



**SENDERO RESOURCES**  
ENVIRONMENTAL AND GEOSPATIAL SOLUTIONS

# WORK SAMPLES CHANGE DETECTION ANALYSIS

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# SPATIAL PATTERNS OF DEFORESTATION PROCESS SINCE EUROPEAN SETTLEMENT IN THE ATHERTON TABLELAND

PRE - EUROPEAN SETTLEMENT LAND COVER MAP



**PRE - European Settlement**

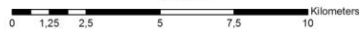
**Land\_Cover**

- Rainforests, scrubs
- Eucalypt open-forests to woodlands on floodplains
- Eastern eucalypt woodlands to open-forests

- Tussock grasslands, forblands
- Other coastal communities or heaths
- Wetlands (swamps and lakes)
- Wet eucalypt open-forests



1:100,000

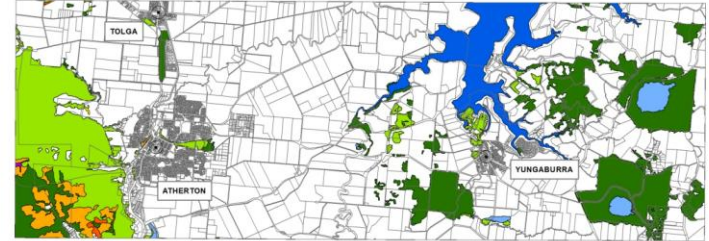


Coordinate System: GDA\_1994\_MGA\_Zone\_56  
 Projection: Transverse\_Mercator  
 Datum: D\_GDA\_1994

Source: Biodiversity status of pre-clearing and 2006b regional ecosystems. Central north Qld. DERM. Queensland Government Information Service.

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POST - EUROPEAN SETTLEMENT LAND COVER MAP 2006



**POST - European Settlement**  
**Land\_Cover**

- Non-remnant, disturbed
- Rainforests, scrubs
- Eucalypt open-forests to woodlands on floodplains
- Eastern eucalypt woodlands to open-forests
- Tussock grasslands, forblands

- Other coastal communities or heaths
- Wetlands (swamps and lakes)
- Wet eucalypt open-forests
- Water

- LandTenure\_Cadastre
- Towns



1:104,216



Coordinate System: GDA\_1994\_MGA\_Zone\_56  
 Projection: Transverse\_Mercator  
 Datum: D\_GDA\_1994

Source: Biodiversity status of pre-clearing and 2006b regional ecosystems. Central north Qld. DERM. Queensland Government Information Service.

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**TENURE**

- Freehold
- Land Lease
- RE
- Covenant
- FR
- National Park
- State Forest
- Easement
- Housing Land
- Profit a prendre
- State Land



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ALEJANDRO VEGA

1:104,216



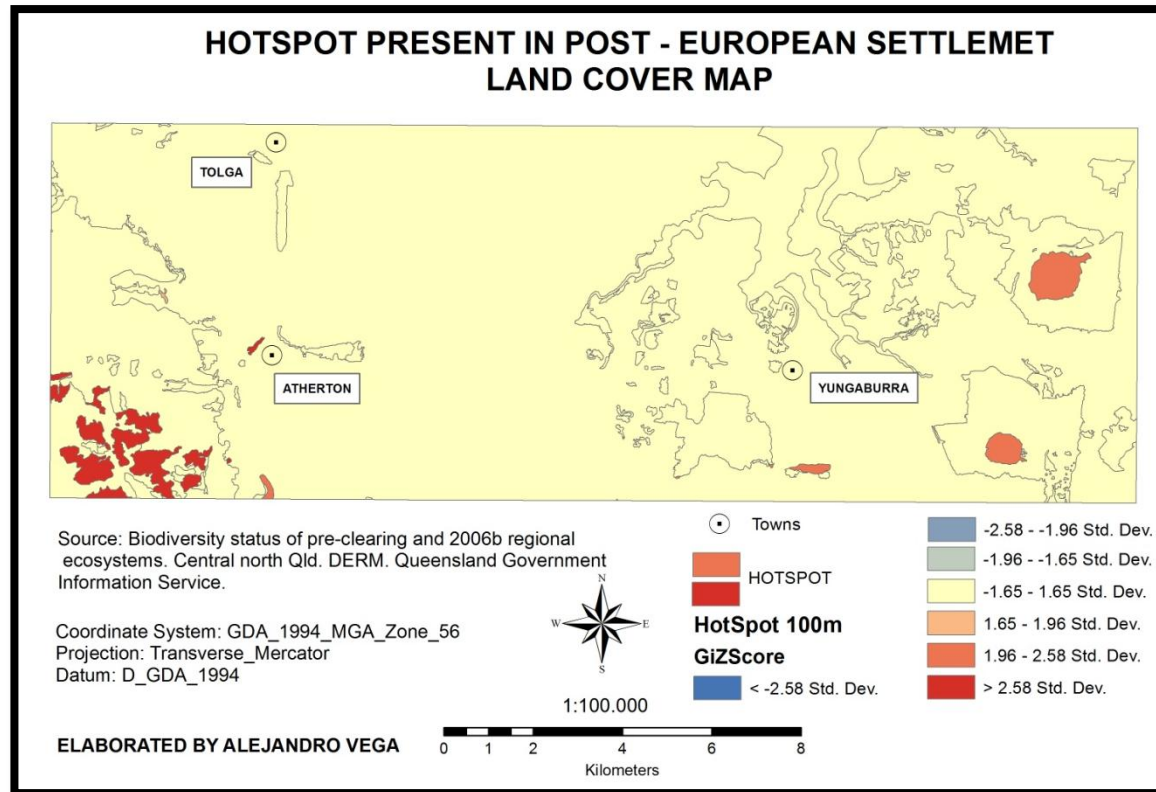
Source: Biodiversity status of pre-clearing and 2006b regional ecosystems. Central north Qld. DERM. Queensland Government Information Service.

Coordinate System: GDA\_1994\_MGA\_Zone\_56  
 Projection: Transverse\_Mercator  
 Datum: D\_GDA\_1994

**MAP PRODUCTION**

# SPATIAL PATTERNS OF DEFORESTATION PROCESS SINCE EUROPEAN SETTLEMENT IN THE ATHERTON TABLELAND

## RESULTS



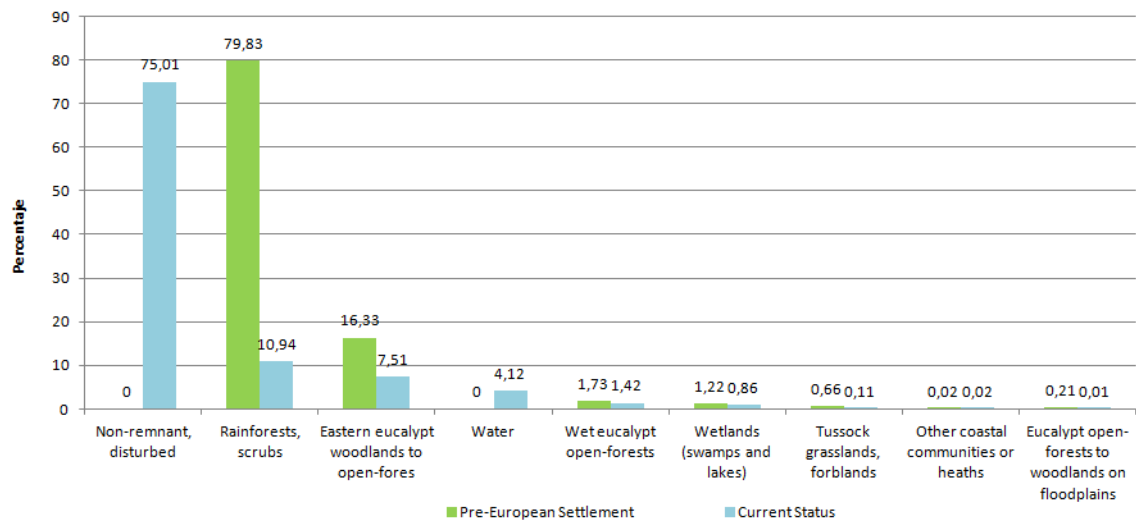
Concentration/clustering analysis

# SPATIAL PATTERNS OF DEFORESTATION PROCESS SINCE EUROPEAN SETTLEMENT IN THE ATHERTON TABLELAND

## RESULTS

ha	Eastern eucalypt woodlands to open-forests	Eucalypt open-forests to woodlands on floodplains	Non-remnant, disturbed	Other coastal communities or heaths	Rainforests, scrubs	Tussock grasslands, forblands	Water	Wet eucalypt open-forests	Wetlands (swamps and lakes)	Grand Total
Eastern eucalypt woodlands to open-forests	1,478.59		1,518.58		0.00		216.93			3,214.09
Eucalypt open-forests to woodlands on floodplains		2.28	0.00				38.58			40.86
Other coastal communities or heaths				4.09						4.09
Rainforests, scrubs			13,001.68		2,153.78		554.82	0.00	0.00	15,710.28
Tussock grasslands, forblands			109.77			20.71				130.48
Wet eucalypt open-forests	0.00		62.12					278.78		340.90
Wetlands (swamps and lakes)			70.60						169.02	239.62
<b>Grand Total</b>	<b>1,478.59</b>	<b>2.28</b>	<b>14,762.75</b>	<b>4.09</b>	<b>2,153.78</b>	<b>20.71</b>	<b>810.32</b>	<b>278.78</b>	<b>169.02</b>	<b>19,680.31</b>

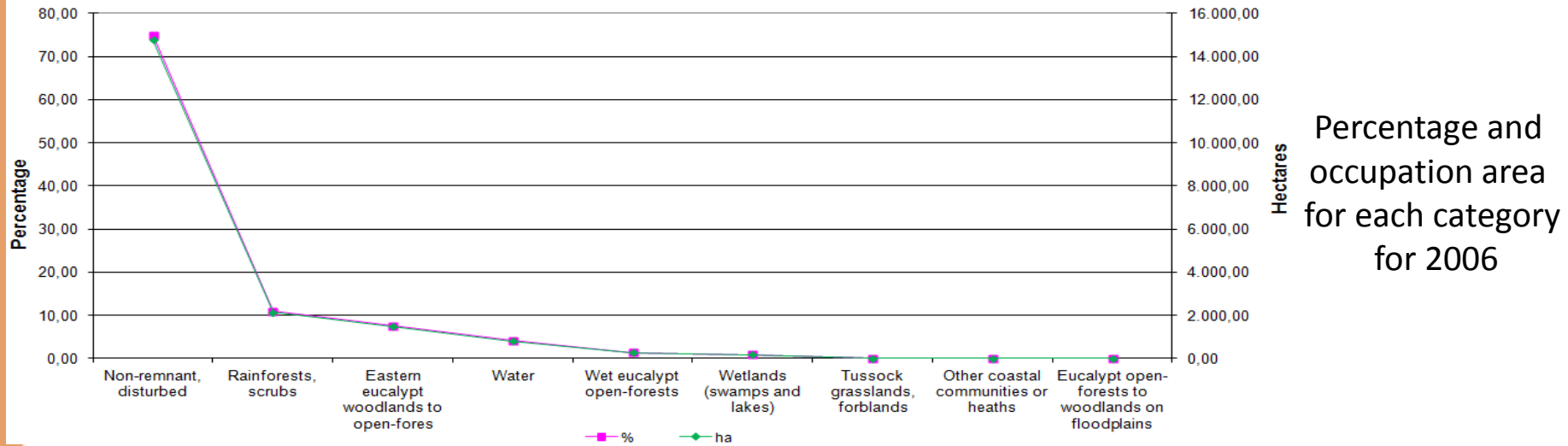
Probability matrix of the landscape transformation in hectares



Multi-temporal proportion of the status of the land covers

# SPATIAL PATTERNS OF DEFORESTATION PROCESS SINCE EUROPEAN SETTLEMENT IN THE ATHERTON TABLELAND

## RESULTS



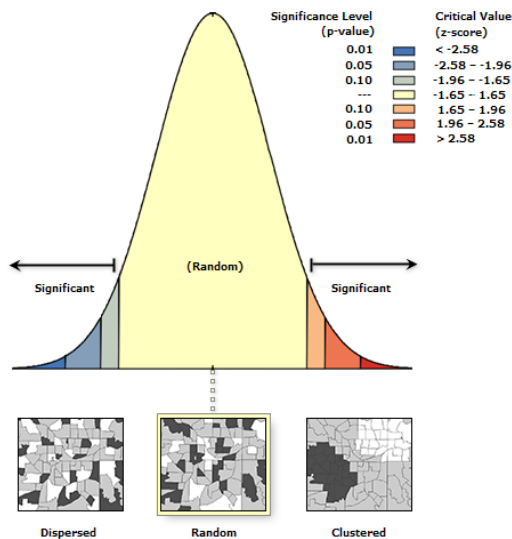
Class	Area (ha)	% of CA in TLA	NumP	MPS	MedPS	PSCoV	PSSD	TE	MPE	MSI	AWMSI	MPAR	MPFD	AWMPFD
Rainforests, scrubs	15.710,30	79,83	21,00	7.481.094,28	34.202,16	437,01	32.693.326,01	186.506,21	8.881,25	1,84	3,30	0,11	1,39	1,26
Eastern eucalypt woodlands to open-forest	3.214,11	16,33	20,00	1.607.056,49	150.240,23	231,40	3.718.749,50	119.045,82	5.952,29	1,74	2,39	0,03	1,31	1,27
Wet eucalypt open-forests	340,90	1,73	17,00	200.527,16	114.606,48	99,07	198.663,09	45.953,78	2.703,16	1,80	2,08	0,03	1,32	1,31
Wetlands (swamps and lakes)	239,62	1,22	11,00	217.837,01	88.705,91	132,31	288.222,00	23.207,13	2.109,74	1,65	1,54	0,04	1,32	1,26
Tussock grasslands, forblands	130,48	0,66	6,00	217.461,94	35.003,41	181,98	395.738,55	9.460,14	1.576,69	1,48	1,32	0,04	1,32	1,23
Eucalypt open-forests to woodlands on floodplains	40,86	0,21	2,00	204.278,51	204.278,51	88,85	181.500,42	18.575,70	9.287,85	4,96	7,63	0,05	1,45	1,51
Other coastal communities or heaths	4,09	0,02	1,00	40.855,92	40.855,92	0,00	0,00	1.758,71	1.758,71	2,45	2,45	0,04	1,41	1,41

Landscape metrics proportion, number of patches, mean patch size, patch size standard deviation, total edge, edge density, mean patch edge and the area weighted mean patch fractal dimension.

# SPATIAL PATTERNS OF DEFORESTATION PROCESS SINCE EUROPEAN SETTLEMENT IN THE ATHERTON TABLELAND

## RESULTS

### Global Moran's Index for Land cover pre-european settlement Spatial Autocorrelation Report



<b>Moran's Index:</b>	0,054456
<b>Expected Index:</b>	-0,012987
<b>Variance:</b>	0,007688
<b>z-score:</b>	0,769198
<b>p-value:</b>	0,441776

### Global Moran's I Summary

<b>Input Feature Class:</b>	PRE - European Settlement
<b>Input Field:</b>	CATEGORIE
<b>Conceptualization:</b>	INVERSE_DISTANCE
<b>Distance Method:</b>	EUCLIDEAN
<b>Row Standardization:</b>	False
<b>Distance Threshold.:</b>	3539.23650429
<b>Weights Matrix File:</b>	None

Moran's Index: 0,054456

z-score: 0,769198

p-value: 0,441776

Given the z-score of 0.77, the pattern does not appear to be significantly different than random.