#### Milldale Ecological Offsetting

## **Statement of Qualifications and Experience**

#### **Jeremy Cooke – Landscape Architect**

I am a Principal Landscape Architect at Beca Ltd. Beca Ltd is an independent advisory, design and engineering consultancy. Beca have more than 4,000 employees in 25 offices around the world and have delivered projects in more than 70 countries. I have been employed at Beca since November 2008.

I hold the qualifications of Bachelor of Landscape Architecture (Hons) and a Diploma of Parks and Garden Technology from Lincoln University, which I completed in 1995. I am a Registered member of the New Zealand Institute of Landscape Architects.

I have 30 years of professional experience in the Landscape Architecture field, including roles such as Associate and Regional Manager of Isthmus Group Christchurch, and senior through to principal roles at Beca Ltd. My experience includes Urban Design and Landscape Design projects throughout New Zealand and the Pacific. My roles have covered urban design, landscape design and assessment for a wide range of projects including urban revitalisation projects, road infrastructure projects, master planning projects, parks and reserves developments and land development projects.

I have a strong background in urban renewal, streetscape and road infrastructure projects including design work on numerous town centre projects and NZ Transport Agency Waka Kotahi Roads of National Significance projects throughout New Zealand. During these projects I have engaged and partnered with local Tanga Whenua groups, key stakeholders, and local authorities to help drive well-coordinated and quality design outcomes.

My role on this project has been to undertake the landscape design of the Milldale Stage 10-13 ecological wetland and riparian stream offset provisions. The landscape drawings and schedules are aligned with the ecological offset recommendations set out in the Ecological Impact Assessment Report undertaken by Viridis Ltd (Document Reference: 10015-030-3 February 2025.

I confirm that, in my capacity as landscape designer of these drawings and schedule, I have read and abide by the Environment Court of New Zealand's Code of Conduct for Expert Witnesses Practice Note 2023.

Jeremy Cooke

26/02/2025

FULTON HOGAN LAND

DEVELOPMENT

26.02.25

26.02.25 Date

Scale (A3)

1:1000 @ A3

Drg Check

J. COOKE

26.

\* Refer to Revision 1 for Original Signature

A FOR CONSENT

DO NOT SCALE FOR SET OUT DIMENSIONS

RIPARIAN PLANTING

AND OFFSET MITIGATION

LANDSCAPE

4672100-AL-S10-1004

PLANTING PLAN

SHEET 4 OF 7

FULTON HOGAN LAND

DEVELOPMENT

26.02.25

26.02.25 Date

Scale (A3)

1:1000 @ A3

Drg Check

J. COOKE

26.

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A FOR CONSENT

DO NOT SCALE FOR SET OUT DIMENSIONS

RIPARIAN PLANTING

AND OFFSET MITIGATION

PLANTING PLAN

SHEET 5 OF 7

4672100-AL-S10-1005

DEVELOPMENT

AND OFFSET MITIGATION

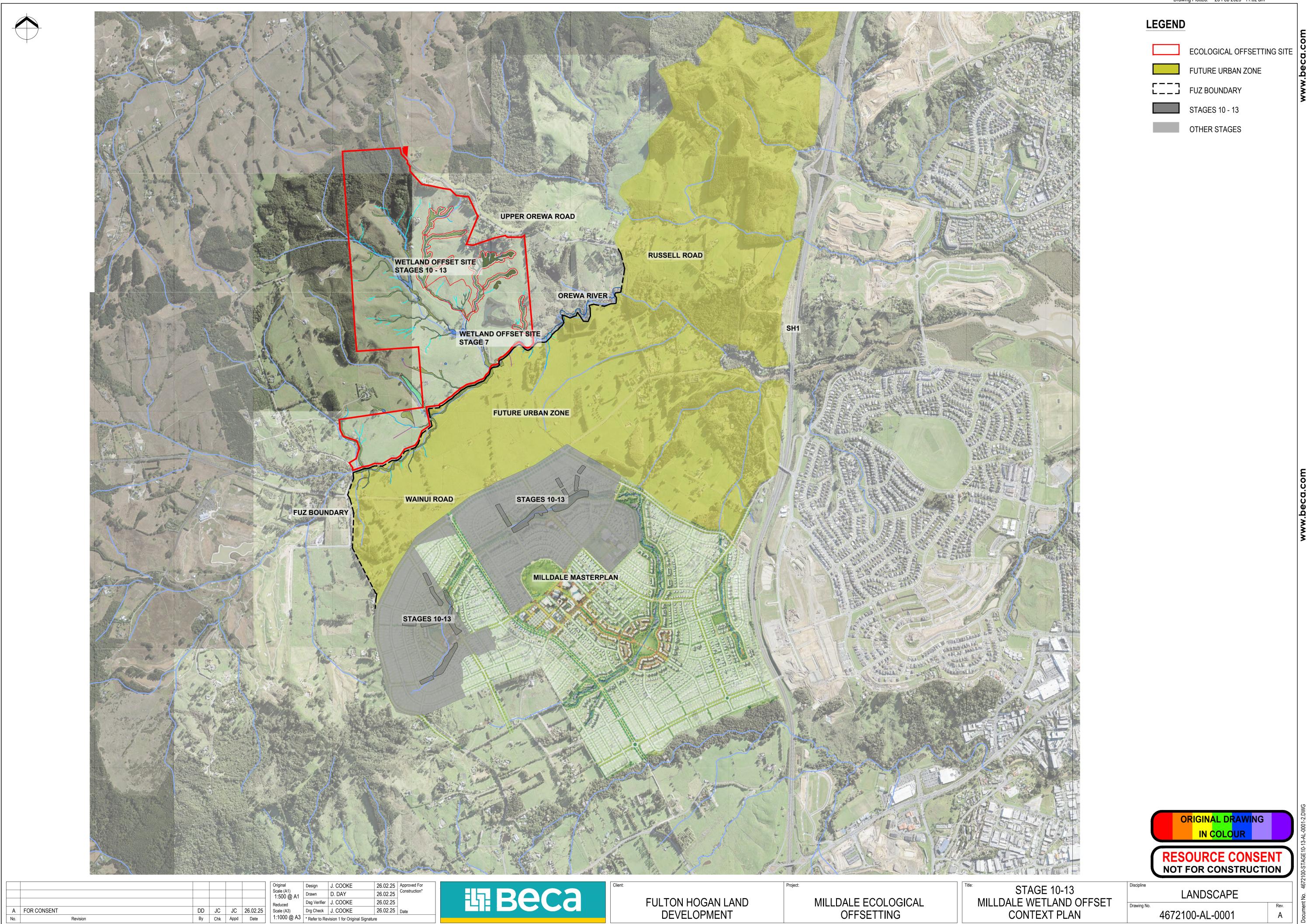
SHEET 6 OF 7

26.02.25 Date

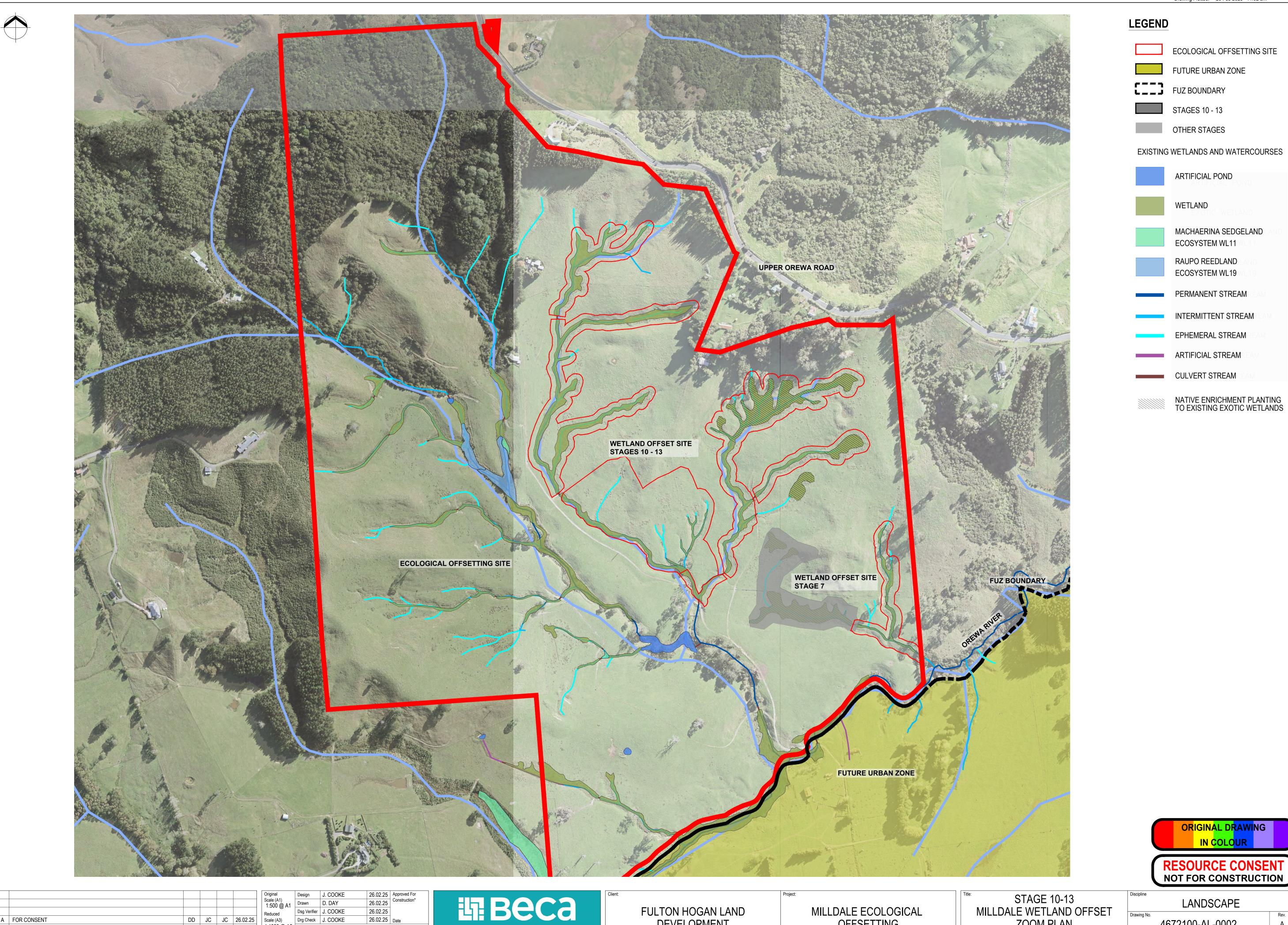
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FULTON HOGAN LAND DEVELOPMENT

26.02.25 Date

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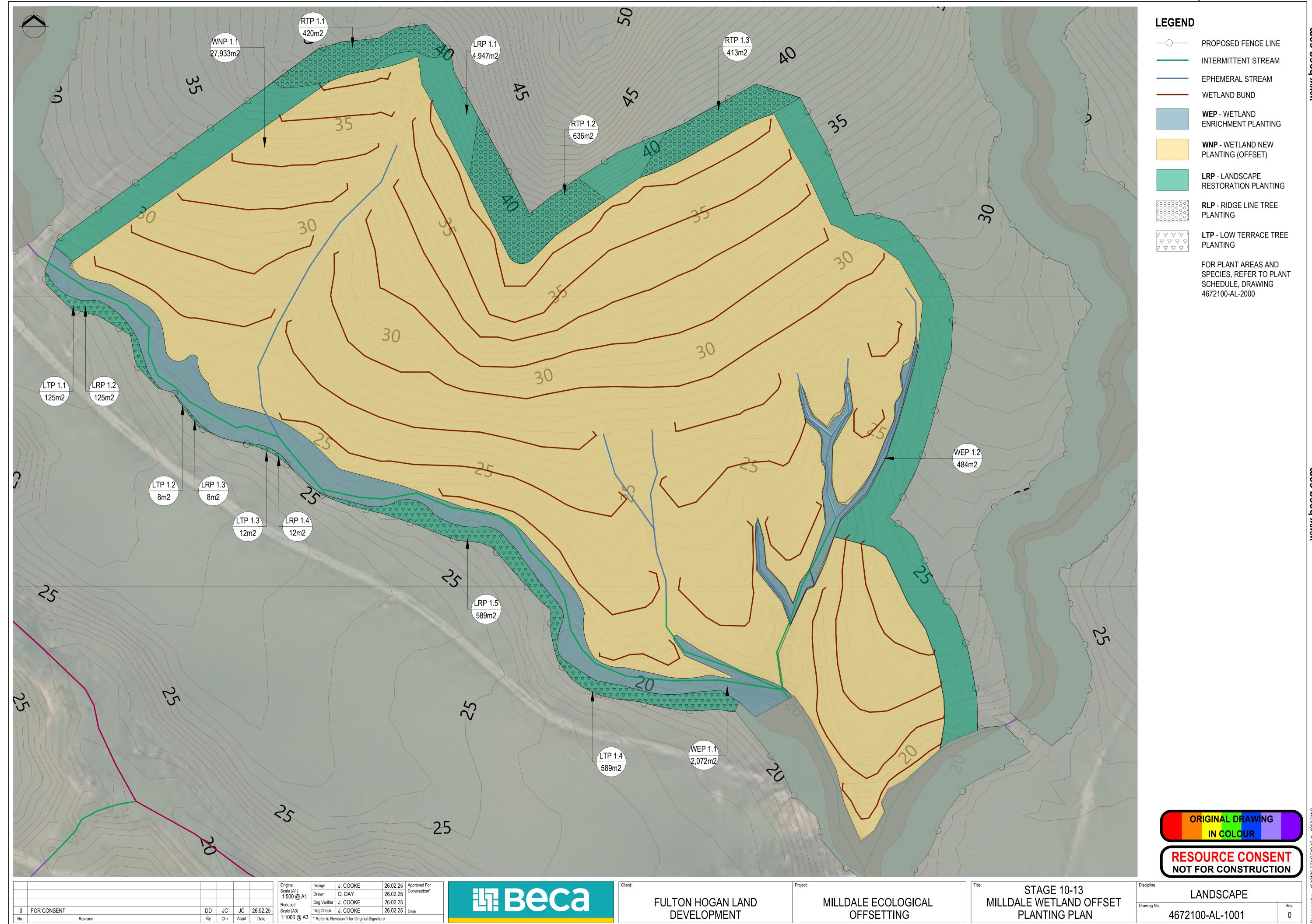
MILLDALE ECOLOGICAL

OFFSETTING

**ZOOM PLAN** 

4672100-AL-0002





**WEP 1.2** 

41

41

BOLBOSCHOENUS FLUVIATILIS	KUKURAHO	OBL	0.5L	2	4%		215		174	41	
CAREX LESSONIANA	RAUTAHI	FACW	0.5L	2	4%		215		174	41	
CAREX VIRGATA	PUKIO	FACW	0.5L	2	25%		1342		1088	254	
CYPERUS USTULATUS	GIANT UMBRELLA SEDGE	FACW	0.5L	2	20%	2556	1074		870	203	
JUNCUS EDGARIAE	WIWI	FACW	0.5L	2	20%		1074		870	203	
JUNCUS SAROPHORUS	WIWI	FACW	0.5L	2	4%		215		174	41	
MACHEARINA TENAX	NA	FACW	0.5L	2	10%		537		435	102	
MACHEARINA ARTICULATA	NA	OBL	0.5L	2	4%		215		174	41	
					100%		5368				
									WNP 1.1		
WNP - WETLAND NEW PLANTING (OFFSET)						Area m2	PLANT NUMBERS	Area m2	27933		
APODASMIA SIMILIS	0101	FACW	0.5L	4	5%		5587		5866		
BLECHNUM MINUS	SWAMP KIOKIO	FACW	0.5L	4	4%		4469		4693		
BOLBOSCHOENUS FLUVIATILIS	KUKURAHO	OBL	0.5L	4	4%		4469		4693		
CAREX LESSONIANA	RAUTAHI	FACW	0.5L	4	4%		4469		4693		
CAREX VIRGATA	PUKIO	FACW	0.5L	4	25%		27933		29330		
CYPERUS USTULATUS	GIANT UMBRELLA SEDGE	FACW	0.5L	4	20%	27933	22347		23464		
JUNCUS EDGARIAE	WIWI	FACW	0.5L	4	20%		22347		23464		
JUNCUS SAROPHORUS	WIWI	FACW	0.5L	4	4%		4469		4693		
MACHEARINA TENAX	NA	FACW	0.5L	4	10%		11173		11732		
MACHEARINA ARTICULATA	NA	OBL	0.5L	4	4%		4469		4693		
					100%		111734				
	I		1							,	

2

0.5L

4%

4%

Area m2

NUMBERS

215

Area m2

2072

174

174

	STATUS RATING					NUMBERS					
								RWBP 1.1	RWBP 1.2	RWBP 1.3	
TING	_	<b>.</b>			_	1	Area m2	26037	22640	7405	
OIOI	FACW	0.5L	4	5%		11777		5468	4754	1555	
SWAMP KIOKIO	FACW	0.5L	4	5%		11777		5468	4754	1555	
KUKURAHO	OBL	0.5L	4	5%		11777		5468	4754	1555	
RAUTAHI	FACW	0.5L	4	5%		11777		5468	4754	1555	
PUKIO	FACW	0.5L	4	5%		11777		5468	4754	1555	
GIANT UMBRELLA SEDGE	FACW	0.5L	4	5%		11777		5468	4754	1555	
WIWI	FACW	0.5L	4	5%		11777		5468	4754	1555	
WIWI	FACW	0.5L	4	5%		11777		5468	4754	1555	
NA	FACW	0.5L	4	5%	50004	11777		5468	4754	1555	
NA	OBL	0.5L	4	5%	56081	11777		5468	4754	1555	
PUTAPUTAWETA	FACU	0.5L	1	5%		2888		1367	1132	389	
HOUHERE	FACU	0.5L	1	5%		2926		1367	1189	370	
MĀNUKA	FAC	0.5L	1	15%	1	8833		4101	3566	1166	
HARAKEKE	FACW	0.5L	1	10%	1	5889		2734	2377	777	
KOHUHU	FACU	0.5L	1	5%	1	2944		1367	1189	389	
MANATU	FACU	0.5L	1	5%	1	2944		1367	1189	389	
			1						1189		
<u> </u>			·								
								LRP 1.1			
<u> </u>					4554440	PLANT					
					AREA M2	NUMBERS	Area m2	4947			
PUTAPUTAWETA	FACU	0.5L	1	5%		260		260			
KARAMU	FACU	0.5L	1	10%		519		519			
CABBAGE TREE, TI KOŪKA	FAC	0.5L	1	5%		260		260			
TOETOE	FAC	0.5L	1	10%		519		519			
AKEAKE		0.5L	1	5%		260		260			
HOUHERE	FACU	0.5L	1	5%		260		260			
MĀNUKA	FAC	0.5L	1	30%	40.47	1558		1558			
HARAKEKE	FACW	0.5L	1	5%	4947	260		260			
KOHUHU	FACU	0.5L	1	12%		623		623			
MANATU	FACU	0.5L	1	3%		156		156			
KUMARAHOU		0.5L	1	2%		104		104			
HOUPARA		0.5L	1	5%		260		260			
KAMAHI	FACU	0.5L	1	3%		156		156			
				100%	1	5194					
								LTP 1.1	LTP 1.2	LTP 1.3	LTP 1.4
<u> </u>					ADEA MO	PLANT	A #0.0 m2	125	0	42	500
					AREA WZ	NUMBERS	Alea IIIZ				589
TARAIRI		1L	0.111	10%	1	8		1	0	0	7
KAHIKATEA	FAC	1L	0.111	10%	1	8		1	0	0	7
KOHEKOHE		1L	0.111	10%	]	8		1	0	0	7
REWAREWA	UPL	1L	0.111	10%	734	8		1	0	0	7
PUKATEA	FAC	1L	0.111	40%	]	33		6	0	1	26
PURIRI	UPL	1L	0.111	20%		16		3	0	0	13
				100%		81					
								RTP 1.1	RTP 1.2	RTP 1.3	
					AREA M2	PLANT NUMBERS	Area m2	420	636	413	
KAURI		0.5L	1	20%		308		88	134	87	
RIMU	FACU	0.5L	1	25%	1	386		110	167	108	
TANEKAHA	FACU	0.5L	1	15%	1	231		66	100	65	
TOTARA	FACU	0.5L	1	25%	1469	386		110	167	108	
MIRO	FACU	0.5L	1	15%	1	231		66	100	65	
-	1				†						
	OIOI SWAMP KIOKIO KUKURAHO RAUTAHI PUKIO GIANT UMBRELLA SEDGE WIWI WIWI NA NA PUTAPUTAWETA HOUHERE MĂNUKA HARAKEKE KOHUHU MANATU KAMAHI  PUTAPUTAWETA KARAMU CABBAGE TREE, TI KOŪKA TOETOE AKEAKE HOUHERE MĀNUKA HARAKEKE KOHUHU MANATU KAMAHI  TOETOE AKEAKE HOUHERE MĀNUKA HARAKEKE KOHUHU MANATU KUMARAHOU HOUPARA KAMAHI  TARAIRI KAHIKATEA KOHEKOHE REWAREWA PUKATEA PURIRI  KAURI RIMU TANEKAHA TOTARA	OIOI         FACW           SWAMP KIOKIO         FACW           KUKURAHO         OBL           RAUTAHI         FACW           PUKIO         FACW           GIANT UMBRELLA SEDGE         FACW           WIWI         FACW           WIWI         FACW           NA         PACW           NA         OBL           PUTAPUTAWETA         FACU           MANUKA         FAC           HARAKEKE         FACW           KOHUHU         FACU           KAMAHI         FACU           KAMAHI         FACU           KARAMU         FAC           TOETOE         FAC           AKEAKE         HOUHERE           HOUHERE         FACU           KOHUHU         FACU           KOHUHU         FACU           KUMARAHOU         HOUPARA           KAMAHI         FACU           KUMARAHOU         HOUPARA           KAMAHI         FAC           PURIRI         UPL           PUKATEA         FAC           TARAIRI         KAC           KAURI         FAC           TARAIRI         FAC <t< td=""><td>  OIOI</td><td>  OIOI</td><td>  OICI</td><td>  OIO    FACW    0.5L   4   5%    </td><td>  OICI</td><td>  OCIDITATION   FACW   O.S.   4   S.    </td><td>  CODE</td><td>  CIG   FACTY   3.5.   4   5%   75%   11777   5468   4754    </td><td>  DCC</td></t<>	OIOI	OIOI	OICI	OIO    FACW    0.5L   4   5%	OICI	OCIDITATION   FACW   O.S.   4   S.	CODE	CIG   FACTY   3.5.   4   5%   75%   11777   5468   4754	DCC

**LEGEND** 

PLANT NUMBERS
CALCULATED AT 105% OF
THE TOTAL AREA TO
ACCOMMODATE SLOPE.

	ORIGINAL DRAWING	١
	IN COLOUR	
	<b>ESOURCE CONSENT</b>	1
N	OT FOR CONSTRUCTION	J

Α	FOR CONSENT	DD	JC	JC	26.02.25
No.	Revision	Ву	Chk	Appd	Date
	•				

Original	Design	J. COOKE	26.02.25	Approved For
Scale (A1) 1:500 @ A1	Drawn	D. DAY	26.02.25	Construction*
Reduced	Dsg Verifier	J. COOKE	26.02.25	
Scale (A3)	Drg Check	J. COOKE	26.02.25	Date
1:1000 @ A3	* Refer to Rev	vision 1 for Original Signatu	re	

**ШВеса** 

FULTON HOGAN LAND DEVELOPMENT

WEP - WETLAND ENRICHMENT PLANTING

APODASMIA SIMILIS

BOLBOSCHOENUS FLUVIATILIS

BLECHNUM MINUS

OIOI

SWAMP KIOKIO

KUKURAHO

**FACW** 

**FACW** 

MILLDALE ECOLOGICAL OFFSETTING

MILLDALE WETLAND OFFSET PLANT SCHEDULE

LANDSCAPE 4672100-AL-2000

# Stream and Wetland Planting Management Plan – Milldale Stages 10-13

# Introduction

This section sets out management requirements in respect of planting measures required to mitigate and-offset-for residual effects of the Project on terrestrial, wetland and freshwater ecological values.

This Stream and Wetland Planting Management Plan (SWPMP) should be read in conjunction with the <u>Ecological Impact Assessment – Milldale Stage 10-13 (February 2025)</u>. The SWPMP includes plant specification guidance, site preparation and pest control, planting implementation guidance and plant maintenance requirements. It is assumed that all planting for ecological purposes will be into natural ground, therefore specifications for topsoil is not included.

Delivery of, and compliance with the Ecological Impact Assessment will be the responsibility of the Environmental Manager who will liaise with the suitably qualified person (SQP) as required. The Environmental Manager should also consider community participation in planting required by this SWPMP.

Detailed contractor instructions will be provided in a planting specification document.

# Plant specifications

The composition of revegetation plantings is described in the planting design specifications and is specific to each ecosystem type being lost as a result of the Project. Plant specifications have been provided in Appendix B. Planting species must be appropriate for the topography, soil condition, and hydrological characteristics of a specific planting location.

# **Eco-sourcing**

All plant material used, or seed sourced, for the purpose of offset and mitigation\_planting must be sourced from the rohe or ecological district (Rodney ED) in which it is to be planted.

Where it is not possible to eco-source planting material from the planting rohe and/or ecological district, the Landscape Manager will consult with the Project Iwi Partner and the Auckland Council to confirm an alternative plant species (which can be eco-sourced) or alternative source (i.e. adjacent ecological district).

## Nursery requirements

When acquiring plants from the nursery, the Environmental Manager must ensure the following:

- All new plantings of myrtle species must come from nurseries that are certified under Plant Pass (or operate under supervision of a certified nursery), the voluntary biosecurity certification scheme offered by New Zealand Plant Producers, or an equivalent scheme.
- All potting mix and plant material shall be inspected for pest species (e.g. myrtle rush, plague skinks and eggs) prior to importation to site.

The landscape specification will set out specific inspection holds and witness points that will need to be cleared prior to bringing plant material onto the site. The pre-inspections are to be led by the planting contractor and provide a program for inspections prior to each planting season.

# Planting methodology and staging

#### Methods

All planting shall be undertaken by experienced personnel in accordance with the recognised best horticultural practice.

All plants shall be planted into holes so that the soil level after settlement shall match the original soil mark on the stem of the plant. The bottom of each hole shall be loosened to allow root penetration and free drainage. Holes shall be approximately one and half times the width of the root ball and a fertiliser tab added immediately prior to planting. The fertiliser shall be mixed with the soil in the base of the prepared hole prior to placement of the root ball, taking care to avoid the roots having direct contact with the fertiliser. Fertiliser is not required in wetland planting where in plants sit in permanent water. Plants are to be 'heeled in' by lightly stamping on the soil surrounding the plant.

Revegetation will be undertaken via a staged approach, consisting of a Starting Crop followed by Enrichment Plantings:

- 1. Starting Crop: consisting of a nursery crop of early-successional, shade intolerant species for initial planting
- 2. Enrichment Planting: consisting of late-successional, shade tolerant canopy or emergent species, to be inter-planted once the 'Starting Crop' has reached 80% canopy cover (expected to take 2-3 years). Notwithstanding that the environmental conditions of some locations may allow for enrichment planting to be inter-planted during starting crop planting. This will be at the Project Landscape Manager's discretion.

The starting crop species composition are early successional species capable of surviving when planted immediately into pasture or earth worked areas. These include fast growing, drought tolerant species that grow well in full sun and potentially windy conditions. Species included within the Starting Crop will provide food for birds and encourage natural seed dispersal.

The Starting Crop is expected to grow quickly and prime conditions for the completion of the Enrichment Planting.

Enrichment planting consists of shade-tolerant species and will be inter-planted once the Starting Crop species have created suitable environmental conditions for their survival. Many of the Enrichment Planting species will form the final climax community of the forest.

#### Seedling quality

Plants should be grown from seed. For those species that are not easily propagated from seed, production of plants from cuttings or naturally occurring seedlings is acceptable.

All planting material will be:

- Grown to specification.
- Well-grown with well-formed root systems that fill the growing container but that are not root bound, and with well-formed foliage above ground.
- Well-hardened before delivery to the planting site.

 Plants being planted will be a minimum of 0.5 litre as described in the planting specifications, or as otherwise specified by the Project Landscape Manager.

#### Site preparation

All pest plants and those likely to compete with the newly planted natives will be controlled to zero-density with herbicide or mechanically removed prior to planting. Herbicides that are likely to be harmful to adjacent existing native plant species, or those that contain a residual factor that may be harmful to natives, shall not be used. Manual or mechanical removal of weed species will occur if it is unsafe to use herbicides at the Landscape Managers discretion. The manufacturers guidelines must be checked to ensure any herbicide stand down periods are met prior to planting commencing.

To ensure the survival of planted seedlings and avoid existing native plants and seedlings that may be within the offset areas, spot spraying (rather than blanket coverage) should be prioritised during pest plant control. It is imperative that all native species, including small ground covers, be encouraged to grow and thrive in order to maximise ecological gains and aid indigenous plant establishment.

Site management will include ensuring that no rubbish, fuel, solvents, concrete wash down material of other related materials enter the freshwater environment.

An ecological approach to weed control will be undertaken, including consideration of:

- Identifying any existing native species that may be encouraged through selective control.
- Undertaking a range of weed control and management activities to establish a new successional pathway that can be managed to establish the desired forest crop.
- Ensuring removal of major weed seed burden and weed re-invasion sources.

Prior to planting, an SQP should be engaged to undertake a site inspection to ensure that site preparation has been completed to ensure successful planting establishment.

Establishment on these sites is likely to involve the use of a rapidly growing starting crop to occupy the site and suppress weed growth. Enrichment planting will generally occur once canopy closure achieves 80% cover.

Where available, the Starting Crop will be planted immediately into pasture.

#### Planting layout and spacing

Planting will be carried out at plant spacings necessary to achieve the required performance targets, including canopy cover, as outlined in the planting design schedules (Appendix A) and planting specification (Appendix B), and are generally as follows:

- 0.5m for wetland offset plant species.
- 0.7m for wetland enrichment plant species.
- 0.5 1.0m for riparian/ wetland buffer plant
- 1.0m for landscape restoration plant species.

Following planting, an SQP should be engaged to undertake a site inspection to ensure that the plantings are at the correct spacings to ensure optimum growth conditions and canopy closure.

Enrichment Planting will occur where there is shade or semi-shade (depending on species preferences) and where suitable environmental conditions exist. Gap formation (trimming of branches) may be required to create optimal light levels for enrichment plant species.

#### **Timing**

Planting shall be undertaken during the typical planting season, April to September (inclusive).

Site specific environmental factors will need to be considered. For example, sites prone to winter flooding or frost will need to be planted during periods where the risk of such events is low. This will be at the discretion of the Project Landscape Manager. For wetland species which grow in standing water, planting shall be undertaken when water levels are suitable to promote successful establishment.

To the extent possible, the timing of planting, particularly of culturally significant tree species used for food or medicinal purposes, will be co-ordinated with Project iwi partners to maximise opportunities to enable the restoration planting to be consistent with maramataka (the Māori lunar calendar).

#### Plant maintenance

#### Plant replacement / blanking

Plants shall be monitored as required by the specification for 5 years following planting and as detailed in the monitoring section. Replacement planting will be undertaken to ensure survival rates are consistent and will achieve a minimum of 80% canopy coverage. Any plants that have failed to establish during this period shall be replaced with a like-for-like species. Where failure is due to environmental conditions being unsuitable for the original species, a new native species shall be planted as confirmed with the Lead Ecologist.

#### Pest plants

Pest plants are defined by those listed as such within the Auckland Regional Pest Management Plan 2020-2030, and those considered by the Landscape Manager as capable of inhibiting plant establishment.

A plant release and maintenance programme will ensure any pest plants that establish are controlled to very low levels and that replacement plantings are not inhibited. All planted seedlings will be released from weed competition for five years following planting. All pest plant control will be undertaken by a suitably qualified, trained, and accredited professional (e.g. Grow Safe certification):

- Pest plant control will be completed in accordance with the Regional Pest Management Plan
- Pest plant control methods will be undertaken in accordance with any local or regional agrichemical policies, and will consider the following:
- Physical, including manual, pest plant control is preferable and shall be undertaken where possible before chemical pest plant control is considered.
- Where spraying with herbicide is required. Herbicides are to be applied in strict accordance with manufacturer's directions and in dry, still air conditions.
- All herbicide spray application shall be administered by individuals with backpack mounted spray equipment or using vehicle mounted application equipment. Spray equipment shall be fitted with effective guards to prevent drift onto other plants and all equipment shall be free of leaks and thoroughly cleaned out before and after use. No equipment or herbicide shall be left unattended on site.

### Stock exclusion

All farm livestock (cattle, horses, sheep and domestic pigs) will be permanently removed and excluded from planting sites before planting commences at each site.

Permanent stock-proof fencing shall be erected where necessary to exclude stock from replacement planting sites. At a minimum this fence will be 7-wire post and batten with 5 m post spacing (Appendix C).

#### Pest animals

If present within the proposed planting areas, including the margins of stormwater ponds, browsing pest animal species such as rabbits, hares, possums, and pūkeko will either be eradicated or suppressed to low levels (to the satisfaction of the Project Landscape Manager) prior to planting.

All pest control actions will be undertaken by an SQP.

Initial pest knockdown will be completed through shooting and poison bait stations (e.g. pindone or diphacinone). The use of other restricted toxins (to be used by licensed operators only) may be necessary if pest numbers are high, at the discretion of the Project Landscape Manager. Where poison baits are utilised, they will be housed in bait stations placed a minimum 10 meters from any watercourse or wetland (including stormwater ponds).

If ongoing grazing damage of plants is observed, further pest management actions may be required at the discretion of the Project Landscape Manager. Measures to address grazing damage include replacing damaged plants with larger plants, installing plant protectors or shields, and pest control. Pest control will be undertaken where populations are deemed to be adversely impacting plant establishment by the Project Landscape Manager.

# Plant establishment programme

To provide eco-sourced plants in time for the Project, seed collection will be undertaken prior to construction commencing.

The timing of planting will be governed by when areas become available for planting. Notwithstanding this, all Starting Crop replacement plantings shall be established within three planting seasons of construction of the Project being completed.

Any plants that have not survived within five years of initial planting shall be replaced as outlined in *plant replacement/ blanking* section above. Once the starting crop has reached approximately 80% canopy cover, as is expected by year five, Enhancement Plantings shall be interspersed within the starting crop.

The maintenance period of replacement plantings will be until 90% canopy coverage is achieved or as otherwise detailed in the planting specification. Enrichment planting is expected to be completed within the five years of planting commencing. Maintenance in each planted area shall be undertaken six-monthly for the first year following planting of the Starting Crop, and annually thereafter for the duration of the maintenance period as detailed in the planting specification.

Maintenance will include the control and removal of pest plants, releasing and removing competing growth around desirable plants and identifying failed plants or disease threats (e.g. myrtle rust). If 80% native canopy cover is not met, then replacement planting and maintenance will continue beyond five years after the competition of planting in the area in question until this performance target is achieved.

# Monitoring

Monitoring will be completed by a SQP and involve a combination of:

- Assessment of the planting survival rates, to inform replanting requirements.
- Assessment of canopy closure.
- Assessment of pest plant species, or other environmental weeds that may reduce the condition of the revegetation planting.
- The effects of pest plants shall be managed to enable the establishment of all restoration plantings.
- Pest animal inspection/observation noting any damage to plants.
- Inspection/observation of vandalism noting any plant removal or damage to plants.
- Identification of any other issues or further management actions.

Frequent inspections will be required through the first year of establishment and these will reduce as plantings develop.

Two six-monthly maintenance inspections will be undertaken in the first year after planting. Following this, annual maintenance inspections will be undertaken to fulfil the replacement planting requirements outlined in *plant replacement/ blanking* section above.

#### Performance measures

Performance measures for each planting type are described in (Condition XX – to be confirmed).

In summary this requires:

- Livestock removed.
- Planting areas fenced prior to the commencement of planting.
- Pest plants absent or suppressed after three years from site preparation.
- 90% survival of enrichment plants after five years from planting.
- 90% canopy cover after eight years from planting.

## Iwi involvement

Iwi Kaitiaki will be invited to co-lead and support the implementation of planting.

This may involve, but is not limited to:

- Site preparation and planting works.
- Ongoing plant monitoring and maintenance.
- Animal pest control.

# APPENDIX A – PLANTING SCHEDULES

BOTANICAL NAME	COMMON NAME	WETLAND INDICATOR STATUS RATING	GRADE	DENSITY/m2	% OF MIX
RWBP - RIPARIAN / WETLAND BUFFE	R PLANTING				
APODASMIA SIMILIS	OIOI	FACW	0.5L	4	5%
BLECHNUM MINUS	SWAMP KIOKIO	FACW	0.5L	4	5%
BOLBOSCHOENUS FLUVIATILIS	KUKURAHO	OBL	0.5L	4	5%
CAREX LESSONIANA	RAUTAHI	FACW	0.5L	4	5%
CAREX VIRGATA	PUKIO	FACW	0.5L	4	5%
CYPERUS USTULATUS	GIANT UMBRELLA SEDGE	FACW	0.5L	4	5%
JUNCUS EDGARIAE	WIWI	FACW	0.5L	4	5%
JUNCUS SAROPHORUS	WIWI	FACW	0.5L	4	5%
MACHEARINA TENAX	NA	FACW	0.5L	4	5%
MACHEARINA ARTICULATA	NA	OBL	0.5L	4	5%
CARPODETUS SERRATUS	PUTAPUTAWETA	FACU	0.5L	1	5%
HOHERIA POPULNEA	HOUHERE	FACU	0.5L	1	5%
LEPTOSPERMUM SCOPARIUM	MĀNUKA	FAC	0.5L	1	15%
PHORMIUM TENAX	HARAKEKE	FACW	0.5L	1	10%
PITTOSPORUM TENUIFOLIUM	КОНИНИ	FACU	0.5L	1	5%
PLAGIANTHUS REGIUS	MANATU	FACU	0.5L	1	5%
WEINMANNIA RACEMOSA	KAMAHI	FACU	0.5L	1	5%
					100%

LRP - LANDSCAPE RESTORATION P	PUTAPUTAWETA	FACU	0.5L	1	5%
COPROSMA ROBUSTA	KARAMU	FACU	0.5L	1	10%
CORDYLINE AUSTRALIS	CABBAGE TREE, TI KOŪKA	FAC	0.5L	1	5%
AUSTRODERIA SPLENDENS	TOETOE	FAC	0.5L	1	10%
DODONAEA VISCOSA	AKEAKE		0.5L	1	5%
HOHERIA POPULNEA	HOUHERE	FACU	0.5L	1	5%
LEPTOSPERMUM SCOPARIUM	MĀNUKA	FAC	0.5L	1	30%
PHORMIUM TENAX	HARAKEKE	FACW	0.5L	1	5%
PITTOSPORUM TENUIFOLIUM	KOHUHU	FACU	0.5L	1	12%
PLAGIANTHUS REGIUS	MANATU	FACU	0.5L	1	3%
POMADERIS KUMERAHO	KUMARAHOU		0.5L	1	2%
PSEUDOPANAX LESSONIANA	HOUPARA		0.5L	1	5%
WEINMANNIA RACEMOSA	KAMAHI	FACU	0.5L	1	3%
					100%

LTP - LOW TERRACE TREE PLANTING								
BEILSCHMIEDIA TARAIRI	TARAIRI		1L	0.111	10%			
DACRYCARPUS DACRYDIOIDES	KAHIKATEA	FAC	1L	0.111	10%			
DYSOXYLEM SPECTABILE	KOHEKOHE		1L	0.111	10%			
KNIGHTIA EXCELSA	REWAREWA	UPL	1L	0.111	10%			

					100%
VITEX LUCENS	PURIRI	UPL	1L	0.111	20%
LAURELIA NOVAE-ZELANDIAE	PUKATEA	FAC	1L	0.111	40%

RTP - RIDGE LINE TREE PLANTING					
AGATHIS AUSTRALIS	KAURI		0.5L	1	20%
DACRYDIUM CUPRESSINUM	RIMU	FACU	0.5L	1	25%
PHYLLOCLADUS TRICHOMANOIDES	TANEKAHA	FACU	0.5L	1	15%
PODOCARPUS TOTARA	TOTARA	FACU	0.5L	1	25%
PRUMNOPITYS FERRUGINEA	MIRO	FACU	0.5L	1	15%
•					100%

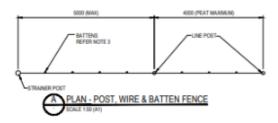
WEP - WETLAND ENRICHMENT PLAN	TING				
APODASMIA SIMILIS	OIOI	FACW	0.5L	2	5%
BLECHNUM MINUS	SWAMP KIOKIO	FACW	0.5L	2	4%
BOLBOSCHOENUS FLUVIATILIS	KUKURAHO	OBL	0.5L	2	4%
CAREX LESSONIANA	RAUTAHI	FACW	0.5L	2	4%
CAREX VIRGATA	PUKIO	FACW	0.5L	2	25%
CYPERUS USTULATUS	GIANT UMBRELLA SEDGE	FACW	0.5L	2	20%
JUNCUS EDGARIAE	WIWI	FACW	0.5L	2	20%
JUNCUS SAROPHORUS	WIWI	FACW	0.5L	2	4%
MACHEARINA TENAX	NA	FACW	0.5L	2	10%
MACHEARINA ARTICULATA	NA	OBL	0.5L	2	4%
		_			100%

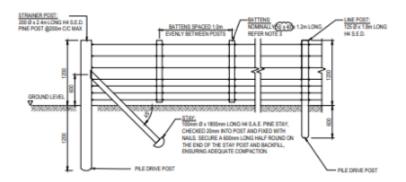
WNP - WETLAND NEW PLANTING (OF	FSET)				
APODASMIA SIMILIS	OIOI	FACW	0.5L	4	5%
BLECHNUM MINUS	SWAMP KIOKIO	FACW	0.5L	4	4%
BOLBOSCHOENUS FLUVIATILIS	KUKURAHO	OBL	0.5L	4	4%
CAREX LESSONIANA	RAUTAHI	FACW	0.5L	4	4%
CAREX VIRGATA	PUKIO	FACW	0.5L	4	25%
CYPERUS USTULATUS	GIANT UMBRELLA SEDGE	FACW	0.5L	4	20%
JUNCUS EDGARIAE	WIWI	FACW	0.5L	4	20%
JUNCUS SAROPHORUS	WIWI	FACW	0.5L	4	4%
MACHEARINA TENAX	NA	FACW	0.5L	4	10%
MACHEARINA ARTICULATA	NA	OBL	0.5L	4	4%
					100%

# APPENDIX B - PLANTING SPECIFICATION

To be developed at Detailed Design

# APPENDIX C - STOCK PROOF FENCING





# B ELEVATION - POST, WIRE & BATTEN FENCE

