

Conservation Planning of Northern Metropolis Development Strategy (NMDS) using Geographic Information System (GIS) and remote sensing

Fong Kwan Kiu

INTRODUCTION

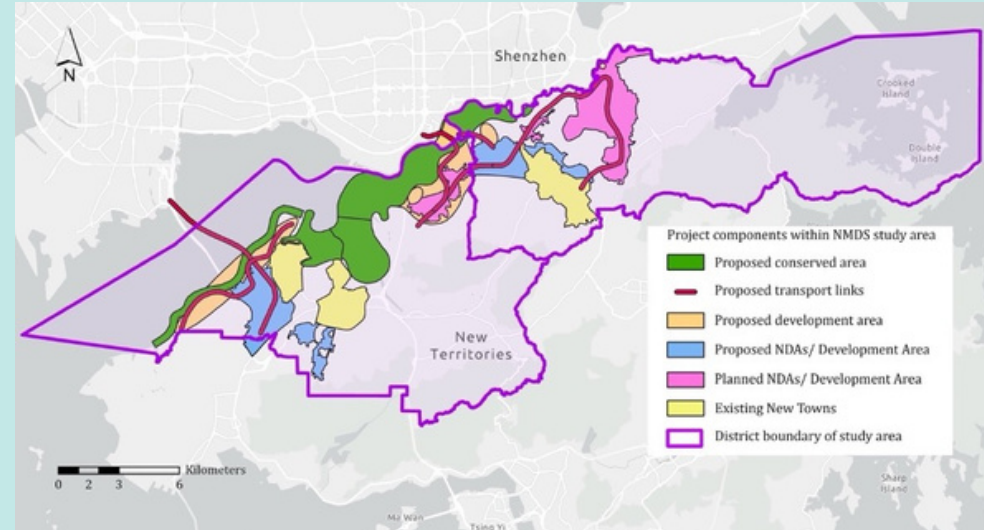
Criticism arisen from NMDS

1. Conservation risks
2. Potential induced destruction from construction works
3. No clear boundary on conservation zone

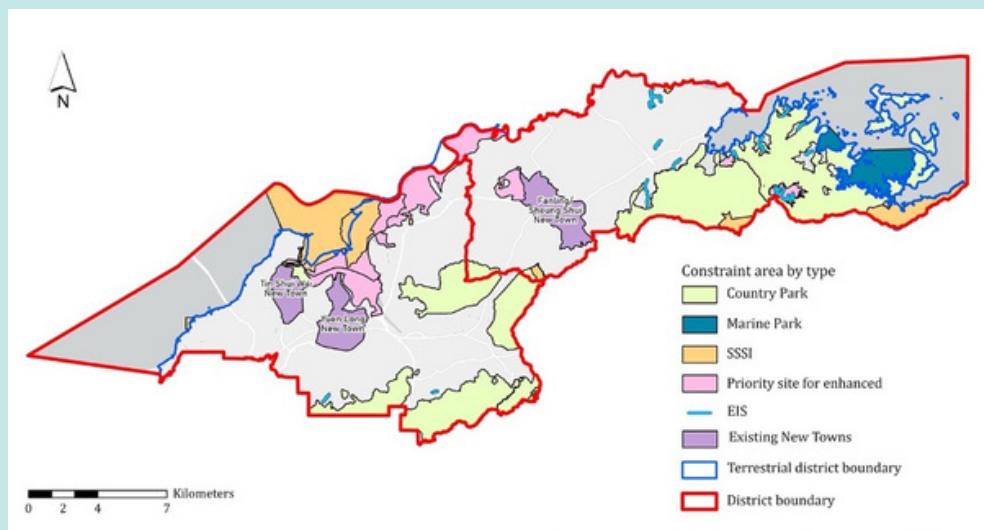
Research Significance

1. Policy implication
2. Conservation value
3. Academic value

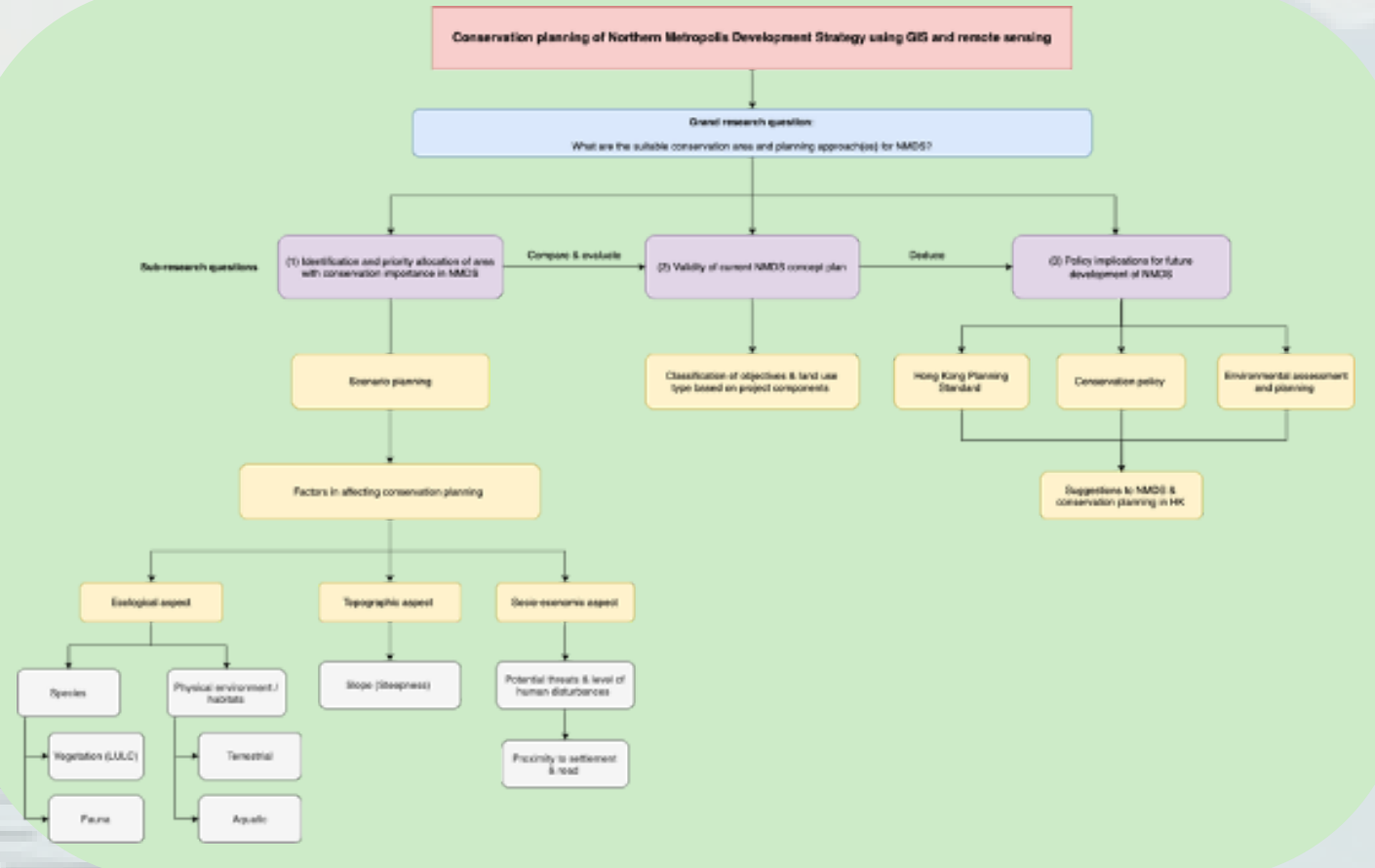
Existing site environment



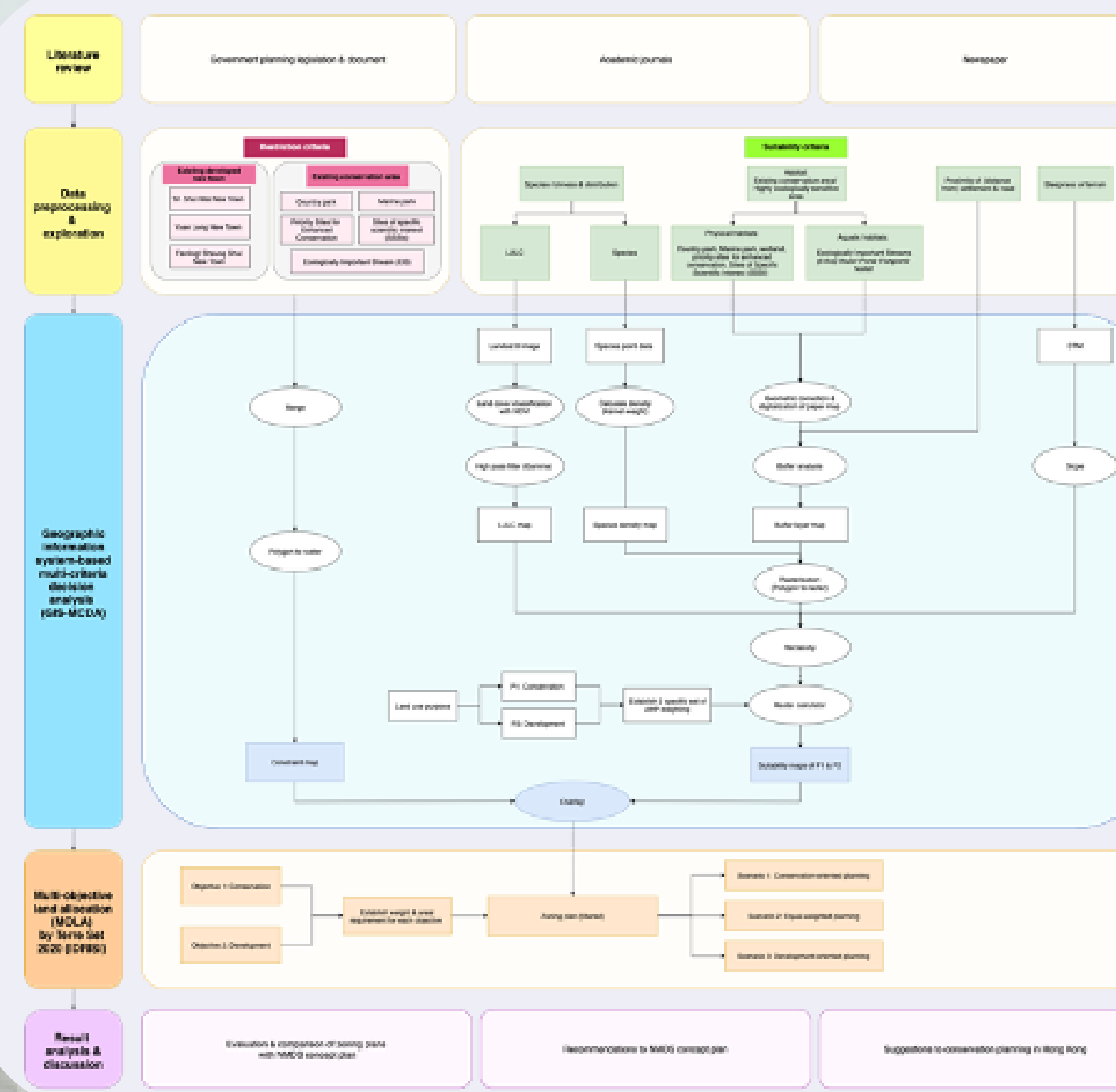
Proposed project components



CONCEPTUAL FRAMEWORK



METHODOLOGY FRAMEWORK



SUGGESTIONS

NMDS

1. Extra conservation area
2. ecological consideration
3. exploration of other development potential of rural built-up are the possible NMDS directions in the future

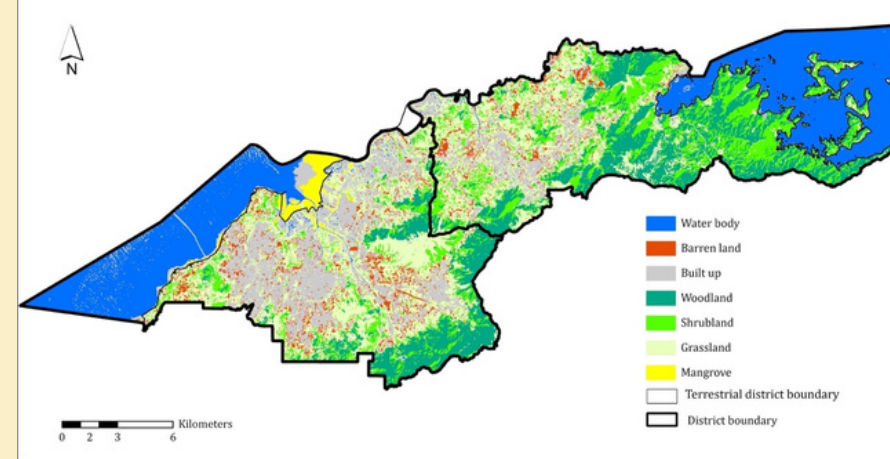
HK

1. Involvement of public participatory approach with scenario-planning & discuss before proposal of project components
2. scientific-based conservation planning (e.g. species mapping)

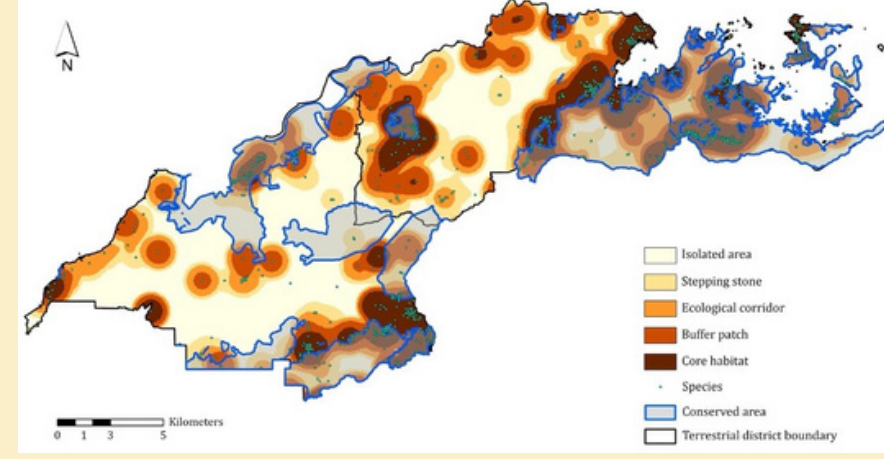
RESEARCH FINDINGS

Multi-criteria decision analysis (MCDA)

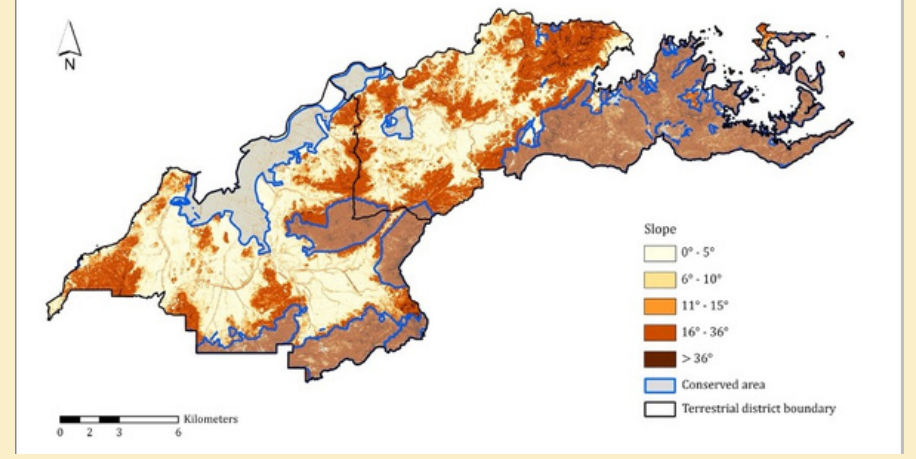
Criteria



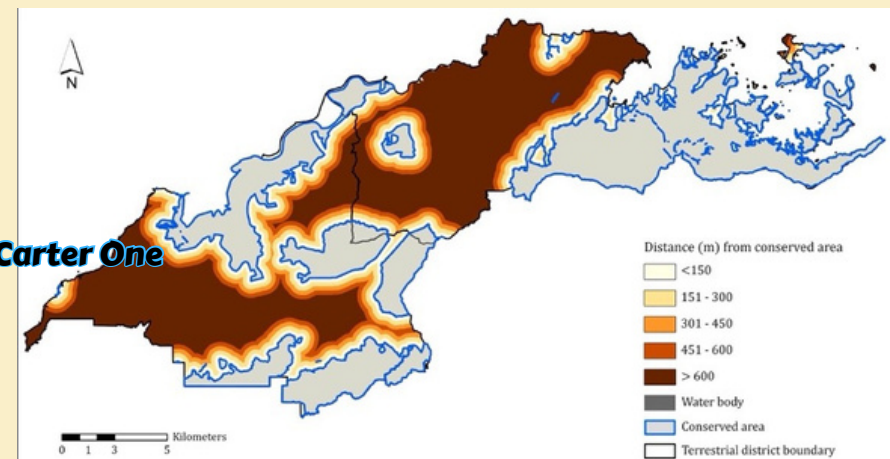
LULC map processed from Landsat 9



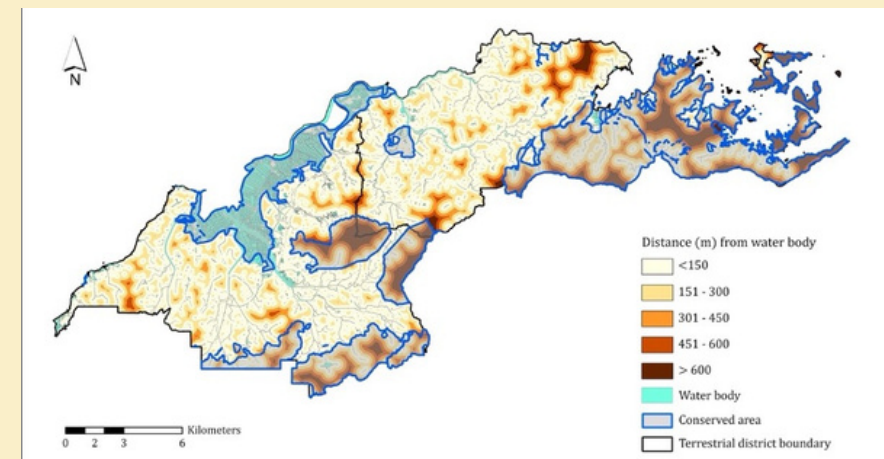
Species density



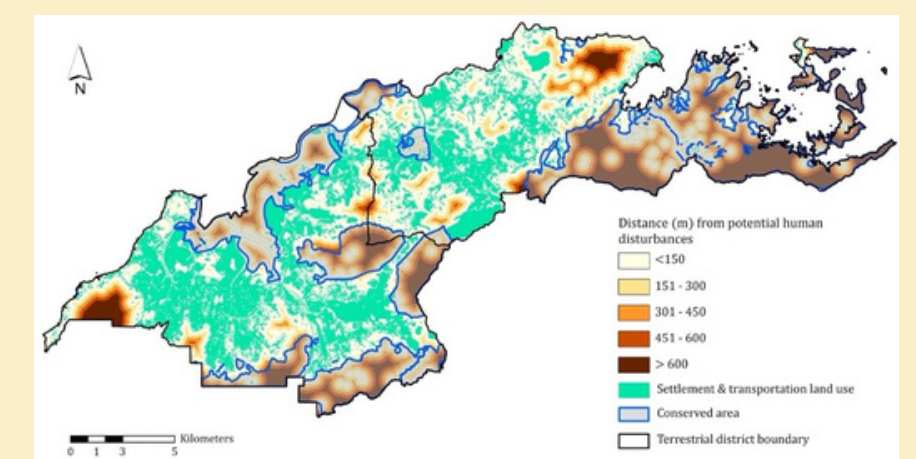
Slope



Proximity to Existing conserved area (from left to right)



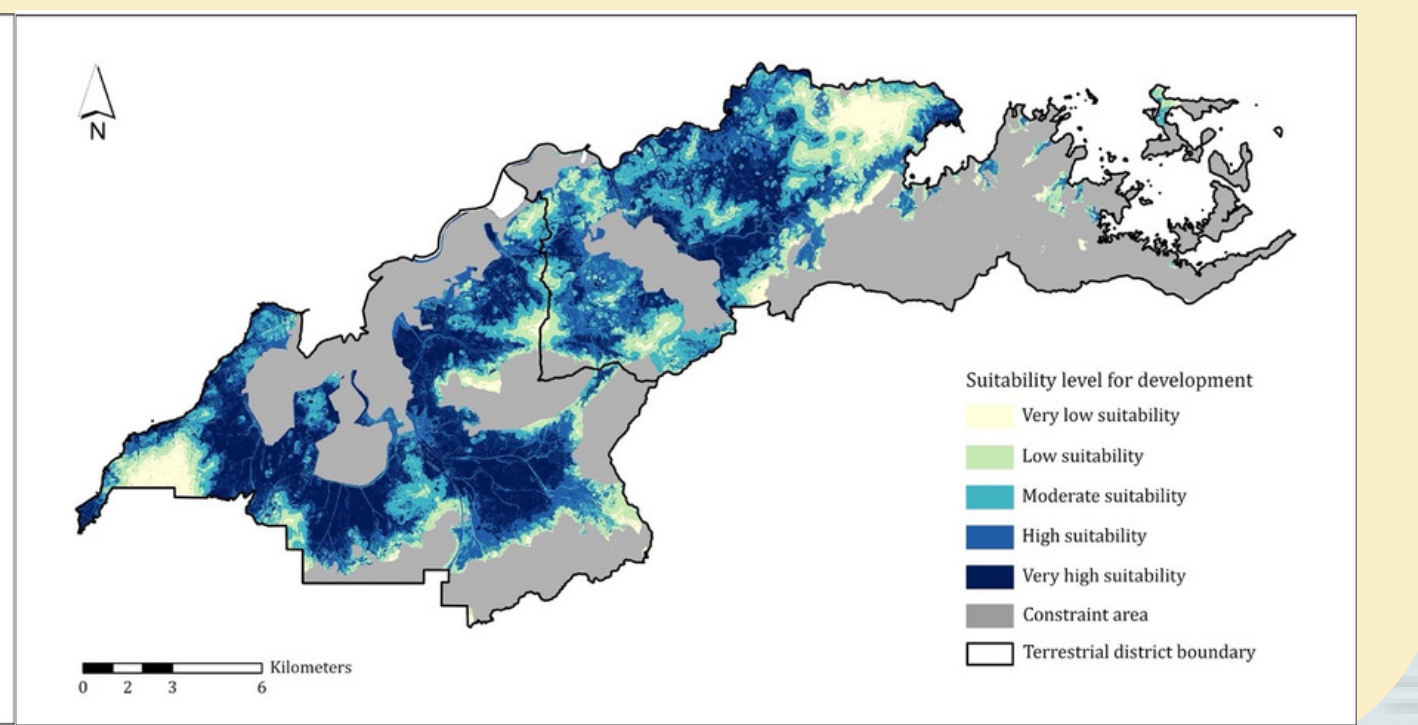
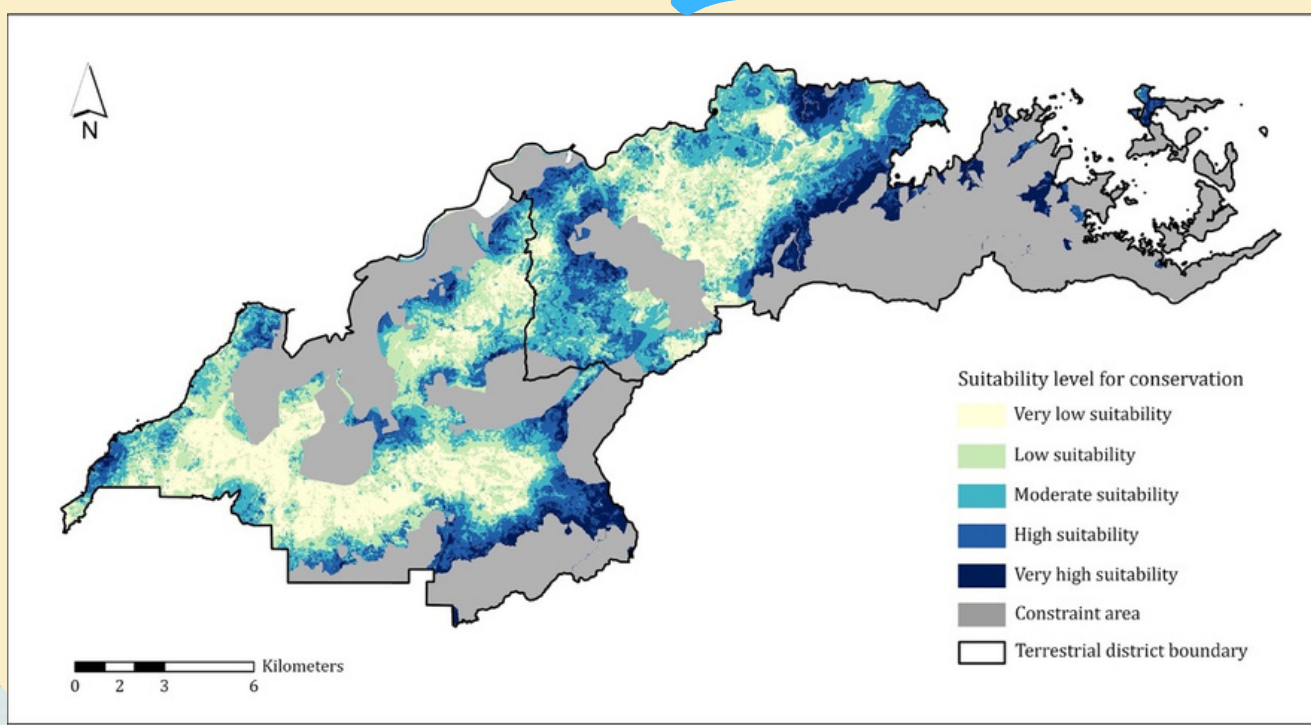
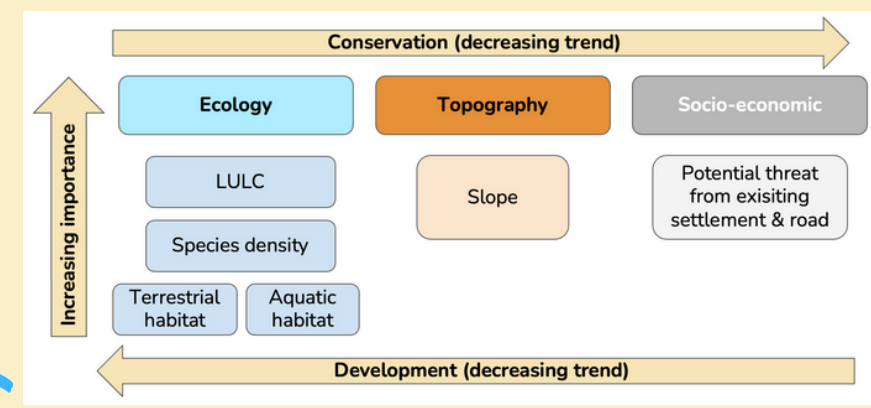
Aquatic habitat



Potential threat of settlement & roads

Suitability analysis

Under decision rule of Analytical Hierarchy Process (AHP), suitability maps for conservation & development purposes are outputted



Multi-objective land allocation (MOLA)

With reference to current 40% conservation area, weight assignment & areal requirement of each scenario:

Planning scenario	Objective	Weight	Areal requirement in pixel (Corrected to nearest integer)	% of available planning area (excluding restricted area)
1 Conservation-oriented	Conservation	0.7	4522886	0.7
	Development	0.3	1938380	0.3
2 Equal importance	Conservation	0.5	2584506	0.4
	Development	0.5	3876760	0.6
3 Development-oriented	Conservation	0.3	1938380	0.3
	Development	0.7	4522886	0.7

After evaluating with MOLA scenario maps, validity of NMDS concept plan:

Objectives	Project components	Comparison with MOLA map	
		Valid	Invalid
Conservation (comparison with S1)	Coastal Protection Park	X	X
	Extension of Hong Kong Wetland Park	X	
	Sam Po Shue Wetland Conservation Park	X	
	Sha Ling/ Nam Hang Nature Park	X	X
	Hoo Hok Wai Wetland Conservation Park	X	
	Nam Sang Wai Wetland Conservation Park	X	
Development (comparison with S3)	Hung Shui Kiu/ Ha Tsuen NDA	X	
	Yuen Long South Development area	X	
	Kwu Tung North NDA	X	
	Fanling North NDA		X
	I&T Park & San Tin Technopole		X
	New Territories North New Town (NTNNT)	X	X

