

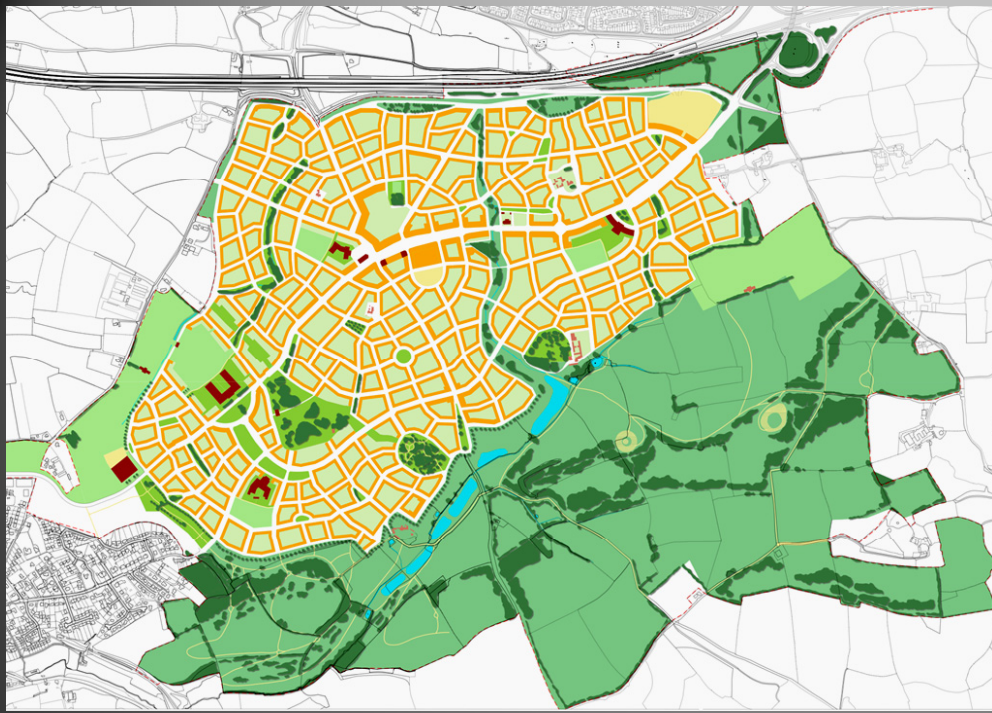
SUSTAINABLE ASSESSMENTS
QUANTIFYING QUALITY

The Real 'Real World'

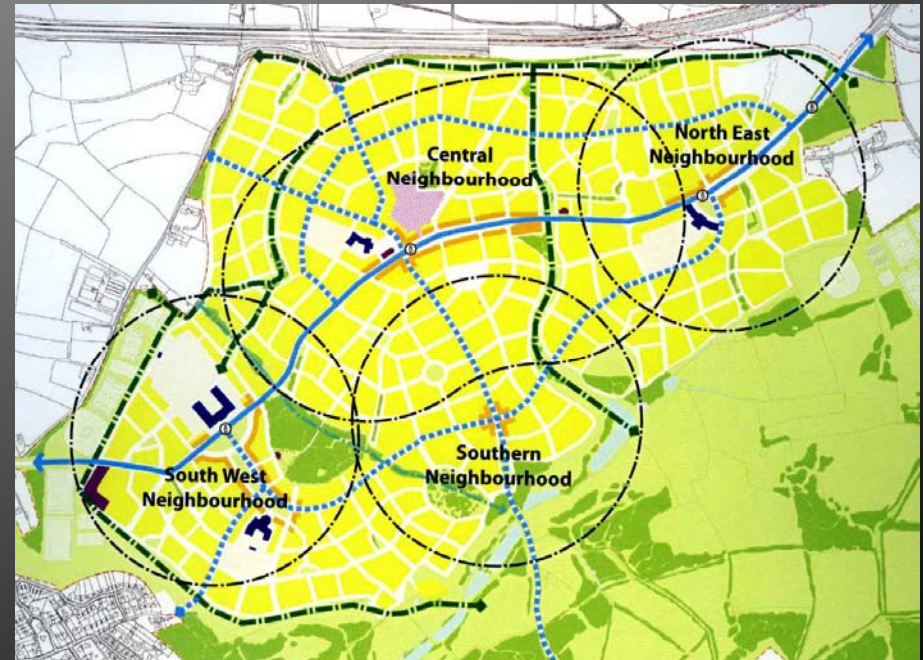
Look around the "Real World" is comprehensively f****d

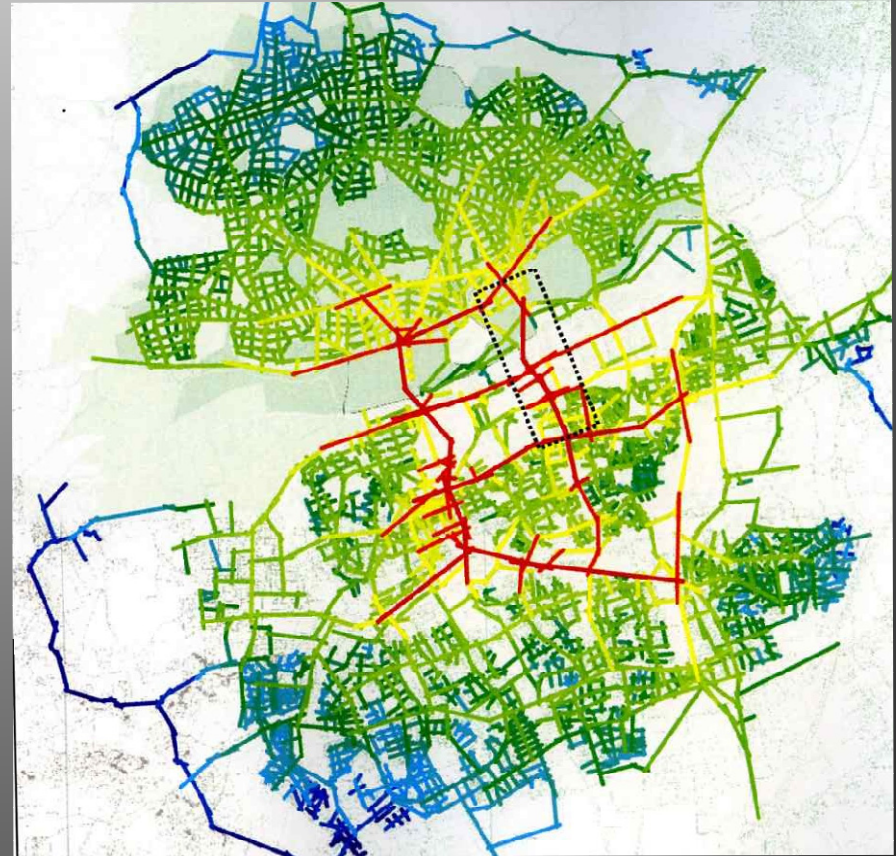
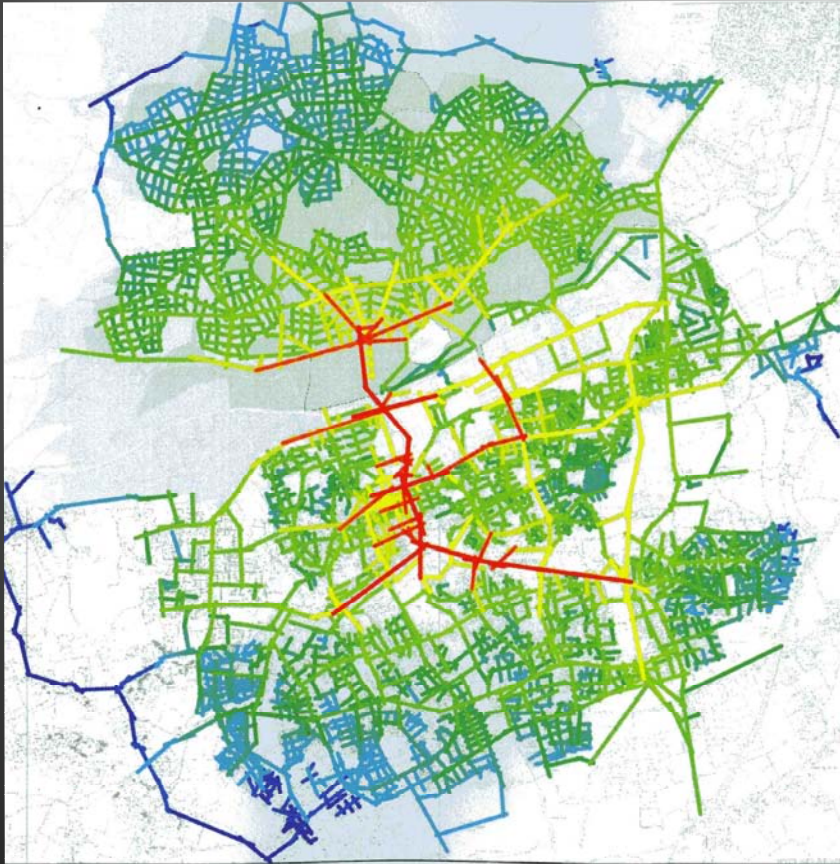
David Fleming writes, "Localisation stands, at best, at the limits of practical possibility, but it has the decisive argument in its favour that there will be no alternative." ¹

'Transition Handbook'

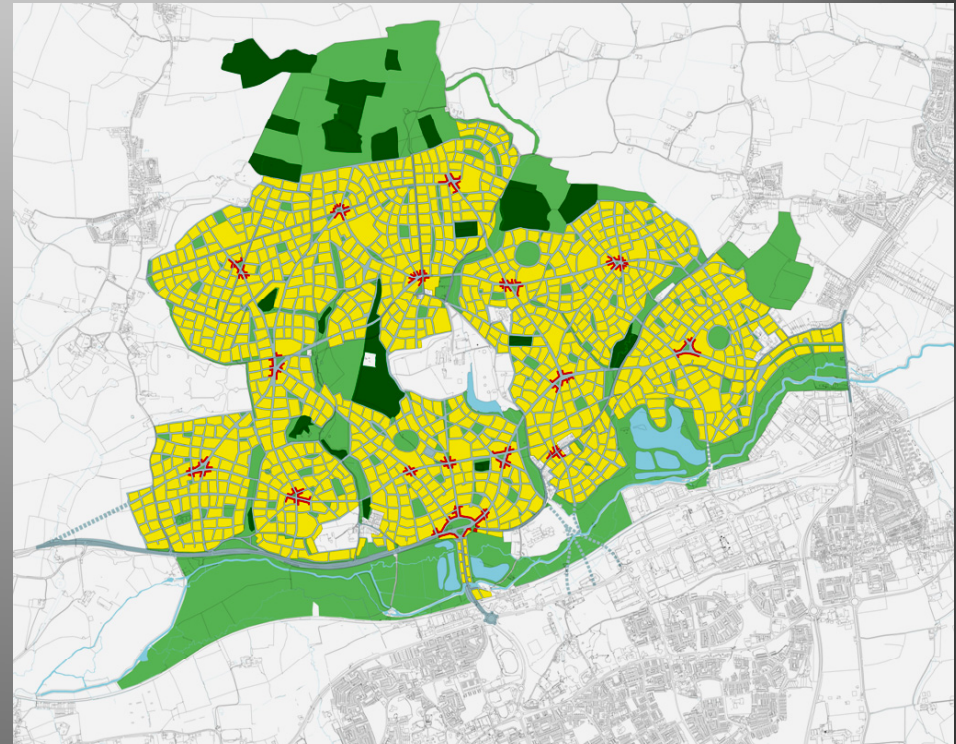
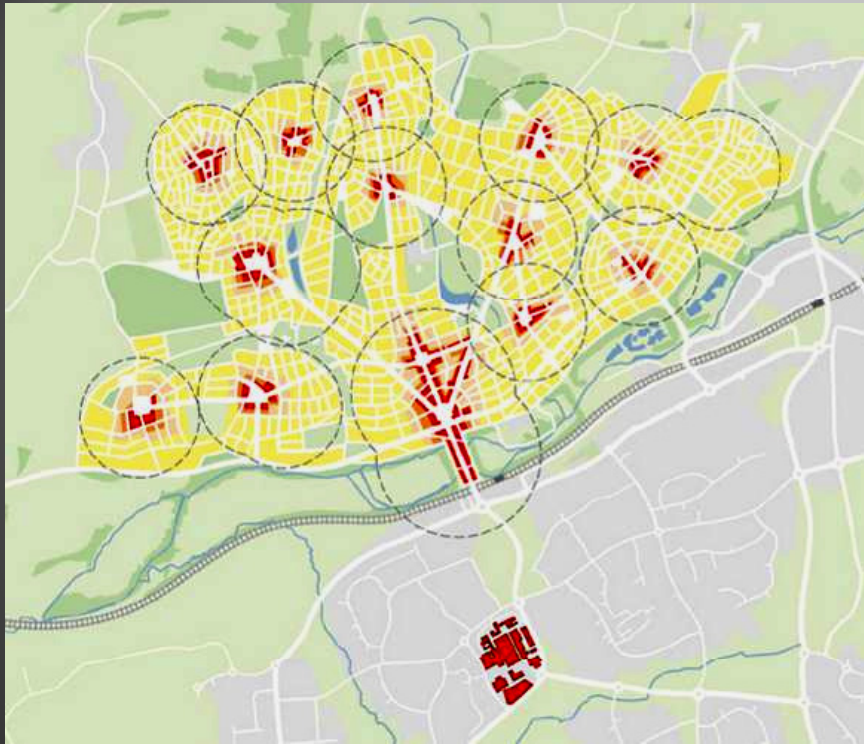


Sherford



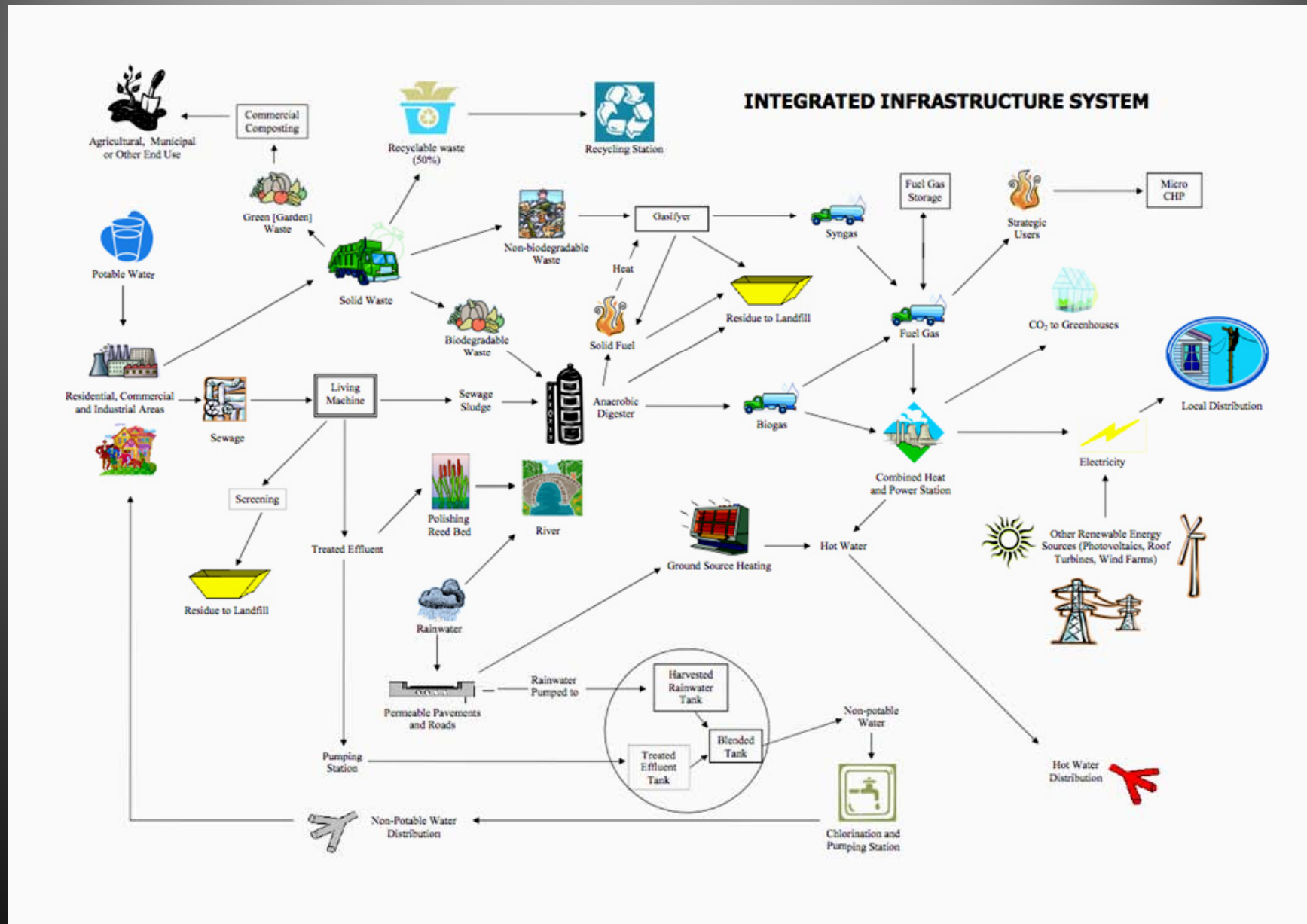


Spatial Integration. Connecting space
Natural movement of the human species

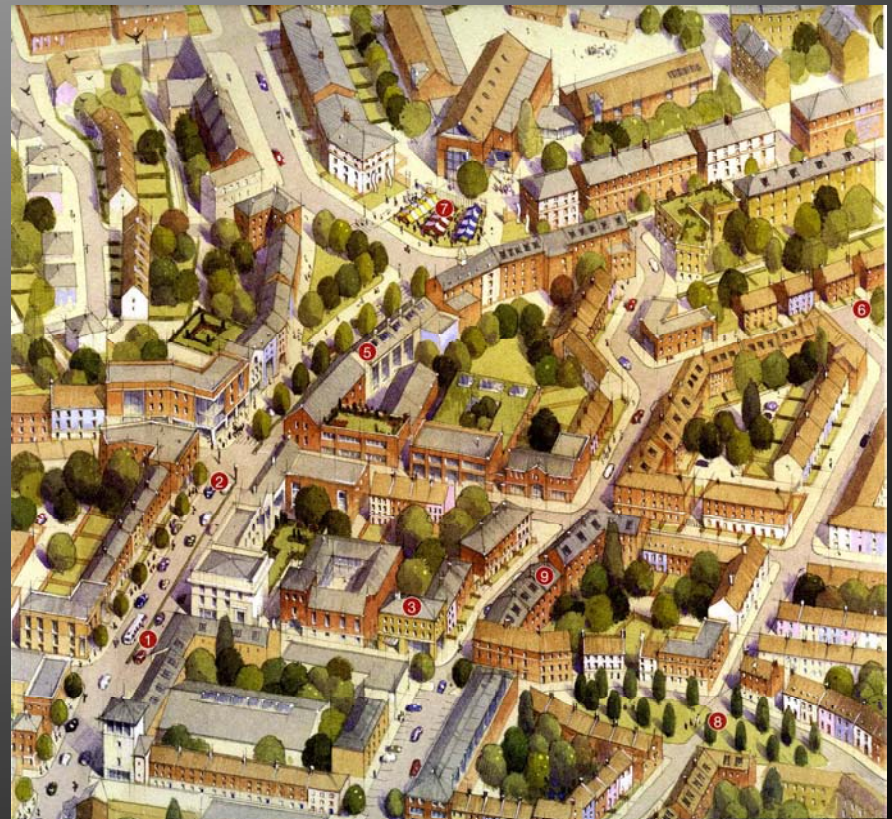


Harlow Town Expansion 25,000 dwellings.

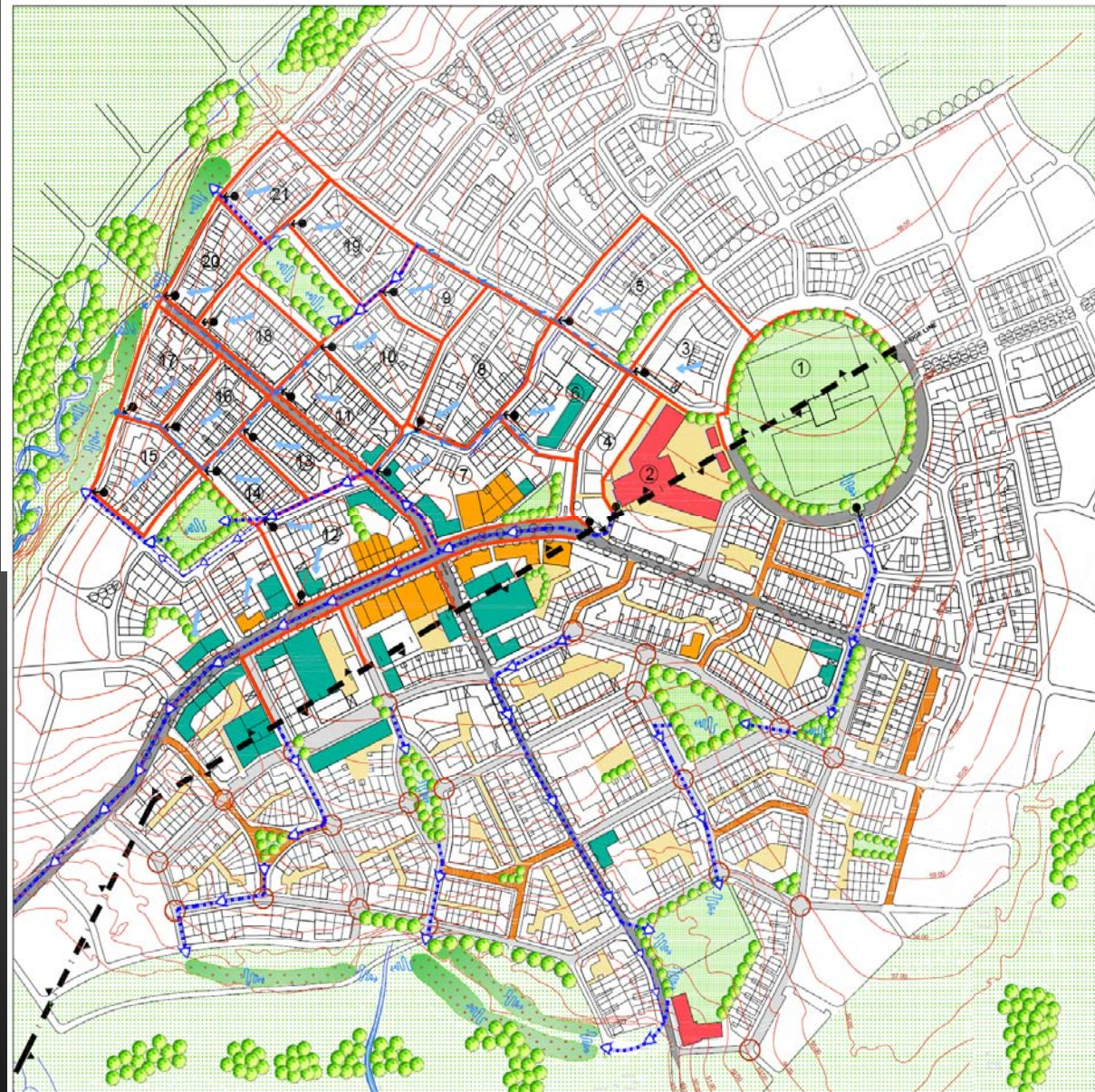
Deformed wheels at every scale in order to push the energy to and through the centres.
Your beloved public transport doesn't make this less necessary it makes it more so



Towards Carbon Neutral



Urban Edge. Eastwick Village.



KEY: Water flow hierarchy

- Contour lines
- Sub-catchment areas
- Urban channel watercourse
- Outer channel
- Bypass channel route
- Center chamber
- Hard surface water run-off
- Direction of water seepage
- Landscape nodes with water seepage
- Constructed wetland



KEY: Road hierarchy

- Main industrial roads, impermeable surface with storage below
- Residential distributor roads 20 m.p.h., permeable surfaces, with impermeable road junctions, and storage below
- Residential estate access 20 m.p.h., permeable asphalt with storage below
- Courts, car-driveways, parking, home garages - permeable block paving or asphalt surface, with storage below

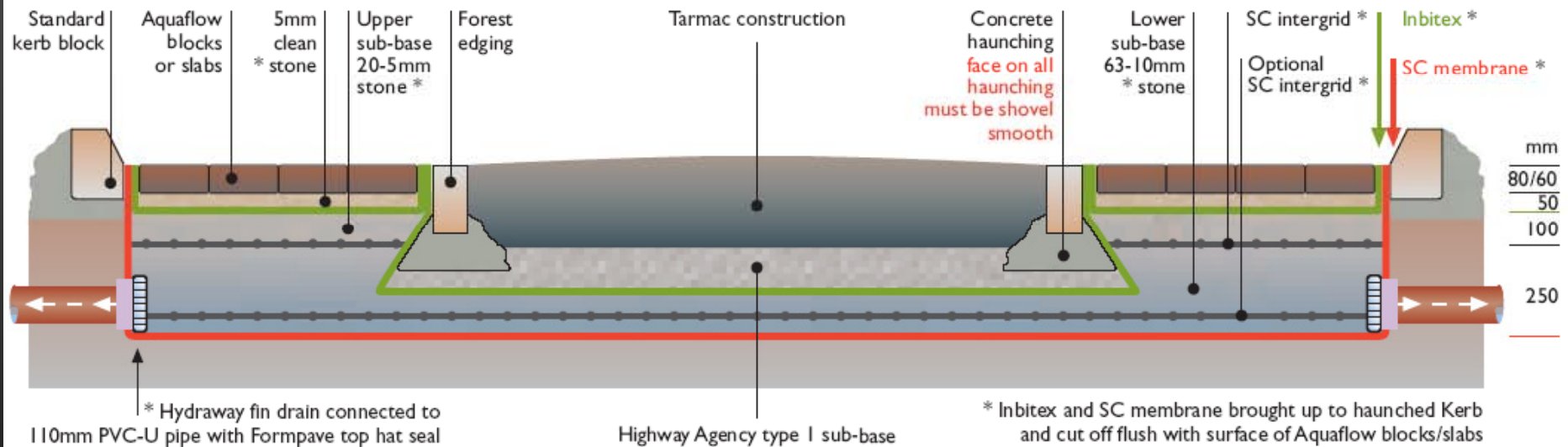
KEY: Building uses

- Schools
- Workplaces
- Mixed use over retail or other use class A

Neighbourhood SUDS System

Aquaflow paving in conjunction with tarmac road surfaces

Tanked system section Aquaflow pavement with undersealing membrane





**Telki FBRS 800 m³/day Municipal
Sewage Treatment Plant, Engineered and
Built by Korte Organica.**



Sewage Plant as Civic Building

What does the GreenPrint cover?

Usually the following 8 topics:

- **Climate Change** - Ensures developments are appropriately adapted to the impacts of present and future climate change
- **Resources** - Promotes the sustainable use of resources including water, materials and waste both in construction and operation
- **Transport** - Ensures transport hierarchy issues are fully addressed and catered for within the development
- **Ecology** - Ensures the ecological value of the site is conserved and enhanced
- **Business** - Ensures that the development contributes to the sustainable economic vitality of the local area and region
- **Community** - Ensures the development supports a vibrant, diverse and inclusive community which integrates with surrounding communities
- **Placemaking** - Ensures the design process, layout structure and form provide a development that is appropriate to the local context
- **Buildings** - Ensures that the design of individual buildings does not undermine the sustainability of the overall development



What does the GreenPrint produce?

“Good”, “Very Good” and “Excellent” benchmarks achieved by the developer

Performance achieved in each category

Total GreenPrint score for the development

Overall GreenPrint Rating for the development

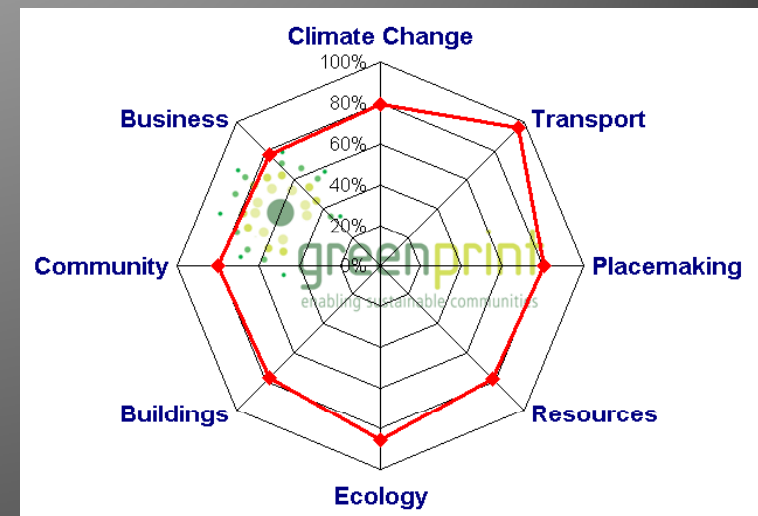
No grade: <50%

Good: 50% – 64%

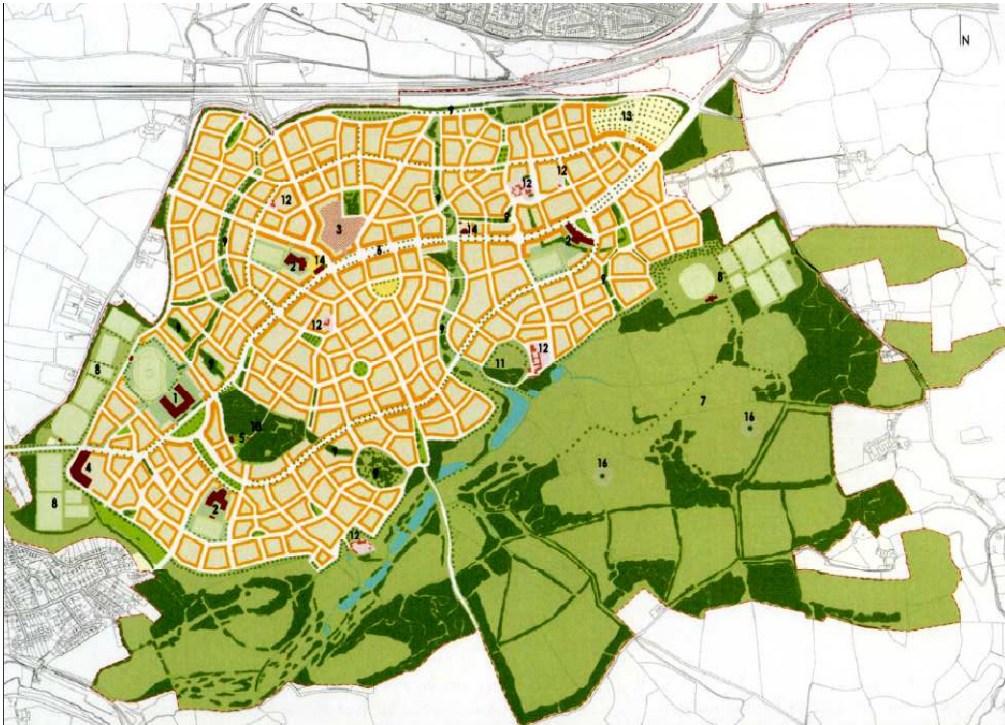
Very Good: 65% – 74%

Excellent: 75% – 84%

Exemplar: >84%



Note: a GreenPrint is created for each development BRE are asked to assess. Therefore the score shown is the percentage of the total score available within the Framework developed for a particular site.



Sherford



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Sustainability framework weightings table:

		Best Practice	Good Practice	Minimum
		1	0.7	0.3
P1	1	1	0.7	0.3
P2	0.85	0.85	0.595	0.255
P3	0.7	0.7	0.49	0.21

You'll never eliminate bureaucracies. We are compelled to join them. They are getting worse not better. This is their latest crutch to lean on. It is worthy. They must use it to assist us not as a stick to beat us just to show how powerful they can be. If we achieve this then by God give us the right to get on with it.

Sherford – Example GreenPrint objective

Objective

To encourage the future use of active solar technologies where they are not initially supplied.

Question

What percentage of the development is designed to allow retrospective installation of active solar devices such as photovoltaic and solar hot water heating (where these are not fitted initially)?

Benchmarks

Good

<80%

Very Good

80-90%

Excellent

100%

Benchmark achieved

Excellent

Weighting 3

Justification/evidence

Masterplan: Infrastructure and Utilities Strategy section - '100% of all roofs will be built to be capable of accommodating renewable energy devices'.

Sources

SPG) 1.1: NON-RENEWABLE RESOURCES, 1.3: RENEWABLE ENERGY PRODUCTION

Sherford – Example GreenPrint objective

Objective	To increase the number of trees on the development for wildlife, amenity and pollution purposes.	
Question	Will the development increase the number of trees on the site (after deducting any destroyed by development)?	
Benchmarks	Good	5%
	Very Good	5%-20%
	Excellent	>20%
Benchmark achieved	Excellent	
Justification/evidence	<p>The entire scheme will result in a net increase in the number of native trees within Sherford and it has been stated by the Landscape Architect that he believes the overall biodiversity of the site will improve markedly after the completion of the development.</p> <p>Red Tree have stated that approximately 3.4ha of woody planting (hedgerows) will be lost due to the development, 10% of which includes standard trees. Within the Community Park 70 ha of new planting is expected to be planted with native broadleaved trees which will deliver a net increase in the number of trees on the site. There is therefore an approximate net increase in trees of site of 66.3ha, which is more than 20% of trees currently on site.</p>	
Sources	SPG) 7.2: BIODIVERSITY	

Weighting 3

Sherford – Example GreenPrint objective

Objective	To reduce the overall consumption of clean water for non-potable uses.	
Question	What percentage of the roof area of the development will be used for rainwater harvesting system?	
Benchmarks	Good	100% of all communal building roofs used for rainwater harvesting.
	Very Good	>50% of the roof area of the whole development used for rainwater harvesting.
	Excellent	80% of the roof area of the whole development used for rainwater harvesting. Additionally the water collected must be capable of being used for internal use including flushing one or more toilets within the premises.
Benchmark achieved	Very Good	Weighting 1
Justification/evidence	<p>Masterplan: Resource Efficiency of the Built Form section - 'Residential Building Standards: Rainwater harvesting to be used for 80% of roofs'. 'Rainwater harvesting to be used for 80% of non residential buildings'.</p> <p>Good Practice has been awarded, because whilst a commitment to 80% of roof areas has been made there is no commitment at this stage to provide an integrated system that will allow for internal use.</p>	
Sources	SPG) 1.4: MINIMISE WATER DEMAND, 1.5: CONSERVE SURFACE AND UNDERGROUND WATER RESOURCES	

Sherford – GreenPrint “Excellent”

Climate Change

- Development has been designed to reduce the contribution to flash flooding through incorporation of Sustainable Urban Drainage systems, green roofs, ponds and wetlands, and the use of permeable surfaces
- Two 1.8mW wind turbines within the 207ha Community park to generate between 32 – 41%
- A carbon sink in the form of a permanent native woodland will be planted, on approximately 70 ha of agricultural land, to help offset the balance of emissions
- 75% of buildings will be equipped with solar thermal systems and/or photovoltaic devices generating between 8 and 12% contribution
- Provision of ‘A rated’ energy and water savings appliances in all dwellings
- 80% of the roof area of the whole development used for rainwater harvesting

RESIDENTIAL STREET

Sherford – GreenPrint “Excellent”

Sustainable Construction and Procurement

- All dwellings to be built to EcoHomes 'excellent' standards
- All non residential buildings to be built to BREEAM 'excellent' standards
- Low carbon targets for all buildings, exceeding new Part L and matching EST Best Practice and Advanced Practice standards
 - Phase 1 – 25% reduction on Part L
 - Phase 2 – 35% reduction on Part L
 - Phase 3 – 50% reduction on Part L
 - Phase 4 – 60% reduction on Part L
- All timber sourced from independently verified sustainable sources as recognised by the Environment Agency
- One 7 yard skip of waste per dwelling target set

RESIDENTIAL STREET

Sherford – GreenPrint “Excellent”

Community and Sustainable Lifestyles

- Set-up of the Sherford Community Trust whose aim will be to promote “more sustainable lifestyles”, it will work with all residents/businesses in Sherford and manage many initiatives, including:
 - Car club
 - Community intranet
 - Energy advice
 - Green travel planning
 - Renewable energy and energy reduction projects
 - Sustainable food initiatives
- Development of a sustainable lifestyles pack for all residents covering issues including sustainable travel advice, energy and water efficiency, recycling and environmental technologies installed in the development and dwelling
- Measures to promote and facilitate the production of home-grown food by residents, and an Organic Community Farm and farmers market

Village Square of Secondary School

Sherford – GreenPrint “Excellent”

Placemaking

- Enquiry by Design process led by The Prince’s Foundation From which Sherford Town Code has been established
- Transport and movement strategy which places the pedestrian and cyclist at the heart of the development, minimising walking distances between home, workplace, schools shops and other daily needs, whilst designing streets, such that speed limits are self-enforcing
- Height:width ratios in line with Urban Design Compendium
- Delivering ‘affordable’ homes and a mix of accommodation types and tenures to meet current and future needs, with good integration of accommodation types and affordable housing throughout development that are ‘tenure blind’

“Village Square” of Secondary School

Sherford – GreenPrint “Excellent”

Transport

- High Quality Public Transport service at the heart of the transport and movement strategy which will run down the main street linking the three neighborhood centres and proposed park and ride facility at deep lane to Plymouth City Centre.
- 100% of dwellings within 400 metres of a bus stop providing a regular service to a local centre
- Provision of a fibre optic network throughout the site as well as a community based interactive public and private services
- 20 mph design speed across much of the development
- Provision of a Car Club with central office facility with storage parking and customer collection / return, and smart card access system

FORMAL TERRACE - URBAN EDGE

Sherford – GreenPrint “Excellent”

Ecology



Sherford – GreenPrint “Excellent”

Ecology

- 70 ha of new woodland as part of the 207 ha Community park
- Provision of wildlife corridors through the town from the west to the east and north to the south
- Extensive planting across the development of locally occurring native deciduous and evergreen trees and shrubs
- Lakes and double planting of hedgerows
- SUDS – swales, ponds, reedbeds

Business

- Identification and development of priority business sectors, including clusters of related activity, and other key business sectors of sub-regional importance
- Deliver an increase in jobs and local skills base, and training opportunities to help local workers upskill

Sherford GreenPrint Rating

- Sherford achieved an "Exemplar" rating
- Overall score of 85%

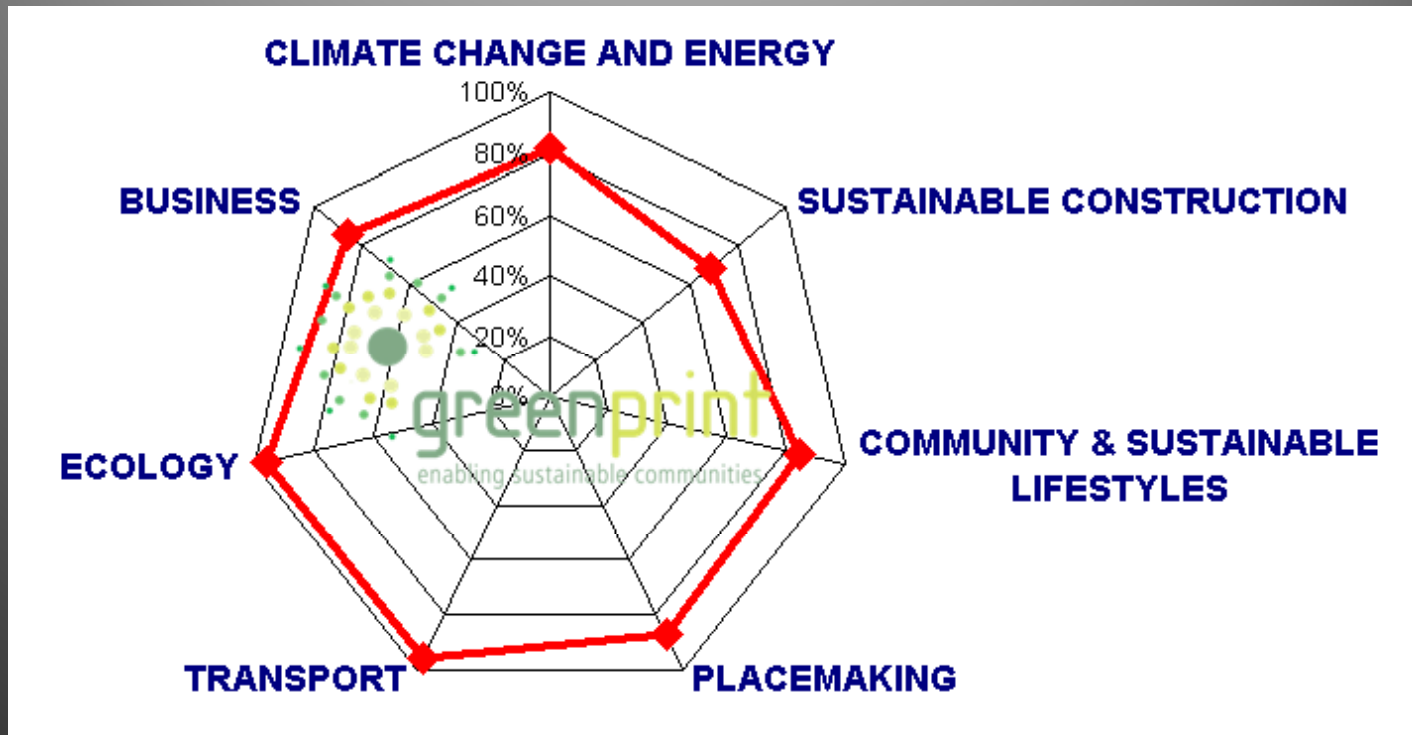
Site: **Sherford, South Hams**

Assessor: **Stuart Blofeld**

Date: **09/03/2007**

Categories		Benchmarks achieved				Maximum possible score	Actual score achieved	%
		Excellent	Very Good	Good	Not Met			
1	CLIMATE CHANGE AND ENERGY	10	4	1	1	14.05	11.44	81%
2	SUSTAINABLE CONSTRUCTION	5	5	3	1	11.3	7.68	68%
3	COMMUNITY & SUSTAINABLE LIFESTYLES	6	0	0	1	6.4	5.40	84%
4	PLACEMAKING	10	4	1	0	13.2	11.54	87%
5	TRANSPORT	11	2	0	0	11.35	10.89	96%
6	ECOLOGY	6	1	0	0	5.65	5.44	96%
7	BUSINESS	2	2	0	0	3.85	3.30	86%
TOTAL SCORE		50	18	5	3	65.80	55.67	85%

Sherford GreenPrint radar



SIX GROWTH SCENARIOS

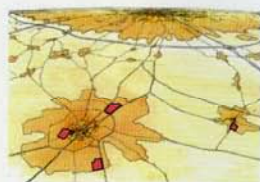
The design team found each potential growth strategy to have certain positive and negative consequences. These strategies were then formulated as 'Scenarios' to help organise public discussions at the Charrette. The growth 'Scenarios' can also be used to inform public discussions to take place at Borough and District Councils over the coming years.



1 CONTINUATION OF EXISTING TRENDS

The housing is primarily placed on smaller sites, wherever found.

This Scenario advocates the status quo, proposing that the county continue with its current approach, developing plots of all kinds as opportunity arises.



2 BROWNFIELD & GREYFIELD SITES

Some of the housing is placed on large sites previously developed or underutilised.

This Scenario advocates the development of both industrial brownfield sites and commercial car parking sites, or 'greyfields.'



3 TRANSPORT-ORIENTED DEVELOPMENT

Some of the housing is placed along transportation nodes.

This Scenario proposes the development of housing within walking distance to existing rail and bus stations. This will require the radical intensification of existing areas.



4 SETTLEMENT EXTENSIONS

Some of the housing is attached to the edges of existing settlements, on green belt land.

This Scenario proposes the distribution of new housing on the boundaries of existing settlements of all sizes, including towns, villages and hamlets.



5 SATELLITE (GARDEN) VILLAGES

Some of the housing is assigned to new villages in proximity to existing settlements.

This Scenario envisions the development of new settlements of a small scale, some of which would provide an opportunity for farming and agriculture.



6 STAND-ALONE GARDEN CITY

The majority of the housing is assigned to a new Garden City on the rail line.

This Scenario proposes the development of one major new settlement accommodating most of the new housing, along with the supporting jobs, infrastructure and amenities.

BRE ASSESSMENT CRITERIA:		'Does the Scenario...'	SCENARIOS					
			1	2	3	4	5	6
Climate	Development should take all cost-effective measures to ensure it is appropriately adapted to present and projected climate-change impacts, such as flooding and increased temperatures.	a. accommodate sustainable drainage schemes to manage a rainfall event?	1	2	1	2	3	3
		b. enable efficient passive solar design?	1	2	1	2	3	3
		c. offer sufficient scale to allow a viable community heating system?	0	3	3	2	3	3
		d. reduce the 'heat island' effect of existing urban centres?	0	1	3	1	0	0
		e. ensure significant cost-efficient technology, energy and installations?	1	2	2	2	3	3
			3	10	10	9	12	12
Resources	Development should reduce the use of resources both in construction and operation, including the current status of the land and its reuse and how waste is managed when the construction site is in operation.	a. remediate contaminated land?	1	2	1	1	0	0
		b. reuse land (brownfield and greyfield)?	1	3	3	0	0	0
		c. introduce sustainable and integrated waste management and treatment schemes?	0	1	1	1	2	3
		d. allow for the use of locally recycled building materials?	1	2	3	1	1	1
			3	8	8	3	3	4
Transport	Development should depend on the availability of transport options, walking and cycling, and public transport (bus and train).	a. locate growth in a walkable neighbourhood?	1	1	3	3	3	3
		b. allow movement along desire lines?	1	1	2	2	3	3
		c. enable safe, weatherproof and secure cycle storage convenient to key locations?	1	2	3	2	3	3
		d. enable safe pedestrian and cycling routes that mitigate intermodal conflicts?	0	1	2	2	3	3
		e. provide sufficient demand for a bus stop within 500m from dwellings?	1	2	3	3	3	3
		f. provide demand for a railway station situated 15 minutes (non-car journey) from dwellings?	1	1	3	0	0	3
		g. offer sufficient scale to improve public transport provision to the area?	0	1	2	2	3	3
		h. humanise vehicle movement?	0	2	2	2	3	3
			5	11	20	16	21	24
Ecology	Development should ensure that biodiversity of a site is protected and enhanced wherever possible, and that links are established to surrounding ecological sites where they exist.	a. support green infrastructure such as substantial green corridors?	0	2	1	2	3	3
		b. provide designated space for food growing (allotments or community gardens)?	1	1	1	2	3	3
		c. provide a new area managed for biodiversity value?	0	1	1	1	3	3
			1	4	3	5	9	9
Business	Development that increases in population should be accompanied by a corresponding increase in employment opportunities in a variety of business sectors to minimize travel patterns which burden the transport infrastructure.	a. provide sufficient critical mass for new shops and basic services?	0	1	3	3	2	3
		b. provide new space for business?	0	1	2	2	2	3
		c. provide a varied scale of commercial and industrial properties?	0	1	2	1	2	3
		d. support existing community-scale retail and services?	2	3	3	3	0	0
		e. provide the scale for a viable home-working hub?	0	0	2	2	3	3
		f. allow for the creation of local jobs in the construction phase?	1	1	2	1	3	3
			3	7	14	12	12	15
Community	Development should offer more than good quality dwellings. Residents should have community facilities that allow social gathering and communication opportunities across economic and ethnic groups.	a. provide a significant number of affordable houses?	1	2	3	2	3	3
		b. provide sufficient scale for provision of additional community facilities?	0	1	2	2	3	3
		c. protect existing community facilities?	1	1	2	3	0	0
		d. protect the social character of the existing communities?	3	2	1	1	3	3
		e. provide community management of communal facilities and infrastructures?	0	1	2	2	3	3
			5	7	10	10	12	12
Place-making	Development is related to how individuals perceive the environment around them. Good development should provide a positive sense of the location itself, which is linked to the landscape in which it sits, its history and legibility, and how the public spaces are designed.	a. enhance legibility and orientation within existing settlements?	0	2	3	1	0	0
		b. provide access to age-appropriate space for children and teenagers?	1	1	2	2	3	3
		c. provide access to public open space at the required distance?	1	1	2	2	3	3
		d. integrate neighbourhoods with existing ones?	1	2	3	1	0	0
		e. enhance the existing public realm?	1	3	3	1	0	0
			4	9	13	7	6	6
Buildings	Development should improve the performance of individual buildings through technology, and by incorporating existing structures. This retains the embodied energy and materials.	a. ensure significant installations of non-energy-related sustainable technologies?	0	1	2	2	2	3
		b. allow existing buildings to be brought back into use?	2	2	3	0	0	0
		c. allow the existing building stock in the area be made more sustainable?	1	2	3	0	0	0
			3	5	8	2	2	3
Average score %			23%	52%	74%	55%	66%	73%
Ranking			6th	5th	1st	4th	3rd	2nd

Climate change

BRE ASSESSMENT CRITERIA:

Climate

Development should take all cost-effective measures to ensure it is appropriately adapted to present and projected climate-change impacts, such as flooding and increased temperatures.

'Does the Scenario...'

SCENARIOS

	1	2	3	4	5	6
a. accommodate sustainable drainage schemes to manage a rainfall event?	1	2	1	2	3	3
b. enable efficient passive solar design?	1	2	1	2	3	3
c. offer sufficient scale to allow a viable community heating system?	0	3	3	2	3	3
d. reduce the 'heat island' effect of existing urban centres?	0	1	3	1	0	0
e. ensure significant cost-efficient technology, energy and installations?	1	2	2	2	3	3
	3	10	10	9	12	12

Place-making

Development is related to how individuals perceive the environment around them. Good development should provide a positive sense of the location itself, which is linked to the landscape in which it sits, its history and legibility, and how the public spaces are designed.

- a. enhance legibility and orientation within existing settlements?
- b. provide access to age-appropriate space for children and teenagers?
- c. provide access to public open space at the required distance?
- d. integrate neighbourhoods with existing ones?
- e. enhance the existing public realm?

0	2	3	1	0	0
1	1	2	2	3	3
1	1	2	2	3	3
1	2	3	1	0	0
1	3	3	1	0	0
4	9	13	7	6	6

SCENARIO 3 TRANSPORT-ORIENTED DEVELOPMENT



Some of the housing allocation is placed around railway stations and bus stops.

Transport-Oriented Developments (T.O.D.s) are located within walking distance of rail stations or bus stops. Catering to both those who work in their vicinity and those who commute out, T.O.D. can lessen the general dependence on cars.

Whilst opportunities for this sort of development exist in Hertfordshire, there are not enough suitable sites remaining to accommodate all of the housing allocation.

Although the majority of railway stations in Hertfordshire have already been developed, some stations offer the opportunity for additional residential, commercial and retail development. Amongst these are rural railway stations which could become hubs for larger settlements, and urban sites which currently include large surface car parks or other underutilised land.

Because these sites offer the ideal location for housing, they justify the demolition of existing under-utilised structures, even if it adds to the expense of development. Indeed, when developed in a balanced, pedestrian-oriented and mixed-use pattern, these sites can become both destinations in themselves and feeders to London, ultimately allowing a more efficient multi-directional commuting on the rail network as a whole.

One design challenge with these sites is that they must accommodate the parking for the on-site programme as well as for the commuters who have driven to the station.

Advantages

- Improves commercial performance
- Conserves green belt
- Reuses land resources
- Reuses existing infrastructure
- Intensifies transportation use
- Improves sense of place

Disadvantages

- Too few sites available
- Requires compulsory purchase
- Requires demolition

CASE STUDY FOR SCENARIO 3
TRANSPORT-ORIENTED DEVELOPMENT

Transport-oriented development (T.O.D.) could offer the opportunity to link new dwellings most efficiently to London, and to other towns within the county, thereby minimising commuters' environmental footprints.

The following study provides a detailed master plan for a 25-hectare site adjacent to Stevenage's rail station, with a retrofit introducing a new urban centre comprised of a combination of residential, retail, commercial and recreational accommodation, along with a hotel.

Half the existing site accommodates a commercial centre with freestanding restaurants and entertainment outlets surrounded by large expanses of car parking. The other half of the site consists of several industrial parcels with associated office buildings and storage facilities. This is not the optimal use for a site in such close proximity to a commuter rail station. The proposed retrofit envisions a 12-block, high-density urban centre that would take better advantage of the rail connection.

A high street with retail at the ground level and residential above is the principal spine, connecting all the blocks and the three principal open spaces, including the main square, a one-hectare park and a small pocket park.

A large square provides a centre for the community, and is linked to the upper plaza of the station by a grand staircase.

A substantial amount of office space is located along the perimeter arterial, providing a protective layer for the residential areas within. A service road parallel to the perimeter high-speed arterial provides the offices with a slower-paced street address and the possibility of on-street parking.

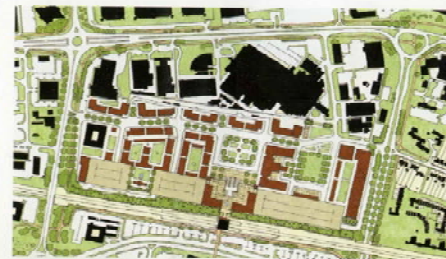
The office, retail, hotel and residential uses are served by six multi-story car parks that are also able to accommodate rail commuters.

This T.O.D. is designed to be built in two main phases, with the industrial tenants remaining in place whilst the mixed-use areas redevelop.

Size of site:	25 hectares
Housing:	1,400 units (5 & 6 stories)
Retail:	18,460 m ²
Hotel:	300 rooms & 3,000 m ² of conference
Office:	141,500 m ² (6 levels)
Car Park:	10,032 (6 levels)



A plan and aerial view of the existing Stevenage entertainment complex, illustrating the high proportion of the site currently dedicated to surface car parking.



The first phase of the redevelopment retains the existing industrial buildings while the surface car parks are redeveloped to accommodate new housing and offices structured on urban streets, blocks and squares. Parking decks for commuters have been inserted.



The second phase of the redevelopment involves the replacement of the existing industrial buildings with high-density office buildings, intended to complement the housing and shops with a great number of jobs.



Hertfordshire could accommodate significant transport-oriented development on sites adjacent to railway stations. The illustrations above depict the Stevenage entertainment complex, as it exists currently, and after redevelopment with new parking structures as well as flats and shops, all structured around walkable streets and squares.

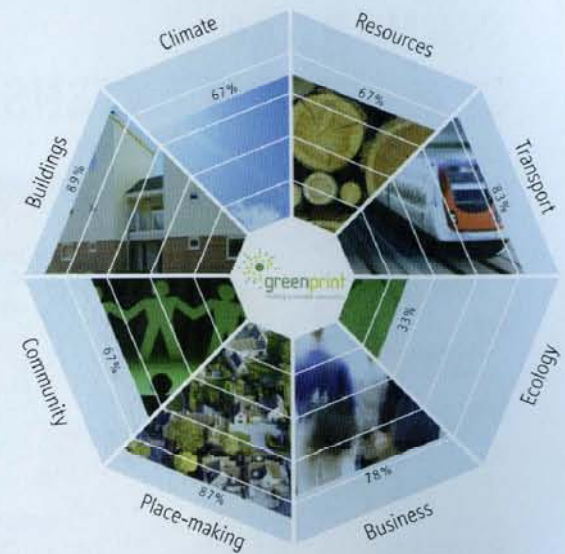
GREENPRINT ASSESSMENT: SCENARIO 3

This Scenario performs best overall in the analysis because it provides an opportunity to address problems in existing settlements and improve the quality of life in and around the New Town centres, whilst also providing new dwellings. Development in central and accessible locations provides the opportunity to strengthen existing employment opportunities. The scale of the development enables construction efficiencies. Some existing buildings and building materials can be reused in new developments.

This Scenario's worst performance is likely to be in the ecology category because there is unlikely to be much opportunity to provide green infrastructure, and in city-centre locations may not provide additional space for managing rainwater and growing food.

The central location and proximity to existing public transport facilities help reduce car dependence, and its size provides more critical mass for public transport improvements. Redevelopment in the New Town centres can improve pedestrian and cycle routes and generally improve connectivity to surrounding neighbourhoods. The scale of the development offers a better opportunity for well-integrated affordable housing.

Best case: The intensification provides small-scale employment opportunities, and integration of uses creates a 'place' in its own right. Noise is carefully managed through design standards. Residents using the public transport are encouraged to walk through the development, adding to its economic sustainability. The new development is linked to existing economic and social networks. Connectivity and resource efficiency throughout the town centre are improved.



Category	Score	Rank
Climate	67%	jt 3rd
Resources	67%	jt 1st
Transport	83%	3rd
Ecology	33%	5th
Business	78%	2nd
Community	67%	3rd
Place-making	87%	1st
Buildings	89%	1st
Average	74%	
Overall ranking		1st

