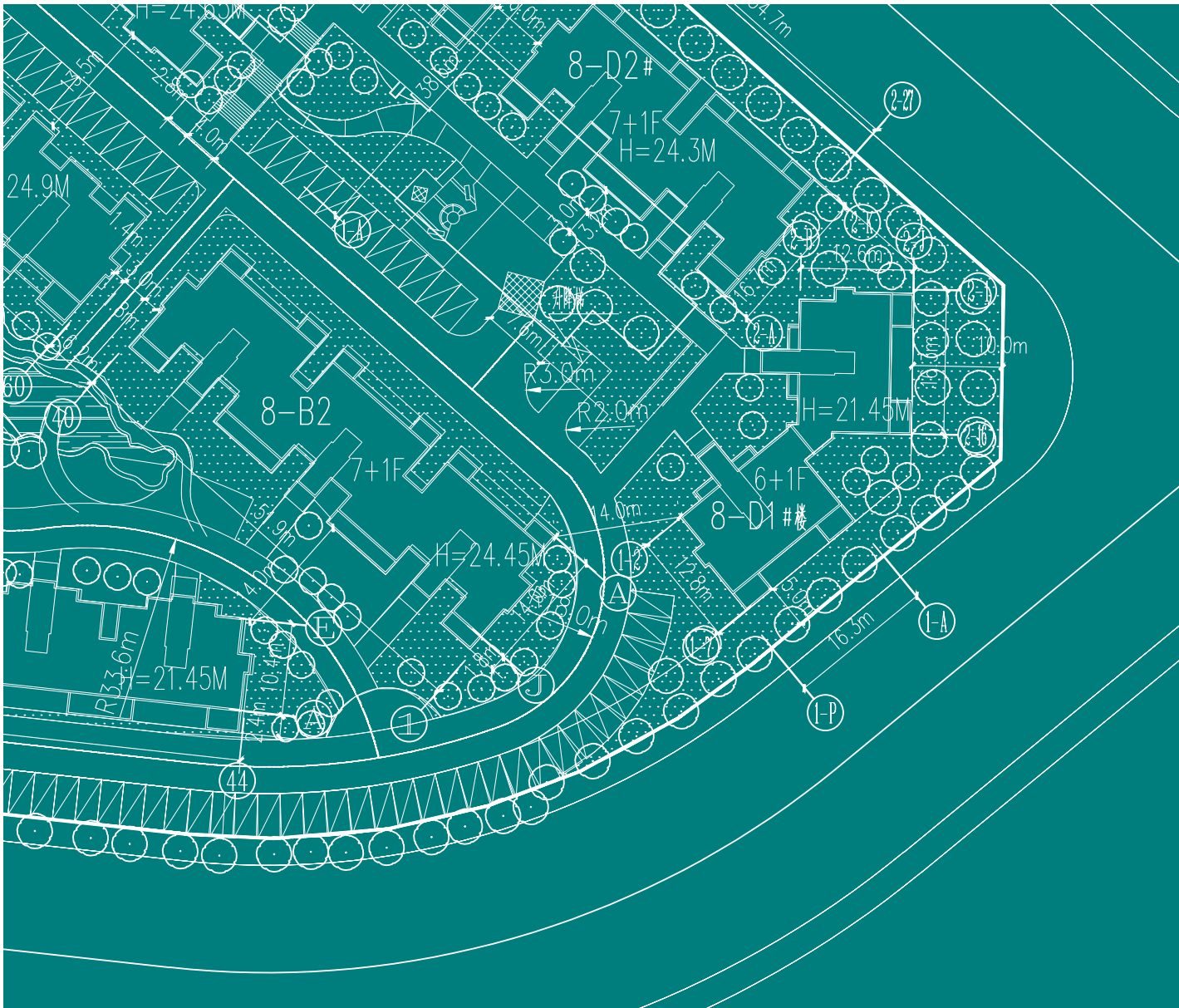
8.0 Civil


8-D2#
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Civil Design Guidelines

The design guidelines have been developed to provide a greater level of certainty for all stakeholders when CIAL embark on developing a new commercial asset – the focus is to deliver on the three core pillars of our mission: enhancing people's lives, fuelling economic prosperity and being great Kaitiaki of our planet.

This document outlines CIAL's Civil design requirements for commercial projects with the aim of providing safe, compliant, sustainable, simple and cost effective outcomes for the civil elements of a building asset.

PURPOSE

CHAMPIONING TE WAIPOUNAMU THE SOUTH ISLAND AND AOTEAROA NEW ZEALAND FOR TODAY AND TOMORROW

MISSION

CHRISTCHURCH AIRPORT IS RECOGNISED FOR

ENHANCING PEOPLE'S LIVES
Our team, customers, partners, communities

+

FUELLING ECONOMIC PROSPERITY
of the South Island and New Zealand

+

GREAT KAITIAKI OF OUR PLANET
Safety, security and sustainability

CHRISTCHURCH AIRPORT

CONTENTS

8.1 INTRODUCTION

Civil services to be provided to CIAL developments shall be designed and installed to balance performance and future flexibility with capital and operating costs.

The guidelines are intended to ensure that the civil services reticulation, equipment and installation are consistently maintained at a high standard, with a constant level of quality and service throughout the lifetime of each development.

Selected civil services must be rationalised against the alternative options described in these guidelines to ensure that all options have been considered and the final solution is the most fit for purpose. All projects are to complete the attached compliance checklist for each major design phase.

The guidelines are not intended to restrict designers from making recommendations in the interest of the project but rather to encourage the incorporation of features and systems that will provide flexibility for change of use, new technologies or expansion in the future.

8.2 ENVIRONMENTALLY SUSTAINABLE DESIGN PRACTICES

Environmentally sustainable design (ESD) practices and features should be considered for the mechanical systems installed in CIAL developments in accordance with section 1.1.7 of the General Design Guidelines.

Some specific ESD practices to be considered for civil services are listed below:

- Low-impact stormwater design solutions, such as utilising sustainable urban drainage systems without standing water or open swales.
- Wash and reuse soakpit boulders from decommissioned soakpits.
- Reuse existing pipe materials.
- Reuse existing road metals.
- Reuse existing road asphalt for contractor lay-down areas.
- Screen and reuse topsoil or stockpile for reuse.
- Where possible, consider sustainable and lower environmental impact materials (i.e. reduce PVC).

All stormwater treatment and disposal systems are to ensure that the potential for birdstrike to aircraft in proximity to the airport is not increased. The civil consultant shall demonstrate as part of their stormwater design that the bird hazard risk to aircraft is minimised as much as is reasonably practicable through the design ensuring that stormwater does not pond after the cessation of any storm event.

8.3 CODES AND STANDARDS

Below are the key codes and standards governing the design, specification and installation of civil services systems. The designer shall obtain the latest version of any CIAL procedure manuals prior to commencing design.

Note that, while the design will generally comply with the codes and standards below, some aspects of these codes and standards are not applicable to New Zealand. There are also variations between some of the codes and standards where they overlap. The design and installation shall comply in all respects with the latest/currently ratified versions of the following:

- CIAL procedure manuals
- Christchurch District Plan
- Christchurch City Council (CCC) Construction Standard Specifications (CSS) Parts 1–7
- CCC Infrastructure Design Standard (IDS)
- CCC Sewage Pumping Station Design Specification (SPSDS)
- CCC Trade Waste Bylaw
- CCC Waterways, Wetlands and Drainage Guide (WWDG)
- NZBC
- New Zealand Transport Agency (NZTA) Specification for Basecourse Aggregate M4
- NZTA Specification for Dense Graded and Stone Mastic Asphalts M10
- NZTA Manual of Traffic Signs and Markings (MOTSAM)
- Auckland Regional Council Stormwater Management Devices: Design Guidelines Manual TP10
- Environment Canterbury (ECan) Erosion and Sediment Control Guideline
- Ministry for the Environment/NZWERF On site Storm-water Management Guideline
- NZS 4431 *Code of practice for earth fill for residential development*
- NZS 4404 *Land development and subdivision infrastructure*
- CIAL Stormwater Design Guide and Resource Consent Framework
- CIAL Car Wash Bay Design Guide
- CIAL Contaminated Soil Site Management Plans
- CIAL Requirements for Working at The Airport
- CIAL Water Safety Plan
- Relevant resource consents
- Relevant New Zealand standard specifications and codes of practice whether specifically mentioned herein or not
- All other standards and documents produced by each and any authority having jurisdiction over the works

8.4 HEALTH AND SAFETY BY DESIGN

Health and safety by design shall be considered as part of the civil design. Refer to the Health and Safety Design Guidelines for specific details with regard to expected documentation and templates.

The civil consultant shall maintain a record the outcomes of health and safety by design and provide a health and safety by design report to identify issues with the design that have implications for construction, operation, maintenance and decommissioning.

Maintenance access shall form a part of the health and safety by design review for the development and **mitigation measures put in place to minimise the risks as a result of that review.**

Designers shall avoid locating services in inaccessible or difficult to access locations. Specific consideration shall be given to:

- trip hazards
- pavement crossfall
- sump grates in cycle lanes
- depth of services
- maintenance workers for the whole life of the development and decommissioning
- soil stability.

8.5 EARTHQUAKE PROTECTION

The civil consultant should consider seismic requirements in their design. The CCC Construction Standard Specifications and Infrastructure Design Standard provide best practices for earthquake resilience for civil works.

8.6 APPROVED CONTRACTORS

Consider and discuss with CIAL prior to tendering of civil works in CIAL developments whether there is a preference for any nominated contractors or subcontractors.

8.7 DESIGN CONDITIONS AND REQUIREMENTS

8.7.1 DOCUMENTATION LEVEL

The level of detailing (LOD) appropriate for the civil services shall be considered and discussed with CIAL. However the minimum level of detailing expected for these services is LOD 300.

8.7.2 COORDINATION WITH DESIGN TEAM

The civil design and associated drawings shall be coordinated with the architectural and other design consultants including but not limited to the following:

- Hydraulic
- Structural
- Electrical
- Mechanical
- Fire (including fire protection services).

Where these consultants are not engaged on a project, the civil consultant shall identify any areas of concern or issues with compliance in these areas to the CIAL project manager for discussion.

8.7.3 FUTURE FLEXIBILITY

Consideration shall be given by the designer to future flexibility of the installation to allow for potential expansion, future weather events or integration of new technology and appropriate allowances made. In particular, consideration shall be given to the spatial requirements and services connections required to allow for potential future expansion or alterations.

Additional consultation with the tenant shall be carried out and allowances made for any specific requirements.

8.7.4
CIVIL DESIGN SCOPE OF WORKS

The civil design will be to the face of buildings and will include:

- earthworks for finished floor levels, roading and lot contouring, including engineered and non-engineered filling, drainage swales and reserve areas
- stormwater reticulation piping, soakage systems and associated structures
- sewer reticulation piping and associated structures and pumping stations
- high-pressure water supply reticulation
- high-pressure fire water supply reticulation
- roading design, including pavements, footpaths and berms
- consideration to combine trenching and ducts for power and telecommunications.

Unless specifically requested by CIAL, the civil design will exclude:

- power design
- telecommunications design
- street lighting design
- traffic signals design
- landscaping design
- fencing design
- traffic safety design.

Irrespective of the exclusions above, the civil design for trenching shall be coordinated with the requirements of the consultants.

8.7.5
FLOOD MANAGEMENT

The civil consultant shall consider the resource consent requirements included in the CIAL Stormwater Design Guide. The civil designer shall request this guideline from CIAL directly.

8.7.6
BUILDING AND RESOURCE CONSENTS

The civil consultant shall advise the effects of the design on compliance with the CIAL existing suite of resource consents, the project-specific land use approval from CCC and any amendments that might be required to this approval due to the design process and any additional resource consents that may be required. Additional consents are often triggered by the depth of excavation and the proximity to groundwater levels and storage of hazardous substances.

Smaller civil projects may not necessarily require a building consent. A building consent exemption may be acceptable to CCC depending on the nature and size of the civil infrastructure being constructed.

8.7.7
ROADING – APPROVED EQUIPMENT AND MATERIALS LIST

In roads, all materials should be in accordance with the requirements of the CCC Approved Materials List.

8.7.8
SITE BOUNDARIES

The civil consultant will consult with CIAL in relation to proposed boundaries and confirm how those boundaries relate to the existing legal boundary and adjoining lease boundaries. Any discrepancies are to be discussed with CIAL and confirmed prior to any design works being carried out.

8.7.9
EXISTING SERVICE LOCATIONS

For the purpose of design, the civil consultant shall contact CIAL for existing service locations. The civil designer shall locate all services related to the tenant within the lease boundaries of the development site. Where this cannot be achieved, the civil designer will gain approval from CIAL to locate services outside of the lease boundary.

The protection of services during construction is the responsibility of the contractor.

8.7.10
REDUNDANT SERVICE REMOVAL

The civil consultant shall identify to CIAL any redundant stormwater, sewer or water supply reticulation to be removed/realigned and discuss with CIAL their requirements.

8.7.11
EARTHWORKS

Airports and several activities associated with airports have been identified as sites where Hazardous Activities and Industries List (HAIL) activities have either occurred in the past or are currently occurring. This means that, under the Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations (NES Soil), the airport campus is a HAIL site and a resource consent is required when any soil disturbance is undertaken.

CIAL holds a global resource consent **(RMA/2016/844)** under the NES Soil, providing for the disturbance of contaminated soil and potentially contaminated soil across the airport campus. Designers must refer to the contaminated soil risk category map to understand what risk category the earthworks are in and design accordingly.

All earthworks performed on the site are to be in accordance with NZS 4431. All fill material should be tested in accordance with NZS 4431, and the civil engineer shall review the testing results to ensure compliance.

8.7.11.1
Topsoil

Varying depth and quality of topsoil may be encountered on the site. For calculation purposes, an assessment of the average topsoil depth across the site shall be made based on the geotechnical report findings and monitored on site.

Class 1 topsoil should be used for dressing berms, whereas Class 2 topsoil will be respread to lots only. The civil consultant should be available to make distinction where required. All grassed areas are to have 150mm depth of topsoil except in areas where CIAL has engaged a landscape architect, in which case the civil design should refer to the landscape architect's information.

8.7.11.2
Cut to fill

Wherever possible, a balance of cut to fill should be achieved unless CIAL have a need for fill material elsewhere on campus. The civil engineer should discuss with the CIAL project manager if there is a need for fill material elsewhere on campus.

8.7.11.3
Quantities

For calculation purposes, a compaction ratio of 1:1.2 on fill materials should be assumed.

8.7.11.4
Environmental management of earthworks

The civil consultant shall, in preparing their design, consider carefully the site conditions and timing and staging of the construction works with respect to the potential for the generation of dust, erosion and sediment during construction.

8.7.11.4.1

Erosion and sediment control

CIAL operates under a construction phase stormwater discharge consent. All design of erosion and sediment control measures for CIAL developments is to be in accordance with the ECan Erosion and Sediment Control Guideline. Erosion sediment control plans shall be submitted to CIAL for ECan approval.

Erosion sediment control principles are to:

- control run-on water
- separate clean from dirty water
- protect the land surface from erosion
- prevent sediment from leaving the site.

8.7.11.4.2

Dust control

Dust control at CIAL and its impact on airside activities are of paramount importance. The civil engineer should identify to the contractor and/or CIAL any dust control issues to ensure mitigation takes place early. Dust may be generated from:

wind-blown dust from exposed surfaces such as bare land and construction sites

- wind-blown dust from stockpiles of dusty materials such as sand and other minerals
- dust caused by vehicle movements on sealed or unsealed roads and yards
- mining
- road works and road construction
- development site construction.

Mitigation of dust may include:

- staging construction to limit areas of exposed ground
- use of progressive stabilisation on large sites
- ensuring contractors are aware of their responsibilities.

8.7.12 STORMWATER DESIGN

Stormwater discharges at CIAL are treated on site and discharged directly into the underlying groundwater table via soakpits or direct infiltration to ground. This is required to remove any ponding of water and manage the risk of birdstrike to aviation activities. CIAL is also located above an unconfined aquifer meaning all discharges require resource consent from ECan. CIAL holds and operates under a suite of stormwater discharge consents from ECan, which provide for both construction and operational phase discharges. Conditions of these consents include specific design standards and a stormwater design approval process with ECan.

8.7.12.1

Construction phase

Sediment and erosion control plans must be submitted to ECan at least 10 days prior to construction commencing on site.

8.7.12.2
Operational phase

Treatment
Stormwater systems for each site must be designed to treat the specific activities occurring on the site. Where these activities involve the storage and use of hazardous substances, a high level of treatment is required. The systems must be designed with specific spill containment. If the activity includes handling of hazardous substances, additional spill containment must be provided.

Discharge
All stormwater from CIAL sites is discharged directly into the ground and into the underlying groundwater table (via soakpits) either on site or if required on a prescient area soakpit. Soakpits must be located in soil free of contamination and meet required infiltration rates.

Stormwater design must also remove the potential for any on-site ponding to reduce any water bodies providing habitat for birds. This is a critical requirement for the management of birdstrike risk on the aerodrome.

Stormwater design shall be in accordance with the CIAL Stormwater Design Guide. The civil designer shall request this guideline from CIAL directly. Designs shall also be in accordance with the current issue of CCC CSS Part 3 (or any superseding document), or if not covered by the CCC CSS, designs shall be in accordance with NZBC clauses E1 and E2.

For stormwater designs, CIAL's current ECan discharge consent shall be referred to. The CIAL Stormwater Design Guide is for reference to aid the civil consultant. However, the civil consultant shall satisfy themselves that their design is in accordance with the current ECan discharge consent.

8.7.12.3
Stormwater shut-off valves

Stormwater shut-off valves shall be as per the CIAL Stormwater Design Guide. The civil designer shall request this guideline from CIAL directly.

8.7.13
SEWER DESIGN

Sewer design shall be in accordance with the current issue of CCC CSS Part 3 (or any superseding document) and shall be in accordance with NZBC clause G13.

All uPVC pipes shall conform to AS/NZS 1260 *PVC-U pipes and fittings for drain, waste and vent applications* and shall have the following stiffness numbers as set out in the standard:

- DN 100 and 150 – SN16
- DN225 and larger – SN8

At CIAL, the wastewater discharge to the council wastewater network is limited to a peak demand limit. The design for the sewer network may require holding tanks and controls sized to cater for the development wastewater discharge. Holding tanks and controls will limit the discharge from development sites to the sewer, limited to the maximum allowable flows. The civil designer will discuss with CIAL the maximum allowable flow from the site.

Sewer drainage receiving hot discharge should be cooled on site to a temperature and a pH agreed with CIAL prior to discharge off site.

Manholes or inspection chambers shall be provided at main junctions, at changes in gradient and direction and at intervals not exceeding 100 metres. For ease of maintenance, manholes should be provided at appropriate locations and rodding points provided where manholes are not practical. In order to maintain a consistent level of access, there shall be no planting around manholes.

8.7.13.1
Sewage pumping stations

All sewage pumping station designs shall be in accordance with the CCC Sewage Pumping Station Design Specification. The civil consultant shall liaise with CIAL for any specific requirements. Any pumping station requirements shall be approved by CIAL prior to design completion.

In Mustang Park, the sewage reticulation system is a low-pressure pumped system. CIAL prefers the low-pressure sewer pump chambers to be located in the landscape strips adjacent to the neighbouring boundary. If this cannot be achieved, the chamber should be located in the paved area where, during maintenance, there is minimum disruption to tenants.

8.7.13.2
Wash bay design

Discharge from wash bays must be isolated from the stormwater network to remove the risk of discharge of contaminants to groundwater. Wash bays must also include a roof to ensure rainwater is not discharged into the sewer network.

Wash bay design shall be in accordance with the CIAL Car Wash Bay Design Guide (or any superseding document). The civil designer shall request this guideline from CIAL directly.

8.7.14
WATER SUPPLY DESIGN

Water supply design shall be in accordance with the current issue of CCC CSS Part 4 (or any superseding document) and shall be in accordance with NZBC clause G12.

All water main reticulation materials are to be pressure pipes rated appropriately for the pressure of the network. Submains and crossovers are to be MPE80.

All fire water supply reticulation materials are to be high-pressure pipe rated appropriately for the pressure of the network. Dakota Park has fire water supply reticulation separate from water supply. This fire water supply is a dedicated building sprinkler supply main. Sluice valves located on the fire water supply shall be electronically monitored to ensure that sluice valves are left in the open position after any maintenance. The requirements of electronic monitoring shall be discussed with CIAL. The civil consultant shall provide specific designs for the fire main thrust blocks.

For roads, the water supply design shall be in accordance with the CCC IDS and the current issue of CCC CSS Part 4 (or any superseding document).

For development sites, the water supply design should be in accordance with NZBC clause G12. CIAL prefers gate and sluice valves to be located outside of development driveways.

8.7.14.1
Backflow preventers

Backflow preventers shall be as per the standard CIAL backflow preventer detail. The civil designer shall request this detail from CIAL directly.

The backflow preventers shall be in accordance with 7.10. The civil consultant will specify the backflow preventer hazard rating. CIAL prefers the backflow preventer and enclosure to be located in the landscape strips adjacent to the neighbouring boundary.

8.7.14.2
Metering on main input

Backflow preventers shall incorporate water meters as per the CIAL water meter details. The civil designer shall request these details from CIAL directly.

8.7.15
ROADING AND HARDSTAND AREA DESIGN

Designs shall be in accordance with the current issue of CCC CSS Part 6 (or any superseding document) and shall be in accordance with NZBC clause D1. The civil designer should check access and egress arrangements are appropriate for the vehicles using the development site.

8.7.15.1
Pavement design

The pavement construction shall consist of a 100mm layer of NZTA M/4:AP40 basecourse over varying depths of NZTA AP65 sub-basecourse dependent on road category, all formed on a well prepared subgrade.

The minimum depth of NZTA M/4:AP40 shall be 100mm. The minimum depth of NZTA AP65 shall be 150mm. For pavement design with less than 250mm metal depth, the metal shall consist of M4:AP40. The road category, number of vehicles and subgrade strength shall inform the design of road pavement thicknesses.

Benkelman beam testing of the basecourse prior to sealing shall be reviewed by the civil engineer. Benkelman beam testing shall be in accordance with the requirements of the CCC IDS.

8.7.15.2
Pavement crossfalls

Crossfalls on pavement shall be in accordance with the CCC IDS and shall not create large/deep basin areas in the pavement. CIAL prefers pavement grades between 1% and 4%. However, where grades are steeper than 3%, the civil consultant shall discuss alternative options with CIAL.

8.7.15.3
Pavement subgrade

Subgrade inspection and testing is to be performed by the civil consultant prior to placement of any metal courses. Any soft areas in the exposed subgrade shall be deemed unsuitable by the civil engineer. Where the civil engineer deems the subgrade unsuitable, extra depths of pit run or AP65 should be used to replace the additional depth of excavation below subgrade level.

8.7.15.4
Sealing

All roads are to be surfaced with asphaltic concrete on a full G5 chipseal prime coat.

All development sites' pavements are to be surfaced with M10 asphaltic concrete on a full tack coat or full G5 chipseal prime coat or with a two-coat chipseal dependent on CIAL requirements for the development.

8.7.15.5
Footpaths

Footpaths will be standard 1.5m wide formation to CSS SD 607 Asphaltic Concrete Footpath and Vehicle Crossing Construction with a full tack coat and DG7 asphaltic concrete surface. Footpath crossfalls shall not be steeper than 2%.

The civil consultant shall discuss with CIAL the cycleway network within the CIAL campus and consider the best location if required. The location of cycleways may be shared with the footpath or on the road with a dedicated cycle lane.

8.7.15.6
Concrete hardstands

Ensure appropriate steel armour edge details are detailed between concrete and asphalt interfaces to minimise risk of spalling. Ensure these interfaces are not immediately below potential building drip lines.

Ensure appropriate finish (e.g. broom) Consider required strength based on expected use.

8.7.15.7
Line marking

These shall be specified in accordance with the NZTA M7 - Spec for Roadmarking paints with a minimum specification of A. Classification to be confirmed with CIAL prior to design finalising

8.7.15.8
Carpark

- Carpark spaces and aisles are to comply with the Christchurch District Plan and NZS 4121:2001 section 5. Lined markings are to be painted white with clear visibility. Consider larger carparking spaces for ease of access, particularly for vehicle leasing premises and luggage/trolley handling (e.g. 2.5m).
- Wheel stops are to be avoided due to trip hazards and ongoing maintenance. Preference is for carparks that abut a solid concrete kerb.

8.7.15.9
Road berms

Road berms are to be dressed with a 150mm depth of Class 1 topsoil from on-site stockpiles. The topsoil is to be dressed, lightly compacted, have the top 25mm cultivated to form a fine even bed seeded in accordance with the current issue of CCC CSS Part 7 (or any superseding document). The berm crossfall shall be 3%.

Right-of-way berms are to be dressed with a 150mm depth of Class 1 topsoil.

8.7.16
LANDSCAPING

The civil consultant shall coordinate with the landscape architect to ensure landscape planting does not impact on underlying services, with consideration given to the whole-of-life maintenance costs of those services.

8.7.17
MONITORING WELLS

The civil consultant shall request from CIAL well maps and identify existing monitoring wells that require protection or treatment.

8.7.18
INSPECTIONS AND HOLD POINTS

The civil consultant should provide an Engineering New Zealand CM3 level of construction monitoring to ensure the civil contractor's compliance to quality assurance.

As a minimum, the civil consultant should monitor the following through inspections and quality assurance documentation:

- Subgrade inspections
- Soft/unsuitable ground inspections
- Trench base inspections
- Stockpiled materials inspections
- ND testing review for earthfill
- ND testing review for drainage backfilling
- ND testing review for AP65 metal sub-basecourse
- ND testing review for AP40 metal basecourse testing
- ND testing review for metal kerb base testing
- Kerb base inspection
- Kerb string inspection
- Benkelman beam testing review
- Confirmation of metal course depths
- AP40 preseal sweep inspection plus string
- Preseal tack coat inspection
- Preseal prime coat inspection
- Asphalt depth inspection
- Footpath tack coat inspection and asphalt depth
- Driveway batten, tack coat inspection and asphalt depth
- Soakpit infiltration rate testing and confirmation
- Soakpit base excavation prior to boulder placement
- Soakpit boulders inspection prior to placement
- Soakpit geofabric inspection
- Manhole corbels inspections
- Manhole sealing inspections
- Stormwater pipe pressure testing
- Stormwater sump measurements
- Sewer pipe pressure testing
- Pre-backfill water inspection
- Water supply main pressure testing
- Water supply main chlorination testing (for mains in roads)
- CCTV review for all pipes 150mm diameter or greater
- Water supply lateral testing (CCC B-084)
- Fire sprinkler supply reticulation pressure testing
- Practical completion inspection for release of retentions
- Final inspection for release of final retentions

8.8 DOCUMENTATION (CLOSE-OUT INFORMATION)

- Non-conformance Reports
- Contractor's completion certificate
- Engineers completion certificate

Earthworks
- Earthfill report
- Maximum dry density/moisture content testing
- Nuclear moisture density testing
- NZS 4431 certification
- Earthfill as-built plans

Drainage
- Authorised installer certification
- Electrofusion pre-construction testing
- Electrofusion log sheets
- Electrofusion operator's certificate
- Butt welding pre-construction testing
- Butt welding log sheets
- Butt welding operator's certificate
- Concrete test results
- Sewer gravity pipe tests
- Stormwater gravity pipe tests
- CCTV review for all pipes 150mm diameter or greater
- Pressure pipe testing
- Backfill testing
- Metal haunching dockets

Water
- Authorised installer certificate
- Electrofusion pre-construction testing
- Electrofusion log sheets
- Electrofusion operator's certificate
- Butt welding pre-construction testing
- Butt welding log sheets
- Butt welding operator's certificate
- Roundness testing results
- Construction tests on electrofusion welds
- Construction tests on butt welds
- Pressure test results
- Backfill in roads dockets
- Backfill testing

Roading

- Kerb base testing
- Kerb concrete strength and slump dockets
- Footpath testing
- Metal course dockets
- Asphaltic concrete dockets
- Asphaltic concrete surface testing
- Cobble stone dockets
- Benkelman beam results
- Asphaltic concrete core results

8.9
CIVIL SERVICES COMPLIANCE CHECKLIST

PROJECT NAME: **DATE:**

SUBMITTED BY: **STAGE:**

SECTION 8.0 CIVIL SERVICES DESIGN GUIDELINES

1.0	GENERAL DESIGN GUIDELINE	Compliant	Non-Compliant	Not Applicable	Comments
	All Clauses	☐	☐	☐	
8.0	**CIVIL SERVICES DESIGN GUIDELINES**				
8.1	Introduction	☐	☐	☐	
8.2	Environmentally sustainable design practices	☐	☐	☐	
8.3	Codes and standards	☐	☐	☐	
8.4	Health and safety by design	☐	☐	☐	
8.5	Earthquake protection	☐	☐	☐	
8.6	Approved contractors	☐	☐	☐	
8.7	Design conditions and requirements	☐	☐	☐	
8.7.1	Documentation level	☐	☐	☐	
8.7.2	Coordination with design team	☐	☐	☐	
8.7.3	Future flexibility	☐	☐	☐	
8.7.4	Civil design scope of works	☐	☐	☐	
8.7.5	Flood management	☐	☐	☐	
8.7.6	Building and resource consents	☐	☐	☐	
8.7.7	Roading – approved equipment and materials list	☐	☐	☐	
8.7.8	Site boundaries	☐	☐	☐	
8.7.9	Existing service locations	☐	☐	☐	
8.7.10	Redundant service removal	☐	☐	☐	

		Compliant	Non-Compliant	Not Applicable	Comments
8.7.11	Earthworks	☐	☐	☐	
8.7.11.1	Topsoil	☐	☐	☐	
8.7.11.2	Cut to fill	☐	☐	☐	
8.7.11.3	Quantities	☐	☐	☐	
8.7.11.4	Environmental management of earthworks	☐	☐	☐	
8.7.11.4.1	Erosion and sediment control	☐	☐	☐	
8.7.11.4.2	Dust control	☐	☐	☐	
8.7.12	Stormwater design	☐	☐	☐	
8.7.12.1	Construction phase	☐	☐	☐	
8.7.12.2	Operational phase	☐	☐	☐	
8.7.12.3	Stormwater shut-off valves	☐	☐	☐	
8.7.13	Sewer design	☐	☐	☐	
8.7.13.1	Sewage pumping stations	☐	☐	☐	
8.7.13.2	Wash bay design	☐	☐	☐	
8.7.14	Water supply design	☐	☐	☐	
8.7.14.1	Backflow preventers	☐	☐	☐	
8.7.14.2	Metering on main input	☐	☐	☐	
8.7.15	Roading and hardstand area design	☐	☐	☐	
8.7.15.1	Pavement design	☐	☐	☐	
8.7.15.2	Pavement crossfalls	☐	☐	☐	
8.7.15.3	Pavement subgrade	☐	☐	☐	
8.7.15.4	Sealing	☐	☐	☐	
8.7.15.5	Footpaths	☐	☐	☐	
8.7.15.6	Concrete hardstands	☐	☐	☐	
8.7.15.7	Line marking	☐	☐	☐	
8.7.15.8	Carpark	☐	☐	☐	
8.7.15.9	Road berms	☐	☐	☐	
8.7.16	Landscaping	☐	☐	☐	
8.7.17	Monitoring wells	☐	☐	☐	
8.7.18	Inspections and hold points	☐	☐	☐	
8.8	Documentation (close-out information)	☐	☐	☐	