with on-site and must comply with The Christchurch City Council Plan and the NZ Building Act 2005 (**Appendix 5.1**).
- CIAL are interested in stormwater retention and drainage initiatives including on site storage of water and recycling for irrigation. Any such measures to retain water should not prove attractive to birds (i.e. locate rainwater tanks underground).



- All soakpit and oil interceptor inspection chambers are to be kept clear of foliage, mulch and other material likely to gather, in order to maintain access for inspection. Access is important in order to meet stormwater consent monitoring requirements.

2.4 Plant selection and planting

2.4.1 Planting Themes

- The majority of planting should reflect the soil and climatic conditions of the Canterbury Plains. However it is appropriate that designated areas of exotic plantings (e.g. annuals for seasonal display) are located within certain areas of the Terminal Precinct (entrances and roundabouts for example) to reflect Christchurch's reputation as the Garden City. CIAL's preference however is for planting themes to be native to Canterbury.
- Plant selection should be based on the CIAL recommended Plant List (**Section 4**) which specifies indigenous local species and exotics that are low maintenance and least prone to attracting birds.
- Plant selection should also consider the Canterbury Regional Pest Management Strategy 2005-2006 (**Appendix 5.1.2**) and the Christchurch City Council Infrastructure Design Standard (Draft July 2007). This document lists inappropriate trees, shrubs and groundcovers for specific locations. A description and location of the full document is listed in **Appendix 5.1.3**.
- Where possible, exotic plant species should be limited to high use spaces where pedestrian and vehicular traffic is concentrated. The high water requirements and maintenance of many exotics, and their attractiveness to birds make key focal areas appropriate places in which to locate species less tolerant of the dry conditions found at the Airport.

NATIVE

EXOTIC



Annuals & exotics reflect Christchurch's reputation as the Garden City



Windbreaks provide shelter from predominant winds

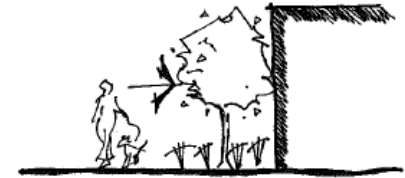
- The external business and commercial properties of CIAL, where pedestrian and vehicular traffic is less intense, should be planted with indigenous species which are representative of the Canterbury region.

2.4.2 Structure & Density

- Location of trees and planting beds must consider the following
 - (i) Spatial constraints
 - (ii) The potential size of the mature tree or plant
 - (iii) The root system of the proposed plant and how that might affect stormwater, paving and underground services

Plant selection within the landscape should provide and allow for:

- (i) the proximity of planting within operational areas. Trees that provide nesting and feeding opportunities for birds should be minimised
- (ii) shade for pedestrians, public spaces and carparks
- (iii) windbreaks for public spaces provide shelter from predominant winds - .e. g. shrubs maintained as a hedge in both the Terminal Precinct and tenanted properties
- (iv) important viewsheds, i.e. plant height/spread should be considered for framing important views and reduce potential for covering of signs when plants reach maturity
- (v) human scale in streetscapes, i.e. trees provide vertical emphasis which can balance the overwhelming dominance of built structures
- (vi) reduction of weed growth – e.g. mass planting of groundcovers



Trees provide vertical orientation, reducing the scale of buildings. They can provide some screening without totally limiting surveillance



Plant spacing is such that planter beds are full at maturity without creating tri-ha:



- (vii) use of annuals for seasonal display in high use pedestrian area
- (viii) minimise opportunities where trees might provide climbing access into restricted areas.

- Density of planting must be such that planter beds are full once plants have reached maturity.
- Plants with drooping stems or leaves should be positioned so that the leaves of the mature plants will not hang over any footpath and cause a trip hazard.

2.4.3 Size & Quality

The size of tree required at planting is determined by the location. Trees in the following areas must be semi mature when planted.

- Feature areas (pb150, 3m height) – entrances to buildings, around the Terminal Precinct and major movement corridors:

Street frontage trees (pb150, 2.5m height) – along the front edge of External Properties on leased or tenanted land.

All other development areas, the general plant sizes acceptable at time of planting should be:

- Trees pb150 – (min height 2.5m)
- Shrubs - 250mm height
- Groundcovers - selection and space should ensure good form and coverage of the site within 2-3 years.
- The mature height of any trees planted must not exceed the height restrictions detailed in the plan 'Obstacle Limitation surfaces – maximum working heights' (**Appendix 5.9**)



Mature plants will obscure sign



Plants are too far apart to create a dense, low hedge

- Tree and plant selection should be mindful of commercial values (e.g. sightlines required for advertising). The mature height must be considered when specifying plants.
- Hedging: plant spacing must be close enough to allow mature plants to form a dense hedge at mature trimmed height.

2.5 Soft Landscape Works

2.5.1 Subgrades

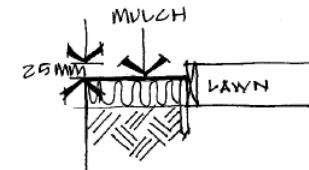
- Where imported soil is required, all landscape subgrades are to be cultivated to the following minimum depths prior to topsoiling, planting and mulching:
 - Lawn 75mm min
 - Garden 200mm min
- Where proposed garden or lawn areas have been heavily compacted during construction, the ground should be ripped to a minimum depth of 500mm prior to cultivation to aid natural drainage.
- Where possible, consideration should be given to selecting subgrades that can be compacted to reduce rapid water penetration through subsoils.

2.5.2 Imported Topsoils

- All imported topsoil is to be weed free and must comply as a minimum with Christchurch City Council Construction Standards Specifications (CCC CSS: 2006 – **Appendix 5.1.5**)
- Depths of imported topsoils are to be as follows:
 - Lawn 100mm min



Appropriate plant spacing for Griselinia to create a full, dense hedge 1200mm high



Mulch is to finish 25mm below finished surfaces



- Garden 200mm min

2.5.3 Mulch

- Garden beds are to be mulched with 100mm of approved mulch at the time of planting and topped up annually to a minimum consolidated depth of 75mm.
- Mulch is to be of a fine consistency (0-30mm, shredded bark, crushed and screened) so as not to be washed into stormwater systems in high rain events. Samples of intended mulch should be submitted to CIAL for approval.
- Mulches are to finish 25mm below all finished surfaces (edging, paths, walls & kerbs) in order to reduce maintenance and provide consistency throughout the Airport grounds.

2.5.4 Planting & Staking

- All planting is to comply as a minimum with CCC CSS; 2006 (**Appendix 5.1.5**).
- All plants should be placed into a hole which is a minimum of 1.5 times the diameter of the pot size. For tree planting, ensure the hole is a minimum of 200mm wider around the entire root ball.
- Where staking is required, all tree species must be staked in accordance with CCC CSS; 2006, SD701, to provide support from prevailing winds.
- Trees planted in lawn areas must allow a 500mm minimum radius of mulch from the trunk of the tree.
- Staking is to be removed at the conclusion of the plant establishment period.



2.5.5 Turf

- Instant Turf is to be laid in all areas within the Terminal Precinct.
- Seed selection should be endophyte enhanced to as to deter birds and improve insect resistance.
- Suggested species include:
 - 70% ornamental rye and 30% chewings/ red fescue
 - 80% fescue browntop superfine and 20% browntop
- All weeds are to be removed and topsoil spread prior to laying turf.
- A base dressing of Turf fertiliser with an NPK rating of 14-3-7 plus trace elements should be applied at 30g/m² to topsoil prior to laying turf.
- Turf areas should finish flush with adjoining hard surfaces.

2.5.6 Grass Seeding and Hydroseeding

Grass seeding or hydroseeding are acceptable alternatives to instant turf in all External Business & Commercial Property areas.

Grass seeding should be applied and cultivated to a 20mm depth so that the minimum of seed is exposed. The seeded ground should be levelled and lightly consolidated to ensure good soil/seed contact.

Seed selection should be endophyte enhanced so as to deter birds and improve insect resistance.

- Suggested species include:
 - 70% ornamental rye and 30% chewings/ red fescue



- 80% fescue browntop superfine and 20% browntop

Protect new grass areas and ensure adequate watering to enable establishment.

Fertilise and top-dress grass once established.

2.5.7 Edging

All gardens should have a solid mowing edge when not edged by a building, driveway, kerb or path (e.g. H4, CCA rough sawn, ground treated timber of 100 x 25 minimum dimensions fixed into position with H4 stakes).

2.6 Irrigation

Where irrigation is connected to a potable water supply, backflow prevention is a compulsory requirement in accordance with the NZ Building Code.

Dry tolerant species should be first choice in plant selection to reduce the amount of irrigation required on Airport grounds.

CIAL's preference for irrigation is for tenants to link into an automated system. If using alternative irrigation, hours of usage should be limited to between 10pm and 5am to reduce evaporation.

Sprinkler spray patterns are to be designed not to cover paths or roads in order to minimise water wastage.



Chri Horizontal water features encourage birds, increasing the risk of birdstrike

2.7 Hard landscape works

2.7.1 Water features

- Birds are attracted to horizontal bodies of water. To minimise birdstrike hazard, water features are to be vertical with sub surface storage so as not to encourage birds to settle.

2.7.2 Signage

- Plans showing the design and location of signage, integrated with building and landscape designs must be submitted to CIAL for approval prior to construction.
- Consideration should be given to the importance of the message, in terms of colour, shape, size, surrounding context and how necessary it is. Unnecessary signage can clutter and confuse visitors, leaving the message unseen.
- Signage located in grassed areas should have a 300mm concrete mowing strip surround for ease of maintenance. Alternatively supports should be of a height to allow mower access beneath the sign.
- Tall lights and large signs may require the installation of spikes to discourage birds from landing on such structures. CIAL must be consulted on the installation of larger structures as part of the approval process.

2.7.3 Furniture

- The type and choice of materials for site furniture in public areas must be clearly specified. Site furniture includes items such as: seats, tables, bike stands, bollards lights and rubbish bins.
- Choice of location should enable rest, views, relief & relaxation.

X

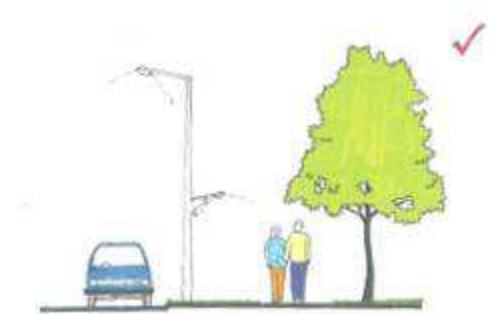


Signage in grassed areas require a 300mm concrete mowing strip

- Fixing of furniture should ensure safety and ease of maintenance.
- Only rubbish bins which restrict bird scavenging are acceptable in the Terminal Precinct.

2.7.4 Paving

- All paving must comply with the relevant New Zealand construction, safety and accessibility standards. Acceptable gradients for steps and slopes are contained in the NZ Building Act, 2005– **Appendix 5.1**)
- All unit paving is to be laid on a concrete base to ensure stability.
- Where the surface of an access route is subject to wetting, the surface shall have a cross fall of no less than 1 in 100. The surface of any access route shall not have a cross fall of more than 1 in 50 (NZ Building Act, 2005).



Ensure lighting is shrouded and not past the horizontal

(Image: Safer Canterbury: Creating Safer Communities, 2004)

2.7.5 Lighting

- Minimise light pollution and glare to the Airport’s operational flight paths by ensuring that lighting is shrouded and not past the horizontal.
- All on-site light fixtures and lighting poles are to be specified in accordance with the CIAL review process.

2.7.6 Integrated Art

Integrated art brings colour and life to the airport, making public space a more personal experience. CIAL supports the commissioning of integrated or stand alone art works that respond to the airport environment with works that consider relevant themes of indigenous and aviation history within a contemporary urban setting.



2.8 Carparks

- Carparks must be designed with the following provisions:
 - Provide shade while minimising roosting & nesting opportunities for birds
 - Reduce visual impact
 - Allow safe and efficient pedestrian movement
- Location of tree planting should allow a canopy which provides extensive shade areas.
- All trees planted shall be a minimum of PB150 and height of 2.5m with a minimum clear trunk of 2m at maturity to allow visibility.
- Understorey planting should be no higher than 700mm to allow visibility through the carpark.
- Road frontages to carparks should have a 2m wide minimum landscape planting zone
- All stormwater drainage shall comply with the stormwater resource consent granted for CIAL. All design shall be co-ordinated with the Environment Officer at CIAL.

2.9 Site clean-up

- All construction sites are required to be kept clean and tidy. Any potential wind blown rubbish is to be securely contained and food scraps to be disposed of immediately.
- Contractors are to clean up and remove all debris, unused materials and waste (solid or liquid) from the site on completion of project.



- All excess topsoil is to be taken to CIAL's Harewood Road pit.

2.10 Maintenance

Maintenance includes watering, weed control, cultivation, control of pests and diseases, removal of litter, checking of stakes and ties, trimming, pruning or mowing and other accepted horticultural operations necessary to ensure normal and healthy landscape establishment and growth.

The two most important factors are adequate moisture and eliminating competition from other vegetation. Therefore, the selection of dry tolerant species and thick mulch cover are advisable to reduce maintenance by suppressing weeds and retaining water. Grass within the International Antarctic Centre and Terminal Precinct should be mown to Class 1 as noted in **Appendix 5.2**. Grass within the External tenanted properties should be mown to Class 2.

During the growing season, mowing shall be undertaken at weekly intervals and the clipping of edges fortnightly. Lawn and garden maintenance areas are outlined in **Appendix 5.8**.

2.10.1 Plant and Lawn establishment period

- The minimum plant establishment period shall be 3 months, prior to handover to the Gardening and Maintenance team at CIAL.
- Minimum plant establishment and maintenance standards are outlined in CCC CSS Part 7 (**Appendix 5.1.5**)
- Maintenance records in accordance with CCC CSS 2006, Part 7, Clause 14.9, are to be submitted to CIAL Facilities Services on a monthly basis.

3 SPECIFIC LANDSCAPE ZONES

This section describes the distinctive landscape zones of the airport and should be read in conjunction with previous sections of this document. A road ownership plan is attached in **Appendix 5.7**.

3.1 Terminal Precinct

The Terminal Precinct caters for both a working and visiting community and needs to provide for pedestrian amenity, vehicle legibility and a coherent landscape visual aesthetic. The intensity of development is perceived to be higher than the external properties surrounding the Precinct; therefore the following guidelines should take precedence over other general guidelines with which a conflict might occur.

- A mix of both native and exotic species is appropriate within the Terminal Precinct through predominantly indigenous planting complemented by pockets of exotic species.
- Ensure all views to terminals and signage are maintained and promoted.
- All covered paths must have adequate lighting to meet New Zealand standards and CIAL lighting regulations.
- Mowing and maintenance should be undertaken at the highest level, i.e. Class 1 – Gardening Maintenance (**Appendix 5.2**)
- Paths and walkways must be designed and constructed to ensure water doesn't cause pooling and ice in winter (see **Paving section 2.7.4**).

3.2 External Business & Commercial Properties

Landscape guidelines for CIAL tenanted land are as follows:

- Provide suitable screening and planting to car parks as per CPTED principles and carpark guidelines (see **Section 2.8**)



Terminal Precinct



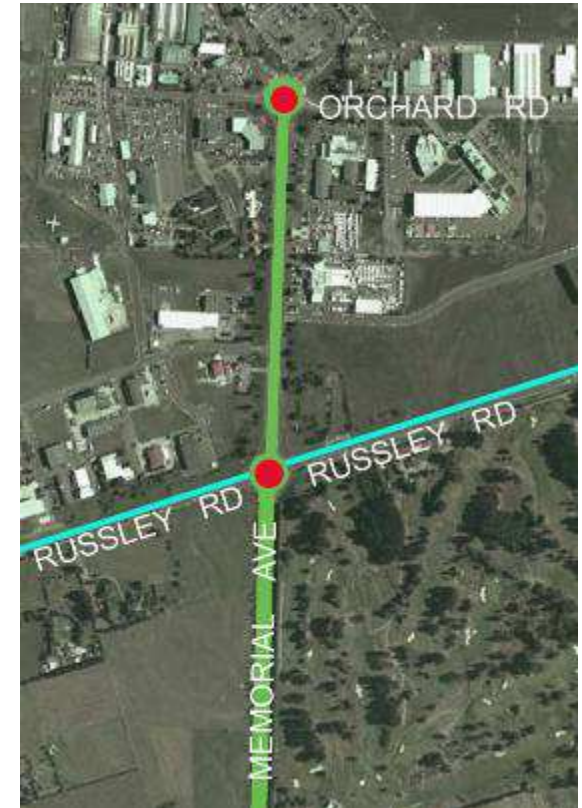
External Business & Commercial Properties

- Reduce the scale of buildings with mounding and screen planting
- Ensure surveillance of building and carparks are maintained.
- Main pedestrian access to the building should be easily identified from the street.
- Maintain separation of pedestrian and vehicular access.

3.3 Visitor's Path to the Airport

As shown in figure 3 and outlined in the Boffa Miskell Concept Plan (**Appendix 5.5**), the Visitor's Path begins within the Airport site at the Orchard Road roundabout and continues to the Memorial Ave/Russley Road roundabout. Landscape guidelines for this area are as follows:

- Formal in character.
- Trees should be a semi mature size (at least 150L) at time of planting to create maximum visual impact (Refer to **section 2.4.3** – Size and Quality of Plant Selection).
- Setback of trees from road edge to comply with Transit New Zealand Guidelines for Highway Landscaping at time of planting (**Appendix 5.1.6**).
- Visibility through medians must be maintained with vegetation to have either a maximum height of 0.6m or to be limbed to provide a clear trunk to a height of 2.5m.



Memorial Ave - Visitors Path

3.4 Median Island Planting

- All tree planting in medians must conform to Transit New Zealand Guidelines for Highway Landscaping (**Appendix 5.1.6**).

- In order to preserve sight lines to and from vehicles, visibility through medians must be maintained with vegetation to have either a maximum height of 0.6m or to be limbed to provide a clear trunk to a height of 2.5m.
- Tree species should be semi-mature at time of planting, at least PB150 – (refer to **section 2.4.3** - Size & Quality of plant selection)

3.5 Roundabouts

- All tree planting in roundabouts must conform to Transit New Zealand's Guidelines for Highway Landscaping (**Appendix 5.1.6**).
- In order to preserve sight lines to and from vehicles, visibility through medians must be maintained with vegetation to have either a maximum height of 0.6m or to be limbed to provide a clear trunk to a height of 2.5m.
- Shrubs and groundcovers are to be located no closer than 1m to the external edge of the roundabout. The remaining 1m is considered part of the vehicle rollover zone and may be either paved or grassed.
- Signage located within mountable-kerb roundabouts are to have a minimum 300mm clearance from the kerb edge and shall be assessed on an individual basis for safety by CIAL.



Preserve sightlines through pruning and plant choices

4 SUGGESTED PLANT SPECIES

Plant selection has a dramatic impact on the character and operational safety of the Airport. The potential hazard of bird strike is an issue that CIAL aims to minimise both from a design perspective and as part of ongoing maintenance. Below is a list of both desirable and non desirable plant species².

4.1 Suitable species

Trees – Native

Corynocarpus laevigatus	karakā
Dacrydium cupressinum	rimu/white pine
Dodonaea viscosa	akeake
Griselinia littoralis	papauma/broadleaf
Knightia excelsa	rewarewa
Lophomyrtus ballata	ramarama
Olearia paniculata	golden akeake
Pittosporum crassifolium	karo
Pittosporum eugenioides	tarata/lemonwood
Pittosporum tenuifolium	kohuhu
Plagianthus regius	manatu/ribbonwood

Trees - Exotic

Cedrus atlantica	blue atlantic cedar
Cedrus deodara	himalayan cedar
Fagus sylvatica	european beech
Fraxinus sp.	ash
Quercus palustris	oak
Thuja plicata	western red cedar
Ulmus sp.	elm

² This suggested Plant Species list updates the list in the previous Boffa Miskell report (**Appendix 5.5**) and includes information gathered from CIAL's consulting Ornithologist, Peter Harper. Additional literature is available from CIAL (see **Appendix 5.4 & 5.6**).

Suitable species (continued)

Pseudopanax sp.	whauwhaupaku/five finger
Pseudopanax crassifolius	lancewood
Podocarpus totara	totara
Sophora microphylla	south island kowhai

Shrubs – Native

Hebe sp.	
Myosotidium hortensia	chatham Island 'Forget-me-not'
Pachystegia insignis	marlborough rock daisy
Pseudowintera colorata	horopito/peppertree
Sophora prostrata	prostrate kowhai

Groundcovers & Grasses – Native

Acaena novae-zelandiae

Shrubs - Exotic

- azalea sp.
- camellia sp.
- calluna sp.
- erica sp.
- escallonia sp.
- photinia sp.
- pieris sp.
- rhododendron sp.
- viburnum sp.

Groundcovers - Exotic

Ajuga reptans



Pseudopanax laetus



Sophora prostrata



Azalea sp.

Groundcovers & Grasses – Native (continued)

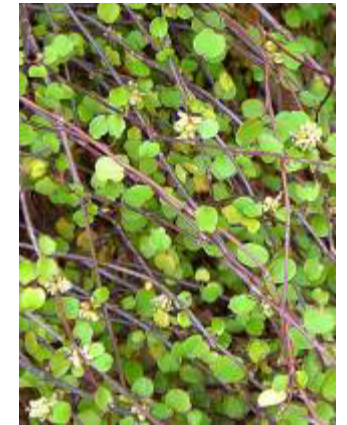
Aciphylla subflabellata	taramea/fine speargrass
Anamenthele lessoniana	wind grass
Astelia sp.	nz bush lily
Blechnum pennamarina	kiokio
Carex testacea	carex
Chionochloa rubra	red tussock
Libertia ixiodes	native NZ iris
Libertia grandiflora	native NZ iris
Muehlenbeckia axillaris	mat pohuehue
Poa cita	silver tussock/wiwi
Poa colensoi	blue tussock
Raoulia monroi	silver scabweed cushion
Schleranthus uniflorus	kohukohu
Uncinia uncinata	

Climbers - Native

Clematis paniculata	puawananga/White clematis
Parsonia capularis	native jasmine

Groundcovers – Exotic (continued)

Bergenia cordifolia
Grevillia sp.
Pachysandra terminalis



Muehlenbeckia axillaris



Pachysandra terminalis



NZ Native Clematis paniculata



4.2 Non-desirable species (bird attractants – (Appendix 5.14)

Trees – Native

Cordyline australis (in groups of more than 3)	ti kouka/cabbage tree
Coprosma sp.	
Hoheria sp.	lacebark
Metrosideros sp.	pohutukawa
Phormium tenax	harakeke/NZ flax

Trees - Exotic

Cupressus macrocarpa (single trees)
Pinus radiata
Platanus sp

Note: Deciduous trees with large leaves should be avoided due to issues with leaf drop and the blocking of drains.

4.3 Christchurch City Council Infrastructure Design Standard

Part 10 of the standard identifies trees, shrubs and groundcover considered undesirable for use in specific areas. It is recommended to take into account this standard when formulating any plant schedule within the Airport Precinct.

5 APPENDICES

5.1 List of Relevant Legislation, Regulations & Other Documentation

The Resource Management Act (1991)

The Building Act (2005)

NZ Building Code <http://www.dbh.govt.nz/building-code-compliance-documents#free-download>

NZ Public Health & Disability Act (2000)

5.1.1 Christchurch City Plan

The site of Christchurch International Airport Ltd is zoned Special Purpose (Airport) within the Christchurch City Plan. The Special Purpose rules are contained within Volume 3, Part 8, Section 3.0. CIAL is also designated for Airport Purposes.

Section 3.2.4 (a-f) outlines the specific reference to Visual Amenity that must be considered in any landscape proposal.

5.1.2 Canterbury Regional Pest Strategy

Available to download on the following website:

<http://www.ecan.govt.nz/Plans+and+Reports/pestAndWeeds/RPMS+2005.htm>

5.1.3 Christchurch City Infrastructure Design Standard 2007, Part 10: Reserves, Streetscapes and Open Spaces

Part 10 of this document outlines criteria for streetscapes, layout, open spaces and landscaping of legal roads. The guidelines will assist decision-makers to:

- Enhance the character, quality of life and environmental appeal of each development
- Complement and improve the environmental quality of the surrounding neighbourhood
- Provide recreation opportunities
- Increase the region's biodiversity
- Enhance the Garden City image of Christchurch
- Provide areas of social interaction
- Contribute to the character, shape and form of the city and surrounding environments

5.1.4 Indigenous Ecosystems of Otautahi Christchurch.

Set 3: The plains of Shirley-Papanui & Fendalton-Waimairi for Christchurch-Otautahi Agenda 21 Committee

This booklet contains a list of plants selected for their suitability to the particular Indigenous Plains Ecosystems within which CIAL is located. Land surfaces have been mapped for their age, soil development and drainage. Typical conditions of the soils and species tolerance to various conditions in this area are listed.

5.1.5 Christchurch City Council Civil Engineering Construction Standard Specifications, Parts 1 – 7 2006 (CSS)

Website: <http://www.ccc.govt.nz/doingbusiness/css/>

5.1.6 Transit NZ Guidelines for Highway Landscaping Version 2

Available to download from the following website: <http://www.transit.govt.nz>

5.2 CIAL Mowing Classes

Class 1: 19mm – 25mm grass length. Reel mow with catcher in a groomed manner to give a striped (court effect)

Class 2: 19-25mm grass length. Rotary mower with catcher

Edges are to be trimmed and clippings swept and removed.

5.3 CIAL Electrical & Electrical for Mechanical - Policy & Procedures Manual

Available from CIAL Facilities Services, Version #3, date issued: 30 August 2006, Index G201

5.4 Bird strike background literature

Available from CIAL Facilities Services

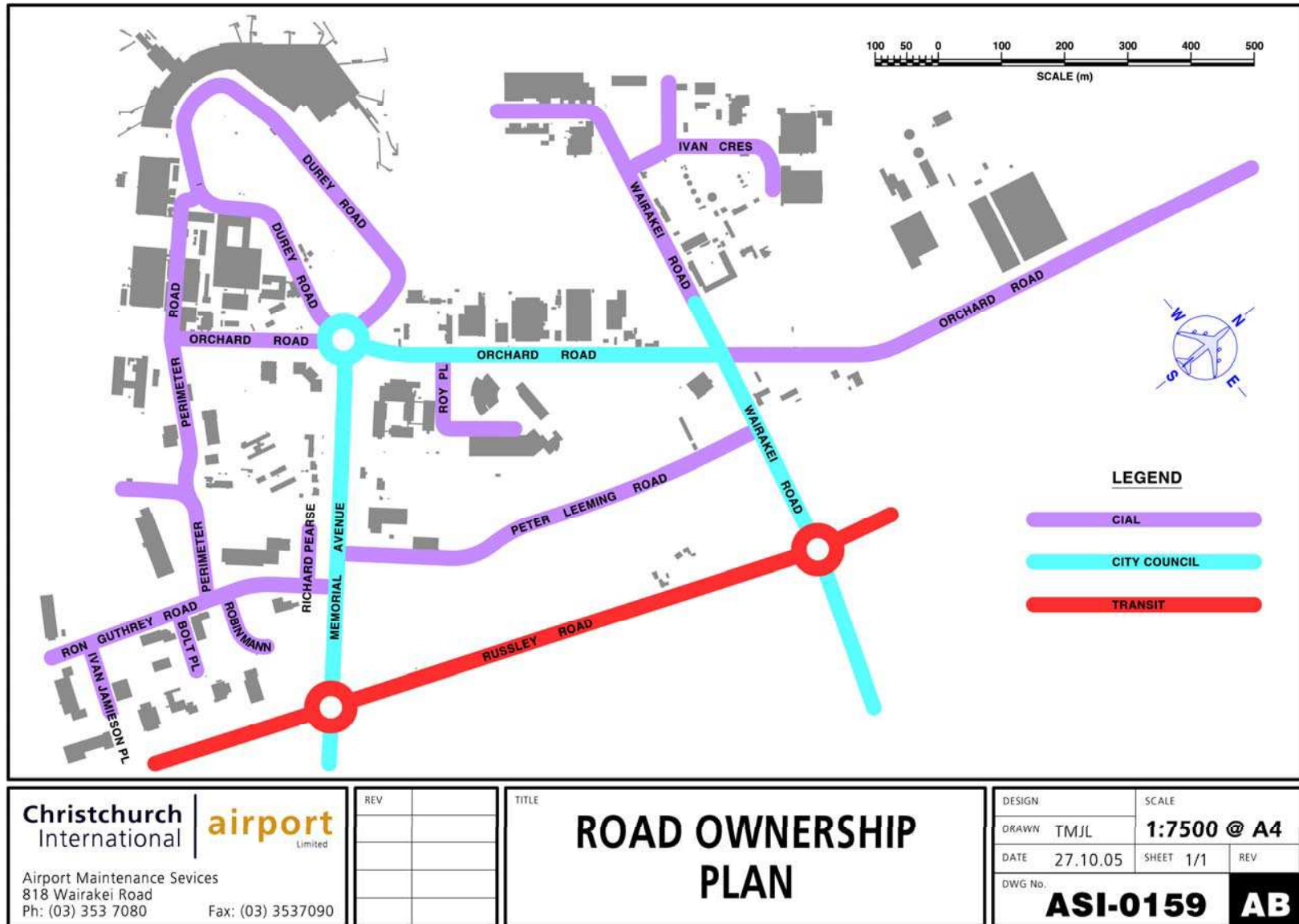
5.5 CIAL 2001 Planting Concept – Boffa Miskell

Available from CIAL Facilities Services, prepared for CIAL, April 2001 by Boffa Miskell

5.6 Trees & Plants Suitable for an Airport Environment/Pine Plantations & Birdstrike

Available from CIAL Facilities Services, prepared for CIAL by Peter Harper, Consulting Ornithologist

5.7 CIAL Road Ownership Plan (not to scale)

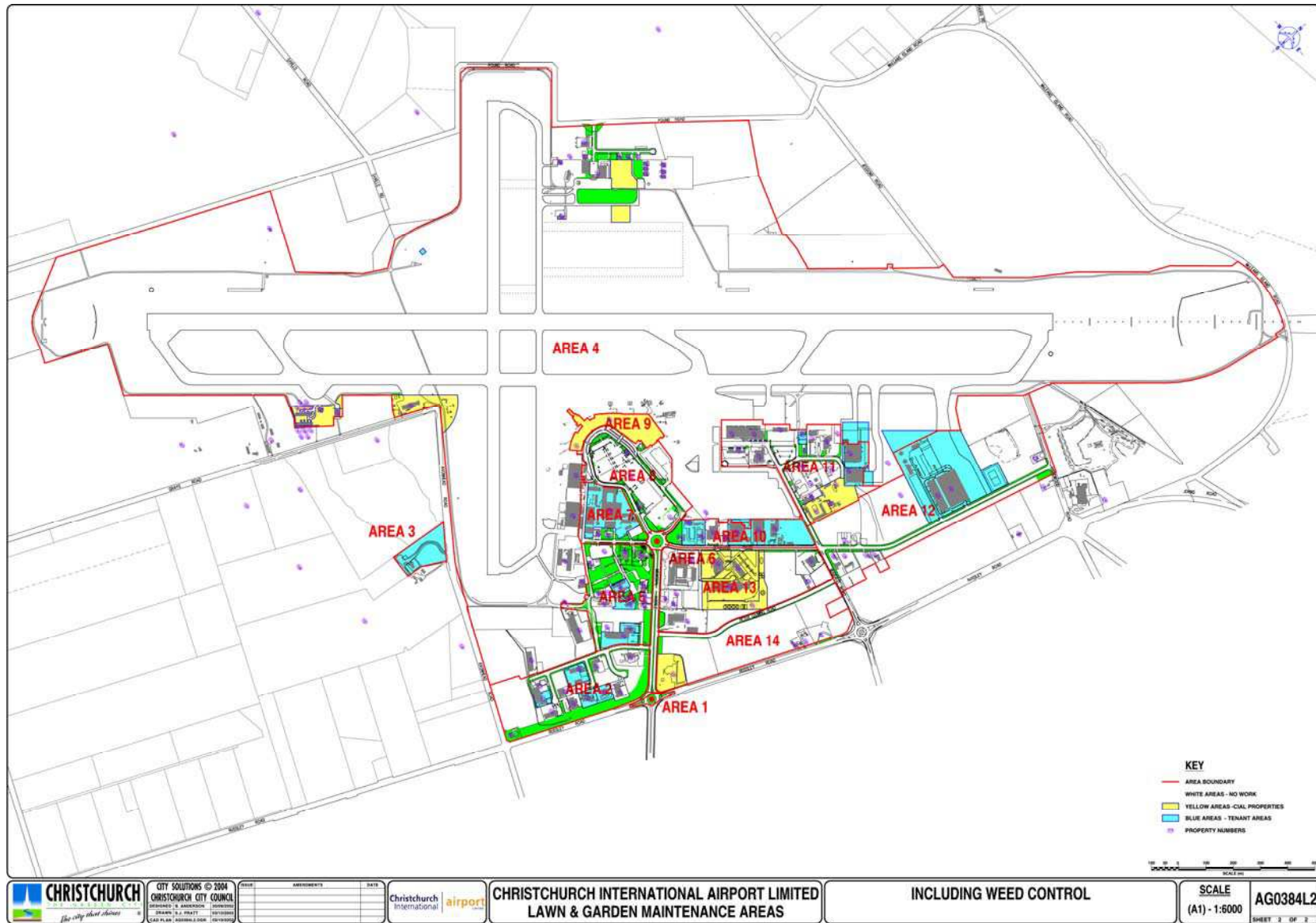


Christchurch International airport
 Limited
 Airport Maintenance Services
 818 Wairakei Road
 Ph: (03) 353 7080 Fax: (03) 3537090

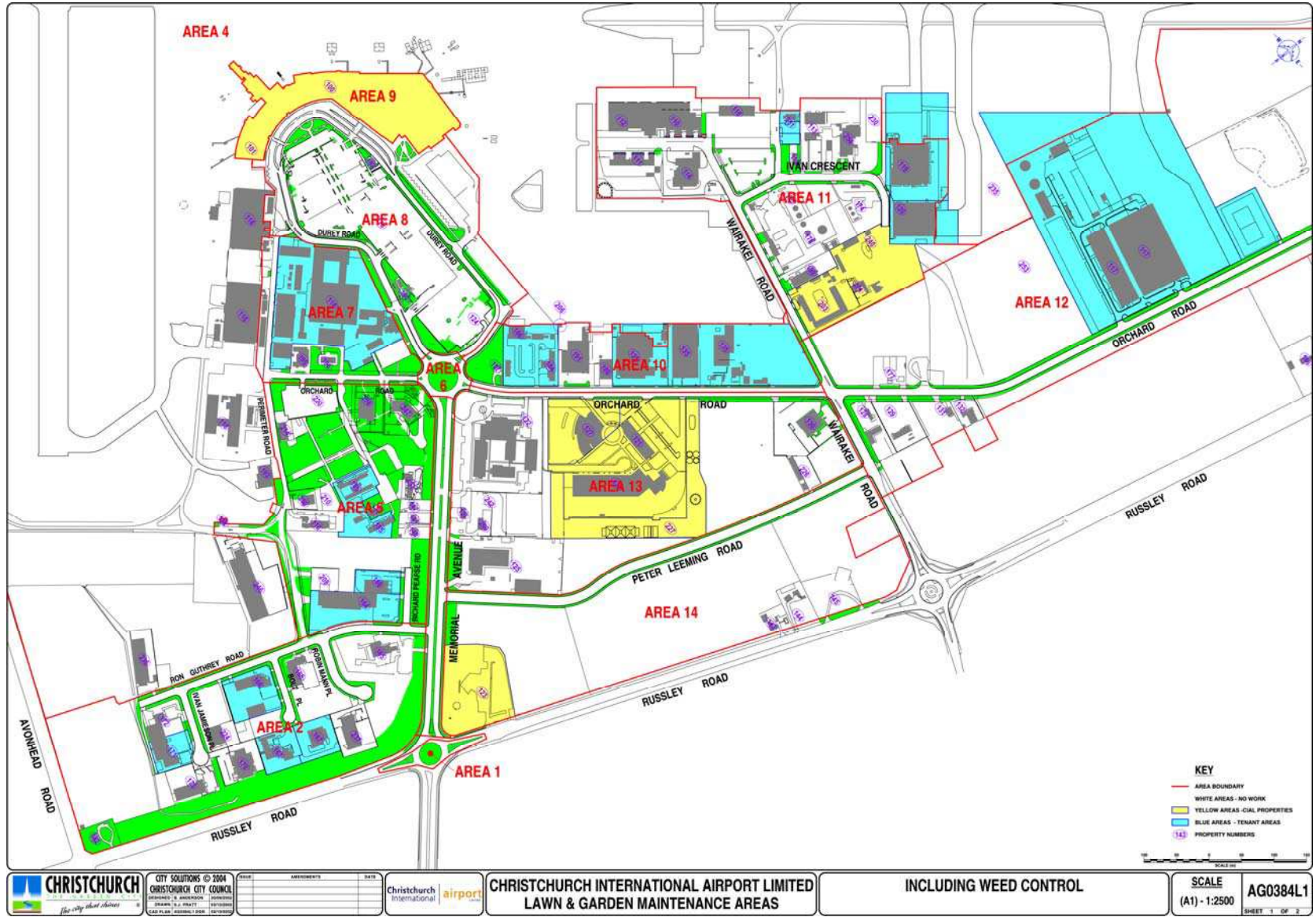
REV	

TITLE
ROAD OWNERSHIP PLAN

5.8 CIAL Lawn & Garden Maintenance Areas 1 (not to scale, updated 2007)



CIAL Lawn & Garden Maintenance Areas 2 (not to scale, updated 2007)



5.9 CIAL Obstacle Limitation Surfaces – Maximum Working Heights (not to scale)



CHRISTCHURCH INTERNATIONAL AIRPORT LTD Landscape Protocol Checklist	CIAL PROJECT NO:
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Consultant: _____

Phone No: _____ Email: _____

Project address: _____

Project No: _____ No. of Sheets: _____ Date: _____

Supplied/Complies	Not Applicable	All landscape plans, including alterations to the existing airport landscape, must be approved by CIAL. As part of the internal review process, Consultants must submit this completed checklist, with plans, to: Facilities Services, Christchurch International Airport Ltd, 818 Mairakei Rd, Christchurch, Attention Manager Airport Facilities. Please allow 20 working days for approval.
		2 copies of each plan (fully dimensioned scale drawings to a standard acceptable to CIAL)
		Design Stage
		Sketch Design (including the design brief, if any)
		Developed Design (only if required as part of Client's brief)
		Contract Documentation
		As Built Plans (on completion of project)
		Information included as part of the above plans
		Drainage & grading
		Paving
		Planting
		Signage
		Irrigation
		Lighting
		Recognition of Urban Design Protocol Guidelines
		Incorporates CPTED principles
		Conforms to Transit NZ Guidelines for Highway Landscaping

continued overleaf...

	<p>Plant Selection and Planting</p> <ul style="list-style-type: none"> ▪ Based on the CIAL recommended Plant List ▪ Incorporates principles of the Christchurch City Council Infrastructure Design Standard, Part 10 (Reserves, Streetscapes & Open Spaces) ▪ Complies with Christchurch City Council Civil Engineering Construction Standard Specifications 2006, (CCC CSS, 2006) Part 7; Landscapes
	<p>Length of plant establishment and maintenance period _____ months</p>
	<p>Complies with the relevant sections and rules of the following legislation:</p> <ul style="list-style-type: none"> ▪ The Resource Management Act (1991) ▪ The Building Act (2005) ▪ NZ Building Code ▪ NZ Public Health & Disability Act (2000) ▪ Christchurch City Plan ▪ Canterbury Regional Pest Strategy ▪ Christchurch City Council Civil Engineering Construction Standard Specifications 2006 (CCC CSS: 2006)
	<p>Excavation permit</p>
	<p>Resource consent</p>
	<p>CIAL Stormwater Drainage Resource Consent</p>

FOR OFFICE USE ONLY

DEPARTMENT	APPROVAL	DATE
Facilities Services
Property
Quality & Compliance
Planning & Environment
Services & Operations