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GREEN BELTS REVISITED

RETHINKING AND RECONFIGURING THE SPATIAL RELATIONSHIP OF CITY AND ITS ADJACENT COUNTRYSIDE IN NORTH WEST EUROPEAN METROPOLITAN REGIONS: THE CASE OF THE RANDSTAD'S GREEN HEART

Remco van Dijk

GREEN BELTS REVISITED

Delft University of Technology
Department of Urbanism
Graduation Studio Complex Cities

COLOPHON

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Rethinking and reconfiguring the spatial relationship of city and its adjacent countryside in north west European metropolitan regions: the case of the Randstad's Green Heart

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June, 2012

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PREFACE

This project advocates a shift from the questions "where do we want to be and how do we get there? " to "how do we move in a desirable direction in the face of uncertainty" (Innes and Booher, 2010:206). Following Innes and Booher it promotes building regional capacity to co-evolve with change. It is not about weighting alternative solutions or leaving things to the market, but about cooperation between actors from the public, private and business sector, each with their own knowledges that can be employed to build adaptive strategies helping regions to move into a desired future. As such spatial planning processes will become more flexible and therefore better equipped to deal with uncertainty and surprices. While jointly looking at these uncertainties the shared conception of the desired future may even change.

The known, UK originating, planning instrument green belt will be used to make the case. This spatial policy to control urban growth is iconic to a spatial planning answering the questions "where do we want to be and how do we get there? ". The green belt policy has been developed in the UK in the first half of the twentieth century en became an universal accepted means to control urban sprawl. A green belt is a ring of countryside surrounding an metropolitan area where urbanisation will be resisted for the foreseeable future, maintaining an area where agriculture, forestry and outdoor leisure can be expected to prevail. The fundamental aim of green belt policy is to prevent urban sprawl by keeping land permanently open, and consequently the most important attribute of green belts is their openness.

During the last decade some fundamental changes within the object and process of spatial planning in north west European countries has complicated the very effectiveness of this spatial planning instrument.

First the object of spatial planning relevant to green belts, metropolitan areas, are growing together into a new phenomenon called metropolitan regions. It complicates the effectiveness of green belts as this new urban form is not only new because of its exceptional size, but also because green belts have become part of the same spatial unit containing opposing land uses like urbanized areas, urban sprawl, and highly dense residential areas (Castells, 2010).

Secondly within the process of spatial planning a shift from government to governance is fading the system responsible for the implementation of green belts. Governing processes are no longer fully controlled by formal government but subject to negotiations between a wide range of public, semi-public and private actors (Sörensen and Torfing, 2007), whereas green belts are depending on a high level of interventions by government.

A developed hypothesis responding to these fundamental changes will be tested and further explored in a case study: the case of the Green Heart. The Green Heart is a spatial policy for controlling urban growth in the central part of Randstad Holland. It can be considered as an inverted green belt, instead of surrounding the area itself is surrounded by a ring of cities, keeping these cities from growing together. Dutch national government is step by step retreating from this policy. At the same time the area is confronted with specific local and urgent problems, threatening the characteristics of its cultural landscapes. The western part has to deal with soil salinazation, while fresh water storage is becoming less stable and decreasing. In the eastern, peat lands, the characteristic peat is vanishing as a result of oxidation. This process of oxidation is caused by the low ground water level needed for the agricultural sector and without interfering the peat will be disappeared in 50 years.

This report will start with a preamble: the Holland's Garden plan, it illustrates the potential outcomes of the chosen approach. It will be followed by a treat of the different steps that have been made to build up the case. The report will be finalized with a concluding thought on the future of Green Belts.

Remco van Dijk, June 2012

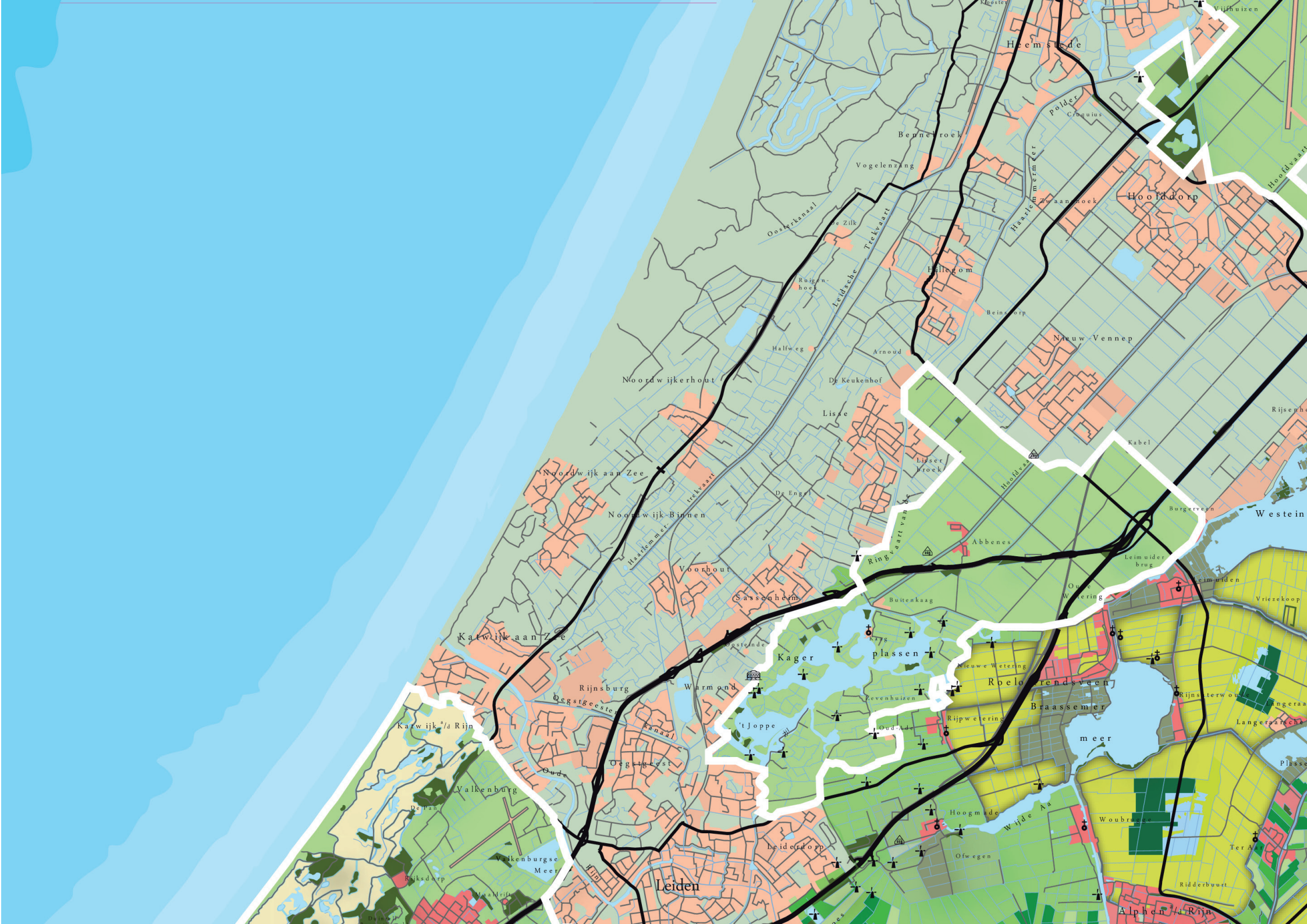
Preamble:

A more distinct palette of cultural landscapes: nearby located pleasure gardens and more distant rough farmlands, will provide the urbanized western part of the Netherlands extra capacity to compete with similar metropolitan regions all around the World.

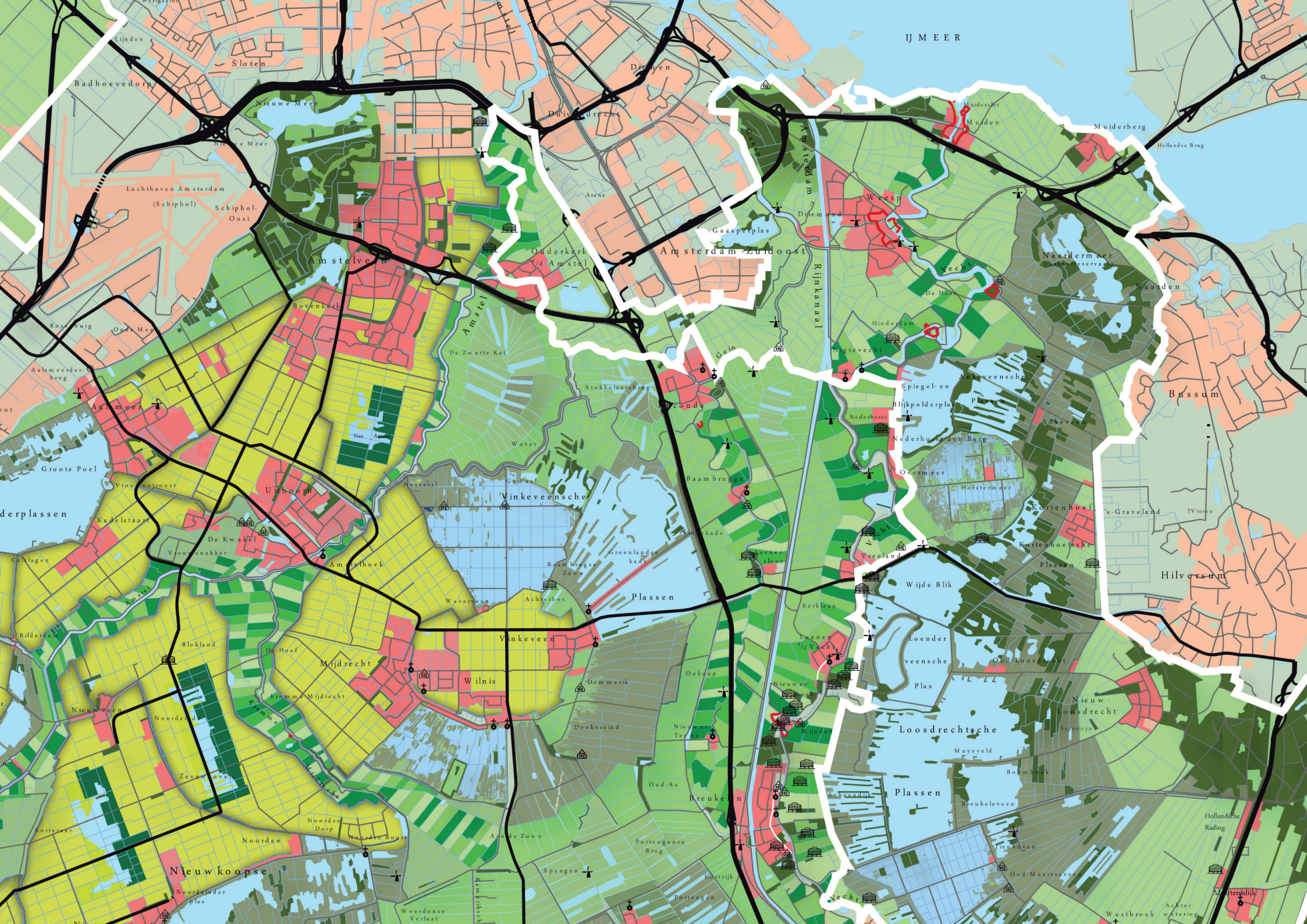
Holland´s Garden



Holland´s Garden has been developed from the point of view that actor involvement is indispensable for regional spatial planning. It is part of the graduation project ´Green belts Revisited, rethinking and reconfiguring the spatial relationship of city and its adjacent countryside in north west European metropolitan regions: the case of the Randstad's Green Heart' as completed in 2012 at Delft University of Technology.



Heemstede
Vijfhuizen
Polder
Cruquius
Bennebroek
Vogelenzang
Haarlemmermeer
Zwaanshoek
Hoofddorp
Hoofdvaart
Oosterkanaal
De Zilk
Leidsche Trekvaart
Hillegom
Ruigenhoek
Beinsdorp
Nieuw-Vennep
Halfweg
Arnoud
Noordwijkerhout
De Keukenhof
Lisse
Rijsenhoek
Kabel
Lisserbroek
Noordwijk aan Zee
De Engel
Noordwijk-Binnen
Haarlemmer-trekvaart
Ringvaart van de
Burgerveen
Westein
Abbenes
Leimuiderbrug
Voorhout
Sassenheim
Buitenkaag
Oude Wetering
Leimuiden
Vriezekoop
Katwijk aan Zee
Oosteinde
Kaag
Kager
plassen
Nieuwe Wetering
Roelofarendsveen
Rijnsburg
Warmond
Zevenhuizen
Braassemer
Rijnsaterwoude
Langeraar
Oegstgeesterkanaal
Rijpwetering
Langeraarsche
Katwijk a/d Rijn
't Joppe
Oud-Ade
meer
Oegstgeest
Oude
Valkenburg
De Pan
Hoogmade
Wijde Aa
Woubrugge
Leiderdorp
Ter Aar
Valkenburgse Meer
Ofwegen
Rijksdorp
Leiden
Ridderbuurt
Alphen a/d Rijn


IJMEER
Sloten
Badhoevedorp
Nieuwe Meer
Duivendrecht
Diemen
Muiderslot
Muiden
Muiderberg
Hollandse Brug
Luchthaven Amsterdam
(Schiphol)
Schiphol-Oost
Arena
Gaasperplas
Amsterdam-Zuidoost
Amstelveen
Ouderkerk a/d Amstel
Amsterdam
Rijnkanaal
Weesp
Driemond
Vecht
Naardermeer
Naarden
De Horn
Hinderdam
Nigtevecht
Bovenkerk
Amstel
De Zwarte Kat
Gein
Stokkelaarsbrug
Abcoude
Spiegel- en Blijkpolderplas
Ankeveensche Plassen
Ankeveen
Bussum
Nederhorst
Nederhorst den Berg
Overmeer
Horstermeer
Kortenhoef
's-Graveland
TV toren
Groote Poel
Vrouwentroost
Uithoorn
Nessersl
Gemaal
Vinkeveensche
Baambrugge
Kudelstaart
De Kwakel
Vrouwenakker
Amstelhoek
Vinkekade
Groenlandse kade
Baambrugse Zuwe
Loenersloot
Vreeland
Kortenhoefsche Plassen
Hilversum
Wijde Blik
Waverveen
Achterbos
Plassen
Kerklaan
Bilderdam
Blokland
De Hoef
Vinkeveen
Loenen a/d Vecht
Loenderveensche Plas
Oud-Loosdrecht
Mijdrecht
Wilnis
Demmerik
Oukoop
Nieuwer-hoek
Nieuw-Loosdrecht
Kromme Mijdrecht
Nieuwveen
Noordeinde
Donkereind
Nieuwer Ter Aa
Mijnden
Loosdrechtsche Plassen
Muyeveld
Sypesteyn
Zevenhoven
Oud-Aa
Breukelen
Scheendijk
Boomhoek
Breukeleveen
Hollandsche Rading
Korteraar
Noordse Dorp
Noordse Buurt
Noorden
Aan de Zuwe
Portengense Brug
Tienhoven
Nieuwkoopse
Spengen
Kortrijk
Oud-Maarsseveen
Noordeinderplas
Woerdense Verlaat
Portengen
Westbroek
Achterwetering
Martensdijk

RESILIENT GOVERNANCE

Central to the Holland ' s Garden plan are the proposed actor networks. These networks are supposed to connect actors, ideas, and knowledge in changing combinations and across organizations and diverse issues. They make up the core of a pursued adaptive governance regime that is considered to be a crucial precondition for a sustainable future spatial development of the territory.

This adaptive governance regime has been developed in a context in which Dutch national government is retreating from the field of spatial planning (I&M, 2012). A shift that best can be seen as part of a larger global trend that policy, defined as the attempt to achieve a desired outcome, is no longer the result of governing processes that are fully controlled by formal government, but subject to negotiations between a wide range of public, semi-public and private actors (Sörensen and Torfing, 2007). Scholars call this phenomenon 'network governance' (Innes and Booher, 2010).

In order to deal with this new emerging situation the proposed strategic spatial strategy will be focused on employing the power of networks, which connects public, semi-public and private actors. The strategy acknowledges the existence of interdependency among players and the inability of a single actor or organization to make progress working alone. Moreover as the proposed networks are connected to diverse actors around specific problems (for instance land maintenance and water management) and specific geographic areas, (like the lake bed polders and peat lands) these networks will build up a sensitivity to local realities that the centralized government often cannot achieve. They also increase coordination across boundaries such as those between goverment agencies (waterboards, national forest service, etc.) levels of government (municipalities and provinces), experts from different fields (water management experts, ecologists, economists, etc.), and opposing ideological camps (nature preservationists, farmers, etc.).

Ultimately the strategy aims to progress the developed networks into a governance regime. The proposed actor networks will allow for experiment and select what appears to work, combining ideas in various ways in a pragmatic style. Outcomes, innovations, ideas that seem to work will be progressed in a relatively stable pattern of policy making that constitutes a specific form of regulation, or mode of coordination (Sörensen and Torfing , 2007).

In light of ongoing globalisation and following Innes and Booher (2010) this project considers change to be normal and stability what needs to be understood. In this context sustainability is considered to be a dynamic process rather than an end product. The developed regime is regarded to be able to build capacity to address the various and sometimes contrasting needs of multiple actors in this state of constant change, complexity and fragmentation characterising the process of globalisation.

Resilience is a key concept that can be used to understand how this adaptive governance regime can work. A resilient system is one that can withstand shocks and surprises, absorb extreme stresses, and maintain its core functions, through perhaps in altered form (Innes and Booher, 2010). Resilience refers to three mean features: the amount of change a system can undergo and still retain the same controls on function and structure, or still be in the same state, within the same domain of attraction; the degree to which a system is capable of self-organisation; the ability to build and increase the capacity for learning and adaption in a system.

In order the pursued governance system to become resilient the proposed networks will be built around many type of agents, operating with different perspectives, knowledges, and interests. This diversity is crucial both to assure a wide variety of information is at work and that there will be many options and many players with different capabilities to take actions. These proposed networks need two main feautures to be succesfull (Innes and Booher, 2010). First they need to share and discuss information and experiments in order to develop common understandings.

This interactions need to cross sectors, scales and jurisdictional boundaries, as well as public and private sectors. This interaction needs to be collaborative to assure that listening and mutual learning takes place. They cannot be controlled in detail by a central authority if this is to be an adaptive system. They have to be self-organizing and evolving.

Secondly the proposed networks need informed and effective selection mechanisms. For a system to be productively adaptive it must include a way to eliminate ineffective strategies and agents and to encourage those with more valued outcomes. Unfortunately government often interferes with the natural selection process, as it continues to fund approaches that are ineffective because political preferences or simply because of slowness. A fluid governance system is able to facilitate experimentation and innovation to occur before programs are legislatively designed and institutionalized. The informality of the proposed networks makes it easier to drop failing efforts and built upon the succesfull ones.

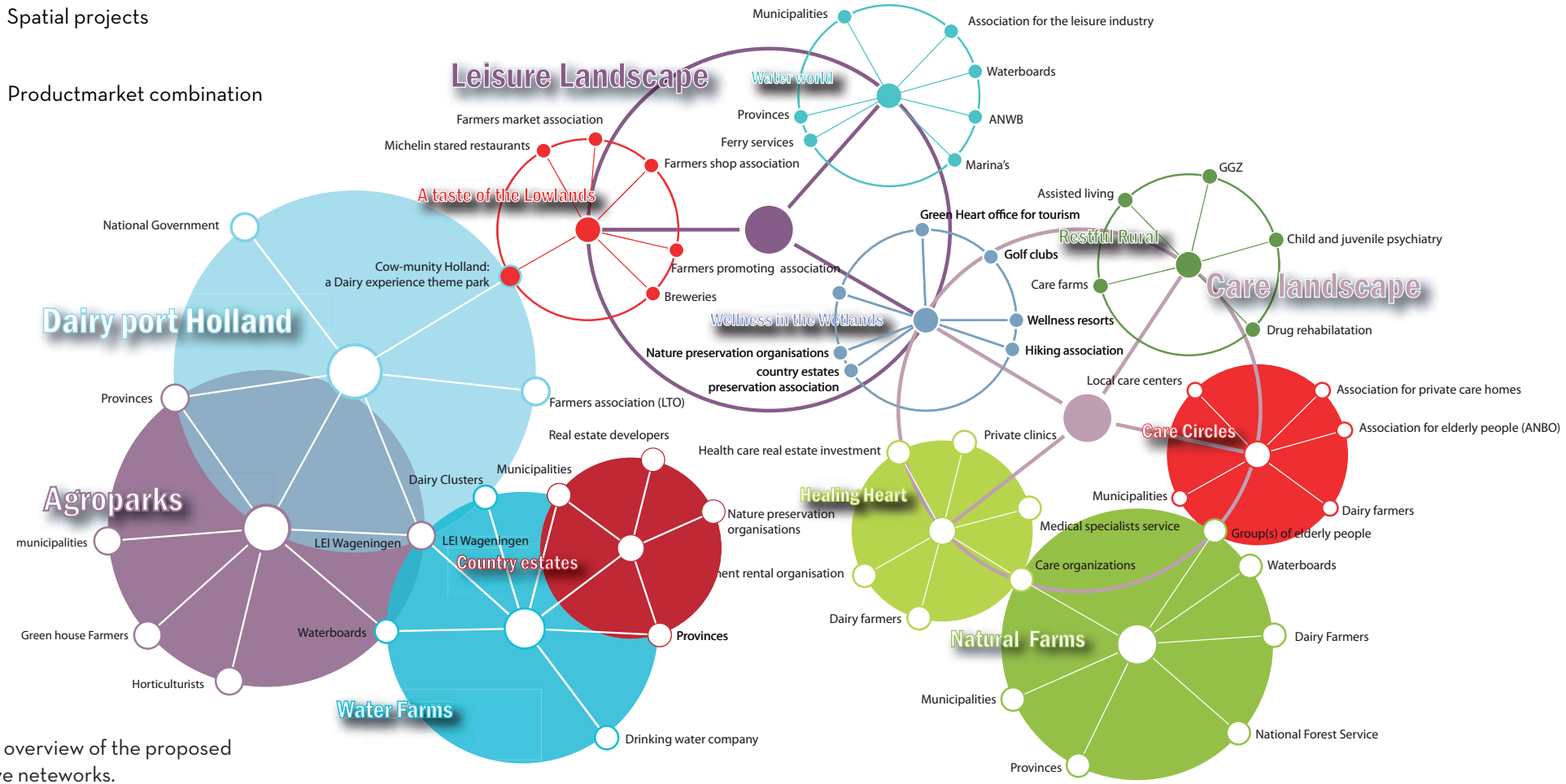
TYPE OF NETWORKS



Spatial projects



Productmarket combination



Schematic overview of the proposed cooperative neteworks.

GARDEN OF HOLLAND

Holland ' s Garden understands the central open area surrounded by the polycentric conurbation of the Randstad Holland, the Green Heart, as a unique region that can measure itself with comparable regions , like the Loire valley in France, Kent in England, Stockholm skärgard and Tuscany in Italy, that are affectionately known as ' gardens of ' because of its quintessential countryside. Within the palette of nature areas around the Randstad it is a completion to areas like the North Sea, the Zeeuwse Delta, the IJsselmeer and the Utrechtse Heuvelrug. The low dynamic polder landscape of the Green Heart can become a region of peace and contemplation in which nature flourishes and the outstretched polders will enable urbanites to forget about their daily problems.

THE URGENCY TO ACT

Central to this new perspective are new concepts that will tackle the urgent water management problems in the region. The in the west located low lake bed polders are dealing with ongoing seepage, causing soil salinisation and further complicating agriculture production ,whereas in the east the peat lands are oxidating rapidly as a result of the for agriculture needed higher groundwater table. If nothing changes the peat will be vanished within 50 years and together with it the typical dense polder structure of the peat lands. Therefore the lake bed polders will become self sufficient in its water supply by means of a shared rain water harvesting facility managed by cooperative water farms. By extensifying the agricultural land use in the peat lands higher groundwater tables are workable, and with it peat oxidation will be stopped.

The context of this new perspective is a time in which the most important landscape forming activity, agriculture, is undergoing dramatic changes as a result of shifting conditions in the world market and therefore will have problems to survive economically in the future. As the characteristics of the Dutch polder landscape is very much related to agricultural activities in the region, the future of this cultural historic landscape is also at risk. Related to the new water management concepts new directions for dairy farming will be developed. In case of the peat lands this entails extensification of the agricultural land use whereas in the eastern lake bed polders agricultural activities become more intensified.

BOSKOOP GREENPORT

The region Boskoop is an important international centre for ornamental trees. Jointly this cluster of production, trade, logistics, supply, services, knowledge and education will develop new sustainable production methods. It is foreseen that in the future this successful historical locally embedded cluster will further expand in the Green Heart region.

DISTANT PEAT LANDS

The peats lands in the east will give the urbanites of the Randstad the possibility to retreat from civilization. New farm cooperation's will transform the landscape into extensive and differentiated polders. The area will lack accessibility as large parts of the road system in the area will become obsolete and will become reduced to a system of indispensable roads to connect villages and farms. Only the larger cities are relatively well connected to the national network. From out of these cities the peat lands can be entered using the water bus system or the remaining country tracks. The region will incorporate a care landscape employing the green and peace qualities of the region. Here the urbanites can recover from surgery or enjoy retirement in one of the care hotels.

AGRO POLDERS

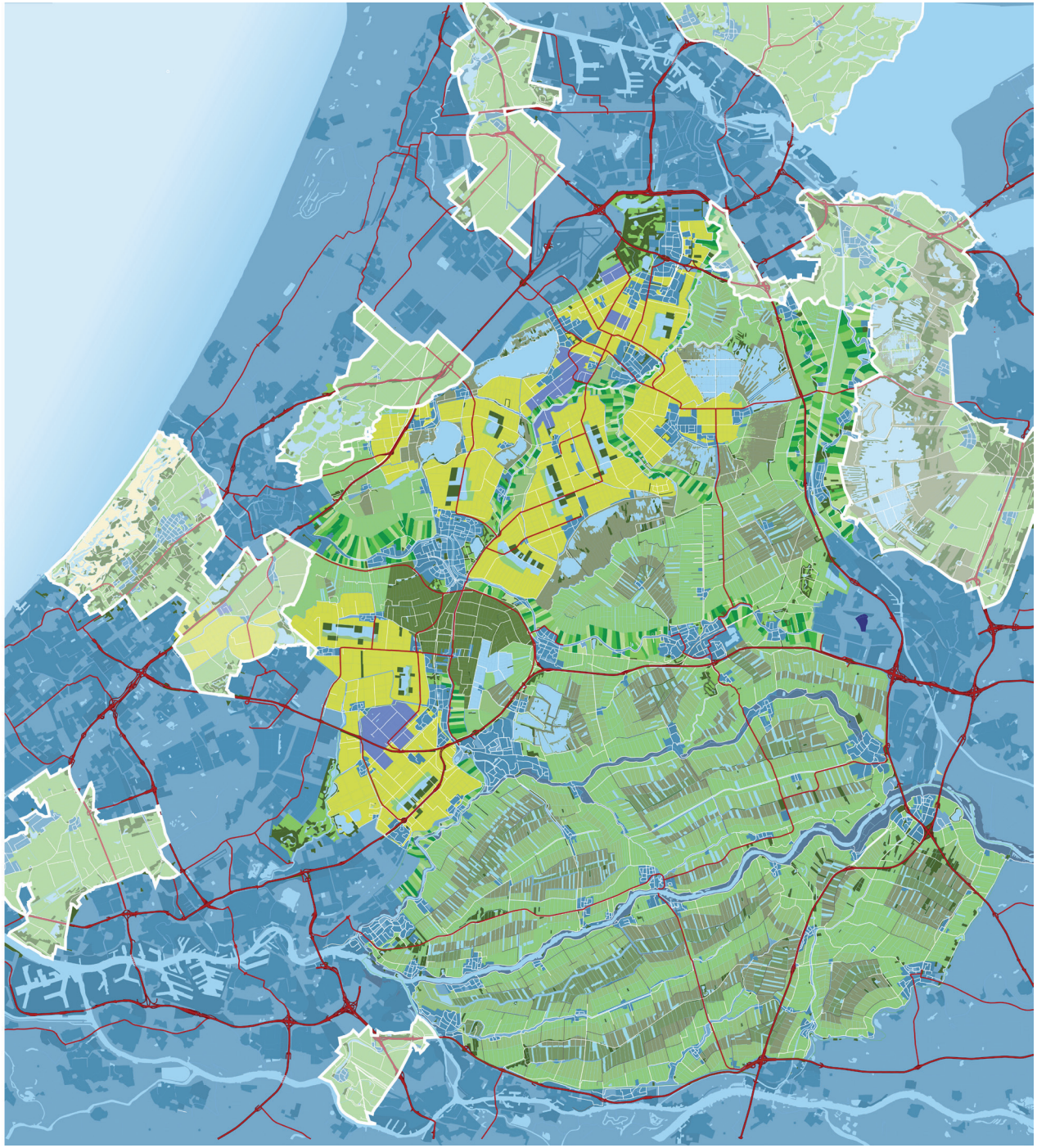
Farming in the lake bed polders will become a new standard in agriculture. Highly modernised and innovative dairy companies will cluster together into Holland dairy port a worldwide known centre for dairy farming. Parallel to this urbanites will colonize the best parts of the polders and transform them into a linked up system of pleasure gardens and make up a new country estate landscape. Embedded in these country estate landscapes are large water retention areas, water farms, that will be managed by cooperative dairy clusters.

MAP OF HOLLAND ’S GARDEN

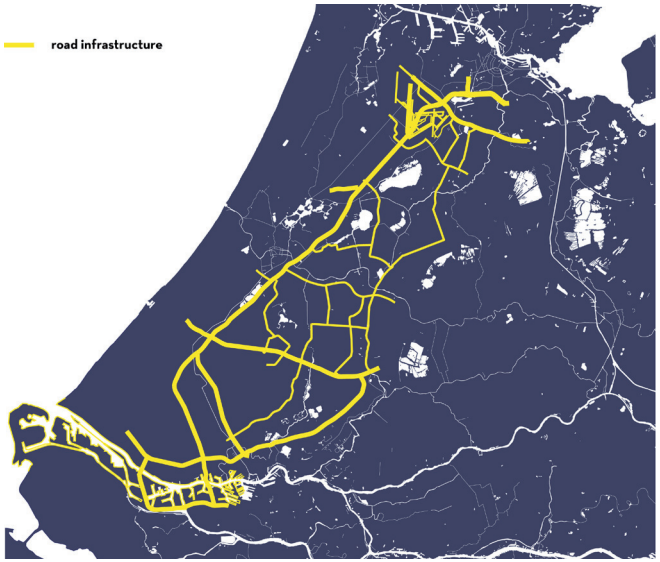
- Dairy clusters
- Natural farming
- Country estates levees
- Country estates lake bed polders / water farms
- Nature
- Forest
- Parks / recreation
- Green houses
- Horticulturists
- Built area
- High ways
- Main roads
- Secondary roads (within plan area)
- Unpaved roads (within plan area)
- Provincial buffer zones

N

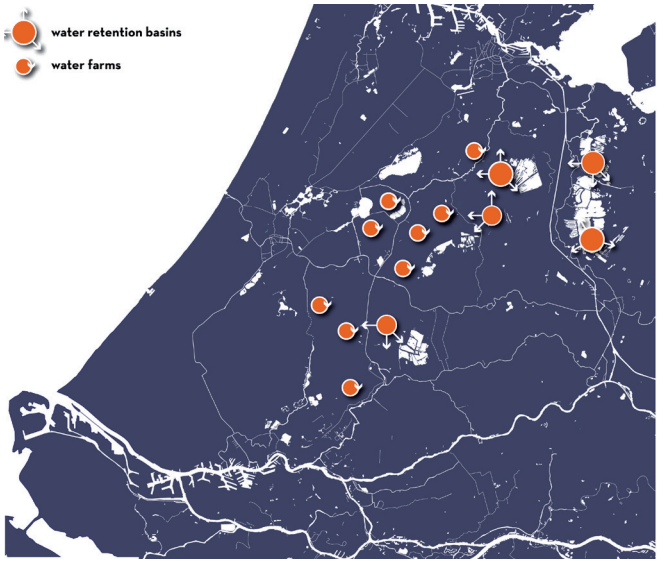
0 5 km 10 km



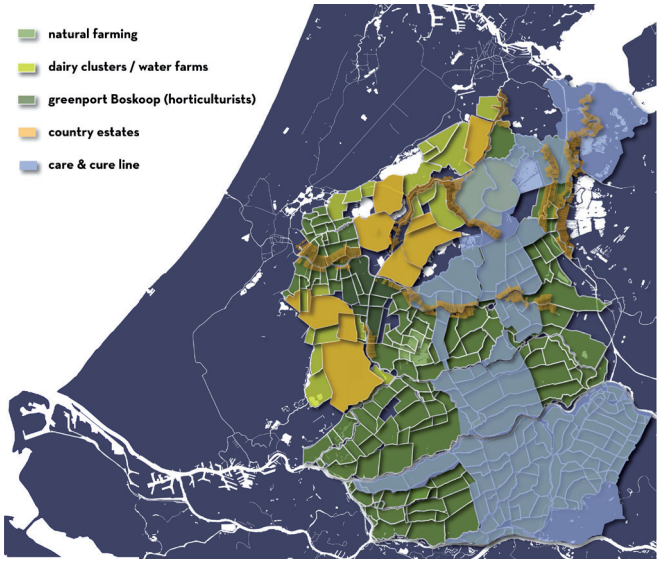
The map of Holland ’s Garden is not a blueprint plan or a pursued final image. The map shows the potential outcome of the developed cooperative networks.



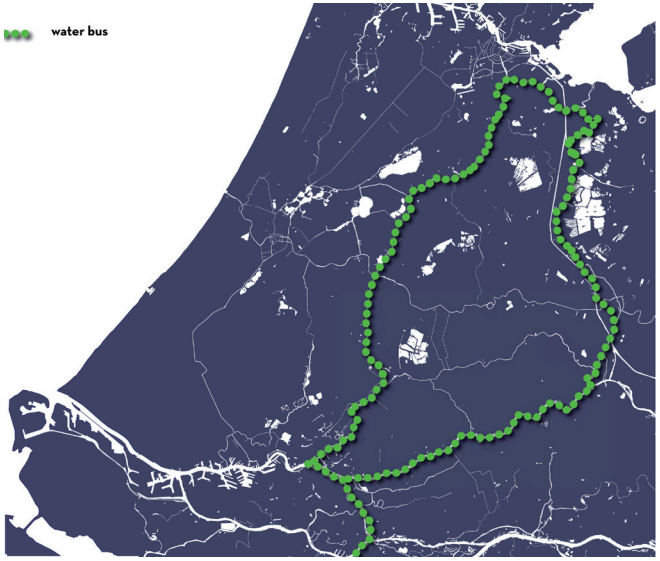
Intensifying the Rotterdam - Amsterdam corridor



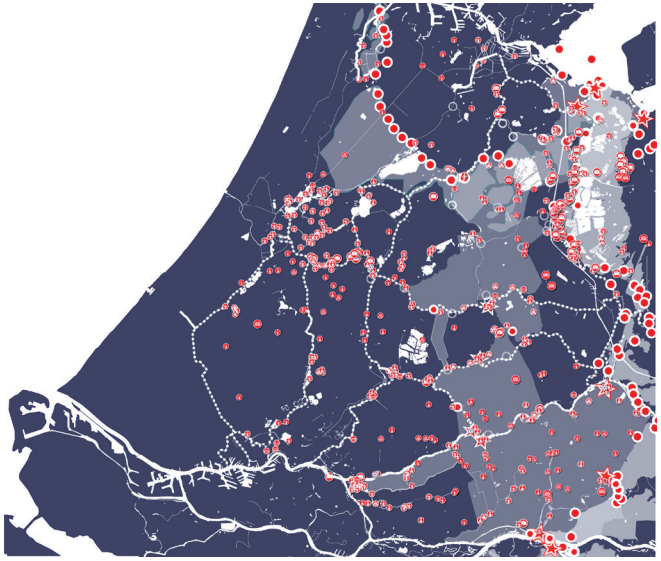
Fresh water facilities for agriculture



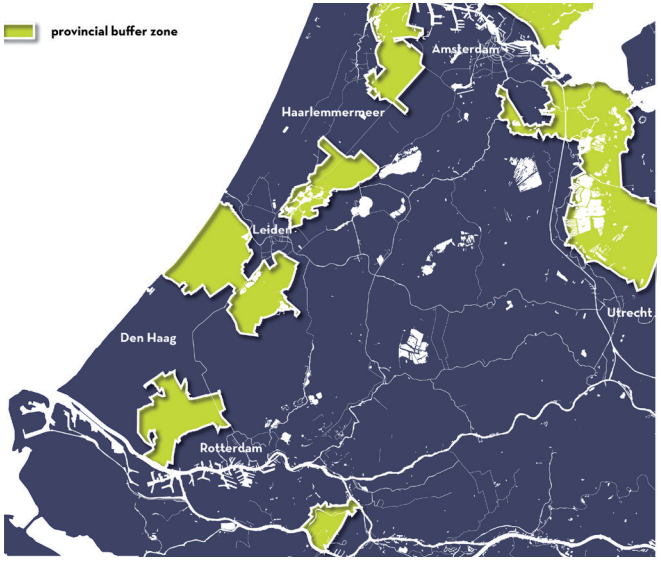
Policies: thematic structural visions



Slow connections: a new water bus system



Cultural heritage as a frame for future developments



Policies: provincial buffer zones

GOVERNMENT 'S ROLE

Institutions resist change, even when the ideas that where responsible for their constitution are long surpassed. In this case the pursued adaptive spatial regime exist uneasily at best with traditional government. However, change should occur outside but also alongside traditional government activities. The imagined resilient governance system will not replace formal government, but will coexist with it, as a kind of shadow system. It will allow for experiment and select what appears to work, pragmatically combining ideas in various ways. It may provide innovations and ideas that can be taken up by formal government.

The proposed networks however must be enabled by governing institutions that provide incentive structures for participation, technical knowledge, and legitimacy. Supportive frameworks for collaboration include budgets, laws, regulations, and political and financial incentives for participation.

POLICIES

In terms of spatial planning policies successful innovations and ideas can be integrated and institutionalized in so-called structural visions. A structural vision is an overall indicative spatial plan that can be used by all levels of government in the Netherland as a framework to integrate spatially relevant decision-making. Concerning the form of structural visions there is a lot of flexibility. It is also allowed motivation and policy choices to concern issues that go beyond spatial planning, as long as they give enough guidance for the development of the land-use plans. Beside specific territories structural visions can also concern only one specific element, theme or aspect. So for instance it can only concern agriculture development. Land use plans bring in the juridical constraints to what you can and cannot do at a certain plot or piece of land. By changing them in accordance with the proposed policies in the structural visions, they can help to steer future developments in the pursued direction. National government could consider dairy farming as a top sector, in the same manner as the Greenports, and facilitate and stimulate the development of a Dairyport advancing dairy agriculture.

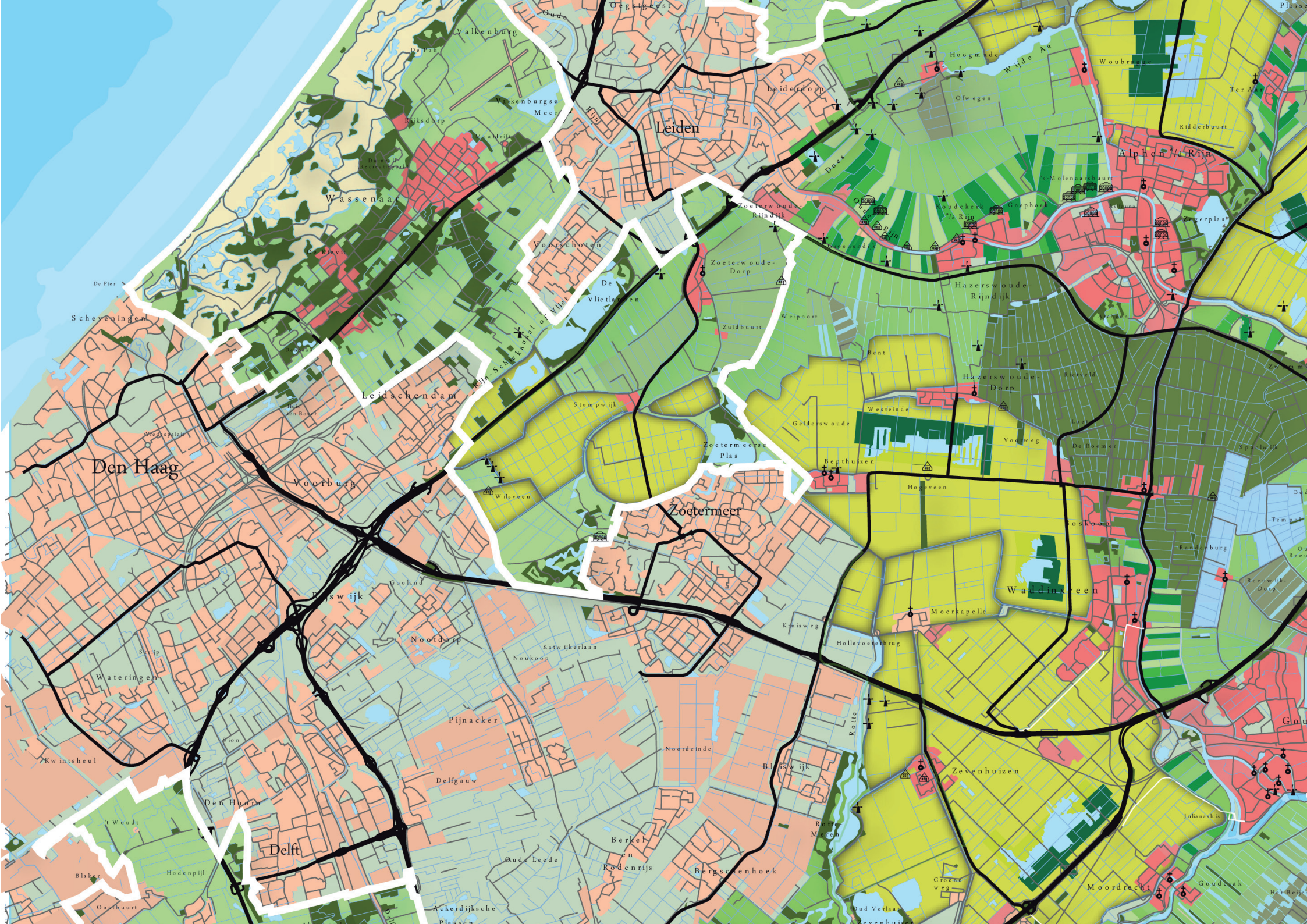
In the process the proposed regime will also gradually change existing practices through the cumulative effect of evolving norms, expectations, and understandings as well as collective learning (Innes and Booher, 2010).

INITIAL INVESTMENTS

As stated above collaboration needs supportive frameworks by governing institutions. Besides this initial investments by government are also regarded a necessity. Provinces of South and North Holland should speed up the intended improvement of relevant provincial roads and speed up the development of the proposed N207 north (connection Aalsmeer – Alphen aan den Rijn). The three Provinces of the Green Heart should start the development of a more extended waterbus system. Starting point is the existing waterbus line between Dordrecht and Rotterdam. The waterbus system will make places more accessible, but in a slow way. Places connected to this system will become a reachable, but far distant destination.

BUFFER ZONES

During the process it became clear that within the region there are two different kinds of reasons to keep space open from urbanisation: at the one hand provision of outdoor recreation and other services to society and at the other hand conservation of natural and cultural values. For the most part within the Green Heart it is about preserving cultural historic landscape, however in the case of the Vechtstreek and the Oude-Ade region recreational uses have become a focus point. This providing for recreational demands requires a complex and diverse open space system to suit the needs of various population groups (different age groups, young parents, handicapped people, cultural differences, etc.). Planning for recreation addresses questions such as how much, what sort and where the open space is needed. They need a high level of intervention. The project therefore proposes to include these areas to the former national buffer zones to make up new provincial buffer zones. A policy instrument that makes the needed high level of intervention possible.



Oegstgeest
Oude
Valkenburg
De Pan
Valkenburgse Meer
Rijksdorp
Maaldrift
Duinzell (Recreatiepark)
Wassenaar
De Rievit
De Pier
Scheveningen
Leiden
Leiderdorp
Hoogmade
Wijde Aa
Woubrugge
Ter Aar
Ofwegen
Ridderbuurt
Alphen a/d Rijn
Does
's-Molenaarsbuurt
Koudekerk a/d Rijn
Gnephoek
Zegerplas
Zoeterwoude-Rijndijk
Groenendijk
Voorschoten
De Vlietlanden
Zoeterwoude-Dorp
Hazerswoude-Rijndijk
Weipoort
Zuidbuurt
Rijn-Schiekanaal of Vliet
Leidschendam
Bent
Hazerswoude-Dorp
Rietveld
Stompwijk
Westeinde
Gelderswoude
Voorweg
De Roemer
Spoelwijk
Zoetermeerse Plas
Benthuizen
Hogeveen
Den Haag
Voorburg
Wilsveen
Zoetermeer
Goskoop
Randenburg
Tempel
Reeuwijk-Dorp
Waddinxveen
Moerkapelle
Kruisweg
Hollevoeterbrug
Gooland
Rijswijk
Nootdorp
Katwijkerlaan
Noukoop
Strijp
Wateringen
Pijnacker
Noordeinde
Rotte
Blijswijk
Zevenhuizen
Kwintsheul
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Bergschenhoek
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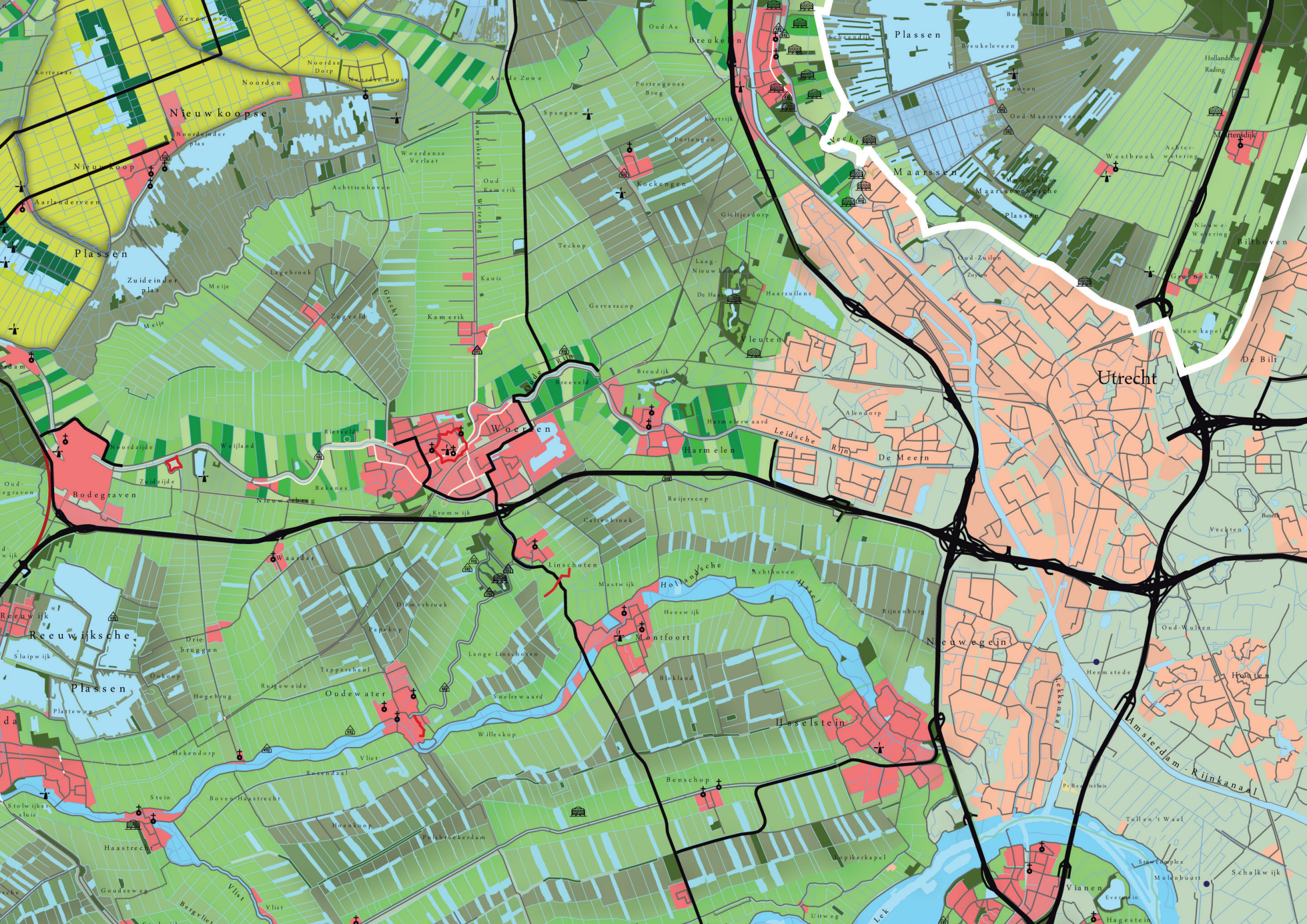
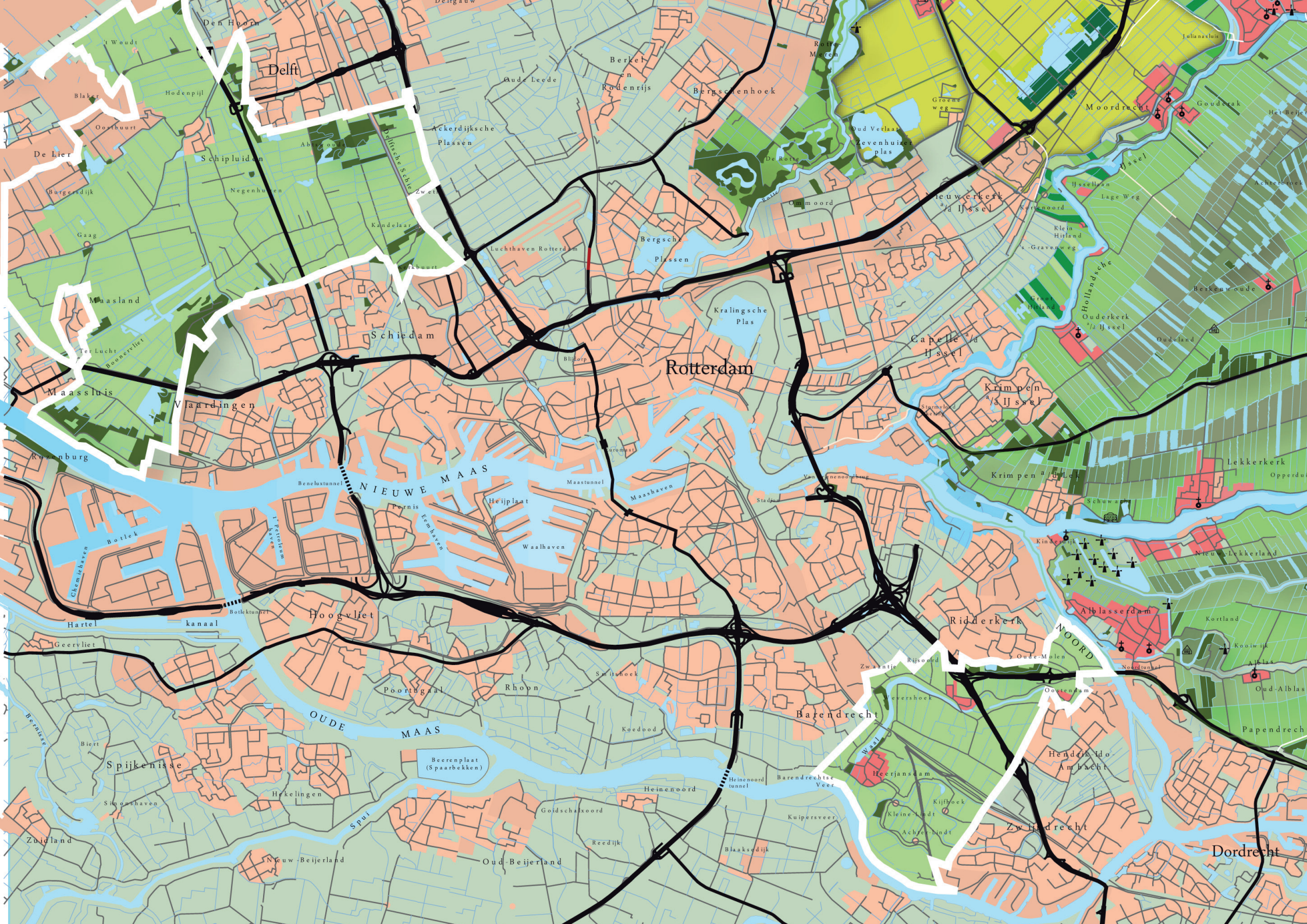
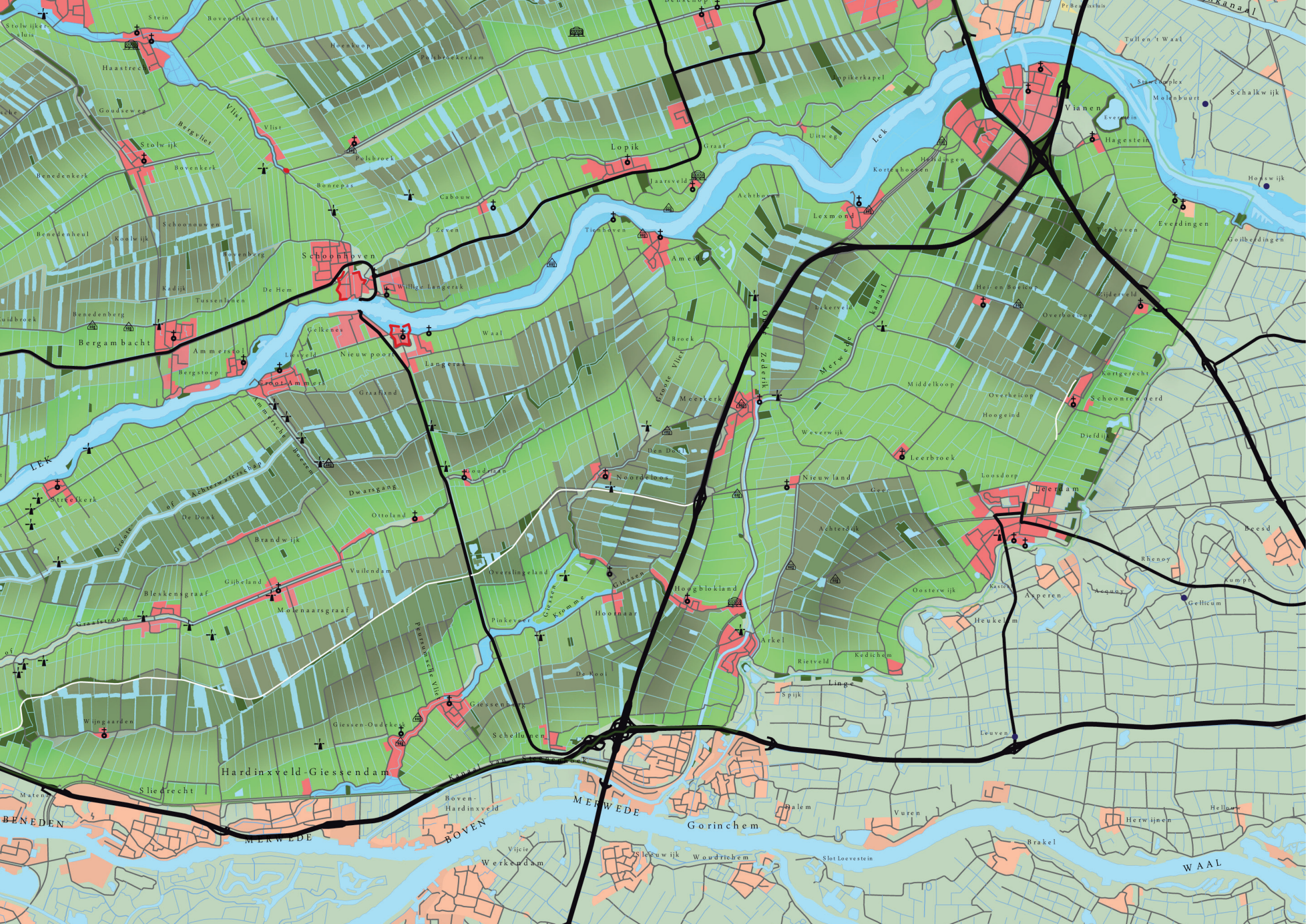


Zevenhoven
Korteraar
Noorden
Noordse Dorp
Noordse Buurt
Nieuwkoopse
Noordeinder plas
Nieuwkoop
Aarlanderveen
Plassen
Zuideinder plas
Meije
Lagebroek
Zegveld
Grecht
Kamerik
Woerdense Verlaat
Achttienhoven
Oud Kamerik
Kamerikschе Wetering
Aan de Zuwe
Spengen
Portengense Brug
Kortrijk
Portengen
Kockengen
Teckop
Gerverscop
Kanis
Oud-Aa
Breukelen
Scheendijk
Plassen
Boomhoek
Breukeleveen
Tienhoven
Oud-Maarsseveen
Vecht
Maarssen
Maarsseveensche Plassen
Westbroek
Achterwetering
Hollandsche Rading
Martensdijk
Nieuwe Wetering
Bilthoven
Groenekan
Blauwkapel
De Bilt
Oud-Zuilen
Zuylen
Gieltjesdorp
Laag-Nieuwkoop
De Haas
Haarzuilens
Vleuten
Breudijk
Breeveld
Oude Rijn
Woerden
Harmelen
Harmelerwaard
Leidsche Rijn
Alendorp
De Meern
Utrecht
Rietveld
Weijland
Noordzijde
Zuidzijde
Bodegraven
Bekenes
Nieuwerbrug
Kromwijk
Reijerscop
Cattenbroek
Waarder
Linschoten
Mastwijk
Hollandsche IJssel
Achthoven
Heeswijk
Montfoort
Rijnenburg
Nieuwegein
Vechten
Oud-Wulven
Heemstede
Houten
Lekkanaal
Amsterdam-Rijnkanaal
Reeuwijk
Reeuwijksche Plassen
Sluipwijk
Driebruggen
Oukoop
Hogebrug
Plattewеg
Diemerbroek
Papekop
Tappersheul
Ruigeweide
Oudewater
Lange Linschoten
Snelrewaard
Blokland
IJsselstein
Willeskop
Hekendorp
Vliet
Rozendaal
Benschop
Stein
Boven-Haastrecht
Stolwijkersluis
Hoenkoop
Polsbroekerdam
Haastrecht
Lopikerkapel
Goudseweg
Vlist
Bergvliet
Uitweg
Lek
Vianen
Everstein
Hagestein
Tullen 't Waal
Stuwcomplex
Molenbuurt
Schalkwijk



Delft
Den Hoorn
't Woudt
Blaker
Hodenpijl
Oostbuurt
De Lier
Burgersdijk
Gaag
Schipluiden
Negenhuizen
Abtswoude
Delftsche Schie
Zwetsel
Kandelaar
Kerkbuurt
Maasland
Ter Lucht
Boonervliet
Maassluis
Vlaardingen
Rozenburg
Schiedam
Oude Leede
Berkel en Rodenrijs
Bergschenhoek
Rotte-Meren
Groene weg
Oud Verlaat
Zevenhuizer plas
De Rotte
Ommoord
Ackerdijksche Plassen
Luchthaven Rotterdam
Bergsche Plassen
Kralingsche Plas
Blijdorp
Rotterdam
Nieuwerkerk a/d IJssel
Kortenoord
Klein Hitland
's-Gravenweg
Groot Hitland
Hollandsche IJssel
Moordrecht
Gouderak
Julianasluis
IJssellaan
Lage Weg
Achterbroek
Berkenwoude
Ouderkerk a/d IJssel
Oudeland
Capelle a/d IJssel
Krimpen a/d IJssel
Stormvloedkering
Lekkerkerk
Opperduin
Krimpen a/d Lek
Schuwacht
Kinderdijk
Nieuw-Lekkerland
Alblasserdam
Kortland
Kooiwijk
Alblas
Oud-Alblas
Papendrecht
Hendrik-Ido-Ambacht
Zwijndrecht
Dordrecht
Ridderkerk
Oude-Molen
Noordtunnel
Oostendam
Rijsoord
Zwaantje
Weyershoek
Barendrecht
Heerjansdam
Kijfhoek
Kleine-Lindt
Achter-Lindt
Kuipersveer
Barendrechtse Veer
Heinenoord tunnel
Heinenoord
Blaaksedijk
Reedijk
Goidschalxoord
Oud-Beijerland
Nieuw-Beijerland
Zuidland
Spui
Hekelingen
Simonshaven
Spijkenisse
Biert
Bernisse
Beerenplaat (Spaarbekken)
Koedood
Smitshoek
Rhoon
Poortugaal
Hoogvliet
Botlektunnel
Hartel kanaal
Geervliet
Botlek
Chemiehaven
1e Petroleum haven
Eemhaven
Pernis
Heijplaat
Waalhaven
Maastunnel
Maashaven
Stadion
Van Brienenoordbrug
Euromast
NIEUWE MAAS
Beneluxtunnel
OUDE MAAS
NOORD



Stein
Boven-Haastrecht
Stolwijkersluis
Haastrecht
Hoenkoop
Polsbroekerdam
Goudseweg
Vlist
Bergvliet
Stolwijk
Bovenkerk
Benedenkerk
Polsbroek
Bonrepas
Cabouw
Lopik
Graaf
Jaarsveld
Achthoven
Lexmond
Tienhoven
Ameide
Schoonhoven
Willige Langerak
Zeven
Schoonouwen
Benedenheul
Koolwijk
Bovenberg
Kadijk
De Hem
Tussenlanen
Benedenberg
Bergambacht
Ammerstol
Bergstoep
Gelkenes
Liesveld
Nieuwpoort
Langerak
Waal
Groot Ammers
Graafland
Ammersche Boezem
Groote of Achterwaterschap
LEK
Streefkerk
De Donk
Dwarsgang
Ottoland
Brandwijk
Vuilendam
Gijbeland
Bleskensgraaf
Molenaarsgraaf
Graafstroom
Wijngaarden
Giessen-Oudekerk
Giessenburg
Schellunen
Hardinxveld-Giessendam
Sliedrecht
Matena
BENEDEN
MERWEDE
BOVEN
Boven-Hardinxveld
Werkendam
Vijcie
Kanaal van Steenenhoek
Overslingeland
Pinkeveer
Giessen
Kromme
Hoornaar
Hoogblokland
Arkel
De Kooi
Groote Vliet
Meerkerk
Den Dool
Noordeloos
Goudriaan
Broek
Zederik
Merwede
Lakerveld
Lopikerkapel
Uitweg
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Schalkwijk
Honswijk
Everdingen
Goilberdingen
Tienhoven
Hei- en Boeicop
Zijderveld
Overboeicop
Middelkoop
Overheicop
Hoogeind
Kortgerecht
Schoonrewoerd
Diefdijk
Weverwijk
Leerbroek
Nieuwland
Geer
Loosdorp
Leerdam
Achterdijk
Oosterwijk
Kasteel
Asperen
Acquoy
Heukelom
Rhenoy
Beesd
Rumpt
Gellicum
Rietveld
Kedichem
Linge
Spijk
Leuven
Dalem
Vuren
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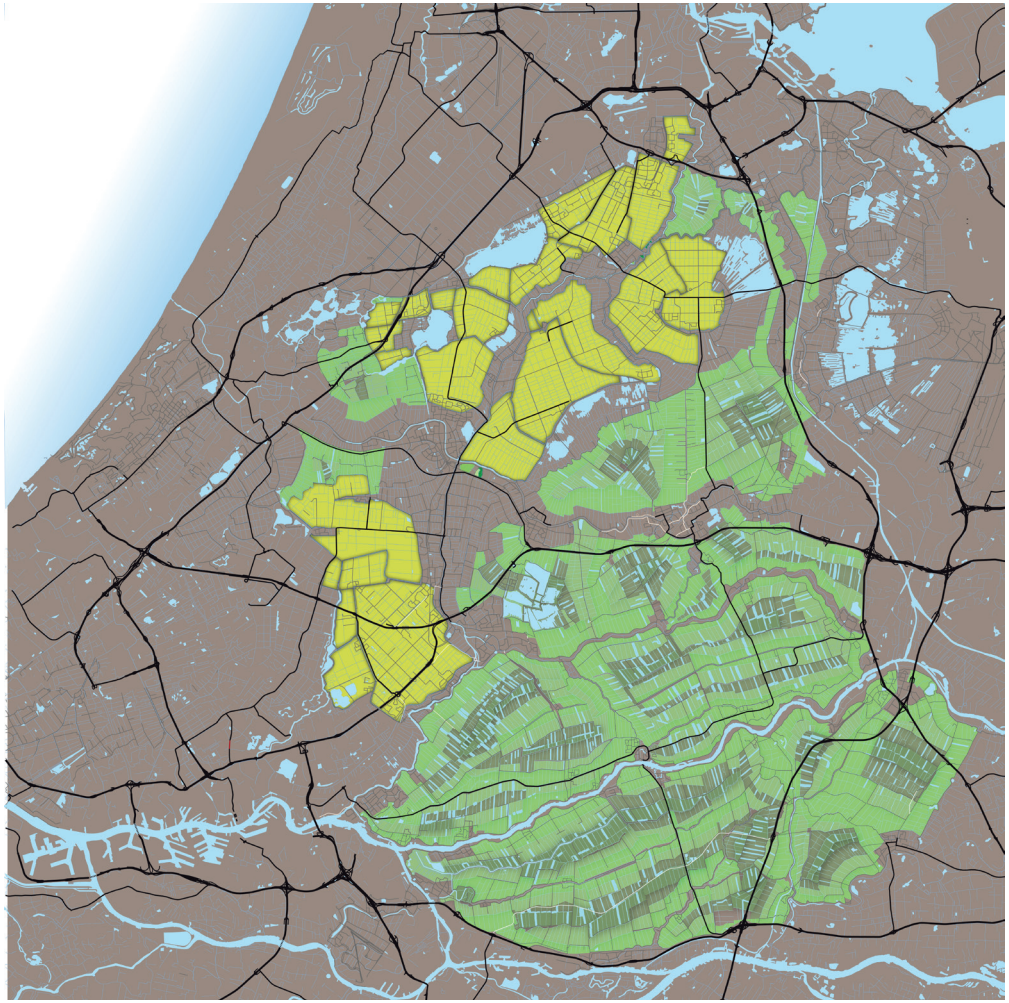
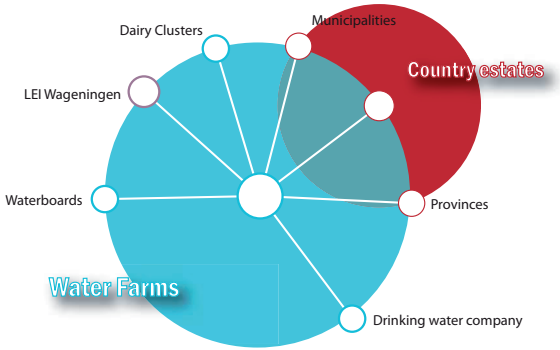
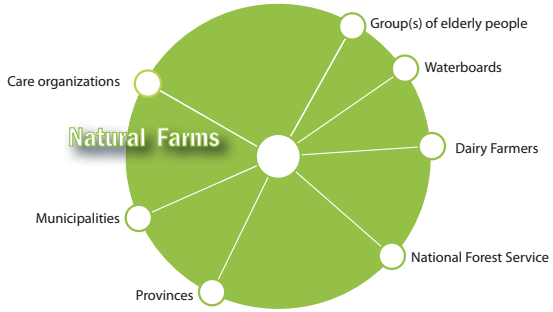
Herwijnen
Hellouw
Brakel
Slot Loevestein
Woudrichem
Sleeuwijk
WAAL







Dairy clusters

Natural farming

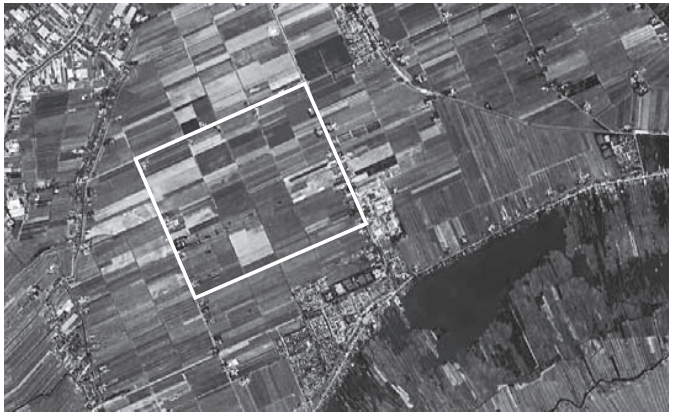
FARMING 2.0

In future the dairy farmers of Holland ' s garden will develop in two contrasting agricultural modes of production. Within the rational large scaled lake bed polders dairy farming will become an example of industrialised, metropolitan farming. Cooperatives of dairy farmers make up clusters of around twenty groups of 100 dairy cows. In their turn these cluster cooperate with similar clusters in a waterfarm which will provide in their own water resources. The dairy clusters can also cooperate with companies from other agrocultural sectors by benefitting from each other waste streams and logistic infrastructures in so-called Agroparks.

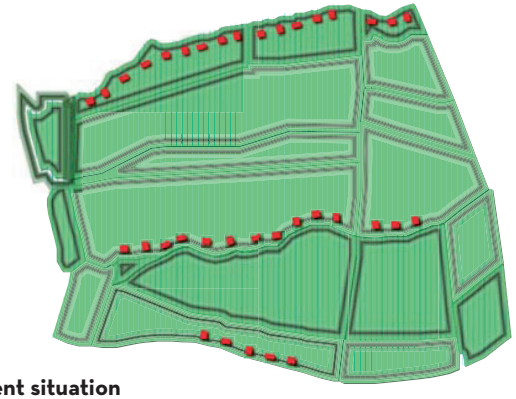
Preservation of the peat lands cannot be combined with this kind of industrialised and modern mode of farming. A more extensive way of dairy farming will be developed here. As less milk cows will be kept on larger area ' s ground water levels can be increased, preserving the peat. As farming will be extensified other sources of income have to be developed. Secondairy functions like farm shops, bars, restaurants, (care) hotels, child day care centres will help farmers to complete their income.



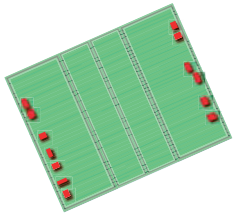
1. Example extensifying in the peatlands: fragment of the Alblasserwaard



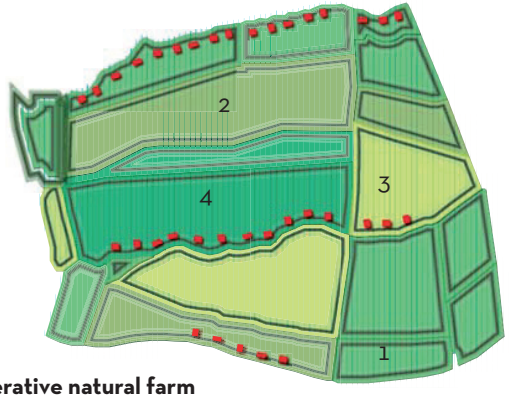
2. Example intensifying in the lake bed polders: fragment of polder



Current situation



Current situation



Cooperative natural farm



Cooperative dairy clusters: water farm

1. EXTENSIFY: NATURAL FARMING,

ca. 1500 ha.
720 milk cows

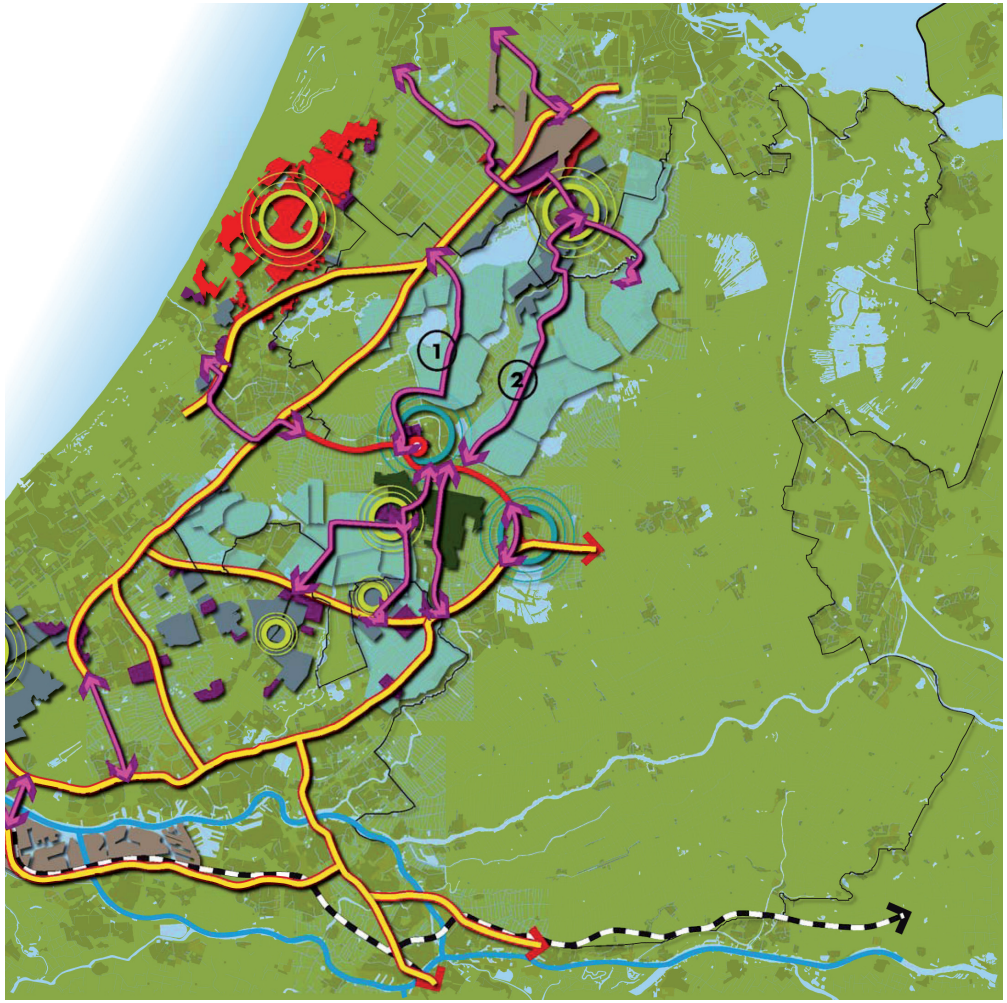
1. meadow land for dairy cattle close to reclamation axis;
2 meadow lands catlle and calves (behind meadow lands of the dairy cattle);
3 hayfields for forage supply meadow birds habitats (difficult to access and wet lands);
4 hayfield for botanic management (very difficult tto access wet and puddles)

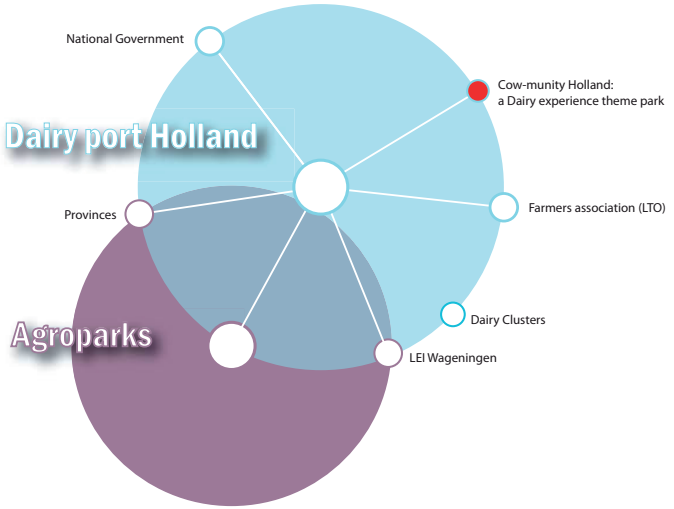
2. INTENSIFY: DAIRY CLUSTER / WATER FARM

dairy cluster
ca. 100 ha.
960 milk cows

water farm
ca. 500 ha.

1 dairy clusters;
2 water retention;
3 nature development;
4 country estates.



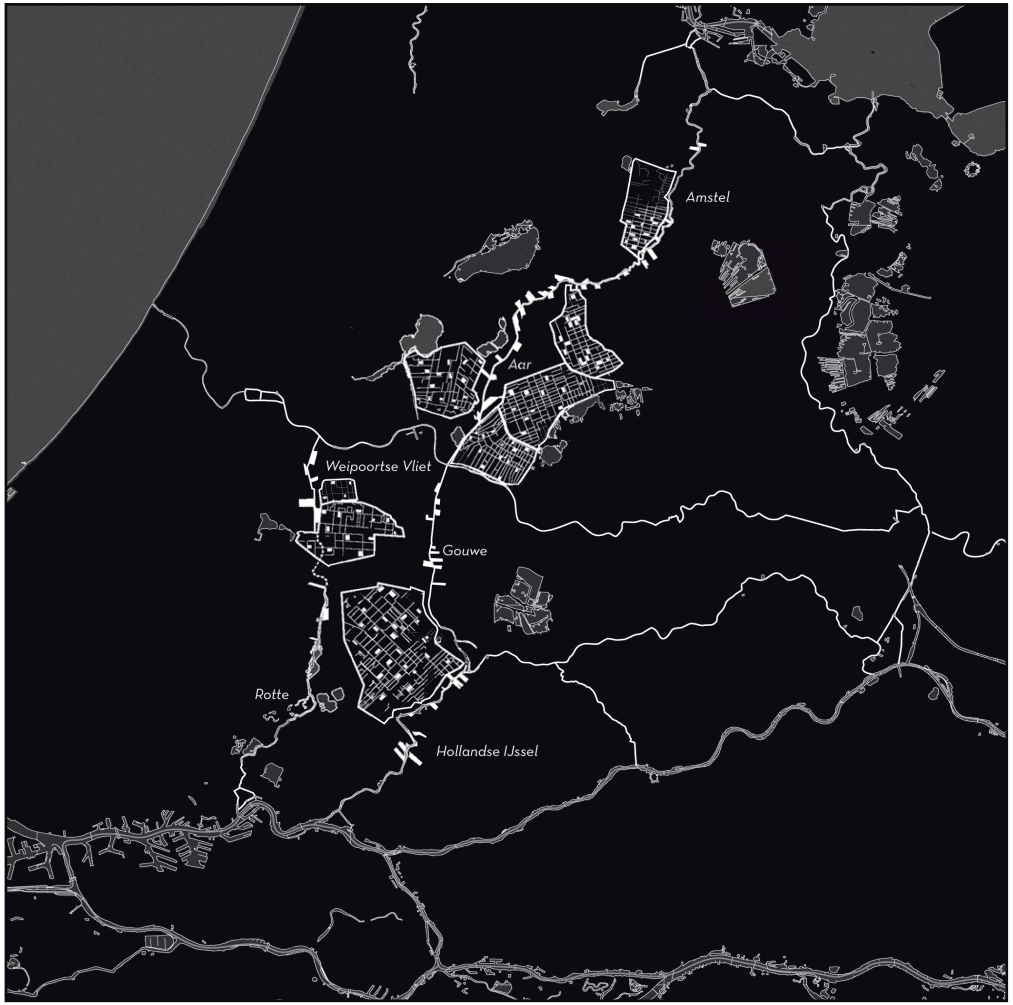


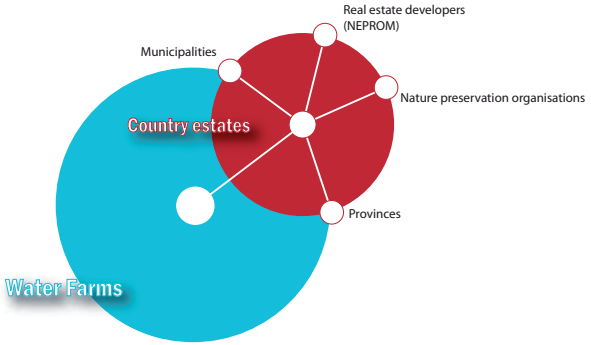
Business parks
Green houses
Flowers
Horticulture
Main port
Pasture

Green ports
Potential locations Dairy port
Potential locations Agroparks
Planned infrastructure (according to structure visions Green ports)

HOLLAND DAIRYPORT

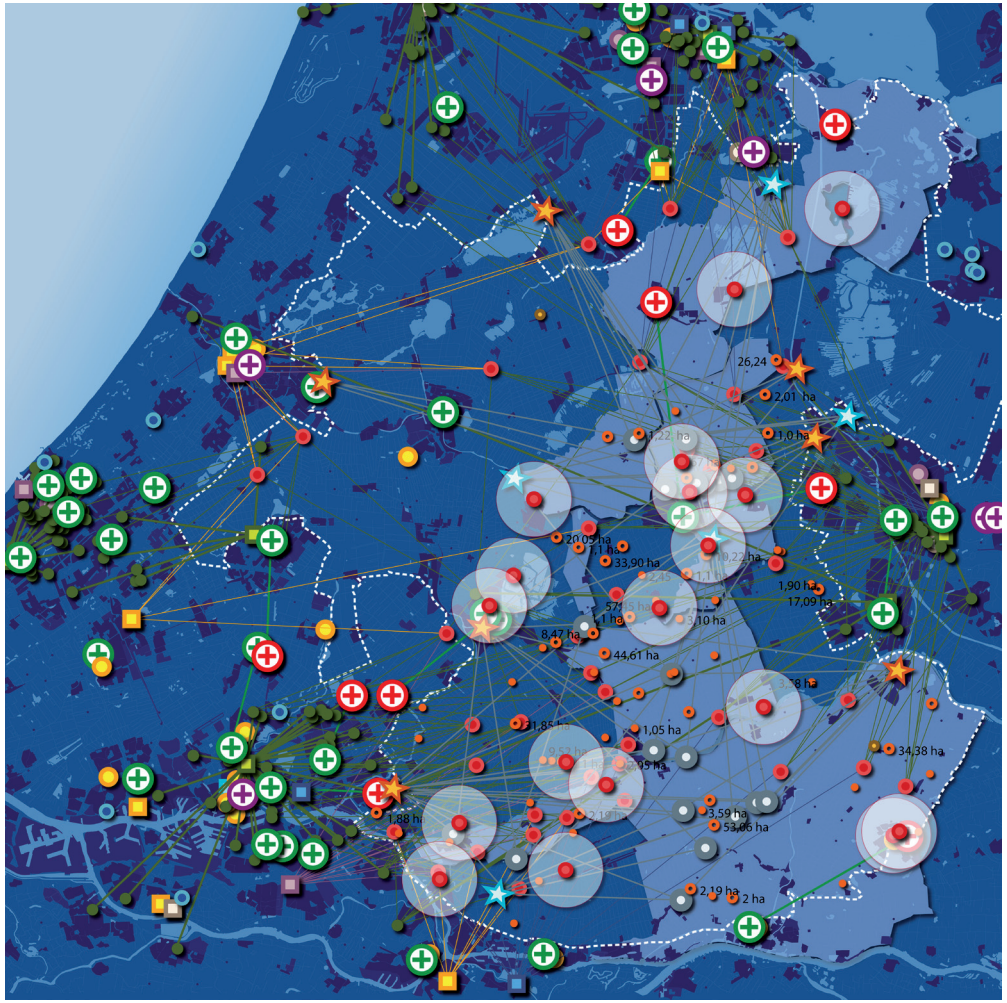
The large dairy cluster located in the western part of central open space of the Randstad will be developed as Holland Dairyport. Dairy products are produced and traded in an innovative and high-tech manner within this cluster. Besides production and trade there is a whole chain of other activities, with building techniques, transport, education and research. The former business park Rijnhaven at Alphen aan den Rijn will be transformed into an international centre for dairy products. Well embedded and connected to the infrastructure and logistic systems of the Greenports it will be able to create an internationally competive environment. Agroparks optimise mutual benefits between the different agro sectors. Through the centre the world famous cheeses are distributed all over the globe. Tapping into the new markets of Brazil, Russia, India and China it has become one of the largest dairy clusters all over the world. To give the industry an image an dairy experience centre is opened. Here general public can learn about the history of Dutch dairy farming, current production methods and the variety of products and flavours.

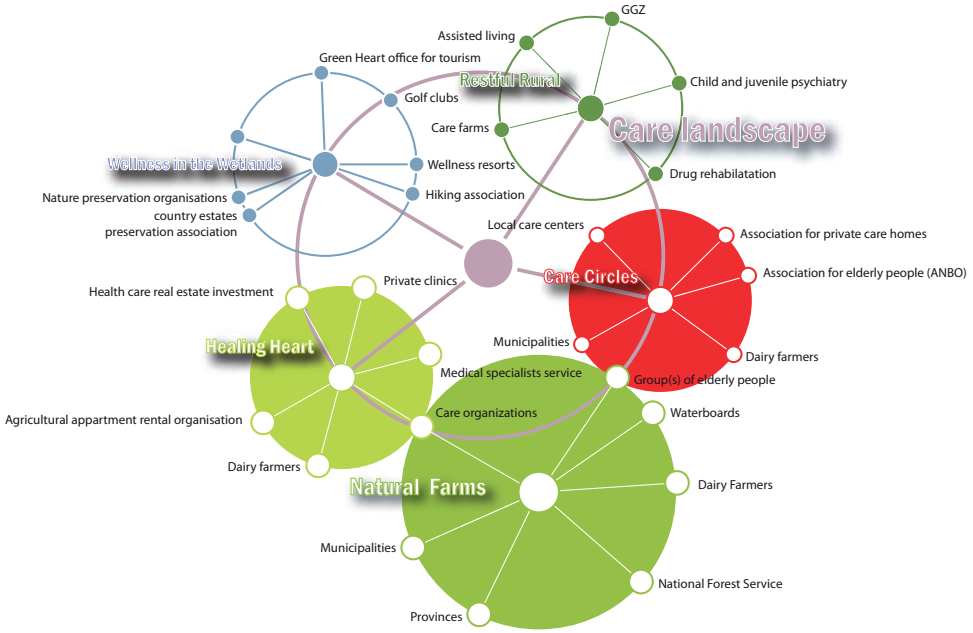




COUNTRY ESTATE LANDSCAPE

The in the western part of the Randstad located lake bed polders and adjacent rivers will become the scenery of new in nature embedded and mutually linked up country estates. Inspired by the 17th century country estate landscapes, wealthy urbanites invest their savings in countryhouses and landowner ship. Baroque countryhouses, symmetric, surrounded by ornamental gardens will stretch out along rivers like the Amstel, the Mijdrecht, the Vecht, te Angstel and the Aa and in polders like Polder Nieuwkoop, Polder Zevenhoven, Polder Vierambacht, Noordeinderpolder, Polder Vierambacht and the Wassenaarsche Polder. Through new and improved provincial roads the countryhouses are easily reachable from the surrounding cities like Utrecht, Rotterdam and Amsterdam. Waterbuses leave frequently from stops along the Amstel, the Gouwe and the Vecht into the territory. Using the waterbus system the estates have become a favourite destination for daytrippers seeking to escape the crowded and smelly cities. Taking the waterbus they come across numbers of small solar boats owned by the inhabitants of the country estates going for their daily groceries.

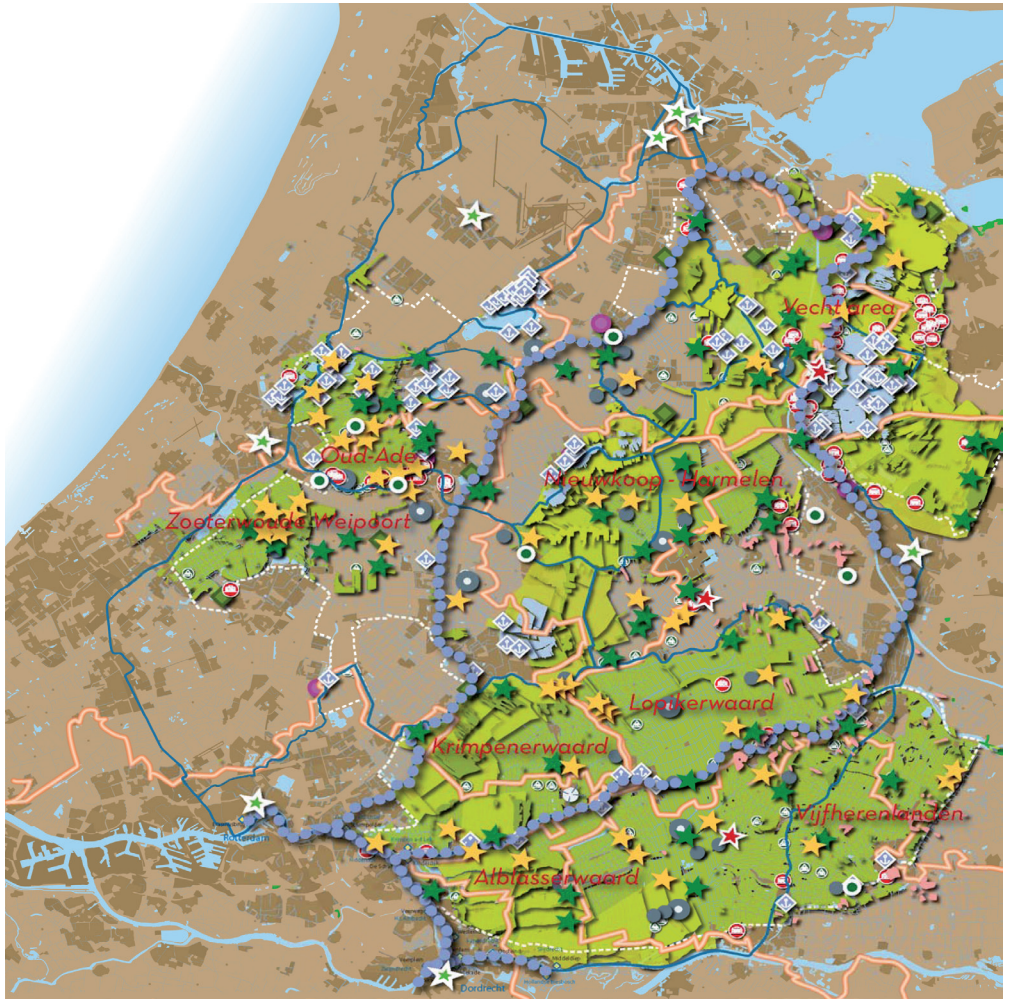


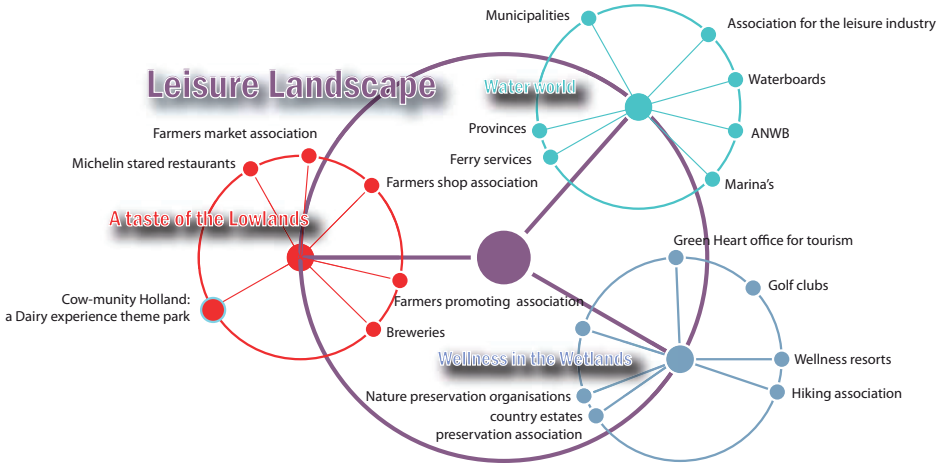


CARE LANDSCAPE

The structure and relics of the former military defense line the *'Oude waterlinie'* will be deployed to link a new care landscape to the region. Private clinics, care hotels, care farms and wellness resorts are just a few examples of the palet of facilities that will be developed in the region to serve the growing group of elderly people in the surrounding cities. The existing 'medical matrix' in Randstad Holland with its hospitals, clinics and care centres will be employed as an framework to develop the care landscapes.

- Academical hospital
- General hospital
- Policlinic
- Private clinics
- medical specialists service
- Existing care hotels
- Potential care hotels
- Care center
- Existing private nursing home
- care farms
- Integrated mental health care center
- child and juvenile psychiatry
- drug rehabilitation
- assisted living
- assisted living housing locations
- forensic psychiatry
- Revalidation center
- Audiological center
- Epilepsy center
- Dialysis center





LEISURE LANDSCAPE

On the bases of the new care landscape a more complete and varieted leisure landscape can be developed attracting new markets. to recover from medical treatments or prevention. As a means to recover from medical treatments wellness facilities can directly serve care functions. They can also become part of a preventive program. Other facilities, like farm shops, restaurants, hotels complete the palet. These functions will also provide new complementary sources of income for dairy farmers.

- Michelin starred restaurant
- Organic farmers market
- Farm shop
- Cheese farmers shop
- Brewery
- Belvedere Dairy farming
- Orchards
- Monumental farms
- Marina
- Golf courses
- Wellness resorts
- Nature reserves
- Luxury apartments rental
- Bed & Breakfast
- Historical country estate
- Long distance hiking trails
- To be developed Green Backbone
- To be developed Ferry line



Stockholms skärgård
“Stockholms archipelago”, coastal area with many small islands (skerries), fish, summer residents

Groene Hart
“The Garden of Holland”, wetlands in a delta, pasture, cheese, country seats

Kent
"The Garden of England”, hilly landscape on a lime soil, orchards, hop gardens, castles

Vallée du Loir
“The Garden of France”, river valley, vineyards, mushroom nurseries, ornamental gardens, castles

Toscana
“Birthplace of the Renaissance” gorgeous landscapes, culinary tradition, vineyyards, villla’s, churches




See you in Holland´s
Garden!


PROBLEM
STATEMENT

INTRODUCTION

How changing conditions are challenging the future of green belts

"Make no little plans; they have no magic to stir men's blood and probably themselves will not be realized. Make big plans; aim high in hope and work, remembering that a noble, logic diagram once recorded will never die, but long after we are gone will be a living thing, asserting itself with ever growing insistency. "

Daniel H. Burnham, 1907

The ideal spatial relationship between city and countryside in north west European city regions has been subject of debate for more than a century(Kühn, 2003). With the emergence of the Industrial Revolution at the end of the 18th century in the United Kingdom followed by the rest of Western Europe at the beginning of the 19th century, policy interest in green belts first arose. In that period of time urbanization expanded enormously provoking a shift in balance between the urban and rural population in favor of the urban. It resulted in changing spatial relationships between cityscape and landscape. Increasingly, the industrial city was held responsible for the vanishing of rural lifestyles and qualities and values associated to it, reinforcing the dichotomy between city and countryside (Gandy, 2006). The Romantic ideal of town and surrounding countryside was felt to be in danger. As a result, a policy response was regarded to be a necessity.

The notion of a dichotomy between the cityscape and landscape derived from the medieval conceptualization of a contradiction between city and countryside. With the rise of city walls a sharp contrast between city and landscape characterized most European cities over many centuries (Fumagalli, 1994, Kühn, 2003). This duality of city and landscape is such a powerful notion that it still shapes the cultural images of many present planners in Europe. The 'embedding' of a city in a beautiful agrarian landscape, which is used for recreation and food supply, is still a current notion of regional planning (Kühn, 2003). In this view planners have often used the concept of green belts to achieve urban form. The idea of green belts carries a double meaning. At the one hand it refers to what it contains: nature, recreation and agriculture, at the other hand it refers to what it surrounds: a buffer to shape urban form. London, Vienna, Barcelona, Budapest, the Randstad Holland and Berlin, among others are European examples (Kühn, 2003), outside Europe in cities like Seoul, Tokyo, Melbourne and Ottawa have implemented green belts (Amati, 2008). As it is applied in so many countries, it can be regarded as one of the best internationally accepted means to control urban expansion and sprawl.

Currently, in the early 21st century, a new urban form is emerging around the world, in which metropolitan areas are growing together into metropolitan regions. These metropolitan regions have interdependencies in their economies, infrastructure, natural resources, and the welfare of their citizens (Innes et al., 2011). It is a new urban form because it contains within the same spatial unit urbanized areas and agricultural land, green belts and highly dense residential areas (Castells, 2010). It is a multicentred metropolis that does not correspond with the traditional separation between city and landscape. As a consequence the very concept of green belts must be questioned.

Moreover as the systems that were responsible for the implementation of green belts concept are fading. Planners are no longer the powerful experts that they once were, nor can they rely on a consensus politics that will support them, like it used to be for instance in the Netherlands. The shift in public attitudes towards the role of planners has coincided with the neo-liberal inspired strategy to deregulate planning and its apparent interference with market processes. This shift towards a deregulated planning regime does not necessarily entail an abandonment of green belts planning, however it may undermine green belts because it implies a redistribution of power.

To illustrate the problems green belts are facing, I will offer the example of the Dutch Green Heart. The Green Heart is a central open space in the Netherlands which is surrounded by the polycentric conurbation of the Randstad Holland. According to tradition the concept originates in the late 1940s, when the great Dutch aviator and

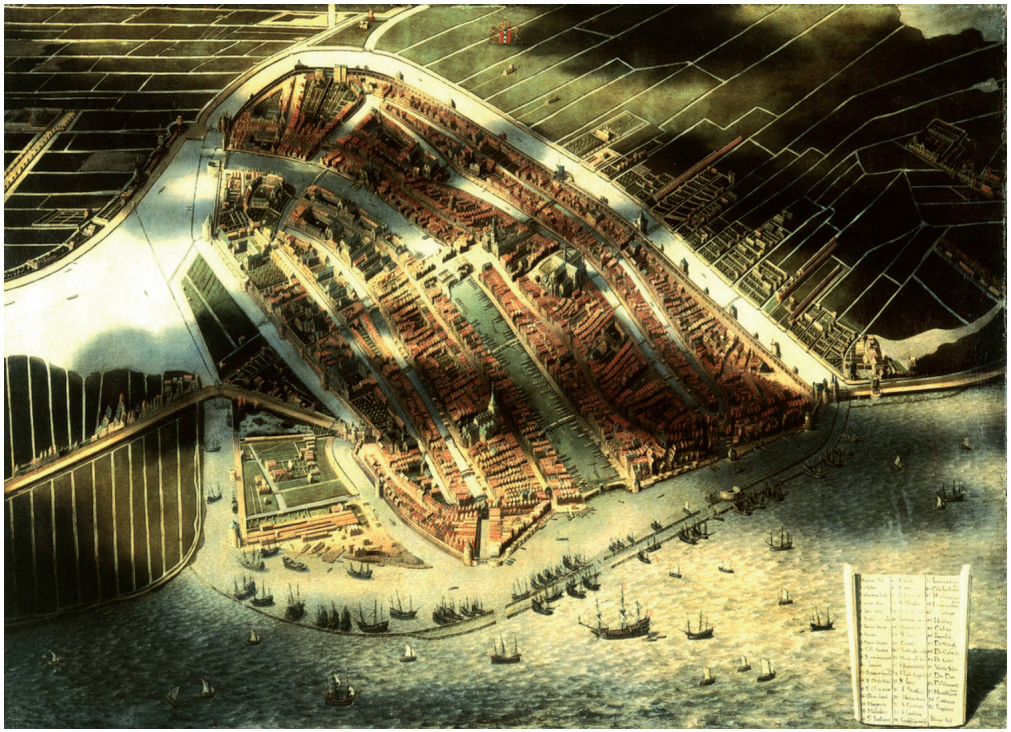


FIG 1. THE ROMANTIC IDEAL OF TOWN AND SURROUNDING COUNTRYSIDE A.J.Ch. Micker, Bird's-eye view of Amsterdam, 1660, Source: Amsterdams Historisch Museum

businessman, Albert Plesman, flew over the western part of the Netherlands and noticed that the cities in this area more or less made up a rim, surrounding an open, green area. He suggested to name this manner of conceiving the western part of the Netherlands Randstad (rand meaning rim, and stad, city). Soon the concept got adopted by the Dutch National Planning Agencey, who added the term Groene Hart (Green heart) to address the large open space. As such the Randstad Holland can be considered a metropolitan region *avant la lettre.* It was already at that time that it was considered to be one of the world's highly urbanised areas, lacking one single dominating metropolis. Instead it had a polycentric organisation, with a distribution of specialist functions between them (Burke, 1966). Within the concept of the Randstad, the Green Heart always has been an important element of policy in the Netherlands that aimed to retain the distinction between urban and rural areas. As such Zonneveld (2007) considers the Green Heart as a green belt surrounded by urban belts. Maruani and Amit-Cohen (2007) interpret the Green heart as an 'inverted' green belt. Similar to green belts, it is a shape-related instrument to contain urban growth.

As later on will be shown, it did not lack of any ambitions, visions, projects or subsidies for the Green heart the last sixty years. In spite of all that, the '*Ruimtelijk Planbureau*' (the National Spatial Planning Office of the Netherlands) concluded in 2003 that the policy of conservation had failed: the open landscape is disappearing slowly, much more housing and offices were build than originally intended. The soil is sinking, an ongoing phenomenon that is caused by the water level management that is supporting the livestock industry and problems



FIG 2. THE GREENHEART HOW IT IS OFTEN ENVISIONED: a romantic urban environment embedded in a beautiful landscape.



FIG 3.THE 'MESSY' REALITY OF THE GREENHEART: a mosaic of different kinds of land-uses slitted by infrastructure

concerning water threats are rising. And more recently even the policy on the Green Heart as a national landscape, as on other national landscapes, the Green Heart will be abandoned (*Minsterie van Infrastructuur an Milieu*, 2012). Besides that the policy on the *rijksbufferzones* (national buffer zones) will also be canceled. The *Uitvoeringsprogramma Groene Hart* (realization program for the Green Heart), will be stopped. In an earlier stage, the national government already ended financial arrangement for the *Ecologische Hoofdstructuur* (Ecological main structure), *recreatie om de stad* (recreation around the city) and the *Investeringsbudget Landelijk Gebied* (investments budget for the country side). All policies concerning nature and landscape has been left to the provinces and municipalities, and therefore also the costs.

The task at hand therefore is to develop a sustainable solution for the Green Heart. With referring to sustainable in a complex sense in this case, as it refers to "sustainable economics (profit-generation), a sustainable social structure (broadly supported), a sustainable social structure (well embedded form a evolutionary, relational point of view), and sustainable environmental solutions"(Boelens, 2009:188). By doing so the future of the area will be less depent on governmental intervention and therefore it can secure its future better.

THE CASE OF THE RANDSTAD'S GREEN HEART

The archetypal Dutch landscape

Wide the sky and steely grey,
Above the wondrous lakes and fens;
Greenhouses, trees, mills, penned
By ditches silver-grey

H. Marsman, Holland, 1931

To start off with the case study at hand, the Green Heart, will be introduced further. Since the 1960s, the term 'Greenheart Metropolis' (Burke, 1966) appeared to define the polycentric conurbation of the Randstad around a central "open" space: the Green Heart. The region does not have any officially established boundaries. Yet, there exists a rough understanding among people (including politicians and planners) in the Netherlands about which parts of the country belong to the Randstad and which do not. Unlike many metropolitan areas in Europe, the Randstad does not have one single dominant core. Instead, the Randstad Region as a whole is dominated by the four major Dutch cities (Amsterdam, Rotterdam, The Hague, Utrecht) that are, from a European perspective, medium-sized centres (750,000 – 275,000 inhabitants). Its functions are spread over its entire area. Although Amsterdam is the largest city in the Randstad and the capital and financial centre of the Netherlands, the national government is located in The Hague and Europe's largest port in Rotterdam. Another seven or eight cities (Dordrecht, Leiden, Delft, Gouda, Haarlem, Zoetermeer, Almere, Haarlemmermeer, Zaanstad) in the area have between 100,000 and 200,000 inhabitants. The area is generally seen as economical core and engine of the Netherlands: almost 45 % of the Dutch population lives in the region and it accounts for about 50% of the country's jobs and economic output, while it only covers 20 % of Netherlands land area (OECD, 2007).

The four major cities, also known in the Netherlands as 'the big four' are separated from each other by the famous 'Green heart' (see fig. 2). This Green Heart is one of the most well-known policy concepts of the Netherlands that aimed at the preservation of open space and therefore the containment of urbanization. It can basically be regarded as an inverted green belt surrounded by urban areas.

The Green Heart covers about 1800 km2 and within the area are 70 local municipalities, of which 43 are situated completely within its boundaries (*Stuurgroep Groene Hart van de provincies,* 2007). The Green heart landscape consists to a large extent of agricultural land, mainly used for dairy farming, therefore it can be considered to be predominantly an area of (agricultural) production. Dairy farms within the Green Heart have followed the general trend of intensification and increase of scale.

The Green Heart itself is made up of relatively old landscape types, dating back to medieval times. These landscapes are all completely man-made and together they make up a good show case of all historical landscapes in the western part of the Netherlands. Looking more closely the Green Heart area shows a large variety of landscape types. Lörzing (2004) sums up the different landscapes as follows:

• peatland cultivation landscapes, wet and low-lying meadowland with an extensive drainage system of ditches, canals and reservoirs, in which windmills historically served as pumping engines;

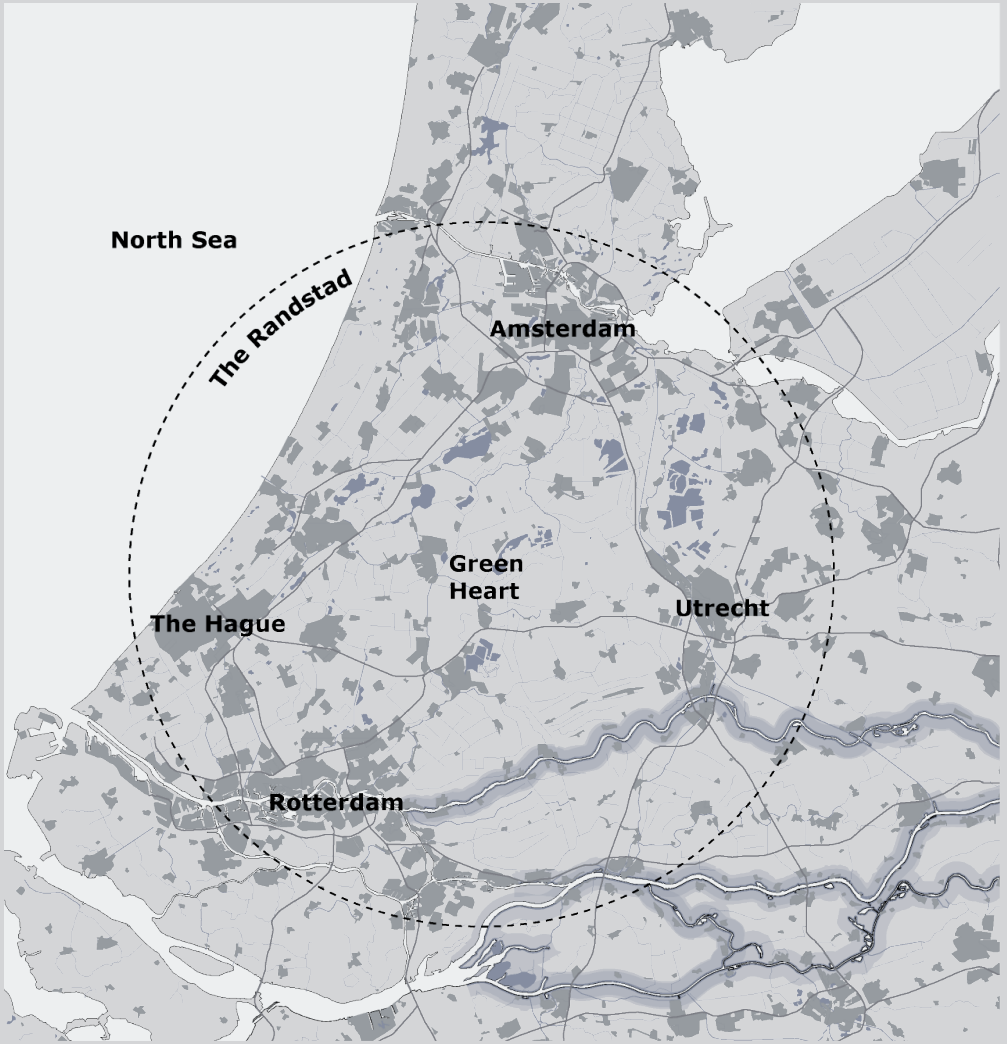


FIG. 4 THE RANDSTAD AND ITS GREENHEART, the 'big four' Amsterdam, The Hague, Rotterdam and Utrecht around the central open space: teh Green heart. Source: Lambregts et al.(2008)

• artificial and semi-artificial lakes, most of them are the result of peat extraction; from the 16th to the 19th century some of these lakes were reclaimed and now make up rationally parcelled farmland lying 3–6 m below sea level, the lake-bed polders;
• river landscapes, with their seasonally flooded marshlands and parallel river dikes.

The Green Heart still carries a lot of cultural heritage monuments within its area. Especially in the peatland cultivation landscapes and along the river dikes, where historical ribbon settlements (road or dike based) are located, there are still hundreds of well-preserved historic farmhouses. Windmills, sometimes grouped in clusters with out a doubt are the most striking landmarks in the Green Heart. Although all of them have lost their original function as pumping engines. In spite of described developments in the introduction, the Green Heart still comes across as the archetypal Dutch landscape, calling to mind the landscape paintings of old masters like Ruysdael, Koninck (see fig. 3) and Van Goyen.



FIG 5. AN EXTENSIVE LANDSCAPE, WITH A RIVER, Philips Koninck, 1664 Source: Museum Boijmans Van Beuningen

OPEN SPACE PLANNING

Green belts as a public intervention required by market failure

This chapter will elaborate on green belts as a planning instrument more. Green belts are inextricably connected to open space planning. Open space planning, in turn, originates in land use planning (Maruani and Amit-Cohen, 2007) which is, in an integrated and qualitative manner, concerned with the location, intensity, form, amount, and harmonization of land development needed for the variety of land use functions (Albrechts, 2004). A land-use plan therefore is a proposal as to how land should be used, in accordance with a considered policy. Although the uses of open spaces are diverse and manifold, generally two main categories of functions can be distinguished: the first one consist out of uses concerning recreation and other services to society, while the second one is more concerned with the protection and conservation of natural and cultural values (Maruani and Amit-Cohen, 2007). In line with these two categories of functions according to Maruani and Amit (2007) there are two contradicting approaches. The first one response to the societal needs, like recreation, environmental qualities and facilities. The other approach is more concerned with conservation and protection of the existing landscape. Maruani and Amit-Cohen refer to these two approaches as a "demand approach" and a "supply" approach.

Green belts make up an exception as their main focus is neither recreation or conservation, but to make a clear separation between urban and rural areas; to control urban growth. Fig 4 sums up the different uses that are related to green belts. It only secondarily emphasize recreation or conservation, depending on the circumstances. In this sense green belts can be considered as a shape-related models as the open spaces in these cases are defined by its shape, related to the space or spatial configuration of the adjacent urban area. Fig 6 shows how Maruani and Amit-Cohen relate the green belts (shape-related models) to other forms of open space planning. Generally the different forms imply difference of scale. From local (urban) and regional (countryside) up to national scale (wilderness) (Maruani and Amit-Cohen, 2007).

A characteristic in a lot of cases typical to open spaces planning is that public intervention is required due to market failure (Maruani and Amit-Cohen, 2007). In a free market system goods and services are exchanged on a demand and supply basis , assuming the existence of certain basic conditions, such as a large number of sellers and buyers, symmetry of information concerning prices and values of goods and lack of external costs or benefits. According to classi economic theory, under such conditions the free market will behave optimally considering the total benefit to society (Maruani and Amit-Cohen, 2007). Market failures are cases where the market is not optimal. Weimer and Vining (1999) have listed common market failures from which two are specifically typical to open spaces: public goods and externalities.

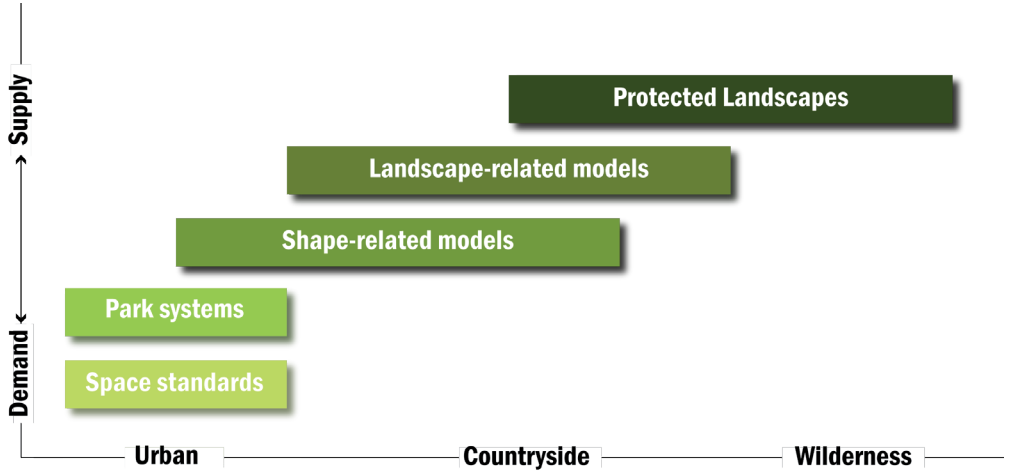


FIG 6. MODELS OF OPEN SPACE PLANNING, related to the demand and supply approach and its position to the urban, after (simplified) Maruani and Amit-Cohen, 2007

Public goods are defined by Weimer and Vining (1999) as non-excludable and non-rival. Non-rivalry meaning that consumption of the good by one individual does not reduce availability of the good for consumption by others and non-excludability means that no one can be effectively excluded from using the good. Therefore there is no incentive to pay for the good, and it becomes problematic to finance it via the free market system. This is in many cases applicable to open spaces, as for instance in the case of public parks or protected landscapes.

Externalities arise when activities produce costs and benefits to people or organisations that are not included in these activities. In a free market externalities tend to be ignored. Consequently, goods with external costs to society are over produced and sold at low prices that do not reflect their real cost to society. On the other hand, production of goods with external benefits is too low, and those potential benefits cannot be fully enjoyed (Weimer and Vining, 1999). The complexity to assess and quantify indirect benefits and values of open spaces, makes it difficult for open spaces to be feasable in the land market.

In all cases of market failures regular market mechanisms cannot ensure an optimal distribution of limited resources. Planning is considered to be one of the most important and recommended instruments to deliver the required public intervention in these cases (Maruani and Amit-Cohen, 2007). During the twentieth century green belts have become an important planning tool in this respect.

GREEN BELT OBJECTIVE	COMMENT
To prevent urban sprawl	Implicit in green belt policy generally, although sprawl is rarely defined rigorously. Also under pins wider policies on development in the countryside.
To preserve the identities of settlements by preventing them from merging	Anticoalescence purpose is closely associated with the spatial form of a continuous belt. Identity of place is the driving rationale.
To protect the supply of farmland close to cities in order to feed them	Academic commentaries tend to the view that this function is no longer appropriate to modern farming and food supply circumstances.
To preserve the landscape settings of cities	Recognizes retention of attractive landscapes close to where people live.
To supply land for recreation	There is support for the recreation function, but with the caveats that it does not particularly favour a continuous belt,
To aid sustainable urban development by promoting a compact city form	The compact city had become the unitary solution to sustainable urban development after the 1990 European Green Paper on the urban environment. Research is, however, still seeking to provide firm evidence to support some of the sustainability claims of the compac city.

FIG 7. FUNCTIONS OF GREEN BELTS, after (simplified) Bramley et al., 2004

THE BOUNDED CITY

Green belts as modernism´s planning tool to control urban growth

"This rural belt surrounds the town like the walls of a medieval city. It limits its boundaries, protects it from the attack of other towns, and preserves its shape and style"
C.B. Purdom, The Garden City (1913)

As this project that makes the green belt as its central theme it cannot neglect explaining how the concept was developed and distributed all over the world. Therefore this chapter will try to unravel the reasons for its worldwide popularity among urban planners. Central to the history of green belts is the United Kingdom planning and the influence it has had on other countries (Amati, 2008). The popularity of the concept was at his heights from the early 1950s to the 1970s in coherence with the belief that the ideals of modernism were feasible. It was also during this time that the concept got exported to countries outside the UK (Amati, 2008) .

The idea of establishing a belt of undeveloped land between cities and countryside has become a planning notion since most of the European city walls in the 18th and 19th century got dismantled. During this time the areas of the former city walls were transformed into green promenades and parks (Kühn, 2003). However the concept only became well known through its association with the Garden Cities concept(Amati, 2008). The concept of green belts is strongly connected with Ebenezer Howard and his influential book To-morrow: a Peaceful Path to Real Reform, later reissued as Garden Cities of To-morrow (Amati, 2008). Howard´s most important goal was to create a fairer and more equal society by means of land reform and the promotion of cooperation. To achieve this goal he advocated the development of Garden Cities (Ward, 1990), but despite the fact that the garden city movement started as a social movement, it has had its greatest successes as a planning movement (Freestone, 1986). In first instance the town planning influenced by the garden city principles was merely applied on a smaller scale. Only until problems of the side-effects of urban growth, like urban sprawl, ribbon development, environmental overload and increasing traffic, became more obvious from the early 1920s it was also made applicable to the metropolitan scale. The responses to these problems by planners are at least inspired by Howard's 'correct principle of a city's growth', the example of a multi-centred of growth from Garden Cities of To-Morrow. Perceived as a physical planning model, the diagram brought together several relevant planning ideas: a strictly limited population and size, satellite towns, green belts and agricultural hinterlands (Freestone, 1986). The principle of a green belt gave planners a tool to make a clear separation between urban and rural areas.



FIG 8. THE COVER OF GARDEN CITIES OF TO-MORROW, , E. Howard, 1902 Source: Parson and Schuyler (eds.), 2002

While the green belt was only one policies that planners could deploy, it was strongly supported in the UK by an active group of preservationists (Amati, 2008). These preservationists pursued the normative objective that a town should be clearly a town, and a village a village. In this pursuit green belts were considered to be a suitable tool of imposing an urban-rural polarity on the in-between landscape of the urban fringe. During the period before the Second World War a broad group of actors were promoting the ideas of preservationists. Among these promoters were important planners like Patrick Abercombie and Raymond Unwin, in their turn they had an enormous influence on the development spatial planning in the United Kingdom (Amati, 2008). Unwin was able to integrate his preservationist ideals into the planning system through advocating and finally achieving the implementation of a green belt for the city of London. It was established by legislation through the green belt act of 1938 which empowered local authorities to buy land to keep it open as green belt. Abercrombie wrote the enormously influential County of London Plan 1943 and the Greater London Plan 1944 which contained parts on the green belt and also got recognized internationally (Amati, 2008), see also fig. 9.

The success of the green belt in the UK is made clear by its final integration into central government planning policy (Amati, 2008). After the Second World War, there was a recognition of the need for society to control the development of land, resulting in the Town and Country Planning Act 1947. The most fundamental change established in this act was that planning permission was required for land development; ownership alone no longer conferred the right to develop the land. This Act laid down the foundation of the modern planning system. However, the 1947 Act did not address the issue of green belts directly and left the 1938 Act unchanged. It was, nevertheless, realised that it is not feasible for local authorities to purchase all the land needed to maintain a proper green belt and the covenant option was not working. What was needed was a way of controlling development without interfering with the ownership and existing use of land. A number of the local planning authorities in and around London started taking into account in their plans belts of restricted development to stop the uncontrolled sprawl of London. The central government took over this idea and in 1955, the Ministry of Housing and Local Government asked all local planning authorities, if appropriate, to establish green belts in their development plans (Amati, 2008).

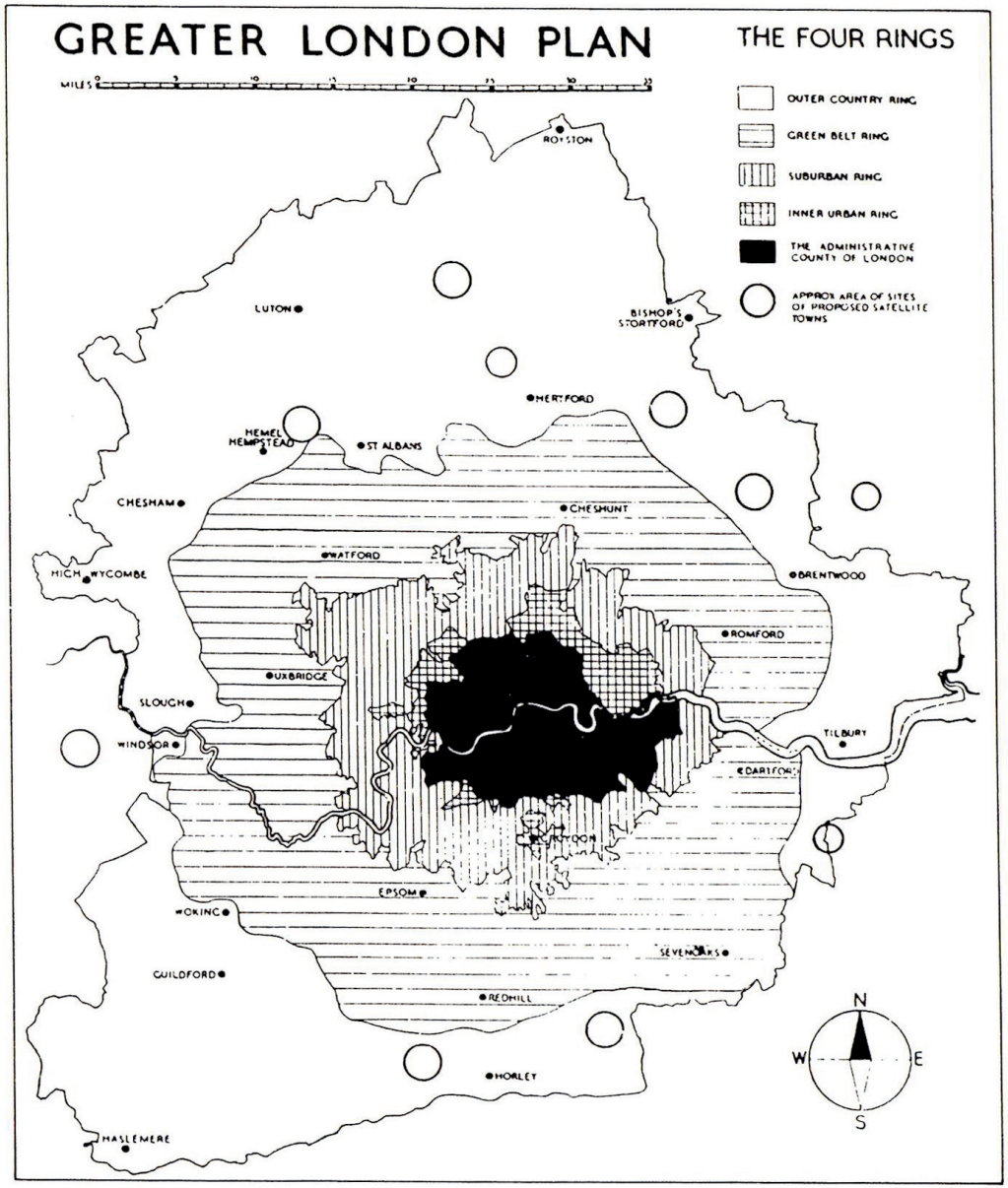


FIG 9. THE GREENBELTED METROPOLIS, Patrick Abercombrie's Greater London Plan, 1944, Source: Parson and Schuyler (eds.), 2002

During the 1940s to 1970s, spatial planners form the United Kingdom and their ideas were seen as an example in the rest of the world (Amati, 2008). As a result by the mid-1950s the green belt could be called part of an international planning language. London, Vienna, Barcelona, Budapest, the Randstad Holland and Berlin, among others are European examples (Kühn, 2003), outside Europe in cities like Seoul, Tokyo, Melbourne and Ottawa have implemented "green belts"(Amati, 2008).

Amati (2008) explains great part of the success of green belts to the fact that it easily could be integrated and therefore freeload with the success of modernist planning in the period just after the Second World War . He does that by identifying three policy characteristics of green belts that overlap with modernists planning. First characteristic is that it is a normative policy. The clear separation of 'town' and 'country' that was pursued by the advocates of green belts reflected the pre war preservationist aversion towards hybrid landscapes but at the same time overlapped with the modernist quest for order. Therefore green belts could easily be integrated with other modernist planning tools as zoning policies. Moreover the green belts fitted easily into the master plans and comprehensive planning embraced by modernist planners. Second characteristic of green belts that according to Amati resembles modernist planning is that it is a rationally determined policy. Modernist planning assumed that planners would be able to uncover the complexity of society through thorough rational analysis. In other words, a rational planning decision could justifiable be made by means of scientific methods. In the case of the green belt 'scientific' knowledge was used to give legitimacy to restrain urban growth . By doing so it hid the normative assumptions that supported the implementation of the green belt as well as the political strategies that planners used to implement it. Finally as shown earlier green belts have become a universal policy . The tendency to employ rational analysis made modernist planners to assume that the results of their work was universally applicable regardless of the context. The appeal to the advantages of the green belt facilitated its dissemination beyond the UK. Planners variously invoked the long history, and therefore, the appeal of an urban form modelled on a medieval walled city. The green belt was invoked as a universal solution to urban growth.

All of these factors during the 1950s helped to reinforce the green belt concept and ensure its application internationally. Finally green belts became part of an universal planning canon, being used to deal with urban growth in different cities around the world, despite the variably circumstances that lie behind cities expanding. It became perhaps the longest-established example of an internationally replicated land use planning tool for managing urban growth (Amati, 2008).

As already hinted on in the previous chapter the uses of green belts have never been fixed. The study made by Amati and Yokohari (2006) on the origins of the London green belt confirm this, as the elaboration on the history of the Green Heart concept in the next chapter will also do. However as a planning tool its aims have always been clear as recent English policy guidance confirms "the fundamental aim of green belt policy is to prevent urban sprawl by keeping land permanently open; the most important attribute of green belts is their openness"(DCLG, 2001).

THE INVENTION OF THE GREEN HEART

How the Dutch planning system originates in the desire to keep the countryside free from spontaneous growth

In this chapter the history of the development of the Green heart concept will be elaborated more. As it is strongly interwoven with the origination of the Dutch planning system, it can almost be regarded as a treatise on Dutch planning. The papers of Zonnenveld (2007)and Lörzing (2004) are credited as important sources for this part and are recommended for further reading on this topic.

The Dutch planning system originates in the 1920s. During this decade planners and researchers travelled to countries like the UK to pick up ideas about 'survey before plan' (Lörzing, 2004). When they returned to the Netherlands the rapid growth of cities speeded up the development of their profession as circumstances gave them support of local and regional politicians. As a result a flow of urban and regional development plans emerged, which interestingly enough opposed against building in the countryside. In particular the phenomenon of ribbon development along roads or, considered even worse, building spread randomly around the countryside, became object of strong criticism (Zonneveld, 2007, Lörzing, 2004). Interestingly enough it got criticized despite the fact that ribbon development always has been historical feature of the Dutch landscape. For example in the Green heart for centuries ribbon-like villages were the only way to build, as the soil of the fields was too soft and too wet to build on (Lörzing, 2004).

As Zonneveld (2007) explains, the reasons for the criticism on ribbon development had a diverse and manifold background. There were worries about road safety, as buildings were being build along the main roads. Others were more concerned with the poor connection the houses had with public services like postal services, water and sewage, and the accessibility for police or the fire brigade. Arguments from another kind of perspective presumed that the spread of houses would weaken the social structure of village life and would therefore fade its facilitating function. This also shows that Dutch planners, beside spatial planning and like planners in the UK engaged with the organisation of society as a whole as well. However finally the most important issue that concerned spatial planners was still the conservation of the countryside . At that time there were no mandatory land-use plans for the space outside built-up areas, currently the main tool to resist undesired building projects (Zonneveld, 2007). There were also no regional plans. From the 1930s, in correspondence with the practices from the UK, all sorts of regional surveys were conducted, but there was no means to convert them into policy. Finally the phenomenon of uncontrolled building activities in the countryside was more or less brought to an end by means of a traffic legislation that was passed in 1937 to stop ribbon construction (Zonneveld, 2007). So, at the end it was a simple regulation and not the planning system that ended ribbon development and the consequential decay of the countryside.

However, in time and to offer an alternative to the disorganized spread of houses, local expansion plans were designed that offered the 'concentration' of building in recognisable, clear-cut village centres. This combination of trying to impose restrictions on building in the countryside while stimulating the development of carefully chosen locations would become the main strategy for preserving the open character of the Dutch countryside throughout the 20th century (Zonneveld, 2007). The concept of a clear-cut village is still relevant today in the Netherlands, however its effects have not always been considered to be positive. Ribbon construction got replaced villages extensions in the form of huge "lobes" of new buildings (Zonneveld, 2007). This was particularly the case in the second half of the twentieth century, disturbing the historical structures.

After the Second World War the exploding population and reconstruction works provoked a period of economic boom in the 1950s. This boom had an enormous impact on the spatial development in the Netherlands and it resulted in an exploding urbanization of the West of the country . It was in this period that the Dutch planning system gained its still existing characteristics (Lörzing, 2004). In order to deal with the foreseen problems deriving from this boom the then Minister of Reconstruction and Housing formed the Working Committee for Western Netherlands. In 1958 this committee issued its report 'De ontwikkeling van het Westen des Lands' (the development of the west of the country) in which it concluded that the post-war housing shortage was going to expand enormously. To deal with this problem several suggestions were made. One of the most outstanding being that the committee claimed that the diameter of the cities should not exceed 8 km. In this manner every inhabitant could reach the countryside within 30 minutes, although this norm had no solid basis what so ever (Zonneveld, 2007). As a result it was concluded that some cities had reached their limits, as they had exceeded this norm. It therefore was suggested that new towns should have to be built (the so-called overspill policy). Another suggestion was to create buffer zones , in order to prevent cities to merge, which was a realistic perspective in the case of for example The Hague and Rotterdam. The emergence of this danger was widely shared and therefore got easily adopted in the very first report on spatial planning in 1960. This easy achieved consensus was not applicable to the implementation of the Green Heart policy. In its report the committee warned it had the potential to develop in the same manner as the so-called kleine ring (small ring), referring to the circle of cities made up by The Hague, Delft, Gouda and Rotterdam. The area in between these cities got already more or less built up in the 1950s (Zonneveld, 2007). To prevent the Randstad to grow inwards, following its more or less natural tendencies, they promoted outward expansion by means of the development of the earlier proposed 'new towns' on the outer edges, protecting the large inner open space of the Randstad, the Green Heart. It did not only met with a lot of opposition because of its enormous scale, but it was also conflicting with efficiency of the Randstad's regarded from a business point of view (Lambregts and Zonneveld, 2004). Therefore in the final acceptance of the concept the support given by the highly influential agricultural sector together with the Ministry of Agriculture



FIG 10. A SEA OF HOUSES, A spatial image that proved to be highly effective in the argument for accepting the concept of the Green Heart, Source: De Ranitz, 1964, in Zonneveld, 2007

was more crucial than argument of good spatial organization.

The concept of the Green Heart supported the agricultural sector's interests, and as people still had vivid memories of food shortages during the Second World War, the agricultural function was regarded as an important attribute of the rural areas (Zonneveld, 2007).

In 1965 the acquired practice of making spatial plans on the three levels of government, the national, provincial and municipal level, was formalized into an official planning system. It meant that plans of lower-level government had to fit into plans of higher-level government, while in the meantime plans have become more and more detailed, concrete and legally binding from the highest to the lowest level (Lörzing, 2004).

Another important development with regard to the Green Heart was the introduction of a reorganization policy with regard to agricultural land. It aimed to make the agricultural sector more efficient by means of re-allotment and the construction of new networks of rural roads, in a few years, over 100 000 hectares of agricultural land got reorganized.

Despite the fact that the national government finally embraced the model of the Randstad with an open Green Heart and buffer zones in between cities, this was not met with convincing policies. Buffer zones were only gradually purchased and re-structured. At first there was also no stringent planning regime for the Green Heart comparable to the regimes for the green belts in the United Kingdom. Moreover the overspill policy, apart from Zoetermeer, was not implemented until the 1970s. As a result the expansion ambitions of local municipalities could not be retained. Finally the ongoing expansion of the built-up areas of the cities surrounding the Green Heart and the construction of glasshouse complexes on the western edge also affecting the image of an large, open Green Heart.

This changed in the beginning of the 1970s when it was finally decided to start to develop the so-called groeikernen (growth centres), which were in the first report on spatial planning (1960) proposed new towns. This policy officially became known as 'concentrated deconcentration'. During this period, the 1970s and 1980s, spatial planning and housing policies became very much integrated (Zonneveld, 2007). By means of subsidies to stimulate the needed development of housing, national government had a strong policy instrument to guide the production of housing in the designated areas. It was also in this period, in the 1970s, that the 'green' in the concept of the Green Heart became more widely embraced (Lörzing, 2004). Due to the report' The Limits to Growth' (1973) by the so-called Club of Rome environmental awareness was rising strongly and therefore the 'green' dimension of spatial planning gained prominence. Lörzing (2004) points out that this not only got adopted by government, but that the Netherlands has, maybe not coincidentally together with the United Kingdom, one of the largest membership rates of private organizations that are concerned with the protection of nature and heritage (with almost 1 million members, or 6% of the total population). Therefore it can be concluded that nature conservation has strong support among the population in the Netherlands. This was met with response in the Third Spatial planning Report of the National government(1973) as the areas that were



FIG 11. PUBLIC EMBRACEMENT OF THE BUFFERZONES, Source *'Bufferzones twintig jaar later'* (Buffer zones twenty years later), RPD 1977

areas that were considered to be part of the Green heart were for the first time defined explicitly.

In the late 1970s, early 1980s support to the economic development of the main cities was felt to be needed as the economy experienced a setback. Therefore the cities got a more central role in spatial policy by means of the so-called 1983/85 Structural Sketch for Urban Areas, an addition to the Third Spatial planning report. Besides that, due to the oil crisis in the mid seventies the reduction of commuting became an important issue. New buildings were preferably build in the existing urban areas, and if not possible, preferably on the edges of cities. Only if an alternative lacked, a more distant locations became an option. As the policy to develop growth centres did not coincide with this policy, it got abandoned (Zonneveld, 2007).

As a result of the emerging environmental awareness in the 1970s the reorganization of agricultural land met resistance. There were warnings about the erosion of the landscape and wildlife. Moreover similar to other areas in Europe, the viability of agriculture became questionable in the second half of the 20th century. In case of the Green Heart this is even more problematic: as it area is a wet, low-lying peat area, it is almost exclusively used for dairy farming. Massive overproduction in the 1970s evoked measures by the European Union promoting the reduction of dairy production. As dairy production was and is important to the area, the economic viability of Green Heart was strongly weakened by these rules. It resulted in a new reconstruction Act at the end of the 1970s besides the reorganisation of rural areas for the benefit of one specific form of modern agriculture other aims, one of the most important being leisure and recreation. Later on it was also used for the implementation of the so-called Randstad Green Structure, which was meant to improve the recreational value of the edges of the Green Heart and the buffer zones between the cities. At first stage, the Randstad Green Structure consisted of spread park areas. In its final stage, the green belt was to become a continuous zone between Randstad and Green Heart. Although only part of the original plans have been carried out, the size of the existing park areas is an impressive 3500 hectares (Lörzing, 2004).

In 1990 the Fourth National Policy Document Extra (VINEX) still gave priority to limit the growing mobility in society. Therefore the VINEX was focused on the concentration of urbanisation and to enlarge the effectiveness of the policy on urban containment. Large parts of the country were designated as zones where only very limited building was permitted. Within the Green heart red lines were precisely drawn around the municipalities to decide where it was allowed to build. Previously, the boundaries of the Green Heart were indicated merely by listing the areas that it covered. In the VINEX, for the very first time, a line was drawn on the map to mark the boundary of the Green Heart. In 1997 this line acquired legal status by national government directing the provinces to include this line in their plans.

Many, if not all, of the aforementioned planning instruments were rather specialized in their nature: they dealt primarily with one specific sector of society (agriculture, nature conservation, recreation). In an attempt to come up with a more integrated view of the future spatial development of the Green Heart in 1992 an overall plan was drawn. This plan, the *'Nadere Uitwerking Groene Hart'* (In-Depth Elaboration Green Heart) tried to integrate the often conflicting interests within the Green Heart. What is interesting about the plan that it called for a different approach for different areas within the larger area of the Green heart, and therefore acknowledging that it is far from a uniform entity, but rather a patchwork of different landscapes and interests (Lörzing, 2004).

With the development of the fifth report on spatial planning in the mid-1990s the 'compact city' emerged as a topic of debate. Cities were not seen as self-sufficient systems that could meet all the daily needs of the urban dweller. Critics pointed out that in reality socio-spatial patterns had emerged in which work, leisure and dwelling had become spread across space. According to the new creed, network cities would emerge at a regional level in a constellation of "urban centres and nodes" (MVROM, 2001, 179 ff), which were designated as urban networks, in effect, a reinvention of the polynuclear urban region of the 1960s. In the final version of the Fifth report, which also became renamed as National Spatial Strategy the system of red and green contours was abandoned. One of the key elements in the new strategy was the concentration policy, which was passed on to the local authorities. The municipalities would do the work, but it was the provinces, above all, which would organize it. Central government would do no more than provide support and carry out checks. The role of the contours has been taken over by concentration areas. On the maps of the National Spatial Strategy the

concentration areas are large empty swathes, which are supposed to serve as search areas for new building projects. It is the local authorities (mainly provinces) who have to flesh out the policy. This is a clear departure from VINEX. Municipalities have to be capable of absorbing the 'natural population growth' (the balance of births and deaths), in new dwellings. The same applies for locally oriented business. This balance constitutes the lower threshold for the entire country, except for areas designated as National Landscapes, where it is the upper threshold. It is a new policy category that emphasises cultural history. Twenty areas are singled out, including the Green Heart, with an overall surface of 500 000 hectares.

Together, the building restrictions in the Green Heart, the compact extension of the Randstad and the creation of new towns could not stop all development in the Green Heart. Today, the average population density of the Green Heart lies at around 475 inhabitants/km2, certainly not a figure that seems in line with the area's image of a non-urban, open landscape. As shown ithe area did not lack of any ambitions, visions, projects or subsidies for last sixty years. Nevertheless the *Ruimtelijk Planbureau* (the National Spatial Planning Office of the Netherlands) also concluded in 2003 that the policy of conservation had failed: the open landscape is disappearing slowly, much more housing and offices were build than originally intended, the soil is sinking, an ongoing phenomenon that is caused by the water level management that is supporting the livestock industry and problems concerning water threats are rising. The rapid growth of the surrounding new towns, however, suggests that the outcome could have been a lot worse. Many are worried about what is called 'messing up the landscape' or 'landscape cluttering' as the official term goes. In particular, the development of industrial areas along major roads has become a stumbling block. Largely because of competition between municipalities, the amount of land issued for industrial sites in terms of their surface area is rapidly growing.



FIG 12. PERCEPTION OF THE GOVERNMENT'S CONTOUR LINE AROUND THE GREEN HEART, Source: Faludi and Van der Valk, 1994, in Zonneveld, 2007

Therefore the classic approach to preserve the Green Heart as one vast, unspoilt open space has become questionable. Some of the most important reasons were as follows.

Although the general view is that the restrictive policy has prevented an even more extreme growth, it became more and more obvious that the Green Heart has become an archipelago of small but highly visible new residential and industrial extensions.

Changes in agriculture, especially those brought about by EU politics. Until the early 1990s, the EU had been fighting overproduction, to a large extent in the dairy

early 1990s, the EU had been fighting overproduction, to a large extent in the dairy farming sector which is so prominent in the Green Heart. Gradually, the EU has adopted a policy in which farmers will be encouraged to engage in new activities like tourism, sale of regional produce to the public, maintaining elements of landscape and heritage. This new policy will have a tremendous effect on the nature of farm activities in the Green Heart, and on their visual appearance in the landscape.

The change in the general mood during the 1990s, which led to an increasing popularity of market economy and private initiatives at the expense of government planning. This paved the way for initiatives by developers and local authorities to build even more in the Green Heart.

Money for expensive public works like the Randstad Park Structure became increasingly scarce. Lower wages and land prices in the 1970s and 1980s had helped to get these projects underway. In the 1990s, the costs of purchasing land for nature conservation purposes, and for laying out parks and forests, had become prohibitive.

As a response to these findings the national government formulated in 2006 a new policy for the Green Heart in the Nota Ruimte (the space memorandum). After years of a policy focused on conservation, the national government wanted to make developments possible in The Green Heart, with respect its unique character.

In Nota Ruimte the old and established idea of the Green Heart as an indivisible entity is abandoned. Following the new ideas, the area is split up into three units, each with its specific landscape qualities:the peatland

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In Nota Ruimte the old and established idea of the Green Heart as an indivisible entity is abandoned. Following the new ideas, the area is split up into three units, each with its specific landscape qualities:the peatland areas in the north-west and north-east; the riverland areas in the south; the lakeland areas in the central part. The idea of dividing the Green Heart into manageable sub-areas (sometimes ironically dubbed the 'heart chambers' by policy makers), concentrating on the protection of the most vulnerable areas, has become national policy.

The three provinces Noord-Holland, Zuid-Holland and Utrecht were supporting this policy. They wanted to realize several key projects in the Green Heart, that were identified as being important in the preceding years. The three provinces started the execution of program Het Groene Hart, Icoon van Nederland (The Green Heart, Icons of the Netherlands). Ten icons were selected to be realized as they , according to the Provinces, are essential to the Green Heart policy. These projects should become examples or inspirations for the whole Green Heart and have a realistic potential to be realized. The focus of these projects is on the material. Questions about authenticity, selection, interpretation and the recreation of cultural heritage are central to these programs. In these discussions the social and cultural aspect of the area have been left out. In order to give the area a sustainable future it is necessary to connect the area to the past and the future intrinsically. It is not only about the material and spatial organization of their heritage, the image, but moreover about the social and economical networks that created their heritage and up to today still do. It is as well about the physical and spatial, as about the social and economical dimension. Moreover there are indications that, despite the program, the process of being built over is still continuing. The monitor map made by the Stichting Groene Hart still shows 47 threads for the Green Heart area. The intended selling of several grounds by Staatsbosbeheer like the Gagelbos (Utrecht), het Diemerbos (Amsterdam) and the Houtrakpolder (Spaarnwoude), due to changing policies of the national government, will erode the Green Heart even more.

And now, after only five years the policy on the Green Heart as described in the nota Ruimte is deserted. In the new spatial structure vision of the central government of the Netherlands Ontwerp Structuurvisie Infastructuur en Ruimte the policy on the national landscape, as on other national landscapes, the Green Heart will be abandoned. Beside that the policy on the rijksbufferzones (national buffer zones) will also be canceled. The *Uitvoeringsprogramma Groene Hart* (realization program for the Green Heart), that funds the above described program of ten icons will be stopped. In a earlier stage, the national government already ended financial arrangement for the Ecologische Hoofdstructuur (Ecological main structure), recreatie om de stad (recreation around the city) and the Investeringsbudget Landelijk Gebied (investments budget for the country side). The policy concerning nature and landscape has been left to the provinces and municipalities, and therefore also with the costs.

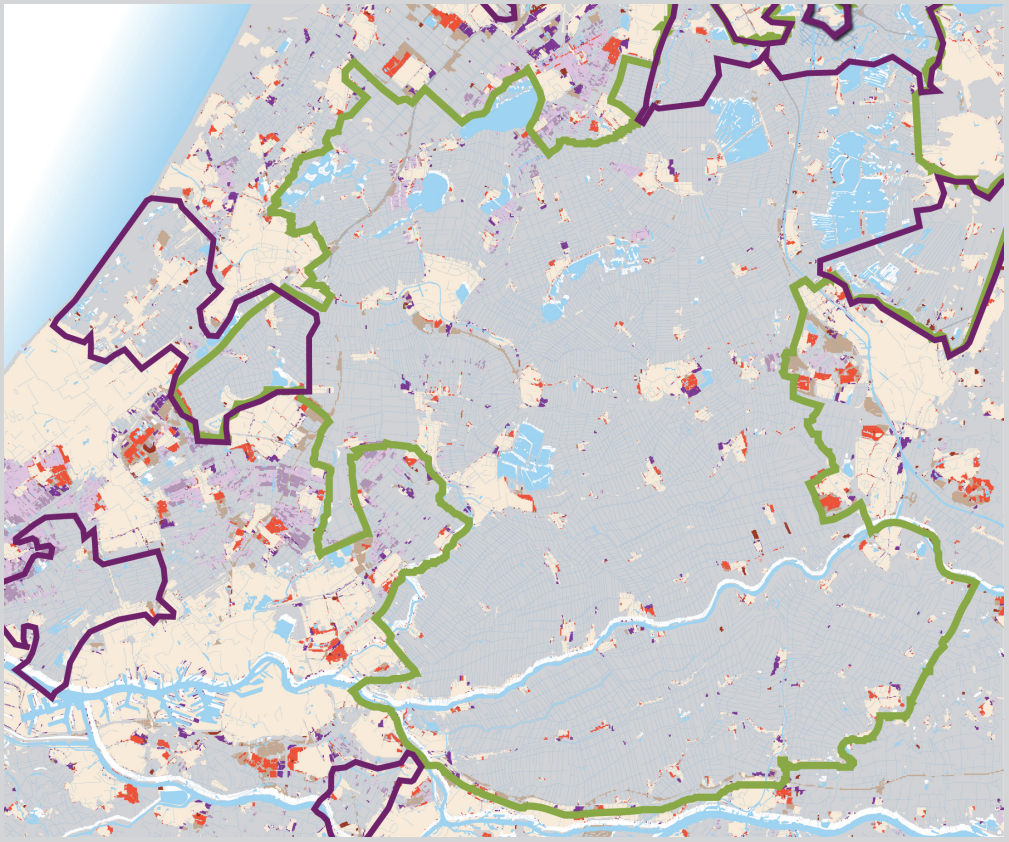

FIG 13. BUFFERZONES (IN PURPLE) AND GREEN HEART (IN GREEN) CONTOURS. IN RED THE INCREASE OF BUILD UP AREAS

THE RISE OF NEO-LIBERALISM

The end of planners paradise, as they are no longer the powerful experts that they once were

Planning has considerably changed since the reconstruction period after the Second World War, a period in which practitioners in Europe and elsewhere took an effort to physically realize the ideals of modernism. Back then, most north western European countries were preparing for a "great leap forward"(Boelens, 2006), as a result of further industrialization and a tremendous growth of the population.
This industrial leap has nowadays long been taken and today we found ourselves in the outcome of the earlier described structural changes: the network society. In this situation planners are no longer the powerful experts that they once were, nor can they rely on a political support needed for measures taken just after the Second World War.
These changes can be traced back to the new political challenges concerning the apparent 'bankruptcy' of the 'welfare-state' after the oil crises of the 1970s. Confronted with massive unemployment and rising governmental debts, neo-liberal administrations arose, focusing on tax reductions, reduction of public services, privatization of public enterprises, deregulation and decentralization(Boelens, 2010).
Spatial planners were suddenly confronted with massive budget cuts and at the same time the task of improving the economic potential of certain regions. This provoked a change in the way regions and places were envisioned, as they were no longer seen as passive spaces to be planned or designed by an authority, but as active territories that influence, and are influenced by the interactions of actors (Giddens, 1984 in Boelens, 2010). According to Boelens (2010) in Giddens's view, this did not mean the end of planning or of institutions such as governments, but it did imply the reorganization of the welfare state towards a kind of late-modern social investment state, by carefully introducing elements of the market approach into civil services.
This process accelerated from the 1990s onwards, as profound neo-liberal changes occurred within public housing, water management and (agricultural) zoning policies (Boelens, 2010). It undermined the coordination capacity of the planning system, severally weaken its position and having its repercussion on green belts.
The state had a significance role in planning green belts during the reconstruction era after World War II as the emphasis was on master 'blueprint' plans. The role of planners shifted as a result of emerging neo-liberal strategies to deregulate planning and its apparent interference with market processes.
This shift towards deregulated planning did not necessarily result in an abandonment of 'green space' planning, but it may undermine 'green space' as it causes a reconfiguration of power relations (Amati, 2008). This is further explained by Amati pointing out that the main organization which supports the 'green space' , can be removed or altered, due to budget cuts. Moreover deregulation may also result in a considerable reorganization of regional planning system which can substantially weaken the installed 'green space' in that region. In this case power can be taken from regional planning authorities and redistributed to district or city authorities or end up with national or state government, or in committees. Therefore neo-liberal strategies are fading the systems once enabling planners to make 'green space' become a successful planning tool, resulting the implementation and conservation of 'green space' to have become a complicated if not, impossible task.
What does this all mean for the future development of 'green space'? Although the current financial and economical crises has brought the outdated governmental approach back on the political agenda, it seems to make no sense to return to the modernistic, visionary but prescriptive spatial planning of the pre-1980s.
Soja (SOJA, 2011) remarks in his article about the shift from metropolitan to regional urbanization that the growing



FIG.14 RONALD REAGAN AND MARGET THATCHER ON THE WHITE HOUSE LAWN, Source: Barry Thumma/ AP

use of the term “governance” rather than government, is in itself showing government restructuring and rescaling. He claims that the relations between the political and economic organization of specific territories are becoming increasingly dysfunctional, as rigid governmental structures continue to resist significant changes. Instead of trying to reform existing governmental systems, the focus often shifts to the establishment of alternative forms of regulatory governance that have a more flexible and adaptive character. This again makes a case for collaborative network processes as they fill the gaps where government fails to operate, cross jurisdictional and functional boundaries engage public and private sector actors on common tasks.

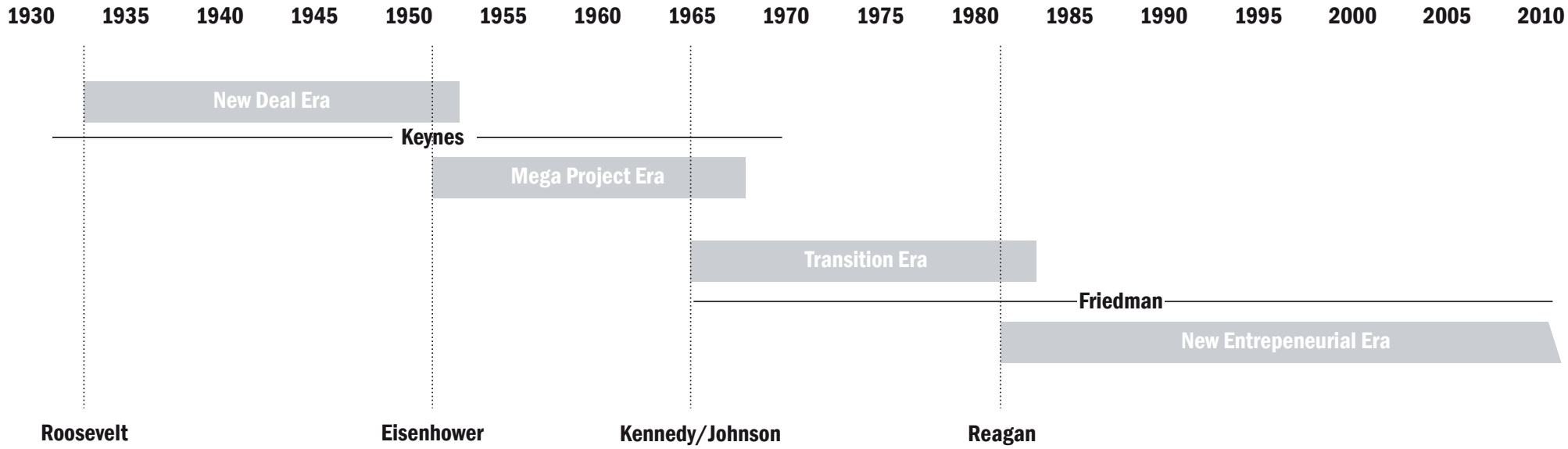

FIG.15 PLANNINGS ERA’S USA ILLUSTRATING THE RISE OF NEO-LIBERALISM. After: Altshuler/Lu-

METROPOLITAN REGIONS

A shift from metropolitan to regional urbanization

In the early the 21st century we are experiencing a global process of urbanization that can be characterized by the formation of a new global spatial configuration. According to Castells (Castells, 2010) this spatial transformation is a fundamental dimension of a new social structure that he calls network society, which he regards to be global as networks have no boundaries. Accordingly it is constructed through global networks connecting major metropolitan regions and their influence. These major metropolitan regions are configurations of metropolitan areas increasingly growing together, with interdependencies in their economies, infrastructure, natural resources, and prosperity (Innes et al., 2011).

These metropolitan regions are the most important characteristic of this accelerated process of global urbanization. It has has received several names, but in accordance with Castells (Castells, 2010) I will refer to it as metropolitan region. As he explains it indicates that it is metropolitan, but not a metropolitan area, because there are usually several metropolitan areas included in this spatial unit. These areas are called polycentric megacity regions by Peter Hall and Kathy Pain (Hall and Pain, 2006) based on their cooperative empirical study of recent metropolitanisation in western Europe. These metropolitan regions arise from two intertwined processes: extended decentralization from big cities to adjacent areas and interconnection of pre-existing towns whose territories become integrated by new communication capabilities. This model of urbanization is at the same time old and new, as the concept dates back to Gottman´s Megalopolis, which focuses on the U.S. northeast corridor from Boston to Washington (Gottman, 1961). In the words of Hall and Pain:

"It is a new form, [including] anything between ten and fifteen cities and towns, physically separated but functionaly networked, clustered around one or more larger cities, spatially separate and drawing enormous economical strength from a new functional division of labour. These places exist, both as separate entities in which most residents work locally and most workers as local residents ... and as a functional region that is connected by networks of transport and communication processing flows of people, goods, services, and information" (Hall and Pain, 2006, p.3).

So it is in the words of Hall and Pain a polycentric metropolis containing cores of different sizes and functional importance that are connected within an unbounded territory following multiple infrastructural systems. Castells (2010) points out that sometimes, as in the European metropolitan areas, but also in California or New York these cores are pre-existing cities incorporated in the metropolitan region. It is also possible that the former central city is still the urban core of the metropolitan region, like in London, Paris and Barcelona. Often, however, there are not clearly dominant urban centres as in for instant the Randstad-Holland, the Ruhr area, Los Angeles or the Oresund region.

The metropolitan region is not just new because of its exceptional size. It is a new form because it has within the same spatial unit the supposed opposites urbanised areas and agricultural land and the opposite of "green space" and highly dense residential areas: there are multiple cities in a discontinuous countryside (Castells, 2010). As a result the rural and the urban are no longer opposed but intrinsically linked in these metropolitan regions. 'Green spaces' have become an integral part of overlapping and plural systems, including agricultural functions, ecological functions and recreational functions supporting the surrounding towns and cities (Burdett et al., 2011).Moreover it is believed that due to the rise of the 'unbound' global network society 'green space' is including urban functions.

Summarising it can be stated that in all of these cases, the metropolitan region is made up by a polycentric structure (with different hierarchies between the centres), a decentralisation of activities and an undefined boundary that varies according to the issue at stake (Burdett et al., 2011), questioning the supposed dichotomy between city and countryside. According to several scholars in one way or another in this early 21st century these metropolitan regions are becoming the universal urban form (Soja, 2011, Castells, 2010, Burdett et al., 2011, Innes et al., 2011, Hall and Pain, 2006, Florida, 2008).



FIG. 16 FRAGMENT OF THE EARTH'S CITY LIGHTS, The brightest areas of the Earth are the most urbanized, but not necessarily the most populated, Source: NASA

THE REGIONAL GAP

The mismatch between the region, the scale at which human activities are increasingly taking place and the scale at which these activities are organized

As Innes, Booher and Di Vittorio (Innes et al., 2011) point out these metropolitan regions however have few linkages in terms of governance1. They refer to the fact that these metropolitan regions have hundreds of jurisdictions, federal, state, and regional sectoral agencies and regulatory bodies that make independent and conflicting decisions. Guven, Hamers and Evers (Burdett et al., 2011) call this the 'regional gap', the mismatch between the region, the scale at which human activities are increasingly taking place and the scale at which these activities are organized . The result is a complex system of public and private players that have no incentive or possibilities to cooperate and address common problems (Innes et al., 2011). Metropolitan regions therefore are not capable of building synergies among diverse components, adapt to changing conditions, or address issues concerning the region (Innes et al., 2011).

Earlier Western attempts to develop and maintain broad oriented metropolitan governments does not offer a lead of departure for metropolitan region government as Innes, Booher and Di Vittorio show (Innes et al., 2011). Many politicians have argued that some type of metropolitan regional government is needed, but actual attempts have often failed as a result of rivalries between urban and suburban, opportunistic politics, and internal fiscal competition (Salet, Thornley, & Kreukels, 2003).

The 'regional gap' especially accounts for 'green space' as it often has to deal with overlapping governmental structures. Moreover as stated by Kühn (2003) policies to preserve open space is large depending on the level of local support. Although 'green space' policy is generally supported by the aversion to urban growth of the municipal governments in the area, these municipalities can also be development-oriented and resist the imposed rules. One of the reasons is the ambivalence regarding the earlier identified spatial mismatch between more 'distant' objectives designed to protect 'green space' and conform to European rules (habitats directive), and the more short term concerns of socio-economic vitality (Kühn, 2003).

Metropolitan regions will require more than formal government. They need systems of governance able to build linkages between larger range of groups and public agencies, with different through interdependent interests across the fragmented and multiscalar decision system so they can deal with the so-called 'regional gap' (Innes and Booher, 2003). Whatever is done must be tailor made to the unique characteristics of each metropolitan region, building on its strengths, and addressing its challenges (Innes & Rongerude, 2006).

Innes, Booher and Di Vittorio (Innes et al., 2011) state that collaborative network processes are capable of doing many of the needed tasks for regional governance. They fill the gaps where government fails to operate, cross jurisdictional and functional boundaries engage public and private sector actors on common tasks, and focus on the collective welfare of a region. Accordingly this project will take the potential of strategies that aim to have directive influence on such processes and therefore contribute to a successful governance of spatial planning in metropolitan regions into account. These strategies should be capable of mobilizing key players in joint action to successfully deal with the so-called 'regional gap' in spatial planning.

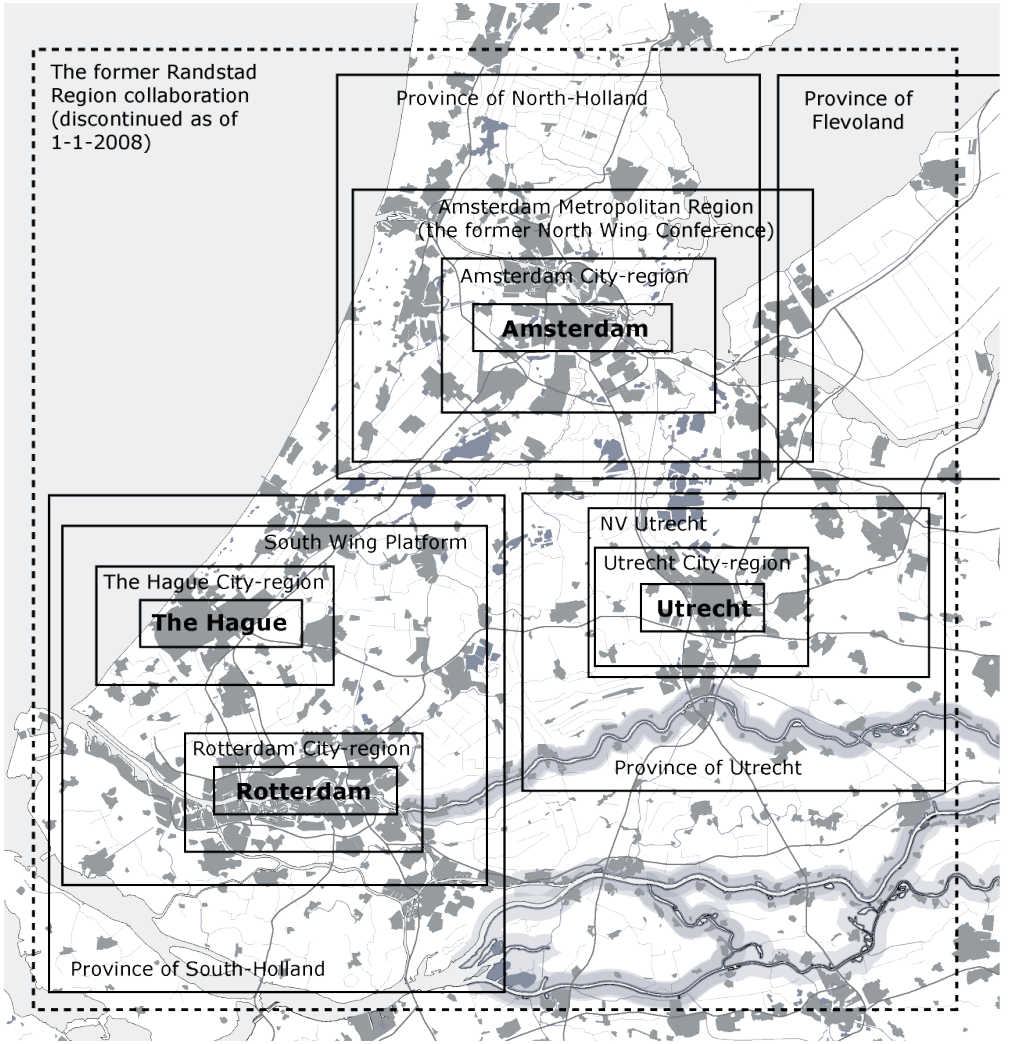

FIG 17. ADMINISTRATIVE ACTORS IN THE RANDSTAD, it is a partial and schematic overview, not shown, for example, are the ca. 150 municipalities that have a say in planning matters as well. Source: Lambregts et al. (2008)

WHY NOT A RANDSTAD GOVERNMENT?

How inter-governmental competition works against institutional capacity building at the level of metropolitan regions

The question that can be raised is why not create a metropolitan regional government? As Innes et al. (2011) remark the history of Western efforts to establish and maintain broad-purpose metropolitan governments does not offer promise for metropolitan region government. Many regional leaders have argued that some type of metropolitan regional government is needed, but actual efforts have often failed on the barriers of urban and suburban rivalries and opportunistic politics. This is illustrated by the failed attempts to lay down foundations for a Randstad level of government the last ten years.

Despite the importance of the Randstad and its including Green Heart as a planning concept, it has never been an administrative unit or governed by a regional or Randstad authority. In the Netherlands, central government, the 12 provinces and the 443 municipalities constitute the three constitutional tiers of elected government. The Randstad is divided between some 175 municipalities and parts of four provinces (South Holland, North Holland, Utrecht and Flevoland).
Lambregts et al. (2008) give a good overview of the attempts made, in short this will be recapitulated now.
In 1998 a first attempt was made to create some kind of an organization capacity at the level of the Randstad. The four largests cities (Amsterdam, Rotterdam, Den haag en Utrecht) within the Randstad presented the Deltametropolis Declaration in 1998 (Lambregts et al., 2008), in which they gave their view on the future spatial development of the Randstad region. In this declaration they claimed that action radius of the four cities started to overlap and therefore more and more planning issues within the Randstad area were transcending the scale of the municipalities and the provinces. As a result they concluded that a joint vision should be made (the Deltametropolis), that also supported their international position (Frieling and van Iersel, 2003). This soon got folowed up by the foundation of the *Vereniging Deltametropool* (Deltametropolis Association), which was an informal institute and aimed to transform the Randstad into a more coherent Deltametropolis by means of the exchange of knowledge and design soultions.

Paralle to this the more formal cooperation called *Regio Randstad* (Randstad Region) was used for more official consultation, policy coordination and representation outside the Randstad. This collaboration between the four Randstad provinces (North Holland, South Holland, Utrecht, Flevoland) had in fact existed since1991, but it only had been reactivated and in 2002. It was a official governmental body and aimed to strengthen the international competitive position and to improve the quality of life in the Randstad. However, it was dependent on the consensus between the mebers for decision making. Deliberation between the Randstad Region and central government was done through the *Bestuurlijke Commissie Randstad* (Administrative Committee for the Randstad). At first central government appeared to follow the pro-Randstad, Deltametropolis agenda. However as the responsible government had fall shortly after it never really got embeded in official government spatial policies. The following government produced a partly renewed report. In his report on the national spatial strategy, the space memorandum (nota ruimte), the Deltametropolis concept got dropped and the old conception of 'Randstad Holland' reappeared, without any specific metropolitan ambitions. It even did got a central position at the level of the Randstad. Which finally resulted in splitting up the Randstad into four focus areas (the north wing and the south wing of the Randstad, the Utrecht area and the Green Heart). This meant that concrete policies and investment strategies were coordinated with the authorities in each of the separated areas. As a result informal collaborative activities that had already been initiated by actors at the local level of the so-called 'wings' (the North Wing Conference and the South Wing Platform) were further intensified. In terms of spatial planning, these levels corresponded better with the actual functional relationships in the areas (commuting patterns, housing markets, etc.). Therefore it turned out that problems, challenges and their possible responses were easier to comprehend, and resulting in the appreciation of these networks of cooperation. Although it did not imply that the ambition of the same local and regional actors gave up on the idea of strengthened capacities at the Randstad level. This resulted in 2006, in the 'Holland 8' in which Amsterdam, Rotterdam, The Hague and Utrecht and the four Randstad provinces again made a plead for the establishment of some sort of a central authority for the Randstad that would be especially involved with spatial policy issues at the scale of the Randstad.
It result in the installment by the central government of a committee to investigate the issue and make recommendations. To illustrate the importance that was given to the committee, former Dutch Prime Minister Wim Kok lead it. This Committee concluded in favour of the suggestions made by the Holland 8. The Committee advised in favour of a serious institutional reforms, which would lead to a single metropolitan government for the entire Randstad. It would finally take over responsibilities from the existing provinces and city-regions.

However the national government chose not to adopt the advice of the Committee. The outcomes of two other important studies supported this decision. The first, a study done by the *Ruimtelijk Planbureau* (National Spatial Planning Agency), pointed at the fact that functional relationships at the scale of scale of the individual city-regions and the wings are still much stronger thatn at the Randstad scale(Ruimtelijk Planbureau, 2006). By doing so it weakend claims that the region could be seen as a single functional entity. And although the second study, the OECD Territorial Review of the Randstad Holland, acknowledged that the Randstad represented a relevant scale on certain issues, it favoured the strengthening of the city-regions (OECD 2007).
This resulted in a further orientation on the wings and stopping the Randstad Region collaboration (from1 January 2008 on). Especially actors in the north wing seemed to lose interest in the 'Randstad

project. The name of their region got changed from the 'north wing' to 'Amsterdam Metropolitan Region'. In this manner they clearly obstructed to any further attempts to promote the Randstad as the one and only Dutch metropolis (Janssen-jansen, 2008). Recent attempts (last one in 2011) to creat a Randstad province therefore grounded and now the focus is on the creation of a large noth wing province (including North Holland, Flevoland and Utrecht) and even a large south wing province (including South Holland, North Brabant and Zeeland).

The question then becomes, what went wrong? Why is it so difficult to create a meaningful cooperation at the level of the Randstad? First of all , Lambregts et al. (2008) point out that there is the issue of competing governments. Relatively to international standards, Dutch municipalities are for a large part dependent on finances of the national government. Attracting additional investments from the national government for large-scale infrastructure or economic development projects therefore create competitive attitudes and actions between municipalities (Lambregts et al, 2008). Moreover cities also compete for potential business investments and on atracting mid and high incomes as potential inhabitant of their cities. Another important source of income are the revenues from the land development plans. Therefore realizing offices and expensive housing becomes profitable for municipalities.

The absence of accepted hierarchies between the major cities in the Randstad complicates this competition between governments even more if you compare it to a monocentric region (Lambregts et al. 2008). This can also for a large part explain why cooperation at a lower scale like the wings and the city-regions is less problematic. In these cases the relationships are usually hierarchically clear and therefore not really contested, making it relatively easier to join up together (Lambregts et al, 2008).

This is strengthened by the fact that not all cities within the Randstad are equally depending on the success of the Randstad to compete internationally (Lambregts et al. 2008). As became clear that the Amsterdam region had managed to achieve international competitiveness on their own. It made the Amsterdam region ambiguous about to the Randstad project and increasingly perceived the cooperation in the North Wing Conference as an appealing alternative.

Finally just as the provinces feared the effects of the creation of city-regions on the strenght of their authority), the national government had and still has reasons to worry about the outcomes of a Randstad authority (Lambregts et al. 2008). As this would govern almost half of the Dutch population and its economy, and could seriously challenge the position of the national government (Lambregts et al. 2008).

According to Lambregts et al. (2008) advocates of institutional capacity at the Randstad level were not only incapable to make a case for a Randstad authority due to competing local governments. Functional relationships and interdependencies at the Randstad level are existing, but they are not so visible and extended as at the scale of the cityregions and the wings (Ruimtelijk Planbureau 2006). Therefore promoters of the randstad level authority were not able to convince in this respect. For many people, the lower scales coincide with their daily activity space and for many planners this automatically mean that governance should be organized at these levels.

Urgent spatial challenges that only can be addressed at the Randstad level have also not clearly been addressed. In theory, such challenges can be defined and although they have been introduced to the Randstad debate (the water retention and transportation challenges), again it could not convince that only a Randstad authority could address such issues (Lambregts et al. 2008).

The case of the Randstad Holland therefore exemplies that inter-governmental competition, ambiguous loyalties, and unconvincing reasoning all works against institutional capacity building at the level of metropolitan regions, although there are at least some emerging issues (international competition, water retention, transport). Therefore it seems to make the case for an alternative approach.



RESEARCH PLAN

PROJECT AIMS & RESEARCH QUESTIONS

INTRODUCTION

In order to describe the aims of the project I will start with summarizing the problem statement. The subject of the project aregreen belts, a concept that carries a double meaning: at the one hand it refers to what it contains: nature, recreation and agriculture, at the other hand it refers to what it surrounds: a means to control urban growth. Due to a new urban form that is emerging around the world, in which metropolitan areas are growing together into metropolitan regions, this very concept comes into question. This urban form is new because it contains within the same spatial unit urbanized areas and agricultural land, green space and highly dense residential areas (Castells, 2010). Therefore green belts are becoming part of metropolitan areas. This regional urbanization (Soja, 2011) also effects a crisis in governance, which is strengthened by the development of neo-liberal strategies in urban planning:

1. The world is experiencing a polycentric regional urbanization process, a shift from metropolitan to regional urbanization in which green belts are becoming part of a metropolitan spatial unit.

2. Among the many effects of the extended form of regional urbanization and its associated scalar restructuring has been a crisis of urban and regional governance, this especially accounts for green belts as it often has to deal with overlapping governmental structures.

3. The impact of this crisis of governance on green belts is strengthened by the development of Neo-liberalism last thirty years causing planners no longer to be the powerful experts that they once were. These neo-liberal strategies sits uncomfortably with green belts ,that has been an important planning tool of modernism to contain urban form.

As a result of this, the role once envisioned for green belts, therefore can no longer hold. Moreover the crisis of governance that goes along with this process and strengthened by neo-liberal strategies are fading the systems once enabling planners to make green belts become a successful planning tool, resulting the implementation and conservation of green belts to have become a complicated if not, impossible task.

AIMS OF THE FINAL PROJECT

On the basis of the problem statement two aims have been formulated for this project. One addressing the problem of substance of green belts, the other one addressing the problem of governance of green belts, reflecting the earlier stated double meaning of green belts:

1. To investigate the role green belts can play in today's north west European metropolitan regions considering the impact of the shift from metropolitan to regional urbanization.

2. To develop a spatial strategy that is able to implement this new role for green belts in north west European metropolitan regions. A spatial strategy that also does "strategic work" in the sense of shaping future development trajectories. The "strategic work" (Healey, 2009) should mobilize attention to the green belts as a whole, and influence and direct the way that multiple actors involved in spatial development shape their interventions.

RESEARCH QUESTIONS

In order to address the aims of the project two main research questions are to be answered. At first the driving force behind the changing circumstance that influences the effectiveness of green belts, the emergence of the metropolitan region, has to be fully understood. By means of this analysis a future role of green belts, adjusted to these changing circumstances, can be envisioned. Secondly the systems that are responsible for the implementation of green belts concept, the system of governance, should be reviewed, resulting in an alternative approach of implementation:

1. What role can the originally as green belts defined areas play in today's north west European metropolitan regions considering the impact of the shift from metropolitan to regional urbanization?

1.1. How can the original concept of green belts be defined and how was it developed?

1.1.1. What is the planning historic background of this approach?

1.1.2.Which functions are defined for these landscapes in relation to its adjacent cities?

1.2.How are the as green belts developed areas affected by the shift from metropolitan to regional urbanization?

1.2.1. What is meant with the shift from metropolitan to regional urbanization?

1.2.2. What are the effects of this shift on the local and regional scale understood in terms of spaces of flow and spaces of place ?

1.2.3. What are the effects of this shift on green belts in terms of functions?

1.3. How can green belts acknowledged as multifunctional deliver sustainable added value to emerging metropolitan regions ? Sustainable in this case refers equally to sustainable economic (i.e. profit-generating) solutions, sustainable social (i.e. broadly supported) solutions, sustainable spatial (i.e. well embedded from an evolutionary viewpoint) solutions and sustainable environmental (i.e. climate-neutral) solutions.

1.3.1.What are the unique core values of today's green belts?

1.3.2. How should these unique core values be interpreted and defined in order to contribute sustainable added value to emerging metropolitan regions?

2. How can this new envisioned role for green belts effectively and sustainable be implemented, as the systems once enabling planners to make green belts become a suc-

cessful planning tool are fading?

2.1. How did the governance of the as green belts developed areas come affected by the shift from metropolitan to regional urbanization?

2.1.1. Which problems can be identified in the governance systems that enables spatial planning to be effective caused by the so-called “regional gap”?

2.1.2. Which problems can be identified caused by the neo-liberal strategies to deregulate government in the effectiveness of the planning and conservation of green belts?

2.2. Can governance by means of self-organizing collaborative networks develop an effective spatial strategy that also does “strategic work”(Healey, 2009) to give shape to this new envisioned role for green belts in the emerging north west European metropolitan regions and deal with the identified problems?

METHODOLOGY & FINAL PRODUCTS

The desire to protect nature and history and the seemingly innocent pleasure derived from natural landscapes has a complex cultural and political history

Duncan and Duncan, 2004, P.7.

SOCIETAL RELEVANCE: GREEN BELTS

As mentioned earlier the ideal spatial relationship between city and countryside in European city regions has been part of debate for more than a century (Kühn, 2003). Gilbert, Wekerle and Sandberg (Gilbert et al., 2005) point out that within this debate there is an increasing opposition to the symptoms of urban sprawl: the absorption of farmland and natural environments by housing and infrastructure. They state that these conflicts over land use are attracting political and popular attention especially in the proximity of cities. Conflicts that are often put forward as tensions between the private and the public in the form of development and conservation. The indicated areas can be identified as green belts as they are usually in proximity of cities, controlling urban form. The conflicts are revealed in discussions on urban sprawl and environmental conservation that have engaged the media, environmental groups, planners, politicians and concerned citizens over the past years (Gilbert et al., 2005). As stated by Gilbert, Wekerle and Sandberg (Gilbert et al., 2005) these conflicts bring together key actors and interests (co)operating at multiple and overlapping scales: family and industrial farmers, environmental non-governmental organizations, rural residents, property owners, industries, recreational corporations and users, multinational land owners, local, regional and provincial governments, and city residents .

SOCIETAL RELEVANCE: GOVERNANCE

Edward Soja (Soja, 2011)following Brenner (Brenner, 2005) indicates that among the many effects of the emergence of the metropolitan region (or regional urbanization as he calls it) has been a serious crisis of urban and regional governance. This is also stated by Innes, Booher and Di Vittorio in their article 'Strategies for Megaregion Governance' (Innes et al., 2011), they conclude that these regions have few linkages in terms of governance, proposing self-organizing networked collaborative governance as a possible solution. That these theoretical findings are also reflected in real practice is shown for instant by the attempts of, at the one hand the Dutch national government to install one single Randstad province as opposed to the four that they have now and at the other hand the abolishment of the regional governmental institutes in England prioritizing local government. Both attempts are following different directions and trajectories representing the lack of agreement on how to deal with the governance of region. This project will take up the suggestion made by Innes, Booher and Di Vittorio not to rely on formal governmental institutions to deal with the governance of these area, but to investigate the potential of self-organizing collaborative networks. To make this issue tangible and feasible it will be understood within the framework of "green space".

SCIENTIFIC RELEVANCE

In the context of the debate about sustainability, the ´Compact City´ has become a not uncontested role model(Williams et al., 2001). Within this view green belts often is deployed to attain a sustainable urban form. The opposite to this traditionally inspired model of the Compact City has been put forward by several post-modern geographers and planners (Kühn, 2003). In their view there is no longer a concentric gradual shift of urban density from city centre to suburb. Patchwork structures, disintegration and fragmentations are used to characterize these current urban forms, with Los Angeles as the ultimate prototype. Anticipating on these views some planners advance the hybrid qualities of a synthesis between city and landscape as "middle landscape" (Fishman, 1990) or "city landscape"(Rowe, 1991). The concept of 'Zwischenstadt' (Sieverts, 2007) has provoked a broader discussion about future urban forms in city regions. This approach is mostly critiqued arguing that it legitimates urban sprawl (Kühn, 2003). This project wants to contribute to this debate taking into account the emergence of the metropolitan region and the effects this has on green belts. Green belts as a means to control urban growth is acknowledged to be strongly embedded in the modernists planning system. A planning system that has been undermined by the rise of neo-liberalism. Instead of only reviewing the role of green belts in the light of changed circumstances this project will also take in to account the fading of the systems that were responsible for the implementation of this green belts by investigating the potential of self-organizing collaborative networks.

LITERATURE SURVEY

The research question, what is meant with the shift from metropolitan to regional urbanization (1.2.1.), can be dealt with by doing a literature survey, developing theoretical understanding of the phenomenon. Later in the process this will be confronted with the outcome of a case study that will investigate the effects of the shift from metropolitan to regional urbanization. The question dealing with the backgrounds of the concept of green belts (1.1.1., 1.1.2), will also be addressed by conducting an literature survey. On the basis of the literature survey on green belts a theory will be developed on the current status of green belts in north west European countries.

CASE STUDY

Research questions 1.2, how are the as green belts developed areas affected by the shift from metropolitan to regional urbanization politan regions? and 2.1, how did the governance of the as green belts developed areas come affected by the shift from metropolitan to regional urbanization? will be addressed by doing a case study. These questions deal with operational links needing to be traced over time in which a case study is a helpful method. The case study will be conducted using two units of analysis (governance of spatial planning and green space) that are derived from the main research questions. The method of generalization will be 'analytic generalization'(Yin, 1989) in which developed theory on green belts is used as a template in which to compare the

empirical results of the case study. The outcomes of the case study will also be used to get a better understanding of the shift from metropolitan to regional urbanization in the field by confronting them with the outcomes of the literature survey (research question 1.2.1.). The case study will contain mappings of land use, the geographical history, (leading) actors and analysis of the governance structure and policies

REVIEW PAPER

Parallel to the case study the theoretical understanding of self-organizing collaborative networks willbe conducted by means of a literature study, resulting in a paper review. The outcome of the generalization of the case study will be confronted with the theoretical study on self-organizing collaborative networks.

HYPOTHESIS AND PROPOSITIONS

On the basis of this a pertinent hypotheses and proposition will be developed and used for the further inquiry needed to answer two main questions: how green belts acknowledged as multifunctional deliver sustainable added value to emerging metropolitan regions ? (1.3) and: can governance by means of self-organizing collaborative networks develop an effective spatial strategy that also does "strategic work"(Healey, 2009) to give shape to this new envisioned role for green belts (12.2) of the two main questions. To answer these last two sub questions a design experiment will be undertaken. The developed hypothesis will be tested in the field, using the previously explored case.

DESIGN EXPERIMENT

For the design experiment a preliminary approach is proposed based upon the actor relational approach (A.R.A.) as developed by Boelens (Boelens, 2009, Boelens, 2010). This approach will be further developed on the basis of the outcomes of the case study and review paper (concerning self-organizing collaborative networks). The preliminary approach for the design experiment contains five steps.

Step 1: Determining the focal (f)actors and unique core values

The first step consist out of determining the focal actors and unique core values of the case. It will be done on the basis of the outcomes of the case study.

Step 2: Opportunity maps and developmental possibilities

The second step will consist out of compiling opportunity maps and/or developmental possibilities on the basis of the analyzed internal motives and drives of the identified focal actors, with a perspective on conservation, reinforcement or harnessing of the determined unique core values. These opportunity maps and/or developmental possibilities need to be proactive, future oriented proposals, convincing and therefore capable to commit the focal actors.

Step 3: Bilateral and round tables

The third step will be to discuss the opportunity maps with the focal actors. The objective is to see how far the compiled opportunity maps meet expectations and whether the willing to commit can be achieved, which is interpreted in a broad sense: money, expertise, manpower, the promotion of commitment, etc. Based upon joint interests and enthusiasm of the actors an actor-network-association will be compiled. These actor-network-association are the foundations for the follow up of the process.

Step 4: Pilot projects

With the fourth step the opportunity map is put into a concrete form in one or more pilot projects, based upon the compilation of the actor-network-association.

Step 5: Regime development and general plan outlines

Finally if the previous step has led to a range of successful and promising cases, the next question will be whether it is possible to identify a project-transcending spatial added value that corresponds to the unique core values of the case. Boelens uses the term "regime" for this concept, referring to the broader and durable planning networks described in Fainstein urban regime theories. It is the development of informal arrangements by which public and private interests function together in order to be able, to make and carry out governing decisions. Consideration is given to the reinforcing potentials of the separate cases, or the mutual incentive of some form of common project transcending planning strategy. To finally lay down the foundations for a new, sustainable spatial regime.

TEST OF THEORY THROUGH REPLICATIONS OF FINDINGS IN OTHER CASES

The outcomes of the experiment will be generalized from the experiment to the developed "green space" theory by 'analytic generalization'(Yin, 1989). However this generalization is not automatic. Following the logic of Yin (Yin, 1989) the theory will be tested through replications of the findings in a second or even third case. This replication logic is the same that underlies the use of experiments.

SUBJECT OF THE CASE STUDY: THE RANDSTAD'S GREEN HEART

As a case the Green Heart of the Dutch Randstad is offered. The Randstad can be seen as a metropolitan region "avant la lettre". Burke already identified the Randstad to have a unique form in 1966. Indicating that none of the three largest cities, Rotterdam, The Hague and Amsterdam, are dominating the urban hierarchy; instead they are interdependent in function, and physically separated by wedges of open farmland. In the same year Peter Hall described the Randstad-Holland in his publication about world cities as an agglomerations of functionally specialized towns. More recently the Randstad Holland was taken by Hall and Pain (Hall and Pain, 2006) among others what they call European mega-city regions to be a polycentric metropolis. Finally the Randstad Holland was identified by Florida (Florida et al., 2008) as part of the Euro-lowlands, one of the largest mega region in the world.

The Randstad region has relatively open, agricultural en green center, called the Green Heart. According to Lorzing (Lörzing, 2004) the Dutch planning system for a large part has its origins in the aim to keep the countryside free from urban growth. Within this national planning system the preservation of the Green Heart always have been a key objective.

FINAL PRODUCTS

1. Theory on green belts

The findings of the initial literature survey, together with the findings of the case study and design experiment will be used to develop a theory on green belts, resulting in a paper.

2. A new sustainable regime for the Randstad's Green Heart

The foundations for a new, sustainable spatial regime for the Green Heart of the Randstad Holland, ready to adapt to the

state of flux. It will contain a spatial strategy which will give shape to the new envisioned role of the Green Heart and also does "strategic work" in the sense of shaping future development trajectories. It will redefine the spatial reality of the Green Heart in which its unique core values will be re-confirmed, re-strengthened or re-developed. It will be supporting the theory developed on 'green belts'.

3. Strategic projects

This new sustainable regime will be accompanied by strategic projects. Strategic as defined by Albrechts (Albrechts, 2004) meaning that it is selective and oriented to issues that really matter. "Strategic" in this sense implies that some decisions and actions are considered more important than others for the purpose of producing fair, structural responses to problems, challenges, aspirations, and diversity. In this manner the strategic projects will be supportive to illustrate and credibility of the new to be developed sustainable spatial regime.

4. Review paper on self-organizing collaborative network governance

Based upon the literature survey of self-organizing collaborative networks a review paper will be written supporting the hypothesis made for the theory development on green belts.

STRATEGIES FOR GREEN BELT GOVERNANCE

The potential of strategies that aim to have directive influence on collaborative networked processes in spatial planning

"Spatial planning is best viewed as a set of interdependent processes involving multiple actors that seek to create more liveable, life-enhancing cities and regions"

Friedmann, 2005:213.

As possible solution the suggestion made by Innes et al. (2011) that collaborative network processes are capable of doing many of the needed tasks for regional governance will be taken into account. According to Innes et al. they fill the gaps where government fails to operate, cross jurisdictional and functional boundaries engage public and private sector actors on common tasks, and focus on the collective welfare of a region. Metropolitan regions therefore need systems of governance that will involve not only governments and the public sector, but also profit and nonprofit entities, civic organizations and representatives of a larger public (Innes et al., 2011).

By means of reviewing related theory the above suggested solution has been further developed to finally end up in a five step working scheme. This final working scheme is believed to be capable of develop a effective spatial strategy that also does "strategic work"(Healey, 2009) and at the course of it can give an answer to the question how green belts can deliver sustainable added value to emerging metropolitan regions

In order to set a frame in the next chapter, on the bases of writings by Healey (Healey, 1997, Healey, 2004, Healey, 2007) governance of place and how it relates to spatial planning will be elaborated on. Followed by a review of two potential strategies that take into account collaborative network processes representing different point of views, but both of them using empirical examples. I will start with the relational planning approach as proposed by Healey (Healey, 2007). Healey re-interprets the role of planning frameworks in linking spatial patterns to social dynamics. Secondly the Actor-Relation-Approach (A.R.A.) as developed by Boelens (Boelens, 2009, Boelens, 2010) will be reviewed. Boelens asseses actor-oriented experiments in planning practices. Experiments which deal with the daily planning practice. Finally I will conclude by elaborate on the outcomes of the reviews and will make an argument for the use of collaborative network processes in the governance of metropolitan regions.

THE (SPATIAL) GOVERNANCE OF PLACE

In the mid-twentieth century there was a clear distinction between government and the work of the public sector and that of the private sector, like businesses and the economy (Healey, 2007). Within this frame an urban area had some kind municipal level of government, or maybe within a larger political unit like a province or county, that was expected to aim for a coherent approach to the management and development of its territory. Spatial planning activities could easily fit in this kind of government organization, as it provided a spatially coherent development approach (Healey, 2007).

In contrary nowadays it is as difficult to give a clear definition of what makes up urban government as it is to find an objective definition of what an urban area is (Healey, 2007). As stated above this accounts even stronger in the case of metropolitan regions, as it is made up out of an incoherent web of governance relations. These new forms of governance relations are often operating in largely self-organizing and decentralized manners, reacting to the complexity that cannot be fully controlled or understood by a single form of government (Innes et al., 2011). Therefore governance of metropolitan regions will ask for the construction of linkages across the fragmented, multi-scale decision system and developing capacity to have directive influences outside formal government (Innes and Booher, 2003). This should be done in a tailor made manner responding to the unique characteristics of each metropolitan region, using and building upon existing strengths, while addressing its future challenges (Innes and Rongerude, 2006).

In an almost parallel trajectory the planning tradition has also considerably changed, and at the course of that it became more interlinked with the governance of place. For the most part planning has been dealing with the interrelation between "fixity and mobility"(Healey, 2007:2) the last 100 years. Traditionally this was referred to in terms of the traditional physical planning terms as land-use and infrastructure. As Healey points out this has changed since the influential work of Castells (1996) and it is now understood in the terms 'places' and 'flows', which are inspired by network thinking. In this manner it emphasizes the complex ways in which places are affected by networks that overlap each other and connect to others in distinct spatial units. Fig 1. shows a more explicit explanation of this transformation in spatial planning. It also makes clear that it has had a huge impact on green belts planning, as it is as a planning tool very much linked to the land-use tradition. As a result the places of cities, urban areas and the recent developed metropolitan regions could no longer be understood as integrated and holistic units, with a clear defined territory (Healey, 2007). Instead they are "complex constructions created by the interaction of actors in multiple networks who invest in material projects and who give meaning to qualities of places" (Healey, 2007:3). It follows that activities focused on the strategy making for urban regions are part of this material and imaginative attempt to make an understanding of the complexity of urban life are. Therefore, as Healey puts it, the
planning project, pervaded with this understanding of socio-spatial dynamics, has become a governance project focused on managing the dilemmas of "co-existence in shared places"(Healey, 1997:3). At the core of this planning project stands spatial planning, which can be defined as follows: "self-conscious collective efforts to re-imagine a city, urban region or wider territory and to translate the result into priorities for area investment, conservation measures, strategic infrastructure investments and principles of land use regulation. The term `spatial' brings into focus `the where of things', whether static or in movement; the protection of special `places' and sites; the interrelations between different activities

and networks in an area; and significant intersections and nodes within an area which are physically co-located" (Healey, 2004:46).

Most current spatial planning activities have gone beyond a simple physical understanding of urban areas. According to Healey (2007) spatial strategy-makers are now trying to understand and act upon the "dynamic diversity of the complex co-location of multiple webs of relations that transect and intersect across an urban area, each with their own driving dynamics, history and geography, and each with highly diverse concerns about, and attachments to, the places and connectivity's of an urban area" (Healey, 2007:4). It requires much more than an analysis of the spatial patterns of activities in a two-way dimension. Instead, as Healey continues, it asks for attention to the interdependencies of economic, socio-cultural, environmental, political and administrative dynamics within an urban area. This means that planners from the planning tradition, with their initial focus on place qualities, have to encounter analysts and policy-makers concerned with other foci of policy fields. In this reaching out to and joining up with, people involved with the field of spatial strategy-making are becoming part of widespread effort to re-think government and governance, which involves searching new ways of doing government (Healey, 2007). It therefore becomes increasingly important for spatial strategy-makers to understand and deal with the governance of place.

ACTING STRATEGICALLY FOR URBAN FUTURES

Healey (2007) states that her book about spatial strategy-making is concerned with strategies that appreciate urban areas not simply as demarcated containers in which activities take place, but as "a complex of nodes and networks, places and flows, in which multiple relations, activities and values co-exist, interact, combine, conflict, oppress and generate creative synergy" (Healey, 2007:1). It focuses on formal government arrangements as well as on directive influencing of social-spatial relations in urban areas, to serve manifold objectives and to aim at added value. With its understanding of urban areas as complex of nodes and its focus on directive influence of social-spatial relations these kind of (spatial) governance strategies it seems to have potential with regard to the governance of metropolitan regions. In the book three cases of spatial strategy-making are reviewed. On the bases of this some recommendations for spatial strategy making are made. Healey (2007) stresses that these should not be interpreted as a guidebook, but as she refers to it as "probes for thinking" (Healey, 2007:283). These recommendations are presented in six boxes, the prioritization of the different issues depend on specific localities, but in themselves the six boxes do not represent a specific ordering. As these recommendations seem to have potential for metropolitan governance strategies in the next paragraph I will shortly go through the by Healey defined boxes of issues

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The first issue, imagining the urban, stresses a relational understanding of the multiplicity of webs of relations that intersect and overlap in urban areas. Healey emphasis the complexity and multiplicity of emergent trajectories arising in urban arenas. Accordingly the ability to correctly diagnose these dynamics and to read emerging potentialities and conflicts is a critical capacity for spatial strategy-making if it seeks to have some effect. The second issue, creating arenas for strategy formation and review, refers to the fact that spatial strategy-making takes place in what Healey calls governance arenas, which are more or less specific alliances within the total governance landscape. The capacity to map these arenas and the so-called relational webs followed by an analyses of where new governance relations and arenas may be needed is important here. Therefore it is important to understand what different actors can and under what conditions they are willing to actively engage in spatial strategy-making. It also becomes clear where different kinds of conflict and tension may appear. The third issue, creating frames of reference and specific strategies, involves interpreting urban dynamics in terms of specific spatial qualities and potentialities that represent a certain value, by means of which it creates a frame of reference to make specific choices that will have a huge influence on future tra-

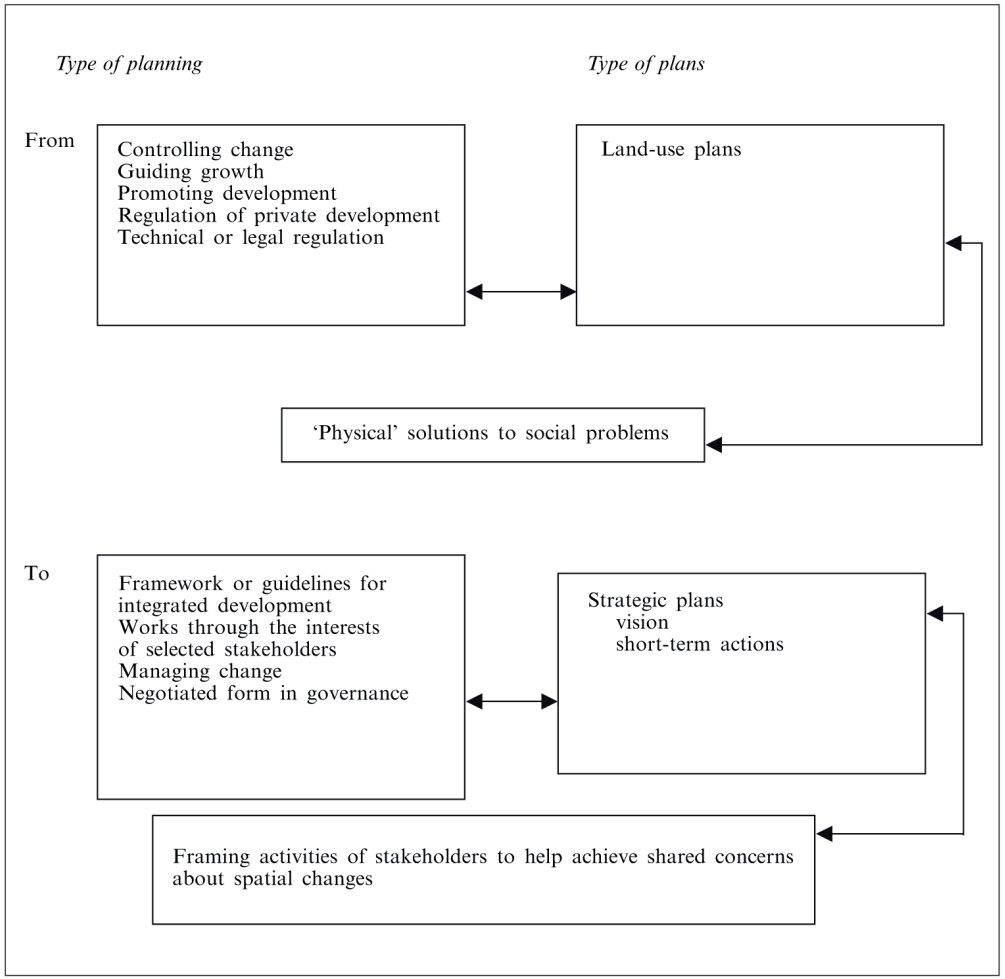


FIG 18. FROM TRADITIONAL LAND-USE PLANNING TO STRATEGIC PLANNING, Source: Albrechts (2004),

jectories. As Healey points out this should not be a technical exercise carried out by one single policy-community. Instead it to try to take into account the multiplicity of experiences and values in the regions in all the phases of strategy-making, and acquire legitimacy through a range of forms of consultation with actors as well as in the public realm. In this manner it is both shaped by, and contributes to shape the governance processes and landscape of its contexts. The fourth issue, generating mobilizing force, stresses the fact that spatial strategy-making is intrinsically political. It involves stressing specific connections or features as strategically important and leaving others in the background. It involves building networks of support for a specific strategy. Within this process of spatial strategy-making it is important to maintain a critical attitude towards the strategy and in that sense allowing, in continual interaction of different groups of actors, the strategy to evolve. The fifth issue, nourishing strategic understanding, deals with the fact that spatial strategy-making may take place at a certain time and place, dynamic processes shaping an urban area will not stop. Therefore attention will have to be given to keep "multiple ways of reading emergent trajectories from multiple positions"(Healey, 2007:283). The issue needs a capacity for imaginative skills as well as systematic analysis. The final issue, nourishing a vigorous public realm, is stressing to keep in focus multiple connectivity's, both with an urban area and with other forces and other areas. This knowledge is not only produced in so-called think tanks, it is also been done by public debate as experiences are exchanged, issues tested and possibilities explored. Besides that according to Healey an ethical responsible polity will consider how what is pursued within its area may impact on others elsewhere and at the same time keep in watch the potentials and dangers of evolving external forces. Therefore spatial strategy-making need to understand how it is contributing to sustaining and transforming the governance landscape in which it is operating (Healey, 2007).

AN ACTOR RELATION APPROACH

In his book 'The Urban Connection' Boelens (2009) explains that his actor-relational approach does not focus on a specific plan or a specific formal institution as the fixed central objective or subjective. Instead it has a focus on "a more neutral moderator and an open medium to sketch opportunities" (Boelens, 2009:188). It is about identifying opportunities and connecting them to actors that are willing to link up with these shared opportunities from the start of. The approach focuses first on so-called leading or focal actors which are defined as "those actors who have the capacity and incentive to invest in the local environment, doing, moreover, for reasons of more or less self-interest" (Boelens, 2009:188). According to Boelens these leading actors can be divided into leading actors within the business society (focused on profit-making), leading actors within the public society (focused on election-winning) and within the civic society (focused on specific partnership interest). Although they have different focal points, the idea is to eventually bring their interests together and as they converge more, the relationship will become more durable (Boelens, 2009). This also contributes to the sustainability that is central to the approach. With sustainable a complex sense in this case as it refers to "sustainable economics (profit-generation), a sustainable social structure (broadly supported), a sustainable social structure (well embedded form a evolutionary, relational point of view), and sustainable environmental solutions"(Boelens, 2009:188). The joint determined unique core values of the specific region are included as core (f)actors. They become the central focal points to which the constructed planning associations continually are being evaluated. The actor-relational-approach aims to act beyond formal government. This is in accordance with the urban and regional regime approach and in order to get around governmental path dependencies. From the start private or semi-private organizations should be commissioned to coordinate and initiate the planning process. The government is envisioned to have a more facilitating role by Boelens. Finally the actor-oriented approach is primarily focused on building effective actor-network associations around meaningful themes or issues as a starting point, a working method and a objective. In this manner it is supposed to gap the bridge between state and civic and business society and aims to promote the democratic governance by offering a bottom-up model of organizational self-efficiency. In a same manner the approach seems to be capable of filling the gaps where government fails to operate, cross jurisdictional and functional boundaries and therefore to contribute to the governance of metropolitan regions. Therefore briefly this actor relational approach is reviewed.

By means of a 'learn as you go manner' Boelens (Boelens, 2010, Boelens, 2009) developed a working scheme. Exemplary cases were being theorized and, as the projects progressed, the resulting theories were being tested by practicing them. The final outlines for the working scheme is build up out of seven steps. In short these seven steps will be recapitulated now. The first step consists of the identification of the primary problem or stakeholders, followed by an analysis and determination of the unique core features of the region or issue concerned . Boelens refers to these unique core features as unique selling points (USPs), which should finally be internalized by the leading actors and can be seen as of the greatest importance. These unique selling points are crucial to the planning process, as they give meaning to it and without them, according to Boelens, the planning issue does not exist. Next other possible leading actors who feel associated with these core values will be identified. These leading actors can be part of the locality , but leading actors only distantly connected to these planning issues can also be involved. It is consistent with the view that actor-network associations are fundamentally open and cut across different scales, sectors and institutionalized fields of expertise (Boelens, 2010). Based upon the internal motives of the identified leading actors, with their own view on the conservation, reinforcement or employability of the unique core values, opportunity maps will be compiled in the third step. Boelens states that it should be future oriented and proactive proposals, that are able to secure the identified leading actors commitment. In the next step the compiled opportunity maps will be discussed with the leading actors. Within this fourth step the objective is to see if the opportunity maps are tempting and therefore create the willingness to invest. This process brings about what Boelens calls distinction between pullers and pushers. Pullers take initiatives and are more committed on the further development of the opportunity maps, whereas pushers, based on their status and/or orientation, have a somewhat more passive approach. The actor-network-association, that can be established at this point of the process is the basis for the rest of the process. If it

necessary to create more commitment the opportunity maps can be updated. In step five the opportunity maps will be used to be translated into real business cases. The final positions of the different actors will become more clear now. Moreover the several leading actors will have to make clear whether or not they are prepared to invest and at this point it becomes clear whether or not the project will succeed. If the previous step has led to a range of successful and promising cases, the next question will be if it is possible to accomplish a project-transcending spatial planning strategy that corresponds to the unique core values of the issues or region in question. Boelens uses the term 'regime' here, referring to the broader and durable planning networks described in Fainsteins urban regime theories (Fainstein and Fainstein, 1986). As a final step an attempt will be made to anchor this new spatial development democratically by means of a made-to-measure democratic association.

CONCLUSION

It can be concluded that planners have key roles to play in metropolitan region governance, but they will have to step away from designing and controlling outcomes (Innes et al., 2011). As a metropolitan region is too dynamic and complex for these to be feasible. Strategic spatial planning can be seen as a possible solutions to (spatial) governance of metropolitan regions. Albrechts (2004) recapitulates strategic spatial planning as a public-sector-led, sociospatial process through which a vision, actions and means for implementation are produced that shape a frame what a place is and may become. Both reviewed approaches can be framed in this definition, with the exception of the actor relational approach in the case of public-sector-led, and have as important element "framing activities of stakeholders to help achieve shared concerns about spatial changes"(Albrechts, 2004).
Both reviewed approach seem to be able to contribute to the implementation and conservation of green belts in the emerging metropolitan regions, as they seem suitable as potential (spatial) governance strategies for metropolitan regions. They involve not only governments and the public sector, but also profit and nonprofit entities, civic organizations and representatives of a larger public (Innes et al., 2011). Moreover they both fill the gaps where government fails to operate (Innes et al., 2011) although Boelens may have a stronger case here as Healey has, as he stresses that you should surpass governmental institutions, whereas Healey is more sensitive to existing governance arenas. Moreover formal government is still at the core of the spatial strategy making envisioned by her. In that case collaborative networks are joint up in the process, with the danger of getting trapped in path dependencies of formal government. Boelens really puts the leading actors in the center of the planning process, with at the other hand, the danger that the process will be blocked by existing governance arenas. However his plead to start from a problem definition, and opening up to a more issue oriented approach is especially interesting in the case of green belts. By looking at the leading actors that are of concern to this issue, a better and more realistic understanding of the forces dealing with green belts will be made possible. Especially in the case of green belts in emerging metropolitan regions, in which case a myriad of diverse overlapping networks of actors and governance relations is involved. His working scheme is also very practical and ready for use, whereas Healey's suggestions are more abstract and suggestive.

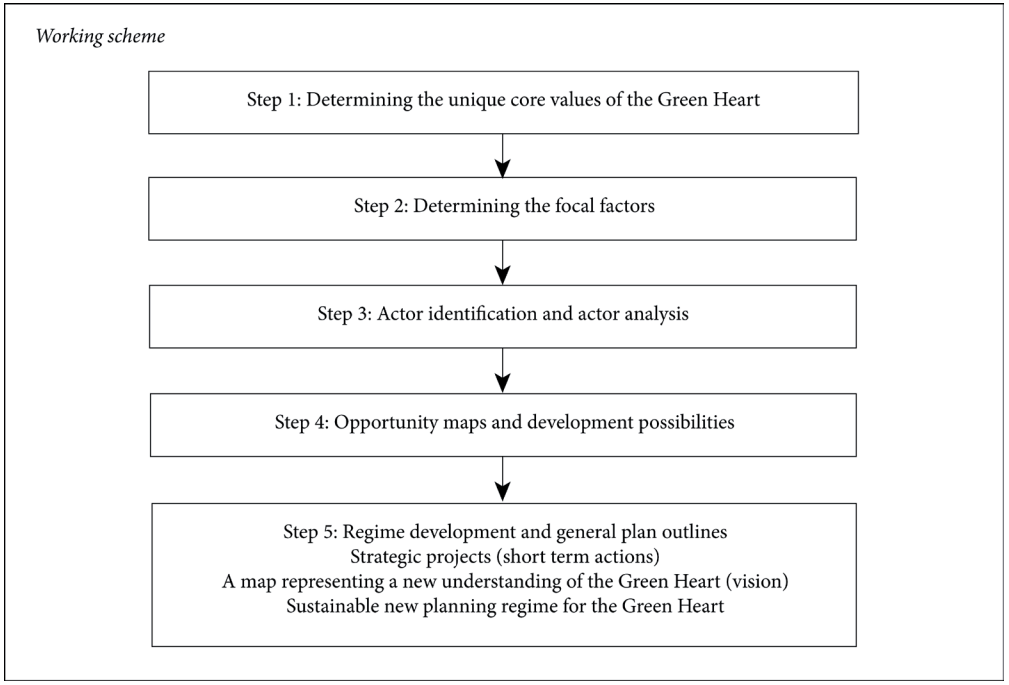


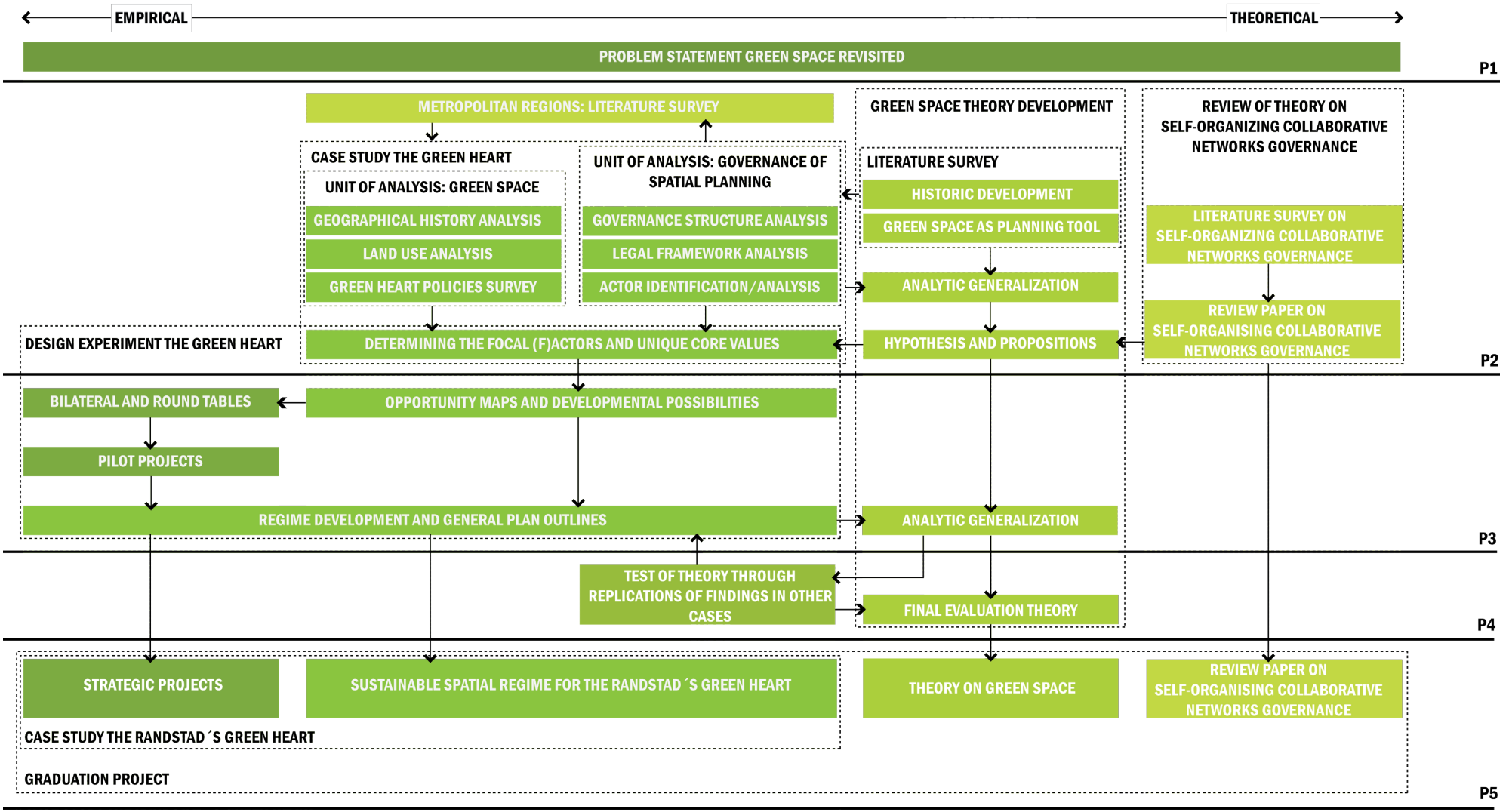
FIG 19. FINAL DEVELOPED WORKING SCHEME

With regards to this graduation project I conclude that the working scheme of Boelens can be a good starting point. However as I belief that collaborative planning is too complex to integrate in the timeframe of a graduation project, the proposed bilaterals with leading actors will be replaced by a review of reports and research concerning the actors. The focus in this case is more about understanding the incentives and needs of the actors and how to take that into account in a planning process than the process of collaboration itself.

I will balance the outcome of the working scheme with the suggestions made by Healey. It is for instance important to acknowledge the imagining that is fundamental to green belts policies, as it blocks every other possible future. The same goes for governance arenas, not taking these into account will create the danger of failing before even having started.

In the next chapter the developed hypothese that governance by means of self-organizing collaborative networks can develop an effective spatial strategy for green belts within emerging metropolitan regions will be tested by executing the developed working scheme in the case of the Green Heart. Every following chapter represents one step of the working scheme, starting off with the determination of the unique core values of the Green Heart region.

PHASING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CASE STUDY
THE GREEN
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THE GREEN HEART AS HOLLAND'S GARDEN

First step: determining the Green Heart unique selling points

The first step of the working scheme consists of an analysis and determination of the unique core features of the region, its unique selling points (USPs). The question becomes: what distinguishes the Green Heart from other regions and makes it special? These discerned unique core values of the Green Heart should be meaningful dominant factors of mutual concern. As such they constantly will have a central position in the planning process. In fact they become the central focal points against which all planning activities continually are measured in terms of their objectives, developments and results (Boelens, 2010).

The Green Heart is at first, as shown earlier (see chapter 'The invention of the Green Heart') the outcome of a spatial planning policy that frames the Green Heart as a contra-mould to the urbanized western part of the Netherlands, the Randstad. Therefore it can only be understood as part of this Randstad: the open space in between the fringe of cities. In their plan for the Green heart, H+N+S even take this a step further, suggesting that the area since the 17th century always has been a *wingewest* (a colony) of the surroundings cities of Holland (Alkema, 2006). In the 16th and 17th peat was extracted to serve the cities, the new lakebed polders made cities more independent and after the Second World War industrialized agriculture provided cheap food, supporting the industrialization and reconstruction of the country. It is within this framework that the area can be considered as a kind of garden to its surrounding cities. Having the same kind of qualities as comparable regions within Europe, like Kent, the Loire valley or Tuscany. Within this context its agricultural production and its related cultural heritage can be considered as a main core value. The area also owes its openness to the predominantly agricultural land use of the area; 77,1% of the land is in use for agriculture (Vogelzang et al., 2009). With the determination of the core values of the region therefore the focus is on agriculture. As mentioned two dimensions stand out: its cultural heritage and its agricultural products. Elements that seems to be archetypal not only to the region, but to also to the Netherlands as a whole.

The land that is now Holland has never been stable. In light of its cultural heritage the fact that the land of the Green heart is almost entirely man-made stands out. These so-called polders are unique to the world. Related to this are the engineering devices, like mills and pumping engines, that were responsible for the reclamation of the polders and kept the areas dry later on. This system of polders and mills is still very visible in the Green Heart. A lot of the villages in the Green Heart are kept relatively authentic; here you can see how cities like Amsterdam and Rotterdam were like centuries ago. In the 17th century some parts of the area were already colonized by the urbanites: several country estate were located along the rivers of the Old Rhine, Vecht and Amstel and some of them are still there. These rivers also created a water infrastructure that made the network of cities so strong in the Golden Age (17th century). Finally the landscape has been used for military propose and as such this has left its marks on the landscape.

In contemporary times the products that are made and produced within the area are world famous and characterize not only the region, but in fact the Netherlands: Gouda cheese and flowers.

In the following chapter I will shortly describe the depicted core values, starting with its cultural heritage, followed by a description of the main agricultural products the region brings forth.



FIG 20. WELCOME TO KENT THE GARDEN OF ENGLAND ROAD SIGN,
Source: www. photographersdirect.com

Stockholms skärgård
"Stockholms archipelago", coastal area with many small islands (skerries), fish, summer residents

Groene Hart
"The Garden of Holland", wetlands in a delta, pasture, cheese, country seats

Kent
"The Garden of England", hilly landscape on a lime soil, orchards, hop gardens, castles

Vallée du Loir
"The Garden of France", river valley, vineyards, mushroom nurseries, ornamental gardens, castles

Toscana
"Birthplace of the Renaissance" gorgeous landscapes, culinary tradition, vineyyards, villla's, churches



FIG 21. 'GARDENS OF' REGIONS IN EUROPE

IT'S CULTURAL HERITAGE

'God created the world, but the Dutch created Holland" Descartes

Man made landscapes

The landscape(s) that we now call the Green Heart has served as a place to live and work for centuries. The area is part of the Rhine Maas delta. In the east the Green Heart is bordered by the sandy soils of the Utrechtse Heuvelrug and in the west by the dunes of the North Sea. In time increasingly the inhabitants were interfering with the shape and appearance of this natural landscape, it became a reclamation landscape. The landscape therefore has become a cultural landscape, carrying the marks of a long history.

Although the beauty of this cultural landscape has been valued for a longer time, for the last century the focus of the protection of the landscape has been on natural values (Beukers et al., 2009). Only recently the protection of cultural historic values of the landscape has become institutionalized in the Netherlands, for instance by means of the establishment of a project board called Belvedere (Feddes, 2000).

Almost all the landscape of the Green Heart has been man-made, however there are a lot of regional differences. The shape and parcellation of the landscape is related to the process of reclamation (Wit, 2009). In what was originally a relatively homogeneous peat bog different kind of landscape patterns have emerged. The peat reclamation, peat extraction, lake-bed and land consolidation polders are the components gave the landscape a varied expression. In the following these different types of polders shortly will be described.

Peat land reclamation landscapes

Peat is made up out of piled up plant leftovers in watery areas. This landscape came into existence in a large continuous area behind the sandy shores of the west of the Netherlands as the drainage of this area deteriorated during the Holocene. Later on the sea retook large parts of the peat land again, this was for instance the case in areas of the islands of Zeeland and the Wadden sea area (Barends, 2000).

Peat has the capacity to retain water up to such an extent that in time it becomes independent of any external supply of water (Borger, et al. 1997). Eventually the pilling up of plant leftovers leads to peat domes that can become meters high. The radial patterns of twisting watercourses that drained off the surplus of rain can still be traced back in today's peat landscapes. In case of high water lower parts of the peat were flooded and sludge and calcareous water could enrich soil and vegetation. Therefore the lower parts of the peat land became more suitable for agricultural use, whereas the higher peat lands were more suitable for peat extraction.

In order to make a peat swamp suitable for human occupation, the surplus of rainwater had to be drained quicker. By lowering the water level, the upper part of the peat dried up and therefore became accessible to humans and animals. This was done by the deepening of existing watercourses and the construction of additional ditches. The ditches were positioned perpendicularly to the natural watercourses, which made the so characteristic strip allotment. The lowering of the water level started up an irreversible process causing the ground level to sink., as after a while the drained top level of the peat oxidises. The area became watery again and a further lowering of the water level was needed, eventually leading to a further sinking of the ground level starting the processes all over again.

From 950 up till approximately 1300, also referred to as the Great Reclamation, large parts of the peat land in Holland and Utrecht got reclaimed (Barendse, 2000). On a large scale settlements were founded. The reclaiming of the peat land was promoted and led by the counts of Holland and the bishops of Utrecht. In the 13th century more intensive modes of land use became common (Barends, 2000). In areas that with a good soil and position a specialized agriculture developed that was capable to produce in an efficient manner large amounts of grain. This came at the cost of areas that had less ideal circumstances. As a result no new peat lands were reclaimed and grain production stopped at the end of the 14th century. Most likely this was also related to persistent water flooding. After 1300 the extraction of peat for fuel uses became the most important drive for reclaiming peat.

In order to deal with the water flooding rivers were embanked to keep out the water in times of high tide and profit more from low tide when the area had to be drained. The embankments, the dams , were blocking the course of ships between the inlands



FIG 22. AERIAL PHOTOGRAPH, PART OF THE POLDER KAMERIK TEYLINGENS (1979), in the back the polder Teckop. Source: Het Utrechts Archief.

and the outlands. The turnover of goods at these dams that became needed created a lot of work. Close to these dams a lot increasingly growing villages therefore arose, that soon became real cities, ultimately resulting in the well known dam cities in the west of the Netherlands (Amsterdam, Rotterdam, Schiedam, Leidschendam, etc.).

After the 15th century the inhabitants of the peat lands more a more focused on the production of butter and cheese. The housing of cattle and the production and storage of food for winter times were improved. In these times the farms were not only focused on the production of dairy products. In the coastal areas the production of hemp was also of great importance. Hemp is the main material for ropes and sail canvas. During this period the windmill got introduced to improve the drainage of the polders.

After the golden age (16th / 17th century) a harsh time started for the agricultural sector in the Green Heart. Only half way the 18th century prices for agricultural products became better. In the course of the 19th century a lot of polder boards decided to shift, despite the larger costs, to steam driven pumping engines. Before polders could be flooded for a longer period of time, as the wind needed to drain the polders was not always there. As a result the areas could be used much more intensively and production increased. Although this was only applicable for the lands close to the farms. Lands more out of reach were used for cattle and horses and became not so well drained. In these areas you could find the so called bluegrass grounds, areas that have a rich variety of flora species and grassland birds.

In the 20th century the agricultural industry became further intensified as a result of an increasing improvement of water management and the introduction of artificial fertilizer. Gradually all areas got the same water management and vegetation. It finally ended up into the situation as it is now in which all parcels are used and fertilized in the same intensive manner, resulting in a much more homogeneous landscape.

Peat extraction land

Before coal, oil and gas became available on a large scale and at a payable price, peat made up the most important source of energy. Several types of peat that is dried are well flammable. For the extraction of peat two techniques can be distinguished. The first technique is the extraction of peat above groundwater level, also referred to as dry peat extraction. The second technique concerns peat extraction under the groundwater level, wet peat extraction. Usually this was done by means of a dredging bracket (Barends, 2000). These techniques had both very different consequences for the landscape. Whereas dry peat extraction only led to a decrease in the quality of the land, in the case of wet peat extraction it resulted in lake formation and therefore quantitative loss of land.

At first it was only extracted for own use and therefore at a small scale. This started already in the 12th century in villages like Zoetermeer, Moordrecht and Waddinxveen (Barends, 2000). At a certain point the demand for peat reached such a scale that it also became interesting for farmers to start extracting peat. When the peat extraction became more systematized and large-scaled in order to supply the urban market it had much more impact on the landscape. The formation of lakes occurred in the course of the 16th century, only after the introduction of the dredging bracket and therefore the start of the wet extraction technique. After peat extraction became under regulation in the West of Netherlands to prevent the whole region to become one big lake the process of lake formation stopped and shifted to other parts of the Netherlands, like Groningen, Friesland en Drenthe. Today lakes like the Reeuwijkse plassen and the Loosdrechtse plassen are well preserved examples of the impact peat extraction has had on the landscape of the Green Heart.



FIG 23. PEAT EXTRACTION NEAR ROTTERDAM, 1918. Source: Nationaal Archief, Spaarnestad Photo.

Lake bed polders

Lake bed polders are polders that are the result of the reclamation of former lakes. The water level in these polders is controlled artificially and they have been reclaimed by means of mills or pumping engines. These areas are characterised by long straight lines (parcellation and pattern of roads and waterways), spread buildings (farms in the middle of their plots), openness (no forests) and agricultural land use.

Lake bed polders can be divided in three groups: reclaimed natural lakes, reclaimed peat extraction lakes and reclaimed parts of estuaries (Barends, 2000). In case of the

reclaimed natural lakes, the land was reclaimed by means of a ringvaart (canal) that was dug around the lake. Followed by the construction of a dike between the ringvaart and the lake. Subsequently the water was pumped out of the lake by means of mills, or later pumping engines. After this the new reclaimed land were provided with drainage ditches. Examples of these kind of lakebedpolders within the Green Heart are the Horstermeer and the Zoetermeerse Meerpolder.

In case of the peat extraction lakes a ringvaart is not needed: the drainage canals that were in use before the peat extraction can become reused. Most of the lakebed polders in the Green Heart are reclaimed peat extraction lakes, that were reclaimed in the 18th and 19th century. Examples are the lakebed polders in Schieland and Delfland at both sides of the Rotte.

Settlements

As mentioned earlier the Green Heart predominantly has had an agricultural function. Therefore agricultural architecture, like farmyards, haystacks and outbuildings are still most characteristic to large parts of the area. On the contrary along the rivers there is large diversity of buildings. This resulted from several non-agricultural activities, like shipyards and brick and rope factories (Borger et al., 1997).

In the 17th century, the so-called golden age, several country estates were built. In order to avoid smelly canals in the summer time the rich merchants left the cities during this period. In no other country the density of country estates was so high as in the Netherlands, and especially in Green Heart. For some parts you can even speak of country estate landscapes.

Military landscapes

Limes

Limes is the Latin word for border. In 47 AD the Rhine became the border, the limes, of the Roman empire. On the south bank of the Rhine between Katwijk and Lobith over twenty military larger and smaller fortifications were established. The fortifications were connected with each other by means of a road, the Limes ad Germaniam inferiorem, divided the current Netherlands in two. Until the fifth century the limes made up the political and cultural dividing line. After the fifth century the direct influence of the roman empire disappeared and the limes lost its function. Roman fortifications in and close to the Green Heart are: Katwijk-Brittenburg, Valkenburg, Valkenburg-Marktveld, Leiden-Roomburg, Alphen aan den Rijn, Zwammerdam, Bodegraven, Woerden, Vleuten-De Meern, Utrecht, Vechten (Borger at al., 1997).



FIG 24. THE NEW DUTCH WATER LINE

The Dutch water defense lines

The establishment of the Old and the New Dutch Waterline can be linked to the large availability of water in the Green Heart area. The lines were laid out to protect Holland from enemies. The Old Waterline, established in the 16th and 17th century, existed out of a number of fortified towns and ran from north to south right trough the Green Heart (Borger et al., 1997). To include the city of Utrecht the New Dutch Waterline, established in the 19th and 20th century, was laid out more to the east. Along this line several forts were built. Both lines include zones that in case of threat of war could be inundated in order to slow down the enemy and make the defense of the country more easy. Dikes and higher areas that could not be inundated were protected by fortifications and fortresses.
As a result of the fortress law in 1874 the so called Stelling van Amsterdam was added to the defense system. This position should serve as the last resort in the case that the enemy would break through the waterline. Between 1883 and 1914 works have been done on this position.

Historic waterways

The Green Heart has a unique network of historic waterways. Holland and therefore the Green Heart was and is part of the Rhine Maas delta and until the Second World War its network of waterways was the most important infrastructure network in the region. Almost all cities were connected through the waterway network and villages that were not connected to this system had a hard time economically.
This system of waterways is for a large part man-made. It has a long history that even goes back to the Romans in the first century A.D. as they already then constructed the first canals in the area. In the 11th century thousands of ditches and watercourses were dug to reclaim the peat lands. However at the end of the 12th century the Old Rhine that lead via Utrecht, Leiden to Katwijk into the North Sea silted up (Brand, 2011) which resulted in the loss of the capacity to drain these new reclaimed lands. In the first half of the 13th century natural lakes and peat lands rivers were linked up to enlarge the capacity to drain the area. This also resulted in larger waterways that could be used for shipping. At least two important north-south connections were created during this period. The first one, also called binnendunen (Brand, 2011), connected Haarlem, Gouda and Dordrecht, the second one connected Haarlem with Leiden and Delft, via the Vliet and the Schie. In the century that followed the network got further extended and refined, the Hague got connected via the Haagse Trek Vliet, the Rotterdamse Schie was added and Delft constructed the Delftse Schie to connect the city with the Maas. By the end of the 14th century the waterway network of Holland was almost complete and did not change really in the two centuries to come.



FIG 25. BARGE WITH A LARGE GROUP OF PEOPLE , VALENTIJN BING 1850-1857, Source: Nederlands Openluchtmuseum Arnhem

In the first half of the 17th century several important trekvaarten were dug. A nice example is the Naarder Trekvaart which got constructed in 1641 between Naarden and the Vecht in Muiden. A part of the so-called jaagpad, on which the horses drew forth the barges still exists.
From the beginning of the 19th century the number of canals increased enormously. The industrial revolution , with its demand for coals, asked for a cheap and flexible infrastructure for mass transport. Within the Green Heart the Merwede canal is a good example.

IT'S AGRICULTURAL PRODUCTION

Dairy farming

The Green Heart is and has always been predominantly agricultural land. Dairy farming is the most dominat sector in the Green Heart (Vogelzang et al., 2009). Since the 15th century the focus of agricultural sector within the Green Heart has been on the production of butter and cheese (Barends,2000). Already in the so-called Golden Age (16th and 17th century) Holland gained the reputation of a cheese producing country. The so-called Gouda cheese is one of the most well known and most consumed cheeses. It owes its name to the fact that it got traded in Gouda. According to European regulations since 2010 the name Gouda Holland has become a protected indication. Another well known but less old (1977) cheese from the region is Leerdammer which is produced in Schoonrewoerd at the borders of the Green Heart. Beside cheese and butter the farmers of the Green Heart also produce milk which makes up almost half of their production. An important cooperation in this respect is FrieslandCampina which is by far the largest dairy cooperation's of the Netherland and therefore also in the Greenheart with more than 17000 associated members. The members get a guaranteed price for their milk and above that an allowance depending on the financial results of the cooperation. The products by the cooperation exists out of milk, baby and child food, dairy drinks, yoghurt, desserts, cheese, butter, cream, milk powder, juices and fruit drinks.

Green house farming,bulb growing and the cultivation of trees and ornamental plants

Dairy farming is by far the most important agricultural sector within the Green Heart. Other sectors are present in the area, but less dominant. Although they are less dominant, these sectors are very successful in economical sense. The Netherlands leads the world when it comes to greenhouse farming, bulb growing and the cultivation of trees and ornamental plants. These sectors use 7% of the agricultural lands but produce 40% of the agricultural economic value. These activities form the basis of a knowledge-intensive agribusiness and are concentrated in clusters known as 'Greenports'. The economic importance of the Greenports is comparable to that of the Rotterdam and Schiphol transport hubs. One of these ´Greenports´, Greenport Boskoop is located in the Green Heart, a other one, Greenport Aalsmeer, is partly located in the Green Heart. Greenport Boskoop is specialized in the cultivation of trees and ornamental plants, whereas Aalsmeer is specialized in bulb growing. Two of the three remaining Greenports, Greenport Westland / Oostland and Greenport Duin- en Bollenstreek are located close to the Green Heart. These Greenports have a strong position in the Dutch economy as the core of a international network of bulbs, ornamental plants, trees and food plants. The production of ornamental trees and plants makes up 60% of the total world trade, whereas the production of flower bulbs even makes up 90 % of the total world trade. Therefore nationally it is acknowledged as a key area (flowers & food) and internationally as a world-class leading cluster. It is leading in the fields of breeding, technology of production, assortment and services. For international trade the closeness of the mainports Schiphol and Rotterdam are essential.



FIG 26. TREE CULTIVATION IN BOSKOOP, Source: www.boskoop.tv

PARADISE LOST?

Second step: determining the core issues

In the next step the main issues were determined. These issues are crucial to the planning process, without them there is no reason to act. For years urbanization has been the mean issue when dealing with the Green Heart. It was considered to be its greatest threat, Recent years it has become clear that another issue is undoubtedly as threatening to the Green Heart as urbanization: water related issues.

WATER ISSUES

Until the Christian era the water systems in the delta of the western part of the Netherlands were only determined by natural processes. In this period the area could be characterized as a (low) peat swamp crisscrossed with a number of rivers and at the seaside bounded by dunes, beach plains and a dynamic intertidal area (Buuren et al., 2008). From the Roman period onwards major transformations occurred in the area, partly caused by human intervention and partly as a result of natural processes. These processes often reinforced each other. The dredging of peat (for fuel) for instance which started in the late middle ages under influence of storm and flows eventually led to the loss of land (Buuren et al., 2008). In turn later on large parts of these lands were reclaimed and became the so-called lakebed polders.

Similar to the past in the present several (physical) processes are occurring that influence future developments of the Western part of the Netherlands. Three main processes can be distinguished (Buuren et al., 2008). Climate change is causing the ice cap of the South Pole and the glaciers to melt and causing more rain in a shorter period of time. It will result in a rise of the sea level, increasing river flow fluctuations and peaks in rainfall and evaporation (periods of drought and water nuisance occurring in an ever increasing succession). The peaks effect is strengthened by an increase of built/paved surface in the area (Kooijmans, 2006). Secondly the soil is sinking as a result of tectonic processes and, more important, human intervention in the peat land areas. To make the peat lands of the Green Heart usable for agriculture the marshy lands have to be made passable. A lowering of the groundwater level is needed to drain the top level of the peat land. As a result of this drainage, the peat oxidizes and therefore the ground level becomes lower. The area becomes marshy again and the process starts all over again resulting in a further lowering the ground level. Finally an ongoing intensification of the land-use and at the same time a decrease in the acceptance of flooding will result in an continuously increasing pressure on the water system of the Netherlands (Kooijmans, 2006). According to the report *´Randstad in Zicht´* (Buuren et al., 2008) these processes result in five distinguishable developments that will affect the water system: risks will increase , some areas will become wetter, soil salinisation will increase and it will become lower. The report also points out that the relationship between the main water system and the polder system is crucial to the water system. The so-called boezem (polder outlet) holds a central position between both levels. In case of a water surplus the boezem drains the water to the sea and the rivers. The retention capacity of the polders is limited. In times of drought water will be led in, in order to keep the desired water levels and secure the quality of the water. By utilizing the boezems in such a manner the flexibility for the use of the polders is maximized. As this project deals with the region scale the focus is more on the issues concerning the regional polder system and its link with the main system the boezems.



FIG 27. DIKE BREAKTHROUGH WILNIS 2003 , Source: Villa media

Risks will increase

Due to the rise of the sea level, increasing peaks in river flow fluctuations security will become an important issue at the long term (upward of 2050) (Deltacommissie, 2008). Both of these issues are for the large part In the case of coastal protection first priority is to deal with the weak links. Current policies are already dealing with this and with the succession of these policies for the long term the coastal protection seems to be in order. To deal with peaks in the flow of rivers the national program Ruimte voor de rivier (Space for the river) has been put in motion. Depending on the local characteristics nine different solutions, like for instance the shifting of dikes, water retention, the deepening of the river foreland or the strengthen / raising of existing dikes are applied to resist new higher water peaks in

the rivers. However some are critical about the capacity of the rivers in the future even after the execution of the program (Silva, 2007). Moreover the shift of the transition area between the influence of the rivers and the sea should be considered. As a result of the rise of the sea level the area where the flow of rivers and the level of the sea together determine the conditions will shift to the east (Buuren et al., 2008). It will become more difficult for rivers to drain their water into the sea. Above that it is expected that in the future, as a result of increasing storm intensity, estuaries will have to be blocked more frequently (MNP, 2007). At these times extra measures are needed to secure the drainage of the rivers.
In case of the Green Heart special attention is needed for the diked area 14. After the weak links of the diked area will be taken care of the largest risks seem to be at ´the backside´ of the area, the dikes and quays along the Hollandse IJssel and the Amsterdam-Rijn channel. The peat quays located in these areas also are a matter of concern.

Some areas will become wetter

In some areas the capacities to drain or retention water can become problematic in periods with peaks in rainfall. This is especially relevant to urbanized and intensively used areas. In the case of the Green Heart the strongly urbanized lake-bed polders Haarlemmermeer, Zuidplaspolder and Mijdrecht are areas of attention. For a part the water nuisance problems in these areas are related to a lack of capacity of the boezem system. It not only lacks of size (volume) but also for instance missing links in the network. Other areas of attention in this case are the lowest and wettest parts of the peat land areas. In the current situation the high water levels are already a problem in wet periods.

Soil salinisation will increase

In several areas water supply, implying sustaining or improving the water quality, will become critical in hot and dry periods of the year. This is a result of rising temperatures, increasing evaporation, lack of flow and a decreasing availability of (sweet)water with a sufficient quality. At the same time the demand for water is increasing.
Especially in the western part of the Green heart the sweet water supply is critical.
Salt water intrusion through the estuaries an ongoing process of salinization of the groundwater (salt seepage). The first process takes place mostly in periods of drought: through water inlet points the boezems together with the connected polders are siltated. On the contrary the salinization through ground water is a diffuse process that takes place throughout the whole year. Although as a result increasing evaporation in dry periods the salt water will reach higher water tables. Locally, but with a clear concentration around the Ronde Venen it is expected that grounds will burst around 2050 and with that the flow of salt ground water will increase.

The inlets for sweet water will have to deal with salt (river) water as a result of the rise of the sea level. The supply of sufficient sweet water will therefore become critical, especially considering the available amount of water will decrease in times of drought and evaporation will increase. In this respect the inlet at Gouda is crucial as it is responsible for a large part of the supply of sweet water for the south part of the Green Heart. Some drinking-water inlets east of Rotterdam could also become affected.
A clear problem of the salinisation process is currently already taken place in areas with vulnerable cultivation. In case of the Green Heart this concerns ground-based horticulture and the tree cultivation around Boskoop.

It will become lower

The sinking of the soil contributes in certain areas to a strengthening of the safety issue, as a lowered location reinforces the consequences of a flood. It can also cause dam-

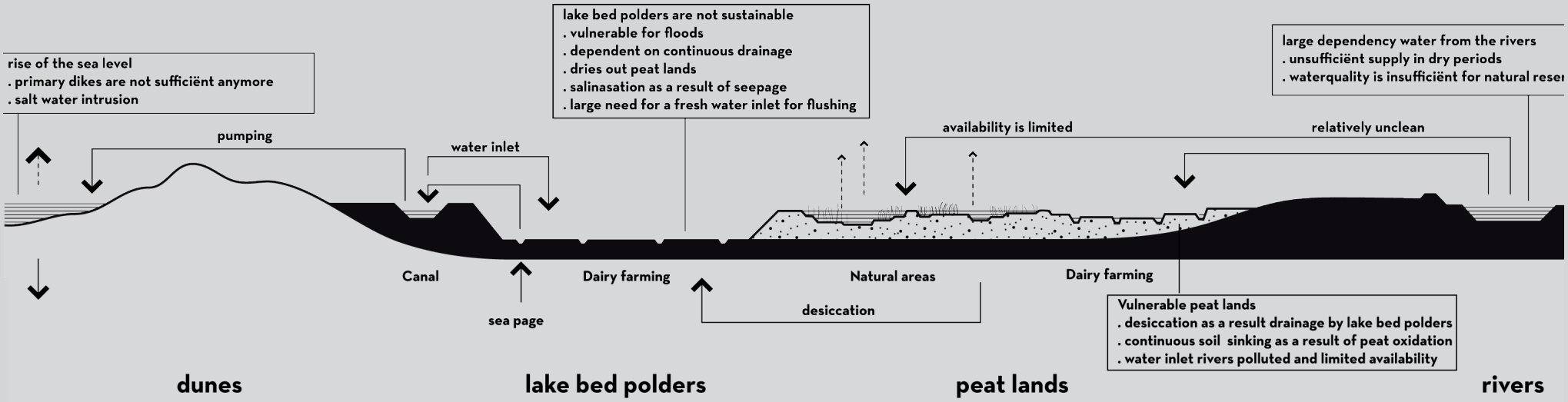


FIG 28. PRINCIPLE SECTION WATER ISSUES GREEN HEART , After Vista Landscape architecture and urban design

ages to foundations and building as a result of settings.
As explained before in the peat land areas the sinking of the soil is for the most related to drainage. Especially in the dry periods the sinking is relatively high; raising the water tables can resist this. However in these periods the available amounts of water will be critical. In time extra measures are needed to secure the drainage of the rivers. In case of the Green Heart special attention is needed for the diked area 14. After the weak links of the diked area will be taken care of the largest risks seem to be at ´the backside´ of the area, the dikes and quays along the Hollandse IJssel and the Amsterdam-Rijn channel. The peat quays located in these areas also are a matter of concern (see fig the dike breakthrough at Wilnis).

ONGOING URBANISATION

The technological renewal that took place half way the 20th century created new potentions for water management, housing and infrastructure, the introduction of concrete for instance solved the problem of putrefying wood at the many marshy areas the Green Heart has (Pieterse et al., 2005). Secondly as a result of an increasing welfare and mobility urban citizens expanded their radius of action. The relation between the location of housing and jobs also faded as a result of this increasing mobility. Originally jobs were decisive in the spatial developments of the Green Heart, but after the seventies housing also became an important factor (Pieterse et al., 2005). As a result the pressure on the openness of the Green Heart further increased.
On the borders of the Green Heart the surrounding cities further expand into the area. Pieterse et al. explain for instance that Utrecht has grown to be connected to Nieuwegein and IJsselstein, villages that were still insignificant in 1950. Amsterdam-Zuidoost grew beyond Diemen in the direction of Weesp and the city of Rotterdam grew in every direction. Although it has te be mentioned that the largest transformations did not took place within the borders of 1993, but within the borders of 1958 (see the included Atlas of the Green Heart).
Along the axis between Amstelveen and Alphen aan den Rijn beside new built up areas also new greenhouses are changing the landscape. This also goes for the area between Zoetermeer, Schipluiden, Schiedam, Rotterdam an Gouda. Together with the strong growth of Gouda and Alphen aan den Rijn these development has lead to an urbanization process that goes along the axis Amsterdam – Rotterdam parallel to the A4 highway.
The second axis along which developments concentrate is the A12, especially Woerden, Gouda and Zoetermeer are highly urbanized. Everywhere in the Green Heart the infrastructural network has been refined. In case there is no large scale urbanization that goes along with it, it is probably related to an up scaling of agriculture. However in time this has and still is provoking several ribbon developments.
As a result of these developments, considering the borders of 1958, the openness of the Green Heart has decreased 25 %: the built up area in 2000 was four times the size of the built op area in 1958 .
Although not so substantial in the future still a lot of changes are to be expected along the borders of the main cities, as these areas are considered to be attractively green and good accessible. This also shows if you look at prices of agricultural land (see the relevant map in the included Atlas of the Green Heart), the areas with highest prices will probably undergo a land use change (Bemmel en Kuiper, 2010). As the map



FIG 29. NEW HOUSING WITHIN THE GREEN HEART

shows most of these areas are at the borders of the cities.

MAINTENANCE

Dairy farms continue decline

Dairy farmers are essential to the maintenance of the Dutch man-made polders as they make up by far the largest group of farmers in the Green Heart. However dairy farming in the Green Heart is threatened by deteriorating changes in European subsidies for agriculture and decreasing world market prices for milk, in the future strengthened by the fact that the milk quota will be gradually be ended. To cope with decreasing incomes ongoing scaling-up and further intensification of farms takes place. A process that is hindered by high agricultural land prices especially at places where the urban pressure is high . As a lot of farmers are not capable to bring up the money to buy agricultural land and expand (Pieterse et al., 2005).

Budget cuts for nature conservation

In the future the maintenance of nature will be decentralized and therefore become the financial responsibility of the Provinces.
To compensate national government will provide in an extra contribution of a 100 million euro per year, which is lower than the costs of maintenance transferred to the provinces. The aim is also to simplify nature maintenance in the future.
The Ecologische Hoofdstructuur (EHS, ecological main structure) should be finished in 2021, but will become smaller than originally planned. The Provinces will become responsible for the maintenance of the EHS. As a result of these changes national government will lower their expenditure on nature and landscape with two third. To compensate the budget cuts the Provinces will probably bring in another 60 or 70 million euro's per year. However despite this, according to an evaluation of the proposed policy of the Planbureau voor de Leefomgeving (Bredenoord et al, 2011) it will result in an accelerated decrease of the quality of nature. More recently it has been decided that the proposed budgets cuts will be reduced from 300 million euro's per year to a 100 million euro's per year. Although it is not completely clear what the outcome of this change will be, it is most likely that there will be enough resources now to maintain existing nature. However there will be a budget cut, the plans for the EHS for instance will still be reduced. As a result the prestige proposed Groene Ruggengraat, a solid ecological connection between the IJsselmeer and the Dutch national park the Biesbosch will not be realized.

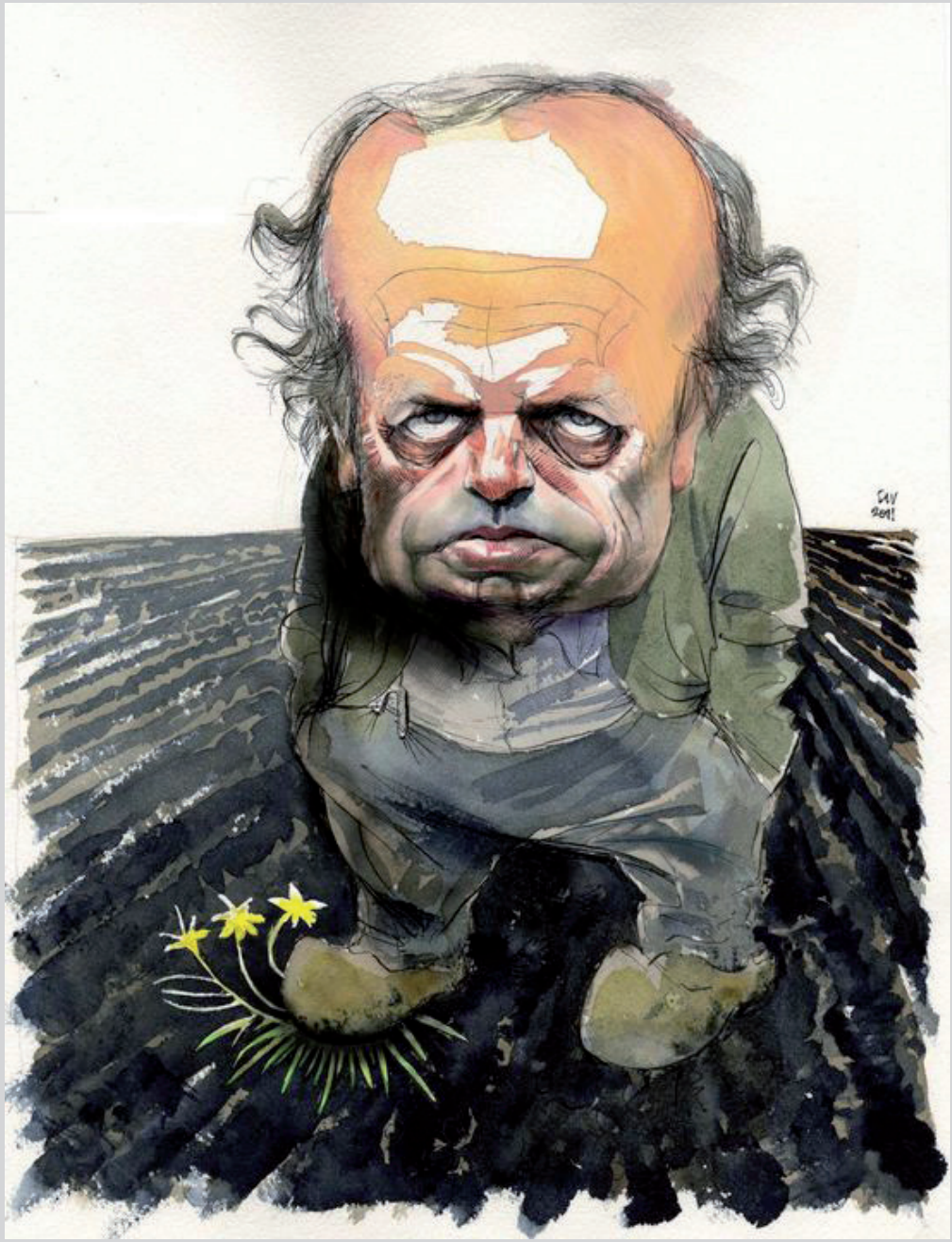


FIG 30. SECRETARY OF STATE HENK BLEKER RESPONSIBLE FOR THE NATURAL AREAS, Source: Siegfried woldhek (2011)

PRESERVATION OF CULTURE HERITAGE

Vanishing peat

As explained earlier on to make the peat lands of the Green Heart usable for agriculture the marshy lands have to be made passable. A lowering of the groundwater level is needed to drain the top level of the peat land. As a result of this drainage, the peat oxidizes and finally the area becomes marshy all over again. An additional lowering of the groundwater level is needed resulting in more vanishing peat as a result of the oxidation process. The exhaustibility of the peat can therefore be predicted easily (Kwaliteitsteam Groene Hart, 2012). After the peat has been gone it will be unlikely that the farmers will keep the more dense system of drainage so characteristic to the area.

Scaling up in the agricultural sector

The report *´Het gedeelde land van Randstad, ontwikkeling en toekomst van het Groene*

Hart´ (Pieterse et al., 2005) drawn up by Dutch National Physical Planning Service concludes that there is a trend of scaling-up in the agricultural sector in the Green Heart: colleague-farmers buy the lands that become available. Although there is a decrease in the number of agricultural companies the acreage of agricultural land has barely changed. It is expected that this process of up-scaling will continue in the future (Beukers et al., 2009). These future developments in agriculture will have its influence on built monuments, as farmhouses will become available with risks of demolition or an unrecognizable transformation. Moreover it will influence the historical cultural landscape: the parcellation, its ditch structure and the characteristic planting.



FIG 31. DEMOLISHED BARN, Source: Morijn (2012)

A FARMER'S LAND

Third step: actor identification and actor analysis

The third step consists out of the identification of the primary problem holder or stakeholder(s) of the Green Heart region. It is about the actors who have the capacity and incentive to invest in their local environment (Boelens, 2009, 2010). In this context you can distinguish leading actors in the business society (with a primary focus on profit-making), within the public society (with a primary focus on representational vote-wining) and within the civic society (with a primary focus on specific partnership interest).
As earlier already concluded is the Green Heart and has always been predominantly agricultural land. It is therefore no suprice that farmers are one of the most dominant actors within the region.

LEADING ACTORS IN PUBLIC SOCIETY

Formal power: national, provincial and local government

In the Netherlands formal power is organized throughout three tiers of government : national government, the provinces and the municipalities. Formally it has within this structure three means of power to its disposal: transfer of information, (financial) incentives and juridical means (Pieterse et al., 2005). Depending on the specifics of a particular policy the required means to steer developments are determined.

The new Wet ruimtelijke ordening (Wro), the new Dutch spatial planning act which became effective in 2009, aims to make a clear distinction between the development of a vision in a structural vision and the development of policy rules in the land-use plans. In this respect the (mandatory) structural vision is an overall indicative spatial plan used as a framework to integrate spatially relevant decision-making on the local level. The Wro gives a lot of flexibility concerning the form of the structural vision. Motivation and policy choices are allowed to concern issues that go beyond spatial planning, as long as they give enough guidance for the development of the land-use plan. It is also allowed that the structural visions concerns only one facet, theme or aspect. So for instance the structural vision is allowed only to concern policy decisions dealing with agricultural development. This also makes it easier to integrate other policy instruments in the vision on the theme. Framework for the land-use plans in the new Wro is to only organize those things that are relevant to the spatial development of an area.

With the approval of the Nota Ruimte (Space memorandum) by the Dutch national parliament, the traditional central role of national government within spatial planning came to an end. The memorandum leads up to a decentralisation of spatial planning resulting in a shift of the primary tasks of spatial planning from national government to the Provinces and municipalities. This trend of decentralisation is continued with the recently published spatial memorandum Structuurvisie Infrastructuur en Ruimte (SVIR, Structural vision Infrastructure and Space) (Ministerie van Infrastuctuur en Milieu, 2012). The document describes the intended policies concerning spatial planning and infrastructure. National government restricts the number of national interests in order to give more space to other levels of government in spatial planning. One of the interests national government is abandoning are the so-called National Landscapes , the Green Heart being one of them. Herewith the protected status of the Green Heart on a national level has been expired and it is now up to the relevant Provinces together with the municipalities to decide what to do these national landscapes.
It is also now up to the Provinces in strong negotiation with the municipalities to decide where to built or not, where to develop nature (EHS for instance). They can steer, promote or prevent, developments within the Green Heart. The Provinces will also take over the tasks of national government to purchase areas for the to be further developed ecological main structure (EHS). However the position of municipalities is still strong, as they have, by means of land-use plans, a large influence on spatial development. Provinces and national government have by means of the new Wro also the possibility to make use of this instrument, but the primacy is still with municipalities.

Staatsbosbeheer (national forest service)

Staatsbosbeheer (national forest service) is the forest and nature manager of the Dutch national government. The organisation maintains around 260.000 ha. forest, nature and other areas for the Dutch state. In this sense the organisation is always important in case areas managed by Staatsbosbeheer are part of a spatial development.

Waterschappen (waterboards)

A *Waterschap* (water board), also referred to as *Hoogheemraadschap* is a regional government agency that is responsible for the water management of a certain region. Its tasks concern the protection of the area against floods, the water quantity and water quality. The water boards are financed via taxes, paid by citizens, farmers and companies. Delegates of these groups make up its board. Problematic with this kind of government structure is that the general interest of a sustainable water management not always coincides with the the interest of every separate group. For instance the waterboard of Rijnland, responsible for the water management of large parts of the middle and the north of the Green Heart, needs space for waterretention to deal water potential floods. Despite the urgence it has difficulties to get the subject taken seriously, as it does not serve direct interests of concerned groups (Pieterse et al., 2005).

LEADING ACTORS IN CIVIC SOCIETY

Natuur Monumenten (Nature monuments)

Natuur monumenten (nature monuments) is a Dutch national association that buys and maintains natural reserves in the Netherlands. It promotes itself as an organization that aims to care for nature in the Netherlands, in order to keep the Netherlands open and green en people can continue to enjoy nature (natuurmonumenten, 2012). In 2011 de association had 730.000 members (natuurmonumenten, 2012).
The organization derives its income from the contribution of the members, donations, sponsorships by companies, like the Nationale Postcode loterij and ING group. The association owns 355 nature reserves together over 100.000 ha. land, within the



FIG 32. THE LOGO OF NATUUR MONUMENTEN, Source: Yocolo

Green Heart this is approximately 6770 ha (Dijke et al., 2005). The organization is strongly involved in the execution of the Ecologische Hoofd Structuur (EHS, ecological main structure).

De 12 landschappen (The twelfe landscapes)
The *12landschappen* is an umbrella organisation for 12 private nature preservation organisations, one in every province of the Netherlands. Most of them have been founded in the 20s and 30s of the previous century, when the above described Vereniging Natuurmonumenten felt the need to have more local embedded organisations. Within the Green Heart the *Zuid-Hollands landschap, Landschap Noord Holland* and *Stichting het Utrechts Landschap* are active. The organisations buy nature and landscapesin order to protect, develop and maintain these areas. The buy the lands the organisations depent on governmental subsidies.

Milieudefensie (environmental defense)
Milieudefensie (environmental defense) is a Dutch association that aims for a sustainable and clean world. The organization has around 80.000 members and donors. In case of the Green Heart it strives to protect the cultural landscape of the Green heart. They see the Green heart as a typical Dutch landscape that nationally and internationally is very unique. In contrast with Natuur Monumenten they do see potential in agricultural nature management. The organization have a lot of local active members who are willing to campaign against developments they see as a thread to the Green Heart, as they have done already many times in the past.

Stichting Het Groene Hart (association for the Green Heart)
*Stichting Het Groene Har*t represents inhabitants of the area that care for the cultural landscape of the area. It functions as an umbrella organization for hundreds of local cultural historical interest defender, like associations that aim to maintain local mills. It collects income by means of donors and project subsidy.

Private land owners (FPG)
Beside farmers there are also private land owners in the Green Heart, a lot of these lands are part of the cultural history or are areas that have a recreational function. They are represented by the *Federatie van Particuliere Grondeigenaren* (FPG, Federation for private land owners). They have over 1800 members together owning around 200.000 ha within the Netherlands, varying from a one ha up to several thousand ha per member. The organisation is aiming to support societal valuable private owned lands by promoting a sustainable economical devlopment.

ANWB
The ANWB represents its members (over 4 million) on the issues of mobility and recreation. The organization has a strong lobby ans is active within several consultative bodies, like het Groene Hart Pact (the Green Heart Pact). In cooperation with other parties it also does very practical projects, like expanding 42 hiking routes throughout the Green Heart.

LEADING ACTORS IN BUSINESS SOCIETY

Chamber of commerce
The chamber of commerce is supporting the interest of companies. In order to look after their interest the organisation takes part of a lot of consultative bodies. In the Green Heart are located approximetaly 50.000 companies supporting 250.000 jobs (Pieterse et al., 2005). As municipalities are aiming to have as much as jobs as possible within their city borders they are usually willing to meet demands of companies, also regarding spatial claims.

Farmers
The appearances of the landscapes typical to the Green Heart result for a large part from the activities of farmers. In order to analyze the agricultural structure of the Green heart closer it has been divided in eight subareas: *Vechtplassen, Rijnland-bollenstreek, Lopikerwaard-Reeuwijk, Krimpenerwaard, Groene Hart West, De Venen, Amstelland Gein, Alblasserwaard-Vijfherenlanden*. For a large part there are two types of farmers in the Green Heart: livestock farms and to a lesser extent horticulturists. The Rijnland-bollenstreek and the Green Heart West has predominantly horticulture, the first subarea being especially known for the production of flower bulbs, while the Green Heart West is well known for its tree and plant cultivation. In the rest of the Green Heart grazing livestock farms is the dominant type of farming, most of them being dairy farmers. In the subareas Alblasserwaard-Vijfeherenlanden and the Krimperwaard 70% of the agricultural companies are dairy farmers, in the Lopikerwaard, De Venen and the Amstelland this is 60-65% and in the Vechtplassen 57%.
The *Land en Tuinbouw Organisatie* (LTO, agriculture and horticulture organisation) represents a large part of the farmers (70% - 75%). The organisation together wit governments and other parties takes part in a lot of consultative bodies. As explained above the within the Green Heart the organization meanly has to deal with two groups of farm-

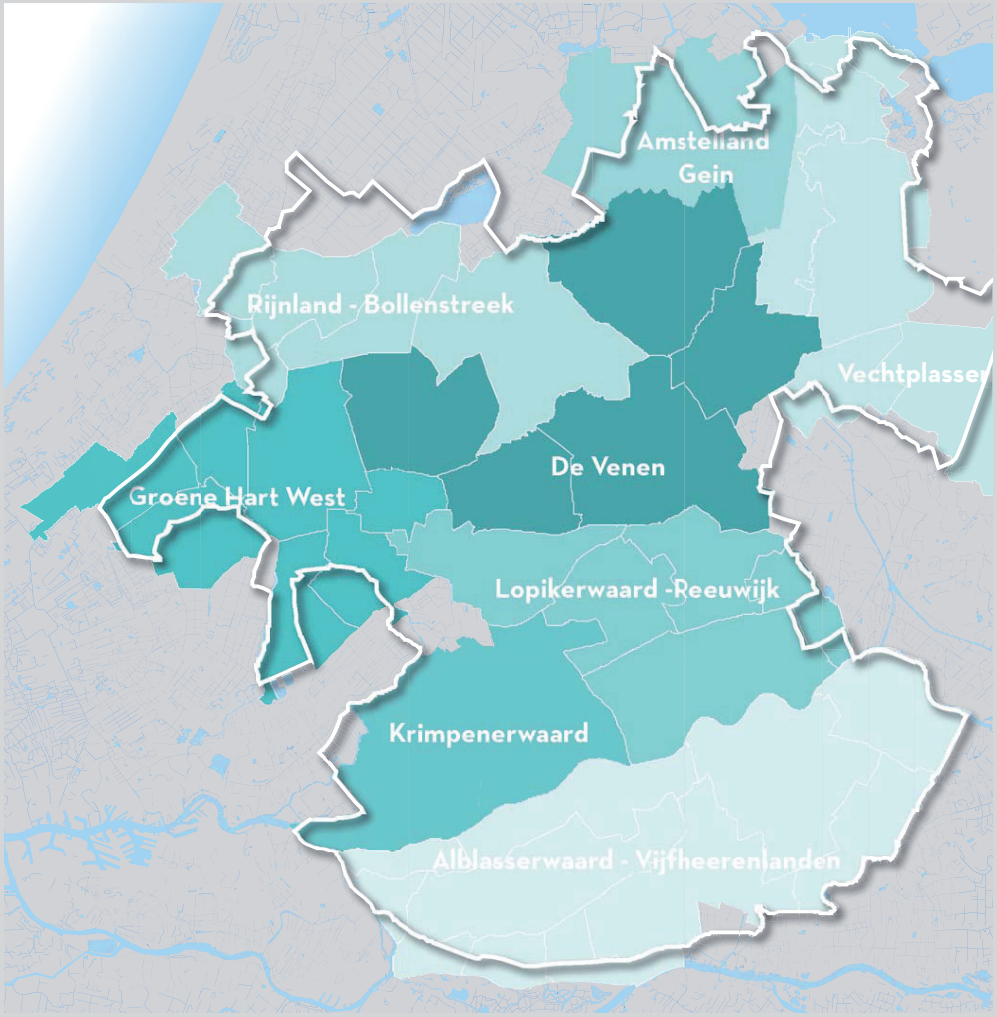


FIG 33. THE EIGHT AGRICULTURAL SUBAREAS IN THE GREEN HEART

ers; live stock farmers and horticulturists
The interests of these groups of farmers differ a lot. The income of the livestock farmers are decreasing, moreover their activities are impeded by high land prices and a call for a higher water level in the area by water and nature protection organizations. Whereas economically it does go well for horticulturists (Pieterse et al., 2005).

Due to decreasing incomes of livestock farming and higher land prices, land ownership is no longer apparent. The prices of agricultural land have not only doubled since 1995, but in areas where urban pressure is high, prices are also run up by the expectation value of the land (a higher value of the land caused by speculation on changes of the land-use plan). As a result most of the farmers are therefore not capable to finance needed expansion.
As the productive value of the land of greenhouses (horticulturists) is considerably higher, horticulturists are capable to pay much more for their lands. Their position on the land market is therefore relatively positive. The land market for green houses however is restricted by means of land use plans and therefore there is a scarcity of land for green houses (Pieterse et al., 2005).

Real estate developers
Within the Green Heart the most important spatial claim by real estate developers is for housing. In order to achieve this they have financial means and land to their disposal. Besides the demand for housing to serve the current inhabitants of the area in there is a general demand for rural living in the Randstad region (Pieterse et al., 2005).

This is emphasized by the outcomes of the questionnaires done for the report *´Het platteland van alle Nederlanders´*(Steenbekkers et al., 2008) in which over 30% of urban citizens in the Netherlands state that they for sure want to live in the country side at some point and 27,5% is seriously thinking about it.
Beside building for new inhabitants, there is also a demand of housing to fill up the natural growth of the villages.

Drinking water companies
There are several drinking water companies active in the Green Heart: Waternet, Dunea, Evides, Oasen and Vitens. These companies are regionally bound and most of the times municipalities and provinces are the largests shareholders of these companies.
The drinking water is gained in the Netherlands by pumping groundwater (60%)



FIG 34. THE DRINKING WATER POOL AT THE LOOSDRECHTSE PLASSEN, the pool is used to gain drinking water, Source: Rederij Vonk

taking in surface water (39%) and extracting water from the dunes (1%). Subsequently the water gets purified and distributed. The gaining of drinking water is strongly related to the other facets of water mangement. Fro instance the pumping of ground water can influence local ground water levels in such a manner that it has a negative effect on nature. The salinasation of the surface water as a result of intrusion will further complicate the gaining of surface water more.

Leisure business (RECRON)

According to the report *'Monitor Toerisme Groene Hart 2010'* (ZKA, 2011) the economical importance of tourism in the Green Heart has grown between 2005 and 2011 with 11%. The strongest (touristic) region within the Green heart has been the *Vechtstreek*.: almost 30% of the turn over is realized here. However related to the whole economy of the Green Heart it is still marginal.

An organization that supports the interests of the leisure sector is the RECRON with approximately 2000 members. The organisation represents around 85% of the turnover of the sector.

ACTOR ANALYSIS

Power vs interests grid

After identifying the leading actor within the area of the Green Heart it becomes important to surface the role and impact of the different actors. What position do they hold and how are they best influenced/directed? A power / interest grid, as described by Ackermann and Eden (2003), has been used to further surface the decisive actors. As such it helped to yield further insights and refine thinking about the leading actors. The grid arrays actors on a two-by-two matrix where the dimensions are the actors interest (in a political sense, instead of just out of curiosity) in the issue, the Green Heart, and the actor's power to affect the Green Heart's future (Bryson, 2004). As a result four categories of actors can be distinguished (Bryson, 2004): players who have both an interest and significant power, subjects who have an interest but little power; context setters who have power but little interest; and the crowd who have little interests or power. According to Bryson (2004) the power vs interest grid helps to determine who's interests and power (the players) must be taken into account in order to successfully address the issue at hand. It narrows a very large number of possible actors down to those significant to strategy making (Ackermann and Eden, 2003). In case of the Green Heart the technique made it clear that certain players could be identified that are of importance for the Green Heart's future: nature preservationists, the Provinces, municipalities, dairy farmers and real estate developers, they are the players.

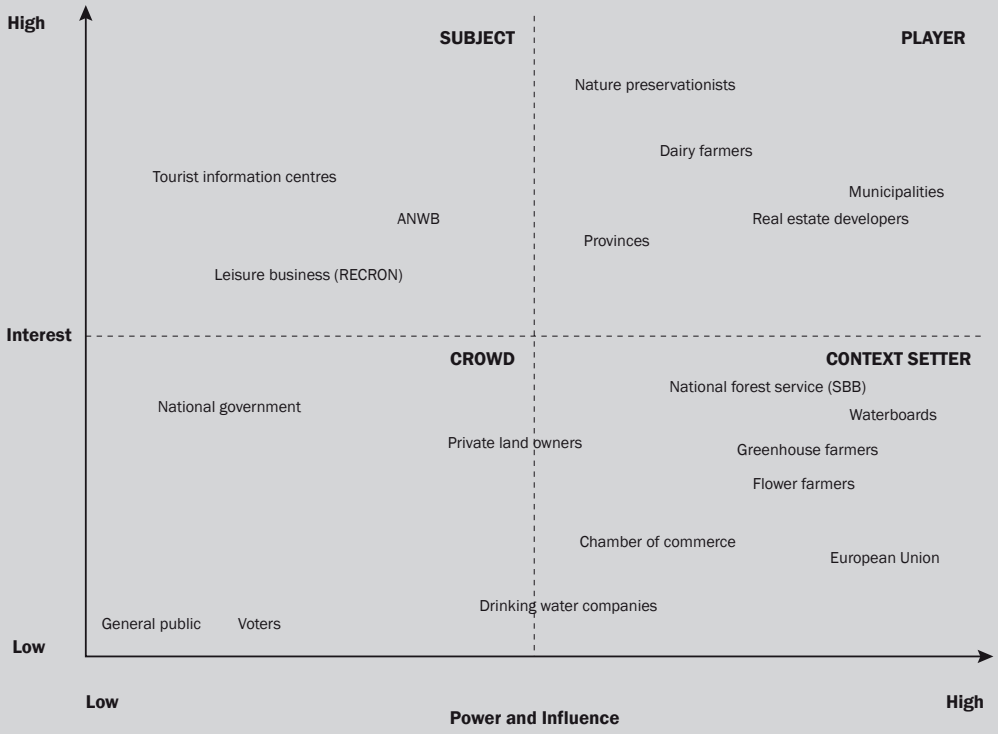
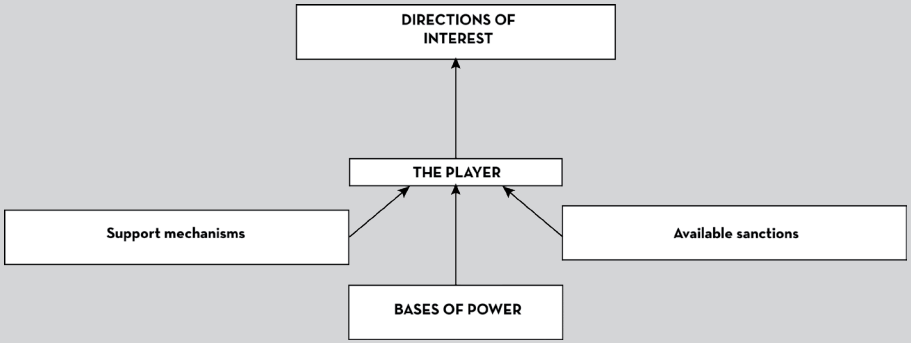


FIG 35. THE POWER VS INTEREST GRID OF THE GREEN HEART

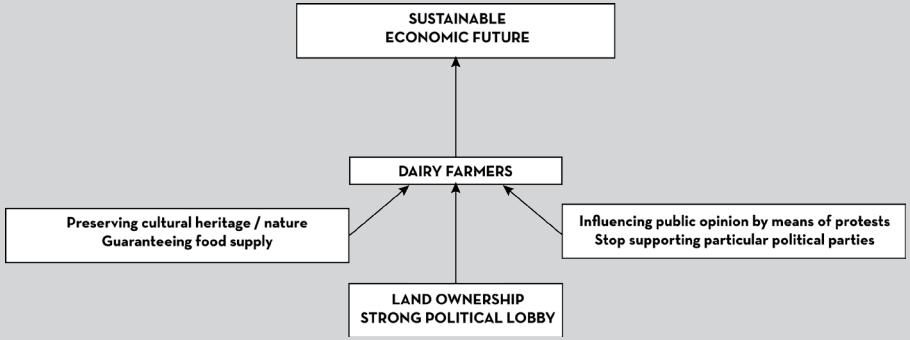
Bases of power - directions of interest diagrams

This technique builds on the power versus interest grids and involves looking more closely at the actor groups (Bryson, 2004). A bases of power –directions of interest diagram can be created for each actor, but to get more focus only the most influential or central actors, the identified players, were analyzed (see fig 34). The technique makes it possible to reflect more in detail on those actors that seem to be powerful and interested and explores why they are powerful or interested. The technique is taken from Ackermann and Eden's star diagrams (2003). These kind of diagrams indicates which sources of power are available to the actors, as well as the goals or interests the actor seeks to achieve. Power can be derived from access or control over various support mechanisms, such as money and votes, or over various sanctions, such as regulatory authority or votes of no confidence or a combination of both (Ackermann and Eden, 2003).

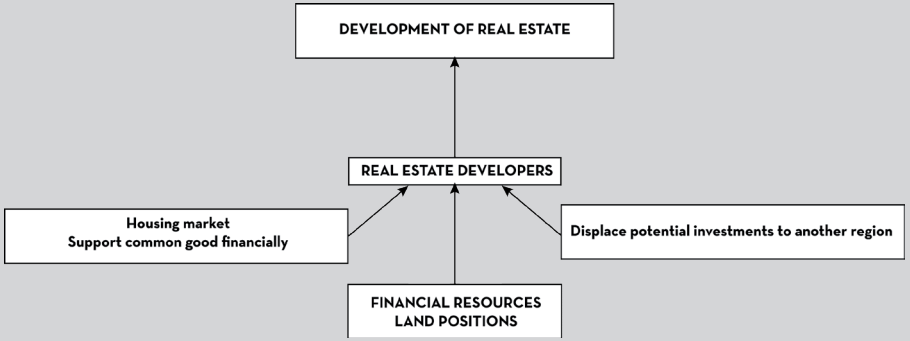
On the bases of the star diagrams of the players it becomes possible to see whether there are any patterns emerging. They can help to find the common ground, especially in terms of interest, across all of the actor groups. It creates the potential to find the common good and structure of a winning argument (Bryson, 2004). The diagrams will also provide background information on each actor in order to tap in on their interests or make use of their power to advance the common good (Bryson, 2004).



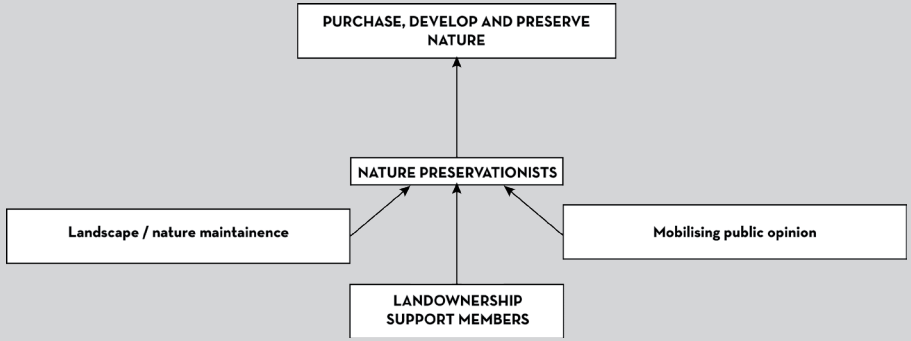
Bases of Power-Directions of Interest Diagram General scheme



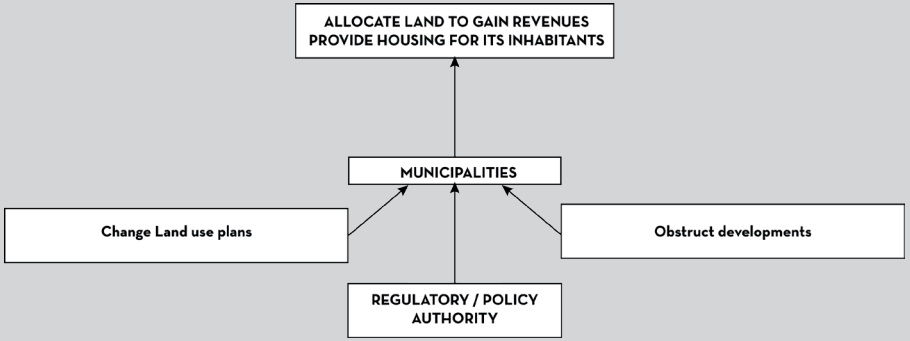
Bases of Power-Directions of Interest Diagram Dairy farmers



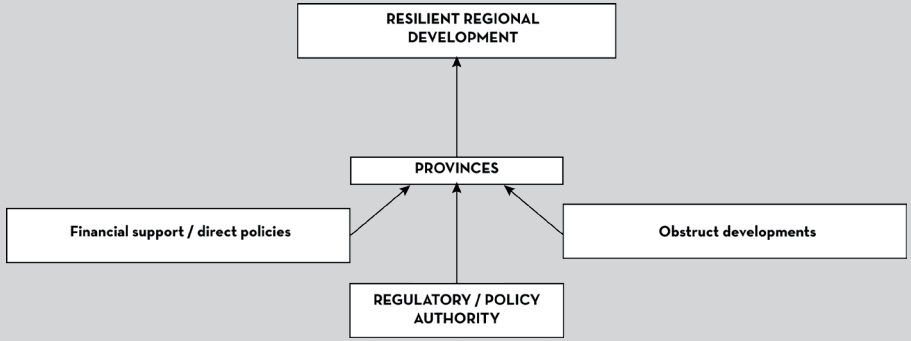
Bases of Power-Directions of Interest Diagram Real Estate Developers



Bases of Power-Directions of Interest Diagram Nature Preservationists



Bases of Power-Directions of Interest Diagram



Bases of Power-Directions of Interest Diagram

FIG 36. BASES OF POWER - DIRECTIONS OF INTERESTS DIAGRAMS, After: Ackermann and Eden, 2003

FRAMING FUTURE TRAJECTORIES

Step four: opportunity maps and development possibilities

The next step implies compiling opportunity maps and development possibilities based upon the internal motives and drives of the identified focal actors. According to the working scheme of Boelens (2009,2010)and in contrary to the descriptive research done at step 1 and 2, the main criteria is that the proposals should be proactive, future oriented, convincing and as such develops commitment of the identified actors. The working scheme by Boelens suggests that these opportunity maps and development possibilities should be created in a team setting. However, as stated before, within the context of this graduation project actor involvement is not regarded to be feasible. Therefore at first a further analyses of the actors and how they are related to the identified issues has been made. The outcomes of these analyses have been related to existing substantiated and potential innovative concepts.

The developed ´Bases of the power-directions of interest diagrams´ have been used as a starting point to understand which interests or themes seem to mobilize a significant number of actors. The goal now is to create persuasive opportunity maps and development possibilities that show how support for specific policies and programs will further the interests of a significant number of important actors (Bryson, 2004).

A STAKEHOLDER-ISSUE INTERRELATIONSHIP DIAGRAM

To show which actors have an interest in different identified focal factors, the main issues, and how actors might be related to other actors through their relationship with these issues a Stakeholder-issue interrelationship diagram helps (Bryson, 2004). The developed diagram helps to structure the problems in the Green Heart region in which a number of potential issues for cooperation or conflict may become apparent. An arrow in the diagram indicates that the actor has an interest in an issue, through their specific interest is most likely to differ from others actors, and those interests may well be in conflict. These different positions of the related actors will be elaborated shortly in the following.

In case of the issue of the preservation of the landscape in the peat land areas farmers have a totally different view as to for instance nature preservation organisations. Farmers preferable want to continue their activities on a economical sustainable manner, whereas nature preservation organisations prefer further development of nature reservations. Water boards seek for a sustainable water management for the area. The leisure & tourism sector aim to develop an attractive and accessible landscape which not always coincides with nature development, nor agricultural activities. Finally private land owners most of the times seek to preserve existing situations.

In case of the issue of the preservation of cultural heritage the national state has designated several so-called rijksmonumenten (national monuments). Although sometimes it is negotiable in most of the cases it is not allowed to change something to a rijksmonument. Municipalities at first will want to preserve monuments, in addition to the rijksmonumenten they usually point out municipality monuments. However if these monuments blocks future developments they are usually willing to soften their positions. Real estate developers see old left over farms as potential objects to develop new housing, sometimes by preserve the old buildings, but if not feasible, by demolishing them and adding new buildings or a combination. To farmers the old farmhouses usually simply are their working environment, not always acknowledging its cultural value. To the leisure and tourism sector again it is usually a means to promote the region, not always in the best interest of the cultural heritage.

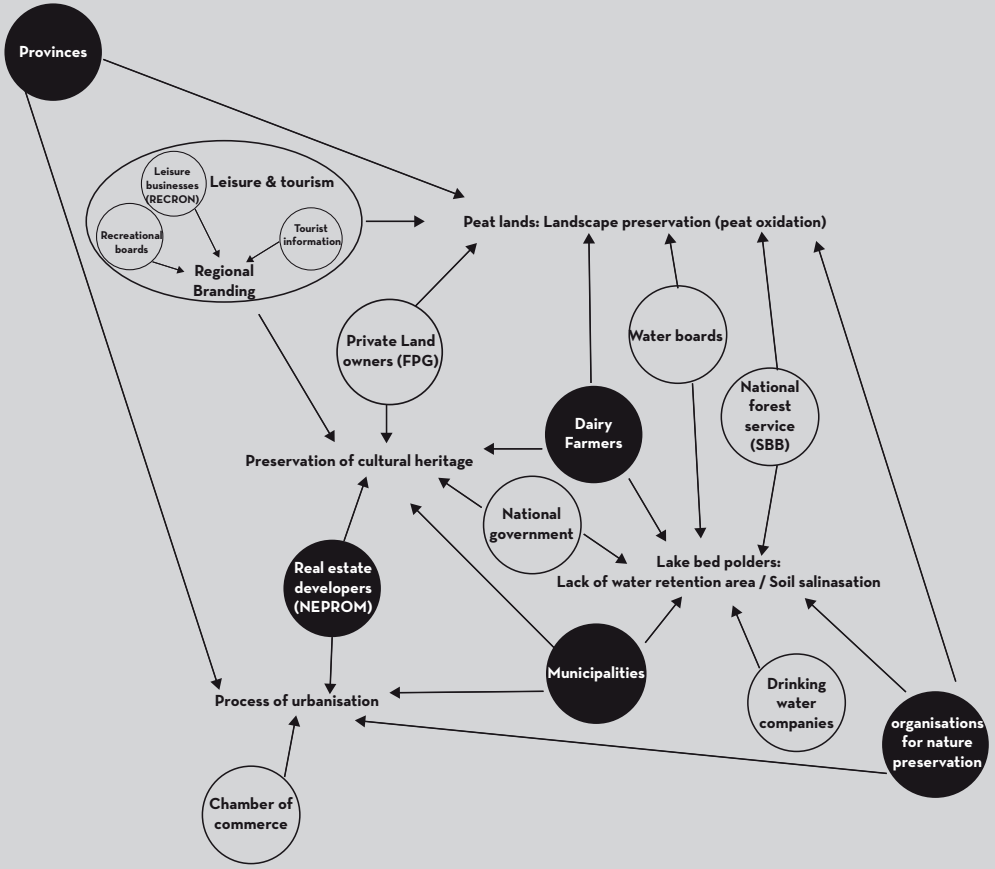


FIG 37. STAKEHOLDER-ISSUE INTERRELATIONSHIP DIAGRAM, Adapted from Bryant, 2003 in Bryson, 2004

In case of the issue of the lake bed polders. Also within these area farmers preferable want to continue their activities on a economical sustainable manner, to do so they need water. The gaining of water in these area drains the water of the adjacent peat land nature areas and are therefore damaged. This resultts in a critical position by nature preservation organizations concerning the water demand of farmers in the lake bed polders. As a result of salinazation this situation will even worsen in time, as there will be an increasing need to flush the areas with sweet water. Water boards will also seek in these areas for a sustainable water management of the area in this case, trying to balance the interest of all parties, but putting safety up front. Whereas drinking water companies will also have a claim on the scarce water.

Finally in the case of urbanisation of the Green Heart there are also different points of view that can be identified. Real estate developers will continue to seek for areas where they can develop their projects. The chamber of commerce will support this in case there is a lack of good business facilities. Municipalities will prefer developments as they can gain revenues from the development activities, at the same time it can be politically sensitive, they have to balance. The province will look for a coherent, sustainable development on the scale of the region. Whereas nature preservation organisation most likely will oppose any kind of urban expansion.

iNTENSIFY & EXTENSIFY

The developed stakeholder-issue diagram made it clear that besides two general issues (preservation of cultural heritage and ongoing urbanisation) there are two issues that are strongly related to local landscape conditions. The issue of peat oxidation is concerning the peat lands and the issue of salinazation is more concerning the lake-bed polders. Besides these two issues there are other significant differences related to the two landscape types.
Commissioned by national government the *nota belvedere* (Feddes, 1999) has tried to identified the most important cultural historic areas in Netherlands,. Interesting enough almost all the areas chosen within the Green Heart are located in the peat lands, this is also concluded by Borger (1997).
Third difference is that in contrary to the peat lands all lake bed polders are positioned close to the urbanised west wing of the Randstad. These polders originally are also the products of the urban citizens, as most of the lake bed polders were reclaimed as an investment to the urban inhabitants of the surrounding cities. The largest part of the peat land is more disconnected from the urban, located in the gap in the Randstad, between Utrecht and Dordrecht. These areas are also related to the much more rural areas of the other *Waarden* , like the Bommelerwaard and the Tielerwaard.
However within both of these landscape types there is one player, one focal actor that stands out: the dairy farmer. They own most of the land and their farming activities for a large part define how these landscapes look like. Although all dairy farmers have to deal with the same kind of financial problems, they all have to deal with a loss of income due to decreasing subsidies and a lowering of world market prices, the landscapes they are active in provide different physical problems. Whereas dairy farming as a result of the granularity of the polder structure and the oxidation of peat have no real possibilities to further industrialize, the lake bed



FIG 38. BELVEDERE AREAS, Overview of the most precious cultural historical areas in the Green Heart. The list has been made for the whole of the Netherlands and has been compiled by the Dutch National Government in 1999. It aims to stress the importance of cultural history in spatial planning.The light green areas are the lake bed polders, the dark green aeras the peat lands. After Feddes, 1999.

polders with their rational structure do have this potential. Also the nearness of the Greenport infrastructure makes the outlook of the dairy farmers in the lake bed polders different as that of their colleagues in the peat lands.
The developed spatial planning strategy takes up the differences between the two different kind of polders, the peat lands and the lake bed polders as its framework, its

starting point to further develop a future scenario.

SPEED UP & SLOW DOWN

The identified focal issues related to the two types of polders are both related to water. It seems therefore to be a logic first step to start with the water management of the area. On the scale of the region of the Green Heart the strongly interrelated combination of water quantity and quality issues are most relevant. On the long term there should be a sufficient amount of water, of sufficient quality, at the right place, at the right time. This is closely related to the possible and desirable uses of the land.

As explained earlier when climate change will continue salt seepage will increase in several low lake bed polders. The water quality in nature and recreational areas therefore will become difficult to maintain in periods of drought, while in times of peaks in rainfall more water have to be drained into the boezems . Moreover in the future the supply options of sweet water will become limited as a result of intrusion; salt seawater will reach main water inlets of the polders. The current dependencies between polders and boezems therefore cannot be hold in the future (Buuren et al., 2008).

In order to relief the pressure on the boezems in lake bed polders of the west wing opportunities to uncouple the polders from the boezem system, will be explored. The aim is to create an differentiated mosaic of areas, each with its own water level, dynamics and water quality. Only the most critical needs (urban green, nature reserves) will be serviced by sweet water supply from the boezems.

For the peat land areas the oxidation of the peat lands asks for a solution. Therefore the aim is to rise the water tables (in order to preserve the peat) en the uncoupling of the lowest parts the peat areas (to unburden the boezem system in periods that a large drainage is needed). At the level of the polder units, large independent functioning water systems are needed.

The water management related taken measures will be related to potential future trajectories for dairy farming in the areas. In terms of affordable landscape management dairy farmers seem to be the most suitable actors to do so. They are the ones that are intrinsically linked to the history of the landscape and to give the landscape a sustainable future should be intrinsically linked to the future of the landscape.

To continue or develop an economic sustainable future dairy farmers have two potential future directions. In the first case dairy farmers aim to become more efficient and therefore more competitive. This is done by means of clustering, enlargement of the farm and further industrialization. This clustering can take place within its own agricultural sector (dairy clusters) or with farms from other agricultural sectors (agro parks). In case of dairy clusters dairy farmers benefit from the larger scale. In case of agro parks different types of agricultural activities (in this case for instance green house farming and dairy farming) benefit from each other's waste flows and logistics.

The second option for dairy farming is to take on other kinds of activities beside farming. According to the 'Ideeënboek multifunctionele landbouw in ruimtelijke ordening' (Concept book multifunctional farming in spatial planning) (Wieringa, 2011) there can be distinguished three kinds of activities farmers develop adjacent to their core business of farming: multifunctional farming, deepen and broaden. Multifunctional farming implies farmers will take on other activities kind activities like health care related, nature- and landscape maintenance, regional products, recreation, child day care and education. Implicit these

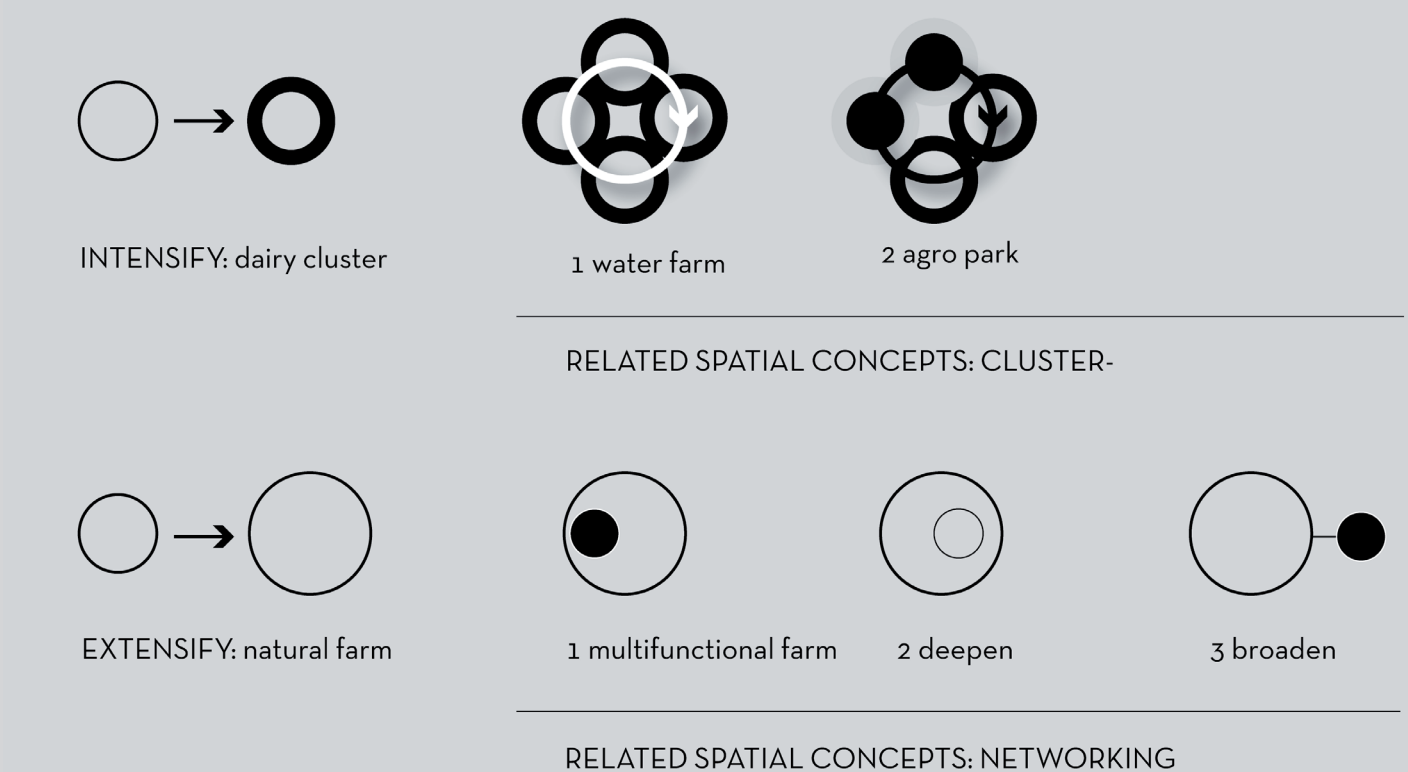


FIG 39. OVERVIEW POTENTIAL DAIRY FARMING CONCEPTS,

activities are related to farming or are resulting from them (Wieringa, 2011). In case of broadened farming activities that are not related to farming, like wholesale, lease of office space, or building construction are taken on . Finally deepened farming is the opposite of differentiation. Differentiation means pushing off processes in the production line, like feed storage, manure storage, manure processing, crops storage, sort, pack , etc. In case of deepening these activities are brought back to the farm.

Taken into account the rational large scale structure and position of the lake bed polders the development of dairy clusters seem to be a logic step. The scale and size of the parcellation in these polders seem to be suitable for a more industrialized and large scaled kind of dairy farmer. This potential is even strengthened by closeness of the Greenports and their related infrastructure. This also creates the opportunities to develop agro parks. Main problem to develop the concept of diary clusters in these area's is the lack of financial means to expand and invest in the industrialisation of the farms. Public opinion is also not always in favour of these kinds of development. To solve the problem of salinisation coupled with a lack of water retention areas as stated above it is preferred that the lake bed polders will be uncoupled from the boezem system. As a result dairy clusters will have take care of the water management within their own region, largely independent from the boezem system. A concept called water farms seem to give a solution. In the chapter on dairy clusters this concept will be elaborated on further.

For the peat lands the concept of dairy farming is much more complicated. The polders have a refined structure that does not coincides with the idea of a industrialised large scaled farm. It is more likely that the farms in these areas have to extensify. As stated above in order to preserve the peat the water tables will have to rise and the peat lands therefore will become wetter making intensification of farming impossible. The dairy farming therefore will have to find other sources of income and take on, as described above, other sorts of activities beside farming. Natural farming is a concept for dairy farming that is capable focused on the recovery and preservation of large peat land areas combined with the running of a dairy farm.

To resume within the Green Heart two to the landscape condition related problem areas can be discerned. At the one hand you have the lake bed polders, dealing with salinisation and a lack of water retention areas, and at the other you have the peat land areas dealing with the vanishing of peat as a result of low ground water levels. The lake bed polders have the potential to take up the dairy cluster concept, whereas the peat land areas are suitable for the natural farming concept combined with additional activities. As a result the future developments of the Green Heart will be shaped in time (speed) and space (scale). In the lake bed polders developments in terms of speed will be accelerated whereas developments in the peat lands will be slowed down. In terms of scale developments will be integrated (clustering) or differentiated(networking). The differentiation of the landscape implies that the landscape will become heterogeneous, whereas integration will result in a more homogenous landscape. Acceleration can be further achieved by seeking to connect to the regional and international infrastructural network, which is on hand in the lake bed polders. Slowing down can be achieved further by connecting to the slow cycles of the rivers or /and to disconnect from the regional and international infrastructural network. These two movements (speed up & slow down) will the guideline for the development of the different discerned landscapes , lake bed polders and peat lands, each with its own specific qualities.

In the next chapters the two main concept (dairy clusters and natural farming) will be further described. Followed by a description of related concepts like a care landscape, Holland dairyport and new country estates landscapes.

NATURAL FARMING

The report *Melkveehouderij op schaal* Rienks et al. (2003) describes three concepts that have potential for the future of dairy farming in the Netherlands. One of them is the concept *natuurbedrijf* (natural farming) which is developed for the vulnerable peat lands and aims to combine the recovery and preservation of large peat land areas with a economical feasible milk production business . It has also been recommended for the peat lands by the national government advisor on landscape in her report *Advies groene ruggengraat* (Feddes, 2009). This concept will make up the framework for the future development of dairy farming in the peat land areas.

At first dairy farmers will be stimulated to form a cooperation. The borders of the cooperation coincide as much as possible with water management and landscape historical units. The cooperation will be zoned into intensive and extensive part on the bases of the structure of the soil, the water management and existing nature values. The areas close to the reclamation axis will be used for dairy cows. The areas right behind these areas are slightly wetter and designated for calves and young cattle. The difficult accessible and more wetter parts will be used as hayfields forage supply. The even worse reachable areas that have puddles will be used as hayfields (bluegrass-lands) for botanical maintenance. The size of these cooperation's will need to be around 1500 ha (Rienks et al., 2003). Currently the average size of the farms in these areas is 34 ha (Vogelzang et al., 2009) which means that the cooperation will have to contain approximately 44 farms. The suggestion made by Rienks er al. (2003) that national government or nature preservation organisations bring in land and barns in exchange for nature maintenance by the farmers has also potential. As shown later on in the chapter on the concept of care landscapes groups of elderly people or care organisation who purchase a farm to turn it into a care hotel can also bring in the leftover lands in exchange of maintenance.

Economically the concepts seem to be a step back. Per ha less money can be made. At 1500 ha 720 milk cows can be kept. Whereas at this moment every company has approximately 60 milk cows per company on average (Vogelzang et al., 2009), which for the 1500 ha in total means that there are kept around 2640 milk cows now. The concept therefore will mean that less than a third of the current income can be made by dairy farming in the future. It will become less self-evident that agriculture is the most important source of income within this area. Therefore economic profitable complementary activities beside their main agricultural function will become interesting. The earlier mentioned multifunctional agriculture comes into play here, the dairy farms will include other activities in care, nature-and

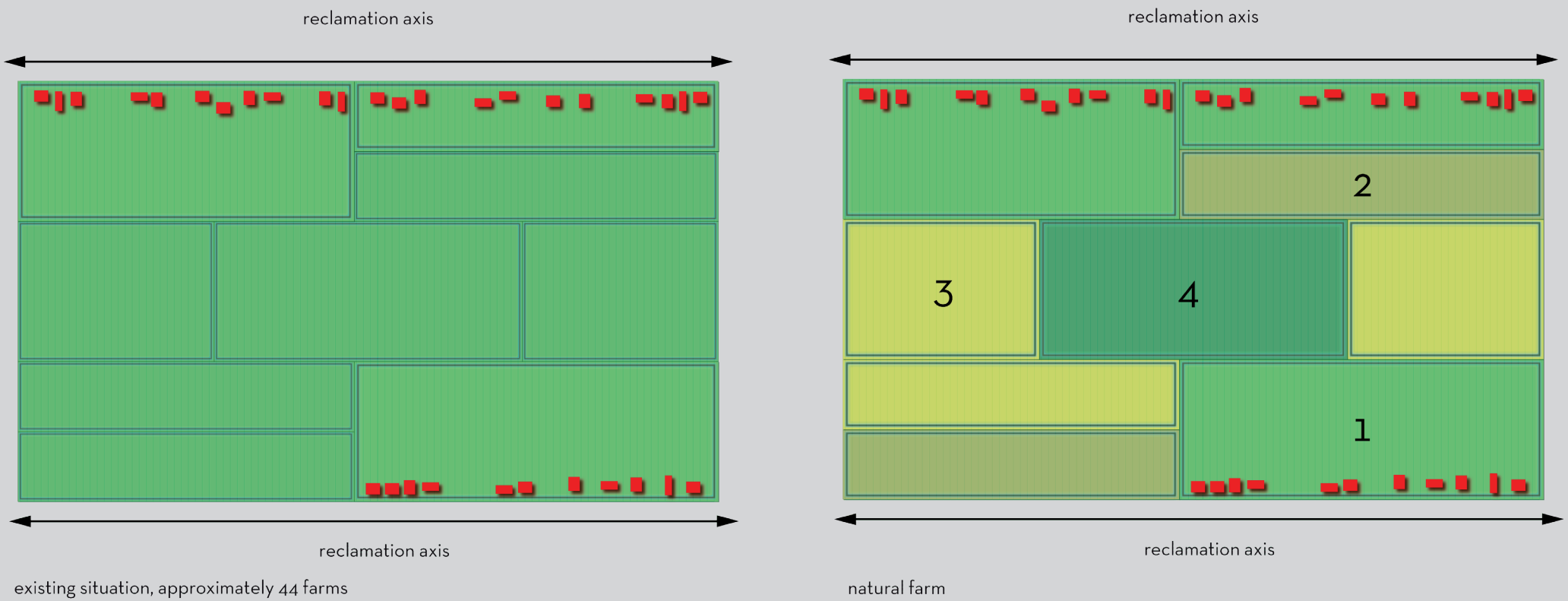


FIG 40. EXTENSIFY: NATURAL FARMING, 1. meadow land for dairy cattle close to reclamation axis, 2 meadow lands catlle and calves (behind meadow lands of the dairy cattle) , 3 hayfields for forage supply meadow birds habitats (difficult to access and wetlands), 4 hayfield for botanic management (very difficult tto access wet and puddles) After Rienks er al. (2003)

landscape maintenance, regional products, recreation, child day care and education on their farms (Wieringa, 2011). These other activities are (implicit) related to its agricultural activities. It is not about freestanding activities, but about a coherent whole of activities within the same company.
The question therefore is whether or not new other economical activities can be developed that will contribute to existence of the dairy farms and by doing so will help to maintain and improve of the cultural landscapes. Health care and recreation seem to have the most potential in this respect (Horlings et al., 2009). Within the health care sector there is a trend of extramuralisation, a shift from care provided in institutions to care provided at the client's home. The country side becomes interesting to the health care sector as certain patient groups benefit from a green environment and at the same time buildings from former farms become available. Connected to this potential is the development of recreation, as the trend not only deals with cure and car, but also with wellness. Health care as well as recreation benefits from an open and attractive landscape. The patient groups and health care sector can bring in their purchased agricultural lands to the natural farming cooperation's. Therefore large parts of the landscape can continue to be used as agricultural lands while at the same time the can serve as recreational area for patient groups and elderly people. In the next chapter this concept will be elaborated on further.

DAIRY CLUSTERS & WATER FARMS

The dairy cluster concept is one of the other two potential future trajectories for dairy farmers in the Netherlands (Rienks et al. 2003). The concept will lead to a very rational and cost-efficient large-scaled dairy farm. In this sense it relates to the large-scaled rational structure of the lake bed polders. The production of forage and the production of milk will be separated, the farm will concentrate on milk production. Each farm has around 1200 milk cows and the young cattle will also be held on the farm. In this sense the circulation of cattle is only restricted to the farm . There only cows being removed from the farm, no new cattle comes in. The cows will be held in stable

groups of 60-100 animals, which coincides with the natural size of cow groups; within the concept these groups are called cow-munity (Rienks et al., 2003). Each cow-munity will have its own accommodation and within one large-scaled dairy farm there are approximately 20 groups. The fact that every cow-munity has its own accommodation makes it possible to create a optimal climate for the cows. Cows will decide for themselves when to leave the stables or not. The stable is equipped with a lot of modern technologies. Cows will be fed individually, health and milk yield will be monitored.

A cooperation of farmers will own the buildings. The cooperation buys supplies collectively and sells its production in an same manner. The individual farmer delivers labour and cows. Profit made by the cooperation will be returned to the shareholders, the individual farmers, of the cooperation (Rienks et al, 2003).

The company is footloose and as stated before large-scaled. In case of a company of 1200 milk cows and 600 pieces of cattle, around 2 ha. of built-up area and around 5 ha. of compound for logistics and landscape integration is needed. Every unit needs 0,5 ha. outlet with some extra space for young cattle. All disturbing elements, like manure and food storage will be kept undergrounds. The company should be well connected to the road system as a lot of logistic movements will be made by means of heavy traffic. Therefore it has a certain logic to put several companies together. The large-scaled structure of the farms makes it possible to do investments in renewable technology, for instance investments in renewable ways of energy production.

Water farms

To cope with problem of salinisation and a lack of water retention areas dairy clusters in cooperation with other dairy clusters can take on the water management of the lake bed polders themselves. This concept is referred to as a water farm (InnovatieNetwerk, 2009). The planning and management of water retention areas has the potential to become a economical viable activity. Landowners, in this case the dairy farmers, will work together with governments and inhabitants to make optimal use of the water in a certain area/region. The water farm will receive, keep, retain, use, work and deliver water (InnovatieNetwerk, 2009). In this concept farmers together with possible other land owners, municipalities, and the water boards start a cooperation, the water farm. This water farm will store water in case heavy rainfall or in case of regional rainfall surplus. The stored water can be used by dairy farmers for their own use and therefore the area will become much less dependent on the boezem system. To compensate the draining of adjacent nature reserves, surplus water will be used to provide nature reserves with enough water supply.

The water farm can develop alternative activities like the breeding of fish, algae and the production of reed that can be used as a bio fuel and purifies the water in the water farm. The purified water can be delivered to adjacent industries and after use again purified. Industries therefore can stop or reduce groundwater uses. The fish can be sold on regional markets. The needed water areas create opportunities for recreational uses and guaranties water supply in periods of drought. The cooperation therefore can also facilitate recreational functions, for instance holiday housing.

Problem within this concept that a substantial investment is needed to start. Money most dairy farmers most likely do not have. A manner to gain finances is to allow housing in certain areas of the lake bed polders. Dairy farmers can sell parts of their lands as residential land, providing enough money to be able to make the necessary investments for the dairy clusters and water farms.

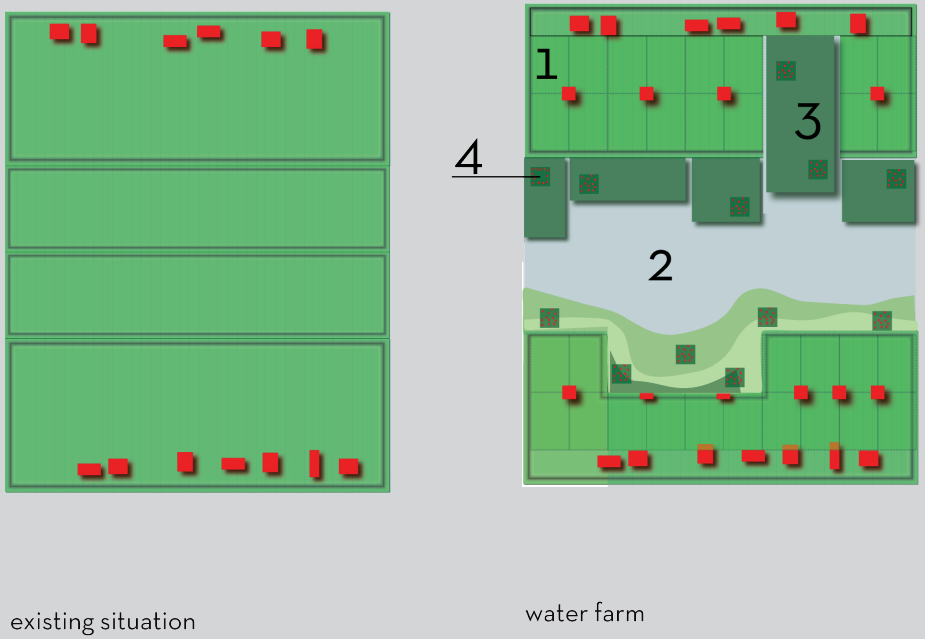


FIG 41. INTENSIFY: WATER FARM / DAIRY CLUSTER, 1 dairy clusters, 2 water retention, 3 nature development, 4 country estates After Rienks er al. (2003)

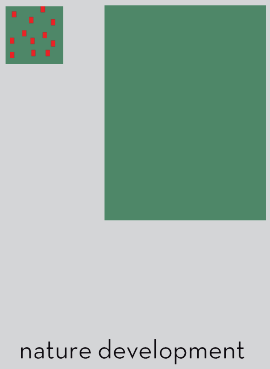


FIG 42. FINANCIAL SETTLEMENT NATURE DEVELOPMENT, 1ha housing delivers 11 ha nature

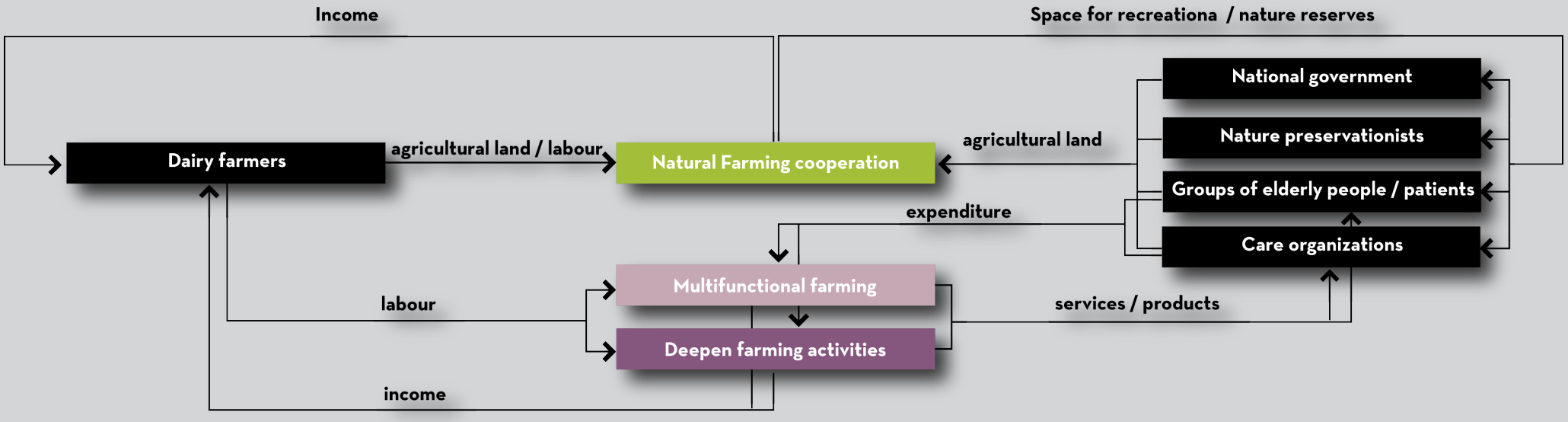


FIG 43. PRINCIPLE NATURAL FARMING IN THE PEAT LANDS

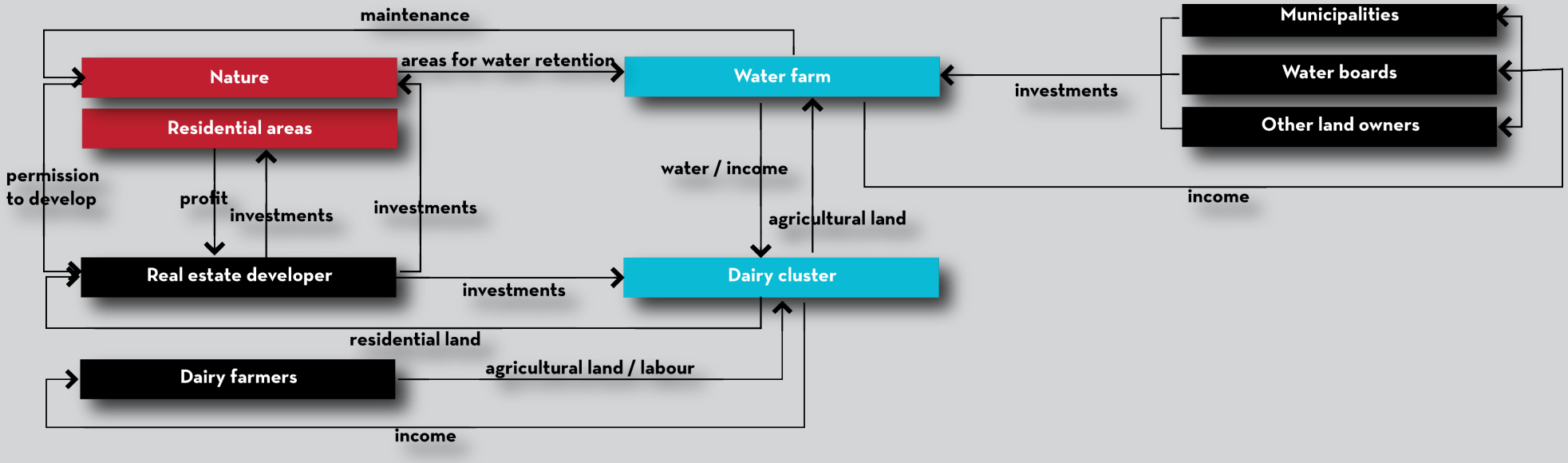


FIG 44. PRINCIPLE WATER FARMS / DAIRY CLUSTERS IN THE LAKE BED POLDERS

A CARE LANDSCAPE

The potential of this perspective is related to the fact that Dutch society is ageing quickly the years to come. In the year 2011 120.000 people retired from their jobs , in the upcoming ten years it is expected that 80.000 – 100.000 people will retire from their jobs per year. This will lead to a enormous increase of expenditure by national government on health care and elderly care. Only a small percentage of this expenditure would be enough to compensate for the loss of income due the required extending of dairy farming in the peat land areas.

Within the health care sector there is a trend of extramuralisation, a shift from care provided in institutions to care provided at the client's home (Horlings et al., 2009). The country side becomes interesting to the health care sector as certain patient groups benefit from a green environment and at the same time the buildings of former farms become available. Patient groups or health care institutions can purchase those buildings and deploy them as care hotels. Connected to this potential is the development of wellness, a trend that is related to cure and care. And if wellness sector expands in the area it will provide an facility infrastructure that has the potential to attract a more general public. This in return will provide more visitors to further develop the leisure and tourism industry of the Green Heart, there is a flywheel effect. Health care as well as leisure benefits from an open and attractive landscape and therefore connects to the core values of the Green Heart.

Medical matrix

Within the surroundings of the Green Heart there is a strongly developed network of cure and care institutions. These institutions, like hospitals, nursing homes, care homes, general practitioners, pharmacists and paramedical services make up an infrastructure on which the care landscape can be developed: the medical matrix (Horlings et al., 2009). From these institutions care can be delivered to new initiatives, like small-scaled housing, care farms or care hotels. This 'medical matrix' will be expanded and refined to the benefit of the care landscape as a result of two type of different trends. First an increasing number of medical clinics are being privatized and medical treatments are done outside the hospital. Care hotels can provide the needed facilities for patients to recover from the treatments. Secondly there is a trend of developing care-service centres in which different kind of medical services are concentrated at one single location. In the following a few potential concepts for the care landscape in the Green Heart will be described.

Healing Heart

As an increasing number of medical clinics are being privatized and medical treatments are done outside the hospital there will emerge a need for care hotels (Horlings et al., 2009). Patients can recover from their treatments in these care hotels. To provide therefore there is a potential to develop several new care hotels within the Green Heart. It is preferred to stimulate the use historic and/or cultural valuable buildings that are left over. As the buildings receive a new economic viable function the changes the building will preserved increases. Besides the care function, wellness and recreational activities that aim to prevent sickness can be developed as complementary facilities.

Care circles

In a zone around small villages in the Green Heart small-scales housing complexes can be developed that will use agricultural buildings that are no longer in use or other comparable buildings close to villages (the so-called second shell) for people that are in need of care. Care will be delivered by care service centres that are located in the villages (the first shell) (Horlings et al., 2009). Depending on the local conditions connections can be made with recreational services (bed & breakfast, restaurants, riding schools), recreational routes and wellness (sauna, treatments).

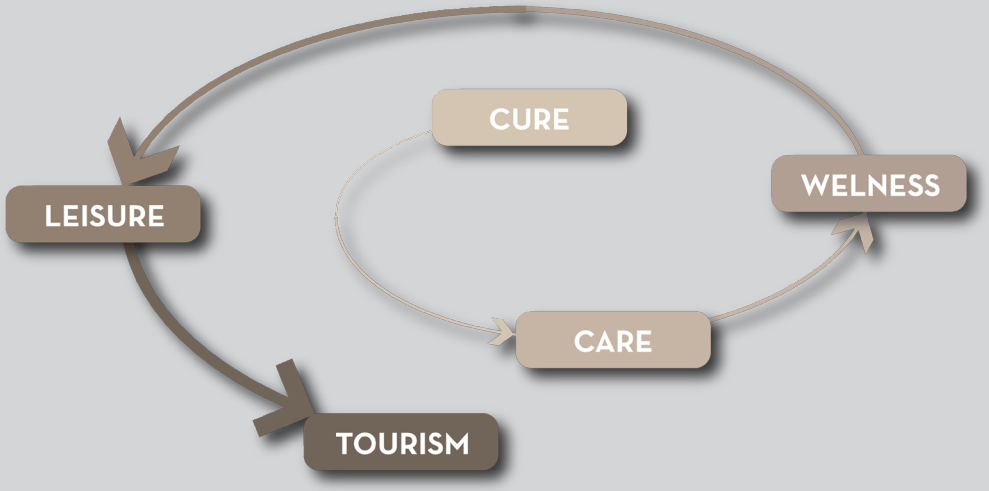


FIG 45. FLYWHEEL EFFECT CARE LANDSCAPE,

Restful rural

Several academic studies point out that people who interact with nature on a daily bases are better equipped against the negative effects of a personal crisis (Ottoson and Grahn, 2005). Green, water and animals lead away from worries. The nearness of green can foster recovery from stress. Care farms can provide in this need. A lot of caretakers believe resulting from experiences in practice, that care farms, direct or indirect, related to the offered activities and the natural living and working environment have an important therapeutic effect on patients with mental problems . As the medical matrix shows there are a lot of mental health care institutions in the surroundings of the Green Heart. By means of a platform demand and supply can be brought together more intensively and in time will probably increase demand.

Care and cure line

In order the give the care landscape a distinct profile and therefore make it more marketable, the care landscape's image and geographically position will be linked to an old historic water defense line: de Oude Hollandse Waterlinie. Investments for care & cure can be deployed for the preservation of this historic relic. By means of finding new uses for this old structure, the old defense line can become visible again in the landscape. So both can benefit from this linkage.

A LEISURE LANDSCAPE

Welness in the wetlands

As stated earlier wellness can be developed as complementary to the care and cure facilities. The care and cure infrastructure will provide a better support to develop this kind facilities. Although the aging of the population most likely will also increase demand. When the wellness sector will further developed within the Green Heart region chances are that it will attract other visitors. These visitors can be used to further develop the touristic sector.

A taste of the lowlands

An example of such a development could be A taste of the lowlands. By developing a cooperation between actors related to the regional products of the Green Heart these products could be better marketed. For instance Michelin stared restaurants could use local cheeses or beers. Taste tours making visits to breweries, farms and restaurants, similar to the wine taste tours in the Loire region in France.

In the following pages the care landscape concept has been substantiated for the Green Heart region. Every concept has been mapped showing the potential of this concept.

A DAIRY PORT

The areas in which the dairy clusters and water farms should be developed, the lake bed polders, are located close to the Greenports. These Greenports all have a sophisticated infrastructure and logistic network. Via international trade and transport they are strongly related to Mainport Rotterdam and Mainport Schiphol.

The strategy of the Greenports is based on joint action, by the industry, supporting organisations and government. This network structure connects the five Greenports with each other. They have developed a joint program that focuses on knowledge and innovation, economy and space, infrastructure and logistics and the European agenda.

In contrast with the Greenport related sectors, the dairy industry is much more spread through the Green heart. There is no real centre of the industry and has the industry has not really a joint agenda.

To strengthen the position of the proposed diary clusters the development of a dairyport is proposed. The dairy port will become a platform to develop a joint program, similar to the Greenports. The Dairy port will also be connected to the infrastructural network of the Greenports in order to benefit from their sophisticated logistic systems. Additional agro parks can be developed on locations were the different industries meet. Production , trade, research, etc will be concentrated in the dairy port. Two locations are suggested for the dairy port: Alphen aan den Rijn, which is best connected to the main ports and the production areas, and Bodegraven which is also good connected, but historically more related to dairy farming.

A COUNTRY ESTATE LANDSCAPE

In order for dairy farmers to be able to invest in the development of dairy clusters, dairy farmers will be allowed to sell agricultural lands for housing development. The proposed housing development will be inspired on the 17th century country estate landscapes. Lake bed polders, like the Beemster and Watergraafsmeer were transformed into so-called lustlandschappen (landscapes of lust) in the 17th century. The country estates made up their own pattern in the lake bed polders (Steenbergen and Bobbink, 2009). Rich merchants from Amsterdam built several country estates surrounded by parks, garden houses, and ports. Together these country estates and the lake bed polders formed a so-called scenic landscape. The contrast of different depths as a result of objects positioned in a sequence in the rational structure of the polders give an atmospheric perspective. A similar effect is aimed for the new to be developed country estates. To get the same kind of effect natural areas will be developed parallel to the residential areas enriching the rational structure of the lake bed polder landscapes.

Oude Veldhuis and Witmond (2005) explain how 1 ha of housing development can provide in developing 11 ha of natural areas, including wet areas. This logic will be used to the develop the country estates in such a manner that it will add value to the lake bed polders. It will bring in new perspectives and will use nature development to redefine the characteristics of the lake bed polders.



FIG 46.17 th CENTRUY COUNTRY ESTATE LANDSCAPE IN THE SURROUNDINGS OF AMSTERDAM, Source Reh et al. (2005)

COLLABORATIVE REGIONAL INITIATIVES

Step five: regime development and general plan outlines

In this final step the question becomes: how to implement the proposed perspectives? What are the conditions needed to make the spatial strategy succesfull?
At first the several trajectories within the two proposed directions (speed up & slow down) can best be developed by means of pilot projects or small experiments in order to identify the most effective approaches (Bryson, 2004). When these pilots or experiment lead to a range of successful and promising cases, the question becomes whether or not is possible to develop project-transcending broader and durable planning networks, referred to by Boelens as ´regime´ as in urban regime theories (Boelens, 2009, 2010). In the following this 'regime' concept will be further explained.

THE DEVELOPMENT OF A REGIONAL REGIME WITH CAPACITY

The problems we have created as a result of our thinking so far cannot be solved by thinking the way we did when we created them

Albert Einstein

As Mossberger and Stoker (2001) point out urban regime theory came widely known with the publication of Clarence Stone´s study of Atlanta in 1989, also earlier work by Fainstein and Fainstein (1983) and Elkin (1987) has been influential. Although its name suggests different, regime theory is more a concept or a model than a theory. According to Mossberger and Stoker(2001) urban regimes are coalitions based on informal networks as well as formal relationships, containing the following four core properties:

1 Partners are both governmental as non-governmental: business participation is required;
2 In order to accomplish the pursued goals collaboration is based on a need to bring together fragmented resources;
3 Regimes have identifiable policy agendas that can be related to the formation of the coalition;
4 Regimes can be characterised by a long-standing pattern of cooperation rather than a temporary coalition.

In other words within the concept of urban regimes power is understood as being fragmented and regimes as collaborative arrangements by means of which local governments and private actors jointly develop the capacity to govern. Governments as well as businesses have access to resources that are needed to govern, in the case of government this concerns for example policy-making authority, and in the case of businesses this concerns for example capital (Mossberger and Stoker, 2001). Stone (1989) describes the political power sought by regimes as the "power to" or the capacity to act, rather than "power over" others or social control. In today's regions, like the region of the Green Heart, a key power is the capacity to mobilize a long-term coalition that is capable of really getting things done (Mossberger and Stoker, 2001). In this case it is not about temporary coalitions that will try to influence political decision making.

Currently the Green Heart has a governance system in which the three Provinces of the Green Heart, Utrecht, North Holland and South Holland make up the so-called steering committee of the Green Heart. Other governmental and non-governmantal actors are thematically and hierarchically related to this steering committee. In this manner the steering committee functions as an additional level of government. Temporary coalitions of actors will try to influence decision making by means of lobbying, but there is no real active engagement of the actors in

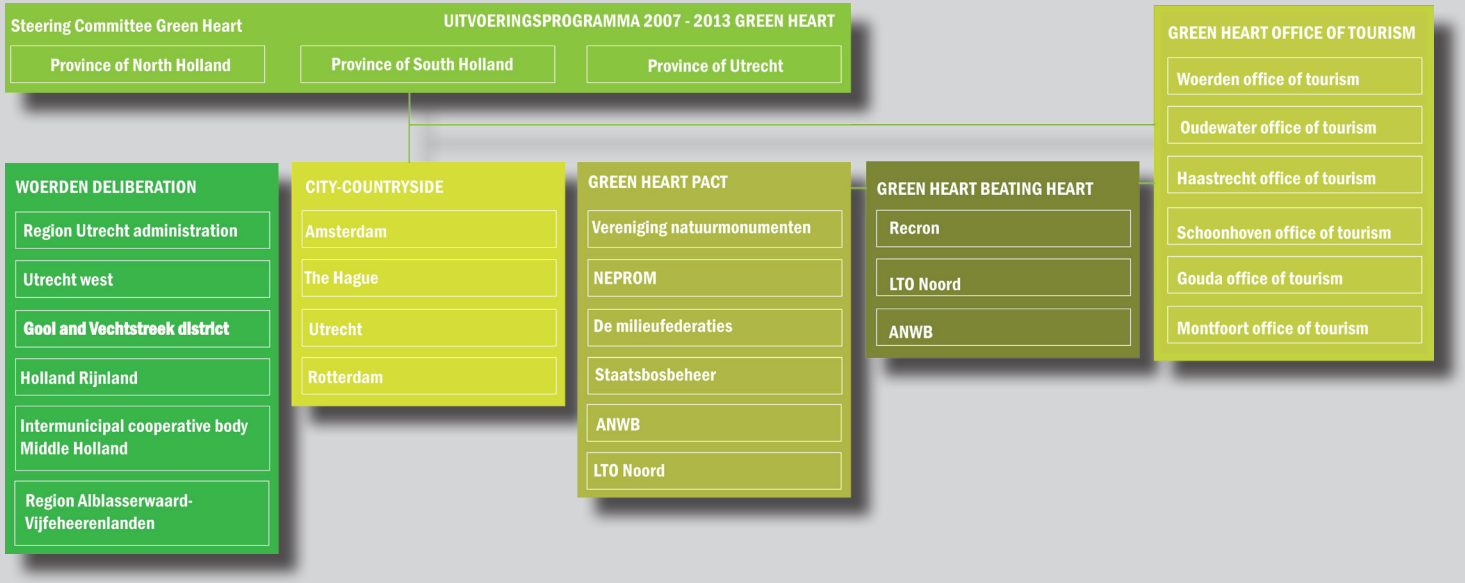


FIG 47.CURRENT GOVERNANCE SYSTEM OF THE GREEN HEART

the processes of decision making Such a governance system that lacks what scholars refer to as ´capacity´. As Innes and Booher (2003) explain traditional government systems like the Steering committee of the Green Heart depends too much on predictability, approach problems piece by piece, and presume experts can deliver tailor-made solutions. It does not acknowledge the fact that given the fragmentation of society and government institutions, no one is really in charge. As a result nobody takes responsibility, and issues slumber unresolved.

Therefore this projects acknowledges that the Green Heart needs a regional regime, a governance system, that has capacity that is able to learn, experiment, and adapt creatively to threats and opportunities (Innes and Booher, 2003). Such a regime should involve regular interactions among the divers players who solve problems or complete complex tasks by working together. According to Innes and Booher (2003) a region with capacity is self-organizing and works inreal time through networked, shared and distributed intelligence. Research points out that complex systems can be adaptive to rapid change and improve performance through the individual actions of many actors, linked together and acting with a few shared manners of doing things on the basis of their local knowledge (Innes and Booher, 2003). Such a process has the ability to be more quickly responsive and more intelligent than top-down guidance or highly structured action and more suitable to conflicting aims and perspectives like in the case of the Green Heart. Instead of relying primarily on standardized ways of proceeding, a regime with capacity relies more on ad hoc gatherings of interested and knowledgeable players to frame problems in new and shared ways and develop nuanced actions to respond to them (Innes and Booher, 2003).

Innes and Booher (2003) claim that the way to build societal and institutional capacity, and the learning processes that are essential to them, is through collaborative planning and action. Collaboration itself leads to breaking down the institutional and geographical barriers to productive problem solving, As they claim: it leads to capacity.

The applied working scheme in the case study did deliver several potential collaborative networks. All developed perspectives, natural farming, water farms, care landscapes etc. are based on the idea of collaboration between actors. Main question remains how to put these perspectives into action. As stated earlier the creation of pilot projects or small experiments helps to identify the most effective approaches .

COLLABORATIVE REGIONAL INITIATIVES

Collaborative Regional Initiatives (CRIs) seem to give a potential framework to start these initiatives in order to achieve project-transcending broader and durable planning networks . CRIs are alliances between actors from public, private, and nonprofit sectors that emerged last decade in California (Innes and Rongerude, 2004) . These CRI's all emerged from collaborative processes involving diverse stakeholders and could develop with the support of a locally embedded foundation. These CRIs differ in their origins, focus, and outcomes, each emerged from its region's unique challenges, and each addressed these in different ways. But the overarching goals of the CRI program were to enhance economic vitality, increase social equity, and protect the natural environment of California regions over the long term through strategic, collaborative action by business, community, and government leadership (Innes and Rongerude, 2004). Innes and Rongerude (2004) claim these CRIs represent a significant innovation in regional governance, reflected in several unique aspects of the CRI concept: dynamic and flexible institutional structures, the mobilization of stakeholders from diverse perspectives, and a regional scope. The ideology behind the CRI program, as Innes and Booher explain, is that collaboration, engaging players from multiple sectors, are more likely to produce workable solutions than a business-as-usual approach. Successful change requires informed and engaged citizens who understand what is at stake, what the choices are, and how to contribute to better decisions. Organizations that crossed sectoral and jurisdictional boundaries, addressed complex regional issues related to sustainability, and worked with and mobilized diverse participants to improve regional performance, were therefore supported.

A similar Collaborative Regional Initiative should be established for the Green Heart. Funded by government or businesses of the region it should engage participants from multiple sectors in developing future trajectories for the region. The on the bases of the proposed trajectories developed networks of cooperation can serve as a first guide line. However these networks and their connections are not fixed, they will change in time , while adapting to the state of flux.

In order the proposed trajectories to become successful typical government action is also needed. Some minor investments and more firm policies will have to be implemented. The most important actions are summed up under beneath.

INVESTMENTS

Provinces of South and North Holland should speed up the intended improvement of relevant provincial roads and speed up the development of the proposed N207 north (connection Aalsmeer – Alphen aan den Rijn).

The three Provinces within the Green Heart should set up the development of a more extended waterbus system in the Green Heart. Starting point is the existing waterbus between Dordrecht and Rotterdam. The waterbus system makes places more accessible, but in a slow way. If a place is connected to this system it will become a reachable, but still far distant destination.

POLICIES

To facilitate the proposed developments governments together (relevant municipalities and Provinces) in cooperation with relevant actors should develop thematic structural visions (see chapter A farmer's land). In these structural visions policies are describe that frame the pursued future perspectives of the different areas. On the bases of these policies land use plans will bring in the rules to steer the development in the pursued direction. For example within the peat land areas rules enscribed in land use plans that block a multifunctional development of dairy farming should be removed. Within the country estate development it is thinkable that the ambition is that all or a percentage of the housing should be ´do it yourself´ building. This then can be recorded in the land use plans.

Finally national government should consider dairy farming as a topsector, similar to the Greenports, and facilitate and stimulate the development of a Dairyport.

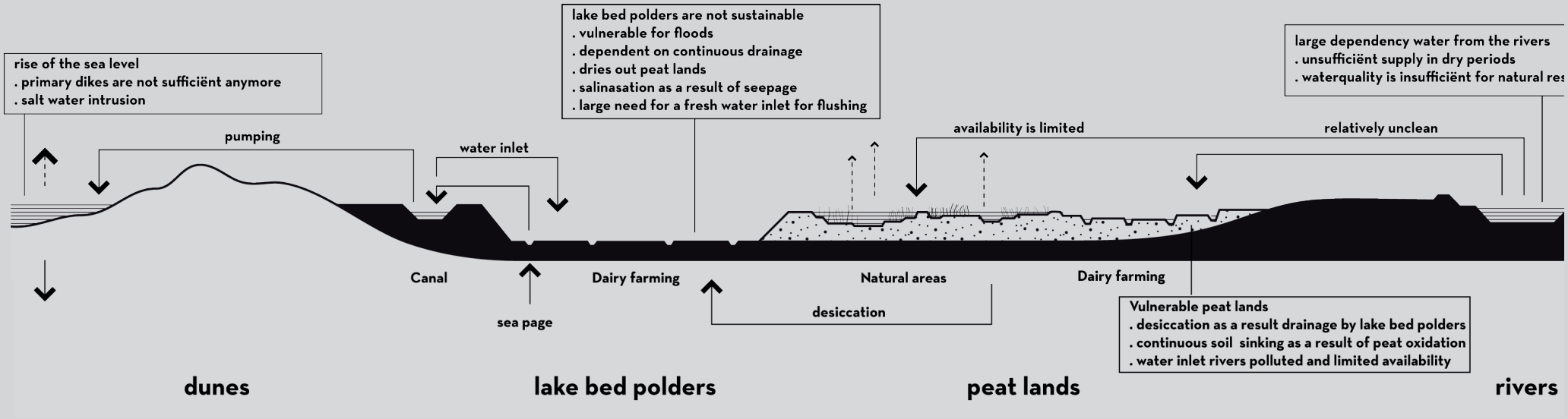


FIG 48. PRINCIPLE SECTION OF EXISTING SITUATIONS

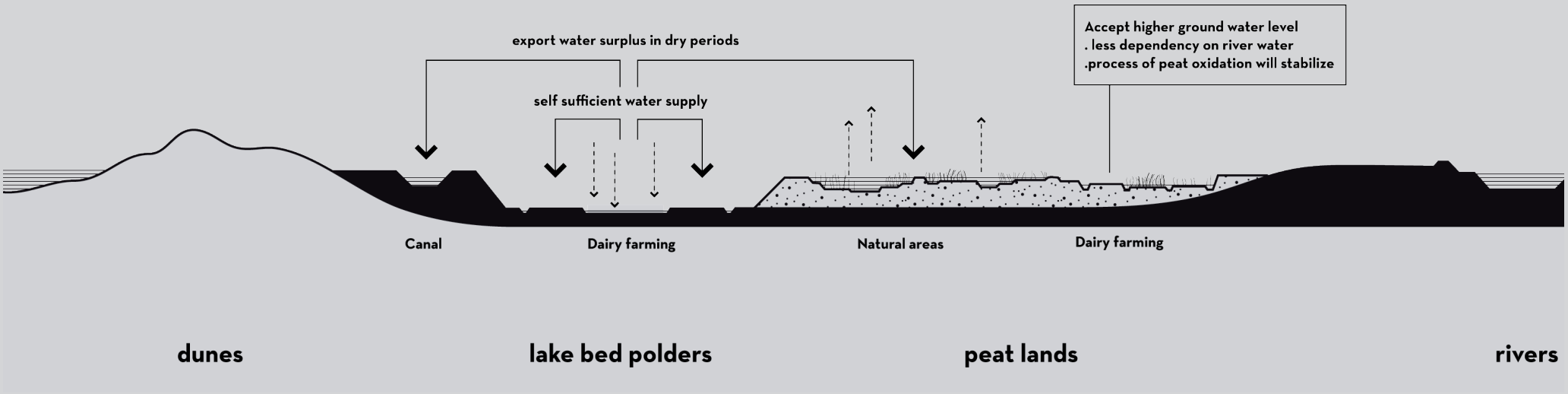


FIG. 49 PRINCIPLE SECTION OUTCOMES PROPOSED FARMING CONCEPTS

TYPE OF NETWORKS

Spatial projects

Productmarket combination

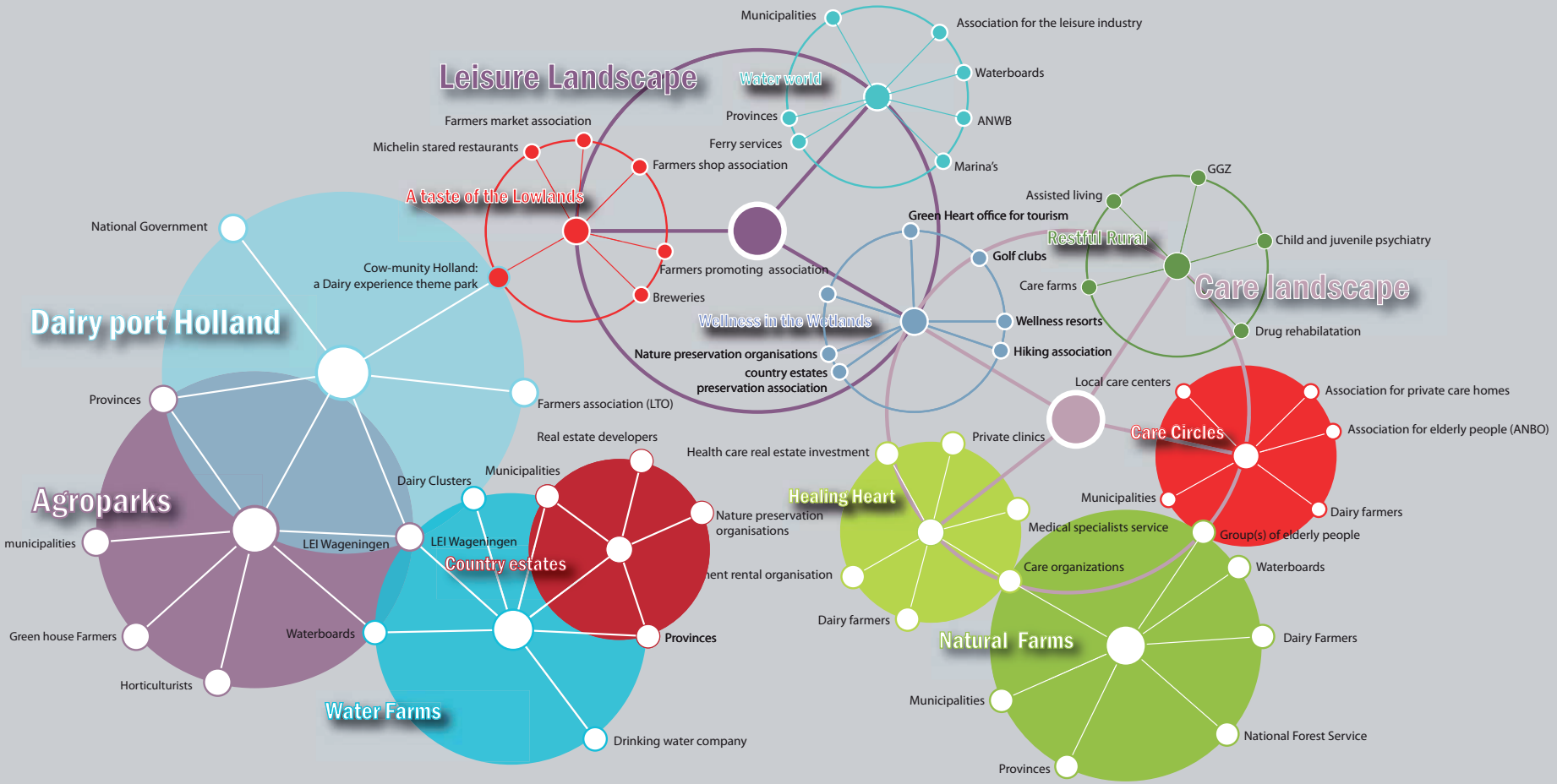


FIG 50.NETWORKS OF PROPOSED COOPERATIONS

The map of Holland ’s Garden is not a blueprint plan or a pursued final image. The map shows the potential outcome of the developed cooperative networks.

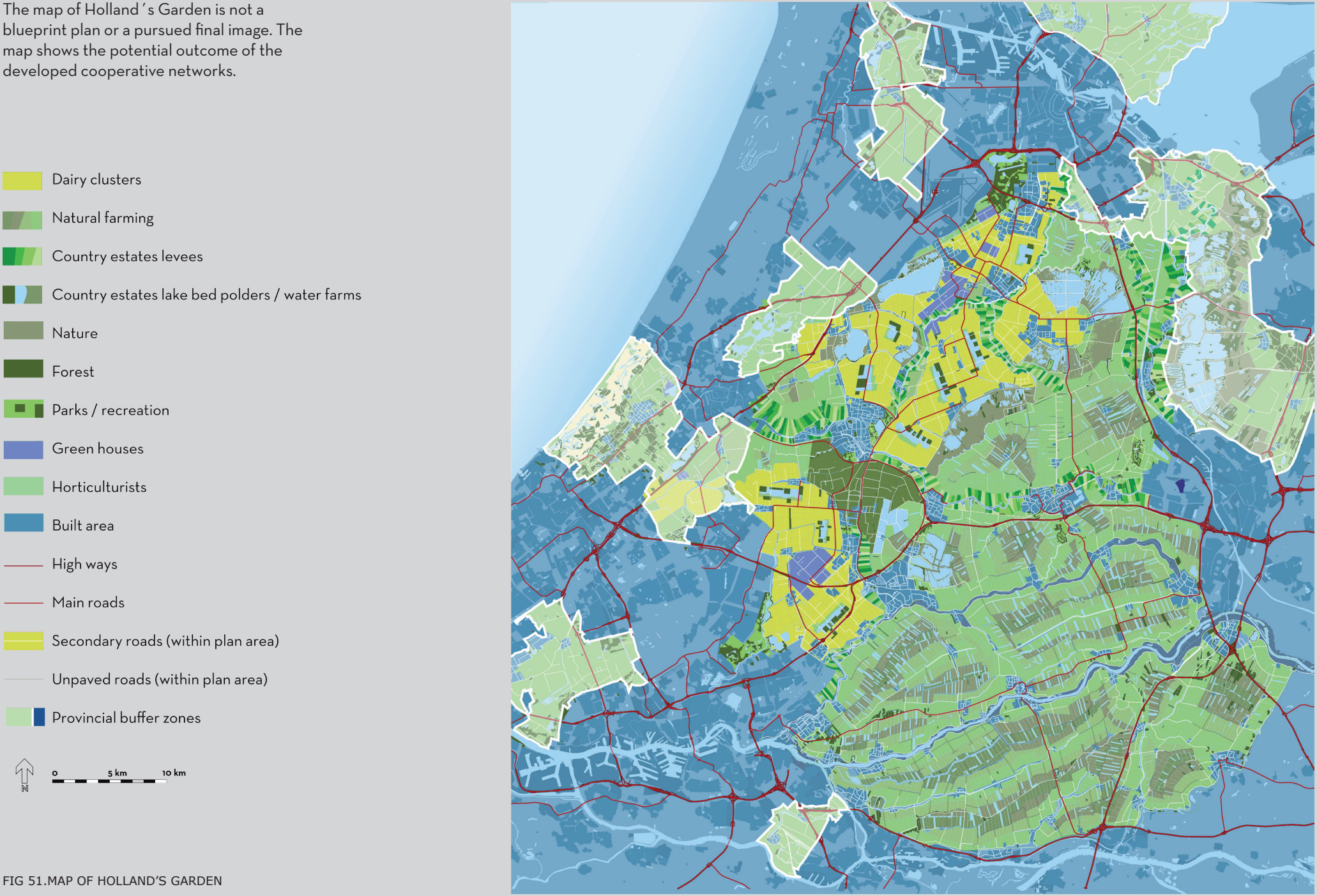


FIG 51.MAP OF HOLLAND’S GARDEN


GREEN BELTS
REVISITED

URBAN - RURAL RELATIONSHIPS

New storylines for greenbelts

Over sixty years ago, green belts were seen as an innovative and effective spatial planning tool to contain urban sprawl (Prior and Raemaekers, 2007). Over time its utility has been challenged several times reflecting changing political agendas. More recently green belts are questioned for the disturbing effects it has had on the housing market. This has been the case in United Kingdom (Prior and Raemaekers, 2007) as it has been in the Netherlands (Weeber and Van Stiphout, 1998). Although the current financial crisis made the issue less prominent it has had its resonance within the spatial planning practice. In the Netherlands for instance a ´no-go´ was replaced by a ´yes, if regime" for the Green Heart´(see chaper 'The invention of the Green Heart'). There seems to be a growing interest for a more positive, integrative and strategic spatial planning, as opposed to a restrictive land use planning to manage urban growth (see also chapter 'Strategies for green belt governance') . However, the iconic status of green belts, like the Green Heart, its simplicity and flexible interpretation has stood in the way of real change (Prior and Raemaekers, 2007).

Green belts have evolved in a period in which two distinct and opposing perspectives influenced the conceptualization of urban-rural relationships. The first one, the anti-urban view, has its origins in the rural-urban migration during the Industrial Revolution (see chapter 'The bounded city') and the social, economic, environmental and health problems that this migration caused. It is within this conception of urban - rural relationships that green belts emerged. The other perspective, the pro-urban view, conceived urbanization as a natural development, appreciating cities as centers of culture, knowledge, innovation and economic growth (Davoudi and Stead, 2002).

A new emerging perspective, the concept of urban-rural relationships implies an end of these two opposing perspectives, as it seems to be appearing more frequently in academic literature, as well as policy documents (Davoudi and Stead, 2002). These conceptualized interdependencies between rural and urban are not new, but as Davoudi and Stead explain, they are far more complex than the classic one to one perceived exchanges between cities and the country side. At times that societies in north west Europe were mostly rural, relationships between cities and the rural were characterized by the flow of agricultural products from rural to urban. After the Industrial Revolution, the nature of the relationship between the urban and the rural began to shift towards an increasing dependency of the rural on cities (Davoudi and Stead, 2002).

Nowadays the linkages between the urban- and the rural are exceeding the single one-way exchanges and has developed a more complex and dynamic network of interdependencies which is building the welfare of cities, as well as the countryside. Technological progression makes it possible for rural areas to compete for employment with cities on a more equal bases. This is stressed by the flows of people, capital, goods, information and technology that can be identified between the urban and the rural (see figure 51) (Davoudi and Stead, 2002).

Despite these developments and new conceptions, policy makers are still addressing the urban and the rural as separated areas (Luiten, 2011). This has become increasingly complicated as the definition of what makes up a rural or urban area is not unambiguous (see figure 53). Despite the lack of a clear universal definition, it is widely acknowledge that physical and functional boundaries between the urban and the rural are becoming more and more blurred. Although the rural may be facing their own specific challenges , these challenges cannot be addressed in isolation from their wider context. As a result there is an urgent need for integrated policy-making (Davoudi and Stead, 2002).

Green belt areas therefore no longer should only be considered as an artificial separator. They need a clear conceptual framework, a story line, which will help to develop a distinct position within the urban field. If the former green belt areas have a continuing storyline they no longer are simplistic no-go areas for development and will become

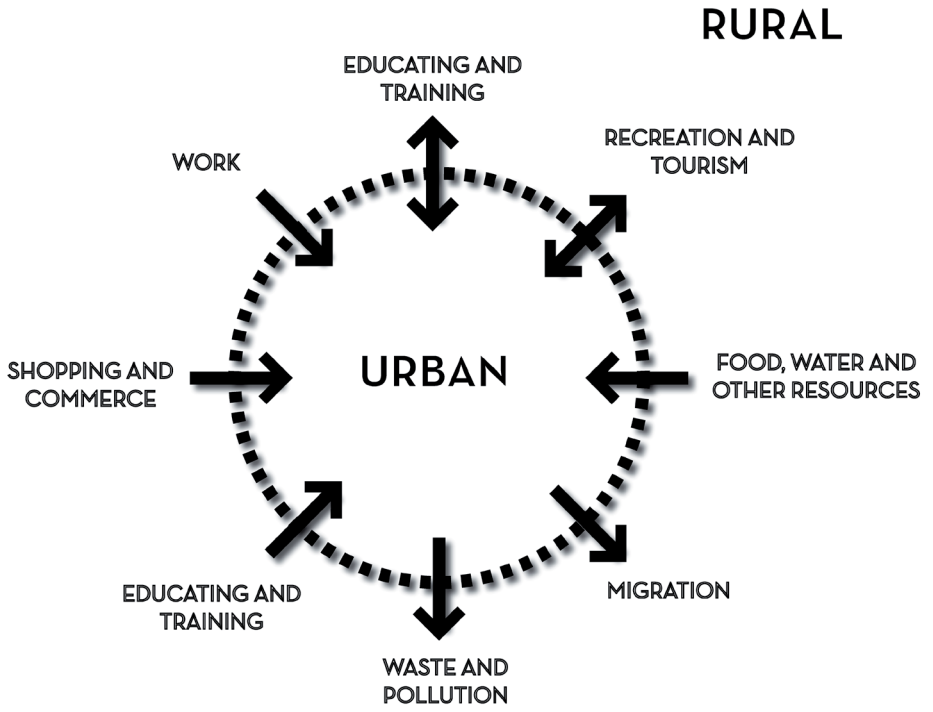


FIG 52.URBAN - RURAL RELATIONSHIPS, After Stead (2002)

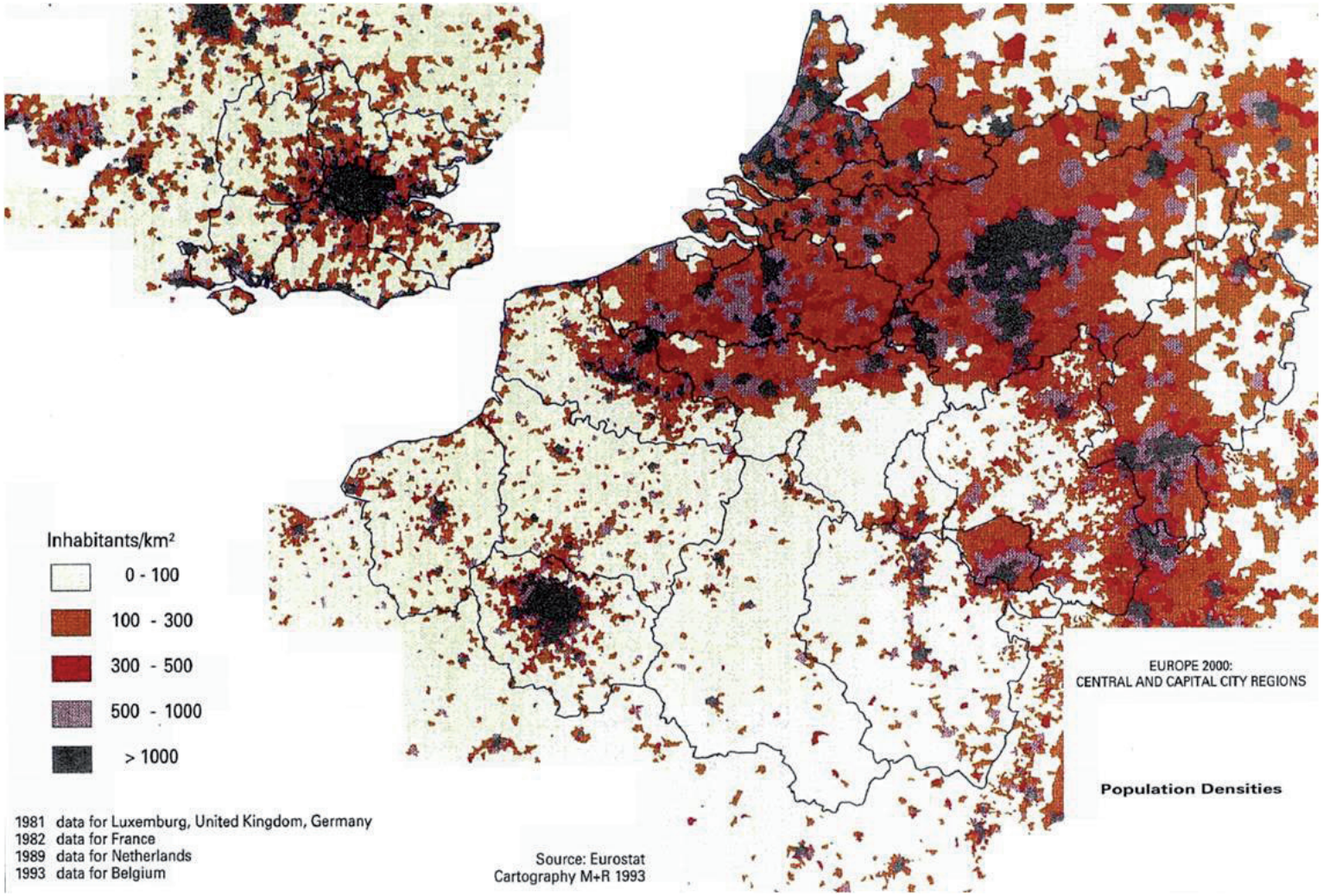


FIG 53.WHAT IS URBAN ? DIFFERENT DEFINITIONS OF WHAT IS URBAN, Sociaal Cultureel Planbureau: rural < 1000 / km² inhabitants (only black areas are urban) OECD: rural < 100 inhabitants / km² (only white areas are rural)

more part of a proactive, integrative and forward-thinking framework of urban spatial management. To be durable this new or updated role of green belts should intrinsically be linked with the history of the green belt landscape and its future. Green belts will have to develop their own storylines, storylines that they are intrinsically linked to the host landscapes of green belts and the surrounding cities.

The applied actor oriented approach in the case study turned out just to do that. It has redefined the agricultural activities in order to give it a future perspective and at the same time takes the characteristics of the landscape into account (natural farming in the peat lands and dairy clusters in the lake bed polders). It relates itself to the surrounding urban areas, by means of the care landscape and the new country estate landscape. The Green Heart has developed its own new storylines for the future and as a result has become part of a proactive, integrative and forward-thinking framework. The actors are crucial in this story; they are the ones who developed the landscape in the past and will have to develop it further in the future. To finalize and related to the argument made so far I will shortly reflect on two defined aims of this graduation project.

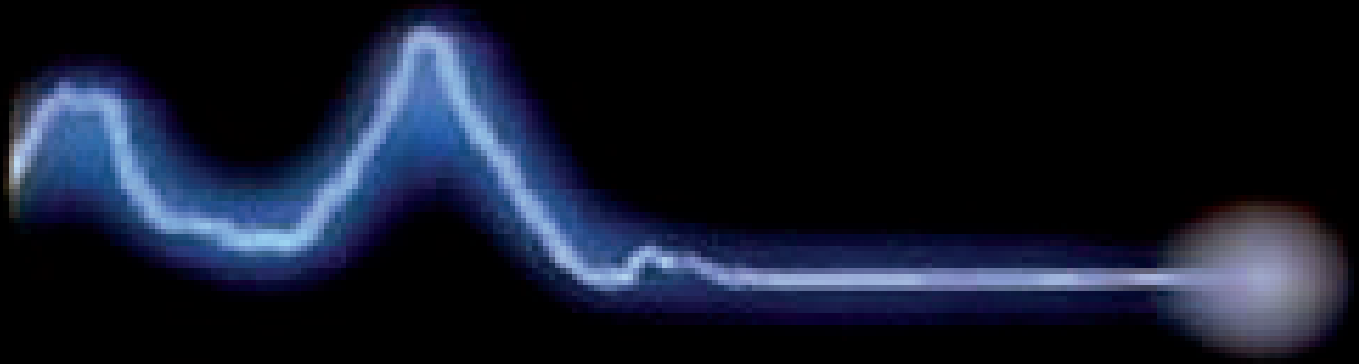
1. To define a new the role for 'green belts' in today's north west European metropolitan regions, considering the impact of the shift from metropolitan to regional urbanization.

There is no unambiguous answer. It depends on the local features of the region. Green belts should develop their own story line based on their core values and related to their focal actors, instead of only being a 'negative' space of the urban. An actor oriented approach is indispensable in this respect.

2. To develop a spatial strategy that is able to implement this new role for "green belts".

Again there is no panacea. However the most important actors of the region should be central to the strategy in order to develop a sustainable (durable) future. All plans & initiatives made by these actors should be centralized around commonly determined core values. An independent 'green belt' Collaborative Regional Initiative can help initiate, steer and develop these processe, finally progressing in a sustainable regime for the area, taking into account its core values.

APPENDIX



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This thesis report has been written, and rewritten, in steps over the last year. It would not have been accomplished without the contribution of others that I would like to acknowledge here. The Department of Urbanism at T.U. Delft is constantly provocative of new thoughts. Within the department Vincent Nadin, Machiel van Dorst, Remon Rooij, Ana María Fernández Maldonado and Alexander Wandl gave me really helpful comments on all or parts of the draft report. More widely, I gained much from the supervision sessions and lectures of the Complex Cities Graduation Studio. In particular I would like to thank my second mentor Eric Luiten, from the Department of Landscape architecture, whose expert knowledge have been very valuable for this project. Finally, the longest conversations have been with my main mentor Roberto Rocco, also from the Department of Urbanism, with whom in the course of much talking and supported by his knowledge of and passion for spatial planning many of the thoughts here have developed.

Remco van Dijk, June 2012

REFLECTION

The aim of the graduation project 'Green Belts Revisited' has been two-sided. First to find a new role for green belts in north west European metropolitan regions considering the shift from metropolitan to regional urbanization. Secondly to develop a spatial strategy that is able to implement this new strategy within the described new context. A spatial strategy that also does "strategic work" (Healey, 2009) in the sense of shaping future development trajectories.

In accordance with the proposed method (literature survey) a theoretical framework concerning green belts has been developed (see chapter 'open space planning' and 'the bounded city' of the thesis) and made substantial by means of the case study (see chapter 'the invention of the Green Heart' of the thesis). This also goes for the problem statement. The problems of regional governance have been made substantial by a survey on the governance problems of the case (see chapter 'why not a Randstad government' of the thesis).

By means of the review paper (literature survey) a theoretical understanding of self-organizing collaborative networks could be developed. A shortened version of this review paper has been selected for the Metropool Forum 2012 as organised by the Vereniging Deltametropool. As a result it got published in the forum's program book and got presented at the Metropool Forum. As such the review paper already gained some relevance outside the faculty.
The outcomes of the review paper were confronted with the developed theory on green belts and on the bases of this a more refined hypothesis was made. It also delivered a more precise working scheme for the design experiment.

On the basis of this working scheme a design experiment has been undertaken to test the hypothesis. For this the Green Heart has been used as a case. Although the project advocates a firm involvement of actors in the spatial planning process, within the timeframe of this graduation project, real the time involvement of actors seemed not to be feasible. The focus within this graduation project was on understanding how to take into account actors in the planning process, instead of the process of involving actors. Therefore the at first proposed bilaterals with leading actors have been replaced by an analysis of official reports and documents that elaborate on the motives and incentives of relevant actors.
During the execution of the project it turned out that some parts of the developed working scheme were very time consuming. The implemented approach (a customized actor-relational approach) is advocating an outward – inward approach instead of a inward-outward approach. This implies that a certain focus within the planning proc-

ess is postponed as long as possible, it aims to keeps a broad scope during the whole process.
Finally the approach did deliver the promised clear overview of the focal issues, related actors and the region's core values. These outcomes could be deployed to develop a strategic spatial strategy that is strongly related to its main actors and therefore is capable to frame sustainable future trajectories. It also turned out that the approach performed in such a way that it has the potential to define new perspectives (functions) for the region and at the same time preserve the developed qualities that now define the Green Heart.

To relate the outcome of the design experiment to the defined aims of the project: the case study seems to confirm that the approach developed in theory has the potential to define new futures for greenbelts around the world and find ways to sustainably implement these futures. As the approach is related to locally embedded actors, issues and core values it will always take the local context into account as the central point and therefore increase the chances of success.

ROLE OF THE GRADUATION STUDIO

By means of lectures and tutoring the Complex Cities graduation studio provided the insights and knowledge to built up a firm theoretical framework around the problem statement. It helped to understand the issues I was trying to tackle in the context of the broader field of spatial planning theory. As a result the outcomes of my research are easier to relate to similar problem fields (green belts , regional governance, metropolitan regions) all around the World. The studio also inspired to further explore theory on urbanism / spatial planning.

THE RELATIONSHIP BETWEEN RESEARCH AND DESIGN

The final strategic spatial strategy that has been developed for the case study, the Green heart, is the outcome of a extended analysis of the area, according to a working scheme resulting from the paper review. First the unique core values of the region (the Green Heart) have been determined, followed by an analyze of the focal actors and issues of the area. On the bases of these analyzes a strategy has been formulated that was further developed by researching potential innovations within the agribusiness. The outcomes of this research was spatially translated in the case study area.

THE RELATIONSHIP BETWEEN THE THEME OF THE STUDIO AND THE SUBJECT/CASE STUDY CHOSEN BY THE STUDENT WITHIN THIS FRAMEWORK (LOCATION/OBJECT)

Parallel to the objectives of the Complex Cities graduation studio my graduation project investigates spatial processes related to globalization and the increasing complexity of the built environment: it investigates the impact of the shift from metropolitan to regional urbanization on greenbelts as a planning instrument to contain urban growth, with as a case study the Green Heart of Randstad Holland. This shift from metropolitan to regional urbanization can according to Castells be regarded as a spatial transformation resulting from what he calls the network society. This envisioned network society is global, as networks have no boundaries. This shift from metropolitan to regional urbanization therefore very much relates to the theme of the Complex Cities graduation studio.

THE RELATIONSHIP BETWEEN THE METHODICAL LINE OF APPROACH OF THE STUDIO AND THE METHOD CHOSEN BY THE STUDENT IN THIS FRAMEWORK

The studio puts forward the idea that spatial planners and designers should act as articulators between various stakeholders producing the city. In accordance with this my graduation project considers the potential of strategies that aim to have a directive influence on collaborative networked processes. It does this in order to try to define a new role for Green belts and find ways to implement this new role. The focus in the design and planning process was on the actors of the case region and by doing so it tried to develop a durable and therefore sustainable solution for the region that takes into account the "actual needs and trends and actual power structures and governance arrangements."

THE RELATIONSHIP BETWEEN THE PROJECT AND THE WIDER SOCIAL CONTEXT

The case study of the graduation project, the Green heart of Randstad Holland has up to recently been part of the Dutch national governments policy 'national landscapes'. Interestingly this policy has recently been abandoned by national government and most likely on the long run will change the image and status of the Green Heart. There are also several trends to be discerned that will have a large impact on the actors currently determining a large part of the spatial organization of the region: subsidies for farmers and the milk quota will be abandoned and similar subsidies on nature preservation will be decreased enormously. To do a project on the Green Heart considering these changes was very interesting, especially as policies are still changing (only recently some of the budget cuts on nature preservation have been cancelled). I belief that the outcomes of my project can contribute to a different view on how to deal with open space and nature preservation in the Netherlands.

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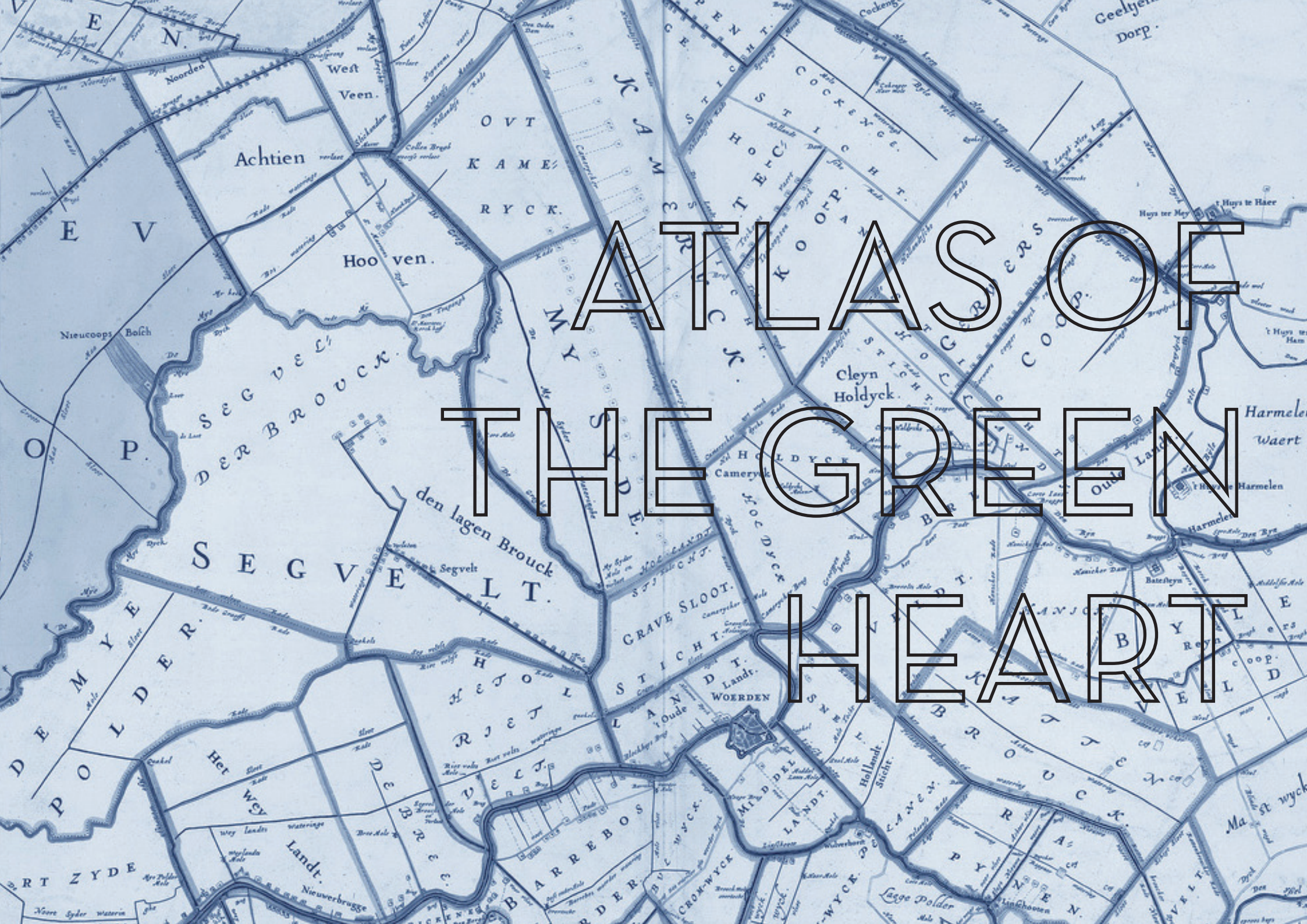
ATLAS OF
THE GREEN
HEART

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HISTORY

Year of foundation villages

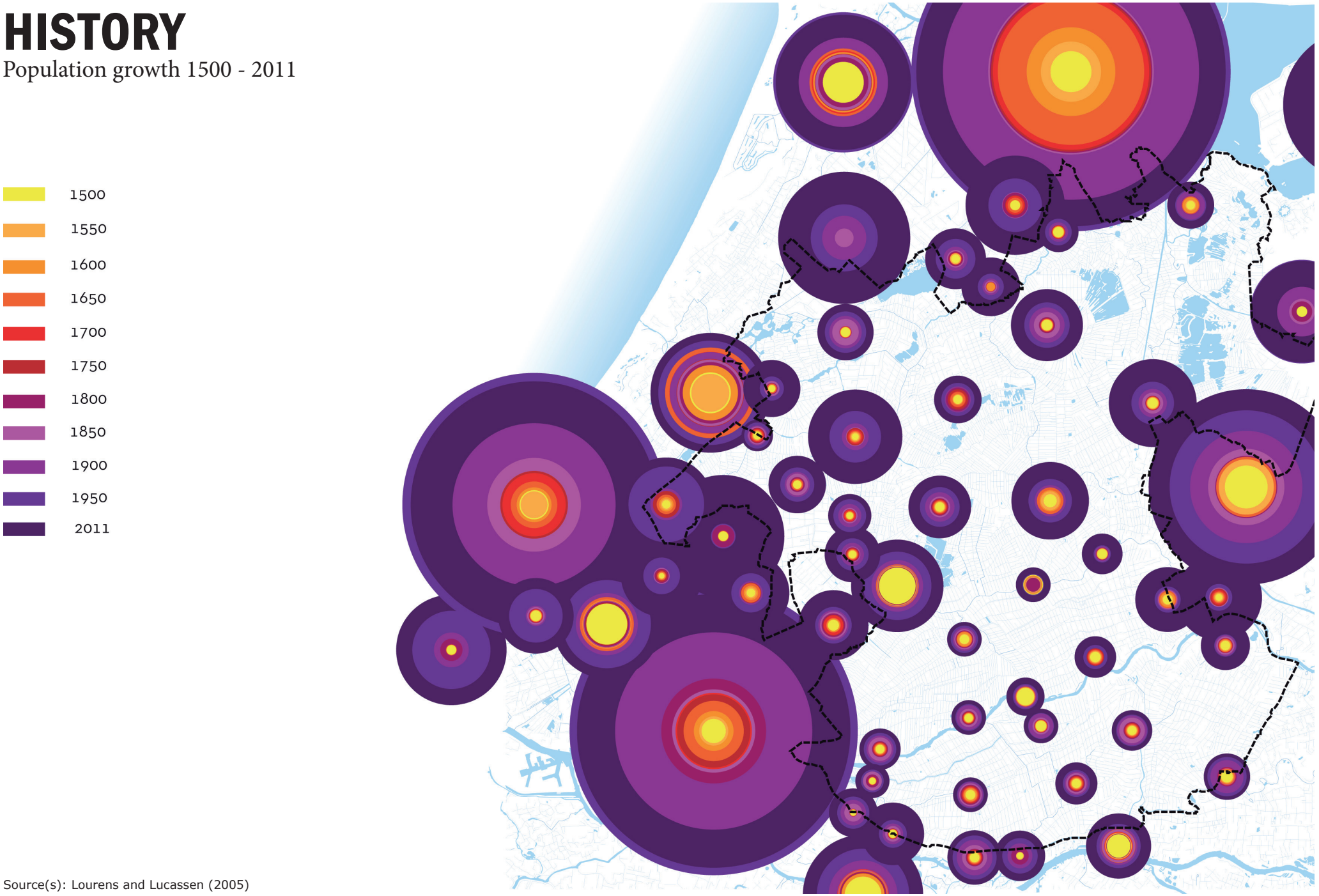
- Founded before 500 AD
- Founded 500 - 1000
- Founded 1000 - 1100
- Founded 1100 - 1200
- Founded 1200 - 1300
- Founded 1300 - 1400
- Founded 1400 - 1800
- Founded after 1800



Source(s): Wikipedia (2012)

HISTORY

Population growth 1500 - 2011



Source(s): Lourens and Lucassen (2005)

CULTURAL HERITAGE

Man-made landscapes

Peat reclamations and
river reclamations

- The Great reclamation, 1550 and earlier
- The improved windmill, 1550 - 1830
- Pumping stations, 1830 - 1918

Lake-bed polders

- The Great reclamation, 1550 and earlier
- The improved windmill, 1550 - 1830
- Pumping stations, 1830 - 1918
- Modern times, 1918 - present

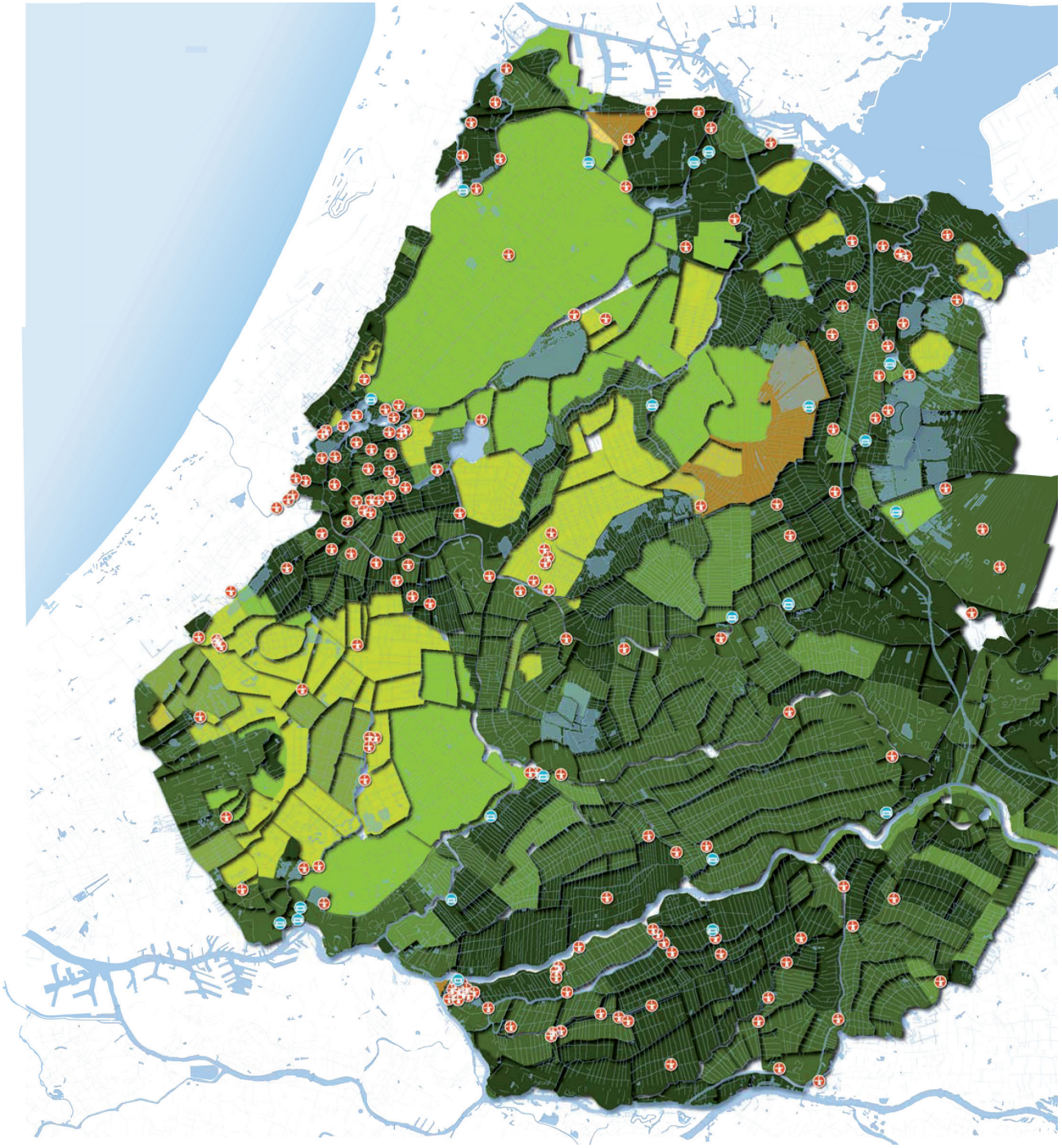
Excavated land

- Modern times, 1918 - present

Historical water engineering devices

- Historical windmills
- Historical pumping station

Source(s): Geuze and Feddes (2005)



CULTURAL HERITAGE

Settlements

Protected town scenery

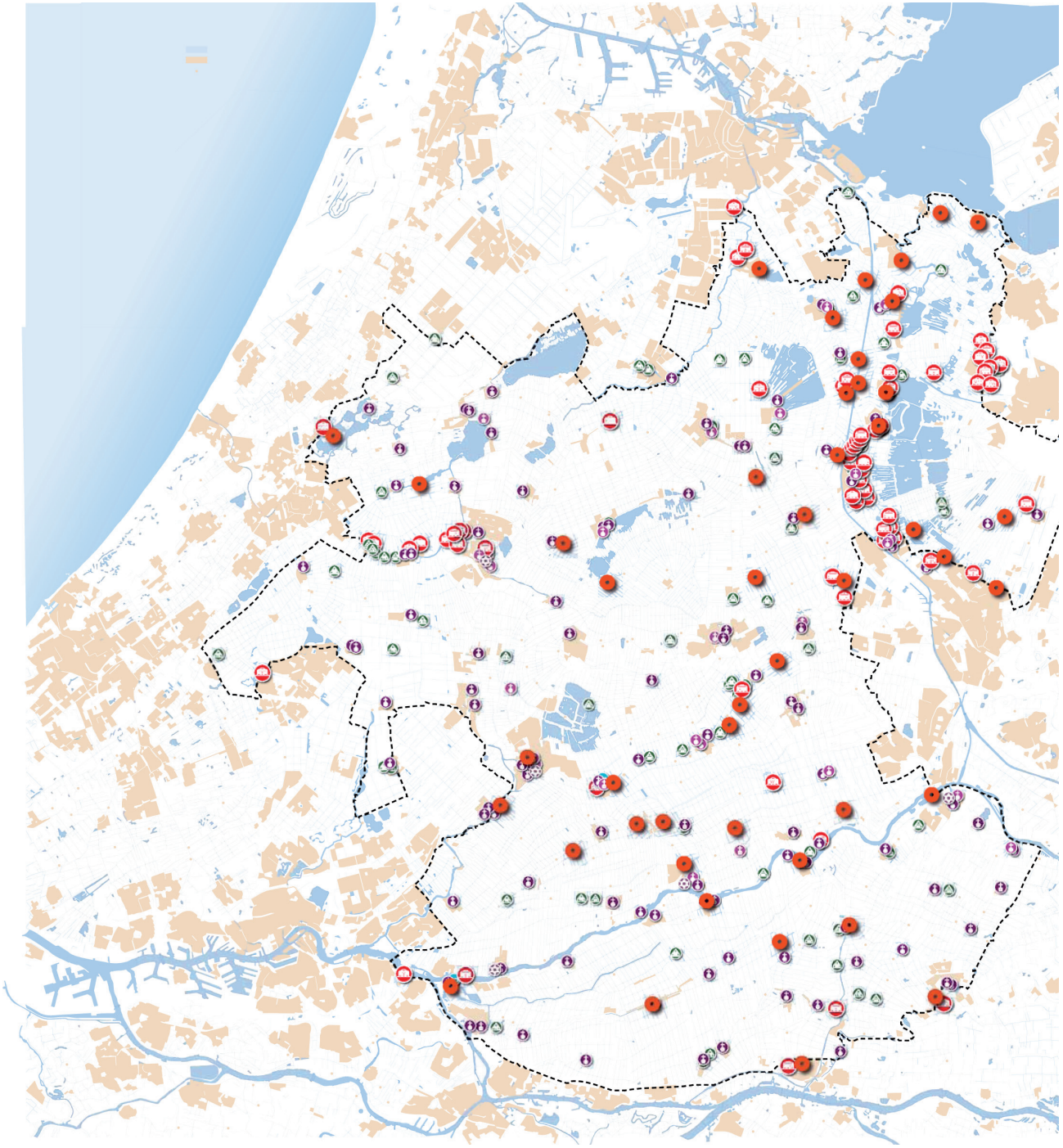
National monuments

Churches

Synagoge

Farms

Country estates

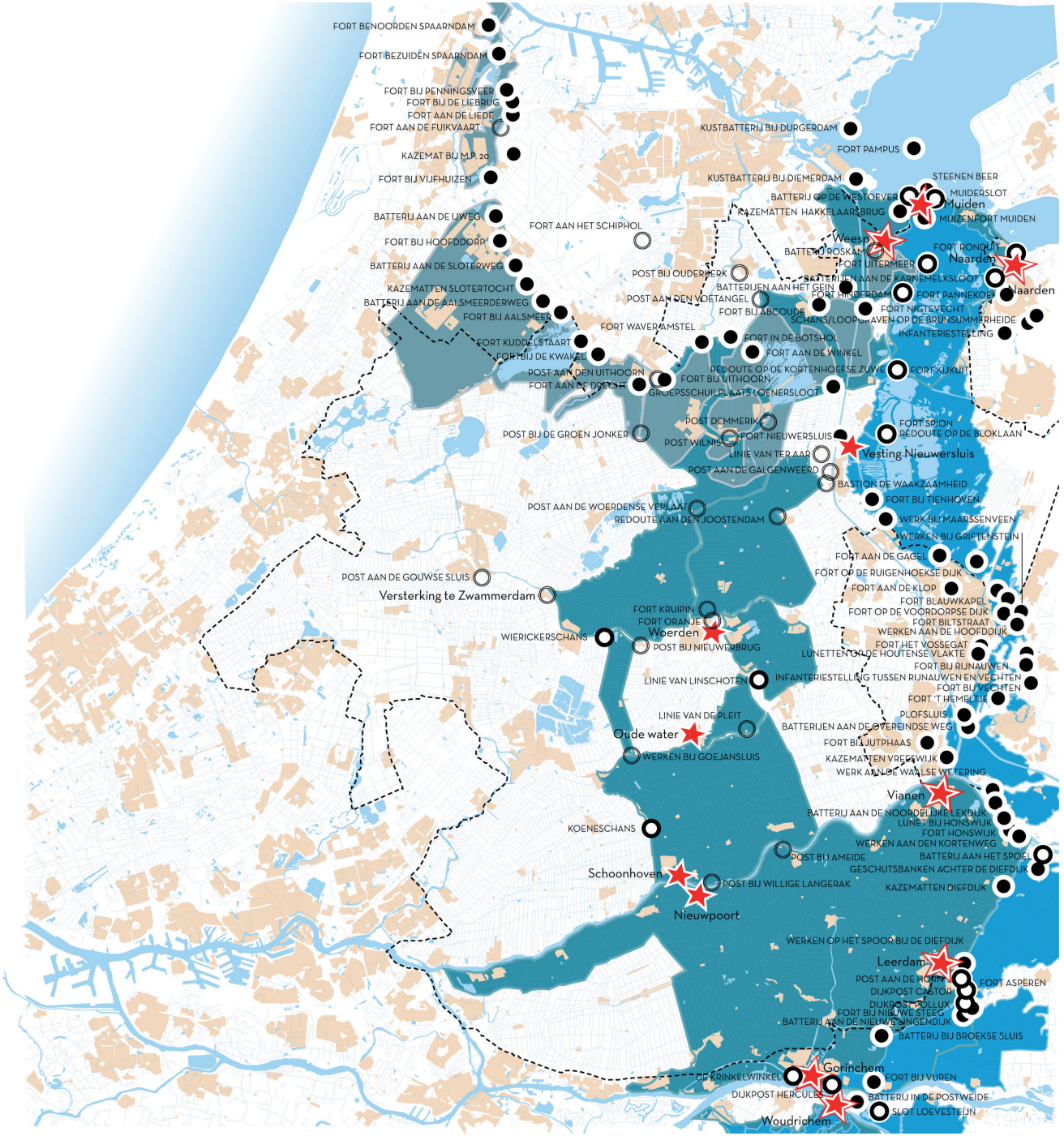


Source(s): Ministerie van Infrastructuur en Milieu (2012) / monumenten register

CULTURAL HERITAGE

The military water defense lines

- The Old Dutch Waterline (1672)
- The New Dutch Waterline (1871)
- The Position of Amsterdam (1880 -1920)
- Border Green Heart
- forts, bastions, etc. Old Dutch Waterline
- fortified towns, Old Dutch Waterline
- forts, bastions, etc. disappeared
- forts, bastions, etc. New Dutch Waterline
- fortified towns, Old & New Dutch Waterline



CULTURAL HERITAGE

The waterway network around Utrecht and Holland around 1560

- Waterways
- Dam
- Sluice
- Town
- Border Green Heart



Source(s): Brand (2011)

LAND OWNERSHIP

Government

National government

Municipalities

Staatsbosbeheer

built-up area

surface water



Source(s): Elsevier / kadaster (2012)

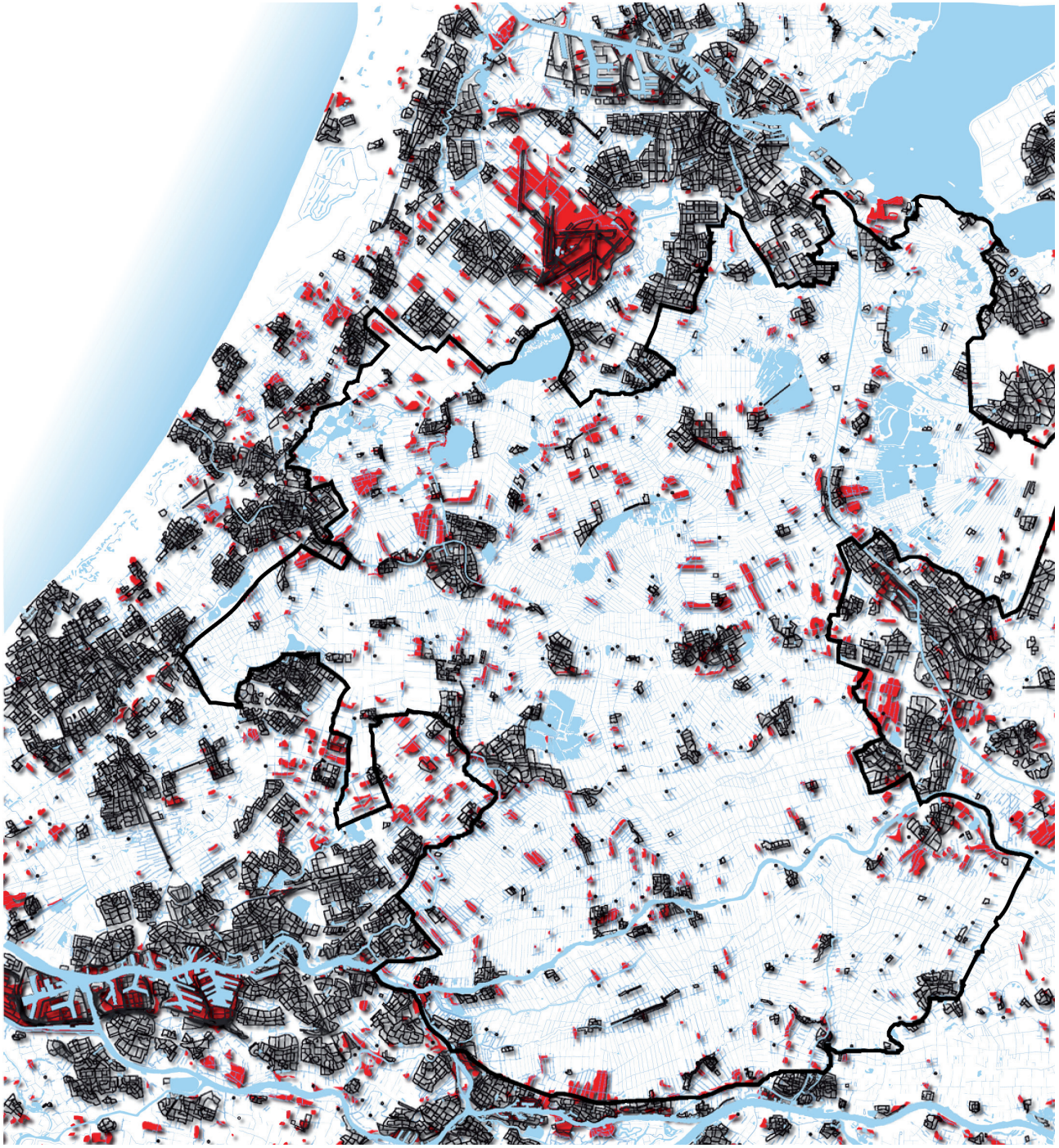
LAND OWNERSHIP

Real estate developers

Real estate developers

built-up area

surface water

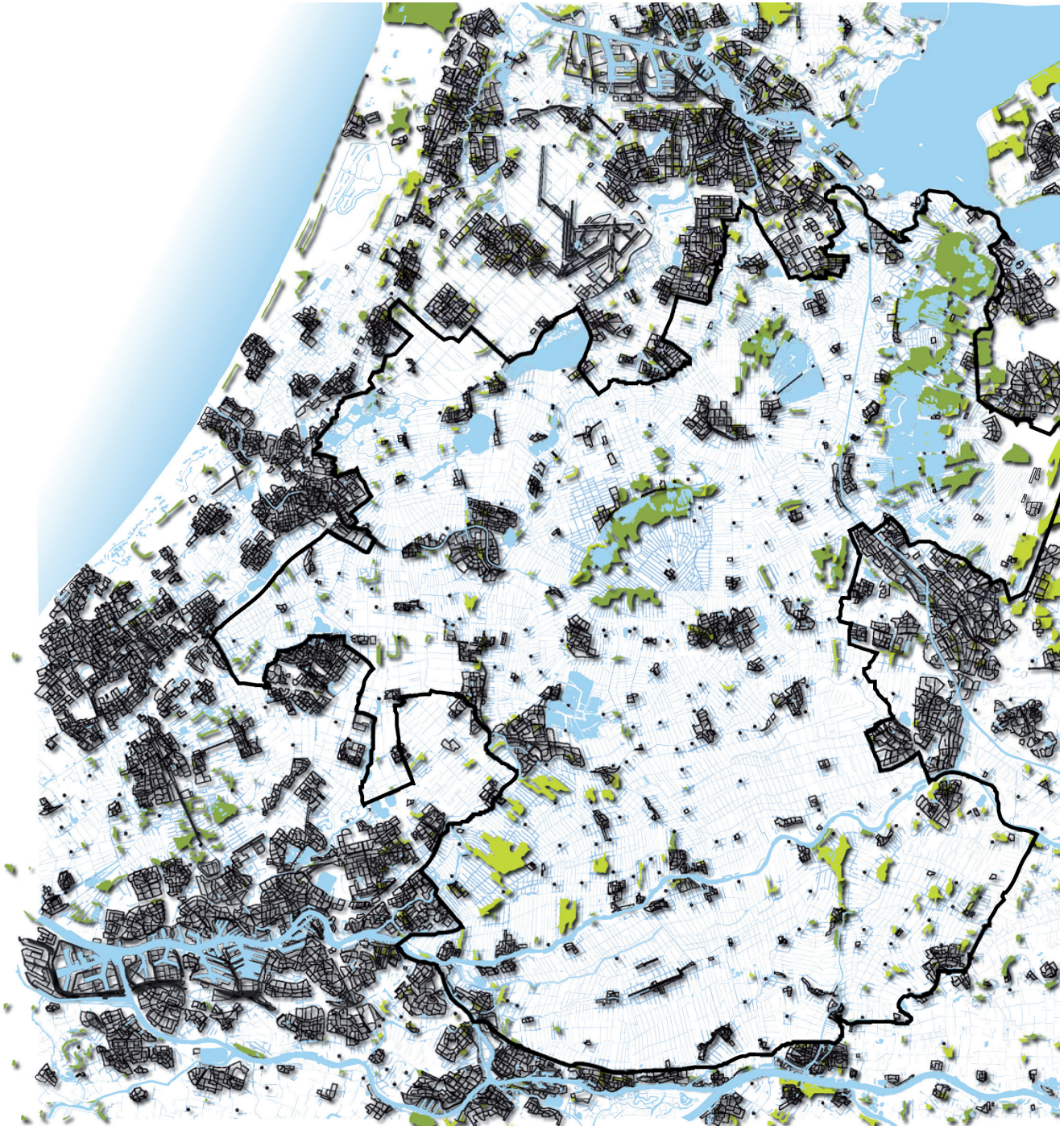


Source(s): Elsevier / kadaster (2012)

LAND OWNERSHIP

Nature preservationists

- Provinciale landschappen (landscapes of the Provinces)
- Natuurmonumenten(monuments of nature)
- built-up area
- surface water



Source(s): Elsevier / kadaster (2012)

LAND OWNERSHIP

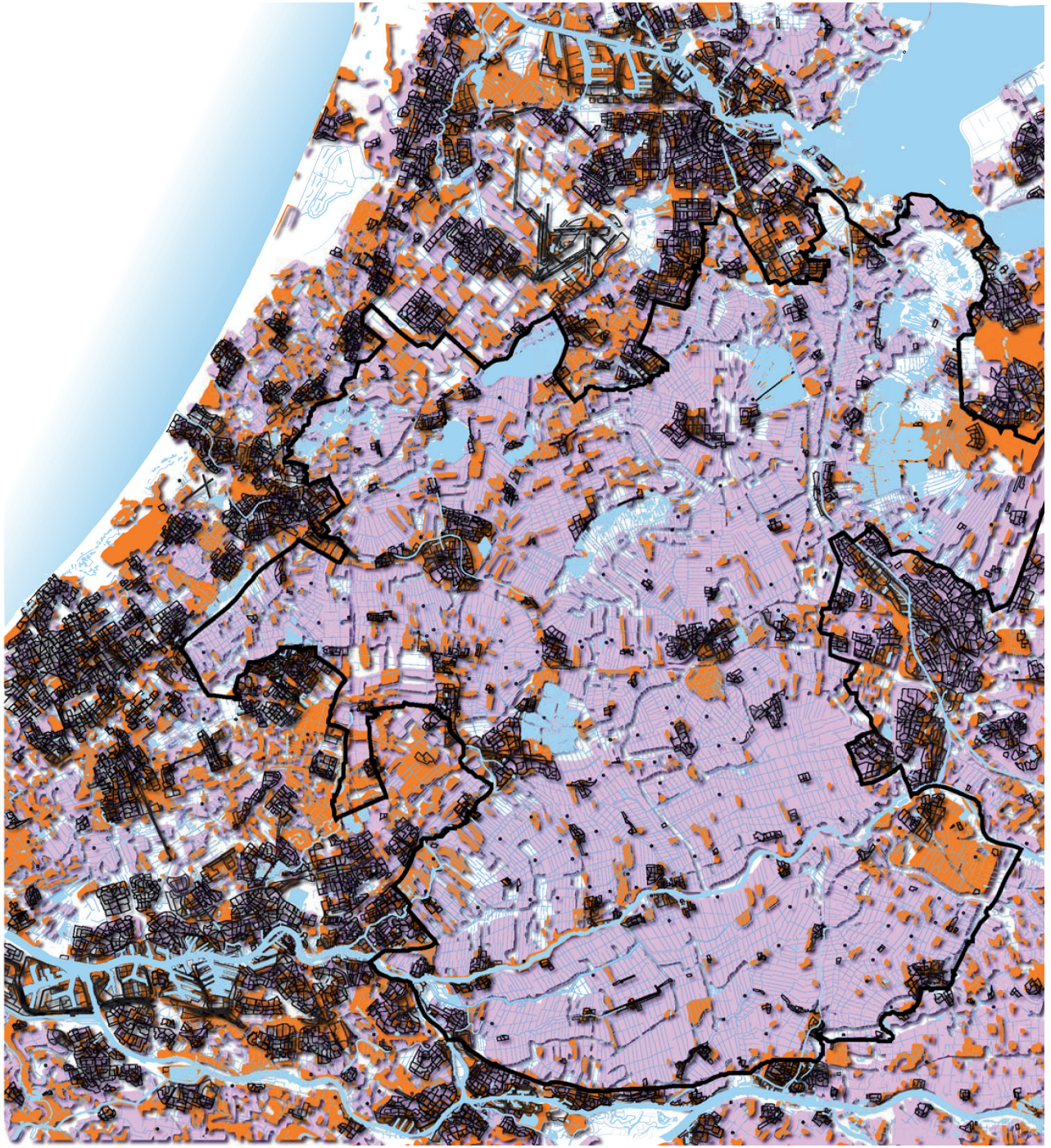
Private owners

Private owners

Companies and foundations

built-up area

surface water



Source(s): Elsevier / kadaster (2012)

GOVERNMENT

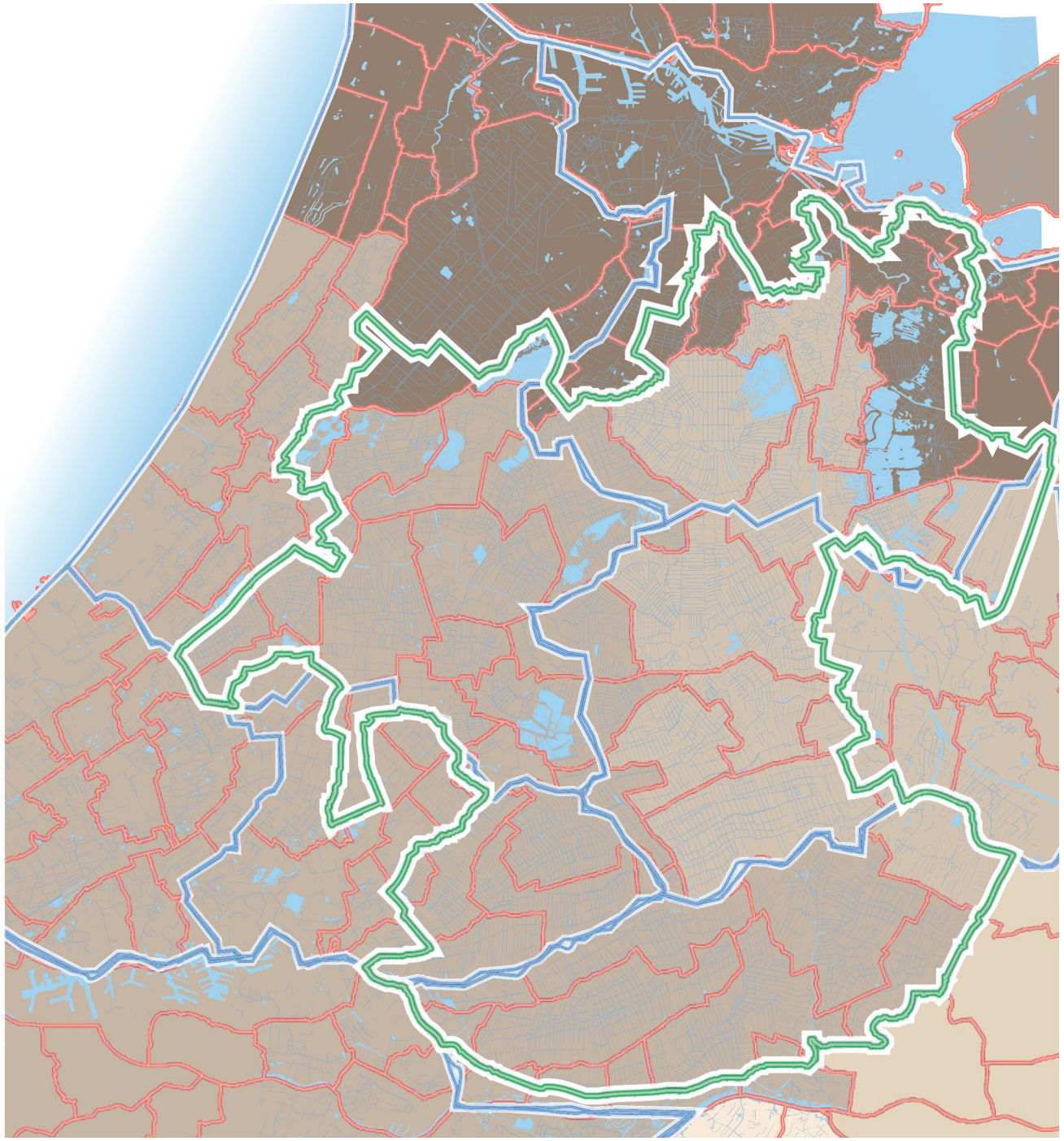
Levels of government

Green Heart contour

Borders provinces

Borders water boards

Borders municipalities



GOVERNMENT

National spatial planning policies

- 1958 Green Heart
- 1958 Bufferzones
- 1985 Search Area Randstad green structure
- 1990 First Official Green Heart contour
- 2006 National landscapes (including the Green heart)
- 2006 Green Heart understood in units:
  1 river landscape
  2 lakes areas
  3 peat lands



GOVERNMENT

International planning policies

2006 National landscape the Green Heart

1990 Ecological main structure on land

1992 Natura 2000 (european legislation based upon the habitats directive and the birds directive)

1996 Unesco world heritage

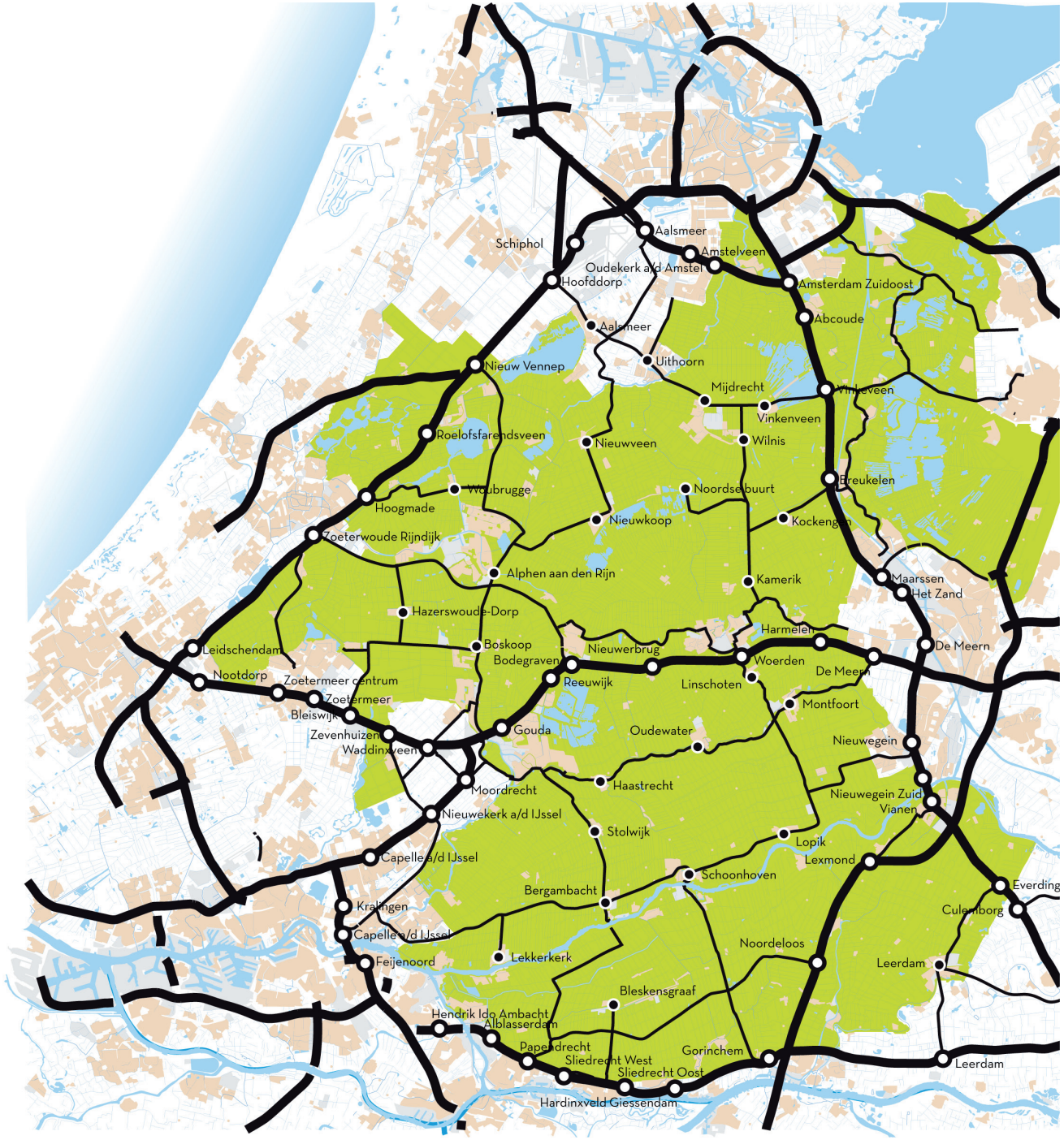


Source(s): Ministerie van Infrastructuur en Milieu (2012)

ACCESSIBILITY

Car accessibility

- National highway
- National highway road exit
- Provincial main roads
- Village
- Green Heart



JOBS WITHIN REACH

15 minutes

National highway

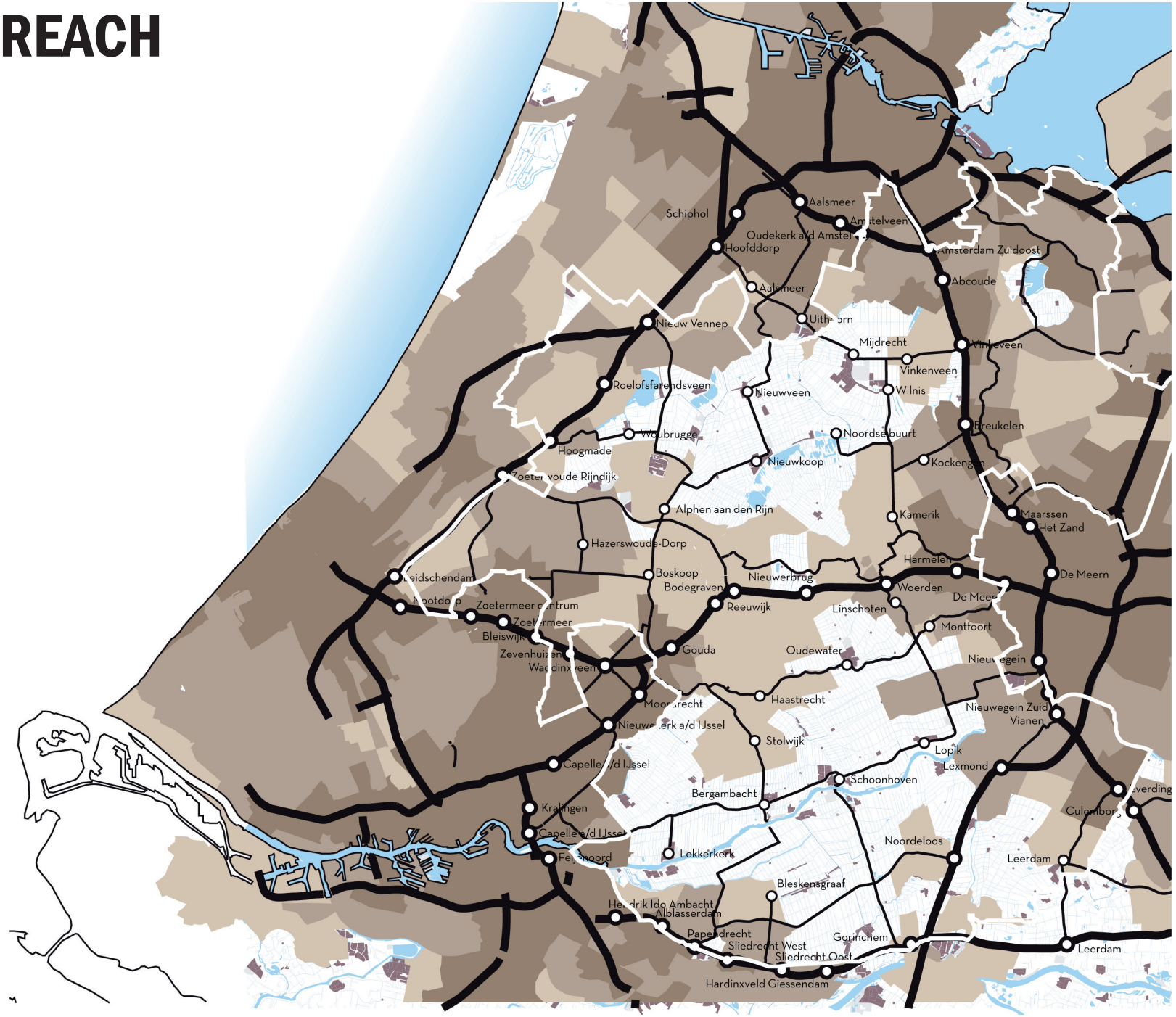
Provincial main roads

0 to 10 000

10 000 to 20 000

20 000 to 40 000

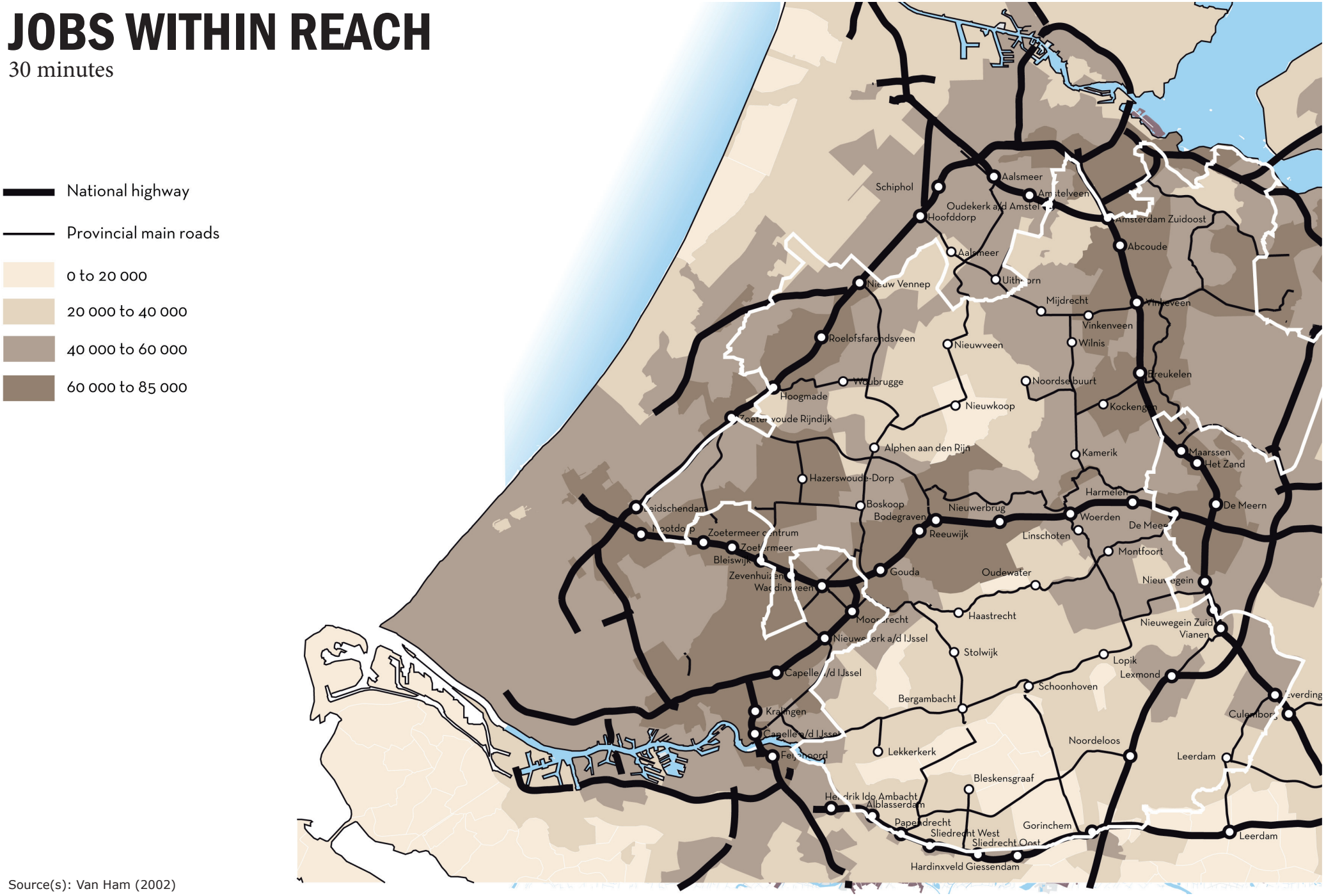
40 000 to 147 000



Source(s): Van Ham (2002)

JOBS WITHIN REACH

30 minutes



Source(s): Van Ham (2002)

WATER SYSTEM

The system of boezems as an intermediary between the polders and the main water system

Boezem

Main watersystem

Polders

Border Green Heart



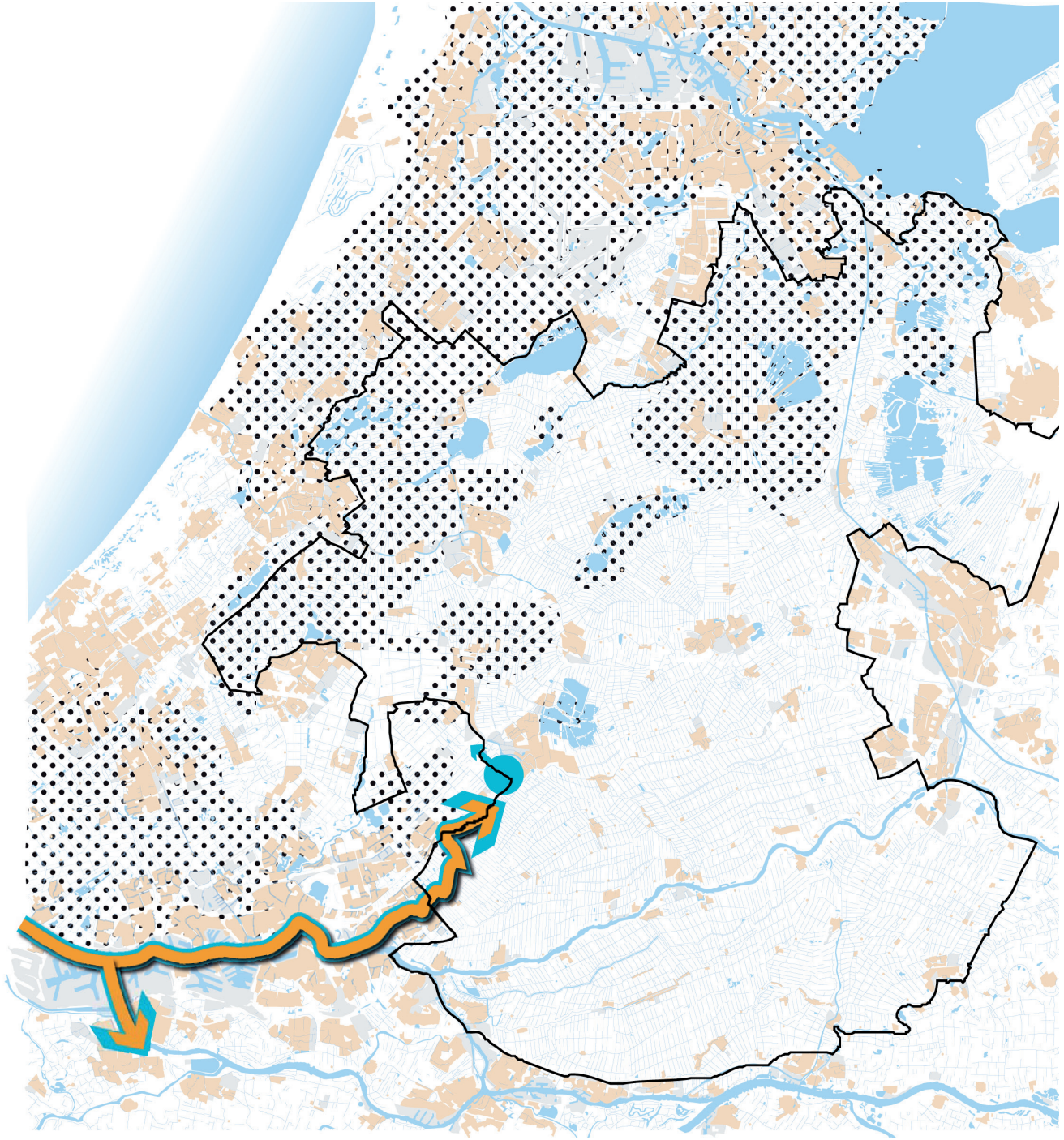
WATER SYSTEM

Salinasation

Area ´s with risk of salinization

salt intrusion

important water inlet

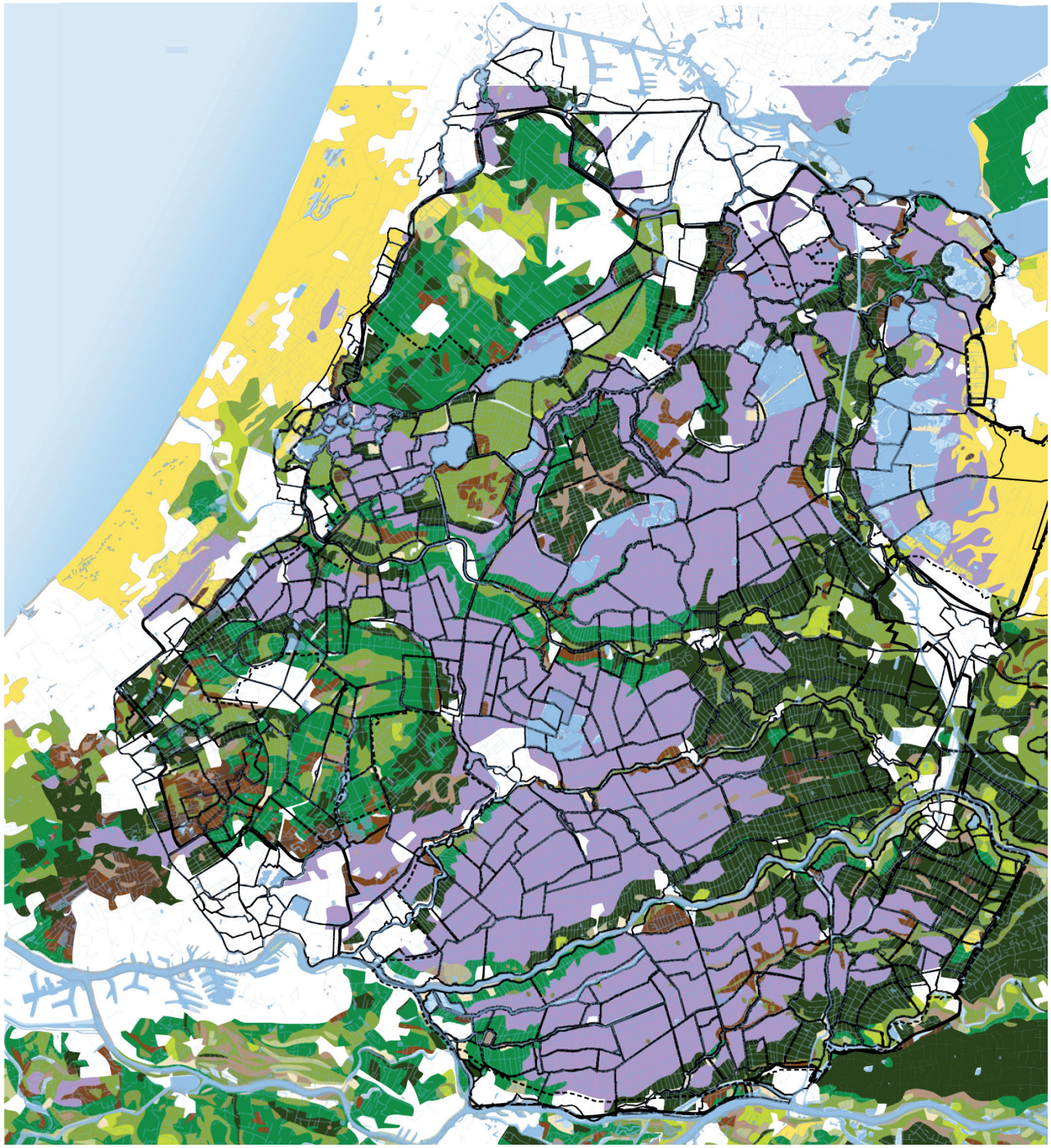


Source(s): Ministerie van Infrastructuur en Milieu (2012)

SOIL

Lithology (soil types)

- Peat
- Sand
- Clay on fine sand
- Sabulous clay
- Light clay
- Heavy clay
- Clay with heavy layer



Source(s): Pieters et al. (2005)

SOIL

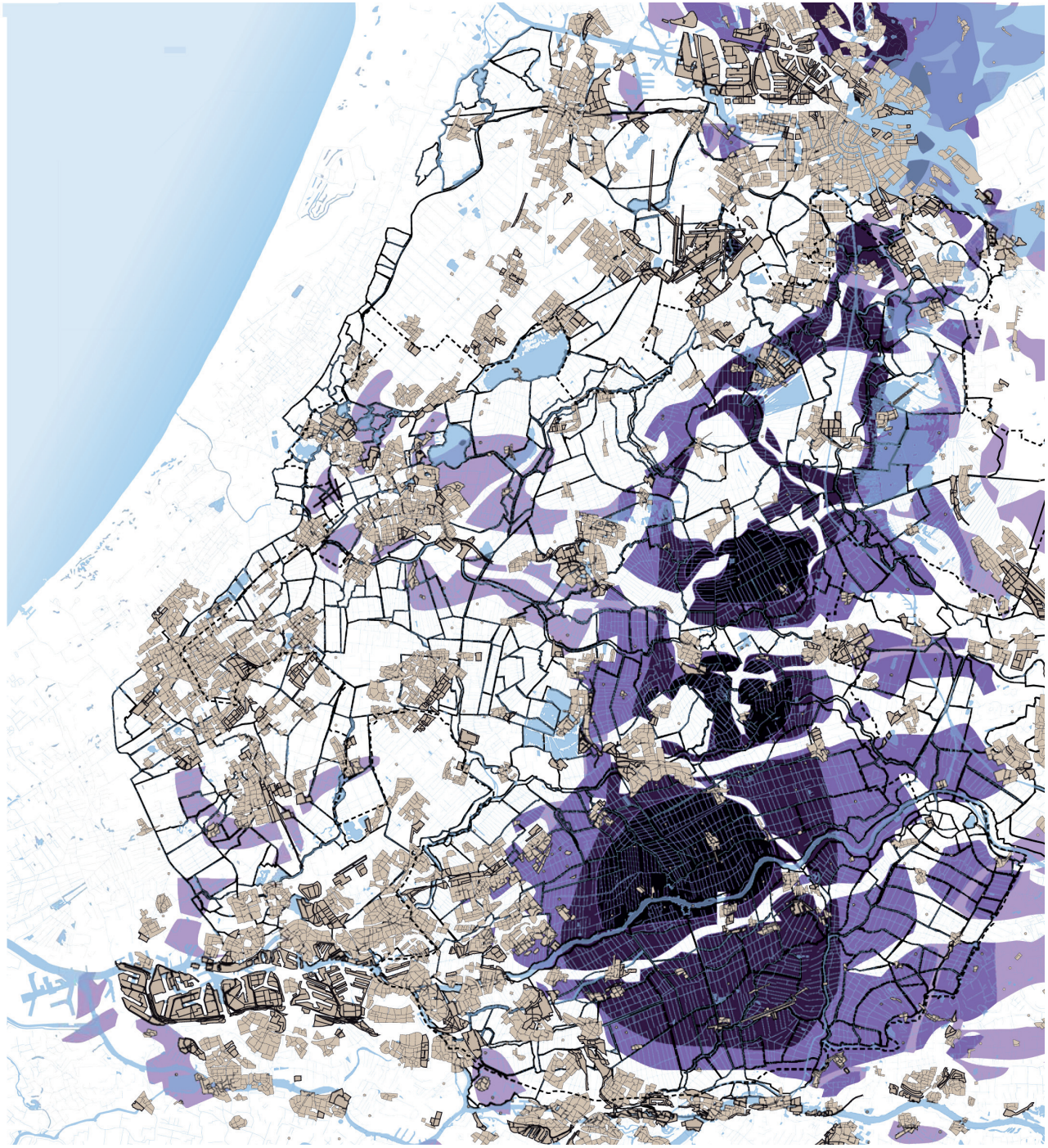
Thickness of peat deposits

Peat < 2 m

Peat 2 - 3 m

Peat 3 - 5 m

Peat > 5 m



Source(s): Vista landscape and design (2009)

LAND PRICES

Agricultural land

nature

build area

agricultural land prices (euro) / ha. in 2008

< 20.000

20.001 - 35.000

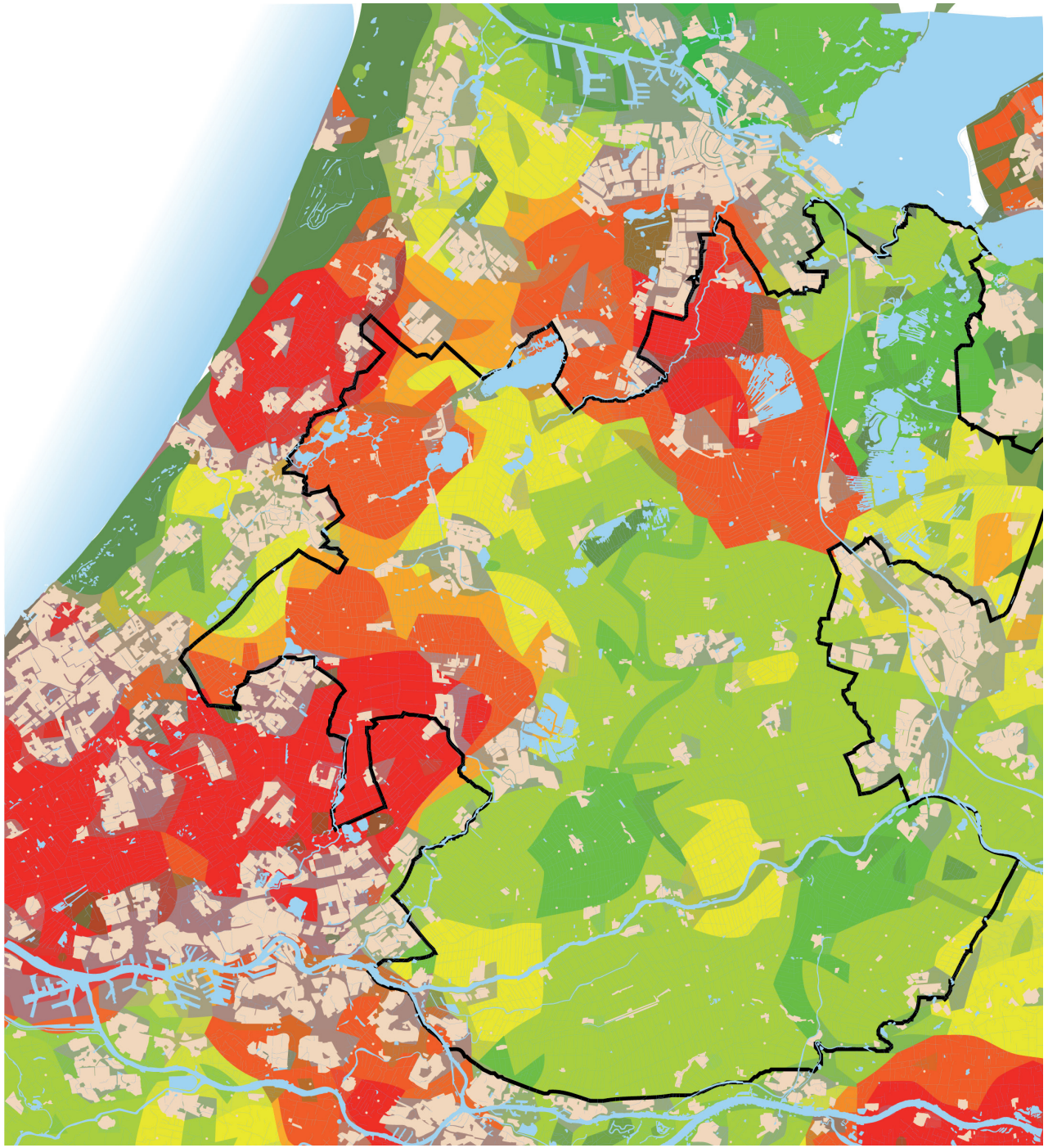
35.001 - 50.000

50.001 - 75.000

75.001 - 100.000

100.001 - 200.000

> 200.000

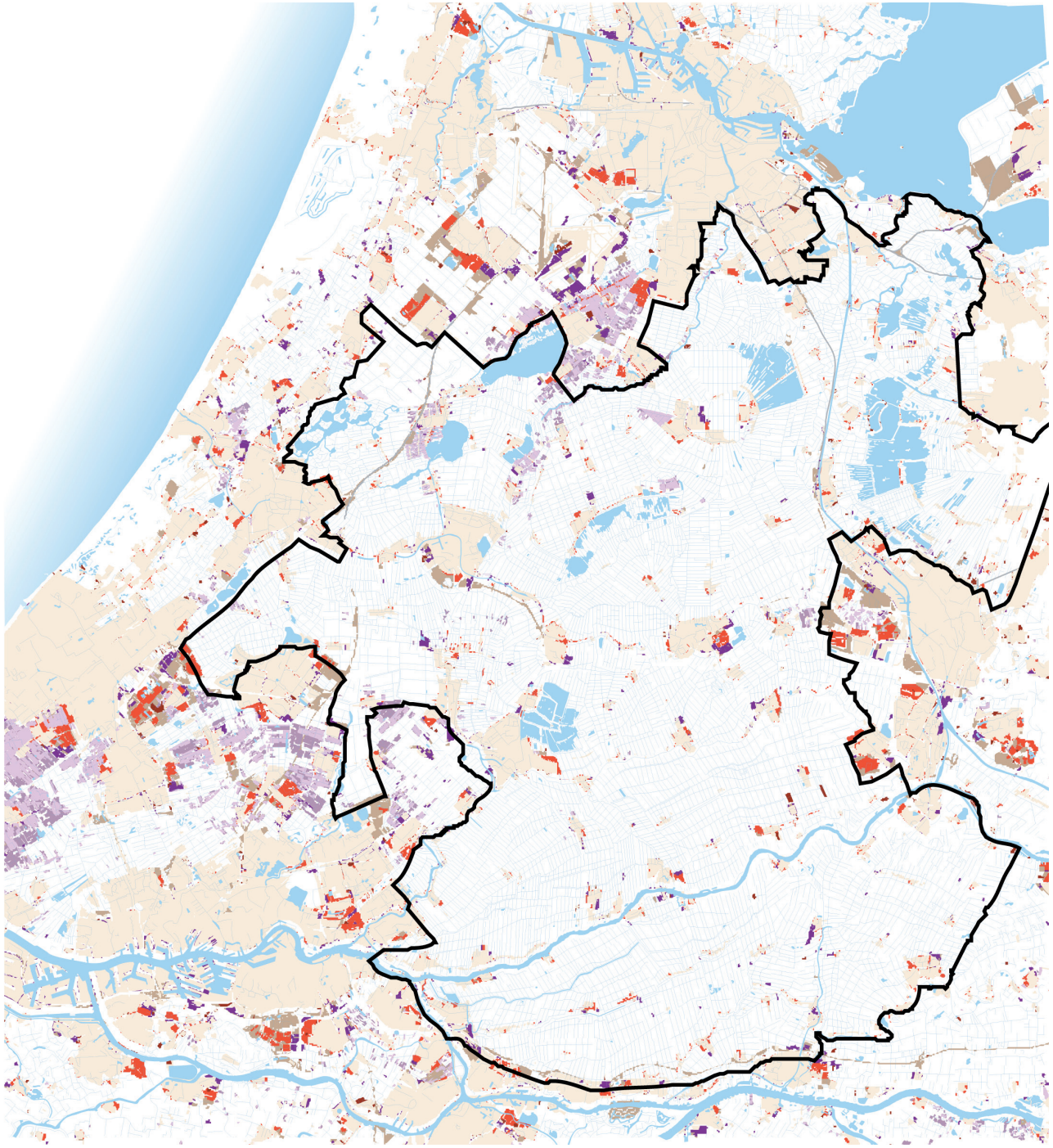


Source(s): Kuhlman et al. (to be published)

URBANISATION

Change in land use change, 1989 - 2003

- Green Heart boundary
- Built-up area 1989
- New residential areas 1989-2003
- New business estates 1989-2003
- New shopping centres 1989-2003
- New construction areas 1989-2003
- Greenhouses 1989
- New greenhouses 1989-2003



Source(s): Burdett et al. (2011)

AGRICULTURE

Live stock farming

pasture

NUMBER OF EMPLOYEES:

Dairy industry

- 1 - 20
- 21 - 50
- 51 -100
- 101 - 200
- 201 - 500
- 501 - 955

Meat industry

- 1 - 20
- 21 - 50
- 51 -100
- 101 - 200
- 201 - 500
- 501 - 856

Fodder industry, number of employees

- 1 - 20
- 21 - 50
- 51 -100
- 101 - 200
- 201 - 396



Source(s): Pieters et al. (2005) Ministerie van Landbouw, Natuur en Voedselkwaliteit (2004)

AGRICULTURE

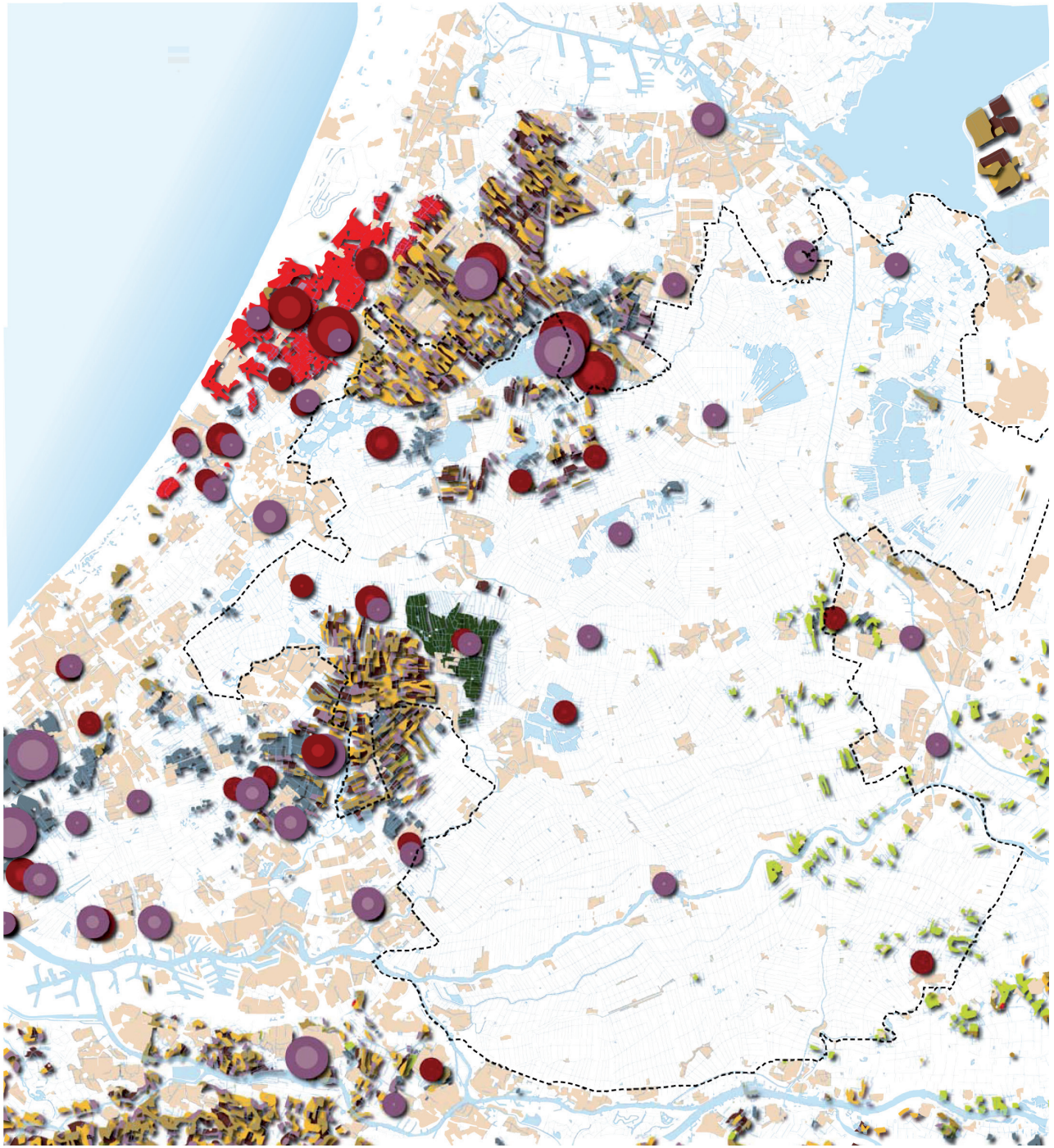
Flower, plants & vegetable industry

- corn
- potatoes
- beetroot
- grain
- other agricultural products
- ornamental plant cultivation
- flowers (bulbs)
- green houses
- orchards

NUMBER OF SECONDARY BRANCHES:

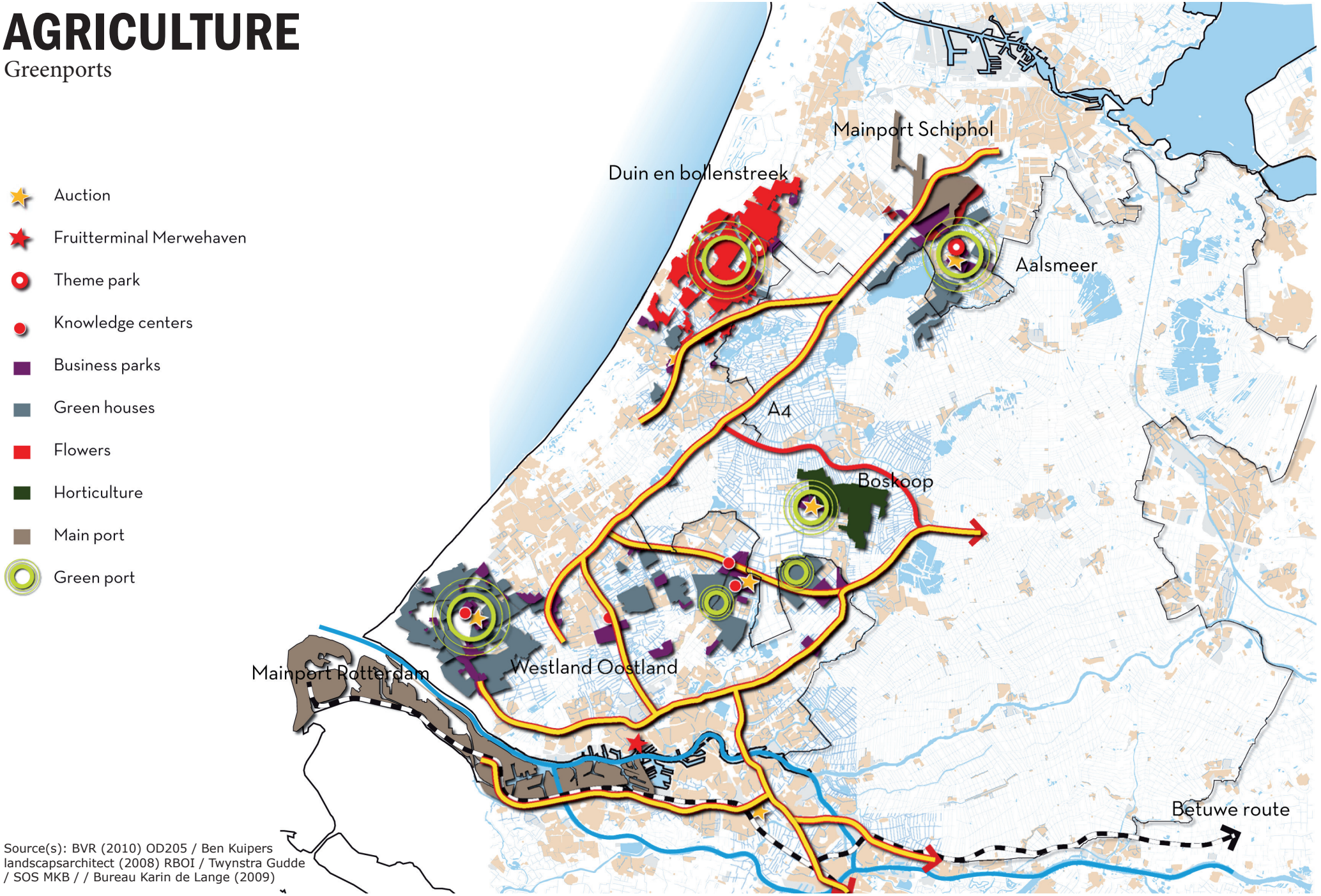
Vegetables	Flowers & plants
1 - 20	1 - 20
21 - 50	21 - 50
51 -100	51 -100
101 - 200	101 - 200

Source(s): Pieters et al. (2005) Ministerie van Landbouw, Natuur en Voedselkwaliteit (2004)



AGRICULTURE

Greenports



Source(s): BVR (2010) OD205 / Ben Kuipers landscapsarchitect (2008) RBOI / Twynstra Gudde / SOS MKB / / Bureau Karin de Lange (2009)


OPPORTUNITY
MAPS

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FARMING 2.0

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A CARE LANDSCAPE

IV A Green Heart's medical matrix
V Healing Heart
VI Care circles
VII Restful rural
\VIII Care & cure line

A LEISURE LANDSCAPE

IX Wellness in the wetlands
X A taste of the lowlands

HOLLAND DAIRY PORT

XI Holland dairy port

A COUNTRY ESTATE LANDSCAPE

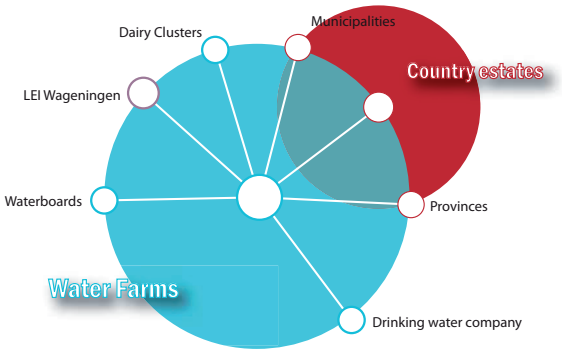
XII A country estate landscape

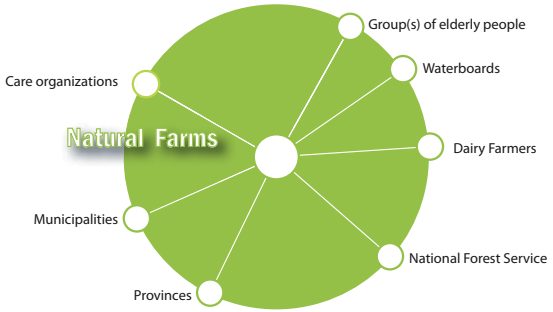
FARMING 2.0

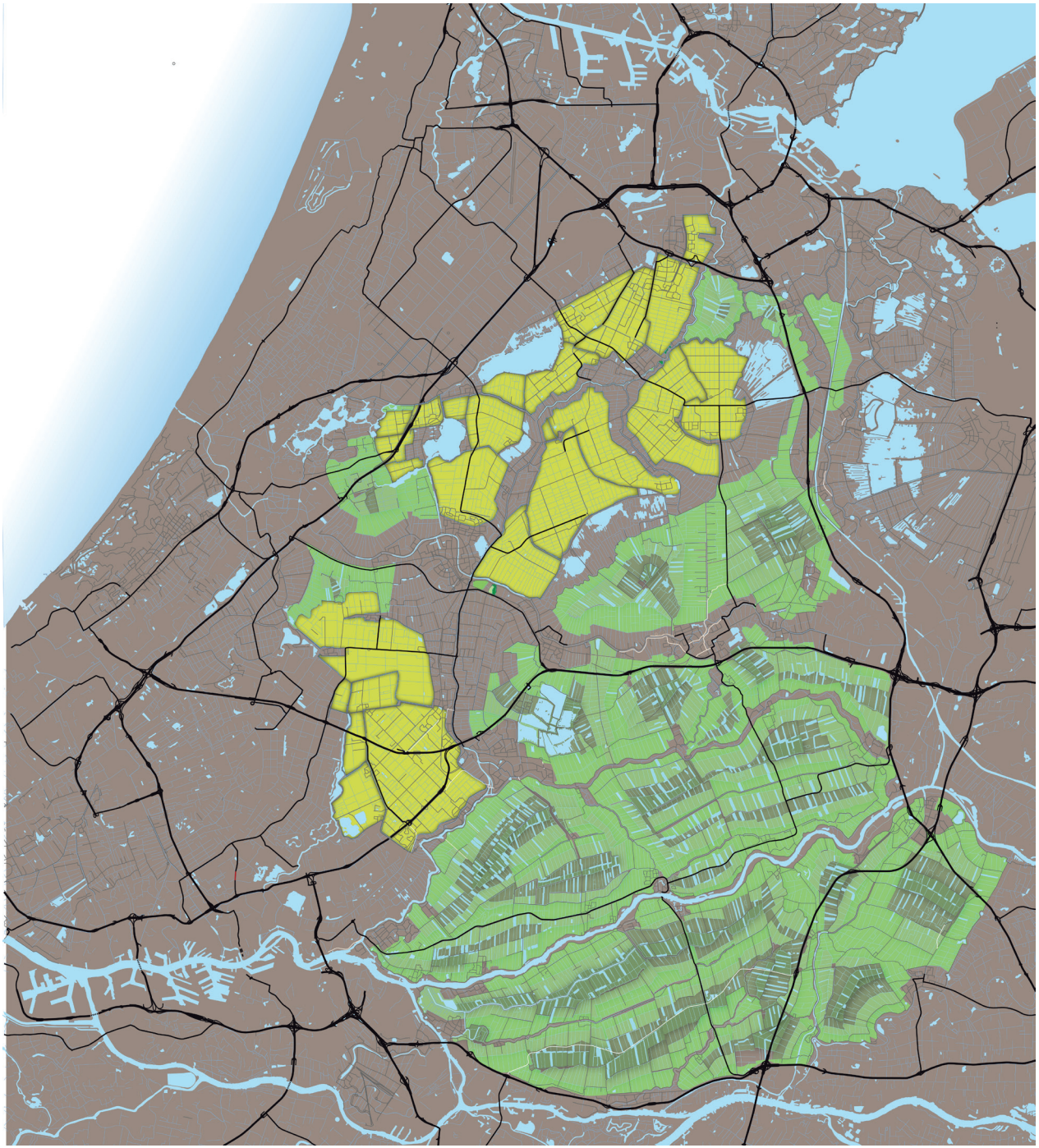
Future directions for dairy farming

Dairy clusters

Natural farming







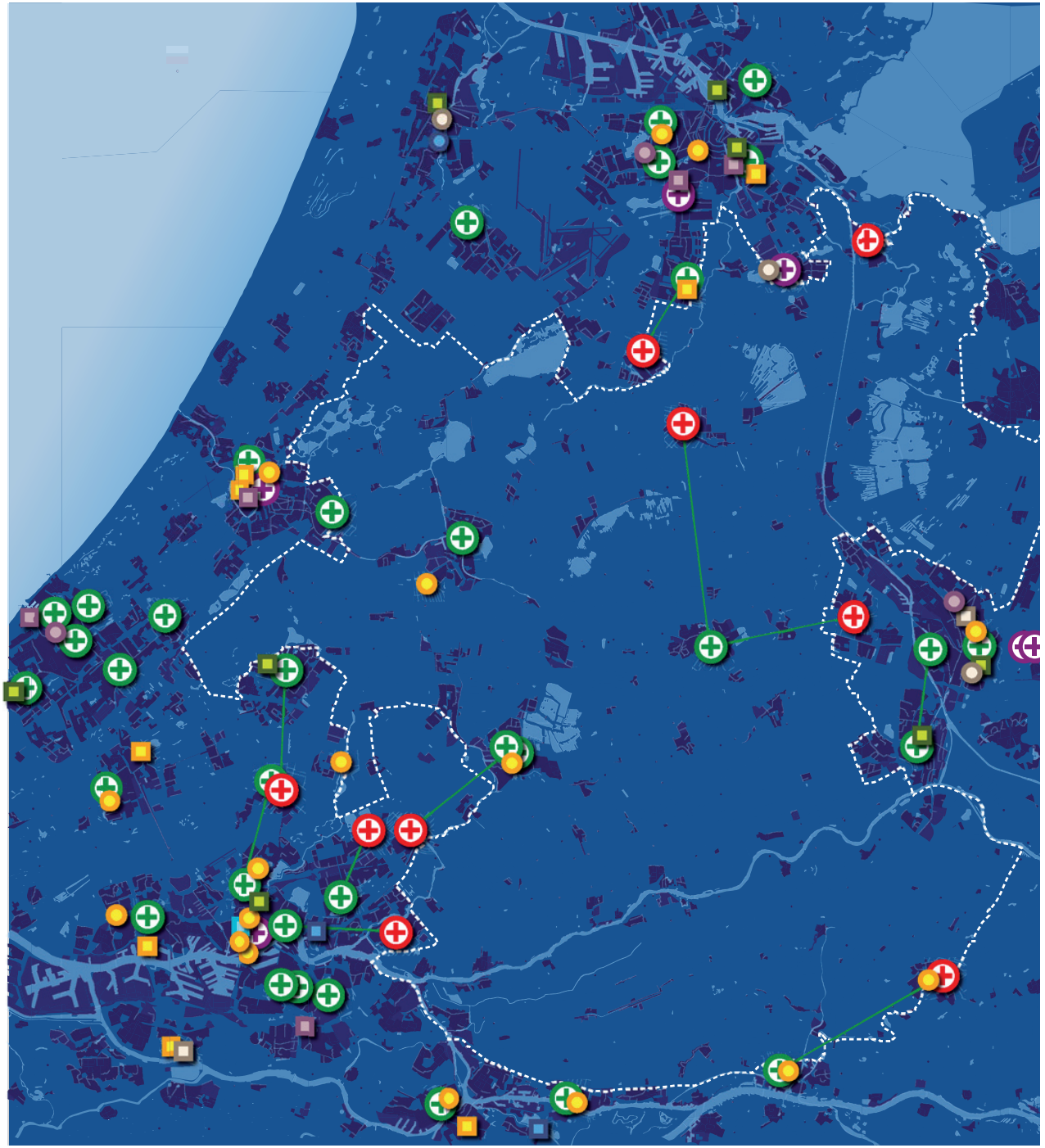
A CARE LANDSCAPE

The Green Heart's medical matrix

- Academical hospital
- General hospital
- Policlinic

- Integrated mental health care center
- Child and juvenile psychiatry
- Drug rehabilitation
- Assisted living
- Forensic psychiatry

- Revalidation center
- Audiological center
- Epilepsy center
- Dialysis center

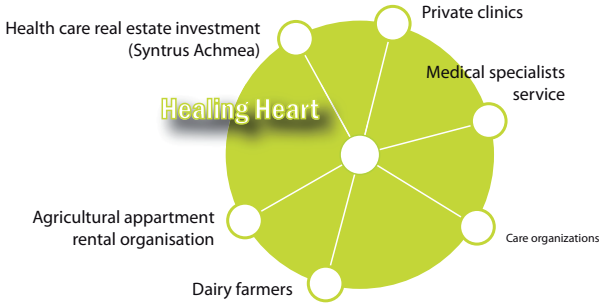


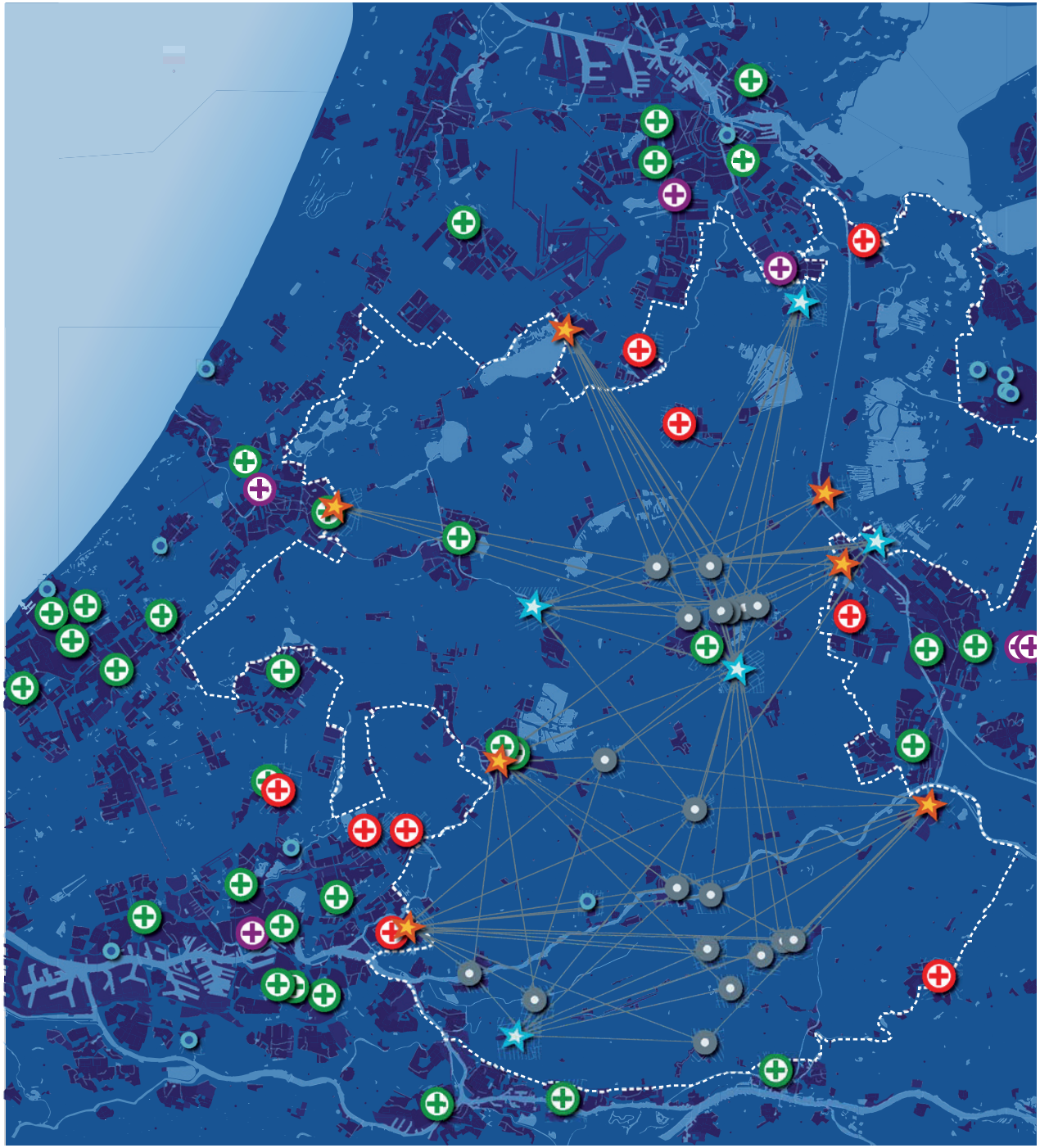
Source(s): Wikipedia (2012)

A CARE LANDSCAPE

Healing Heart

- Academical hospital
- General hospital
- Policlinic
- Private clinics
- medical specialists service
- Existing care hotels
- Potential care hotels





A CARE LANDSCAPE

Care circles

Care center

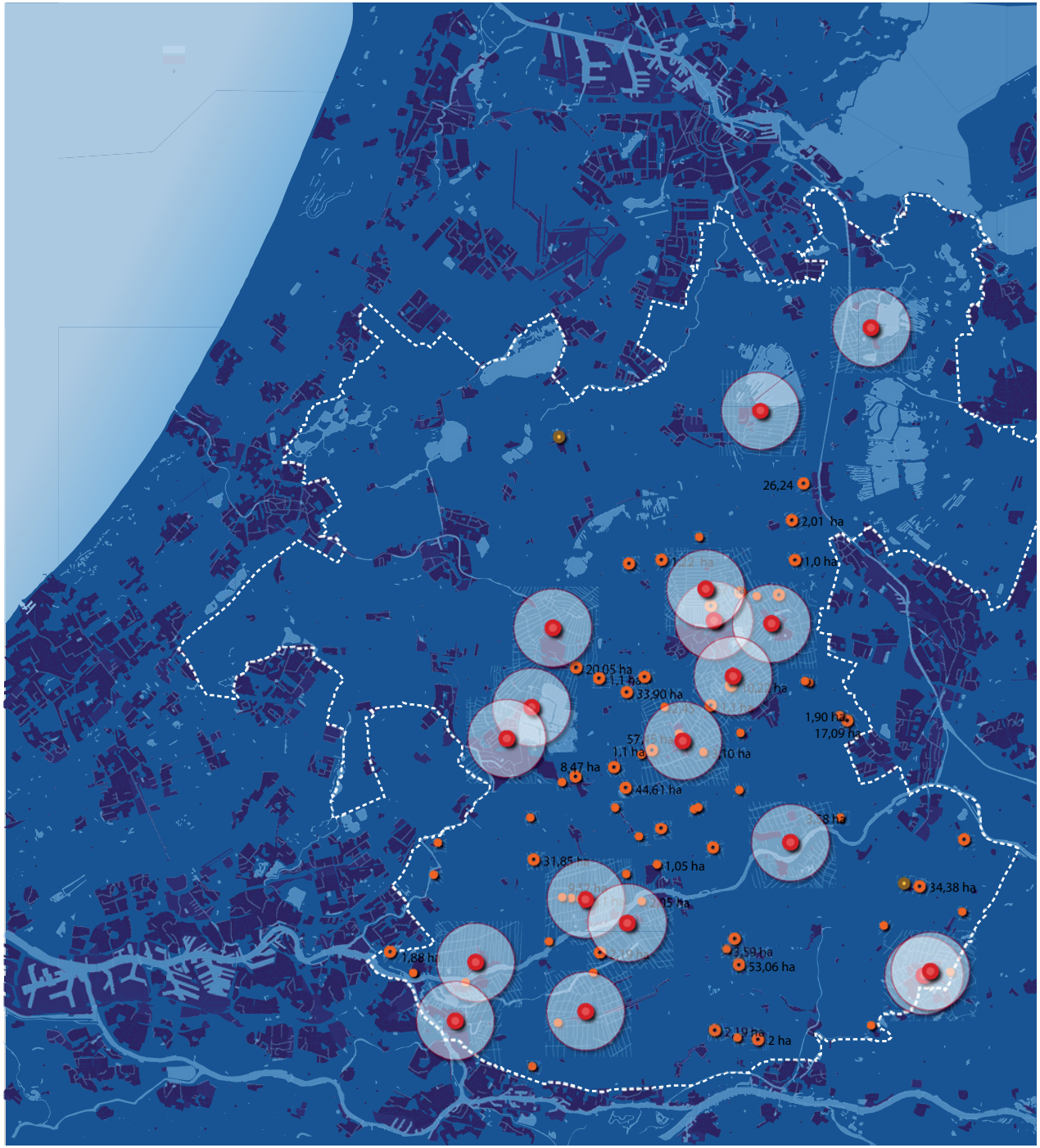
Rural object for sale (11-05-2012)

Agricultural company for sale (11-05-2012)

Existing private nursing home

8,47 ha Amount of agricultural land for sale

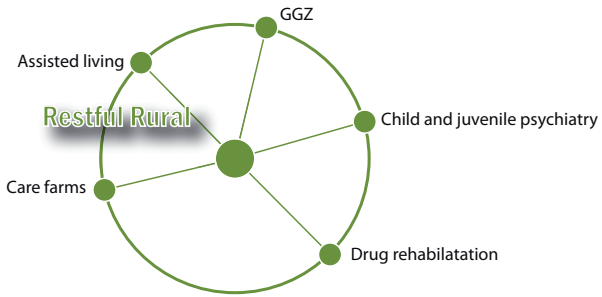


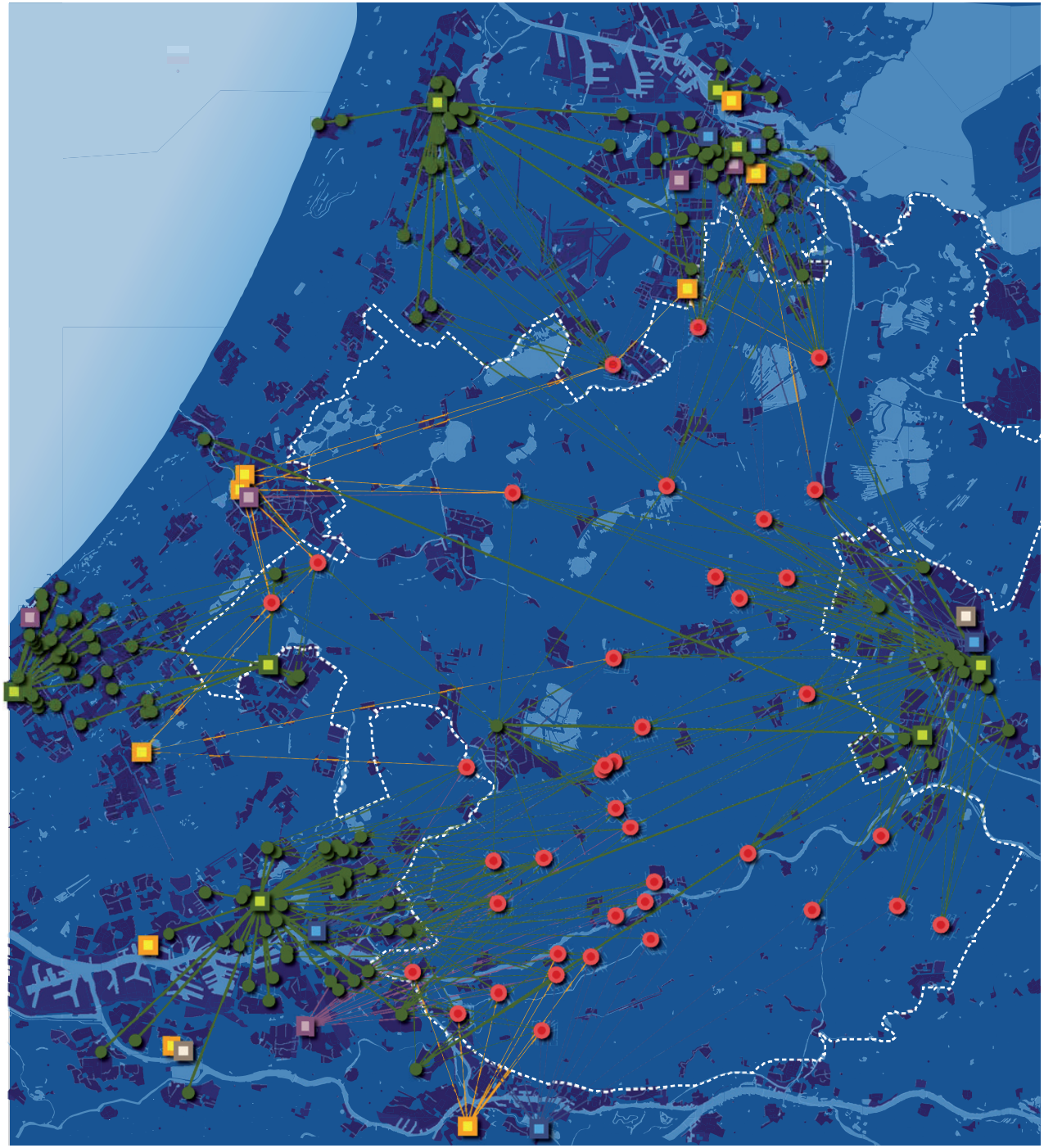


A CARE LANDSCAPE

The restful rural

- Integrated mental health care center
- child and juvenile psychiatry
- drug rehabilitation
- assisted living
- assisted living housing locations
- forensic psychiatry
- care farms





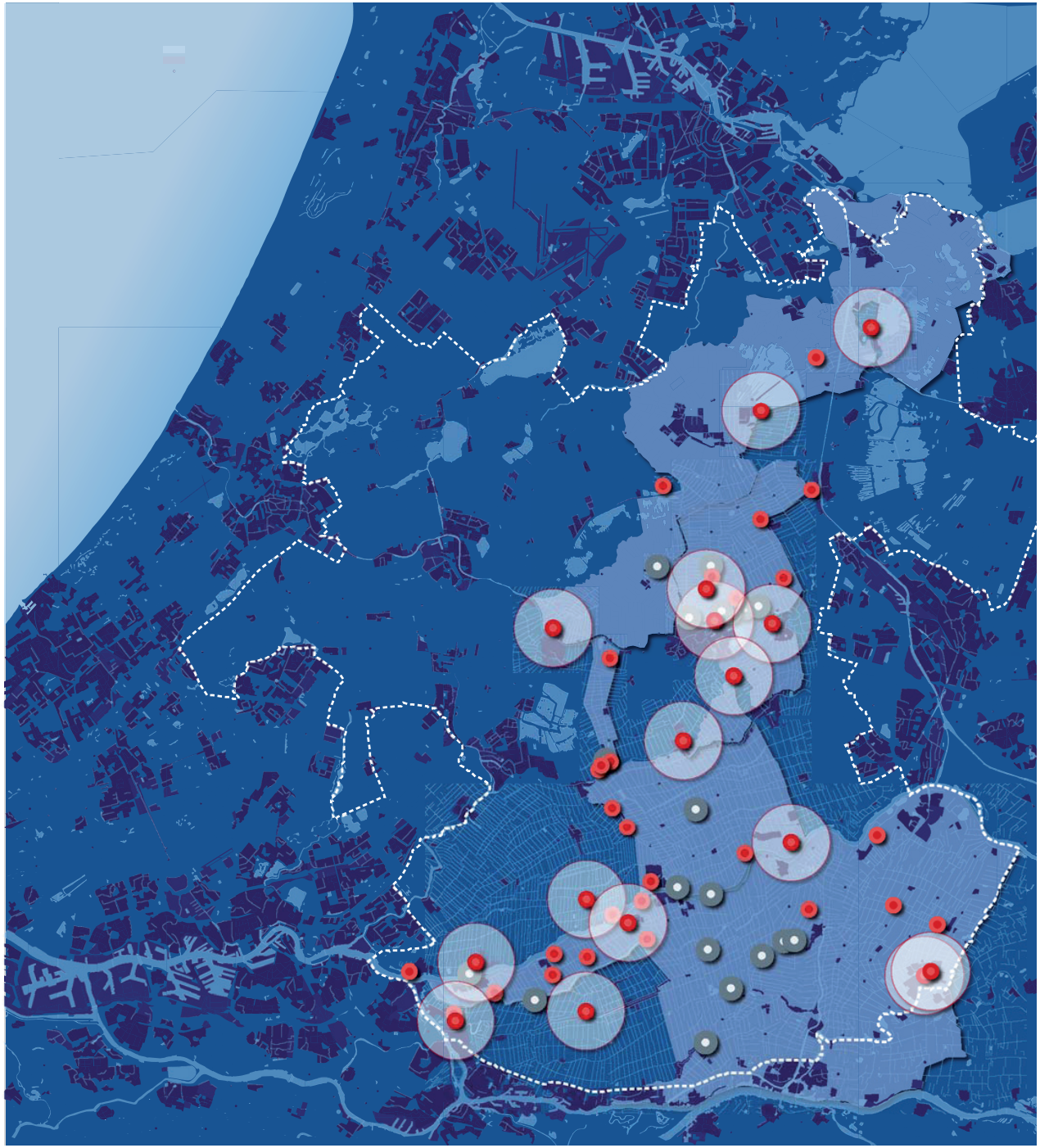
A CARE LANDSCAPE

The care & cure line

Care centers

Care farms

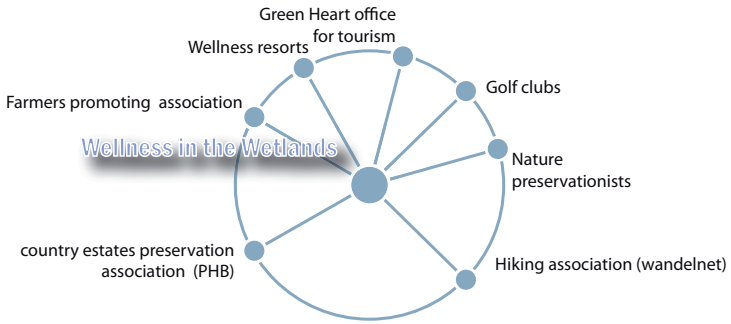
Care hotels

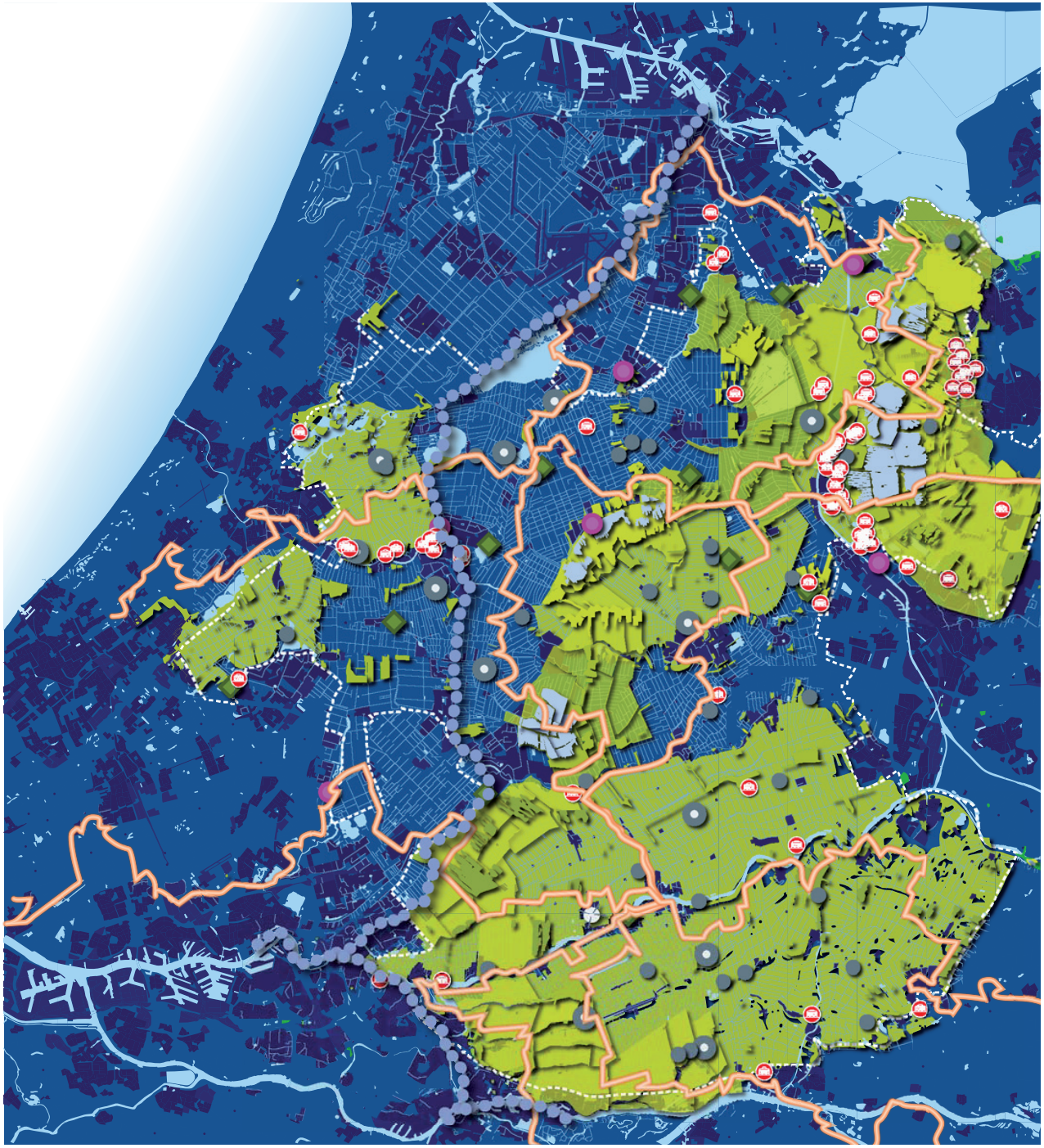


A LEISURE LANDSCAPE

Wellness in the wetlands

- Golf courses
- Wellness resorts
- Nature reserves
- Luxury apartments rental
- Bed & Breakfast
- Historical country estate
- Long distance hiking trails
- To be developed Green Backbone
- To be developed Ferry line

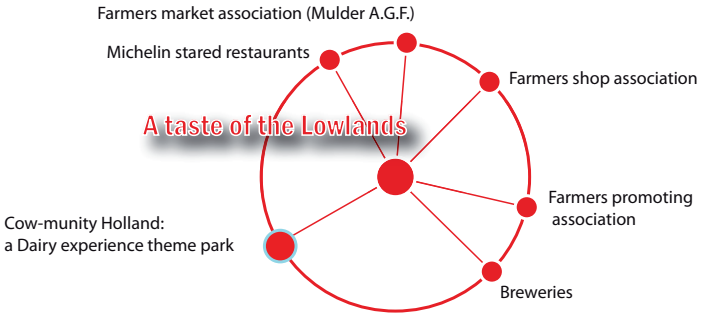


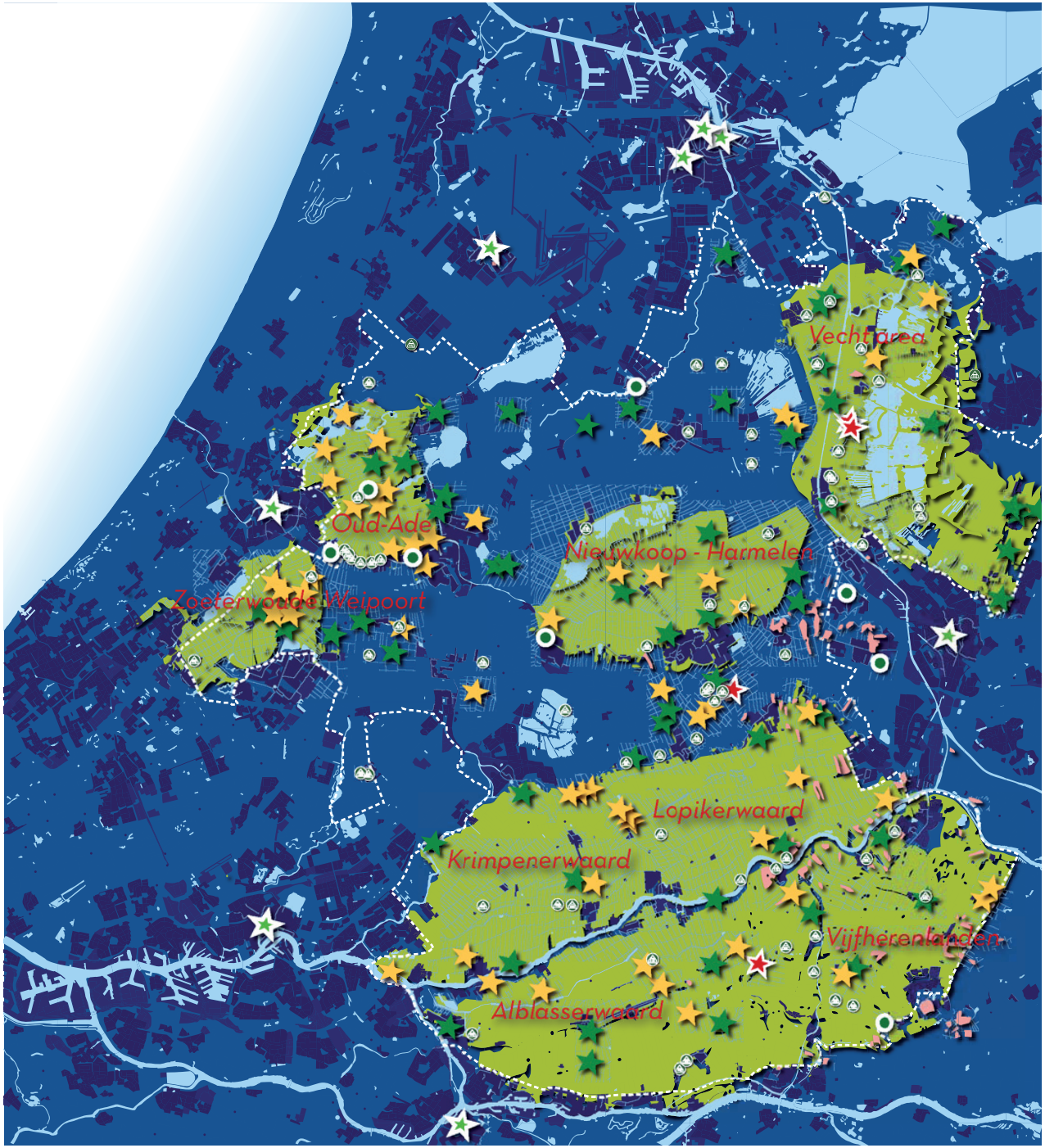


A LEISURE LANDSCAPE

A taste of the lowlands

- Michelin starred restaurant
- Organic farmers market
- Farm shop
- Cheese farmers shop
- Brewery
- Belvedere Dairy farming
- Orchards
- Monumental farms

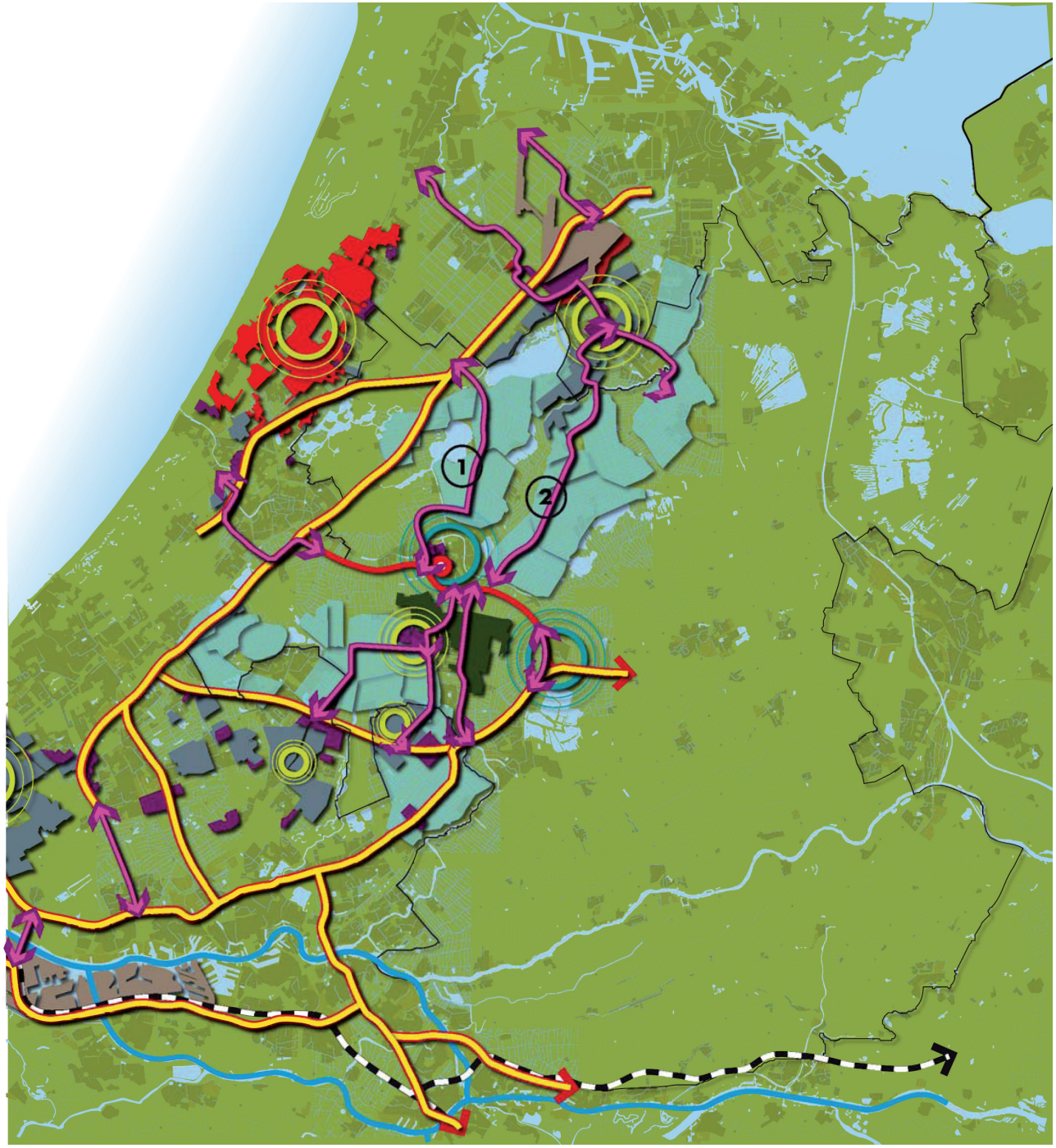




DAIRY CLUSTERS

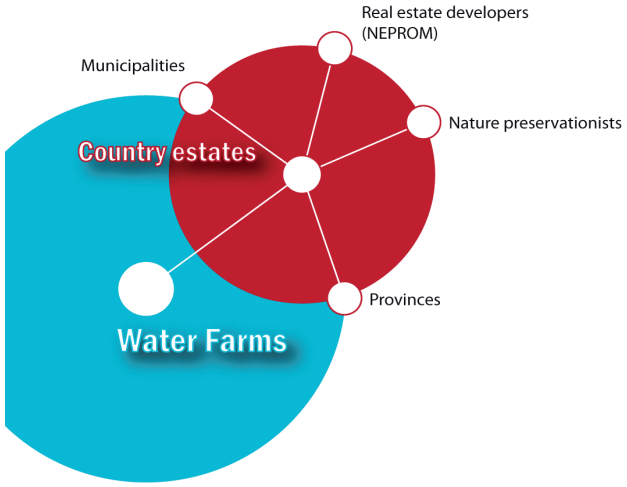
Dairy port Holland

- Business parks
- Green houses
- Flowers
- Horticulture
- Main port
- Pasture
- Green ports
- Potential locations Dairy port
- Potential locations Agroparks
- Planned infrastructure (according to structure visions Green ports)



DAIRY CLUSTERS

A country estate landscape





Green belts revisited

Remco van Dijk

This project advocates a shift from the questions "where do we want to be and how do we get there? " to "how do we move in a desirable direction in the face of uncertainty" (Innes and Booher, 2010:206). Following Innes and Booher it promotes building regional capacity to co-evolve with change. It is not about weighting alternative solutions or leaving things to the market, but about cooperation between actors from the public, private and business sector, each with their own knowledges that can be employed to build adaptive strategies helping regions to move into a desired future. As such spatial planning processes will become more flexible and therefore better equipped to deal with uncertainty and surprices. While jointly looking at these uncertainties the shared conception of the desired future may even change.

The known, UK originating, planning instrument green belt will be used to make the case. This spatial policy to control urban growth is iconic to a spatial planning answering the questions "where do we want to be and how do we get there? ". The green belt policy has been developed in the UK in the first half of the twentieth century en became an universal accepted means to control urban sprawl. A green belt is a ring of countryside surrounding an metropolitan area where urbanisation will be resisted for the foreseeable future, maintaining an area where agriculture, forestry and outdoor leisure can be expected to prevail. The fundamental aim of green belt policy is to prevent urban sprawl by keeping land permanently open, and consequently the most important attribute of green belts is their openness.

During the last decade some fundamental changes within the object and process of spatial planning in north west European countries has complicated the very effectiveness of this spatial planning instrument.

First the object of spatial planning relevant to green belts, metropolitan areas, are growing together into a new phenomenon called metropolitan regions. It complicates the effectiveness of green belts as this new urban form is not only new because of its exceptional size, but also because green belts have become part of the same spatial unit containing opposing land uses like urbanized areas, urban sprawl, and highly dense residential areas (Castells, 2010).

Secondly within the process of spatial planning a shift from government to governance is fading the system responsible for the implementation of green belts. Governing processes are no longer fully controlled by formal government but subject to negotiations between a wide range of public, semi-public and private actors (Sörensen and Torfing, 2007), whereas green belts are depending on a high level of interventions by government.

A developed hypothesis responding to these fundamental changes will be tested and further explored in a case study: the case of the Green Heart. The Green Heart is a spatial policy for controlling urban growth in the central part of Randstad Holland. It can be considered as an inverted green belt, instead of surrounding the area itself is surrounded by a ring of cities, keeping these cities from growing together. Dutch national government is step by step retreating from this policy. At the same time the area is confronted with specific local and urgent problems, threatening the characteristics of its cultural landscapes. The western part has to deal with soil salinazation, while fresh water storage is becoming less stable and decreasing. In the eastern, peat lands, the characteristic peat is vanishing as a result of oxidation. This process of oxidation is caused by the low ground water level needed for the agricultural sector and without interfering the peat will be disappeared in 50 years.

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