



spatialising the styx

SUMMER STUDENT SCHOLARSHIP 2014/2015

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Styx Living Laboratory Trust

Overview

- Context of Summer Scholarship Report
- Some key findings
 - Potential for the Styx (context of site/project)
 - Ecology
 - Aquatic
 - Terrestrial
 - Recreation
 - Accessibility to the Styx
 - Accessibility of the Styx
 - Recreation opportunities
- Application of Report
- Extension of Report
- Conclusion

Context of Summer Scholarship

- Under the Styx Vision: 2000-2040, for the Styx to be a “Source to Sea” facility for Christchurch
- Map out information
- Apply spatial strategy analysis
- Provide resources to facilitate discussions on management and development of Styx

Site Context

STUDY AREA

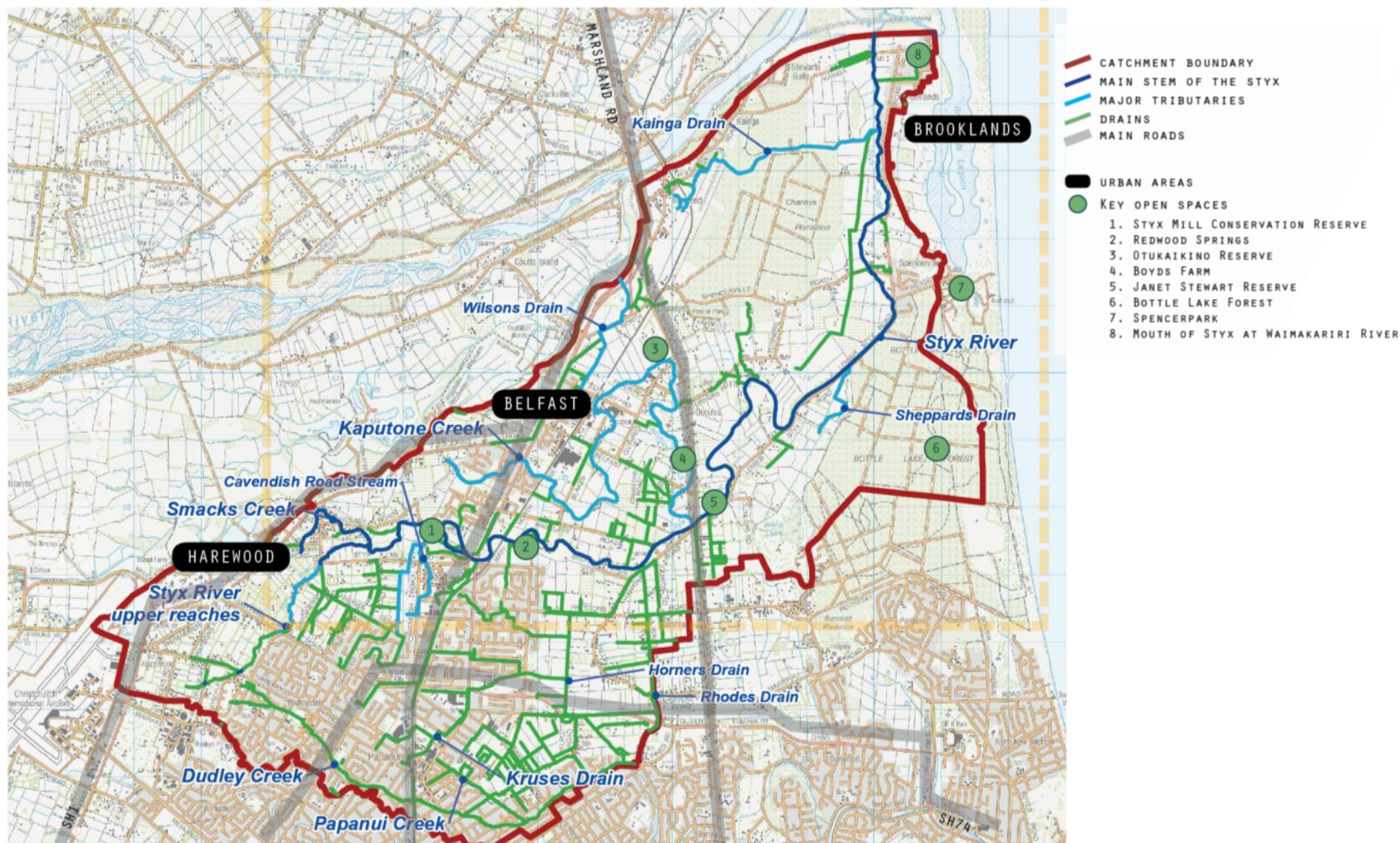
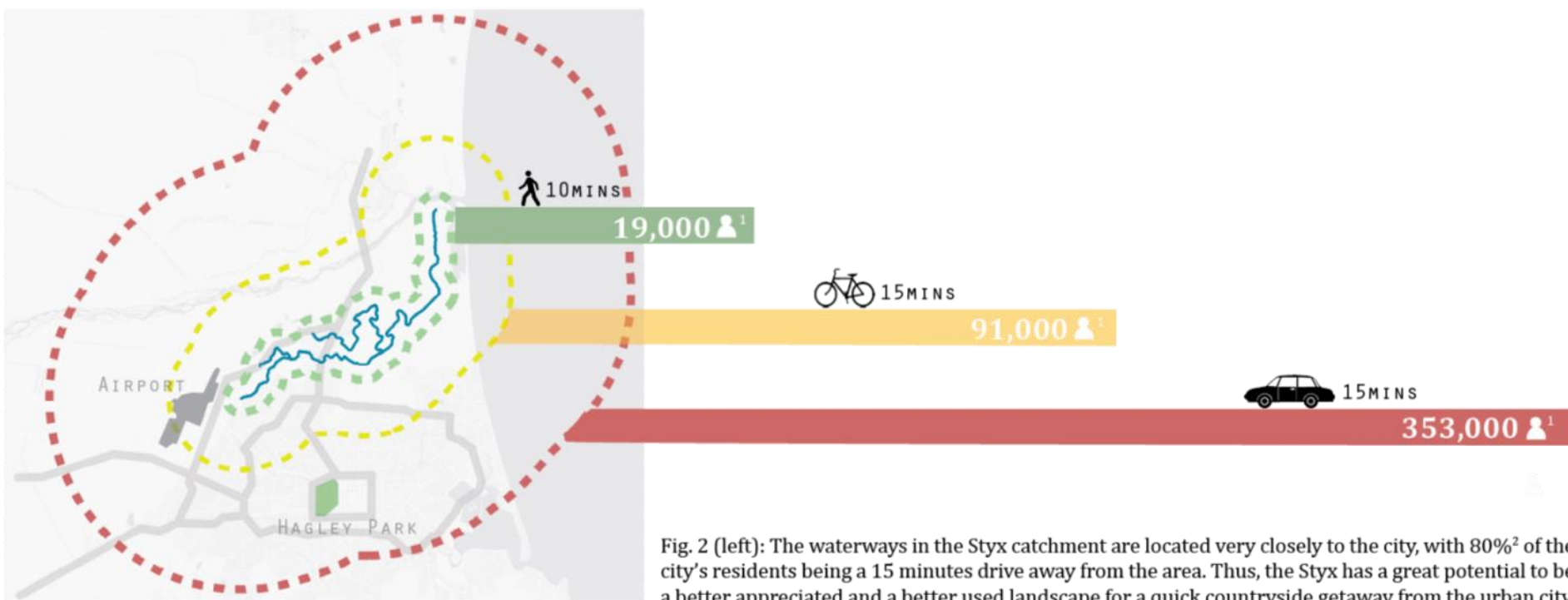


Fig. 1: Key surface waterways within Styx SMP Area (Image sourced from Golder Associates, 2012).

Findings – *Potential for Styx*



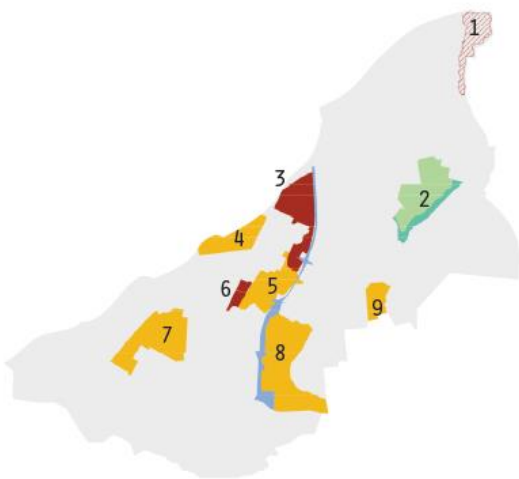
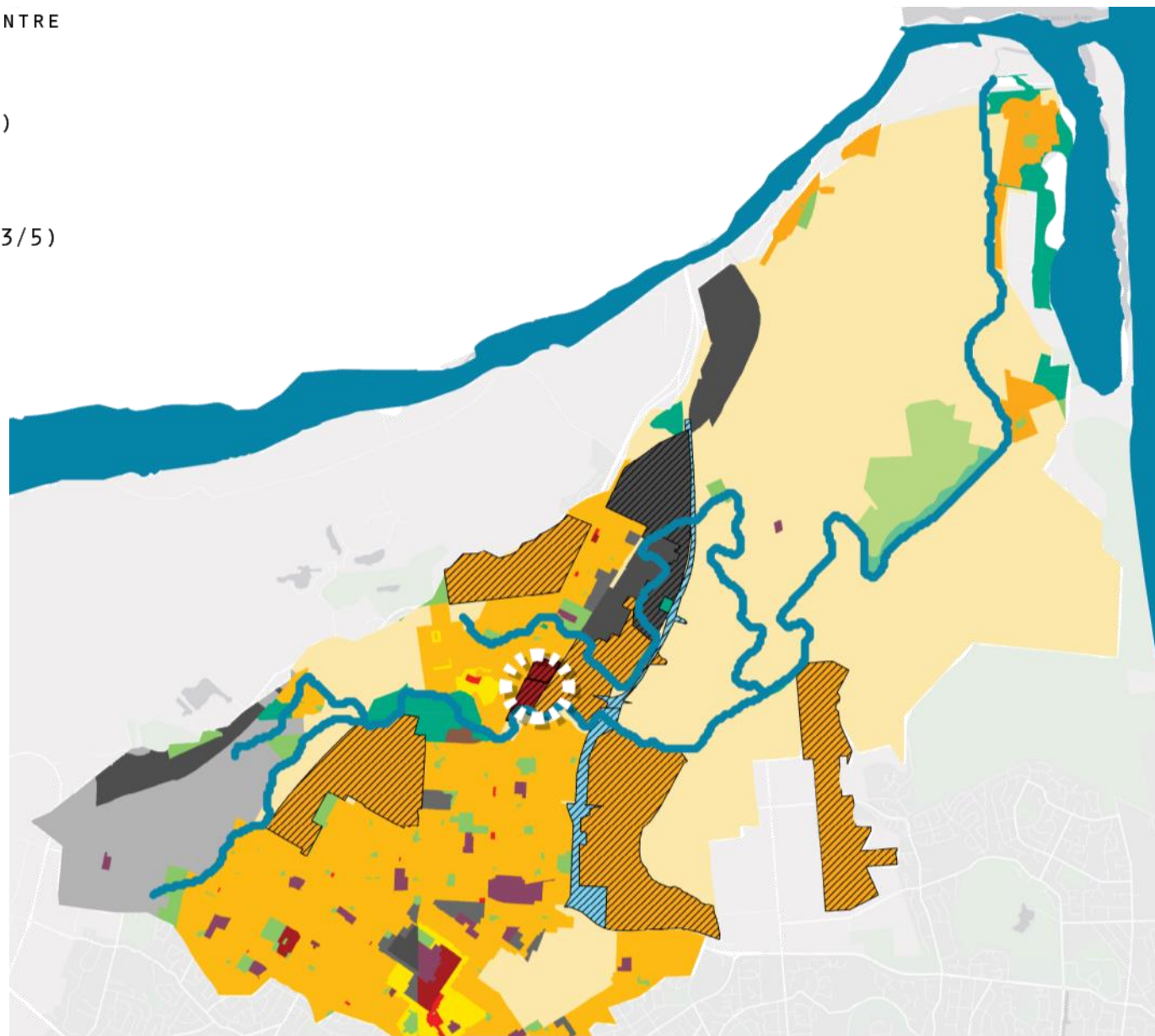
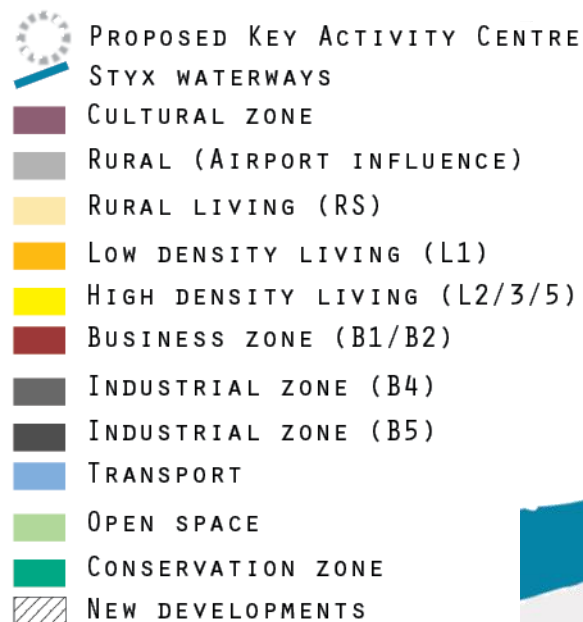
Findings – Potential for Styx



¹ Estimation derived from number of households within each zone, adopting the projection of 2.3 persons per household based on Statistics NZ by 2026, which is the lowest projected value and would thus estimate the minimum population reach of the Styx River (Statistics NZ, 2014).

² Based on the estimated population projection of 2041 Christchurch of 424,000 residents.

Findings – *Potential for Styx*



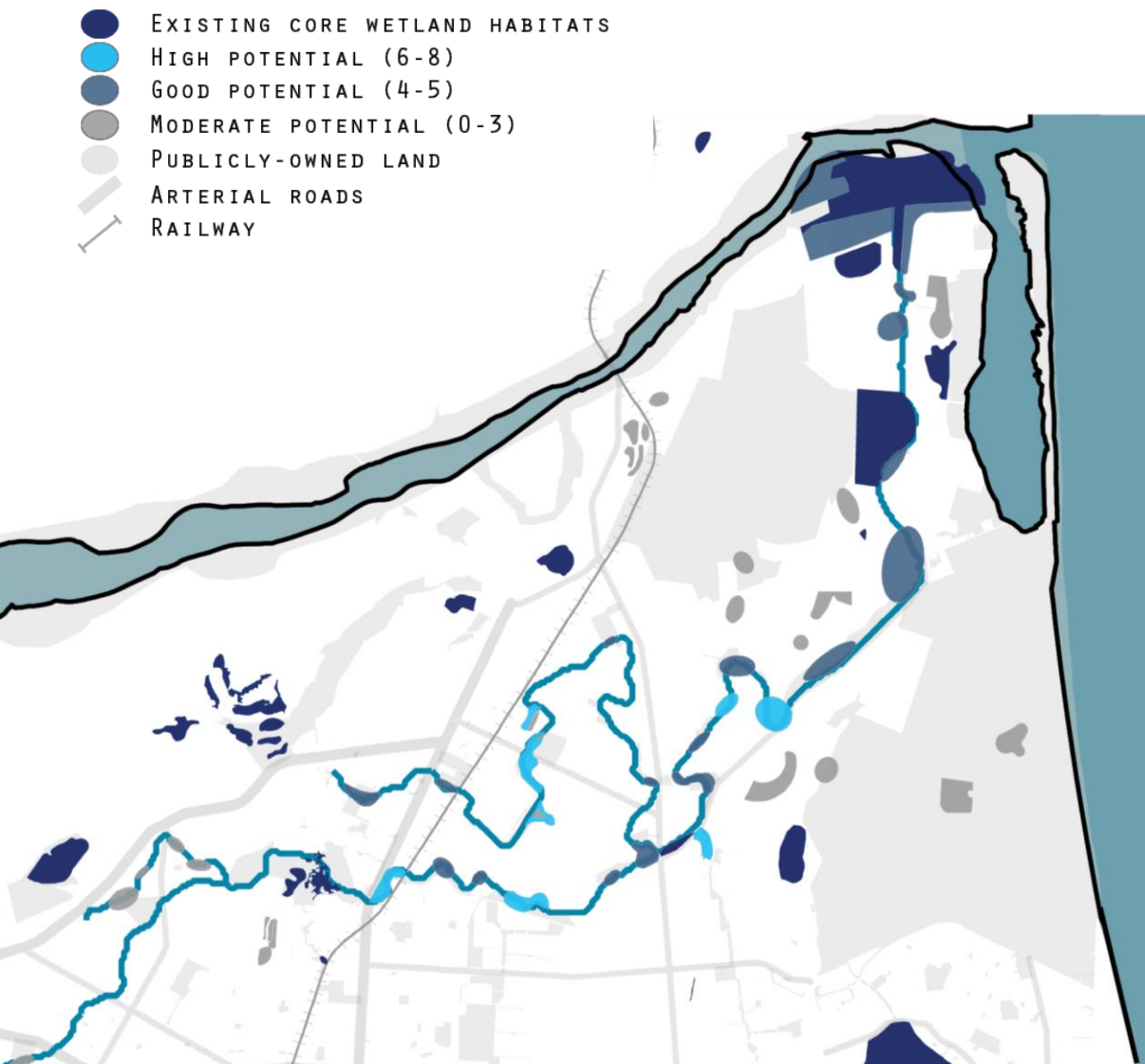
Findings - *Aquatic Ecosystems*

= Restoration and protection of wetlands

- Clean water by filtering and storing contaminants
- Control floods
- High percentage of native birds are wetland species

Findings - Aquatic Ecosystems

Fig. 11.
ANALYSIS OF POTENTIAL WETLAND HABITATS



Existing wetland +
Historic, or
Management under ICMP, or
In flood zone

Existing wetland, or
3ha area under ICMP +
Historic or in flood zone

No existing wetland but
available land, or historic or
in flood zone

Findings – *Terrestrial Ecosystems*

- Meurk, C.D. and Hall, G.M.J. (2006). Options for Enhancing Forest Biodiversity Across New Zealand's Managed Landscapes Based on Ecosystem Modelling and Spatial Design. In *New Zealand Journal of Ecology*. 30(1). Pp 131-146.

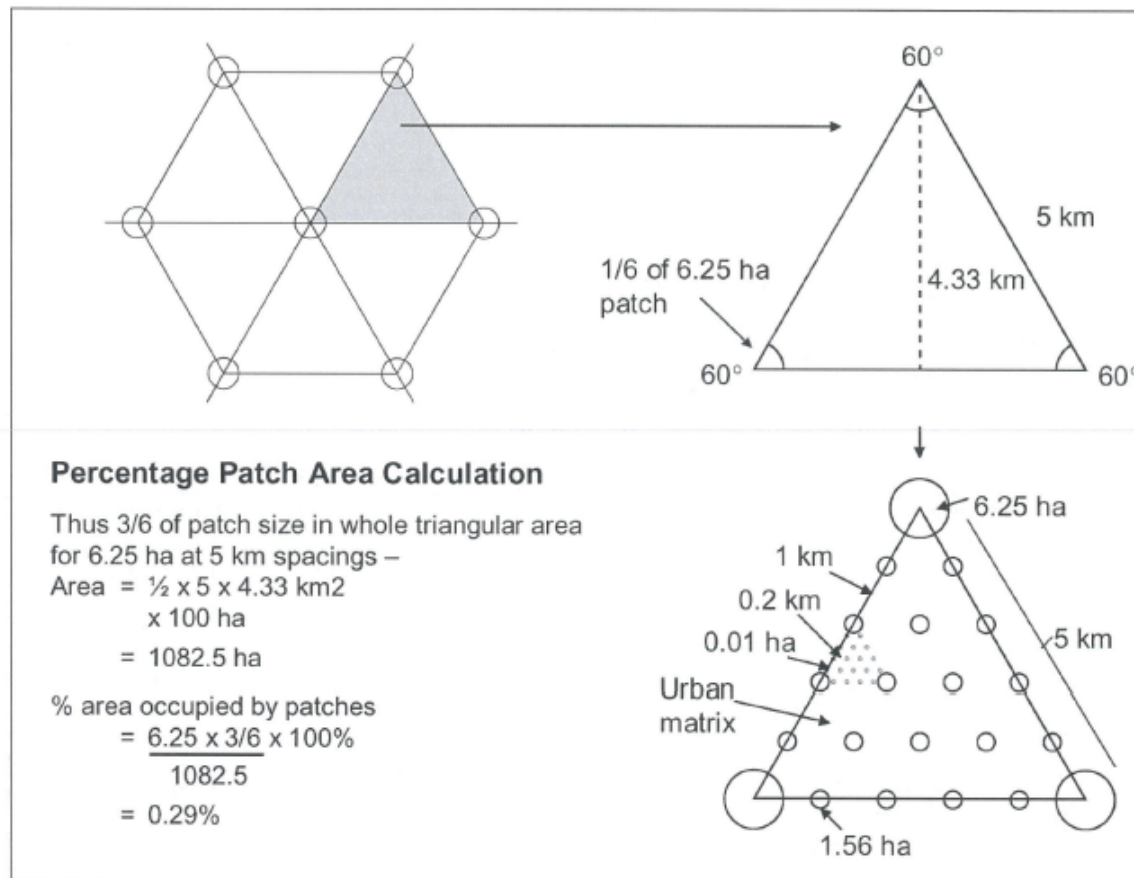
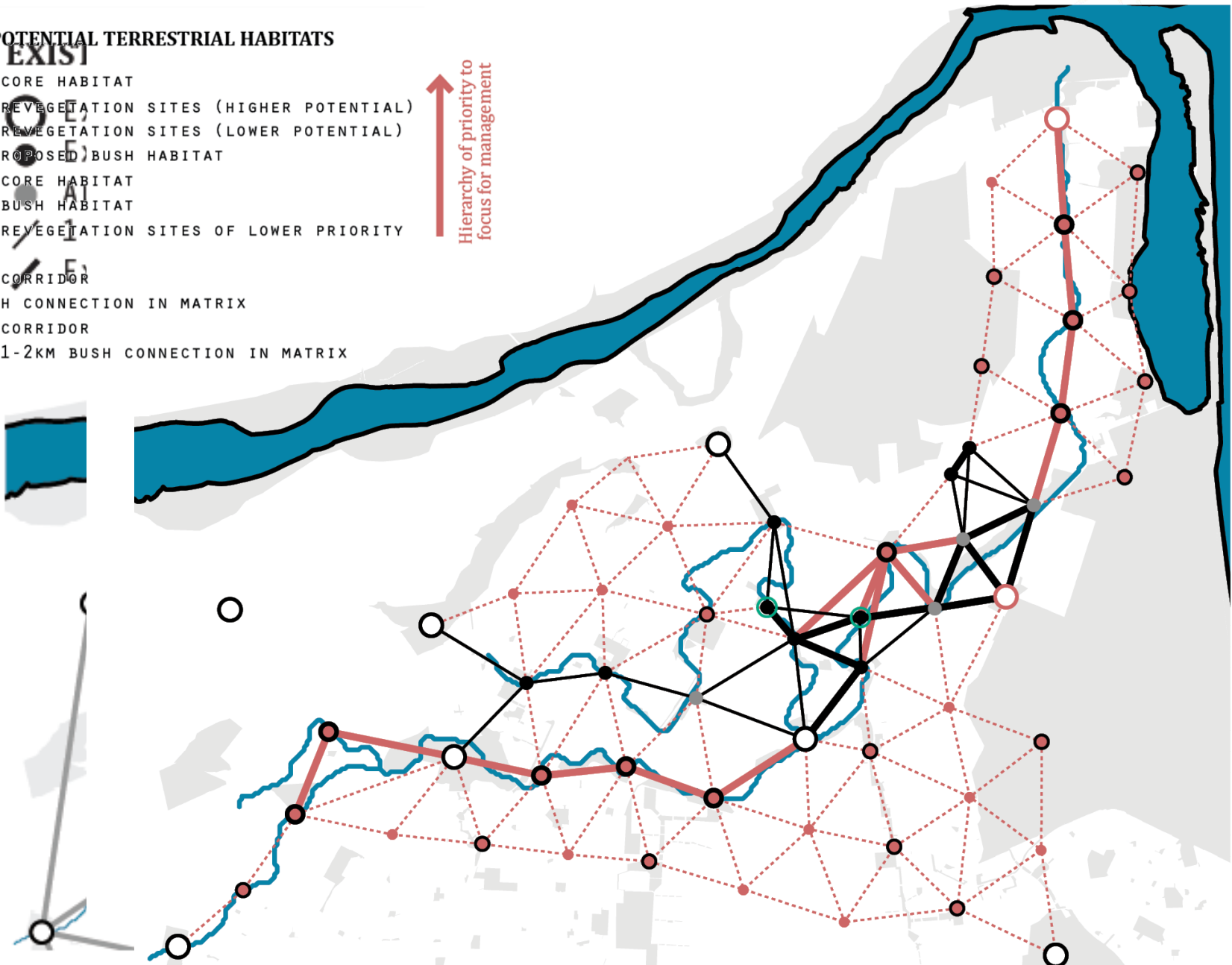
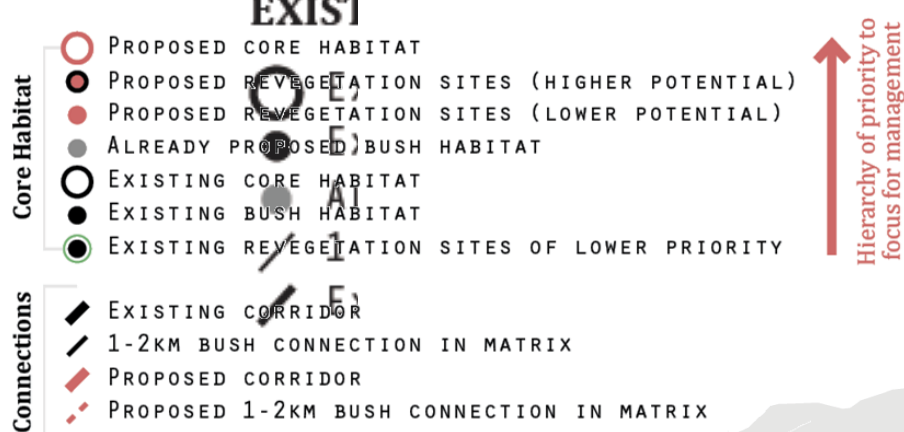


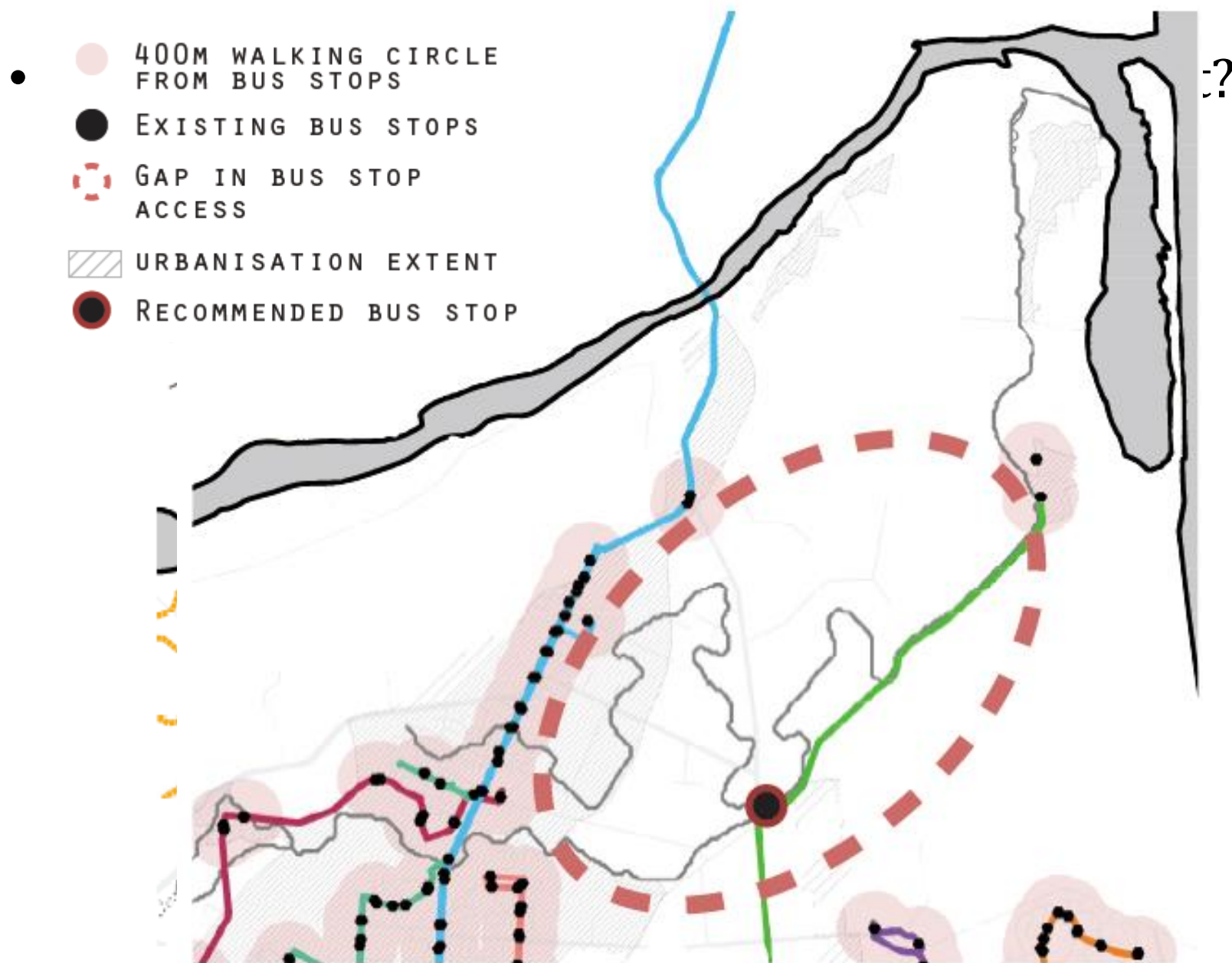
Figure 3: An idealised, nested forest patch configuration of three patch sizes (Source: Meurk and Hall 2006)

Findings – *Terrestrial Ecosystems*

Fig. 17.
ANALYSIS OF POTENTIAL TERRESTRIAL HABITATS

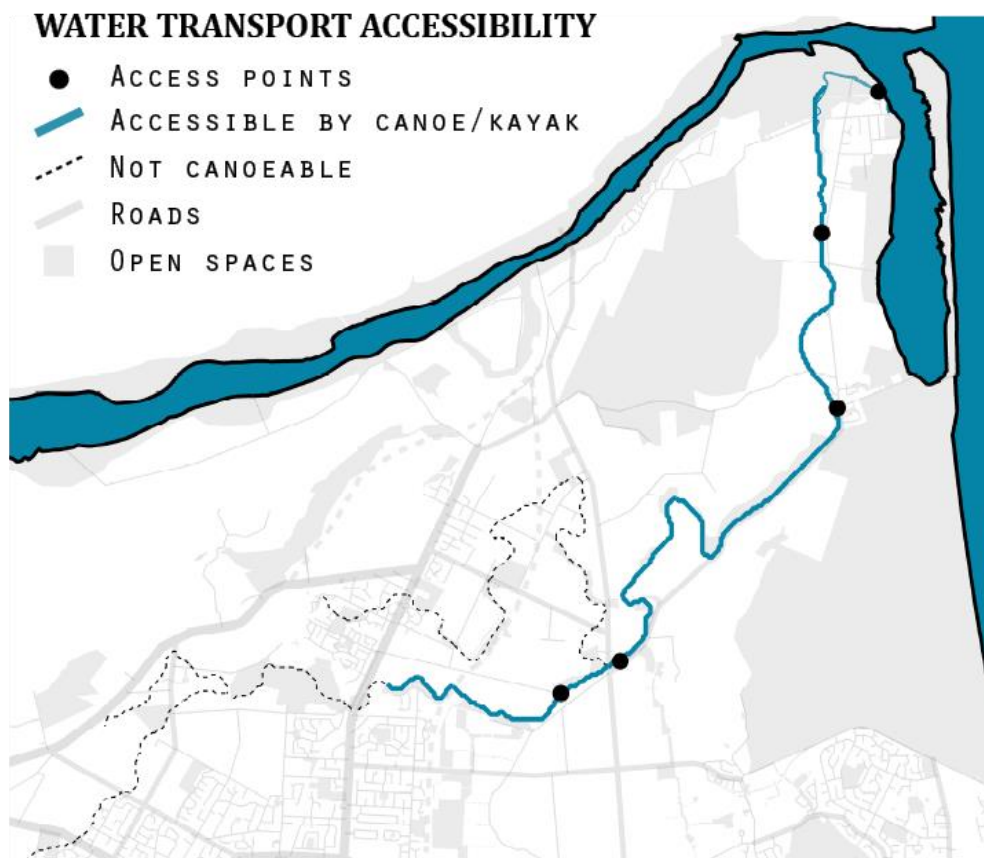


Findings – Accessibility to Styx



Findings – *Accessibility of Styx*

- How recreationally accessible is the Styx?
 - Choices available
 - Ease of accessibility
- 16km of river assumedly accessible by water transport



Findings – Accessibility of Styx

- How recreationally accessible is the Styx?
 - Ease of accessibility

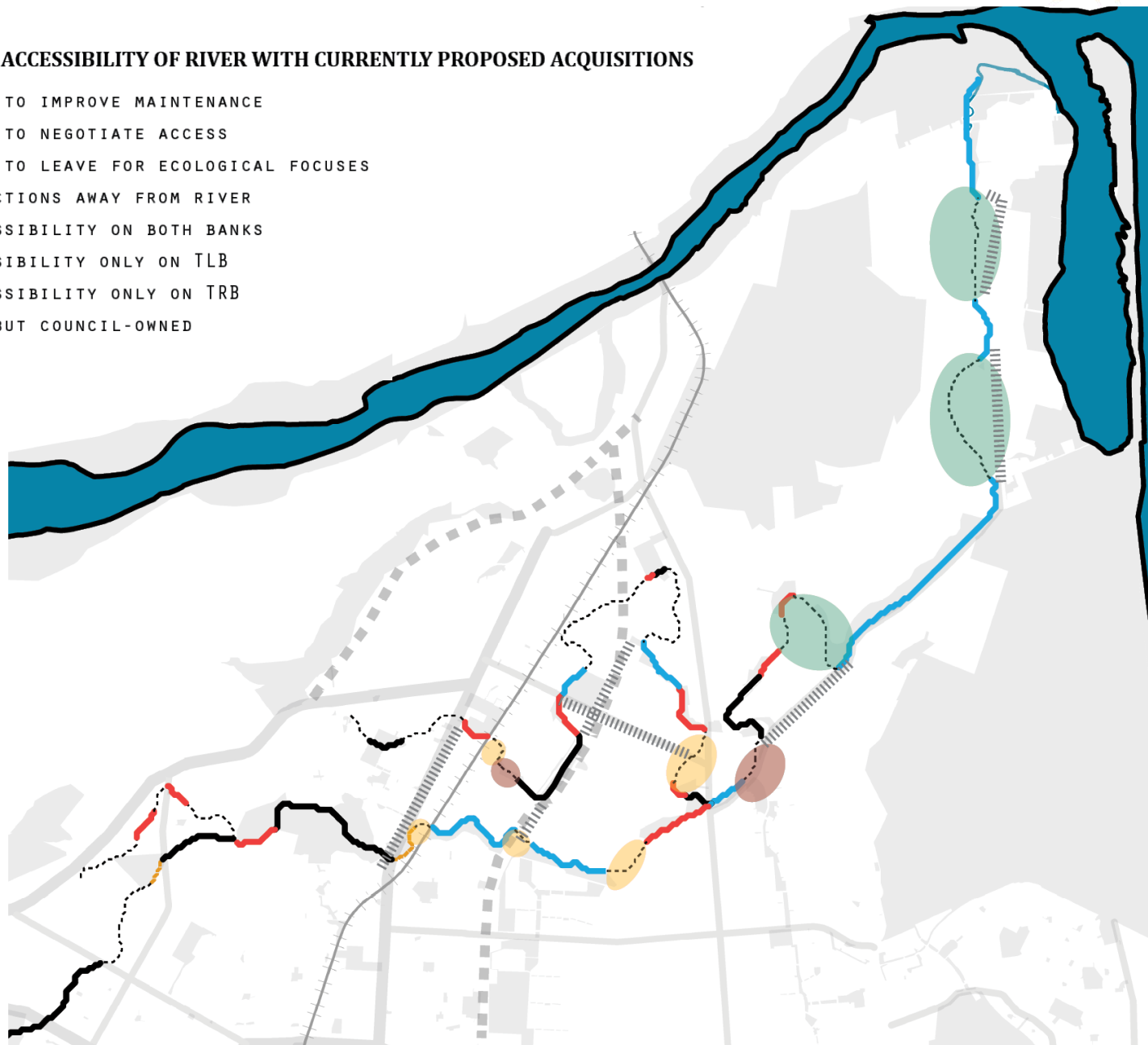


	MAIN STYX		KAPUTONE		SMACKS CREEK		ALL	
Length of river / km	23.75		10.30		2.54		36.59	
Total length of banks / km	47.51		20.60		5.08		73.18	
ACCESSIBILITY	<i>Legally</i>	<i>Actual</i>	<i>Legally</i>	<i>Actual</i>	<i>Legally</i>	<i>Actual</i>	<i>Legally</i>	<i>Actual</i>
Total TRB / km	18.11	12.16	1.51	1.51	0.61	0	20.24	13.67
% of length of river	76.28	51.18	14.66	14.66	24.14	0	55.32	37.35
Total TLB / km	17.60	7.69	2.09	2.09	0.61	0.61	20.31	10.39
% of length of river	74.10	32.36	20.31	20.31	24.14	24.14	55.49	28.40
Total length of banks accessible / km	35.72	19.84	3.60	3.60	1.23	0.61	40.55	24.06
% of length of river banks	75.19	41.77	17.49	17.49	24.14	12.07	55.41	32.88
Length of river accessible / km	19.53	14.01	2.74	2.74	0.61	0.61	22.89	17.37
% of length of river	82.23	58.98	26.63	26.63	24.14	24.14	62.55	47.46
<i>+ Council-proposed contributions</i>								
Added length of river accessible / km	1.62		2.46		0		4.07	
% of total river length accessible	89.04	65.79	50.47	50.47	24.14	24.14	73.68	58.59

Findings – Accessibility of Styx

Fig. 25.
ANALYSIS OF RECREATIONAL ACCESSIBILITY OF RIVER WITH CURRENTLY PROPOSED ACQUISITIONS

- RECOMMENDED AREAS TO IMPROVE MAINTENANCE
- RECOMMENDED AREAS TO NEGOTIATE ACCESS
- RECOMMENDED AREAS TO LEAVE FOR ECOLOGICAL FOCUSES
- ▨ ALTERNATIVE CONNECTIONS AWAY FROM RIVER
- RECREATIONAL ACCESSIBILITY ON BOTH BANKS
- RECREATIONAL ACCESSIBILITY ONLY ON TLB
- RECREATIONAL ACCESSIBILITY ONLY ON TRB
- ▨ NO PUBLIC ACCESS BUT COUNCIL-OWNED
- - - NO PUBLIC ACCESS

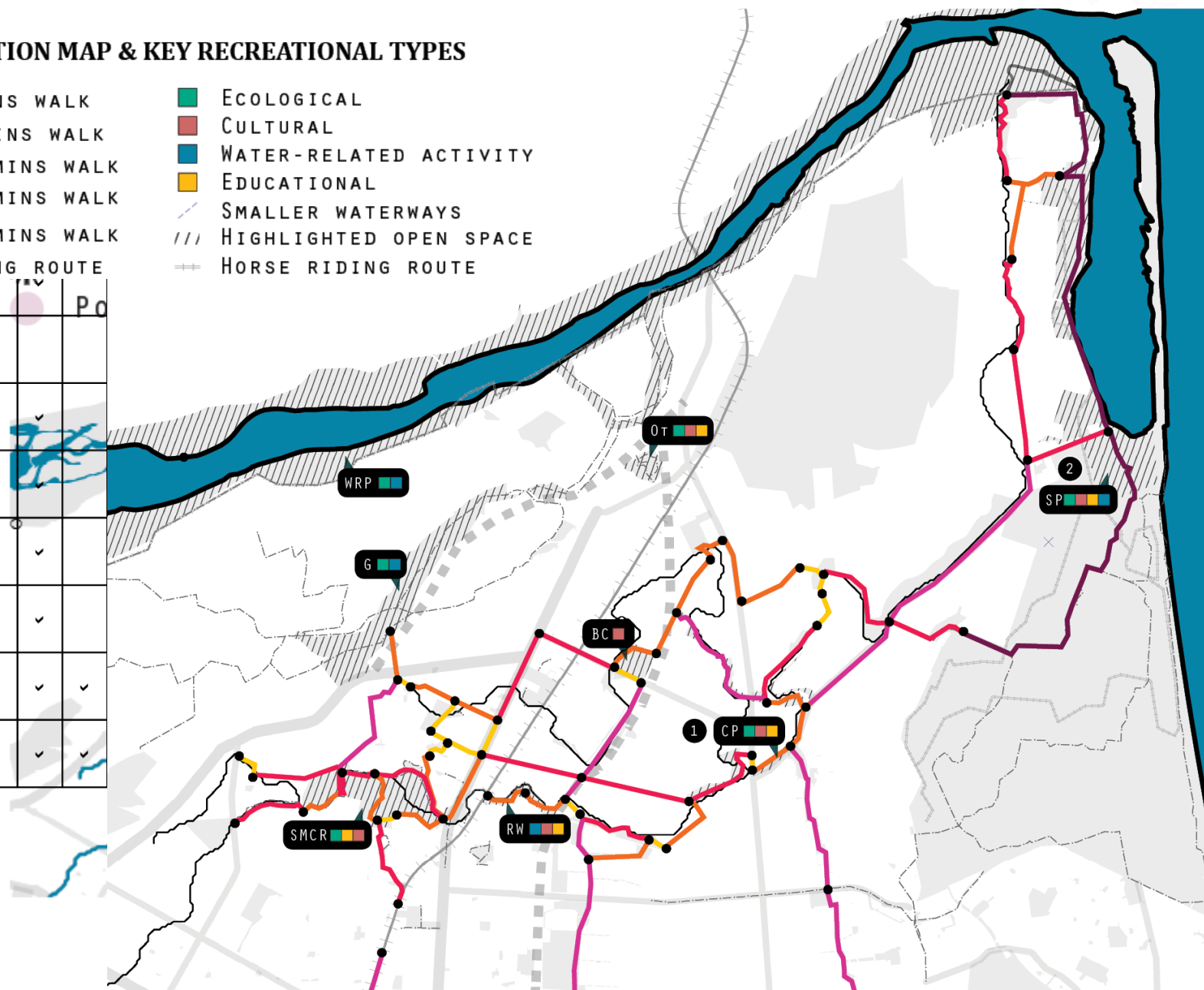


Findings – Recreation Opportunities

TIME CIRCULATION MAP & KEY RECREATIONAL TYPES

- 0-5MINS WALK
- 6-10MINS WALK
- 11-15MINS WALK
- 16-30MINS WALK
- 31-60MINS WALK
- CYCLING ROUTE
- ECOLOGICAL
- CULTURAL
- WATER-RELATED ACTIVITY
- EDUCATIONAL
- SMALLER WATERWAYS
- /// HIGHLIGHTED OPEN SPACE
- == HORSE RIDING ROUTE

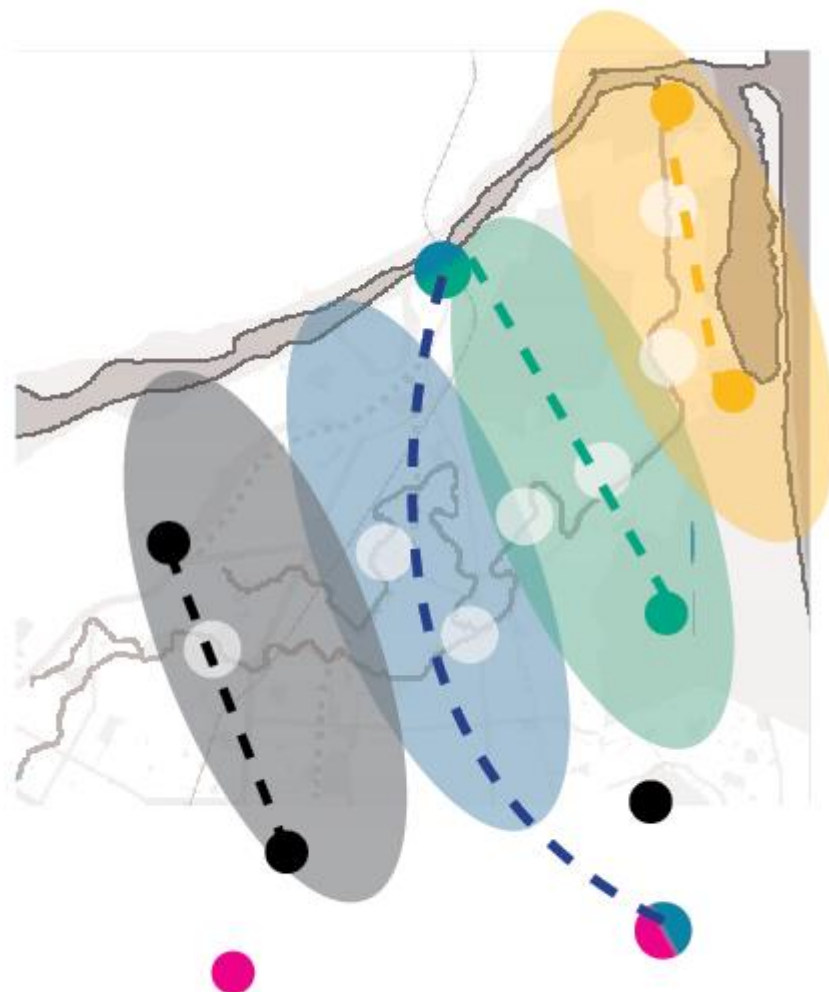
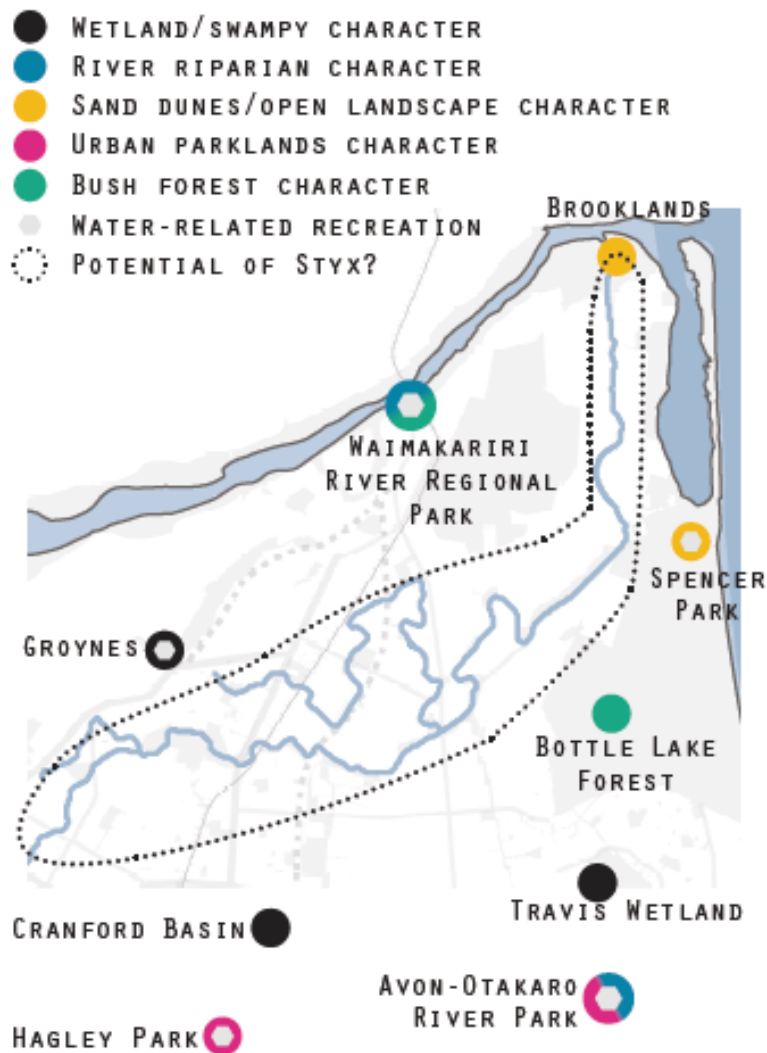
Wilson's Swamp (Ot)	✓	✓
Groynes (G)		
Belfast Cemetery (BC)	✓	
Styx Mill Conservation Reserve (SMCR)	✓	
Redwoods Spring (RW)	✓	
Confluence Park (CP)	✓	
Spencerpark (SP)	✓	✓
Waimakariri Regional Park (WRP)	✓	✓



Application of Report

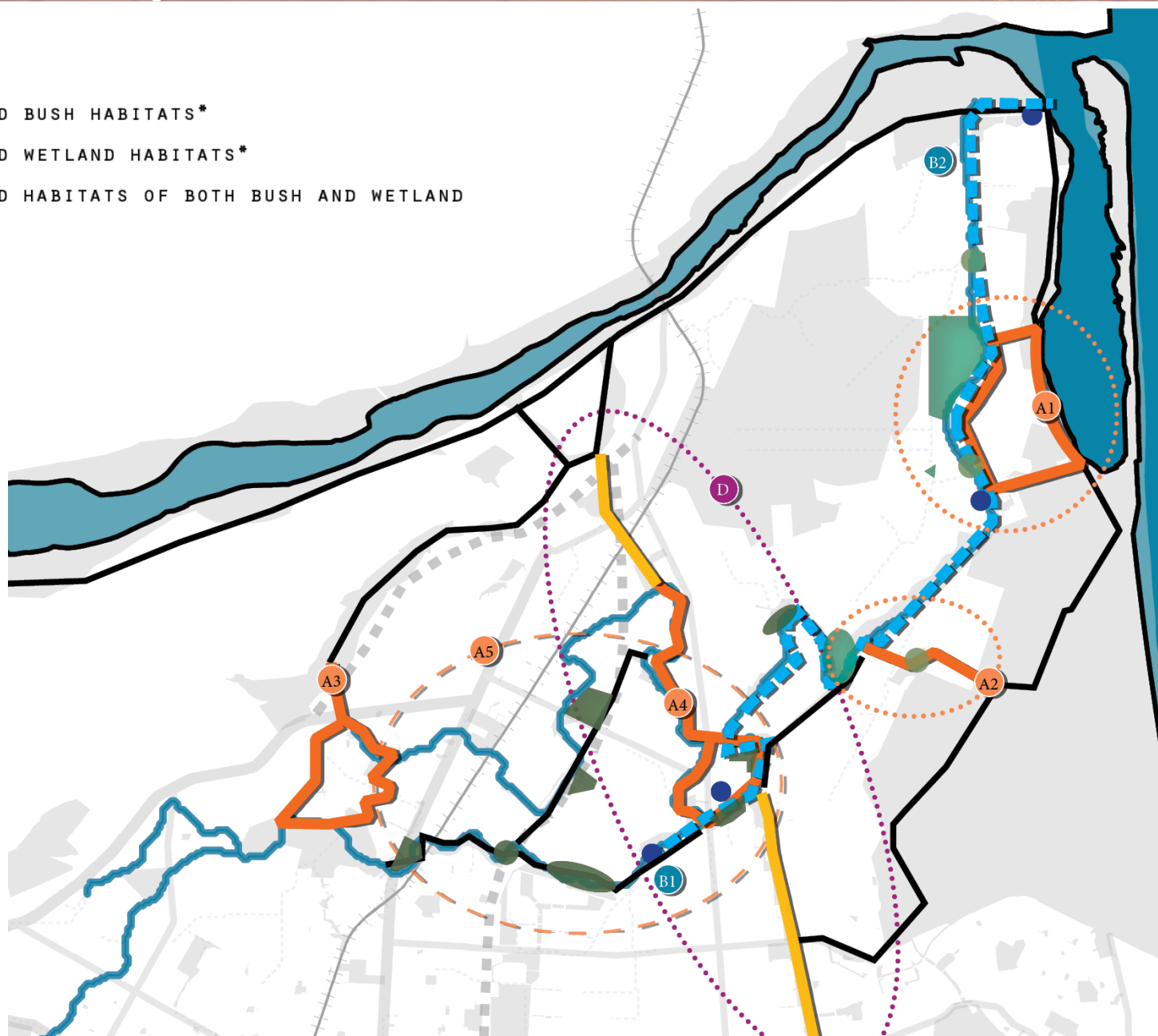
Fig. 39.

LANDSCAPE CHARACTER OF KEY OPEN SPACES



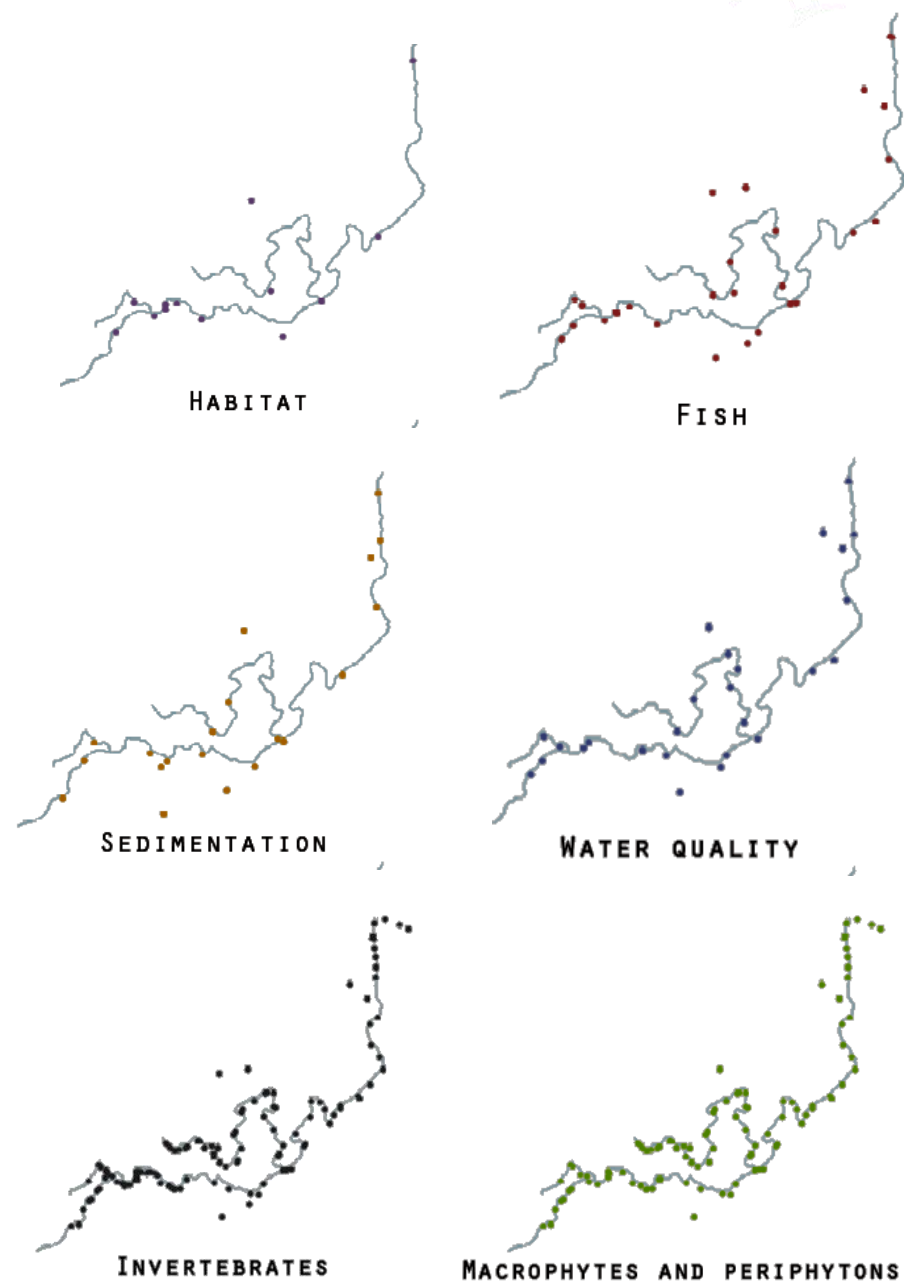
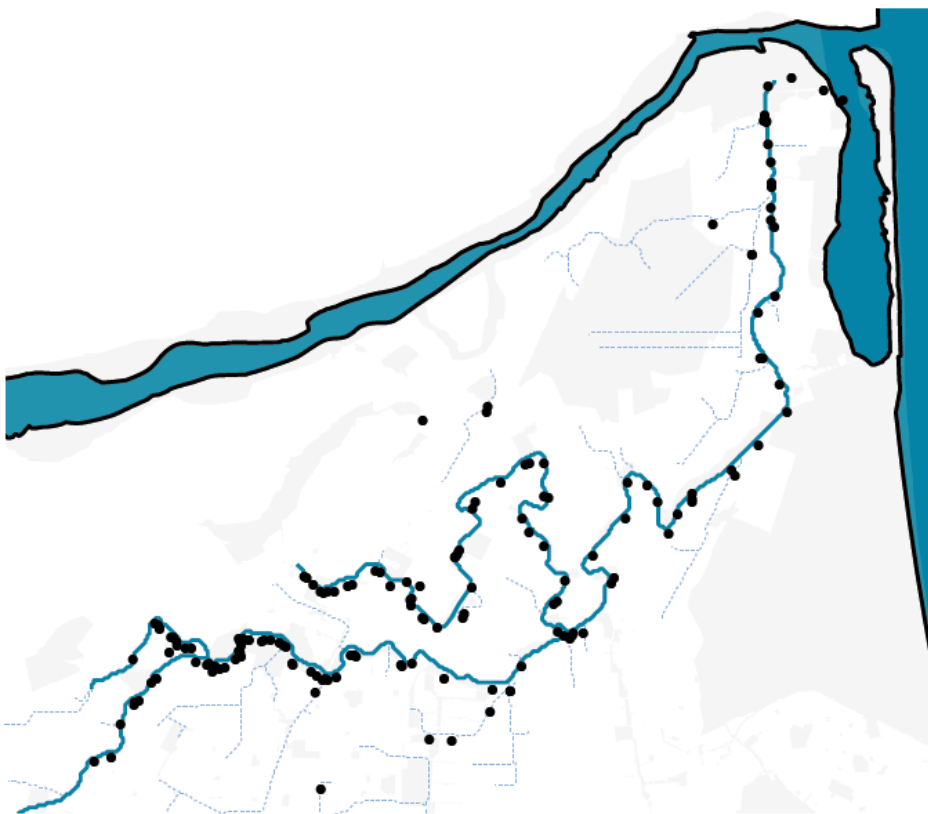
Application of Report

- BOAT RAMPS
- IDENTIFIED PROPOSED BUSH HABITATS*
- IDENTIFIED PROPOSED WETLAND HABITATS*
- IDENTIFIED PROPOSED HABITATS OF BOTH BUSH AND WETLAND
- PROPOSED TRAILS
- EXISTING TRAILS
- POTENTIAL TRAILS
- CANOE/KAYAK ACCESS



Extension of Report

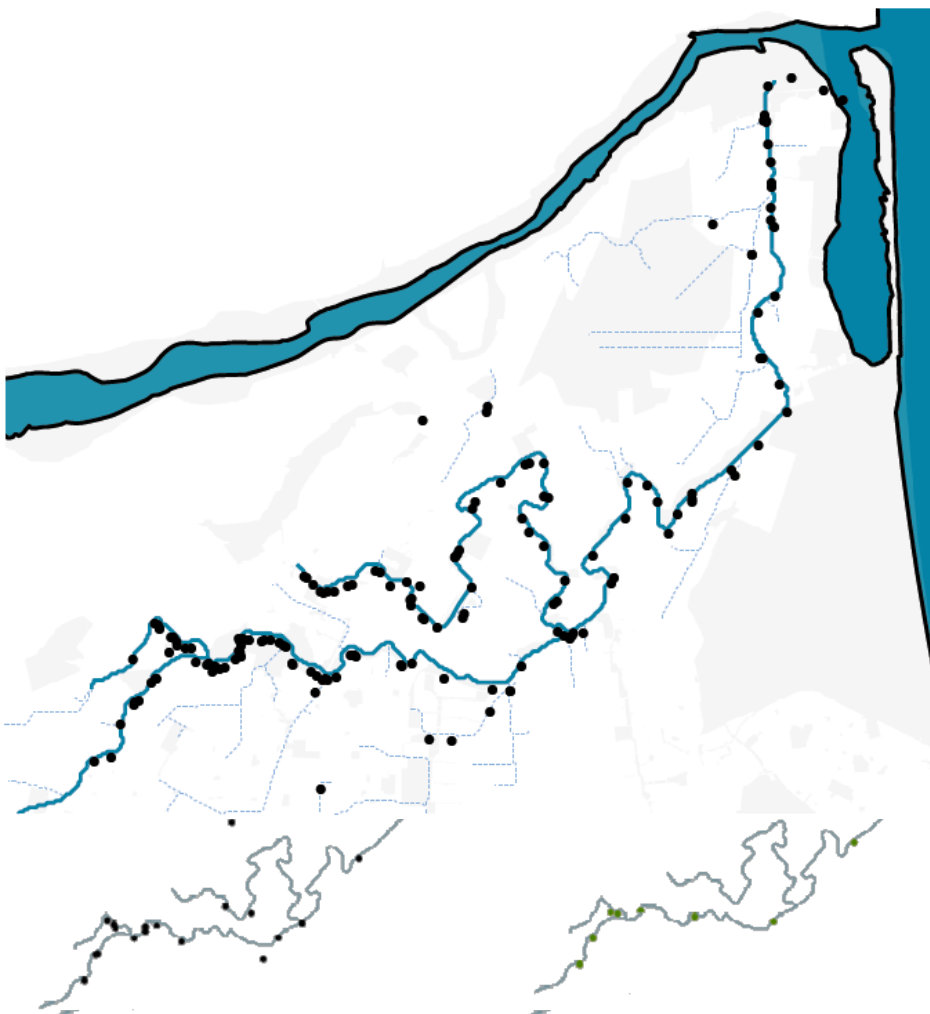
FIELD WORK SITES IN PAST 30 YEARS



Extension of Report



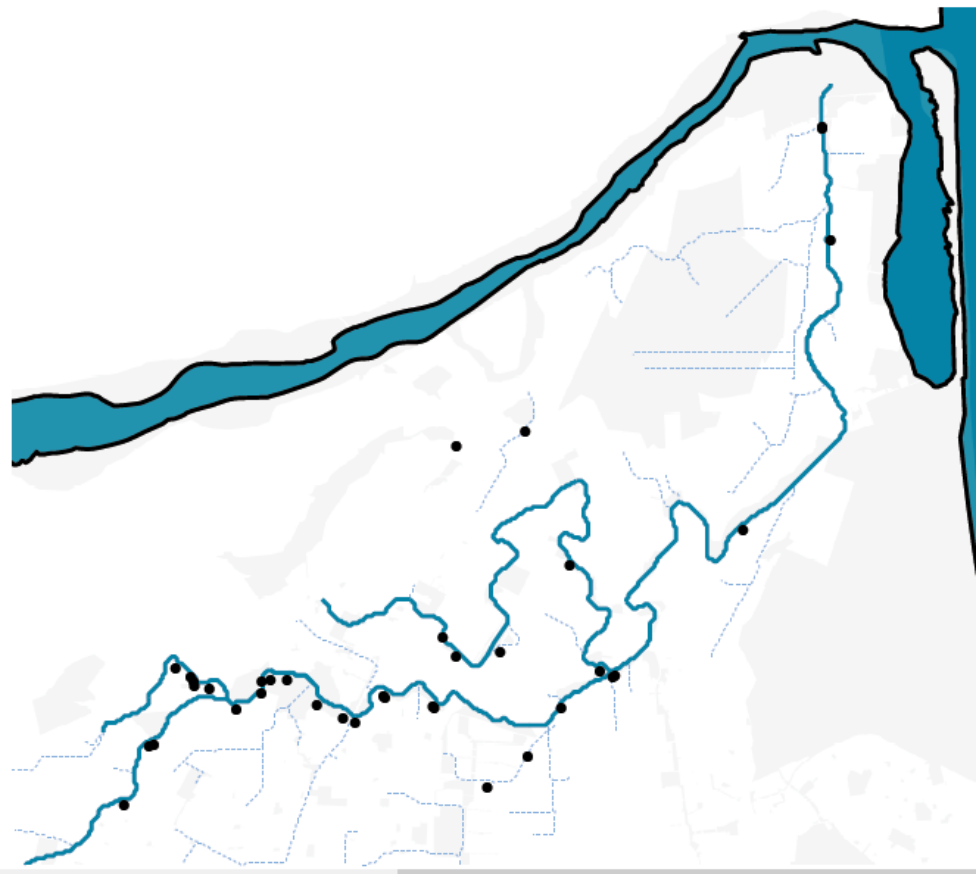
FIELD WORK SITES IN PAST 30 YEARS



INVERTEBRATES

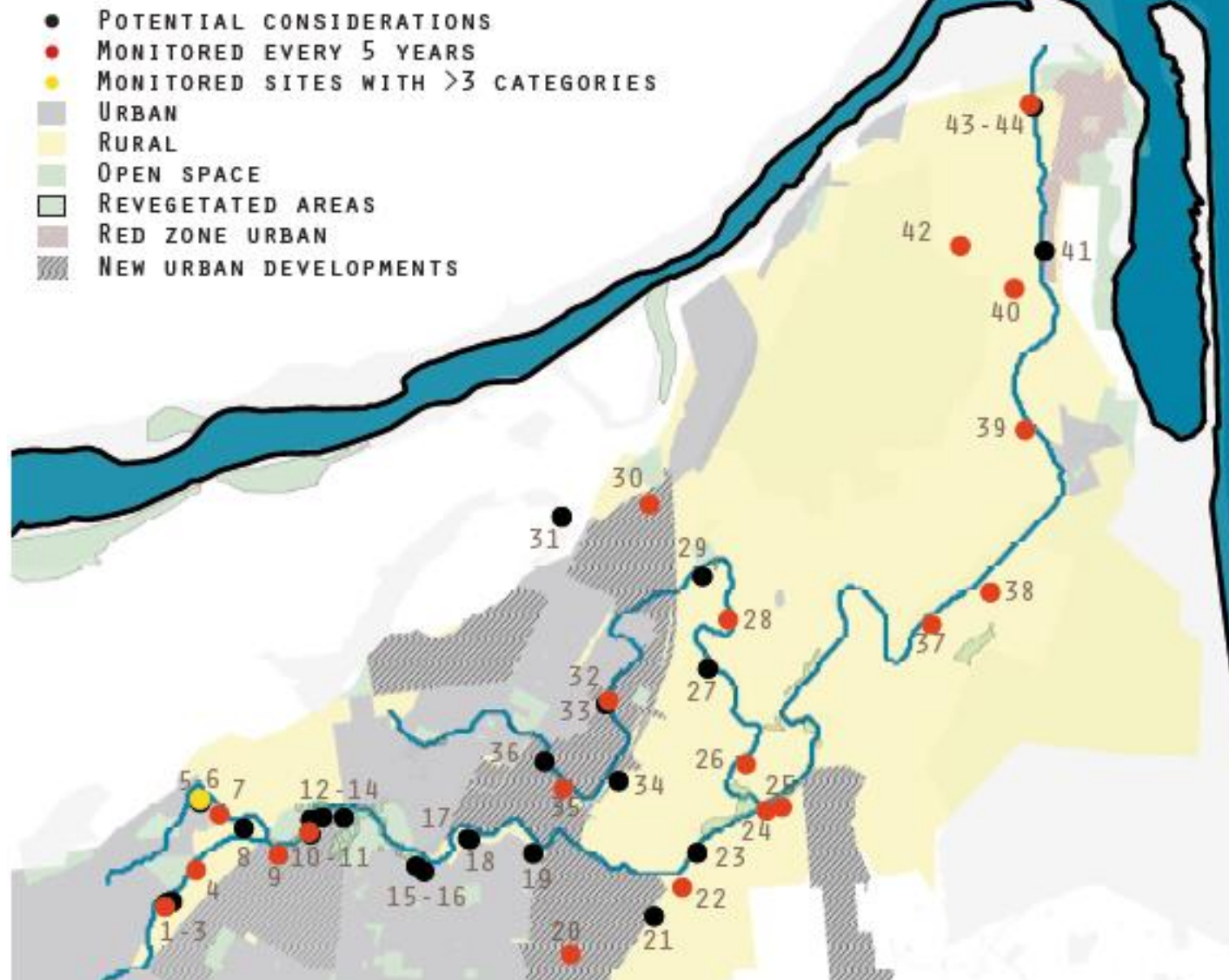
MACROPHYTES AND PERIPHYTONS

FIELD WORK SITES FROM 2011 ONWARDS



Extension of Report

WELL-ESTABLISHED FIELDWORK SITES



Conclusion

Vision One:

“To achieve a viable springfed river ecosystem”

Analysed the aquatic, terrestrial and groundwater ecosystem

Identified hierarchy in restoring/creating core habitat sites

Provided more understanding of ecological network matrix

Conclusion

Vision Two:

“To create a source to sea experience”

Identified routes for protection/enhancement

Analysed recreation & landscape experiences

Conclusion

Vision Three:
“To develop a living laboratory”

Common accessible GIS platform for sharing

Conclusion

Vision Four:

“To establish the Styx as a place to be”

Provide understanding of unique landscape character of Styx