

TO: Steveson Aggregates Limited
COPY TO: Jess Urquhart (Tonkin & Taylor)
FROM: Chris Wedding; Jennifer Shanks

Date: 14 August 2025
Job No: 64827

Hingaia (Drury) Island Offset Revegetation

Dear Jess,

This memorandum reviews the proposed biodiversity offset for the Sutton Block project, specifically that proposed at Hingaia (Drury) Island, where Landowner approval has not been gained. The Sutton Block biodiversity offset proposed 4.4 ha of kanuka forest revegetation to be undertaken at Ngā Motu o Hingaia in response to consultation outcomes with Ngāti Te Ata Waiohua, however the biodiversity offset accounting models demonstrate that the project would still result in an overall net gain outcome without this component (refer Tables 1- 4).

While net gain outcomes are still predicted to be achieved with less kanuka offset planting (17.6 ha), it is acknowledged that overall gains will be reduced, and therefore shortfalls in predicted values at 20 years have greater potential to result in failure to meet net gain outcome. We consider that the conservative values and assumptions built into the models will continue to support an overall net gain outcome (with 4.4 ha less planting), however recommend safeguards to ensure gains are achieved through monitoring and adaptive management as proposed.

Modelled conservativeness

Notwithstanding deviation in multiple attributes, a course sensitivity analysis of the model with reduced planting indicates that the model still withstands some shortfalls in all attributes (for vegetation structure and diversity) as identified below:

- Canopy cover: predicted to be 55% at 20 years is highly unlikely to fall below this value (closure is typically achieved by 5 years, although some canopy thinning with further ecosystem



maturation has been accounted for in the model). Canopy cover would need to reduce to 46% for the model to fail on this attribute.

- Canopy height: predicted to be 7 m at 20 years- canopy height is highly unlikely to be less than 7 m at 20 years maturity; however canopy height would need to be only 5 m at 20 years for the reduced planting model to fail on this attribute.
- Indigenous understorey: predicted to be 10% at 20 years. This value would need to be half of this (5%) for the model to fail on this attribute- however data used to model this attribute indicates that this is highly unlikely- particularly with pest management.
- Indigenous ground cover: This metric would need to fall short by 20% of the predicted values for the model to fail on this attribute. As above, the data used is based on other 20 year old plantings and is considered a strong indicator of predicted value.
- Indigenous diversity: predicted to be 21 species, and would need to be 23% less than predicted for the model to fail on this attribute. Diversity is expected to be well supported by close proximity to existing mature forest fragments and avifauna communities. A lower value is highly unlikely.

Further to these modelled values, we note that the model assumes offset planting would be undertaken generally around the time of removal. We refer to Table 15 of report E4:9 (Bioresearches & JS Ecology 2025) which identifies that all kanuka forest offset planting would be undertaken from years 10-16. This is in advance of kanuka losses (indicatively stages 4 & 5), and therefore modelled attributes are likely to be greater than those predicted (and therefore gains greater than conservatively predicted).

Proposed approach

Given the conservativeness of the models, we are confident that a net gain outcome will be achieved without any offset actions at Ngā Motu o Hingaia. The current approach of monitoring and adaptive management for offset planting is appropriate to ensure the net gain target is met.

Monitoring pioneer planting for other forest types from year's 1-9 will provide realistic metrics to predict the performance of kanuka forest offset planting from year 10. This will determine whether an additional 4.4 ha is ultimately required.

We recommend that a 10-year review of the biodiversity offset to assess whether the modelled targets are being met. If the results show that targets have been exceeded, no further action is needed. If the review indicates that additional offset planting is required, then SAL will be required to secure that land to complete the offset.

To: Jess Urquhart (Tonkin & Taylor)
From: Chris Wedding; Jennifer Shanks



Chris Wedding
Ecology Manager,
Bioresearches



Jennifer Shanks
Director,
JSEcology

Table 1 (reproduced from Table 34, Report E4:9, Bioresearches & JS Ecology, 2025). BOAM Output for loss of 8.79 ha of kānuka forest (Vegetation structures and diversity)

This section captures which elements of biodiversity are to be accounted for, and the benchmark value for the Attribute. The information matches that in the Impact Model					These cells provide information about the proposed Offset Actions			Calculations can be made for a finite end point, or at five yearly time-steps over 35 years. Indicate preference in Column K and Follow the instructions in Column L		This section is where the marginal change in the measure of Biodiversity Attribute due to the Offset Action is quantified. Inputs are derived from direct measure, existing data or models where available, or expert estimated predictions. Attribute Biodiversity Value at the Offset Site is compared to the Attribute Biodiversity Value at the Impact Site to calculate the Net Present Biodiversity Value for each Attribute						This is the average Net Present Biodiversity Value for the Biodiversity Component
Biodiversity Component	Biodiversity Attribute		Measurement Unit	Benchmark	Proposed Offset Actions	Offset area (ha)	Confidence in Offset Actions			Measure <u>prior</u> to Offset	Measure <u>after</u> Offset	Time till endpoint (years)	Biodiversity Value at Offset Site	Biodiversity Value at Impact Site	Attribute Net Present Biodiversity Value	Component Net Present Biodiversity Value
Vegetation structure & diversity	3.1a	Indigenous canopy cover	% cover	55	Revegetation	22	Confident 75-90%	Finite end point	Continue to Column M	0	55	20	10.05	-8.00	2.05	1.55
	3.1b	Height of canopy	m	12	Revegetation	22	Confident 75-90%	Finite end point	Continue to Column M	0	7	20	5.86	-6.60	-0.74	
	3.1c	Indigenous understorey cover	% cover	27	Revegetation	22	Confident 75-90%	Finite end point	Continue to Column M	0	10	20	3.72	-3.26	0.46	
	3.1d	Indigenous ground cover	% cover	10	Revegetation	22	Confident 75-90%	Finite end point	Continue to Column M	0	5	20	5.02	-0.01	5.02	
	3.1e	Diversity # native vascular	count	28	Revegetation	22	Confident 75-90%	Finite end point	Continue to Column M	0	21	20	7.54	-6.60	0.94	

Table 2. (reproduced from Table 35, Report E4:9, Bioresearches & JS Ecology, 2025). BOAM Output for loss of 8.79 ha of kānuka forest (Fauna habitat)

This section captures which elements of biodiversity are to be accounted for, and the benchmark value for the Attribute. The information matches that in the Impact Model					These cells provide information about the proposed Offset Actions			Calculations can be made for a finite end point, or at five yearly time-steps over 35 years. Indicate preference in Column K and Follow the instructions in Column L		This section is where the marginal change in the measure of Biodiversity Attribute due to the Offset Action is quantified. Inputs are derived from direct measure, existing data or models where available, or expert estimated predictions. Attribute Biodiversity Value at the Offset Site is compared to the Attribute Biodiversity Value at the Impact Site to calculate the Net Present Biodiversity Value for each Attribute						This is the average Net Present Biodiversity Value for the Biodiversity Component
Biodiversity Component	Biodiversity Attribute		Measurement Unit	Benchmark	Proposed Offset Actions	Offset area (ha)	Confidence in Offset Actions			Measure prior to Offset	Measure after Offset	Time till endpoint (years)	Biodiversity Value at Offset Site	Biodiversity Value at Impact Site	Attribute Net Present Biodiversity Value	Component Net Present Biodiversity Value
Fauna habitat	3.2a	Log fall	volume, m3/ha	23.71	Revegetation	22	Confident 75-90%	Finite end point	Continue to Column M	0	0.1	20	0.04	-2.19	-2.14	3.96
	3.2b	Leaf litter depth	mm	18.4	Revegetation	22	Confident 75-90%	Finite end point	Continue to Column M	0	12	20	6.55	-6.70	-0.14	
	3.2c	Winter fruit diversity (trees & shrubs)	count	4	Revegetation	22	Very confident >90%	Finite end point	Continue to Column M	0	4	20	11.63	-2.20	9.43	
	3.2d	Winter flower diversity	count	3	Revegetation	22	Very confident >90%	Finite end point	Continue to Column M	0	3	20	11.63	-2.93	8.70	



Table 3 BOAM Output for loss of 8.79 ha of kānuka forest (Vegetation structures and diversity)- with Hingaia component (4.4 ha) removed

This section captures which elements of biodiversity are to be accounted for, and the benchmark value for the Attribute. The information matches that in the Impact Model					These cells provide information about the proposed Offset Actions			Calculations can be made for a finite end point, or at five yearly time-steps over 35 years. Indicate preference in Column K and Follow the instructions in Column L		This section is where the marginal change in the measure of Biodiversity Attribute due to the Offset Action is quantified. Inputs are derived from direct measure, existing data or models where available, or expert estimated predictions. Attribute Biodiversity Value at the Offset Site is compared to the Attribute Biodiversity Value at the Impact Site to calculate the Net Present Biodiversity Value for each Attribute						This is the average Net Present Biodiversity Value for the Biodiversity Component	
Biodiversity Component	Biodiversity Attribute		Measurement Unit	Benchmark	Proposed Offset Actions	Offset area (ha)	Confidence in Offset Actions			Measure prior to Offset	Measure after Offset	Time till endpoint (years)	Biodiversity Value at Offset Site	Biodiversity Value at Impact Site	Attribute Net Present Biodiversity Value	Component Net Present Biodiversity Value	
3.1	Vegetation structure & diversity	3.1a	Indigenous canopy cover	% cover	55	Revegetation	17.6	Confident 75-90%	Finite end point	Continue to Column M	0	55	20	8.04	-8.00	0.04	0.26
		3.1b	Height of canopy	m	12	Revegetation	17.6	Confident 75-90%	Finite end point	Continue to Column M	0	7	20	4.69	-6.60	-1.91	
		3.1c	Indigenous understorey cover	% cover	27	Revegetation	17.6	Confident 75-90%	Finite end point	Continue to Column M	0	10	20	2.98	-3.26	-0.28	
		3.1d	Indigenous ground cover	% cover	10	Revegetation	17.6	Confident 75-90%	Finite end point	Continue to Column M	0	5	20	4.02	-0.01	4.01	
		3.1e	Diversity # native vascular	count	28	Revegetation	17.6	Confident 75-90%	Finite end point	Continue to Column M	0	21	20	6.03	-6.60	-0.57	

Table 4 BOAM Output for loss of 8.79 ha of kānuka forest (Fauna habitat)- with Hingaia component (4.4 ha) removed

This section captures which elements of biodiversity are to be accounted for, and the benchmark value for the Attribute. The information matches that in the Impact Model					These cells provide information about the proposed Offset Actions			Calculations can be made for a finite end point, or at five yearly time-steps over 35 years. Indicate preference in Column K and Follow the instructions in Column L		This section is where the marginal change in the measure of Biodiversity Attribute due to the Offset Action is quantified. Inputs are derived from direct measure, existing data or models where available, or expert estimated predictions. Attribute Biodiversity Value at the Offset Site is compared to the Attribute Biodiversity Value at the Impact Site to calculate the Net Present Biodiversity Value for each Attribute						This is the average Net Present Biodiversity Value for the Biodiversity Component	
Biodiversity Component	Biodiversity Attribute		Measurement Unit	Benchmark	Proposed Offset Actions	Offset area (ha)	Confidence in Offset Actions			Measure prior to Offset	Measure after Offset	Time till endpoint (years)	Biodiversity Value at Offset Site	Biodiversity Value at Impact Site	Attribute Net Present Biodiversity Value	Component Net Present Biodiversity Value	
3.2	Fauna habitat	3.2a	Log fall	volume, m3/ha	23.71	Revegetation	17.6	Confident 75-90%	Finite end point	Continue to Column M	0	0.1	20	0.03	-2.19	-2.15	2.47
		3.2b	Leaf litter depth	mm	18.4	Revegetation	17.6	Confident 75-90%	Finite end point	Continue to Column M	0	12	20	5.24	-6.70	-1.45	
		3.2c	Winter fruit diversity (trees &)	count	4	Revegetation	17.6	Very confident >90%	Finite end point	Continue to Column M	0	4	20	9.31	-2.20	7.11	
		3.2d	Winter flower diversity (trees &)	count	3	Revegetation	17.6	Very confident >90%	Finite end point	Continue to Column M	0	3	20	9.31	-2.93	6.37	



Table 5. (Reproduced from Table 15, Report E4:9, Bioresearches & JS Ecology, 2025). Summary of planting extent by year for each of the ecosystem types. Kanuka forest revegetation from years 10-16, but not removed until Stages 4 and 5 (Indicatively 40-50 year Plan).

Year	WF9 (Lost Stages 1 & 2)	WF9 (Lost Stages 4 & 5)	RF (Lost Stage 1)	VS2 (Lost stages 4 & 5)	Total ha/year	Running Total
1	3				3	3
2	2		3		5	8
3			5.32		5.32	13.32
4	5				5	18.32
5	2				2	20.32
6		5			5	25.32
7		5			5	30.32
8		5			5	35.32
9		5			5	40.32
10				4	4	44.32
11				3	3	47.32
12				3	3	50.32
13				3	3	53.32
14				3	3	56.32
15				3	3	59.32
16				3	3	62.32
Total	12	20	8.32	22	62.32	