



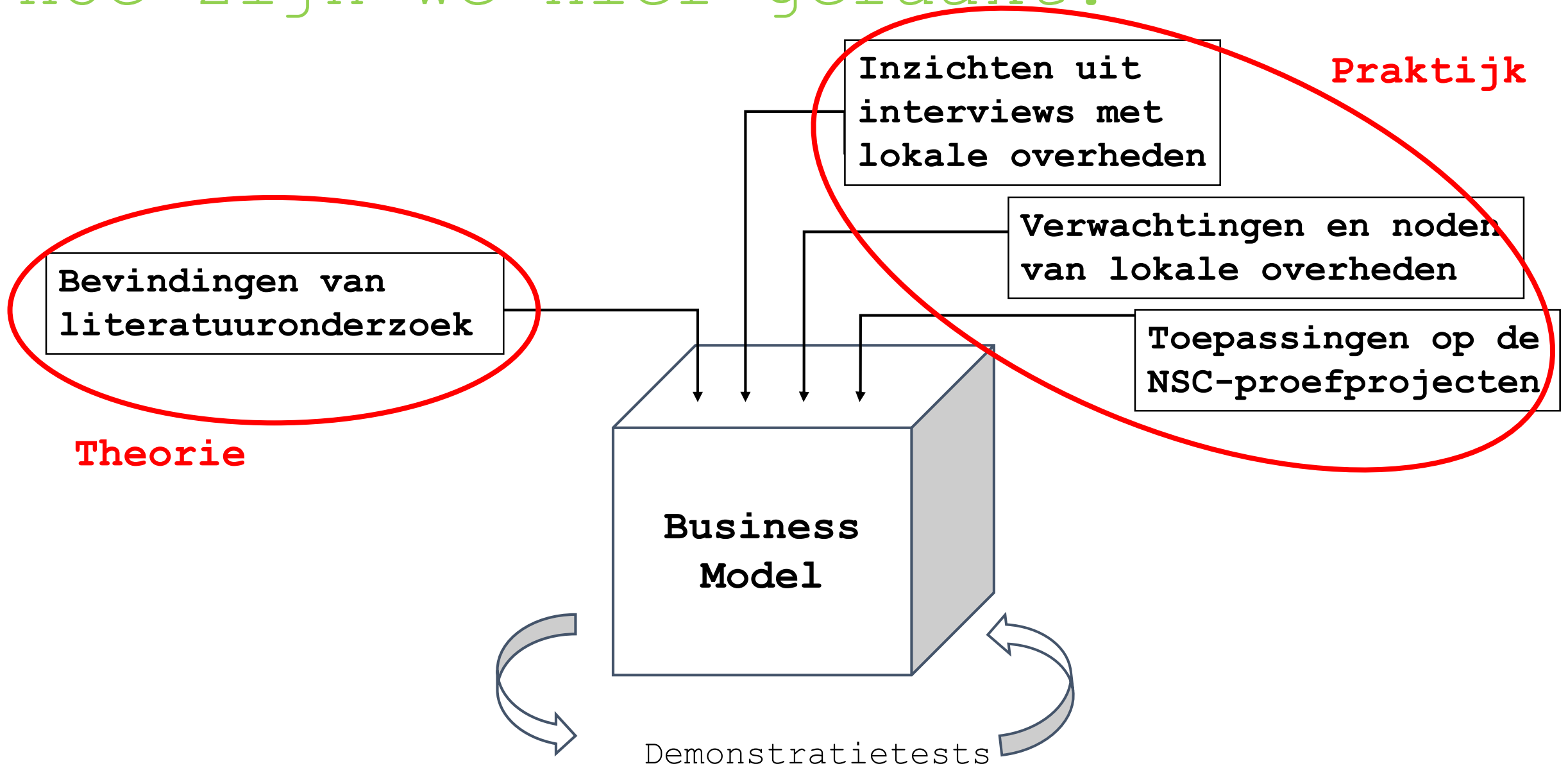
Het NSC Business Model in zijn werk

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Hoe zijn we hier geraakt?



Het Business Model

- Een instrument ter ondersteuning van de besluitvorming
- Vergelijkt bestaand en alternatieve scenario's
- Gebruikt Excel
- Gedetailleerde stapsgewijze begeleiding ter ondersteuning van de gebruiker
- Berekeningen gebaseerd op academisch onderzoek
- Gebruik en resultaten gebaseerd op onderzoek bij lokale overheden



S0 – Scenario's beschrijven

Background information	
Characteristics of the target area	Country UK Municipality Cambridge City My project area can be qualified as town/suburb Surface of the project area 321700 m² Number of people benefitting from the project 5000 Description of the target area Max amount of characters: 450 A new country park serving a new housing development

Defining your (public) green/blue/grey infrastructure						
Scenario title	Tot. scenario area	Category	Type	Amount	Unit	
Baseline Scenario	321700 m ²	Low Green	Amenity grassland	285000	m2	
		Low Green	Tall grass	1000	m2	
		Trees and Shrubs	Single tree (6m-12m)	50	amount	
		Grey infrastructure	Impermeable surface	1500	m2	
		Overgrown	Overgrown	24200	m2	
		Low Green	Flower field	10000	m2	

S1 – Ecosystem- diensten kiezen

Ecosystem services	Short description of ecosystem services *	Include in assessment? Yes/No
Food	For instance, by implementing allotment gardens or planting fruit trees, residents can benefit from the food that is produced.	YES
Materials	Vegetation is a source materials such as wood, trimmings, and other vegetable residues. Only select this ESS if you are planning to use the wood from the vegetation.	NO
Carbon sequestration	For example, by planting more trees and other plants, more carbon can be captured and stored. This can contribute to climate change mitigation.	NO
Micro climate regulation	On the one hand, nature can serve as a source of cooling in cities on hot (summer) days, and on the other hand, it can reduce heat losses on cold (winter) days.	NO
Noise pollution	Vegetation can effectively reduce noise levels (from traffic and other sources), and can also have a positive psychological effect.	NO
Water retention and infiltration	Green Infrastructure can contribute to stable groundwater levels since water is better retained and ensure that the water levels in the waterways do not fluctuate too much.	YES
Air filtering	Green infrastructure can improve air quality by removing pollutants from the atmosphere, including ozone (O3), nitrogen dioxide (NO2), sulfur dioxide (SO2) and, carbon monoxide (CO).	YES
Habitat for biodiversity	Vegetated green infrastructure features can improve and expand the habitat for a wide variety of flora and fauna, which results in more plant- and animal species and thus higher biodiversity.	YES
Aesthetic appreciation	Aesthetic value refers to the interaction of people with the environment related to natural beauty based on human perceptions and judgments.	YES
Physical and mental health	Physical activity (e.g. walking, running, biking, etc.) in the presence of nature leads to positive mental and physical health effects in the short and long term.	NO
Recreation and tourism (by external visitors)	For instance, specific nature-oriented activities (birdwatching, nature study, etc.), as well as informal recreation such as playing, walking, mountain biking, swimming, boating, and fishing.	NO
Real estate prices	Nature and green spaces in the city have a positive effect on the value of real estate in the immediate vicinity.	NO
Education and raising awareness	Green environments allow us to experience nature, to enjoy and to learn about nature and the environment. Moreover, the green infrastructure project can aid in raising awareness about current threats (air quality issues, rising sea level, ...), but also about good practices and potential solutions.	NO
Social cohesion	Green infrastructure improves 'community cohesion' by strengthening the networks of (in)formal relationships among neighborhood residents. For example, parks and recreation areas are important meeting places for habitants (children, older people, etc.).	YES
Attractor for companies and investments	Given that green areas attract people for leisure and recreation purposes, surrounding businesses might experience an increase in revenues.	YES

Tab A – Water retentie

Water retention and infiltration

BASELINE SCENARIO			
Green/blue elements	Area (m²)	RC	
Lawn & Amenity Grassland	285000	0.72	
Overgrown	24200	1.00	
Tall grass	1000	1.00	
Flower Field	10000	1.00	
Middle green	0	0.78	
Trees	1850	0.51	
Woodland	0	1.00	
Water elements	0	1.00	
Semi-permeable	0	0.70	
Impermeable	1500	0.02	
Green wall	0	0.18	
Allotment garden	0	0.90	

Mean 241373.5

Precipitati 0.57 m³/m²

Total 137582.9 m³/year

Tab B – Shannon-Weaver

STRUCTURAL VARIATION							
BASELINE SCENARIO							
	Surface area (in m2)		Log(surface area)		H'	Hmax	D
Layers					1,004111919	1,386294361	2,729482195
Lawn & Amenity Grassland	98150	0,30661489	4,991890304				
Overgrown	0	ONWAAR	ONWAAR				
Tall grass	0	ONWAAR	ONWAAR				
Flower field	45000	0,355013981	4,653212514				
Middle green	0	ONWAAR	ONWAAR				
Trees	13000	0,201198585	4,113943352				
Water elements	7500	0,141284463	3,875061263				
Semi-permeable	0	ONWAAR	ONWAAR				
Allotment garden	0	ONWAAR	ONWAAR				
Other	0	ONWAAR	ONWAAR				
PLOT 4010 GREENER APPROACH							
	Surface area		Log(surface area)		H'	Hmax	D
Layers					1,166336578	2,079441542	3,210210713
Lawn & Amenity Grassland	98030	0,31936164	4,991359003				
Overgrown	0	ONWAAR	ONWAAR				
Tall grass	4500	0,095620546	3,653212514				
Flower field	45000	0,351177798	4,653212514				
Middle green	0	ONWAAR	ONWAAR				
Trees	14110	0,205662701	4,149527014				
Water elements	7500	0,136992603	3,875061263				
Semi-permeable	2000	0,051966303	3,301029996				
Allotment garden	120	0,005089212	2,079181246				
Other	8	0,000465775	0,903089987				

Tab C – Biodiversiteit

Green elements	Presence: YES/NO
Lawn	YES
Tall grass	YES
Flower field/meadow	YES
Flowerboard	NO
Planter	NO
Herbaceous/shrubby plants	YES
Hedge	NO
Tree	YES
Forest	NO
Allotment garden	YES
Berry garden	NO
Green roof	NO
Compost heap	NO
Dead wood	YES
Beehive/bee hotel	YES
Birdhouse	YES
Bird feed	NO
Overgrown	NO
Leaves	YES
Green façade	NO
Blue elements	YES
Bare land (acre/fallow land)	NO
Blue elements (if present):	
Conditions	
Standing water	YES
Population of fish present	NO
Elements	
Eutrophic	YES
Oligotrophic	NO
Shaded water feature	YES
Water element with direct light	YES
Water without vegetation	YES
Water with vertical vegetation	YES
Water with horizontal vegetation	YES

BIRDS	Presence	% of habitat requirements met
House Sparrow	2.00	25.00
Wren	3.00	30.00
Duncock / Finch	2.00	22.22
Greenfinch	2.00	28.57
Blackbird	6.00	50.00
Robin	4.00	36.36
Song Thrush	5.00	55.56
Jay	1.00	33.33
Magpie	3.00	37.50
Collared dove	4.00	80.00
Wood Pigeon	5.00	55.56
Green Woodpecker	4.00	57.14
Great spotted woodpecker	3.00	50.00
Blackcap	2.00	40.00
Chiffchaff	3.00	50.00
Moorhen	2.00	100.00
Common Coot	1.00	100.00
Great Tit	4.00	44.44
BUTTERFLY	Presence	% of habitat requirements met
Great cabbage white/small cabbage white	5.00	50.00
Peacock	5.00	55.56
Chopped aurelia	4.00	50.00
Speckled Wood	2.00	33.33
Brown Sandpiper	2.00	66.67
Large Skipper	3.00	60.00
BEES	Presence	% of habitat requirements met
New garden bumblebee/tree bumblebee	7.00	53.85
European orchard bee	6.00	50.00
Tawny mining bee	6.00	54.55
Ivy bee	3.00	42.86
Orange-tailed mining bee	5.00	41.67

AMPHIBIANS	Score green elements	Suitable	Score conditions	Suitable
Common toad	4	1	3	
Smooth newt	3	1	3	
Alpine newt	3	1	3	
Common frog	5	1	3	
Green frog	7	1	2	

VISUAL RESULTS

Potential habitat for some target species



Tab D – Culturele ecosysteemdiensten

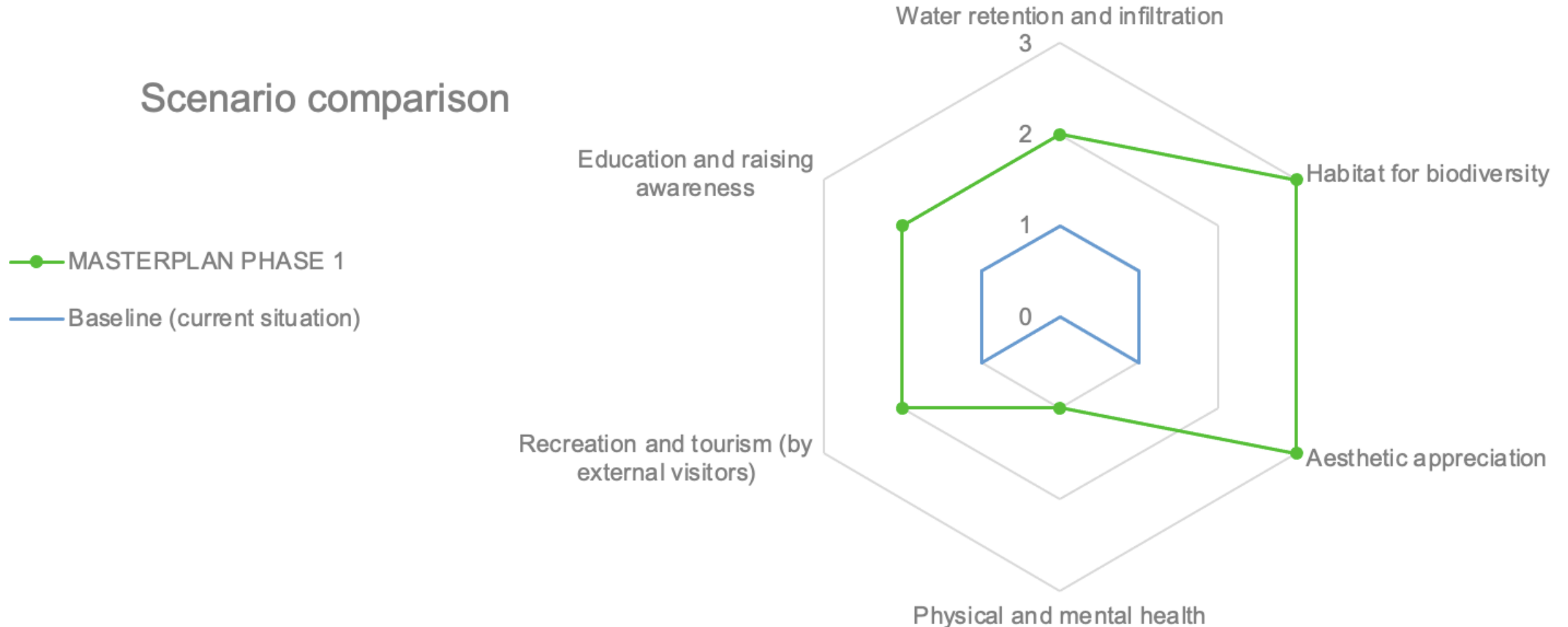
Choose the questions per ecosystem service that are displayed on the factsheet.			Questions	Importance for your project? (1-5, with 5 being the highest)	Baseline Scenario	IT 4010 GREENER APPROACH
			Social cohesion		0	2
x			Does this scenario encourage people to spend more time in the public realm?	2	1	3
x			Does this scenario offer opportunities for local people to meet and socialise, e.g. providing benches, spaces for picnics?	3	0	2
			Does this scenario increase opportunities to participate in community activities?	4	0	3
x			Does this scenario provide space for activities and events to take place?	5	2	2
			Does this scenario make local residents likely to feel more happy/proud to live in the locality and therefore less likely to move away?	5	0	1
			Does this scenario help to reduce anti-social behaviour?	1	0	1
			Does this scenario contribute to a sense of place and visual identity?	1	1	2
x			Does this scenario support people, and/or groups of people, who are socially or economically marginalised?	3	0	2
x			Does this scenario increase volunteering and informal support within the local community?	4	0	2

S3 – Resultaten: kwantitatief

	Water retention and infiltration	Habitat for biodiversity	Recreation and tourism (by external visitors)	Physical and mental health
	Regulating ecosystem services	Supporting ecosystem services		
BASELINE SCENARIO	510834,74 m3/yr	Potential habitat for some target species	8000 visits	43,072037 DALY gained
MASTERPLAN PHASE 1	514405,62 m3/yr	Potential habitat for some target species	16000 visits	43,072037 DALY gained

S4 – Resultaten: kwalitatief

Scenario comparison



S5 – Kosten

Scenario	Element	Construction Costs			
		Lower bound	Upper Bound	Custom Value	Units
Baseline Scenario	Amenity grassland	11.00	20.00		[currency]/m ²
	Tall grass	10.00	30.00		[currency]/m ²
	Single tree (6m-12m)	54.88	54.88		[currency]/pc
	Impermeable surface	100.00	112.00		[currency]/m ²
	Overgrown	0.00	0.00		0
	Flower field	10.00	30.00		[currency]/m ²
Full size country park	Flower field	10.00	30.00		[currency]/m ²
	Natural playground	10000.00	100000.00		[currency]/pc
	Amenity grassland	11.00	20.00		[currency]/m ²
	Tall grass	10.00	30.00		[currency]/m ²
	Single tree (6m-12m)	54.88	54.88		[currency]/pc
	Permeable stone/pavement	83.54	150.00		[currency]/m ²
	Shrubby plants	10.00	30.00		[currency]/m ²
	Allotment garden (Lettuce and Leaf vegetables)	17.29	21.29		[currency]/m ²
	Wetlands, ponds or retention areas	16.30	32.59		[currency]/m ³

S5 – Baten

STANDARD DISCOUNT RATE OF		3.50%	Custom value if not 3,50%		
BASELINE SCENARIO		Quantified result	Unit value	One-time benefit	Annual benefit
Water retention and infiltration		137582.90 m3/yr	0.52		71543.11
Air filtering			CAN NOT BE MONETIZED		-
Habitat for biodiversity			CAN NOT BE MONETIZED		-
Aesthetic appreciation		35.00	0.00		0.00
Physical and mental health		0.57 DALY	105000.00		59622.18
Recreation and tourism (by external visitors)		0 visits	1.50		0.00
Social cohesion			CAN NOT BE MONETIZED		0.00
TOTAL MONETARY BENEFITS BASELINE SCENARIO					131165.28
FULL SIZE COUNTRY PARK		Quantified result	Unit value	One-time benefit	Annual benefit
Water retention and infiltration		161870.31 m3/yr	0.52		84172.56
Air filtering			CAN NOT BE MONETIZED		-
Habitat for biodiversity			CAN NOT BE MONETIZED		-
Aesthetic appreciation		500.00	0.00		0.00
Physical and mental health		12.69 DALY	105000.00		1332513.00
Recreation and tourism (by external visitors)		30000 visits	1.50		45000.00
Social cohesion			CAN NOT BE MONETIZED		0.00
TOTAL MONETARY BENEFITS FULL SIZE COUNTRY PARK					1461685.56

Stap 6: Factsheet

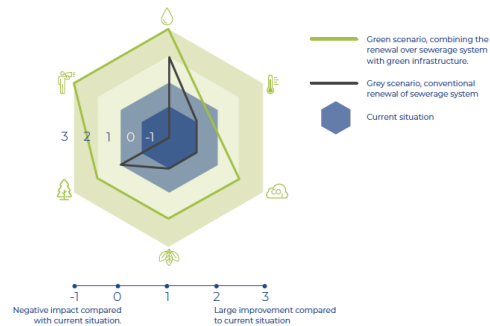
Wemeldinge Noord, Netherlands

Wemeldinge is a village in the municipality of Kapelle, a municipality in the South-West of the Netherlands. Occasional pluvial flooding occurs in the village after heavy rain showers, due to an aged sewerage system and limited water buffering capacity.

- Landscape**
(Sub)urban residential area
- Public area**
2,5 ha, of which 68% paved
- Climate problem**
Pluvial flooding



Scenario Comparison



Grey ↔ Green

Renewing the sewerage system with wide pipes for draining storm water.

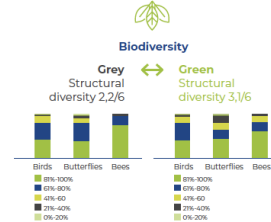
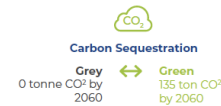
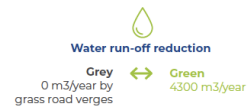
Adding a large pipe which carries the water from rainstorm peaks to a lower-lying area.

Improving the road quality using asphalt only.

Increasing green area with at least 0,6 ha.

Construct permeable green streets, parking places and wadis.

Complement with new grey sewerage system, such as the wide pipe which is also part of the grey scenario.

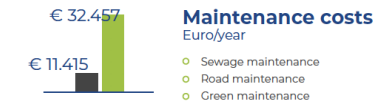


- Awareness raising/Education**
- ✓ Designed in collaboration with residents, to stress what citizens can do to avoid flooding.
 - ✓ Wadis show raised water levels after rain storms.
 - ✓ Organisation of fairs with demonstrational setups.
 - ✓ Concrete example of Kapelle's ambitions on sustainability.

- Aesthetic appreciation**
- ✓ Increased functional green space makes Wemeldinge a more attractive place to live.
 - ✓ Green space encourages cycling and walking.
 - ✓ Green areas and wadis will encourage children's outdoor play.

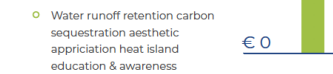
Financial information

Initial investment



Monetary benefits

Euro/year





Cambourne
Bedrijventerrein

Offices

Plot 4010

Soakaway

Ponds

Flower field

Main access road

Doel

- Perceel 4010: nadelige gevolgen van de uitbreiding beperken
- Focus op: biodiversiteit, luchtkwaliteit, en sociaal leven
- £85.000 voorzien voor groene infrastructuur (totaal £475.000)

Veel succes!

- Lees het scenario 10u45 – 10u50
- Open het Businessmodel en vul het in 10u50–11u30
- Herzie de eerste resultaten 11u30– 11u45
- Herzie kosten en verbeter het ontwerp 11u45–12u
- Feedback voorbereiden Plenaire sessie 12u – 12u15
- Plenair afsluiten 12u15–12u30