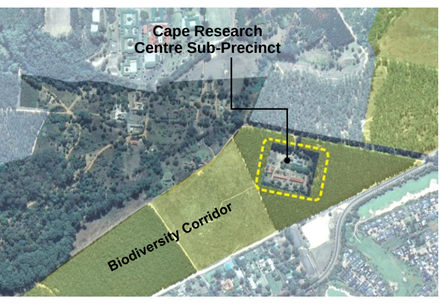
CAPE RESEARCH CENTRE SUB-PRECINCT



KEY PLAN

RANGE OF OPPORTUNITIES:

- **Reduced built footprint equating to a widened biodiversity corridor**

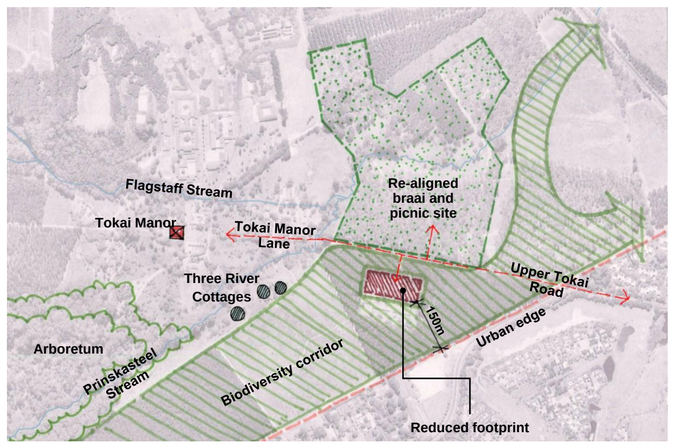


Diagram showing the widening of the biodiversity corridor with the reduction of the Cape Research Centre / Bosdorp footprint

Biodiversity corridor to be doubled in width

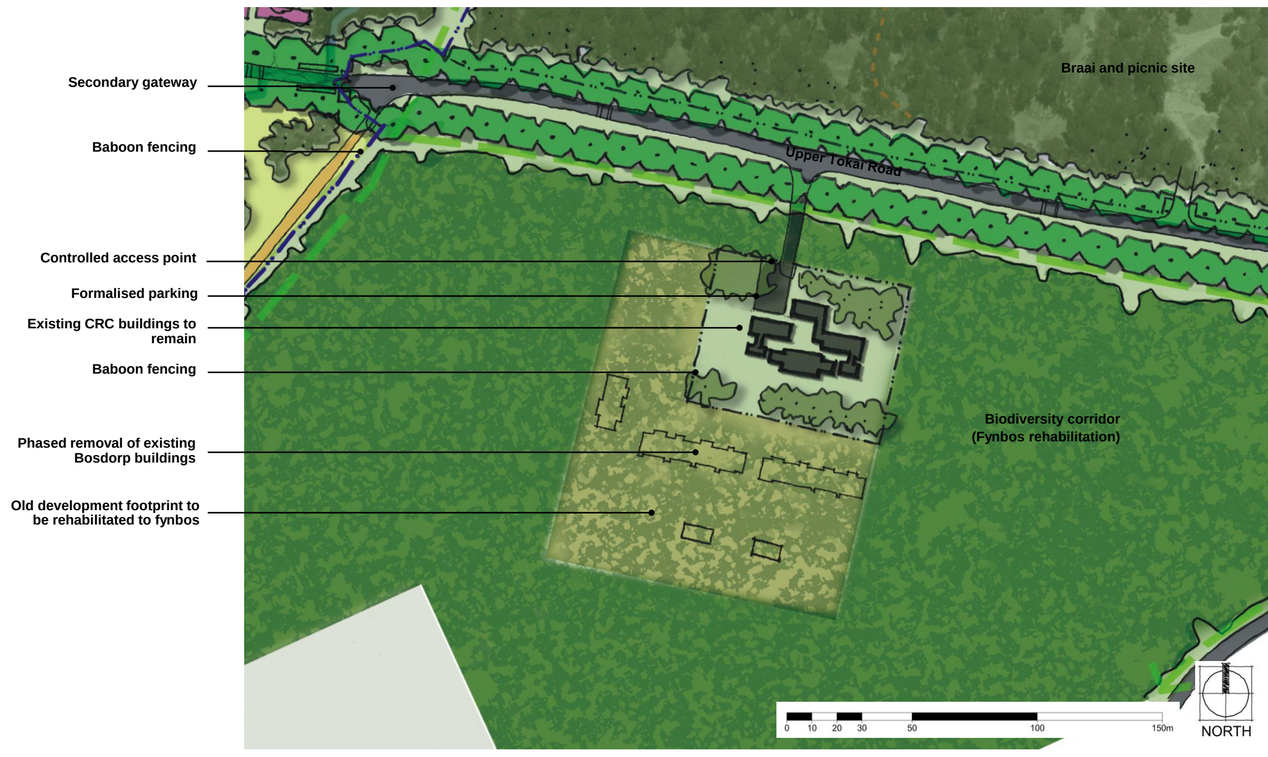
Advantages:

- Outside of core Heritage Precinct
- In existing area of office use (CRC)
- Reinforces TMNP discrete office zone
- Dedicated design and green building "statement" for TMNP
- Uses existing disturbed area
- Frees up "commercial/public activity" use of core heritage precinct
- Can involve removal of other buildings in corridor as part of scheme - Widens corridor
- Good, discrete access

Disadvantages:

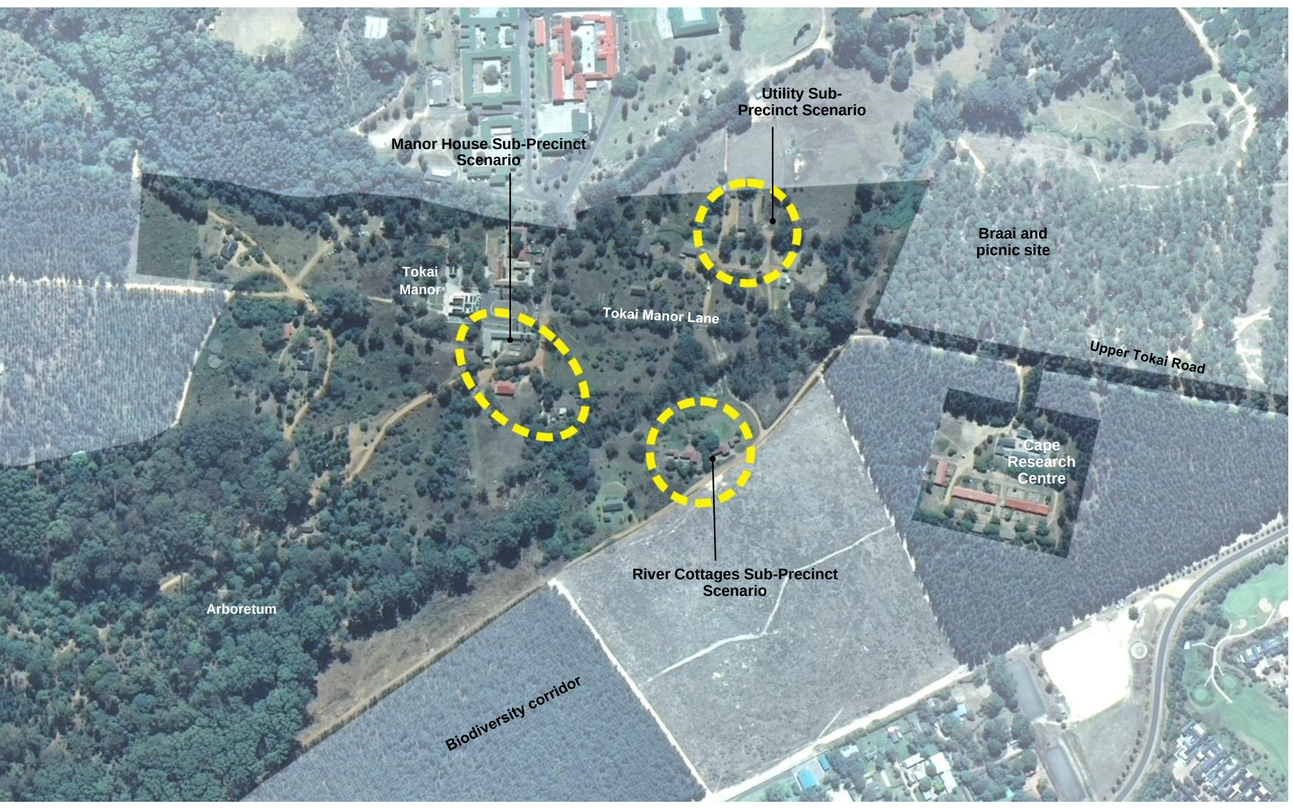
- Outside of Core Precinct area
- Need to connect to existing services (especially sewer - most distant of the scenarios)
- Close to braai site – potential disturbance
- Phasing out of tenants
- In biodiversity corridor (but will be limited impact)
- Visual impact when trees gone
- Fire risk in biodiversity corridor

CAPE RESEARCH CENTRE SUB-PRECINCT



TMNP HEAD OFFICE SCENARIOS

Proposed Locations



TMNP HEAD OFFICE SCENARIOS

Locations Investigated

MANOR HOUSE SUB-PRECINCT SCENARIO INVESTIGATION OUTCOME:

- Refurbishment of Old Stables Building, Brick House and Stone Cottage

Old Stables Building

Brick House

Stone Cottage

UTILITY SUB-PRECINCT SCENARIO INVESTIGATION OUTCOME:

- Refurbishment existing buildings / new building using existing footprints

Depot House

Fire Stand-by House

Stores

TMNP HEAD OFFICE SCENARIOS

Location Assessment and Recommendation

LOCATION ASSESSMENT SCHEDULE

Criteria #		Existing Buildings A. Old Stables	New Building B. Utility Site	C. River Site
	Environmental Considerations			
1	Good Access	1	2	3
2	Linkage to Existing Services	1	1	-1
3	Access to good parking	3	1	3
4	Capacity of building	-1	0	0
5	"Sense of Place"	1	2	4
6	Requires EIA	0	0	2
7	Requires HIA	-2	0	2
8	Impacts on biodiversity corridor	2	2	1
	Social Considerations			
9	Location discrete from "Gateway"	-2	2	4
10	Impact of adjacent uses	0	-1	2
11	Spin off precinct improvement	2	3	2
12	PGWC lease area	3	2	0
	Financial Commercial Considerations			
13	Requires relocation of activity	2	-2	0
14	Cost of Maintenance	-1	3	3
15	Cost of Construction	2	0	0
16	Flexibility/expansion potential	-1	0	3
17	Network Cables	-1	0	0
18	Commercial Imperatives	2	0	0
SCORE		**11**	**15**	**28**
Rating	Excellent	3		
	Good	2		
	Average	1		
	Marginal	0		
	Poor	-1		
	Higher Importance (min/max score)	(-2) + 4		

RECOMMENDATION

RIVER COTTAGES SUB-PRECINCT

Locations Investigated

RIVER COTTAGES SUB-PRECINCT SCENARIO INVESTIGATION OUTCOME:

- Refurbishment existing buildings / new building using existing building footprints

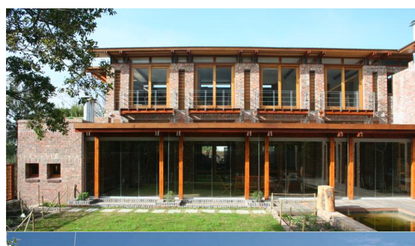
River Cottages

TMNP HEAD OFFICE: OPPORTUNITY FOR A GREEN BUILDING

AN OPPORTUNITY FOR AN "ICONIC" GREEN / SUSTAINABLE BUILDING – A LONG TERM "HOME"

PRECEDENT STUDY

"Green" building
Recycled bricks, thermally efficient, biogas, solar panels



Vodafone SSIC Building, Midrand (6 Green Star rated building)
(Image Courtesy of GLH & Associate Architects)

Green roof building
(Image courtesy of Active Architects)

TMNP HEAD OFFICE: OPPORTUNITY FOR A GREEN BUILDING

PRINCIPLES OF GREEN BUILDINGS

- **Sustainable/durable/low maintenance building design and operation**
  - Building must be sturdy and disaster resistant
  - Design and build for long service life
  - The building must be "future-proof" – access channels all around the structure to easily upgrade and add future technology
  - Capable of being "stand-alone" without connections to gas mains or electric utility
- **Energy efficiency and conservation**
  - Work towards eliminating dependence on external sources of energy
- **Site / land management, reclamation and conservation**
- **Water efficiency, management and conservation**
- **Improved indoor air quality**
- **Improved outdoor air quality**
- **Material resource management, recycling and conservation**
  - Maximum use of renewable building materials such as timber, thatch and wool
  - Minimum use of non-renewable, energy intensive building materials like steel, brick, vinyl, aluminium
  - Use materials found on site or close to the site
  - Locally source materials and components in order to minimise transportation impacts and create local jobs
  - Re-use of building materials and products

TMNP HEAD OFFICE: OPPORTUNITY FOR A GREEN BUILDING

TECHNIQUES AND STRATEGIES FOR GREEN BUILDING

- Traditionally green building aims to be sustainable by aiming for low carbon emissions, typically by being energy efficient. Achieving energy efficiency in buildings will depend on the building type. In offices you need to address lighting and heating, ventilation and air-conditioning (HVAC).
- The most obvious way to work towards energy efficiency and hence carbon neutrality is to employ techniques for temperature control. Comfortable indoor temperatures can be achieved by the use of effective passive heating and cooling systems which harness natural ventilation and shading. Increased solar shading, controllable natural ventilation and high thermal mass significantly decrease energy usage and carbon emissions.
- Energy-efficient techniques include (Lark, 2005)
- Passive solar – involves using the buildings elements (such as rock) to collect and store heat
- Passive cooling – typically involves strategic shading combined with ventilation and evaporative cooling
- Active solar – captures solar energy in specialised collectors, stores it, and uses it to heat or cool
- Earth shelter – places a portion of the building underground, reducing its heating and cooling load
- Super-insulation isolates a building so that body heat will heat it, and summer heat is kept out
- **Energy devices:**
  - Heat pumps – refrigeration technology that moves heat into or out of the earth
  - Photovoltaic panels – generate electricity directly from sunlight
  - Domestic hot water solar collectors
  - Cogeneration – generates electricity and heat in one process
  - Earthen materials – reduce temperature extremes due to their large thermal mass (but should be insulated in colder areas)
  - Cob – earth/straw mix sculpted into walls
  - Adobe – earth brick
  - Adobe – earth bricks
  - Rammed earth systems
  - Ceramic structures
  - Earthships –earth-sheltered structures made of soil-filled tires
  - Insulative materials include
  - Straw bales – used like bricks to build super-insulated buildings
  - Light clay – clay-straw mixture
  - Plant materials
  - Manufactured alternatives to standard construction, eg. stressed straw panels