



We would like to thank our course director Colin Fournier, and our tutors Robert Dye and Olaf Kneer for their thoughtful and continuous support throughout this year; Jonathan Kendall for his wise observations and questions during our crits; Marcelo Santos (UCLU services) for his coffee and for helping us in our researches; Ian Whiteik (Allotments Regeneration Initiative) and Joanne Doyle (Spitalfields City Farm) for kindly initiating us to the hidden face of agrarian London; Don for warmly welcoming us every days at the Bartlett, always smiling even on our hardest days.

We would also like to thank in no particular order Anagha, Cecilia, Denise, Jeff, Jürgen, Ming, Luis, Thresh and all our other classmates for having made this year an unforgettable one. A special thank to Simon for suggesting the title of this report.

Personal acknowledgements

Anna

Thanks to my father, my mother and my sister who enabled me to fulfil this course and many other undertakings; to my friends who continually supported me throughout this year, during good and bad times.

Thanks Nicolas for having made of these two last months a remarkable peaceful and joyful collaboration, full of interesting discussions and questionings. It has been great to work with you.

Thanks to Emmanuel for persistently and patiently believing in me and being there.

Nicolas

Thanks Anna for transmitting me part of your incredible motivation. This was a really enjoyable collaboration.

Thanks to Olivier for being there whenever I needed it, even from Paris, and for supporting me in my numerous moments of doubt.

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We both started this year with no preconceived idea about what our projects were going to be about. It happened that, from different starting points, our projects converged towards the topic of urban agriculture. It is quite naturally that we decided to join our forces for this final report.

This report is not only a theoretical exploration of urban agriculture as it is today and as it should be. It is strongly supported by a project that we designed together over the summer. This project takes the very UCL campus as a stage set. Actually, it is the project that drives the whole logic of our report.

After a rapid overview of the projects that we designed separately during the year, a long (and productive) introduction tries to answer this odd question: why, as urban designers, should we care about agriculture?

The rest of the report is dedicated to the project, whose aim is thus twofold. First, it aims to set a theoretical example of what implementing a productive city could mean in a close future. To do so, it addresses the related technical, social, economic, cultural or political issues in detail. It relies largely on the study of existing experiments and on theoretical knowledge available, as presented in the boxes. Second, as it is anchored in a real context which we were able to study carefully, it has the ambition to be as realistic and feasible as possible. We tried to imagine how it could be implemented for real in the next few months and years, with the hope that it might really happen...

The last development stage of our project, the "productive city", is also our conclusion: it tries to take larger and more long-term perspective and to envision what the requirements of developing urban agriculture would be in terms of urban policy, planning and design.

We hope you will enjoy your reading!

Anna Gasco & Nicolas Rougé

To finally start at the end...

One year ago I started this master course with merely no ideas of what I wanted to achieve in the field of Urban Design. Almost all of my classmates came with marvellous investigational wishes, ranging from fashion, nomadic behaviours to generative systems, parasite implication or poetical connections between senses, cinema and urban fabrics... I remember myself being really impressed about all of them and wondering how I could ever contribute to the study of our modern cities. My only desire was to learn how to decode their astonishing complexity. Have I succeeded after 12 months? The answer is, of course and fortunately, no.

Leading my way through this year, my researches guided me to explore the impact of human lifestyles on our planet. I do not remember exactly how I began to hunt for city frameworks creating sustainable environments - and at the same time, allowing people to act within the process - but it finally took me one entire year. Looking back, today I can say that my project was about urban agriculture, social integration and communities interaction. Considering the increasing social and environmental damages of agriculture – consequences of a global agribusiness – now I can even say that exploring these topics was quite natural to me.



As I explained, I did not start with a vision in mind. By reading and understanding the context, my methodology was to use the local environment to shape the structure and the meaning of my settlement.

I selected a site lost in the neighbourhood of Havering. It is located next to protected parks, wood and marshes. It also contains a small river and is mainly made of agriculture fields and existing farms. I have to confess that its hidden situation acted as its main attractor... Indeed although it is still situated inside the Greater London area, it already contains all the distinctiveness of the Thames Gateway. It is situated at the edge of London's expansion, where city sprawl comes face to face with natural environment. The urban and the rural have often been seen as two opposed concept: when the city grows, nature disappears. In my quest for a sustainable framework, I decided that exploring a way of breaking out the city-country dichotomy could be an interesting starting point.

As aforesaid, my research was a matter of process and I have designed the project by investigating the context.

Considering and using different layers of the landscape, flood retention fences ❶ and footpaths ❷ are shaped in half of the site. By enhancing the agricultural layer, the meaning and structure of the city are created. It becomes a place of transition between the city and the countryside, a territory where the nature and the agriculture overlap within the urban fabric, enabling a manifold urbanity closer to nature, as well as a shared habitat enhancing community life and exchanges between its inhabitant and the existing villages.

The built areas are designed from the river and follow new footpaths, connecting the different parks and existing villages and enclosing the woods and farms. The new neighbourhoods are delimited following the current agrarian lots, with no subdivision of the land. The present tracks serve as the basis for the traffic system.



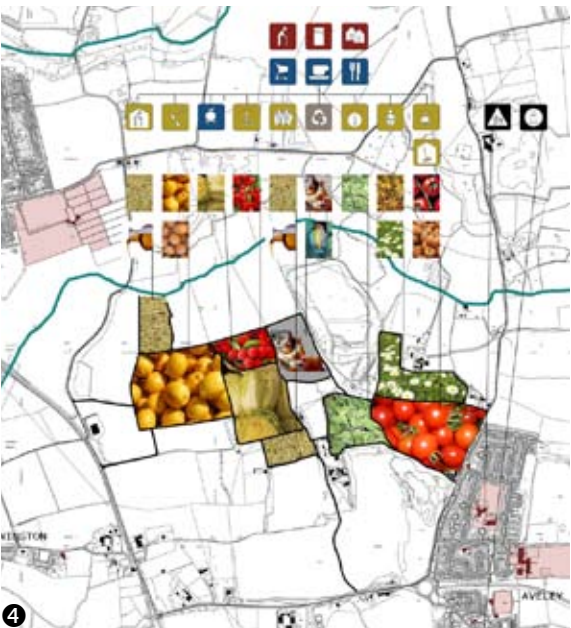
The existing drains are used as water supply for the agriculture areas mixed within the new urban fabric. ❸



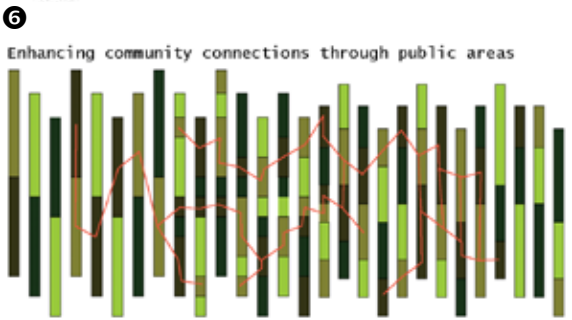
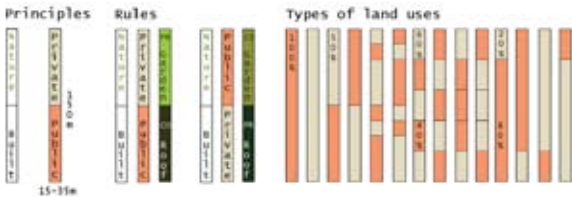
❷

The land uses are also determined by considering the current situation, in order to shape a collaborative program between the new settlement and the villages. If there is no need, the present activities are not replicated and new services are created in the settlement. Moreover the nearby functions are influenced and changed. For example: the existing school located next to Rainham station begins to hold once a week the public organic market of the new settlement; the community centre of Rainham becomes the meeting point for the different communities; the neighbour primary school of Aveley turns out to be the evening community school and is linked during the day to the educational garden inside the new settlement. In each new neighbourhood, a mix of various kinds of accommodations and urban services is located. In order to make the neighbourhoods interdependent, each of them hosts only one social or infrastructure equipment, as well as one type of agricultural production ④

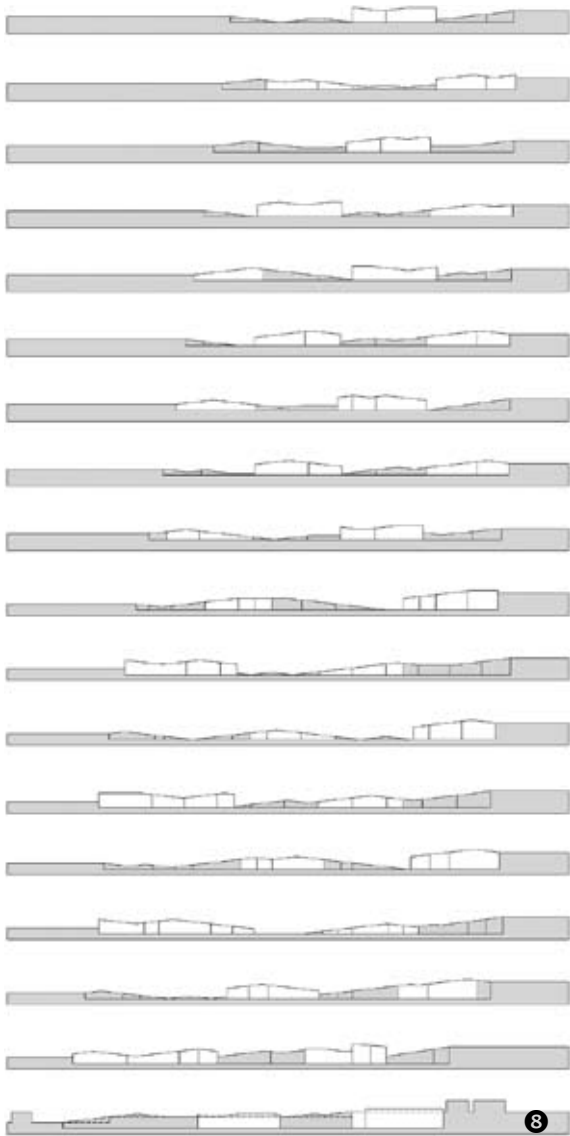
Regarding the community, the urban fabric proposes an open-ended organisation of residential units, enabling the integration of every groups of our current society: mono-parental or large families; singles, students, or couples; old people living alone or needing communal housing; people in all available colours and flavours. ⑤



Finally the organisation of one particularly neighbourhood is shaped looking at agriculture patterns, considering the orientation of the sun and following the sense of the contours. The widths of the threads are generated in order to shape units of urban fabric that could take light from both sides. The built or green areas, as well as private or public functions, are organised by using a colour game. It enables to generate the overlap of the nature and the urban fabric. ⑥

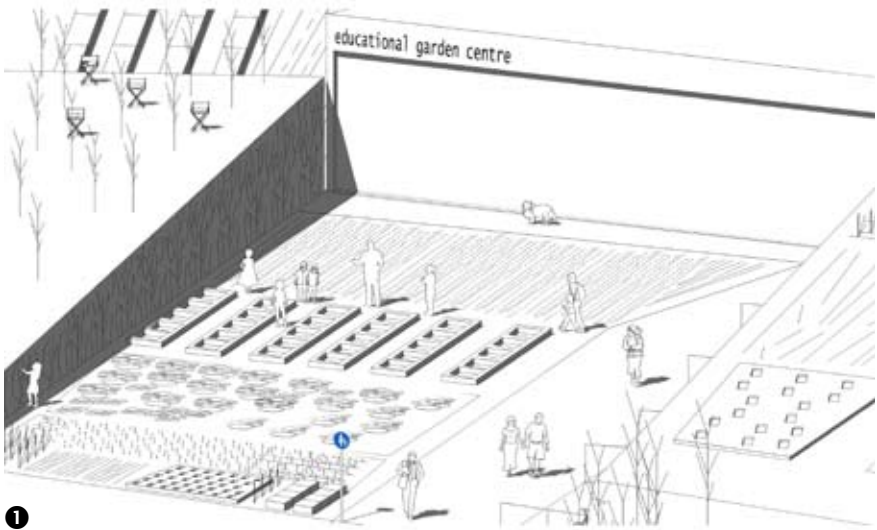


When transposed into the site, this game creates communal or private green roofs, as well as communal or private gardens. ⑦ The slope of each roof and garden are then designed to enable the access to central areas. The city hosts every possible groups of our current society; therefore the declivity reaches no more than 6%, enabling access for disabled people. ⑧ Of course the height of the new urban built form is planned in order to leave clear views from the exiting houses through what could be considered as a new type of fields.



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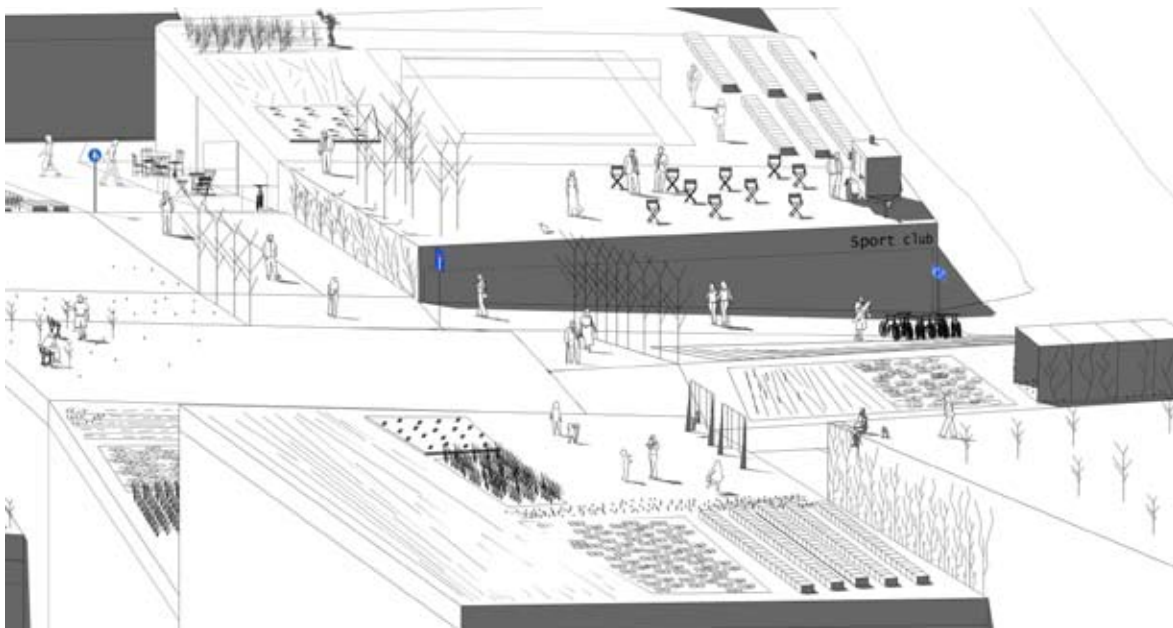
Still considering the same neighbourhood, this time more closely, different layers of interactive programs are developed. Among others, the educational garden is located close to Aveley's primary school ❶; the existing farms are associated with the new agricultural co-op, working similarly as a Community Supported Agriculture association; the local tavern becomes their refectory; and even some Aveley's residents decide to link their gardens to the co-op.



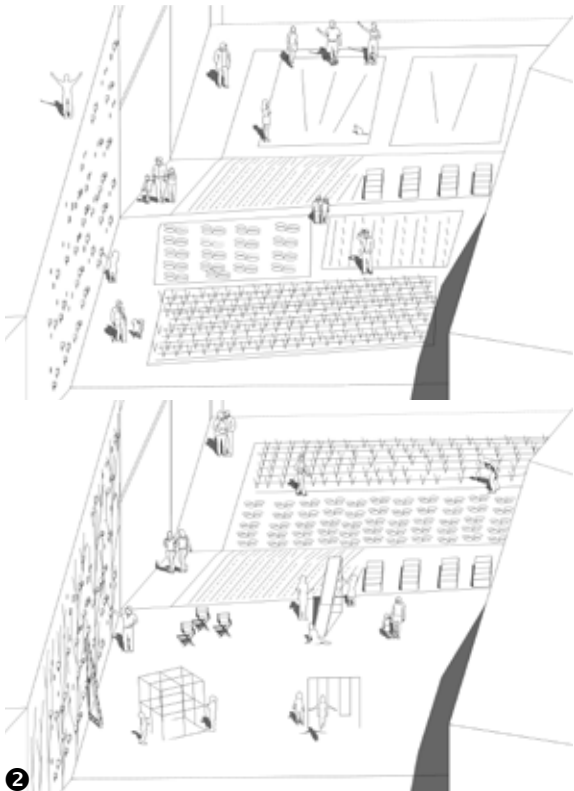
The internal streets are designed as residential or pedestrian ways. The larger street length being less than 300 metres, the car parks can be located at the edge of the neighbourhood, together with bike and car sharing facilities.

The identity and quality of the place are shaped by the interpretation of technical conditions of agriculture. The crops rotation, which enables to keep a healthy soil without the use of any chemical fertiliser, enables a variation of uses in the public spaces. The life of the neighbourhood follows the agricultural paces and seasons, therefore freedom and flexibility is integrated within the urban fabric. ❷ The roots of the crops, their plantation patterns as well as their light needs are considered to locate the various cultures either on roofs or in gardens or even in cellars. All the roofs are devoted to agriculture in order to use and save rainwater. Hydroponic systems are used on roofs and trickle irrigation systems in gardens, each of them enabling an effective use of water.

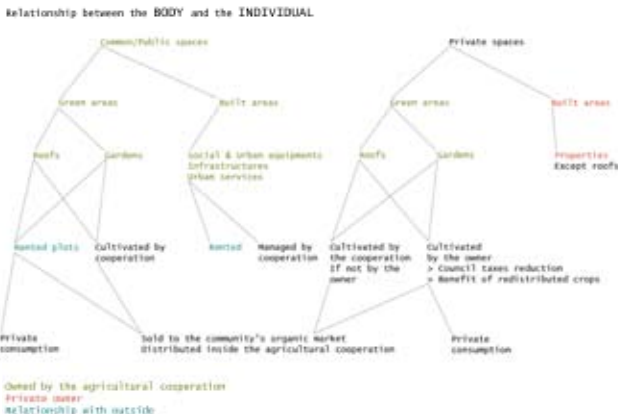
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The density is 272 persons per ha. It is neither of extremely high dense kind, nor even of suburban kind, but it reflects the attempt to create a place of transition between the city and the nature. The achieved crop production considering every productive site enables the provision of 45% of daily fruit and vegetable intakes for each resident, which I consider today as very efficient



Imagining an ownership diagram, an attempt is made to regulate relationships between private and public areas, anticipating behaviours in this mixed environment, without hampering freedom and always emphasizing agricultural aspects. ❸ A variety of economic functions are hosted by the system and various economic relationships exist with the surroundings. If the identity and particularity of the place is very strong it is nevertheless open to the outside and it does not work as a closed system.



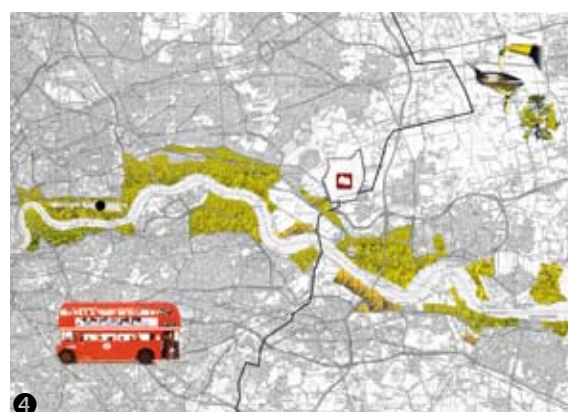
❸ Last but not least, this environment is designed in order to enable different behaviours, without restricting them; allowing a sense of freedom, as well as flexibility; providing a city that could transform itself into a playground and enable discovery and proximity of nature.



What if this settlement and community could really exist? How could this happen?

A similar collaborative and sustainable approach is thought at the regional scale - considering the contaminated brownfield sites of the Thames Gateway and the proximity of London. The London Low Emission Zone Strategy (LEZ) and the 2003/30CE directive of the European Union are explored.

The LEZ is planned by the government to improve London's air quality. In the future, the buses are likely to be replaced by eco-friendly buses, like fuel-cell-powered buses. The 2003/30CE directive aims to further the use of bio-diesel or alternative green energies for transports in all the member countries of the EU in order to respect the Kyoto protocol. Funding and fiscal exonerations are given to endorse bio-energies production. For example, the Belgian port of Gent is establishing a plantation of Colza – rape seed – to transform the oil into bio-diesel; the Austrian ports of Halle and Enns on the Danube River are developing similar projects. Both examples use the river as a transport mode for materials and crops, thus relying on environmentally safe transports.



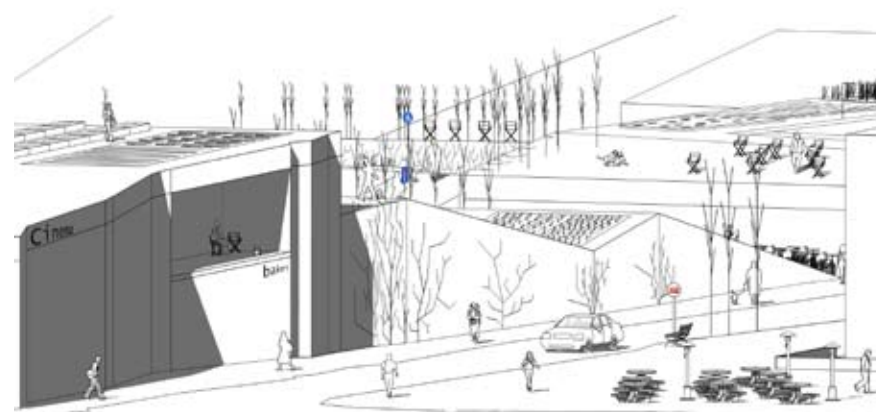
Considering this political and economic context, a partnership is set between the new agricultural co-op of Havering, the Greater London authority and the different public and private bodies involved in the Thames Gateway, aiming to financially facilitate the creation of Havering's new settlement. In order to receive funding from the EU and London, the agricultural co-op converts



Socio Land Lab - Anna Gasco



and exploits Thames Gateway brownfield sites.⁴ These 3800 ha transformed into rape seeds fields (colza fields) are able to produce enough bio-diesel for all London buses during one year. In addition another use of the river Thames is enhanced for the transport of the fuel. Meanwhile, as colza plants are phytoremediators, they enable the remediation of brownfield sites' soil by absorbing heavy metals, transforming them and releasing them in the atmosphere into harmless gases. This remediation strategy being efficient and inexpensive, land owners do not rent their sites but make them available to the agricultural co-op for free before taking them back in an uncontaminated situation.



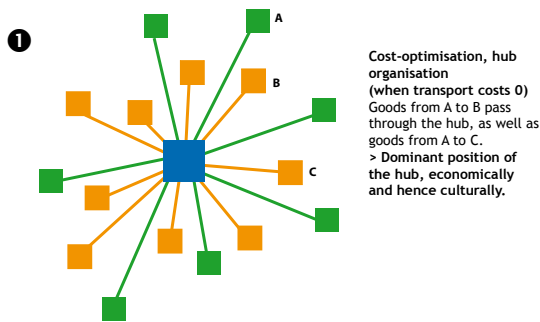
From Bloomsbury to Erith to Bloomsbury again...

Alter-City

It all started with this patchwork thing in October 2005. This was pretty much like an episode of Mission: Impossible. My mission, should I decide to accept it, was to design the piece of a hypothetical London in two weeks...

Alter-City aimed to explore how social and economic utopias of today might shape cities of tomorrow. According to Peter Hall (1), the anarchist movement at the end of the 19th century inspired most of the urban theories of the 20th century. Similarly, why would not anti- or alter-globalization movements generate new models for our cities? These movements try to fight the negative effects of globalization upon living conditions, health, cultural diversity and the environment. Though often criticized for their lack of organisation and sometimes their incapability to propose practical and viable solutions to the issues they denounce, they appear as one of the few movements that contest the neoliberalism dogma that prevails among political and economic elites.

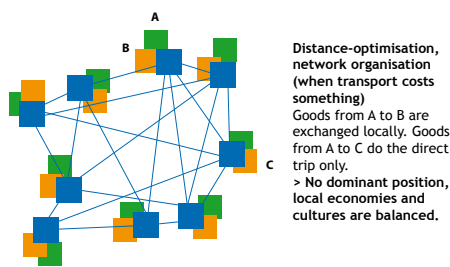
Alter-City was based on an imaginary situation that has something of a fairy tale:



José Bové, the charismatic French leader of the alterglobalization movement, finds asylum in London after being expelled from France for having dismantled Sleeping Beauty's castle in Disneyland Paris. There he finds the ground for a new socio-economic and cultural experiment. He becomes the chief adviser of Mayor Ken Livingstone for social and economic affairs.

His first policy is to create new regulations of local exchanges. Low-price transport is put to an end through taxation (also aided by the increasing price of oil). Distances between home and work, production and consumption have to be shortened. Public transports are developed. Urban freight is rediscovered: trains, and even tubes at night, are used to transport goods.

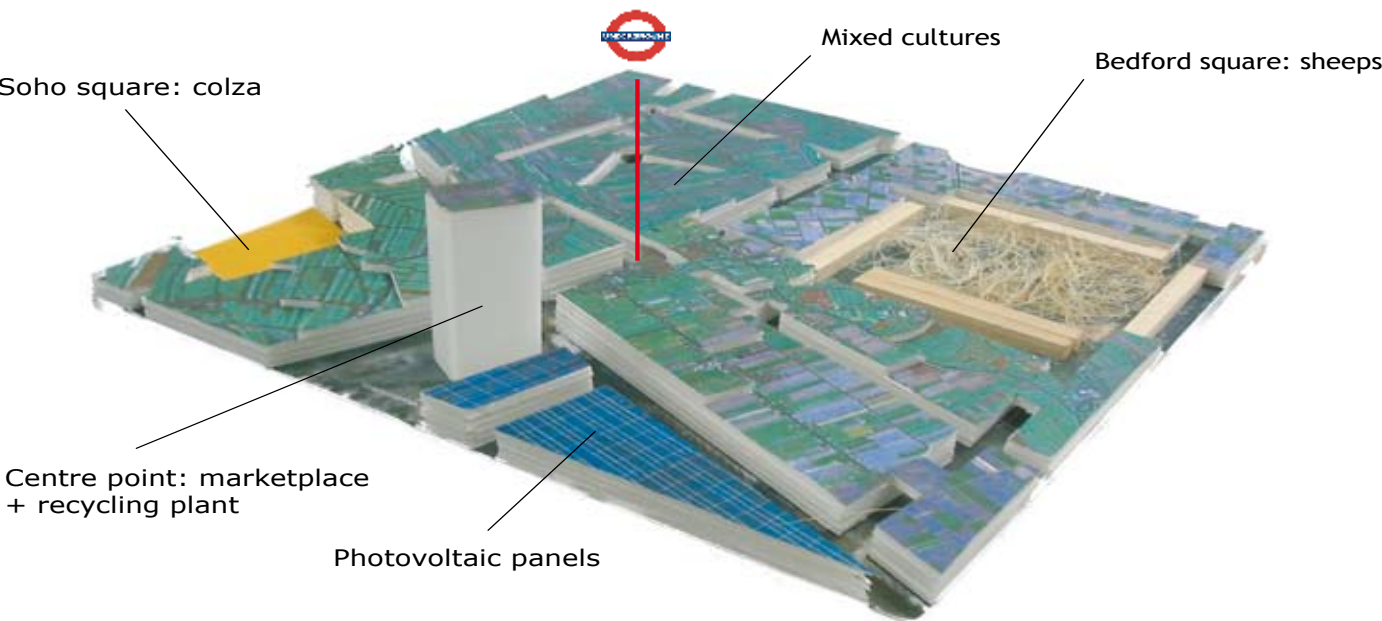
The main idea was thus to explore how new economic conditions could change the shape of the city. In my story, the new regulation of local ex-



changes brings new activities of production and transformation inside the city. These new activities superpose upon other traditional urban activities, but do not replace them. London should remain a relatively dense city, and a centre for exchanges. This would allow more social and cultural diversity.

The previous economic system was based on cost optimisation and led the concentration of all exchanges in a small number of hubs. It is replaced by a distance-optimisation system in the shape of a more homogeneous network with little hierarchy ①. Large-scale production dependant from the hubs is replaced by multiple small-scale units of production interconnected in many different ways with the rest of the city. Each neighbourhood, mixing different activities and not relying on a single outlet, thus cultivates its own cultural difference, depending on its own assets ②. Agriculture is one of the main possible activities for most neighbourhoods. Of course, less transport also means less CO2 released in the atmosphere.

Alter-City was illustrated with the new face of Tottenham Court Road Junction: fields blossom on the roofs of existing buildings; sheep graze in Bedford Square; and the half-empty Centre Point tower is turned into a vertical farm powered by PVs...



The 'Div/Den' strategy

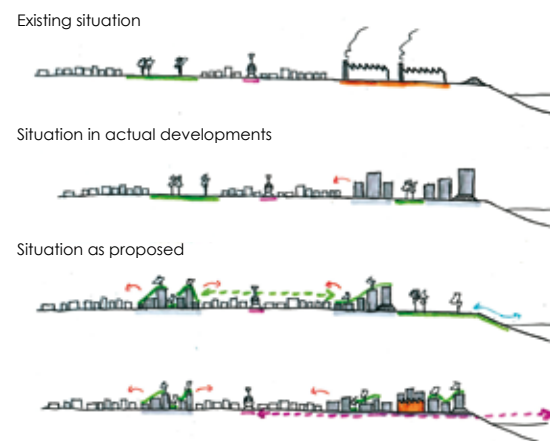
Just like for all my fellow students, my focus then switched to the Thames Gateway.

The Thames Gateway as planned today is a kind of UPO (Unidentified Planning Object): it is certainly not a masterplan, nor a new town; it has something of a regional planning strategy, but not quite because it lacks a strong spatial logic. Actually it is mainly a line on a map defining a corridor of development opportunities stretching along the Thames. The strategy of the government and local bodies in charge of the Thames Gateway framework is to develop brownfield sites as fast as possible, starting from the most valuable (i.e. easiest to remediate and closest to the river), and to create new public transports linking the new developments to central London. This is not enough to create an identity, and this does not address seriously some of the main challenges of the place. There is a strong risk of creating an undefined buffer zone of atomised communities between London and other cities of Essex and Kent.

The 'Div/Den' strategy I proposed looked for a more compact and more interconnected form of development. New infrastructures would create multiple opportunities of journey, not only enable the accessibility of remote sites from down-

town London. New developments would focus on zones already accessible by public transports and aim at DIVERsifying and DENsifying land use within those zones, mixing more intimately the existing and the new, using the 3 dimensions ③. Outside the most accessible zones, new kinds of developments could be imagined, mixing green spaces, industrial infrastructures (whenever it is possible to maintain them) and other activities.

Gradually a spatial strategy emerged in order to fulfil those goals ④. New developments are mostly taking place within the Greater London area so as to keep clear boundaries between the city and the country. The topography on the south bank and the existing or new mega-infrastructures (CTRL, motorways) on the north bank offer the first elements of a new, more 'natural' flood barrier, which helps face the known obso-

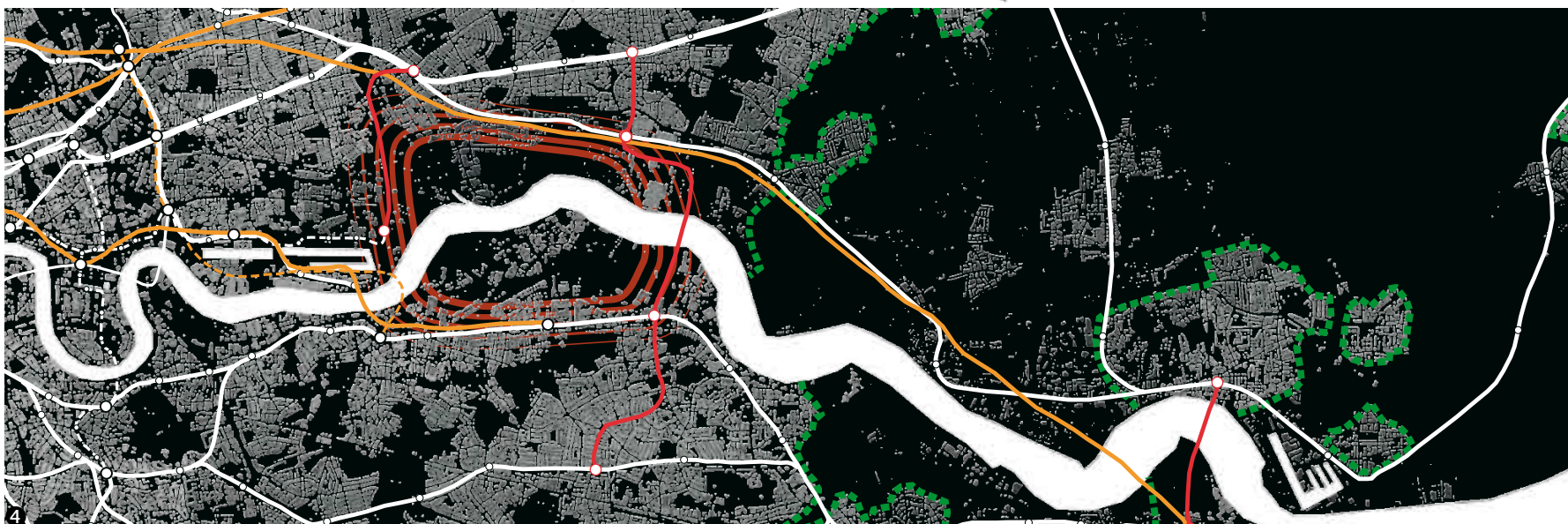


③



lescence of the existing flood defence system in a few years. The central part of the Barking – Daggenham – Thamesmead – Erith area is restored to its natural functions and occupied with activities compatible with its regained floodable nature (leisure & sports, extensive animal grazing, some industrial or residential 'islands'...). At the same time, the edges of this large 'eco-park' are densified and economically intensified. New connections between both banks and with the rest of London are created.

This is a more balanced strategy that takes equal care of both sides of the Thames and fosters change starting from the existing, rather than suddenly transform large parts of the landscape and leave others untouched and declining.

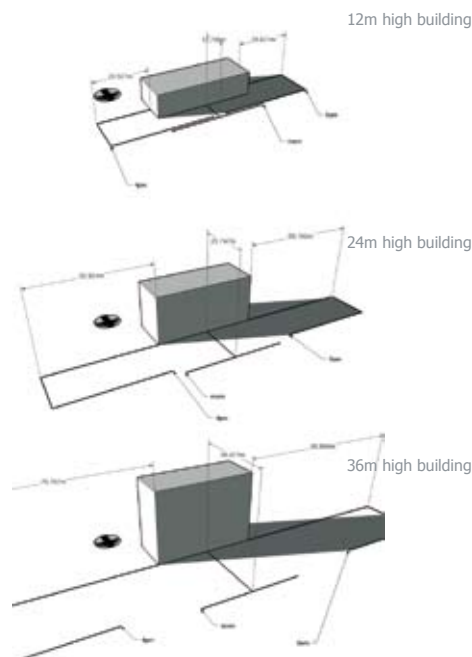


For further information

See Nicolas's Portfolio
"Towards a productive city?"
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Erith productive city

During the second and third terms I decided to focus my attention on Erith and especially on the Lower Belvedere industrial estate, a declining and forgotten site facing the more well-known and studied site of Daggenham.

Looking back to the fantasized London of Alter-City, I figured out that the most efficient and sustainable way to foster change on the edges of my eco-park ❸ was to rely on local resources. In cities, people are the most valuable resource. But truly local material resources are scarce: waste produced by citizens is one; natural elements (sun, wind...) converted into energy can be a second. A third one, often not thought of, can be the soil, sun and water that make plants grow.

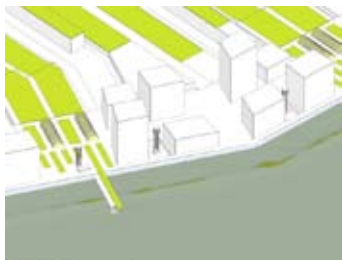
❶



1. Reservoir empty



2. Normal high tide



3. Major high tide (once a month)



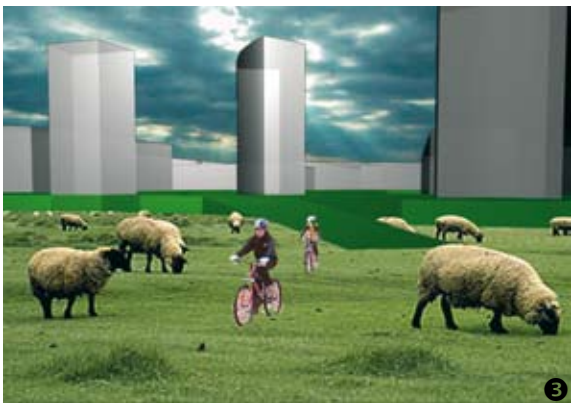
4. Reservoir full

❷

In London, like in most cities in the world nowadays, more and more of the goods consumed daily are made outside of the city (sometimes quite far away). The new development in Erith is thus the opportunity to test a new kind of development blending urban agriculture and small industries into a high density, genuinely mixed-use city. This type of development uses all available local resources: organic waste to make compost; tidal water to irrigate ❷; and of course, people. People of two kinds (that of course overlap): the producers and the consumers.

The design of the 'Erith Productive City' follows a typical sequence from the Thames or the eco-park to the city core:

- The 'wall' is a continuous line of productive buildings (farms, plants, etc.) that also act as



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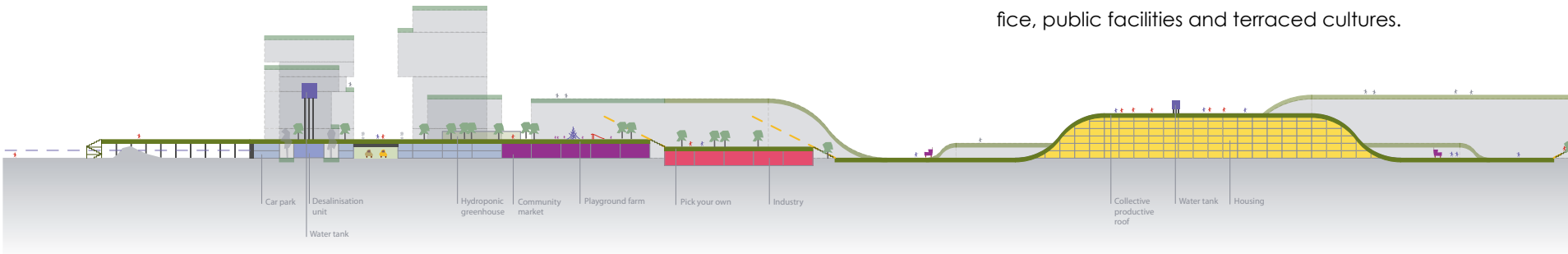


❹

a new flood barrier able to cope with new extreme flooding conditions resulting from climate change. The productive buildings are topped with high rise residential or office towers overlooking the Thames and the park.

- The 'plain', on the contrary, has a moderate residential density. This is where most agricultural activities take place. Built units with green roofs and ground-level fields alternate on east – west oriented strips that optimise solar gains for the crops ❶.

- The 'hills' are accumulations of productive functions squeezed under the urban ground ❺. They offer a new artificial topography for the city. Their slopes can accommodate a mix of housing, office, public facilities and terraced cultures.





The new development needs a series of specific facilities including food catering industries, a waste sorting and transforming plant, an education centre for kids, a research centre, a design centre... The most important facility of all, though, is definitely the market, which could become through its iconic architecture the main landmark of the neighbourhood ④.

Erith Productive City can accommodate approximately 75,000 people at a density of 100 to 215 dph, which is quite high in the context of London.

Its 51 ha of farmable land (22% of the total area) can feed 3,000, that is to say only 4% of the population. This is due to the high density achieved, but also to the fact that only traditional farming techniques are used.

Back to Bloomsbury

The UCL productive campus project detailed in the present report will be the opportunity to come back to Bloomsbury, where it all started...



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⑤

