WIDENING, WEIRS AND RIFFLES

Widening and deepening the creek has benefits both ecologically and aesthetically. Several locations along the creek have been selected for widening. These parts of the creek are typically located in places that are visually prominent from bridges or near main public buildings where the creek may be used as a key focal point or amenity feature.

Widening of the creek is mainly proposed in locations where the creek banks naturally widen, so that the natural flows of the creek are maintained. Simple rock weirs and riffles may be all that is required to widen and deepen the waterway. In some cases, the creek bed will need to be excavated and re-lined in order to create deeper pools, which are important for fish habitat and creek temperatures. In all cases, weirs will be designed (in collaboration with ecologists) to allow fish passage.

ROCK WEIRS AND RIFFLES

Existing creek channel (indicative)

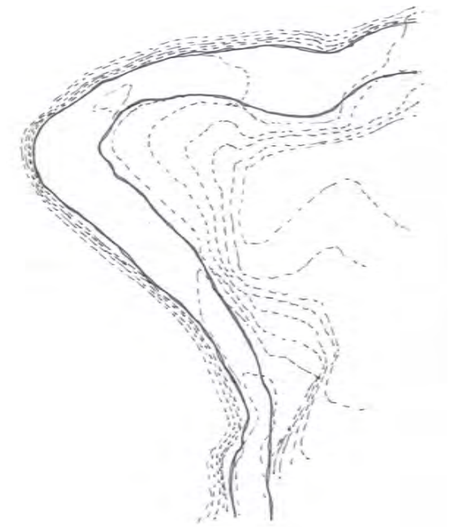
Creek channel with rock weir to flood the natural creek bed contours and riffles to allow fish passage

CREEK SUBSTRATE

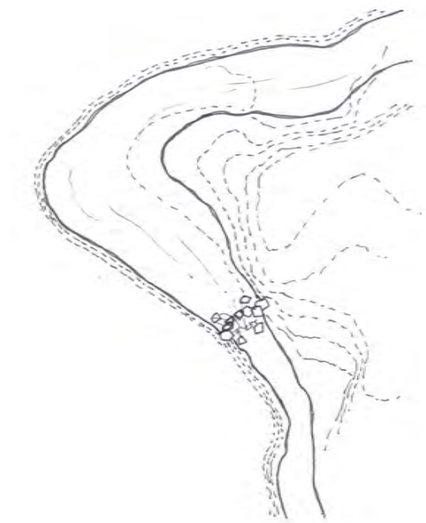
In locations where the creek bed is excavated to create deeper pools, the substrate is to be reinstated with river gravels and small cobbles of a suitable size to be a spawning medium.

Example of creek widening and use of weirs at Millbrook Resort

CREEK WIDENING



Existing creek channel (indicative - plan view)



Creek channel with rock weir and riffles to flood the natural creek bed and widen the waterway. Creek bed dug out and re-surfaced in some locations to create larger pools

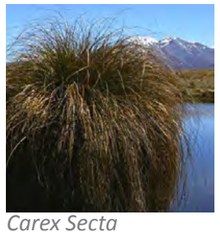
RIPARIAN PLANTING

Mill Creek and it's margins will be enhanced with extensive native riparian planting. This vegetation will provide habitat for wildlife within the stream environment, bank stabilisation and filtration of sediment from stormwater runoff entering the creek.

Riparian plantings will include native species that are well suited to the valley environment. Sedges such as *Carex secta* and *Carex virgata* will be mass planted along the waters edge, while flaxes, toi toi and cabbage trees will hold together the steeper creek banks. Small native trees and shrubs will also be planted within the riparian zone creating areas of shade and shelter.

CREEK MARGIN

Carex Virgata
Swamp Sedge



Carex Secta
Makura Sedge

Carex solandri
Forest Sedge

Juncus edgariae
Wiwi

Polystichum vestitum
Prickly Shield Fern

FLOOD BANKS + UPPER BANKS

Phormium tenax
Harakeke

Austroderia richardii
Toe Toe

Hebe salicifolia
Koromiko

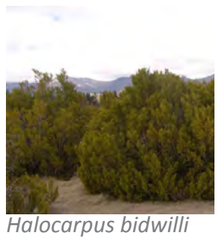
Cordyline australis
Cabbage Tree

Coprosma propinqua
Mingimingi

UPPER BANKS

Pittosporum tenuifolium
Kohuhu

Sophora microphylla
Kowhai



Halocarpus bidwilli
Bog Pine

Olearia odorata
Scented Tree Daisy

Phyllocladus alpinus
Mountain Toatoa

MODIFIED MARGINS AND TERRACES

There are limited locations along Mill Creek where landscaped outdoor areas extend to the creek margins. In these locations, we wish to allow people to get closer to the water by forming terraces and platforms on the waters edge.

Retaining of some terrace edges to the front of accommodation buildings will be formed from natural boulders where there are pinch points between buildings and the natural creek alignment. In landscaped areas near the main restaurant, a solid masonry wall may be formed on the creek margin to retain a hard surface area above.

Downstream near Ayrburn Domain, a terrace on the creek edge is proposed with a solid masonry wall (similar to the exemplar photo below).

Natural rock retaining to terraces

Example of modified creek margins using solid walls to form terraces upstream at Millbrook

OVERVIEW

Site stormwater will be directed through an overland network of grass swales, rock swales and detention basins that slow and filter sediment from hard surface runoff before it enters Mill Creek.

A constructed wetland and stormwater detention pond will become an amenity feature of the restaurant outdoor dining area beside Building A. The pond and filtration beds will be a stormwater filtration and detention system in storm events, collecting and cleansing hard surface runoff before entering Mill Creek. When not in use as a stormwater system, water will be reticulated through the filtration beds as a closed system and treated as a water feature.

ROCK SWALES

FEATURE WETLAND

ROAD SIDE GRASS SWALES

DETENTION BASIN

OVERVIEW

The planting strategy for Waterfall Park involves a purposeful merging of exotic and native plants to create a natural wilderness setting for the hotel and wellness centre. Plant materials will be selected based on their suitability for the valley environment (which has a microclimate distinct from the surrounding Wakatipu Basin) and relevance to historic and endemic plant communities. It is hoped that one day Waterfall Park will become known as a secluded forest retreat.

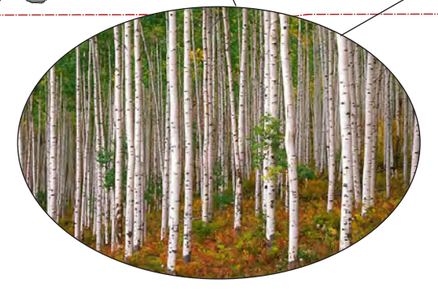
NATIVE FOREST

HOTEL GARDEN

LEGEND

- Existing Tree to Remain
- Italian Alder
- Himalayan Birch
- Beech Forest
- Mitigation Planting
- Riparian/Native Amenity Planting

MILL CREEK
RIPARIAN



WOODLAND

FARMYARD GARDEN



FARMYARD GARDEN

Landscaped areas surrounding the heritage buildings will be dry-climate ‘villa style’ gardens that imbue a farmyard character with hedges to define space and simple mass plantings of lavender, tussock, carpeting or climbing roses, daisies etc to provide pops of colour. Existing specimen trees will be retained where possible. A raised potager garden may be included as the restaurant garden.

KEY SPECIES

Scleranthus biflorus
Cushion Plant

Libertia spp
NZ Iris

Muehlenbeckia spp
Pohuehue

Chionochloa spp
Snow tussock

Rudbeckia fulgida
Coneflower

Leonohebe cupressoides
Cypress Hebe

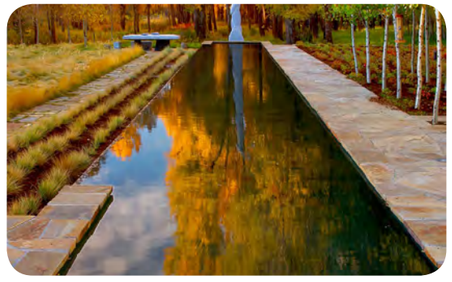
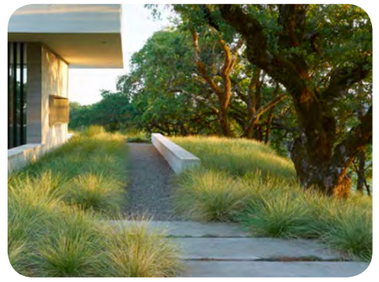
Carpinus betulis
Hornbeam Hedge

Rosa spp.
Carpet Rose Scarlet

Sedum spp
Sedum

Prunus lusitanica
Portuguese Laurel

Prunus cerasus ‘Rhexii’
Upright Cherry


HOTEL GARDENS

Planting within landscaped areas associated with the hotel buildings are to be bold and simple, distinct from the natural planting patterns associated with Mill Creek and the valley walls. These plantings are a ‘maintained edge’ to the surrounding natural landscape.

Gardens will include a combination of hardy native and exotic species in mass planting and uncluttered combinations and compositions. These areas present an opportunity to intentionally and harmoniously merge exotic and native plants.

KEY SPECIES

Scleranthus biflorus
Cushion Plant

Libertia spp
NZ Iris

Muehlenbeckia spp
Pohuehue

Chionochloa spp
Snow tussock

Carex spp
Sedge

Astelia spp
Bush Flax

Blechnum spp
Fern

Pseudopanax ferox
Fierce Lancewood

Rudbeckia fulgida
Coneflower

Leonohebe cupressoides
Cypress Hebe

Clematis paniculata
Clematis

Coprosma spp
Coprosma

Phormium spp
Flax

Hebe spp
Hebe

Sedum spp
Sedum



WOODLAND

Striking stands of deciduous woodland will reflect the historic Arrowtown countryside and provide an impressive display of Autumn colour. The woodlands will ensure the remnant walnut trees along the valley floor and sycamores at the head of the valley are tied in to the re-introduced native vegetation patterns.

Woodlands will be characteristic of the arrival experience to the hotel at the base of the valley. Clumps of woodland will also be present within the valley, mixed with swathes of native forest. Himalayan birch and Italian alder have been selected as the dominant deciduous tree species, as they are both striking trees and fast growing, well suited to the harsh climate of the valley.

KEY SPECIES

Alnus cordata
Italian Alder

Betula jacquemontii
Himalayan Birch

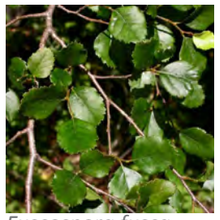


NATIVE FOREST

Deeper into the valley, the valley walls will transition to become native forest, like a hidden remnant of an indigenous environment which will be unique within the Arrowtown area. Native beeches (mountain, and red beech) will be the dominant canopy species, with a more diverse range of native shrubs in the understorey and along the forest margins.

It is intended that the native forest will one day be self sustaining and regenerating. The forest will become a native habitat for native birds and insects.

KEY SPECIES



Fuscospora fusca
Red Beech

Fuscospora cliffortioides
Mountain Beech

Leptospermum scoparium
Manuka

Pseudopanax crassifolius
Lancewood

Phyllocladus trichomanoides
Celery Pine

Griselinia littoralis
Broadleaf

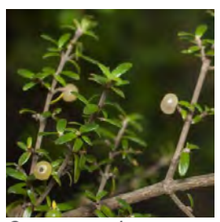
Pittosporum tenuifolium
Black Matipo

Leptecophylla juniperina
Prickly Mingimingi

Carpodetus serratus
Marble Leaf

Pseudowintera colorata
Pepper Tree

Coprosma rhamnoides
Twiggy Coprosma



Coprosma microcarpa
Small Seeded Coprosma

Coprosma crassifolia
NZ Coprosma

Coprosma rotundifolia
Mikimiki

Coprosma virescens
NZ Coprosma

Signage

OVERVIEW

A hierarchy of signage will be used throughout the site as wayfinding for guests and public. While it will ultimately be selected to suit the branding of the operators, the use of a suite of materials (including corten or blackened steel, concrete and hardwood timber) to suit the site landscape and architectural character would be encouraged. Thought has been given to the location and size of signage, however this is likely to be refined at a more detailed stage. In most cases signage will be illuminated at night. All lighting will be localised for visibility of information and will not illuminate beyond the sign. Traffic signs are included separately within the Roading package. Building signage has been further detailed in the Architectural packages by SPA and S.A Studios.

SIGNAGE TYPES

INTERPRETATION PANELS

Interpretation panels containing information about the history of Ayrburn Farm, located on top of the historic earth ramp and at the water wheel near the waterfall.

Timber, concrete, steel, acrylic. Illuminated.

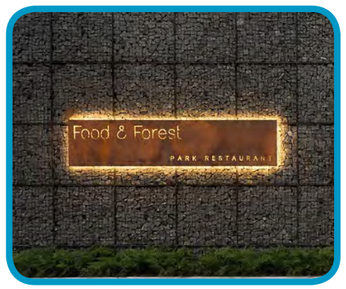
Max size: 0.8m x 1.0m board, 1.3mH

VEHICLE WAY-FINDING

Highly visible signage located at road intersections.

Timber, concrete, steel. Illuminated.

Max size: 2.5mH x 1.2mW



BUILDING WALL SIGNAGE

Highly visible signage, mounted on the building exterior walls. Refer to architectural drawing sets for details

Concrete, steel, acrylic. Illuminated.

Max size: 4.6mH x 4.0mW

SIGNATURE SIGNAGE

Highly visible signage, located at key arrival locations to the hotel, wellness centre and Ayrburn Domain.

Timber, concrete, steel.

Illuminated.

Max size: 2.5m2

PEDESTRIAN WAY-FINDING

Bollard way finding located at nodes along pedestrian and buggy paths.

Solid timber, concrete, steel, acrylic.

Illuminated.

Max size: 1.5mH x 0.5m square

LOCATION SIGNAGE

Moderately visible signage separate from buildings, located upon arrival to key locations, such as the Dell Pavilion and Chapel.

Timber, concrete, steel, acrylic. Illuminated.

Max size: 1.5m high x 0.5m square

RESTAURANT AND OUTDOOR RETAIL/HIRE SHOP SIGNAGE

Ayrburn Domain signage to locate the restaurant the outdoor retail and hire facilities, mounted on the building walls as per architectural drawings, and at key arrival locations.

Timber, concrete, steel, acrylic. Illuminated.

Max size: 1.6m2

Note: All images shown are indicative. Actual signage will be selected by the various operators

SIGNAGE AREA

	SIGN DIMENSIONS	AREA (M2)	#	TOTAL AREA (M2)
BUILDING SIGNS				
Building A				
Hotel Operator Signage	4.6mH x 4.0mW	18.4	1	18.4
	3.6mH x 2.0mW	7.2	1	7.2
Hotel Entry Signage	0.8mH x 4.0mW	3.2	1	3.2
Accommodation Buildings				
Building B	0.8mH x 2.0mW	1.6	2	3.2
Building C	0.8mH x 2.0mW	1.6	2	3.2
Building D	0.8mH x 2.0mW	1.6	2	3.2
Building E	0.8mH x 2.0mW	1.6	2	3.2
Wellness Centre				
Upper Entry	0.6mH x 2.8mW	1.7	1	1.7
Lower Entry	0.8mH x 2.8mW	2.2	1	2.2
Ayrburn Domain				
Wall Mounted Signs	Varies		10	6.0
Entrance Signs	1mH x 1mW	1	1	1.0
LANDSCAPE SIGNS				
Location Signage	1.5mH x 0.5m2	0.75	3	2.25
Vehicle Wayfinding	2.5mH x 1.2mW	3	9	27.0
Interpretation Panels	0.8m x 1m board, 1.3mH	1	2	2.0
Pedestrian Wayfinding	1.5mH x 0.5m2	0.75	15	11.3
Signature Signage	2mH x 1.2mW	2.4	3	7.2
TOTAL			**56**	**102.3M²**

Furniture

OVERVIEW

Site furniture will encompass a collection of outdoor seats, benches, planters and cycle stands. Made from a combination of timber and corten steel, outdoor furniture pieces will be treated as sculptural features of the landscape.

LARGE PLANTER

SEAT PLANTER

FEATURE POT PLANTER

LEGEND

- Corten benches
- Planter seats
- Feature planters
- Entry landing planters
- Bike Parks

BENCH SEAT

BIKE STANDS

N

Note: All images shown are indicative

Rendered Image by Brandspank

North

Alternative footpath route subject to consent for bridges

Proposed access road - asphalt

Stormwater detention basin (indicative area shown refer to others)

Grassed swale

Concrete footpaths with broom finish and exposed aggregate street crossings

Proposed street trees

Proposed vehicle and pedestrian bridge (refer to engineers for detail)

Stormwater detention basin (indicative area shown. Refer to others)

Proposed revegetation to creek edge

Existing Mill Creek

Clusters of trees to provide screening of road from neighbouring properties

1.5m - 2m grassed mounds (1:3 slope)

Grassed swale on both sides of the road (1:5 slope)

1.5m - 2m mounding (above finished road centreline level) with planting

Cycleway / pedestrian access

baxter design

0 15 30 75m
SCALE = 1:1500 AT A1

REFERENCE : 2739-SK36 - SCALE = 1:3000 AT A3 - 16 NOV 2018

ATTACHMENT B

REBUTTAL EDIVENCE OF P. J. BAXTER 19 NOV 2018

NEW ACCESS ROAD TO WATERFALL PARK

CONCEPT MASTERPLAN

QUEENSTOWN LAKES DISTRICT COUNCIL

APPROVED PLAN:
RM180584

Wednesday, 13 March 2019

North

Mill Creek Revegetation

Red Tussock
(Chionochloa rubra)
PB8 @1m centres

Koromiko
(Hebe salicifolia)
PB2 @1.2m centres

Toi Toi
(Chionochloa richardii)
PB2 @1.2m centres

Mingimingi
(Coprosma propinqua)
PB2 @1.2m centres

Carex
(Carex secta)
PB2 @1.2m centres

Mountain Flax
(Phormium cookianum)
PB2 @1.2m centres

Pin Oak
(Quercus palustris)
80Ltr x 81

Screening Trees
Each 80 litre, minimum, at 2m spacing, minimum.

Mountain Beech x 28
(Fuscospora cliffortioides)

Western Red Cedar x 18
(Thuja plicata)

Freemans Maple x 16
(Acer freemanii)
and/or **Norway Maple**
(Acer platanoides)

English Ash x 14
(Fraxinus excelsior)
and/or **American Ash**
(Fraxinus americana)

Stormwater Detention Pond Planting

Red Tussock
(Chionochloa rubra)
PB8 @1m centres

Koromiko
(Hebe salicifolia)
PB2 @1.2m centres

Toi Toi
(Chionochloa richardii)
PB2 @1.2m centres

Mingimingi
(Coprosma propinqua)
PB2 @1.2m centres

Carex
(Carex secta)
PB2 @1.2m centres

Mountain Flax
(Phormium cookianum)
PB2 @1.2m centres

Native Shrub Mix

Mingimingi
(Coprosma propinqua)
PB2 @1.2m centres

Koromiko
(Hebe salicifolia)
PB2 @1.2m centres

Wineberry
(Aristotelia serrata)
PB2 @1.2m centres

Flag light at intersection

Bollards with downlighting in accordance with the Southern Light Lighting Strategy

baxter design

0 15 30 75m
SCALE = 1:1500 AT A1

REFERENCE : 2739-SK37 - SCALE = 1:3000 AT A3 - 16 NOV 2018

ATTACHMENT C

REBUTTAL EDIVENCE OF P. J. BAXTER 19 NOV 2018

NEW ACCESS ROAD TO WATERFALL PARK

PLANTING AND LIGHTING PLAN

QUEENSTOWN LAKES DISTRICT COUNCIL

APPROVED PLAN:
RM180584

Wednesday, 13 March 2019

North

Evergreen : 28 x Mountain Beech / Nothofagus Cliffortoides

Evergreen : 18 x Western Red Cedar / Thuja plicata

Deciduous : 16 x Freemans Maple / Acer freemanii
and/or Norway Maple / Acer platanoides

Deciduous : 14 x English Ash / Fraxinus excelsior
and/or American Ash / Fraxinus americana

Each tree minimum 80L at minimum 2m centres

Native shrub planting mix :
- Mingimingi / Coprosma propinqua
- Koromiko / Hebe salicifolia
- Wineberry / Aristotelia serrata

Each PB2 at 1.2m centres

Beadle Residence

Screening Trees
Each 80 litre, minimum, at 2m spacing, minimum.

Mountain Beech x 28
(Fuscospora cliffortioides)

Western Red Cedar x 18
(Thuja plicata)

Freemans Maple x 16
(Acer freemanii)
and/or **Norway Maple**
(Acer platanoides)

English Ash x 14
(Fraxinus excelsior)
and/or **American Ash**
(Fraxinus americana)

baxter design

0 5 10 25m
SCALE = 1:500 AT A1

REFERENCE 2739-SK32 - SCALE = 1:500 AT A1 - 1:1000 AT A3 - 16 Nov 2018
DRAFT - NOT A WORKING DRAWING - NOT FOR CONSTRUCTION
2739-sk32 - waterfall park - lower plateau road planting.dwg - SK32

ATTACHMENT D

REBUTTAL EDIVENCE OF P. J. BAXTER 19 NOV 2018

WPDL / NEW ACCESS ROAD TO WATERFALL PARK

LOWER PLATEAU ROAD PLANTING

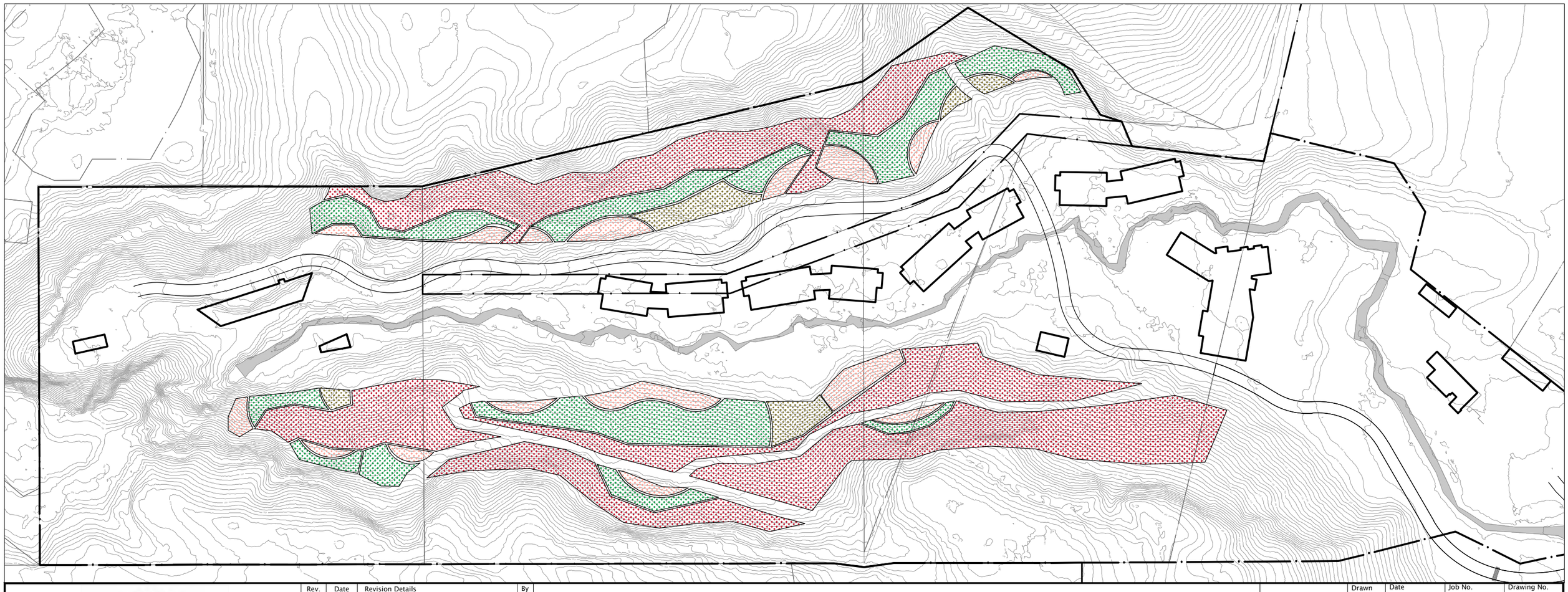
Pre Hotel - Native Infill Planting Schedule

Key	Common Name	Botanical Name	Ratio	Spacing m	Areas m² (Based on WIDTH slope)	Plant Numbers	Planting Pattern / Layout
	NZ Flax	*Phormium tenax*	0.25	1.2	6238	4332	Planted in groups of 20-75
	Lemonwood	*Pittosporum eugenioides*	0.10	1.2	2495	1733	Planted in groups of 5-15
	Broadleaf	*Griselinia littorallis*	0.15	1.2	3743	2599	Planted in groups of 10-75
	Hebe	*Hebe sallicifolia*	0.15	1.2	3743	2599	Planted in groups of 10-50
	Coprosma	*Coprosma propinqua*	0.15	1.2	0	0	Planted in groups of 10-35
	Cabbage tree	*Cordyline australis*	0.10	1.2	2495	1733	Planted in groups of 2-7
	Lancewood	*Psudopanx ferrox*	0.07	1.2	873	606	Planted in groups of 1-3
	Mtn Beech	*Fruticosa Clifortoides*	0.03	1.2	749	520	Planted in groups of 5-15
				Total		14122	

Tree Planting Schedule

Key	Common Name	Botanical Name	Ratio	Area M²	Spacing m	Number	Smaller grade	Larger grade
	Italian Alder	*Alnus cordata*	NA	5147	3.5	420	PB5 - 210	(12-14L) - 210
	Himalayan Birch	*Betula jacqumontii*	NA	3024	2.5	484	PB5 - 242	(15L) - 242
	Mountain Beech	*Fuscospora cliffortioides*	NA	11260	2.5	1802	PB5 - 1200	(PB18) - 600
				Total		2706		

Total number of shrubs and trees = 16,828
Total number of native shrubs and trees = 15,924
Total number of exotic trees = 904



WATERFALL PARK

Rev.	Date	Revision Details	By
A	24/1/19	Both schedules combined into one plan	GW

Waterfall Park
Stage 1 & 2 Planting Areas

Drawn	Date	Job No.	Drawing No.
GW	25.01.19	202	401
Designed GW		Scale 1:2000@A3	
Checked GW		Datum & Level NA	Rev. ----

\\wpc.local\Company\RedirectedFolders\George.Watts\Documents\Winton\Projects\202 - Waterfall Park\CAD\Sheetset\303 Stage 1 & 2 Planting Areas.dwg Plotted: 25.01.2019