# WOLFSON ECONOMICS PRIZE 2014

## Charthills Green – a Garden City in the Garden of England.

Chris Blundell

Final submission, August 2014

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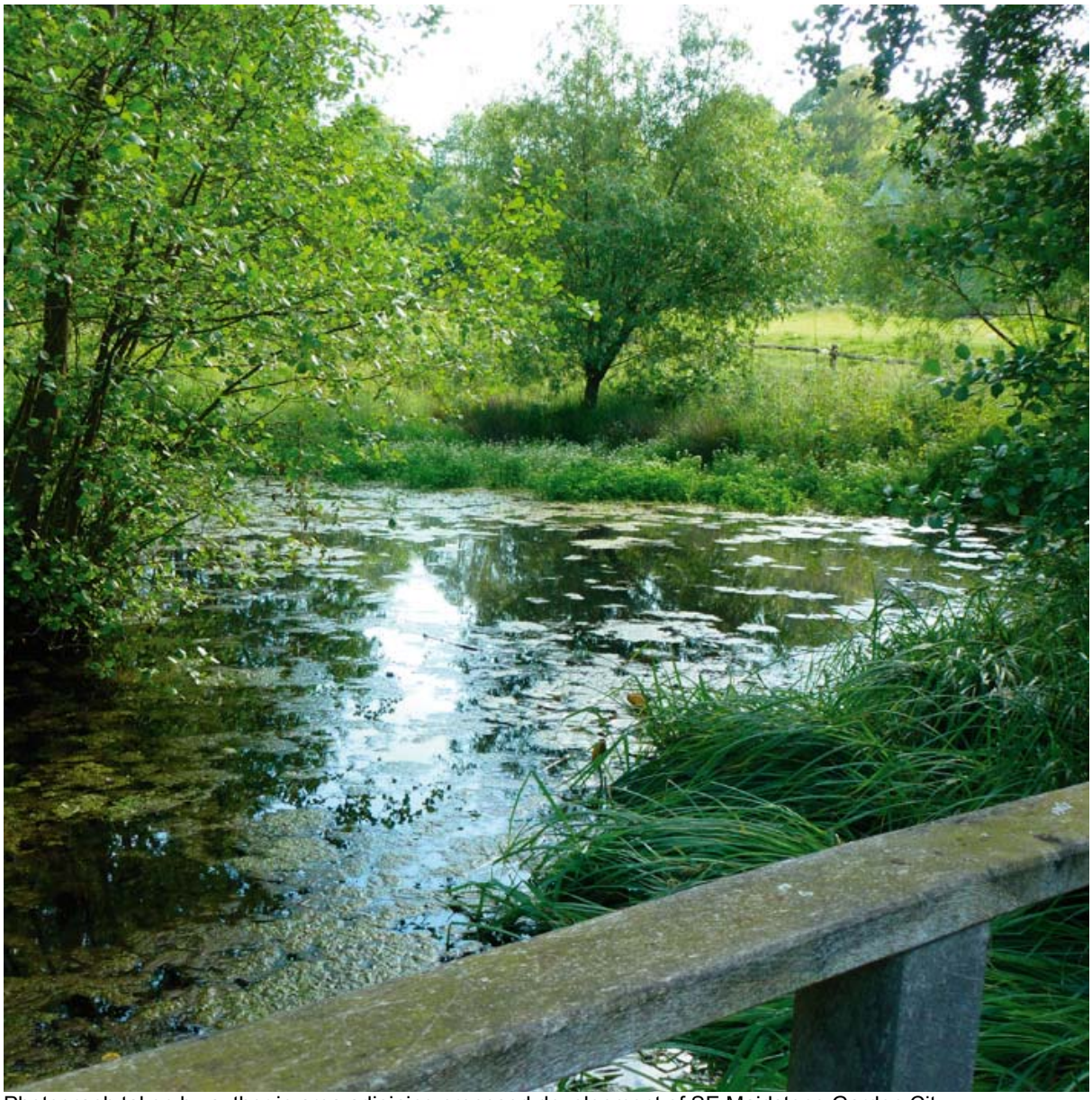

Photograph taken by author in area adjoining proposed development of SE Maidstone Garden City:

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## Abbreviations

| | |
|---|---|
| BC | Borough Council |
| CC | County Council |
| CIL | Community Infrastructure Levy |
| CIC | Community Interest Company |
| CPI | Consumer Price Index |
| CPO | Compulsory Purchase Order |
| CSH | Code for Sustainable Homes |
| GCCC | Garden City Community Council |
| GCDC | Garden City Development Corporation |
| HA | Housing Association (also known as an RP or Registered Provider) |
| HPI | House Price Inflation |
| LA | Local Authority |
| LDO | Local Development Order |
| LEP | Local Enterprise Partnership |
| LHA | Local Housing Allowance |
| LPA | Local Planning Authority |
| NPPF | National Planning Policy Framework |
| NTA | New Towns Act 1981 (Chapter 64) |
| PC | Parish Council |
| PWLB | Public Works Loans Board |
| s.106 | Section 106 Town and Country Planning Act 1990 |
| SEDLAA | Strategic Employment Development Land Availability Assessment |
| SHLAA | Strategic Housing Land Availability Assessment |
| SHMA | Strategic Housing Market Assessment |
| SLIC | Strategic Land and Infrastructure Contract |
| TCPA | Town and Country Planning Association |


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# Non-Technical Summary

# 1. Non-Technical Summary

## Visionary

The proposals are based on an updated interpretation and reworking of the original Garden Cities model, with high quality designs based on design codes approved by local people. They introduce a paradigm shift in the way that large scale development is perceived through a new focus on design quality and sustainability, informed by engagement with the local community. Learning from international versions of garden cities is absorbed to improve sustainability.

There is no attempt to dictate the design, which should be a product of extensive and detailed engagement with local people through Enquiry by Design. However, in order to demonstrate the vision for a new garden city in mid-Kent, key aspects of local character and distinctiveness have been identified and inform proposals which reflect and respect the best defining qualities of the area, forging a new vernacular looking forward as much as celebrating that which is familiar and comfortable.

Architects and developers will be chosen through competition with work awarded to those whose proposals and experience most closely reflect the guiding ideals of the garden city. Designs which celebrate locality and community will prevail over mass market styles.

The city will become the magnet once again, but this time for (a) new employer(s). This will be a new city with a diverse and talented population including young wealth creators, people who need rapid access to London for work, and experienced third age households. Companies will be drawn here by the joint attractions of talented people, a high quality and sustainable community, affordability and access to London. To borrow a phrase, “If you build it they will come”.

This will be an inclusive and sustainable mixed tenure development providing for the needs of a cross section of local people, including affordable rented, market rented, shared equity and self build options as well as a wide range of open market sale homes. These would be set within a series of interconnected walkable suburbs where the car is accommodated but public transport, cycling and walking celebrated.

Historic field patterns will shape the development into definable neighbourhoods. The hedgerows which now define fields will in future define neighbourhoods, each with their own architectural identity, and with sustainability integrated in the form of neighbourhood allotments, play areas and the like. The hedgerows will thus shape the development at a local level while sustaining their own eco-system. Healthy lifestyles will be easier and safer, and seen as the natural choice.

Sustainability will be embedded in the construction phase. Design codes which emphasise common characteristics support the use of modern methods of construction for high quality “engineered” housing. A sustained high volume production over a 30 year development period would encourage the development of a manufacturing facility, and a training academy for both modern construction and traditional craft skills. This would be ideally placed to support the development of other garden cities, including two others promoted in Kent, and also the London regional market. (Figure 1).


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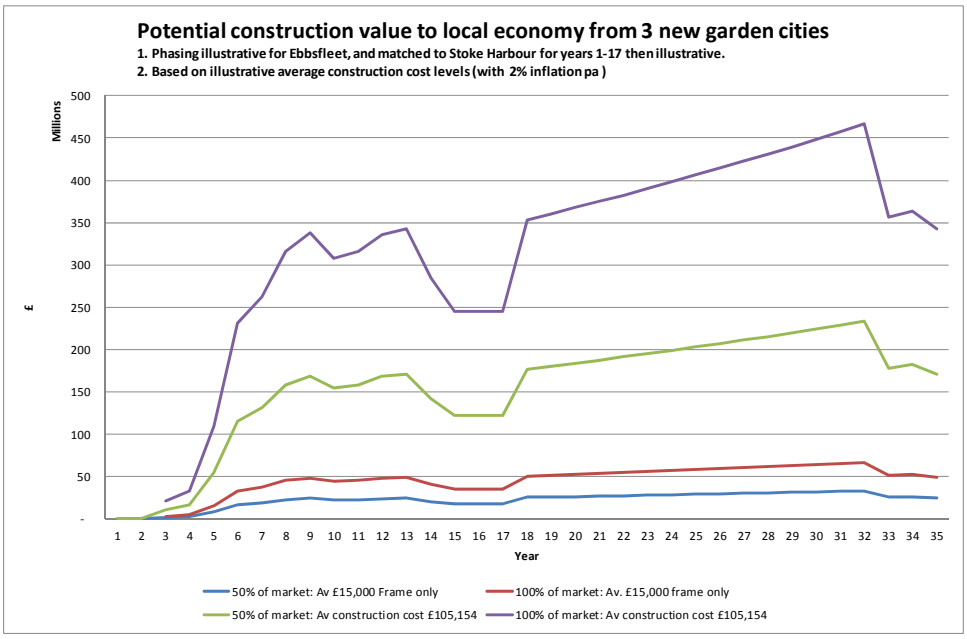


**Figure 1: Potential construction value to local economy from 3 new garden cities**

## Economically Viable

Established funding and delivery mechanisms would be used wherever possible so that risk is minimised. These are proposed to be extended to improve delivery prospects without the uncertainty of major new legislation or funding mechanisms, each of which could add time, risk and cost.

A Garden City Development Corporation (GCDC) is proposed as the planning and delivery co-ordination body. This would take the form of a Community Interest Company (CIC) to benefit from established and proven company structures from the commercial sector while ensuring that its activities are directed towards public interest and all surpluses distributed for community benefit. A Garden Cities Task Force is proposed so that the cost of developing model structures is borne once, freeing individual GCDCs to concentrate on planning and delivery. Land acquisition (including CPO), local planning (within an approved Masterplan) and infrastructure provision would be devolved. The LEP would integrate GCDCs into local commercial and government networks.

Land acquisition would, wherever possible, be by agreement, with initial compensation at a ten times multiple of agricultural value, plus recovery of fixed costs of plant and equipment on the land. The original landowners should also be entitled to share in the uplift in value consequent on development, but on a deferred basis through overage agreements. Government is, however, recommended to act to set clear parameters for statutory compensation in respect of hope value.

Acquisition of previously developed land (residential or commercial) should also take place at a (lower) multiple of current use value. Statutory compensation limits are low compared to development value but a pragmatic solution would be to offer voluntary compensation at more realistic levels which could be taken into account in the event of any CPO required. This way compensation equitably shares the surplus from development without compromising the statutory compensation scheme for major infrastructure projects.


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Funding the infrastructure would require access to long term capital and so access to PWLB loans (at preferential rates through the LEP infrastructure route) is proposed. Access can be organised through a Local Authority who would on-lend but as this involves an assumption of risk, which may deter some local authorities, it is proposed that CICs be permitted to borrow direct from the PWLB. Funding could also be sourced through local Bonds which would provide long term certainty while engaging local people financially.

Higher levels of infrastructure will be required at an early stage to encourage and support more sustainable lifestyles, particularly around transport. This burdens the financial appraisal as the costs are incurred early, and accumulate interest, while the revenue stream commences later, and the project would only be expected to return to positive cash flows a number of years into the future.

The new HS1 station may require infrastructure investment from government. More site specific investment, such as a BRT network or the infrastructure for automated vehicles, should be met by the development, and this may involve alternative financing structures such as Tax Increment Financing to fund early years investment.

The attractive nature of the project and the steady long term returns would make financing of the residential and commercial development from conventional sources feasible. Pension funds and other patient institutional investors have already signalled an appetite for the long term low risk investment that will be required. The remaining homes to be produced will be funded, planned and delivered by the market using established mechanisms. The key difference however is that the scale of delivery planned will bring exceptional economies of scale which should enhance margins and improve developer and investor appetite.

The modelling for the financial viability of the development is closely tied to a project plan so that forecasts of cash flows are realistically stated.

Completions are at a rate the market can comfortably absorb, and if needed could be accelerated, which would improve project viability. 40% of the homes are affordable, and at a 50% discount to market prices. The tenure mix includes affordable rent, shared ownership and both self build and custom build and market rented housing. Affordability is demonstrated for both market sales (relative to London), market rented and affordable rented homes.

Viability has been modelled at 15,000 homes, with a number of sensitivities tested. Figure 2 demonstrates payback for a range of scenarios all built from cautious base case assumptions (which achieve an IRR of 8.95% and a long term profit for distribution of over £450m). 20 different scenarios around cost and value, Base Rate and house price inflation relative to CPI have been tested, and apart from a small number of extreme combinations these consistently demonstrate viability.


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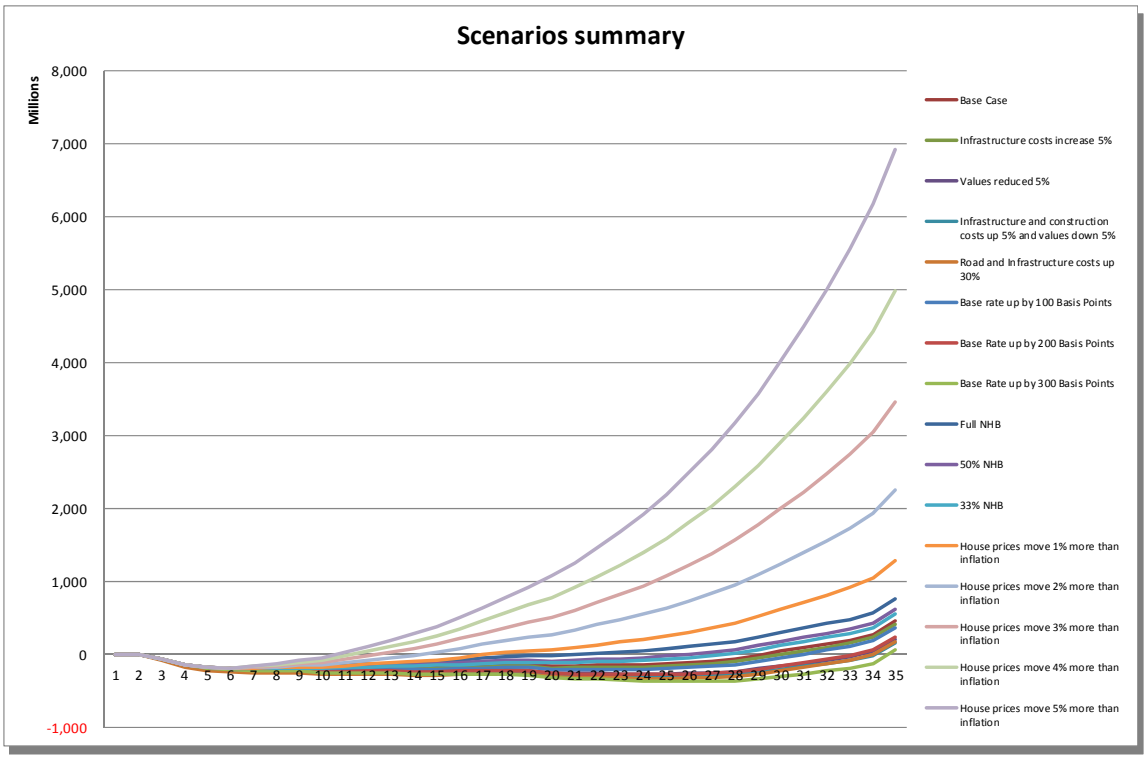


**Figure 2: Viability modelling for Garden City of 15,000 homes**

No new grants are proposed and the scheme can achieve breakeven without New Homes Bonus, although the longer payback period may increase financing rates and exposes the developer to more external market risk. The development does however meet the test of being economically self sufficient.

## Popular

The most important argument is that a place of high design quality and sustainability will be built which will enhance the local area and provide amenities and infrastructure of wider benefit. Designs deriving from all that is perceived to be best in local design, and then taking such elements forward in a family of designs fit for the modern age, would appeal to a wide spread of local opinion and newcomers alike.

Closely allied to this is a wide range of sustainability benefits ranging from very high levels of performance of the fabric of the new city, a committed and generous spirited programme of offsetting and the introduction of transport improvements which benefit the whole of the local community to the demonstrable benefits of reduced land take and impact compared to a more widely spread pattern of development encrusting a range of villages, each of which has a special character.

It is right that the interests of local people are protected so that none lose out, and those whose property is adversely affected should be generously compensated. The local community will have the opportunity to invest in, and share in the success of, the GCDC through a Bond where local investment is at a premium.

In the long term a new resident led Garden City Community Council would be established to provide local services and ensure the quality of the development is maintained. Proposals are made for governance including a structured transition to a resident led GCCC, including the local housing association as a key partner. The viability of the GCCC based on local Council Tax is clearly demonstrated, and the GCCC is supported in providing a range of community programmes and amenities


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through cross subsidy from the distribution of surpluses from the GCDC in the form of a “Community Dividend”.

The attractions of the city will be more than skin deep and astute and forward thinking companies will be drawn here by the combination of talented and creative people and the culture they will create in a beautiful, sustainable and forward looking community. The development will also be a significant contributor to the local and regional economy, providing the opportunity for a major new manufacturing operation to support a new engineered house-building factory serving both local and regional (especially London) markets. The impact of three proposed garden cities in Kent has been modelled and the benefits to the local area, and to economically disadvantaged parts of the regional economy, are major as demonstrated in Figure 1 above. Production serving the rest of the south-east could substantially increase this turnover.

Construction has good multiplier effects through local and regional economies. Extrapolation using the most cautious estimates of the economic impact of constructing a new garden city show a major impact on the local economy– see Figure 3. This would be further amplified if related infrastructure improvements were made, such as a new HS1 station.

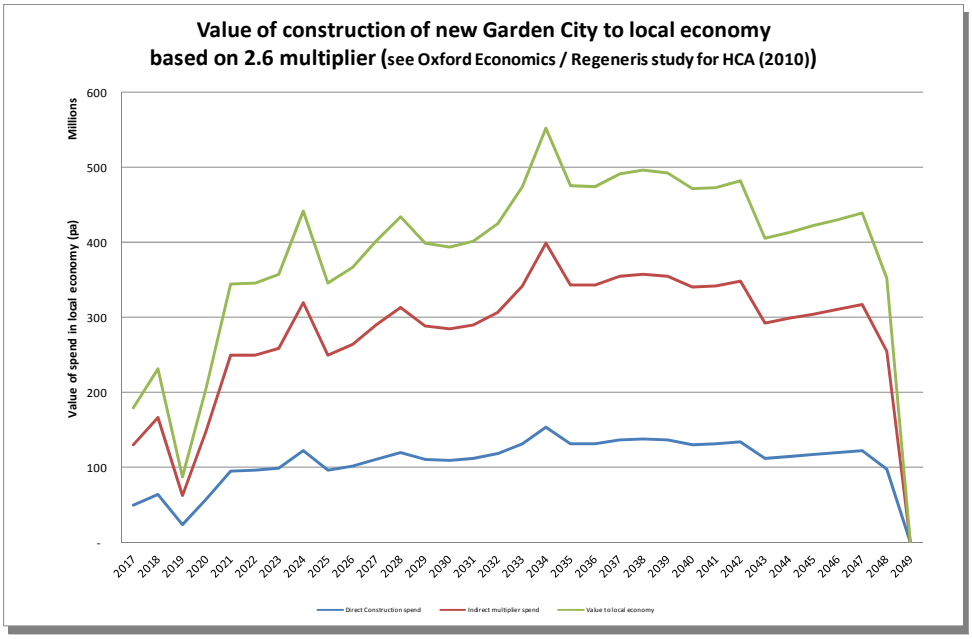


**Figure 3: Value of construction of new garden city to local economy**

Both of the above charts illustrate the major impact the development of garden cities can have on local economies, creating good quality employment on-site and elsewhere, over and above the employment for long term residents, whether that be through the local, regional or London employment markets.

The dividend for the local area, and for the regional economies, is substantial, and this supports arguments that should prove popular.

Overall, a new wave of garden cities will only come forward if supported by local communities. Support is best demonstrated by a local referendum of the whole of the community.


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The proposals for Charthills Green meet all of the Garden City Principles put forward by the TCPA (2014) and so should be supported by government. A number of specific proposals for government assistance and support are made which should receive cross party support.


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# Introduction


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## 2. Introduction.

Howard's seminal text "*Tomorrow: A Peaceful Path to Real Reform*" (Howard. 1898) was guided by utopian ideals of improving lives through the creation of better places to live. The underlying humanistic ideals of social and economic liberalism, sustainability and the practical and aesthetic value of traditional crafts still resonate to this day.

His vision of a high quality environment with good quality housing, ready access to employment and support for healthier lifestyles, all within a new community defined by its high quality design and sustainability, is as valid as it has ever been. Residents of high value neighbourhoods in major cities take these benefits for granted. Howard's utopian ambition was to bring such opportunities to a much wider population.

This essay puts forward proposals for new garden cities that remain true to those ideals while responding to the needs, aspirations and lifestyles of current and future citizens. New garden cities must be locally determined, including matters of design, but for the purposes of this essay it is necessary to convey a clear vision, and so a personal vision of the garden city of the future is put forward. Key to that vision is that the design reflects and respects all that is best in the area but unequivocally looks forward, confident in its purpose, design and sustainability. That place is Charthills Green, a new garden city in mid-Kent.

Charthills Green will be a special place, inspired by the rich heritage and diversity of the area. It would meet the needs of the local area first and foremost but also contribute substantially to the regional and national economies, both through its own output of creativity and commerce and also by providing an attractive and viable alternative to young households needing access to London and looking for a new and high quality lifestyle.

What Britain needs now is innovation and determination in the supply, financing and governance of the kind of new communities where people will want and choose to live, enabling a wider range of society to enjoy the improved quality of life Howard advocated. We need well designed and attractive homes which are fit for the modern age and future-proofed, in economically and socially sustainable communities. We need innovation and boldness in the planning and financing of these new communities to transform aspiration into reality.

This essay sets out a plan for such innovation, based on the Howard's original ideals and principles, but learning from contemporary and complementary approaches to urban development. Pragmatically, existing mechanisms are used wherever possible, but where appropriate changes are proposed to the planning, design, funding and governance of new developments.

In doing so the proposals made reflect key issues in the development of Charthills Green, a new garden city in mid-Kent. The ideas put forward are not prescriptive, either for Charthills Green or for other proposed Garden City locations. Instead, they are included as illustration of how such proposals could be applied and result in a place of high design standards while demonstrating viability.


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Figure 4: Location of proposed area of search and phase 1 of Charthills Green

Reflecting and respecting the best of the past, while introducing bold and imaginative new ideas, will be a recurrent theme.


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# Preparing for the garden city of the future

*"At the end of the day, however, it is surely how buildings - of whatever style - stand together to make a place and build a community that matters, far more than the individual building.*

*For what it is worth, my own interpretation of the "neighbourhood" formula is simple - a network of legible, interconnected streets that accommodate the car while celebrating the pedestrian; the principle of encompassing work, play, shopping and living in a harmonious way within walkable distances, and the "pepper-potting" of affordable housing amongst those on the open market - all the while attempting to restore a sense of harmony, proportion and, above all, beauty into our everyday lives."*

The Prince of Wales at the Sustainable Urbanism Seminar, Melbourne. 7th November 2012


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# 3. Preparing for the garden city of the future.

At the heart of the issue are a series of questions of what would make a garden city a special place. Character and appearance define garden cities for many people but if they aren't viable then they won't be built - viability is therefore also at the heart of the issue. But in order to be viable it needs an economic purpose and sustainable commercial base. In order to attract businesses which would give it that commercial base it will need the right people and the right business environment. In order to attract the right people there needs to be an attractive offer, which includes employment, salaries and quality of place. This then introduces more subtle factors such as quality of housing, the retail and leisure offer and intangibles such as diversity and environmental sustainability, all of which feed into the cost and basic viability of the development.

Published work analysing the critical location factors for the wide range of garden cities which have been built is scarce. Recent debate has, however, focussed on a number of factors which are likely to be important in selecting a location for a new garden city in the UK[1], and these are addressed in section 3.3. Whatever motivates the location, it is the character of the place which will come to define it. Just as the original garden cities brought together the best of urban opportunities and rural lifestyle so the modern garden cities will bring together wealth creation, interaction, stimulation, education and culture in a high quality built and natural environment that residents delight in and celebrate. They will have their own culture, based on aspiration and shared appreciation and respect. The city will be designed to meet these values, and just as in the first garden cities they will change the paradigm of urban living.

## 3.1. The need for new solutions.

The contemporary relevance of garden cities is predicated on their ability to meet changing needs and respond to diverse preferences and choices. We have a growing population both numerically and, significantly, in numbers of households. As a nation we now invest much less in housing than we did through the late 20th century (Wilcox and Perry, 2014). Later household formation, smaller household sizes and an increase in divorce rates, together with increased life expectancy all contribute to the need for more homes (see Appendix C). Increased affluence leads to more diversity in tenure, with a range of opportunities to rent or buy a home, notwithstanding average house prices now over 5 times average household incomes[2]. Transport is more efficient but safe and convenient access to employment and to everyday local services remains a widespread concern. These are all key factors in the design of a new generation of garden cities.

## 3.2. Garden City principles revisited.

The evolution of urban design has adapted the principles of the garden city movement for the modern world and in doing so key themes resonate through. The original idea took root in Hertfordshire but has been picked up and applied globally. In doing so it meets and absorbs influence from new thinking from a variety of sources. From the New Urbanism, Green Urbanism and Smart Cities movements emphasis is placed on


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social sustainability by way of varied and mixed tenure housing, walkable suburbs and local employment. Environmental sustainability is stressed through lower car usage, reducing the consumption of water and other natural resources, and latterly a return to the traditional practices of food self-sufficiency.

Whilst thinking has moved forward there is much that Howard would recognise from the original principles. There is also a reflection of popular contemporary culture, including an emphasis on locally inspired "humanistic" designs, reinvigoration of community and healthy sustainable lifestyles. From these we can develop the key themes applicable to the development of garden cities for the 21st Century. The challenge lies in taking forward garden city themes to produce even better places – better designed, and better suited to current and future needs.

Contemporary residential development has been dominated by the major developers. Their "subtopian"[3] model of production features repetition of pattern book designs and limited investment in public realm. Limited variation of product speeds the planning and design process and assists cost control. Developers learn what appeals to their customers and gradually improve from that starting point rather than risking wholly new designs. Investment in public realm consumes valuable land which could otherwise be used for dwellings, and requires maintenance carrying long term financial burdens.

The garden city model also manages the number of styles and design details, but for very different reasons, namely a sense of design continuity and cohesion to create a more harmonious whole. Repetition of regional and local design characteristics both strengthens visual identity and rationalises costs. There is greater emphasis on designing the neighbourhood and public spaces because character is determined at neighbourhood level, which then takes the lead for design coding of blocks and properties set within a clearly legible hierarchy of spaces forming walkable suburbs[4].

Streetscene at Westholm, Letchworth Garden City Photo: Letchworth Heritage Foundation

### 3.3. Selecting the right location for a new garden city.

One of the key themes in location factors is areas with high levels of, or potential for, economic growth. These can exist around any of the major centres of population but particularly in the south east. Strong growth poles have been identified in an "Arc of Opportunity" to the north and west of London (Wei Yang, 2014, p.15) including three specific areas of search. The factors driving such an area of search include:


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- The fundamental strength of the local and regional economies, evident in high growth and resilience under economic stress.
- Good transport infrastructure and connectivity to major centres of population.
- A well educated and highly skilled workforce.
- A strong tertiary education sector to support research and development.
- Absence of restrictive environmental designations or natural risk factors such as floodplain.

In similar vein Haynes (2014) identifies common characteristics of successful smaller cities including:

- Attractive to Young Wealth Creators
- Good Transport Links
- Specialised Economic Nucleus
- Strong Financial Self-determination

A city of 15,000 homes has to have an economic purpose (which can be in one or more sectors). Historically these often arose out of specialisms which brought people with the right skills together, for example the steel industry in Sheffield, leather and shoe manufacturing in Northampton or even education in Oxford or Cambridge. Modern industry and commerce, particularly communications, have moved on but co-location is arguably just as important for the coffee culture of today's new commercial hotspots of information and creative industries.

### 3.4. Understanding the drivers and the markets

Cities are about people coming together for all sorts of reasons, the principal one being economic activity, and even in the modern digital age co-location makes commerce easier. Arising out of co-location come a wide range of other factors, from the basic needs of everyday living through to education, cultural activities and the like. Cities are at the centre of so many aspects of modern life, and the garden cities of the future need to fulfil those needs.

> *"The city is designed to appeal to young wealth creators, the people who create the technologies, research ideas and companies that will fuel growth in our economy tomorrow. The concept is to a design a new city that functions as an urban laboratory, a place where residents and businesses can live and work with new technologies, an innovative sustainable infrastructure, heightened democratic control and beautiful, greenery covered buildings. The city's unique selling point is its exceptional quality of life. ...."* *Haynes (2014)*

The changing demography of the UK is characterised by an increasing number of households, a reduction in average household size, and a large cohort moving into older age (see Appendix B). Remaining true to Howard's ideals it is important that a new garden city embraces a diverse range of social and economic groups. Local


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people looking for a better place to live, alongside those attracted to the area and older households, should all be welcomed alongside the new inventors, entrepreneurs and wealth creators... The new garden city should be a welcoming, diverse and socially inclusive place – Howard would have had it no other way.

There is another reason for such diversity among the population. Diversity enriches, brings new skills and ideas, new cultures and values, and through all these sparks creativity, which will be the lifeblood of the new community. Diversity provides the range of skills and services which a new community will need, from the high end professional services, information and technology professionals and creative industries through to the day to day service providers who will keep the schools running, provide back-office support, allow shops to open and keep the day to day infrastructure of the city serviced. Without that diversity the city would suffer.

This diverse range of people are all necessary and will play valuable roles in this new society but the defining characteristics are that they will share occupation of a new place dedicated to high quality modern living. The headline market segmentation will be about young professionals, information managers, creatives and entrepreneurs, as in all probability they will do most to shape the place, but it will be a city for everyone because together they will make it work.

### 3.5. Creating places people value

Garden city designs should be humanistic, putting people first in the way the spaces work and the way people feel when using them. A garden city should comprise a number of walkable suburbs, each with its own distinct character but set within a context of attractive green spaces and through routes to encourage walking, with its social interaction and health benefits. Local schools, shops and play spaces reinforce identification with locality and neighbourhood. Engaging local communities in identifying that which is best and most valued, and ensuring designs reflect and respect those local preferences reinforces that shared identity with an area.

The overall master-plan should echo the original garden city designs in providing generous green spaces linking to the wider countryside through tree lined boulevards, cycleways, paths and swales. The architecture of public places should invite use and enjoyment. Leisure, recreation, sport and play should come together in well designed, safe and well managed spaces that link different residential areas –attractive places that frame development and bind communities together.


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Streetscene at Westholm, Letchworth Garden City. Photo: Letchworth Heritage Foundation

Community should be celebrated by giving pride of place to public buildings, with well defined vistas towards them – these are the focal points of community and investment in their architecture should reflect that pride in the place. High quality public spaces adorned by public art define and celebrate all that is good about the area

These themes echo the original garden city designs. They do so because they work, and because this forms the first layer of shared "ownership" by the community. They also mirror contemporary versions of sustainable urbanism.

### 3.6. The sustainable solution

The new garden city should be guided in its design and development by higher ideals of design quality and sustainability, just as the original garden cities set out to be visionary exemplars of sustainable development of their time. They therefore have to be more than the same old development in a different, green-tinged wrapper. They have to inspire through what they stand for, how they are conceived and developed, and how they are governed.

Sustainability has many dimensions but the overarching theme of One Planet living is at the heart. The ten One Planet principles provide a framework to develop action plans to live and work within a fair share of the earth's resources.


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| One Planet Living: The Ten Principles | | |
|---|---|---|
| **Principle** | **Description** | **Application to Garden City** |
| **1. Zero carbon** | Making buildings more energy efficient and delivering all energy with renewable technologies. | All homes to zero-carbon standard, with proportion to higher levels of energy efficiency including CSH Level 6 and Passivhaus equivalents. |
| **2. Zero waste** | Reducing waste, reusing where possible, and ultimately sending zero waste to landfill. | Recycling made easy at domestic level, and bio-waste converted for re-use locally in neighbourhood allotments and local farms.. |
| **3. Sustainable transport** | Encouraging low carbon modes of transport to reduce emissions, reducing the need to travel. | Bus Rapid Transit system of fast and frequent local transport reduces need for car use. Easy access to high speed rail network. Well developed network of safe and attractive cycle-ways and footpaths. |
| **4. Sustainable materials** | Using sustainable healthy products, with low embodied energy, sourced locally, made from renewable or waste resources. | High proportion of off-site manufactured homes, locally manufactured with high proportion of locally sourced and sustainable materials. |
| **5. Local and sustainable food** | Choosing low impact, local, seasonal and organic diets and reducing food waste. | Network of neighbourhood allotments for local food production, and link to adjoining commercial agricultural sector through regular supplies. |
| **6. Sustainable water** | Using water more efficiently in buildings and in the products we buy; tackling local flooding and water course pollution. | Water saving features designed into buildings (residential and commercial). Rainwater and grey water harvesting and re-use. Re-engineered storm water drainage. |
| **7. Land use and wildlife** | Protecting and restoring biodiversity and natural habitats through appropriate land use and integration into the built environment. | Network of green (and blue) routes to encourage biodiversity. Existing field patters used with retention of hedgerows as habitat and to define areas. Local allotments. |
| **8. Culture and community** | Reviving local identity and wisdom; supporting and participating in the arts. | Designs reflecting and respecting local traditions. Arts and culture promoted as part of community development. |
| **9. Equity and local economy** | Creating bioregional economies that support fair employment, inclusive communities and international fair trade. | Network of small scale local enterprises that offer reciprocity of skills and work. Local skills and trading networks. Fair trade commitments for local trade networks. |
| **10. Health and happiness** | Encouraging active, sociable, meaningful lives to promote good health and well being. | Walkable suburbs; local schools; neighbourhood employment and shopping; high levels of community infrastructure, including leisure and play, footpaths etc. |

**Figure 5: The One Planet Living principles and their application in the Garden City**
Adapted from http://www.oneplanetliving.net/what-is-one-planet-living/the-ten-principles/

These concepts are also broadly replicated in the balanced sustainability concepts of "People, Planet, Profit", also known as the Triple Bottom Line (Elkington, 1997).


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This involves a new approach to business that takes into consideration social, environmental and economic dimensions and underpins an ethical approach to sustainable development. Application of this thinking questions established assumptions of how we should develop, manage and live in modern cities. Homes, workplaces, community buildings, transport, food and many other aspects of daily life involve choices. Very rarely are these binary choices – more often the question is how we balance the various social, environmental and commercial dimensions of choice. In this respect the planning system has been a key agent of change in the development sector as the environmental performance of new development and the social benefits extracted through the s.106 system. This is not to argue that the planning system sets out with a triple bottom line agenda but rather that planning is one of the most powerful mechanisms local communities have at their disposal to influence the people and planet dimensions of development.

Planning a new community for the 21st Century implies a commitment to shared ideals for today and for the future, and so the Zero Carbon Standard should be a minimum. The cost of developing to higher levels of the Code for Sustainable Homes (CSH) has been a disincentive for many developers but recent research has identified that the cost premium for a new Zero Carbon Standard, based substantially on a lower technology Fabric Energy Efficiency Standard, has reduced considerably to between £43-60psm over Part L1A of the Building Regulations (*Zero Carbon Hub, 2014 – see* Table 1*).* This level of cost premium is minimal and so a commitment can and should be given that all new homes will meet this standard as a minimum, although innovation to produce new homes, offices, commercial and public buildings should be driven by community pressures.


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Table 1: Costs above Part L1A for achieving the Zero Carbon Homes Standard

**Cost above Part L1A 2013 for achieving the Zero Carbon Standard for different house types via the assumed lowest cost route to compliance**
**(Scenario 1 FEES + Efficient gas boiler + PV + AS)**

| ELEMENT | DETACHED HOUSE | SEMI-DETACHED HOUSE | MID-TERRACED HOUSE | LOW-RISE APARTMENT |
|---|---|---|---|---|
| PER HOME | | | | |
| FEES | £1,728 | £61 | -£76 | -£32 |
| Heating and LZC technology | £3,270 | £2,824 | £2,477 | £978 |
| Carbon Compliance | £4,998 | £2,885 | £2,401 | £947 |
| Allowable Solutions | £2,118 | £1,504 | £1,508 | £1,375 |
| **Total (central)** | **£7,116** | **£4,389** | **£3,910** | **£2,322** |
| **Range** | **£6,700 - £7,500** | **£4,100 - £4,700** | **£3,700 - £4,200** | **£2,200 - £2,400** |
| PER $M^2$ [2] | | | | |
| FEES | £15 | £1 | -£1 | £0 |
| Heating and LZC technology | £28 | £37 | £32 | £18 |
| Carbon Compliance | £42 | £38 | £31 | £18 |
| Allowable Solutions | £18 | £20 | £20 | £25 |
| **Total (central)** | **£60** | **£58** | **£51** | **£43** |
| **Range** | **£57 - £64** | **£54 - £62** | **£48 - £55** | **£42 - £44** |

Source: (Zero Carbon Hub and Cyril Sweett, 2014, Table 1)

The options for higher levels of sustainability apply equally when considering transport. Transport was a key aspect of Howard's model and the connectivity to nearby urban areas and to regional and national transport infrastructure was an important consideration then as it would be today. The garden city will be separate by design and so transport can and should be considered from the very first stages of planning. Zero carbon homes should be matched by low carbon transport systems.

Walkable suburbs alleviate the need for much of local car use. The car should be accommodated but the pedestrian and cyclist celebrated.[5] Integrated and accessible transport systems based on public transport, cycling and walking should be designed in through the use of safe, convenient and attractive environments and routes.

Designing in transport from the outset provides the opportunity for more ambitious thinking in integrated transport modes, such as a green tram system (see Figure 6 which shows the Montpellier tram system whose tracks blend in with the "greenway"


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and are both attractive and can be engineered as a form of SUDS system). But smaller scale and lower investment solutions need to be adopted wherever possible including cycle routes, local "hoppa" buses and a bus rapid transit system.

**Figure 6: Green urban transport: The Montpellier tram system and the proposed Bristol BRT**
Source: http://en.wikipedia.org/wiki/Bristol_Supertram Retrieved 7 July 2014 @ 17:05

Sustainable lifestyles celebrate "local" as an alternative to the excessive "food miles" in most contemporary shopping baskets. There is, and will be, a place for supermarkets through to convenience stores but local food sourcing, including allotments, is both more sustainable and popular. The early garden cities provided allotments as a link to rural lifestyles. Contemporary garden cities can do the same, but they can also extend that principle at a smaller scale through edible gardens and encouraging "grow-your-own" (Duany and DPZ, 2011). Specific proposals for sustainable food production at Charthills Green are put forward in Section 4.

On-site energy generation, and reduced energy use through more energy efficient buildings are at the heart of a sustainable community. For this reason the settlement should adopt the Zero Carbon Standard as a minimum, although lower energy and in particular more on-site generation could be provided through buildings designed to higher levels of the Code for Sustainable Homes (CSH).

These ideas are summarised in Figure 7 below.

***Sustainability Commitments***

- *Minimum of Zero Carbon Standard but target CSH Level 5*
- *High targets for local sourcing of construction labour and materials*
- *Construction (MMC and traditional craft skills) centre of excellence*
- *Promotion of self build and custom build*
- *Neighbourhood community stores*
- *Retention of all trees of A grade and 10 for 1 replacement as part of carbon offsetting*
- *Water saving strategy including extensive use of SUDS*
- *Walkable suburbs*
- *Integrated transport systems to centre of town, and to regional transport infrastructure, with interconnectivity to high speed rail network*

**Figure 7: Sustainability commitments**


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WOLFSON
ECONOMICS PRIZE
MMXIV

# A portrait of Charthills Green


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## 4. A portrait of Charthills Green

It is important to re-state that the primary proposition of a place supported by, and designed with and by, local people remains paramount. Nothing in this portrait should be read as undermining or diminishing that principle. For the purposes of this essay however it is necessary to advance a vision of what the new garden city would look like, and so the portrait that follows is derived from the general principles advocated.

Charthills Green will be shaped by local people, and it is a central contention that local people will decide matters of style and character based on established and respected local precedent. In that respect even the name could be significant. As a "working title" several options were considered[6] but Charthills Green was chosen. The local area is part of a landscape known as the Chart Hills, and so the place name is, literally, grounded in and springs from the locality and its history and traditions. The phrases in the image below seek to reinforce that. The eventually selected name will, however, be a matter for local people to choose, as has happened throughout history.


The ideas behind a new garden settlement in mid-Kent have been in preparation for a number of years. Golding Homes, a housing association based in Maidstone, has been working with landowners to deliver a new garden settlement based on designs reflecting local architectural character, in a sustainable new settlement to the south-east of the county town. The new climate of opinion presents an opportunity to deliver Charthills Green, a 21st century garden city in the garden of England.

It would meet the needs of the local area and also contribute substantially to the regional and national economies, both through its own output of creativity and commerce and also by providing an attractive and viable alternative for young households priced out of London, but needing access to London, and looking for a new and high quality lifestyle.


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## 4.1. The site

Maidstone's location, 38 miles south east of the centre of London, is ideal for the development of a garden city. It sits adjoining a well developed transport network and has ready access to London, Gatwick airport and the continent. Strategic transport improvements announced by the LEP will see a third Thames crossing which will improve transport connectivity to the North of London. These advantages are illustrated in Figure 8 below.

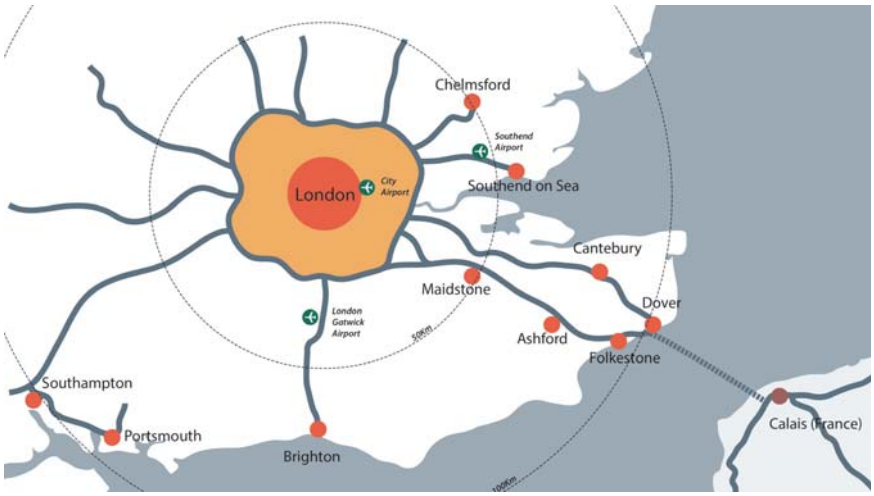


Figure 8: Broad location within the regional context

At 15,000 homes Charthills Green would represent a significant increase over previously published plans. Only part of the land has been identified (for the earlier promotion) and further land would need to be sourced. It is envisaged that the development would take a poly-centric form generally extending to the east and south-east of the first phase (shown in Figure 9 below).

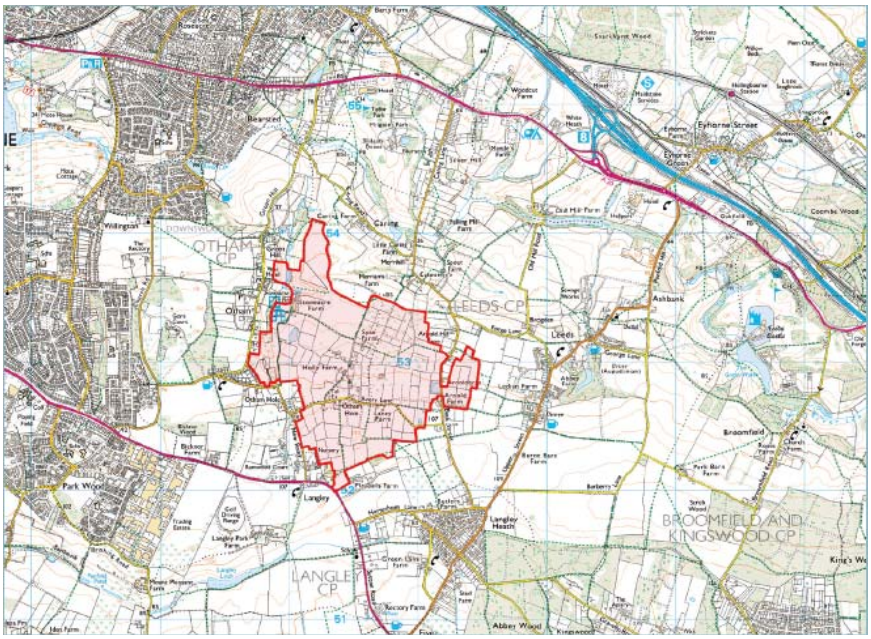


Figure 9: Broad location of Charthills Green and surrounding land and infrastructure

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The site lies about a mile to the east of the suburbs of Maidstone, and is in mixed use, although predominantly used for orchards and soft fruit production, much of it under polytunnels. The terrain is generally level and with few distinguishing features apart from the high hedges which define the fields and provide shelter to the orchards, and two narrow and infrequently trafficked lanes passing through.

Whilst being located in an area of good landscape quality the site is not impacted by environmental designations which would prevent development, although there is an area of high landscape quality immediately to the north, and Leeds Castle approximately 1½ miles to the north east which would require a buffer zone to prevent any impinging on a local and national asset. Consistent with its intensive use a preliminary ecological survey concluded that there were no major ecological issues which would need to be addressed. There are a modest number of heritage assets in the area.

Figure 10 shows the development of the town from 1908 (the time of Letchworth's inception) through to current times, including the arrival of the motorway and high speed rail.

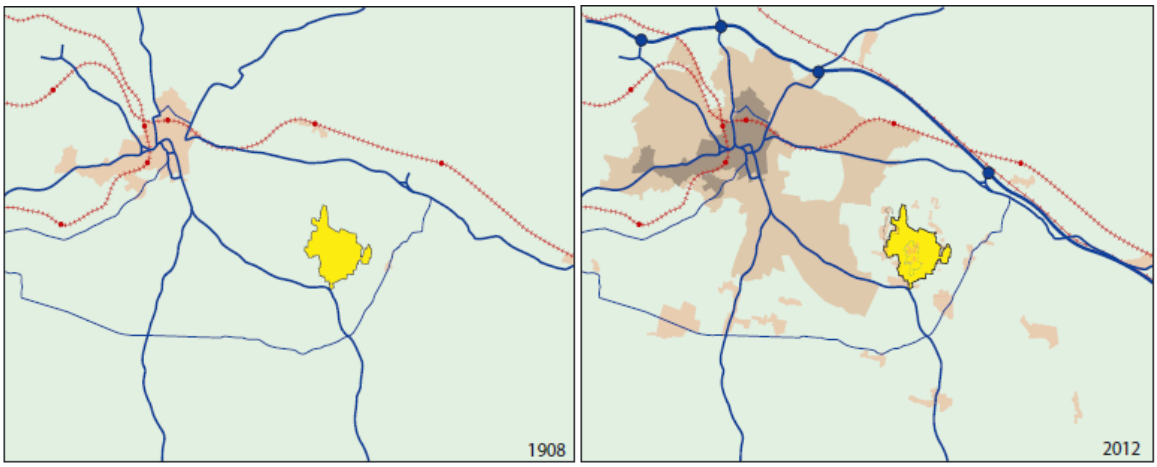


Figure 10: Maidstone 1908-2012

## 4.2. The Planning context.

The former Local Development Framework was consulted with the public in 2007 when a strategic option favouring a new settlement to the south-east of Maidstone was endorsed[7]. Those plans have been superseded and the Maidstone Local Plan is still under development. A Strategic Housing Market Assessment (SHMA), Strategic Housing Land Availability Assessment (SHLAA) and Strategic Employment and Development Land Availability Assessment (SEDLAA) were carried out concurrently in 2013. Based on these Maidstone BC approved a housing target for consultation in February 2014 of 19,600 homes between 2011 and 2031. This was a significant increase over the previous target of 11,080. The SHLAA was undertaken against a background of a Call for Sites in early 2013 which brought forward sites with a claimed capacity of c.20,000 homes, including a notional 5,000 homes at the site promoted by Golding Homes.

The proposals set out here are a development of the original ideas into a new poly-centric garden city of 15,000 homes, arranged as three distinct but closely co-located settlements, working as one economic entity. The stated ideals are for the creation of


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*'A place embodying high standards of design and sustainable ideals, built on traditional values'* ... and ...*'A new place offering a new lifestyle, fit for the future but based on inherited values of community and cohabitation of people and nature'* The ideals have struck a chord with many in the local community.

A new road would be necessary to service the development and it is proposed that this forms a new relief road for traffic congestion to the SE of Maidstone, particularly between the villages of Leeds and Langley. A cost study for a new road was produced by DavisLangdon, and the results included in the viability modeling of the new garden suburb in 2013. This modeling was subject to Due Diligence review at the time by DTZ, who concluded that that scheme was deliverable and fundable.

Environmental protection features strongly, although the local planning authority's own landscape quality assessment indicated a lack of impediments in terms of protected designations, and an ecology screening review for Golding further confirmed there are unlikely to be major ecological constraints.

The area proposed for the garden suburb does have sensitive design considerations though, including the nearby Otham Conservation Area, although despite the rich history of the area there are very few properties of heritage value affected.

### 4.3. Transport and connectivity

As outlined above and in Figure 8 the site has great potential due to favourable transport fundamentals. It lies approximately 1 mile south of Junction 8 of the M20, and is 38 miles from Charing Cross (coincidentally exactly the same distance as Letchworth). The Channel Tunnel is 25 minutes drive and the port of Dover 40 minutes. The broad location of the site and surrounding development and infrastructure is shown in Figure 9 above.

More importantly (for the development and for the wider local community) there exists a clear opportunity for a major improvement of high speed access to London and the Continent. The site would need a new access/spine road and it is envisaged this would connect with the main road network close to J8 of the M20, approximately 1 mile to the north. The HS1 high speed rail line runs immediately to the north of the motorway, and is already bridged-over to access a motorway services station. To the north of the services station runs the domestic rail line. Taken together these provide an ideal opportunity to create a new interconnection between domestic and high speed rail lines, the M20 and the A20, where some of the major engineering costs have already been taken in the form of the motorway junction and the crossing of the HS1 line (see Figure 11 below). A new station here would be approximately 30 mins from St Pancras international[8]. The line itself has spare capacity, currently used only by the Eurostar trains to the continent and Javelin trains to Ashford.


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Figure 11: Transport connectivity at M20 J8

A Maidstone Parkway station has been talked about locally for many years, and if delivered would put Maidstone, the county town, within 30 minutes of central London, and 10 minutes from Ashford International, from where there are connections to Brussels (1 hr 39 mins) and Paris (1 hr 52 mins). Charthills Green, approximately one mile to the south, would be a short cycle or hoppa bus (or even BRT) ride away. The "magnet" factor drawing in "young wealth creators" would be strong connectivity allied to the high quality built and natural environment.

The benefit to Maidstone residents, who for far too long have seen prosperity pass by, would be substantial, increasing the attraction of Maidstone as a business location, improving accessibility to high quality employment and services in London and in all probability increasing local residents stored wealth in the value of their properties. The case for a new HS1 station is compelling and would win strong local support from the business community and the general public. A new station would not come cheap, but the key infrastructure is already in place, substantially mitigating the cost, and if supported by the local planning authority it is likely it would be supported by the LEP. These proposals for Charthills Green provide substantial further weight to that case.

*"High-speed rail infrastructure does not come for free. It is very expensive to build. The public will understand that in order to get state-of-the-art infrastructure that transforms their journey times, it is right that they should make a contribution."*

*Lord Adonis in The Guardian. 18 June 2009*


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### 4.4. Market analysis

New garden cities generally are likely to be a magnet for new households, both highly mobile single people and also those establishing families (Haynes, 2014), and Charthills Green is no exception. However, it cannot be an exclusive community and there needs to be a balance of ages, social groups and lifestyles if it is to develop into a "real" and "lived in" place. The economic drivers and opportunities will provide the motive for development but the physical qualities, particularly design and sustainability, will provide the reason for many of the residents to move there. Across the breadth of potential market four particular groups stand out as the most likely "pioneers" (See Barton Wilmore, 2014) of the early development.

- **Local people looking for a better lifestyle in the area they call home.**

  The SHMA and the demographic data from the 2011 Census provide clear evidence of a strong local demand, and it is right that any market analysis considers their needs first. Local people need good quality homes, and an exciting, vibrant, sustainable community will provide both affordable housing and employment opportunities, reducing the need for commuting to find work. Local people will also provide the embryonic new community, with established social and familial networks to the area. Charthills Green will stand out as the place to consider first when they look for a new home.

- **Young wealth creators looking for a home in a well designed and sustainable place, with a lifestyle to match**.

  Charthills Green needs a strong employment base in order to sustain the economic, social and environmental fabric of the place. Some employment will come in the form of self employed entrepreneurs, creative and business service providers and inventors, while others will look for salaried employment. The Maidstone economy has been too heavily geared to public services and related professional services but a new garden city offers the opportunity to attract a major employer. It is likely such an organisation would be professional or services based, either an international company looking for a high quality UK base with good access to London, or a UK company with high end services out-posted from a London office. London has clusters of such powerhouses of creativity and entrepreneurialism, such as the "silicon roundabout" of Old Street or the new Google UK HQ at Kings Cross, but the creative process can require time and space away from intensity and so there is a place for an alternative which provides a supportive environment ….the "Geeks in the Garden".


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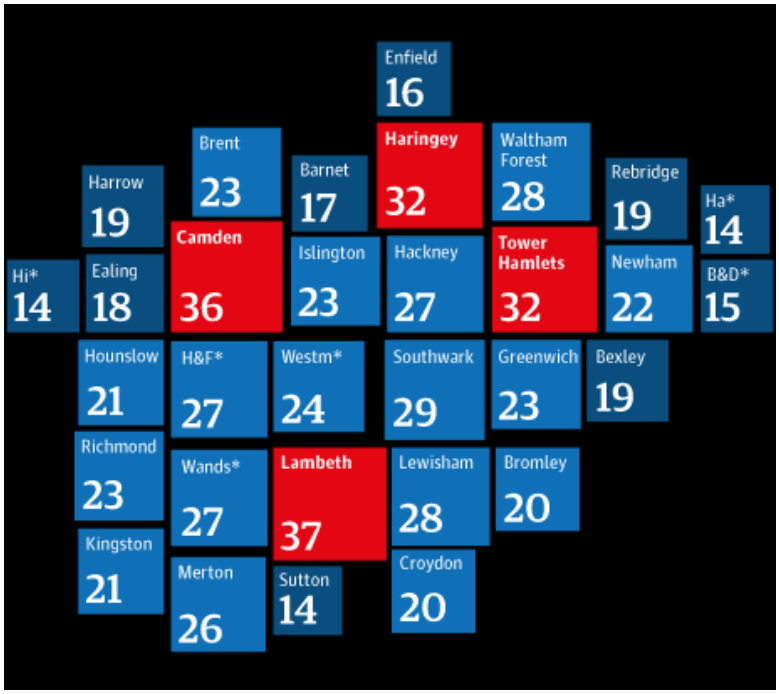
*So who are today's young wealth creators? They include high-tech and low-tech entrepreneurs, researchers, designers, engineers, biologists, physicists, artists, bloggers, filmmakers, musicians, digital animators, food experimenters, app designers, games designers, clean-tech advocates, those that spin-out from existing businesses or identify and grow new industrial niches. And not all of these young wealth creators sit in the new economy; they include chemical engineers, mechanical engineers, accountants and those that specialise in advanced manufacturing.* Haynes and Langley *(2014 p.6). ……. The young and ambitious care deeply about sustainability and the environment; they embrace physical fitness and outdoor pursuits; they are foodies and enjoy artisan food, drinks and cocktails; they get stuck into neighbourhood and civic networks; they are attached to multiple electronic devices simultaneously.* Haynes and Langley *(2014 p.9)*

- **Young professionals unable to afford a home in London.**

  London is the premier wealth creation engine of the UK economy and we all have a stake in ensuring it continues to be successful. That success is predicated on attracting and retaining the people who create the wealth, and the many others who support them. A significant challenge to this in recent years has been the high cost of housing in the capital. The return to economic health following the economic crisis of 2007 took root in London first, and has grown fastest there. House price rises of 20% plus across the capital (see Figure 12 below) pose a risk to the social and economic well being of London.




Source: The Guardian 2 July 2014 at
http://www.theguardian.com/money/2014/jul/02/leap-london-house-prices-unequalled-nationwide

**Figure 12: London House Price Inflation Year on Year (to Q2 2014)**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As a consequence London is now one of the most expensive places to live in the world[9]. There are finite opportunities to meet London's burgeoning housing needs within the capital and so the surrounding areas, which benefit from economic integration and employment opportunities, need to shoulder their share of the burden.

Many people from Kent work in London and Maidstone is inextricably part of the London jobs market. Yet how many of those who commute could afford to buy a home in London given the rampant price inflation and very high price to income multiples of London properties over recent years? There are 7,000+ Maidstone residents who commute daily to London, many (although not all) in the professions or well paid positions in commerce or government.

*"The SHMA 2014 analyses commuting patterns in detail using 2001 and 2011 Census data. To summarise, the highest commuting flows are between Tonbridge & Malling and Maidstone (13,900 people daily) which is likely to be partly influenced by the concentration of employment at Kings Hill in West Malling ….. 7,132 people from Maidstone commute to London daily. Maidstone borough's direct rail links to London and the proximity of the capital are factors in shaping the local economy, house prices and travel."*

Maidstone Borough Council. 2014. Annual Monitoring Report 2012-13. Para 2.14

*"The SHMA 2014 (p87) explains that at around £24,700, the median income of Maidstone "workers" is about £5,000 lower than the median income of Maidstone "residents"."*

Maidstone Borough Council. 2014. Annual Monitoring Report 2012-13. Para 2.12

This is part of a long established pattern of employment and transport. London welcomes these workers and doesn't put up borders at the boundary with Kent preventing this daily migration to jobs in the capital. So why then should there be any argument about some current residents of London, priced out of the capital, taking up residence in Kent. There would be resentment if their introduction to the local housing market had the effect of excluding (either through price or through allocation) long standing local residents, but the whole premise behind Charthills Green is that it would increase supply, so first and foremost there would be more opportunity and better housing for local people.

- **Third age quality seekers** – typically empty-nesters, looking to release capital in their homes, either to bolster pension income or to transfer equity to next generation to allow them to buy a home.

  National demographic trends predict a significant increase in older people over coming decades, and Maidstone is no exception. Table 2 below shows the age profile of Maidstone projected over the next 20 years, where the proportion aged 65 or over increases from 18% in 2012 to almost 26% in 2037.


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**Table 2: Age profile of Maidstone population – projections 2012-2037**

| AGE GROUP | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 | 2036 | 2037 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0-4 | 6.2% | 6.2% | 6.2% | 6.2% | 6.1% | 6.1% | 6.1% | 6.1% | 6.0% | 6.0% | 5.9% | 5.9% | 5.9% | 5.8% | 5.8% | 5.7% | 5.7% | 5.6% | 5.6% | 5.5% | 5.5% | 5.5% | 5.4% | 5.4% | 5.4% | 5.4% |
| 5-9 | 5.8% | 5.9% | 6.0% | 6.0% | 6.1% | 6.1% | 6.1% | 6.1% | 6.1% | 6.0% | 6.0% | 6.0% | 6.0% | 5.9% | 5.9% | 5.9% | 5.8% | 5.8% | 5.8% | 5.8% | 5.7% | 5.7% | 5.6% | 5.6% | 5.6% | 5.5% |
| 10-14 | 5.9% | 5.8% | 5.7% | 5.6% | 5.6% | 5.7% | 5.8% | 5.8% | 5.9% | 6.0% | 6.0% | 6.0% | 6.0% | 5.9% | 5.9% | 5.9% | 5.9% | 5.9% | 5.9% | 5.9% | 5.8% | 5.8% | 5.8% | 5.7% | 5.7% | 5.7% |
| 15-19 | 5.9% | 5.8% | 5.7% | 5.7% | 5.7% | 5.5% | 5.4% | 5.2% | 5.2% | 5.2% | 5.3% | 5.4% | 5.4% | 5.5% | 5.6% | 5.6% | 5.6% | 5.6% | 5.6% | 5.5% | 5.6% | 5.5% | 5.5% | 5.5% | 5.5% | 5.5% |
| 20-24 | 5.4% | 5.5% | 5.5% | 5.5% | 5.3% | 5.2% | 5.2% | 5.1% | 5.0% | 4.9% | 4.8% | 4.7% | 4.6% | 4.6% | 4.6% | 4.6% | 4.7% | 4.8% | 4.8% | 4.9% | 4.9% | 4.9% | 5.0% | 4.9% | 4.9% | 4.9% |
| 25-29 | 6.2% | 6.2% | 6.2% | 6.3% | 6.3% | 6.4% | 6.4% | 6.4% | 6.3% | 6.2% | 6.1% | 5.9% | 5.8% | 5.8% | 5.7% | 5.5% | 5.4% | 5.3% | 5.3% | 5.3% | 5.5% | 5.5% | 5.6% | 5.6% | 5.7% | 5.8% |
| 30-34 | 6.3% | 6.4% | 6.3% | 6.3% | 6.3% | 6.4% | 6.4% | 6.4% | 6.5% | 6.5% | 6.6% | 6.6% | 6.6% | 6.4% | 6.3% | 6.2% | 6.1% | 6.0% | 5.9% | 5.8% | 5.7% | 5.6% | 5.5% | 5.5% | 5.5% | 5.6% |
| 35-39 | 6.2% | 6.0% | 6.1% | 6.1% | 6.3% | 6.4% | 6.5% | 6.5% | 6.4% | 6.4% | 6.4% | 6.4% | 6.5% | 6.5% | 6.6% | 6.7% | 6.7% | 6.6% | 6.5% | 6.4% | 6.3% | 6.2% | 6.1% | 6.0% | 5.9% | 5.8% |
| 40-44 | 7.4% | 7.2% | 7.0% | 6.8% | 6.4% | 6.2% | 6.0% | 6.1% | 6.1% | 6.2% | 6.3% | 6.4% | 6.4% | 6.4% | 6.4% | 6.4% | 6.4% | 6.5% | 6.5% | 6.6% | 6.7% | 6.6% | 6.6% | 6.5% | 6.4% | 6.3% |
| 45-49 | 7.8% | 7.8% | 7.7% | 7.6% | 7.4% | 7.2% | 7.0% | 6.8% | 6.6% | 6.3% | 6.1% | 5.9% | 5.9% | 5.9% | 6.1% | 6.2% | 6.3% | 6.3% | 6.3% | 6.3% | 6.3% | 6.3% | 6.4% | 6.4% | 6.5% | 6.6% |
| 50-54 | 6.8% | 6.9% | 7.0% | 7.2% | 7.4% | 7.4% | 7.4% | 7.4% | 7.2% | 7.1% | 6.9% | 6.7% | 6.6% | 6.3% | 6.1% | 5.8% | 5.7% | 5.7% | 5.8% | 5.9% | 6.0% | 6.1% | 6.1% | 6.2% | 6.1% | 6.2% |
| 55-59 | 5.9% | 6.0% | 6.1% | 6.2% | 6.3% | 6.4% | 6.5% | 6.7% | 6.8% | 7.0% | 7.0% | 7.0% | 7.0% | 6.8% | 6.7% | 6.6% | 6.4% | 6.2% | 6.1% | 5.8% | 5.7% | 5.5% | 5.5% | 5.6% | 5.8% | 5.9% |
| 60-64 | 6.0% | 5.8% | 5.5% | 5.5% | 5.5% | 5.5% | 5.6% | 5.7% | 5.8% | 5.9% | 6.0% | 6.1% | 6.2% | 6.4% | 6.5% | 6.6% | 6.6% | 6.5% | 6.4% | 6.4% | 6.2% | 6.1% | 5.9% | 5.8% | 5.6% | 5.4% |
| 65-69 | 5.8% | 6.0% | 6.0% | 6.1% | 5.9% | 5.5% | 5.2% | 5.1% | 5.0% | 5.0% | 5.0% | 5.1% | 5.2% | 5.3% | 5.4% | 5.6% | 5.7% | 5.8% | 6.0% | 6.1% | 6.1% | 6.2% | 6.1% | 6.1% | 6.0% | 5.9% |
| 70-74 | 4.1% | 4.2% | 4.3% | 4.5% | 4.7% | 5.2% | 5.4% | 5.5% | 5.5% | 5.4% | 5.0% | 4.8% | 4.6% | 4.6% | 4.6% | 4.6% | 4.7% | 4.8% | 4.9% | 5.0% | 5.2% | 5.3% | 5.4% | 5.6% | 5.7% | 5.8% |
| 75-79 | 3.3% | 3.4% | 3.5% | 3.5% | 3.5% | 3.5% | 3.6% | 3.8% | 3.9% | 4.2% | 4.6% | 4.7% | 4.8% | 4.8% | 4.8% | 4.4% | 4.3% | 4.2% | 4.2% | 4.2% | 4.2% | 4.3% | 4.4% | 4.5% | 4.6% | 4.8% |
| 80-84 | 2.5% | 2.5% | 2.5% | 2.6% | 2.6% | 2.6% | 2.7% | 2.8% | 2.9% | 2.9% | 2.9% | 3.0% | 3.1% | 3.3% | 3.5% | 3.9% | 4.0% | 4.1% | 4.2% | 4.1% | 3.8% | 3.7% | 3.6% | 3.6% | 3.6% | 3.6% |
| 85-89 | 1.5% | 1.4% | 1.5% | 1.6% | 1.6% | 1.7% | 1.8% | 1.8% | 1.8% | 1.9% | 1.9% | 2.0% | 2.1% | 2.1% | 2.1% | 2.2% | 2.3% | 2.4% | 2.5% | 2.6% | 3.0% | 3.1% | 3.2% | 3.2% | 3.2% | 3.0% |
| 90+ | 0.8% | 0.9% | 0.9% | 0.9% | 0.9% | 1.0% | 1.0% | 1.1% | 1.1% | 1.2% | 1.3% | 1.3% | 1.3% | 1.4% | 1.5% | 1.6% | 1.6% | 1.7% | 1.8% | 1.8% | 1.9% | 2.0% | 2.2% | 2.3% | 2.4% | 2.6% |
| All ages | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |

Source: Census 2011 - 2012-based Subnational Population Projections.
Table 2: Local authorities and higher administrative areas within England.
http://www.ons.gov.uk/ons/publications/re-reference-tables.html?edition=tcm%3A77-335242.

Changes in the pensions market mean more people entering the third age will experience financial stress. Others may experience family stresses as young adults priced out of the home ownership market are forced to live at home longer. One answer to each of these is the creation of an appealing place where residents can downsize their accommodation to release equity, either for pension supplementation or to lend to family members. A new community with good quality, well designed, affordable, energy efficient homes, where maintenance and heavy gardening are provided by others offers an attractive alternative to an asset rich but cash poor old age.

As set out above the headline market segmentation will be about young professionals, information managers, creatives and entrepreneurs, as in all probability they will do most to shape the place, but in concept and design Charthills Green will be a city for everyone because together they will make it work. The Garden City will celebrate diversity in all its forms but the defining characteristic of the population is that they will have chosen to share a new place dedicated to high quality modern living.

- *Good jobs, with good accessibility to London when needed*
- *Affordable, good quality housing, well designed and with good quality public spaces*
- *Good sustainability credentials*
- *Quality of education*
- *A vibrant and diverse new place with a high quality of life and good local amenities– Leeds Castle, two golf courses, the North Downs AONB and Maidstone, Canterbury and Tunbridge Wells nearby*

…….these factors have already worked at West Malling. Charthills Green has the potential to redefine garden city living as the sustainable and design conscious new urbanism for the 21st century.


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Figure 13:West Malling (comparator site of 2,750 homes 10 miles away)

## 4.5. Infrastructure.

One of the concerns often voiced about major new development is the slow delivery of infrastructure (British Social Attitudes Survey 2014). The developers of Charthills Green recognise this and so the financial modelling has allowed for the progressive, early delivery of infrastructure throughout the development period. Infrastructure imposes a heavy cost burden and so this needs to be managed but the phasing of delivery of infrastructure would always precede the designed capacity – in other words the next phase of infrastructure is always delivered before the demand outstrips the previous level of capacity.

The one exception to this is the first couple of years of occupation where it would not be feasible to provide a new school, health centre etc with only a very small number of people on site. At this early stage of development there will need to be reliance on capacity elsewhere in the locality. The development company would be willing to compensate for this – both funding for the temporary provision and also compensation for the first occupiers to reflect the lack of amenities. In this latter respect the development model discounts prices by 10% in year 1, 8% in year 2 and so on through til year 5. The community infrastructure planned for the new city follows current recommended standards to the full as set out in Appendix F.

The new infrastructure is not for the exclusive use of the new community. The high quality new facilities provide the ideal opportunity for interaction between long term residents of the area and newer residents so that the new local community takes root.


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Infrastructure doesn't just mean community buildings, schools and health centres. Transport will be a key element in the design of a free standing new city. Transport internal to the development will be primarily focussed on the day to day needs of the new residents, but the new city will need to be well connected to other nearby urban centres for employment, education, entertainment and all the other day-to-day needs of modern life. There will be a local "hoppa" bus to connect up the different neighbourhoods but the new garden city will also need to be well connected to the urban area and a Bus Rapid Transit system is proposed running on a circular route from the centre of nearby Maidstone through the centre of the new garden city and connecting up to the new Maidstone Parkway station. This will give residents of other parts of Maidstone fast and convenient access to the employment, education and leisure opportunities Charthills Green has to offer, and so spread a very tangible and everyday benefit among the much wider local population base.

Infrastructure also means the information technologies of the future. The market segmentation identified "young wealth creators" as a key group for the future of Charthills Green and their information technology needs will include superfast and widely distributed broadband. A new garden city would design such infrastructure in from the start, and the scale and density of the market would support the incorporation of the fastest technologies available. This would be far in excess of the capacity and speed of data generally available outside the major cities and the infrastructure would be available to all local people.

### 4.6. A working community.

Howard's model included local employment as a key element. Whilst the nature of employment has changed the new settlement should have a strong local jobs offer with a variety of employment opportunities within the city and easy commuting distance. The city will become the magnet once again, but this time for (a) new employer(s). This will be a new city with a diverse and talented population including young wealth creators, people who need rapid access to London for work, and experienced third age households. Companies will be drawn here by the joint attractions of talented people, a high quality and sustainable community, affordability and access to London. To borrow a phrase, "If you build it they will come"[10].

Recruitment of a major employer in the professional, financial or information services sector will be a high priority once the HS1 station is open. In addition, a combination of information age home-working (and support for this) and artisan crafts would blend seamlessly into the grain of the development, although the everyday needs of the community, from hairdressing through to car repairs, would also need to be provided in reasonable proximity.

Homes should therefore be designed with flexibility for home-working and high levels of ICT connectivity built in, but the Garden City should have a business hub providing business support services through to office and meeting space to allow enterprises to grow and offer employment. Preferential terms should be offered for Garden City residents. This may need some facilitation but start-up business concessions are already available through Regional Growth Funds.


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The development of the new settlement will take upwards of 20 years concentrated work in one compact location and so presents a major opportunity for local employment and the provision of a major training centre for construction skills. The simplicity of arts and crafts inspired domestic architecture lends itself to modern methods of construction, and this could facilitate the development of a centre of excellence and training. Equally, traditional skills are still in strong demand and so the training initiative could have specialisms in MMC and traditional craft based skills, which would assist the local heritage sector, together with training for self-builders.

Timber frame production in Germany
Photo courtesy of Andrew Ogorzalek of PCKO, taken on DTI trade mission

Efficiency in action - BALCO factory in Sweden
Photo courtesy of Peter Chlapowski of PCKO


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## 4.7. Design principles.

> *The pioneers of the Garden City movement saw Garden Cities as crucibles in which the best of the past was fused with the opportunities of new technology and progressive to fulfilling the ambition encapsulated in the Garden City principles.*
> *(TCPA 2014a p.2)*

If the character of a place is a product of landscape and history then the area to the south-east of Maidstone draws strong inference from its agricultural origins. There are a number of strong symbolic elements that would resonate locally, including oast houses, the iconic Wealden type hall houses (whose origins can be traced back to the vale to the South East of Maidstone in the late 14th century[11]), and a landscape shaped by orchards enclosed by tall shelter belt hedges. These features of the natural and built environment contribute a number of visually strong elements that can influence designs which reflect and respect local character and preferences.

Good design is well mannered. It should not seek to slavishly copy or emulate, but instead should draw inspiration from that which is appreciated, and use it to create new and special places that celebrate local tradition and custom whilst meeting contemporary needs and lifestyles.

If Maidstone's sources of inspiration are the oast houses, Wealden hall houses and tall hedges then these can become key elements of the design vocabulary of a new garden city. Key elements include the frame, the shape, the roof pitch and tiles (both roof coverings and tile hanging).

Their position in local design means they will not succumb to pastiche, and a new garden city cannot seek to replicate such influences at a 15,000 home scale. Rather, the key design elements need to be picked out and incorporated in a range of appropriate ways in the architecture of the new buildings and the definition of space and green routes through the city. Prominently located buildings, and those framed by long distance views should be particularly considered for ways to work with the traditions and cultures of the area to produce a new but well mannered architecture of the garden city.

Equally, a city of 15,000 homes needs diversity of styles and designs if it is to be visually appealing and architecturally legible. Design coherence does not dictate uniformity, although it does require thought to the balancing of differences of style, from density, scale and massing through to design detailing and inter-relationships. There would thus be a hierarchy of places and spaces, with important buildings of more imposing style and prominent use of these elements positioned more prominently and domestic buildings of lesser scale and simpler design, occupying less prominent locations.

The original garden cities included variety of design effectively, defining public space and neighbourhoods by clear design themes. Thus, Letchworth today has Heritage Character Areas and Modern Character Areas. "*Each area has been defined through a detailed examination of characteristics relevant to individual homes and streets, including the date of the property, house style, detail and materials, road layout,*


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*parking, house orientation, the building line, trees and verges, front gardens, boundaries and density*". (Letchworth Garden City Heritage Foundation (2013), p.3)

Charthills Green will be a new garden city which will set the standard for design that others will seek to emulate. This is because the design process will engage local people and through them a special place which reflects and respects its natural and heritage context will emerge. Through those attributes it will be a place that residents and the wider local community will be proud to call home, and which others will admire.

The city will comprise three closely interconnected settlements, each sub-divided into a number of walkable suburbs of approximately 1500 homes. These walkable suburbs will, wherever possible, be moulded to the original pattern of fields so that the tall shelter hedges can be retained as part of the character and the ecology of the area. In this way the heritage of the area is respected and provides a framework for architectural differentiation from one walkable suburb to another while the hedges form natural routes for ecology, nature trails, pathways and cycle-ways[12]. This network of green routes through and within the neighbourhoods would become, over time, a defining characteristic of the city, emphasising the lower carbon and healthier lifestyle ideals of the garden city. Positive development and use of this green infrastructure would constitute a form of offsetting of the carbon impact of the city.

As with the original garden cities there will be a number of design areas which will give identity to neighbourhoods and design legibility to the city. Density and height will vary according to land use and population characteristics. Prominent locations will be more intensively used, while quieter residential areas will have more domestic scale and character of buildings. Thus, intensity of use would build up towards the centre of each settlement, where important community facilities would be located, such as schools, shops, a health centre and a community centre. The neighbourhoods would also define the public transport routes, so that a hoppa-bus or similar local transport system would link up the edges of the different neighbourhoods but within the neighbourhood roads would be designed to Homezone principles, surfaced with permeable block paving to discourage speed (whilst also allowing for more natural sustainable urban drainage systems), with speed limits moderated and, in doing so, encouraging healthier and more sociable alternatives.

Some of these approaches informed the initial masterplanning for the garden suburb proposed by Golding Homes, with masterplanning carried out by PRP Architects. These designs were a first attempt to convey the possibilities for the area, creating an overall spatial plan and within it definable neighbourhoods. Any such masterplan naturally commences with an analysis of the key design opportunities and constraints and identification of reference points.

Figure 14 below shows this illustrative masterplanning when applied to the original garden suburb proposal which it is now envisaged would form a third of the overall settlement.


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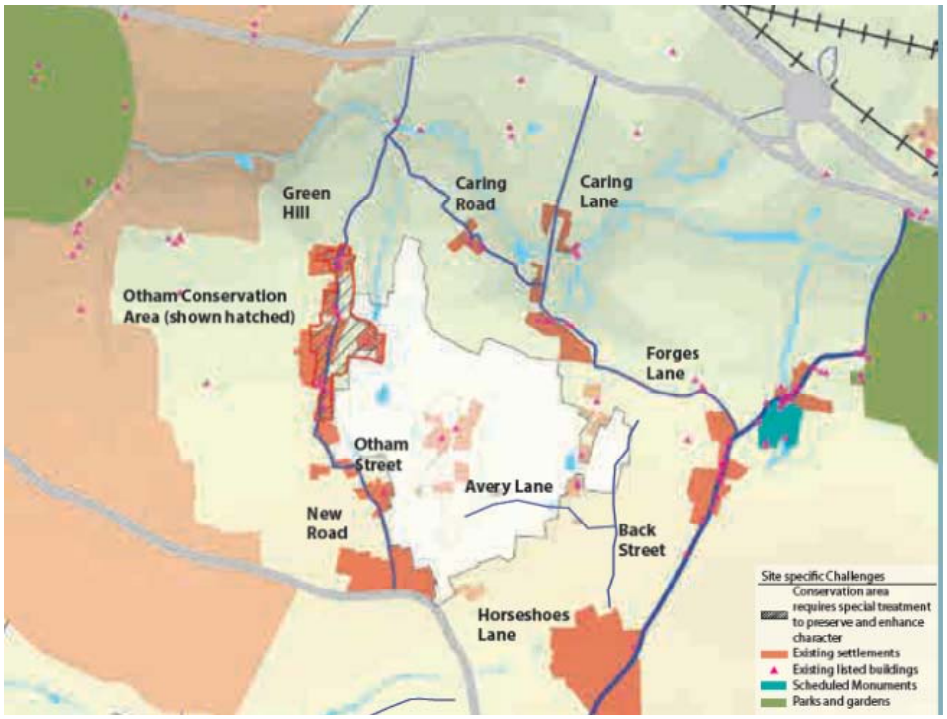


Figure 14:Environment and heritage context of Charthills Green

Figure 15 takes this further and shows an indicative route for a new spine road through the development, including an advanced public transport network serving the whole garden city and connecting to the local, regional and national transport networks. This is supplemented by a circular route which connects up the walkable suburbs and defines suitable locations for primary and secondary schools, retail facilities, a local enterprise hub, a health centre and a community centre.

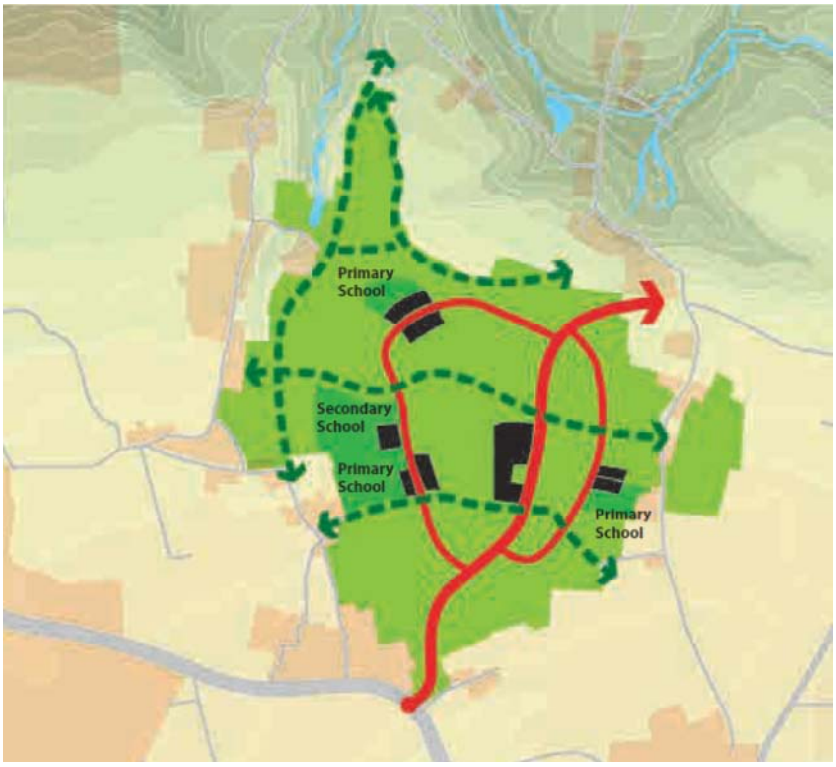


Figure 15: Indicative layout of one section of Charthills Green


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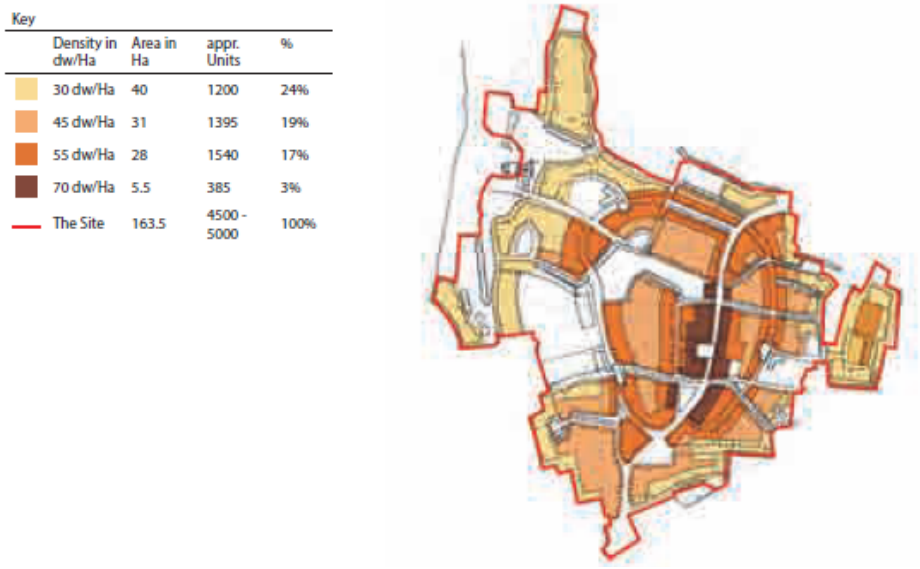
This has then been translated into plans showing the approximate density of development. In this very initial iteration a yield of 43.5 dwellings per hectare was achieved. This is a garden city and so there would naturally be a higher proportion of green space (and consequently reduction in density) expected. The financial modelling (see section 5) assumes an overall 33% amenity and open space ratio, which translates into a density of 50 dwellings per hectare, and which is felt to be achievable within the design concepts of the garden city (Figure 16).



Key

| | Density in dw/Ha | Area in Ha | appr. Units | % |
|---|---|---|---|---|
| | 30 dw/Ha | 40 | 1200 | 24% |
| | 45 dw/Ha | 31 | 1395 | 19% |
| | 55 dw/Ha | 28 | 1540 | 17% |
| | 70 dw/Ha | 5.5 | 385 | 3% |
| | The Site | 163.5 | 4500 - 5000 | 100% |

Figure 16:Illustrative density zoning of one section of Charthills Green

The design was then developed to give an illustrative plan for the first phase which now reveals an open and green character to the development, consistent with the garden city ideals (Figure 17).


Figure 17: Illustrative layout of one section of Charthills Green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As stressed earlier the design of the new garden city will be determined in an iterative enquiry by design exercise. Engaging residents to create places they have a stake in, and which reflect shared ideals, delivers higher levels of satisfaction. Enquiry by Design is at the heart of good design, engaging and harnessing community spirit and ambition in the way their shared space is created. This involvement of local people extends into design coding exercises to establish the framework for designing the buildings and shared spaces.

Many would regard the Arts and Crafts period as a high point in both domestic and public architecture. From Letchworth and Welwyn Garden City through to Hampstead Garden Suburb the quality of design stands out.

It is necessary for the purposes of this essay to describe the vision for Charthills Green and so an attempt is made using a personal interpretation of designs which would prove popular also suitably grace the area. As with the name of the settlement the design influences start with local tradition and custom, and here the key design elements of the Wealden hall houses shine through, namely the strong and well articulated frontage, the prominent expression of the frame and the deep and steeply pitched roof. These features are well demonstrated in a collage of photographs of traditional houses of the area (Figure 18).

**Figure 18: Properties illustrative of local heritage and tradition**
Source: Images taken from English Heritage online database at http://www.imagesofengland.org.uk/


© Charthills Green Ltd

This type of building is widely admired for its quintessential “English-ness”. They are, arguably, an early ancestor of the Arts and Crafts houses popularised in Letchworth and other contemporary garden cities as they were unequivocally hand built using traditional crafts. However, buildings of this type, which were built in town and country locations, were never built at scale and any attempt to replicate would clearly be inappropriate on many different levels. We can however employ some of their design elements in a modern and forward looking interpretation of styles which reflect the best of local character.

This approach has already been taken in Germany where the impressive medieval Fachwerk houses have been re-interpreted in very contemporary style by modern manufacturers such as Huf. Figure 19 below shows a range of house types which, whilst clearly not in the English tradition do employ common elements in the form of the strong and well articulated frontage, the prominent expression of the frame and the deep pitched roof which come together in an extremely pleasing contemporary style. These are clearly not everyday buildings for a mass market, but as iconic buildings gracing important locations they convey a style which could over time become a signature for the area.

**Figure 19: Ideas for iconic designs for prominent locations**

Source for figures 15 to 18 : http://www.huf-haus.com/en/the-huf-house/gallery.html

Figure 20 shows further examples in this style, for a wider range of situations. The properties at the top left are more conventional and could be built as either single family housing or housing for single sharers while the block at the lower right is


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designed specifically as multi-family housing (for example the young wealth creators working for a major corporation, or third age households).

Figure 20: Ideas for iconic designs for prominent locations (2)

There would no more be 15,000 Huf houses than there would be 15,000 Wealden hall houses but just as the Wealdens stand out and define the area, and are a matter of pride to local people, these modern interpretations would be the statement buildings of the future. The quality of design stands out. Their environmental performance both in construction and in use is of a very high level. Their clean and ultra contemporary lines are a perfect metaphor for the future of the city. These are buildings that would send the right message to the young wealth creators and professionals, and which could easily attract third age buyers with the promise of de-cluttered and streamlined living in high quality and low running-cost new homes.

It is not just the housing that will define the area. Many commercial and public buildings by their nature command more prominent plots, and their architecture presents a real opportunity to set a standard for design as budgets are often more generous. The community buildings will give access to the widest range of people so everyone can share in the highest quality of design. Companies relocating to Charthills Green will be able to commission designs which meet their needs and make the right statements about their organisation. Figure 21 below showcases designs for offices and public buildings which would suit a range of high profile locations for the new garden city.


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Figure 21: Office and public buildings using complementary designs

Alongside these iconic buildings there would need to be a range of house types that suited the needs of a wide range of residents. Not everyone would aspire to live in a Huf house, nor necessarily feel comfortable in doing so, but the garden city will need choices and alternatives that remain true to the local design influences, with high levels of sustainability. Figure 22 shows several such house types where the combination of roof pitch, weatherboard cladding and a sympathetic choice of facing brick respond to other local stimuli, but the garden city would commission a range of options through design competitions to bring forward the best in contemporary design.


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**Figure 22: Alternative designs responding to local tradition**

Source: Images supplied by PCKO Architects

Whilst the enquiry by design process is there to engage local people it is only fair that there is a voice for the future residents as well, including those who may move to the area. Charthills Green will therefore be designed with new lifestyles in mind from the outset. The "young wealth creators" and the "third age" empty nesters will be alongside the design team from day one, literally in some respects and metaphorically in all. The city will be designed uncompromisingly with their needs and lifestyle preferences in mind. It will be a city designed around people who prefer to cycle, walk and use public transport for the opportunities it brings, both social and sustainable. The green through routes, cycle routes and walking and jogging pathways will be the living arteries of the community and so they will be designed in at the start.

As well as being attractive the new homes need to be designed to adapt to changing demographics and lifestyles. Smaller and older households will have lower child density. This in turn leads to higher density areas (measured in dwellings per hectare) and related issues of traffic management and parking, and so all the more important that walkable suburbs are designed to support local work and local amenities.

Good design goes beyond aesthetics. It is about functionality and liveability. Well designed homes reflect and provide for the needs of a broad cross section of society and so Lifetime Homes and Building for Life standards should be built into local design codes for affordable homes with private developers encouraged to follow suit. We will need new house types to avoid the impression of crowding consequent on the trend to smaller properties. We will need flexible house types to accommodate future changes in demography. Good architects relish these challenges and constantly innovate to create better homes.


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Far more than conventional development garden cities are about sense of place. That would predominantly be addressed through the incorporation of significant elements of green space, from the local neighbourhoods defined by the original hedgerows through to the inclusion of local play space, allotments and meeting places and the creation of impressive open spaces both within and between the different suburbs. The question of visual identity can, however, be addressed in a number of subtle ways. House styles, planting schemes and street furniture all play a part. Playful design cues can also help make the place and imbue a special quality and identity. For example the use of stylised naming for streets, public buildings and even individual properties, where anything from names and imagery through to distinctive styles of lettering and imagery (see Figure 19 below) creates a local place.


Figure 23: Creating a visual identity

The nature of these types of design influences is such that they readily engage local people. If such a high quality design and "people centred" planning approach to new communities is adopted the debate about garden cities then becomes how "we" build rather than whether "they" build.

## 4.8. Adding value to the local area.

Taken together the substantial improvement in facilities, particularly transport and the wash-over effect of a concentration of high quality housing, would inevitably raise values in the locality. It is unlikely this would prejudice affordability, but rather the added value would benefit local residents[13] and at the same time improve the prospects of inward investment and regeneration for a significant concentration of affordable homes in the south eastern suburbs of Maidstone, through improved land values assisting appraisals for regeneration schemes.

Maidstone BC (and hence the wider public) would also benefit through improved accessibility to the nearby Parkwood trading estate[14], generating higher rents on commercial space because of improved connectivity. This would also remove heavy goods traffic from the suburban road network.


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## 4.9. A sustainable place.

A garden city in the garden of England really does have to demonstrate exemplary sustainable credentials. This is recognised and has been incorporated into the modelling. There are a wide range of issues to consider and it is important to do so systematically and rigorously, and submit to benchmarking against the highest normative standards. Charthills Green will therefore base its sustainability policies and offers on the New Communities Group work of the TCPA.

There are a number of key dimensions to be addressed, and starting with the two principal carbon intensive aspects of modern day-to-day life namely housing, and the energy consumed in its production and use, and also transport. In terms of housing, as well as being part of the whole low-carbon new community, the new homes should meet the following standard as minimum (all derived from the TCPA's New Communities Group recommendations – see Figure 24):

***Housing Sustainability Standards***

- *Zero Carbon Standard and minimum Level 4 of CSH*
- *Building for Life silver standard*
- *Lifetime Homes Standards and space standards for all affordable homes, family houses and homes designed for older people*
- *Real time energy monitoring system*
- *Real time public transport information system*
- *Super high speed data connectivity*

**Figure 24: Housing minimum sustainability commitments**

Managing and reducing the carbon impact of the development also requires specific consideration of transport, both within the site and also the connectivity to the wider local, regional and national transport networks.


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***Transport sustainability standards***

1. *Homes should be within ten minutes' walk of:*
   a. *frequent public transport and*
   b. *neighbourhood services.*
2. *There will be a maximum walking distance of 800m from homes to the nearest school for children aged under 11, except where this is not a viable option due to natural water features or other physical landscape restrictions.*
3. *Planning applications will include travel plans which demonstrate:*
   a. *how the town's design will enable at least 50 per cent of trips originating in new communities to be made by non-car means, with the potential for this to increase over time to at least 60 per cent;*
   b. *good design principles, drawing from Manual for Streets, Building for Life, and community travel planning principles;*
   c. *how transport choice messages, infrastructure and services will be provided from 'day one' of residential occupation, and*
   d. *how the carbon impact of transport in the new community will be monitored, as part of embedding a long term low-carbon approach to travel within plans for community governance.*
   e. *options for ensuring that key connections around the new community do not become congested as a result of the development, for example by extending some aspects of the travel plan beyond the immediate boundaries of the town, and;*
   f. *significantly more ambitious targets for modal share than the 50 per cent (increasing to 60 per cent over time) mentioned above and for the use of sustainable transport.*
   g. *there will be sufficient energy headroom to meet the higher demand for electricity, for ultra low carbon vehicles (i.e. electric and fuel cell powered) and;*
   h. *the scheme will not add so many additional private vehicles to the local road network that these will cause congestion.*

**Figure 25: Transport commitments**

There are a range of other environmental and social sustainability dimensions for a major new development and so, drawing from the recommendations of the TCPA's New Communities Group, a 10 point plan will be proposed to the local community, as set out in Figure 26 below.


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### *Charthills Green 10 point sustainability action plan*

Charthills Green will develop plans which embody high standards of sustainability across the development, and with particular focus on housing and transport infrastructure.
It will also commit to the following 10 point action plan in its first year:

**Biodiversity**

1. A detailed survey of the area will be undertaken in the 2nd half of 2015 to develop a strategy for conserving and enhancing local biodiversity. The process will engage the local community as widely as possible, particularly through local schools who will be involved in planning and developing new habitat for any necessary translocations.

**Landscape and Historic Environment**

2. A key theme is the way that history and tradition can and should inform the future development. The area local to the site(s) has a rich history and a number of important heritage assets although these are almost all outside the specific area for development. A landscape and historic environment assessment will be undertaken in the 2nd half of 2015, engaging extensively with schools and the local community.
3. Proposals will be brought forward to identify, document and exhibit local history, with specific evidence on interpretation, for local schools so that the importance of heritage is reinstated in popular thinking. Leeds Castle is ideally placed to play a central role for long term exhibition of local history and how it has shaped the area.
4. Charthills Green will earmark a portion of the Community Dividend fund for a programme of support for owners of important listed buildings in the local area, underwriting the VAT on repairs.

**Energy**

5. Charthills Green will aim to be zero carbon meaning that taken over a year the net carbon dioxide emissions from energy use within the buildings on the development as a whole will be zero or below. The initial masterplanning and planning applications will demonstrate how this will be achieved.

**Green Infrastructure**

6. 30% of the land will be allocated to green space, of which at least two thirds should be public including a network of well managed, high quality green spaces, which are linked to the wider countryside.
7. Each neighbourhood will have adequate land given over to allow local production of food, with allotments available on nominal rents.
8. Neighbourhoods will be designed and planned to support healthy and sustainable lifestyles, particularly by creating delightful public places to encourage interaction and play, and with cycle routes and pathways encouraging walking and cycling over car use.

**Waste**

9. Develop a sustainable waste and resources plan, covering domestic and non-domestic waste, which:
    a. sets targets, for residual waste levels, recycling levels and landfill diversion, as well as demonstrates how they will be achieved, monitored and maintained.
    b. demonstrates how construction process waste will avoid being sent to landfill (exception for the materials for which it is the least environmental damaging solution).

**Water**

10. Set ambitious targets for water efficiency starting with a water cycle strategy that will:
    a. set measures to limit additional water demand from both new housing and new non-domestic buildings
    b. demonstrate that the development will not result in a deterioration in surface water or ground-water arising from the new community,
    c. set out measures for improving water quality and avoiding surface water flooding from surface water, groundwater and local watercourses; and
    d. incorporate widespread sustainable drainage systems (SUDS) and avoid unnecessary connection of surface water run-off into sewers.

*The above commitments are based on the TCPA's New Communities Group recommendations.*

**Figure 26:Charthills Green 10 Point Sustainability Action Plan**

As also recommended by the TCPA's New Communities Group, Charthills Green will ensure that a detailed plan is produced for the delivery of the new community, and ensure it is kept to, including a detailed timetable of delivery of neighbourhoods, employment and community facilities and services – such as public transport, schools, health and social care services, community centres, public spaces, parks and green spaces and biodiversity. Figure 27 sets out key deliverables for this plan.


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***Transition support and Community Development***

1. *Investment in community development and third-sector support, which enhance integration with the wider community*
2. *The specific metrics which will be collected and summarised annually to monitor, support and evaluate progress in low carbon living, including those on zero carbon, transport and waste;*
3. *A governance transition plan from developer to community, and*
4. *How carbon emissions resulting from the construction of the development will be limited, managed and monitored*

**Figure 27: "Transition" investment to support the local community**

## 4.10. Choice, diversity and affordability.

The new garden suburb would offer the ability to meet local housing needs without overburdening the urban area or the surrounding villages.

The original garden cities sought to make the benefits available to both home owners and renters. Housing markets have moved on and the aspiration for home ownership is much higher but it is important that the benefits of a modern garden city extend over different income groups. The tenure should therefore meet locally determined proportions of private and affordable housing and, through local housing associations, models of flexible tenure should be developed to allow incremental increase or reduction in equity participation to match household needs and circumstances. The affordable homes must be interspersed within the private, and the need for intermediate and flexible housing options require that market rented housing is offered.

The opportunity for households to build their own home fits in well with the sustainability and enterprise aspects of the garden city. Whilst the overarching design codes will have to be followed the ability to self-build will attract enterprising households. Self builders will have, or develop, skills that are trade-able with others in the new community, taking on work packages for neighbours on a reciprocation basis. The garden city could even offer preferential access and terms for (serviced) self build plots for householders and immediate family from the area as part of the “local offer”.

## 4.11. Creating and sharing value.

A higher quality place which is well connected will deliver better values and consequently better return on investment. Higher standards of design of both private and public realm will drive higher levels of demand and hence increase revenue generation. If well connected to major regional centres this would give a viable alternative lifestyle and so improve values. Song and Knaap concluded that “*holding other attributes constant, properties located in a neighborhood with “new urbanist” features command an estimated 15.5 percent premium*” (Song and Knaap, 2003, p.20)[15]. It is not possible to directly transpose results from new urbanist developments in US to garden cities in the UK but the overall principle of better designed and better connected districts carrying a significant premium would be expected to hold good.

These ideas are summarised in Figure 28 below.


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***Design Principles***

- *Designs reflecting and respecting the character and traditions of the local area*
- *Masterplan drawing inspiration from the local area, developed through Enquiry by Design, for overall design coherence.*
- *Distinctive character for each neighbourhood*
- *Increased provision of civic space*
- *Higher levels of investment in public realm*
- *Neighbourhood centres based around a primary school with multi-purpose use designed in from the start*
- *Well resourced higher order centre for the Garden City.*

**Figure 28: Design principles**


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WOLFSON ECONOMICS PRIZE MMXIV

# Funding and delivery

*'My dear boy, I hope you have a pleasant trip; but you are wasting your time. If you wait for the authorities to build new towns you will be older than Methuselah before they start. The only way to get anything done is to do it yourself."*

(E F Howard quoted in Osborn, 1942, Preface)


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# 5. Funding and delivery.

## 5.1. The delivery model.

The scale and duration of the undertaking, together with the need for a cohesive approach to the overall master-planning, infrastructure and delivery, will require an overarching developer. Whilst private developers are doubtless capable[16], the proposals to return a significant package of benefits to the local community will require a new entity with public interest principles hard wired into its governance and operations.

The first two garden cities were delivered by private subscription but the need for a significant expansion of housing in the post war period led to the evolution of New Towns which were substantially publicly funded. Enabling legislation was passed which provided for the formation of new town corporations to raise the funding and provide the governance. That legislation is still on the statute books in the form of the New Towns Act 1981 (NTA), and so offers a possible route to funding and governance of a new generation of garden cities.

This is powerful enabling legislation, and it is backed up by specific powers for the formation (s. 3) and effective governance of a new corporation (Schedule 3), exercise of planning control (s.7(2)) and acquisition (compulsorily if required) of land (s.12).

*"If the Secretary of State is satisfied, after consultation with any local authorities who appear to him to be concerned, that it is expedient in the national interest that any area of land should be developed as a new town by a corporation established under this Act, he may make an order designating that area as the site of the proposed new town".*

*New Towns Act (Section 1, para 1)*

These powers are widely drawn but to ensure consistency with the principles of Localism any such organisation must be predicated on local consent. Forming new bodies whose powers could over-ride local government would not sit easily with central or local government. Any such proposals would therefore need to win solid local support.

If the NTA route is adopted there would need to be a suitable development vehicle that is commercially oriented in its skills and practices, but publicly controlled to retain the benefits for future community use. The constitution would need to be framed in such a way that the powers of the Board are defined and limited, accountability clearly stated and the distribution of any surpluses through the life of the body and at its demise clearly controlled.

A Garden City Development Company (GCDC) possibly promoted by and under the auspices of a Local Economic Partnership (LEP), is one possibility. Such an organisation should work for a discounted rate of return rather than normal commercial developers expectations. This is appropriate both to recognise the public interest nature of the organisation and also the reduced risk (through preferential terms and


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guarantees). It is necessary to generate a rate of return, specifically to cover risk in what is a major and long term investment, but any margin over risk should accrue to a predetermined balance of interests, including the local community and, as proposed here, the original landowners.

As soon as there is a firm proposal for a garden city to be taken to consultation the preliminary steps towards the formation of a GCDC should be instigated. There will need to be a shadow Board to manage the process through consultation and this will require both a credible organisation and Board, and visibility in public debate.

The delivery vehicle has so far been described as the Garden City Development Company (GCDC), for convenience. This describes its purpose but not its fundamental nature or governance arrangements. What is proposed is a Community Interest Company (CIC). A CIC shares many characteristics of, and enjoys the benefits of, limited company status but is established entirely for the benefit of the community rather than its members or shareholders. "*A CIC is first and foremost a limited company carrying on a social activity and must be viable as such. …. As a limited company a CIC must act as such and comply with company law generally as well as the special CIC legal requirements*" (Office of the Regulator of Community Interest Companies. 2013 p6).

The CIC form of company was introduced in 2007 and has become an established model for organisations which trade with a social purpose ("social enterprises") or carry out other activities for the benefit of the community. There are different types of CIC, namely companies limited by guarantee, or public or private companies limited by shares, which provides options as to the most appropriate form to use in this situation. Recommendations are made in section 8 for the formation of a Garden Cities Task force, one of whose objectives should be to report on the suitability of these different forms of governance for garden city development companies.

The regulatory framework for CICs provides reassurance that companies only operate to serve their defined community purpose (with clearly established community interest tests), which gives reassurance to members, investors and the wider public. Within this however there are acceptable levels of payment to Directors and also a limited ability to pay dividends. Both of these are attractive as the responsibilities of Directors of a GCDC would be substantial and it will be necessary to recruit a very high calibre Board with high level professional and commercial skills, and the time commitment involved implies that a payment of a Director's fee would be appropriate.

In addition, whilst there is provision for limited distribution of assets through dividends the asset lock provisions operated by the regulator ensure that the assets and profits will primarily be devoted to the benefit of the community. Whilst the primary purpose of the CIC would be to develop the new garden city and ensure effective provision of public services (of a very wide range) and long term management of the public realm, the ability to pay modest dividends could be an important element of securing buy in from the original landowners and the wider local community through share ownership. There are clearly prescribed limits to this (see Figure 29 below) but mechanisms are proposed which work within this to ensure equitable treatment and community participation whilst remaining within the community interest test.


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***The three elements to the dividend cap***

*The Cap has three elements:*

*The maximum dividend per share limits the amount of dividend that can be paid on any given share. The limit for shares issued on or after 6 April 2010 is 20% of the paid-up value of a share.*

*The maximum aggregate dividend limits the total dividend declared in terms of the profits available for distribution. Currently, the limit is 35% of the distributable profits.*

*The ability to carry forward unused dividend capacity from year to year to a limited extent. Currently the limit is 5 years.*

*Office of the Regulator of Community Interest Companies. 2013 p.14*

**Figure 29: CIC Dividend cap limits**

A CIC annual report will be required to communicate how the company has operated within its stated aims and objects, and this would ensure transparency and accountability to stakeholders and the wider community.

Most importantly the CIC would be able to raise funds either through conventional debt or the issue of Bonds to enable it to deliver its functions. It would also allow compensation to landowners or local property owners to be converted into higher interest bonds, allowing measured and tax efficient release of funds.

The CIC would be liable to Corporation Tax like any other company, and so has some disadvantages compared to charities who benefit from tax exemptions, but the operational freedoms, conventional and business focussed company structure (and regulation) and the likelihood of attracting high calibre governance make this a price worth paying.

In practical terms the CIC would operate commercially, providing services to the local community and then distributing any annual operating surpluses as dividends as appropriate (and within the permitted purposes) to investors, with the balance potentially paid as grant in aid to local charitably constituted organisations (which happen to do some of the things which overlap with the CIC's area of operation).

An alternative would be for the CIC to pay deferred compensation for land once it is in profit, and then spend the balance on providing services to the community at a level so as to avoid any serious tax liability, keeping back enough to provide a safety margin – or again, gift aiding to local charities related to the Garden City.

All of the above is, of course, wholly consistent with the neighbourhood planning and the local consent principles that underpin the NPPF and the central tenet of this paper.

In operational terms the arrangements this would give rise to are shown in Figure 30 below. To paraphrase, the GCDC would borrow commercially and also from the PWLB (for infrastructure) via the local authority. It would acquire the land and develop the masterplan before providing key infrastructure and selling land on a managed basis to selected developers. The developers would secure detailed planning


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permission and construct the development, including any affordable housing, but the provision of other infrastructure and public benefits would remain with the GCDC. Housing associations would provide the affordable housing (either through s.106 or conventional land and build contracts). The local authority would provide nominations for the affordable housing and also act as a conduit for PWLB funding for infrastructure. If all of these arrangements sound relatively familiar it is because individually they are, and they follow the maxim of not taking on risk or uncertainty where there is no need to do so. There is a degree of innovation in the overall packaging of the project financing but the attraction of tried and trusted methods operating through a CIC company remains strong.

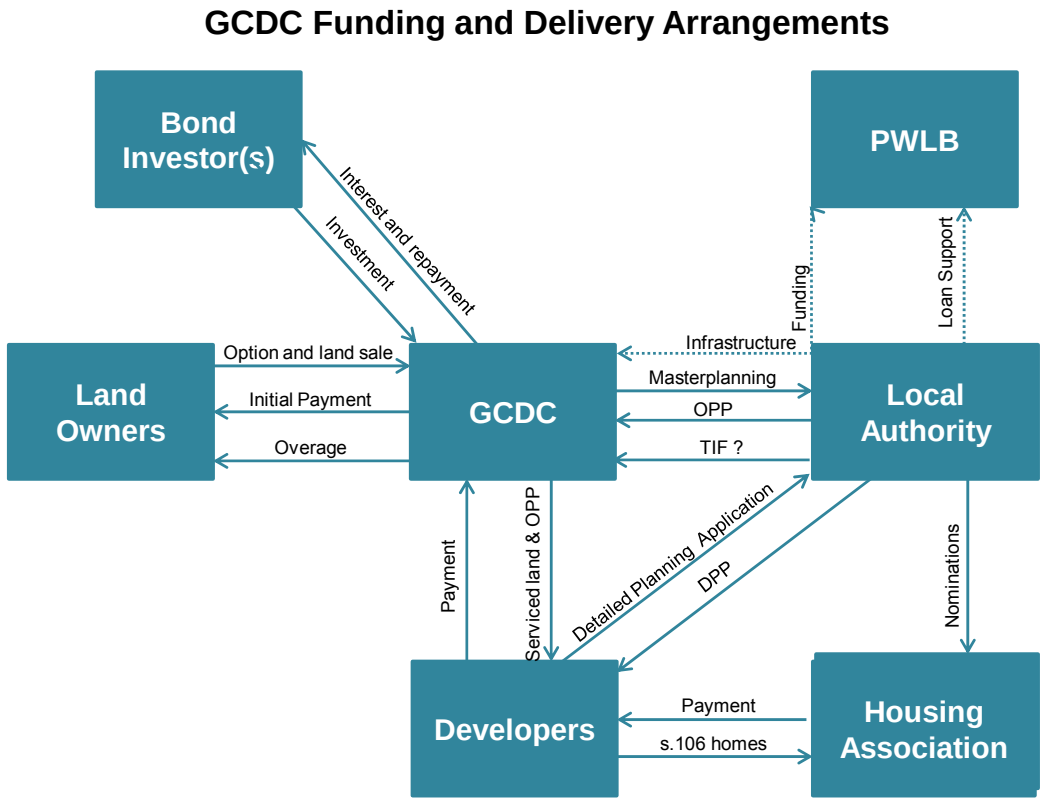


Figure 30: GCDC Funding and Delivery arrangements

The GCDC will need to organise the delivery of the enabling infrastructure and introduce developers for both housing and commercial investment. It is not necessary for the delivery vehicle to undertake all development itself but it will need to undertake land assembly, master-planning, land allocation and infrastructure provision, and guide the new garden city to completion. In order to achieve this the GCDC would need a suite of appropriate objects and powers, including:

- The power to designate land within the boundaries
- The power to borrow money.
- The power to prepare a Masterplan which, after Public Inquiry and approval by the Secretary of State, would be the statutory development plan,
- The power to grant or refuse planning permission, and


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- The power to compulsorily purchase land if it could not be bought by voluntary agreement;
- The power to buy land at current use value (or such higher price as may be approved in subsequent legislation

(Freeman, 2014)

## 5.2. Securing the land.

Given the scale and diversity of land ownership likely there is significant scope for frustration of the development process either out of protest or for commercial advantage and so the GCDC would have to be prepared to use CPO powers if required, although acquisition by agreement is always preferable.

Agricultural land ownership is different to the property investments householders make. Domestic property values are very high for the land occupied, and have shown significant price appreciation. By contrast agricultural values are low, and price change has been much slower. Agricultural land may well have been in the hands of the same families for generations, and past investment in tending to and improving the land and capital investment in premises, plant and equipment may have been considerable. Taken together these factors justify differential treatment between agricultural and residential compensation.

Given that a consent for residential or commercial development would be less likely in the absence of a garden city proposal it would be unfair to allocate all of any uplift in land value to the landowner. Equally however, it would be unfair to purchase land at (a multiple of) existing use value and not allow a sharing of the enhancement in value. The proposition to land owners would therefore be purchase of land at a multiple of agricultural value (or proportion of residential development value), plus overage or, failing agreement, to proceed by compulsory purchase order (CPO).

Agricultural land value would be equalised over the whole development area[17] so that landowners are treated equitably irrespective of whether the land they contribute were used as high value residential or low value open space or community use. This should be supplemented to cover the costs of business relocation including fixed plant and equipment. This would compensate for the inconvenience and disruption, allow purchase of replacement land for continued farming and also share an appropriate part of the potential uplift consequent on grant of residential consent.

This has been formulated in the financial modelling as a flat rate £100,000 per acre (which compares to agricultural land values of somewhere around £10,000 per acre), plus recovery of fixed investment in the land. On top of that an overage payment per acre is proposed using a proportion of the annual surplus of the CIC via its permissible dividend. The value of the dividend is obviously dependent on the financial performance of the company, and so cannot be guaranteed, and so the model assumes a base figure starting at a low level once the development cash flow moves positive, rising annually with inflation. The resultant land price is modelled, for all 20 scenarios which have been tested, in Figure 31 below.


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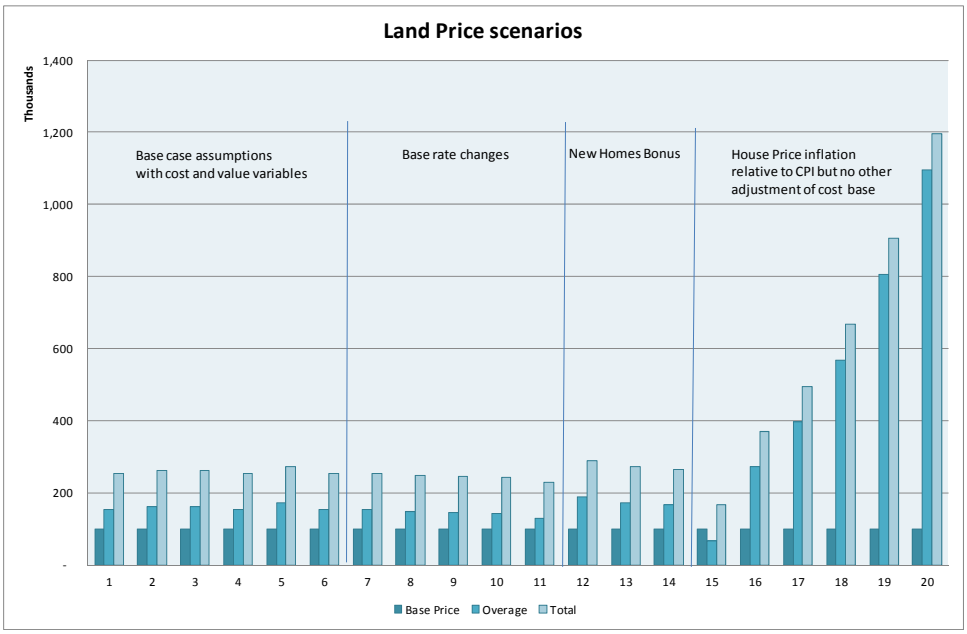


**Figure 31: Land prices derived from various scenarios modelled**

The land values generated are a large multiple of the original or current use value as agricultural. This should be more than sufficient to persuade any reasonable landowner, generously compensating them and allowing them to relocate their business, growing and improving it in the process, or otherwise use their compensation. If it were not sufficient to persuade them then the option to instigate compulsory purchase should not be dismissed.

CPO compensation raises the issue of hope value, with the Myers vs Milton Keynes Development Corporation case, and concerns about Human Rights implications. This raises a practical question, namely whether statutory compensation plus any fair assessment of hope value would exceed the compensation proposed above.

The TCPA argue that the designation of a new town would allow the Secretary of State to direct "*that any increase or decrease in value due to public development should be disregarded*" (TCPA 2014 p 21). As they argue, it would be perverse to compensate an owner for the potential uplift in value consequent on securing planning permission when the right to develop is effectively already owned by the state (as a consequence of the Town and Country Planning Act 1947. The TCPA are proposing a tightening of the original legislation to ensure that compensation rules for the compulsory purchase of land for New Towns (and garden cities) are based on current use value.

It is reasonable to suppose that, if progressed, the legislation would be supported given the enthusiastic and cross party support for garden cities. In the absence of such change there is a powerful and persuasive argument that any assessment of compensation which seeks to base value on future development should take full account of the cost of infrastructure to service the land, disregarding fully any public investment. The levels of investment for a new garden city would thus extinguish any substantial hope value. The debate with a landowner would obviously invite them to reflect on the opportunity of a generous compensation package freely negotiated versus the chance of a lower amount of compensation following contested legal and valuation process.


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In practical terms it would be beneficial for land to be released incrementally but tended for agriculture until such time as needed. This would best be achieved if the landowner was "hard-wired" into the development vehicle so their dividends (in the form of overage payments) can be paid when a surplus arises. In this respect their long term land interests continue to provide a dividend for them, but they are able to relocate their businesses with generous compensation.

Fair treatment for individual households is a more complicated issue. Compensation principles for projects undertaken in the public interest are well established, and include compensation for both acquisition and for blight[18]. Whilst a new garden city could support substantially enhanced statutory compensation any need for new legislation could establish unhelpful precedent for major new projects such as HS2 or a new London airport. Therefore, legislating for mandatory compensation at significantly enhanced levels would present practical and political problems.

However, a GCDC could contract (including through s.106 Agreement or Unilateral Undertaking) enhanced compensation over and above the statutory entitlement to those particularly adversely affected (to be determined locally). This could include higher levels of compensation for acquisition of land or property (see Morton 2011) and higher levels of compensation for any blight caused by the new development.

### 5.3. Providing and funding the infrastructure.

Having secured the land one of the key functions of the GCDC would be to bring forward the enabling infrastructure, including transport, drainage, water, electricity, gas, telecommunications and the like, and also enabling the provision of social infrastructure such as schools, green spaces and public realm. There are three aspects to be addressed, namely planning, funding and delivery.

A strong and locally supported concept allied to a suitable delivery vehicle, business plan and planning powers will only be achieved if funders are confident of delivery and willing to support. If projects can be significantly de-risked commercial funders are available and the steady supply of revenue would be attractive to pension funds and low risk investors[19]. The key questions then revolve around the rate of interest a funder would require, what type of lending instrument would be used (Loan facility, Bond etc), and what security and covenants would be required.

As a Community Interest Company a GCDC should be able to access long term preferential rate finance through the Public Works Loan Board (PWLB). If the funds were required for enabling infrastructure and public realm capital projects as part of regional growth programmes PWLB loans may be made for anything from 1 to 50 years. From 1 November 2013 PWLB rates are reduced by 40 basis points (0.40%) for lending in respect of an infrastructure project nominated by a Local Enterprise Partnership (LEP)[20,21]. This could be used to fund the main infrastructure elements e.g. roads, schools etc. Loans are available to all tiers of local government, and there is clear precedent of these being on-lent to housing associations and so there is no reason why this should not be allowed for the GCDC[22].

Notwithstanding the Community Interest Company status of the GCDC the repayment of the loan would need to be secure, and a Strategic Land and Infrastructure Contract[23] could be used to tie infrastructure investment to recovery through enhanced


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land value following development. An alternative which may be appropriate would be the Tax Increment Financing mechanisms[24] routinely used in funding major US infrastructure projects (British Property Federation, 2008, p.3). These would be appropriate for major infrastructure serving the wider community, such as a new station on HS1 or a new Bus Rapid Transit system.

The repayment of the loan could be geared to the development period, where receipts from land sales would generate a reliable income stream for repayment. Alternatively, a longer period of amortisation could be taken on particularly for public assets such as community or leisure centres, with the GCCC taking on any overhanging debt from the GCDC, to be met via Tax Increment Financing.

In each of these approaches direct lending from the PWLB to the GCDC would be preferable although this may require amendments to the PWLB lending regulations. If this were not possible the LEP or another suitable tier of local government could act as access point for on-lending for that part of the infrastructure that would normally be funded by public sector, or act as guarantor.

### 5.4. Funding the housing

The vast bulk of the investment will be housing or housing related (including infrastructure). There are three principal sources of that investment namely the GCDC which will source its capital through the PWLB (as described in section 5.3) or commercial debt and equity, developers who will provide their own working capital through private equity or commercial debt (including the use of debt, equity or guarantees from the HCA) and housing associations who are now mature players in the wholesale debt markets.

Financial institutions will provide most of the finance because:

- “institutional capital is available in much greater quantities than any developer’s balance sheet capital;
- with current regulations, it is unrealistic to expect banks to make significant long term loans against land and infrastructure; and
- institutions look for lower returns than corporate development capital PROVIDED the risks are commensurately low.”

(Freeman 2014)


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"We expect institutional investors to continue finding the sector attractive, reflecting the investment grade sovereign linked nature of HA bonds. Issuance spreads of bonds in our rated portfolio have compressed over the past six years, irrespective of the nominal amount, coupon or tenor, pointing to increased investor demand over the period."
(Moodys's, 2014, p1).

"A widening investor base has facilitated HAs' increased capital market activity. Industry estimates have pointed to a tripling in the investor base over the last seven years to over 75 investors. The long maturities and investment grade nature of HA bonds match well with the liabilities of pension funds and insurance companies, who tend to be buy and hold investors. Across Moody's rated portfolio, over the period FY2008-14, we have witnessed a compression in spreads[11] at issuance, irrespective of the nominal issuance, coupon or tenor, pointing to increased investor demand in this sector. We expect investor demand to remain buoyant over the near term with institutional investors continuing to find HA bonds attractive reflecting their investment grade, sovereign linked characteristics."
(Moodys's, 2014, p5)

Moody's Investors Services (2014) "English Housing Associations: Financial Disintermediation – A One Way Trip"

**Figure 32: Changing patterns of housing association debt and investor sentiment**

In similar vein housing associations are now experienced in accessing long term patient capital in the form of the Bond market where investor demand is strong and 52% of capital funding for the major RPs is now sourced (Moody's 2014, p.3) and rates are very competitive See Figure 33 below).

Spreads have declined over time indicating increased investor demand

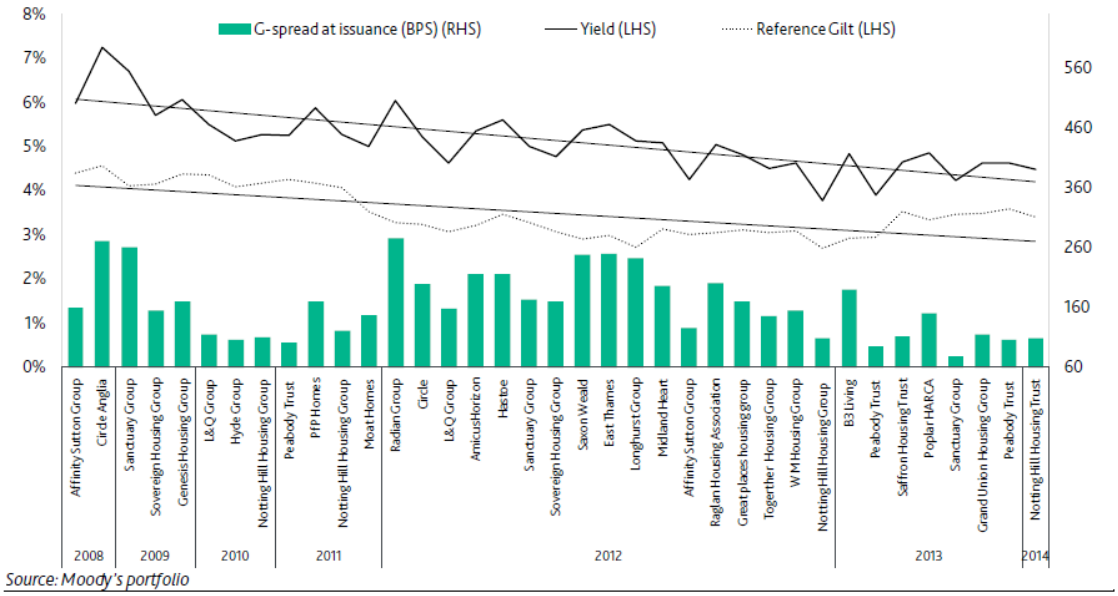


**Figure 33: Recent financing rates for affordable housing providers**
(Moodys's, 2014, p5)


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Access to capital would not be expected to be problematic providing normal market conditions pertain and there were no return to the fundamental lack of market confidence experienced in the aftermath of the global banking crises of 2007.

### 5.5. Local planning powers.

In order to streamline and speed up delivery the GCDC could be vested with local planning powers under NTA legislation, or planning could be administered by the Planning Inspectorate under the National Infrastructure Planning process[25]. The NTA specifically refers to such decisions being taken where it is "expedient in the national interest". Whilst this may seem like a considerable power to be exercised centrally the garden city would need strong local support and so the GCDC should only seek and use such powers where clearly supported locally.

Whilst the major development phase would require clear and detailed planning parameters to ensure that the ideals of the garden city were delivered (and in line with local preferences as established through Enquiry by Design processes) there is a case for Local Development Orders (LDO's) to simplify the detail of Planning at individual level whilst retaining design cohesion. LDO's can both support quality and reinforce Localism (Local Government Association, 2011). The same unifying effect can be achieved by local covenant, as has been demonstrated at Letchworth.

### 5.6. Undertaking the development.

Residential development is best undertaken by commercial developers and housing associations, each of which would have access to suitable finance. Developers for a new garden city (both market and affordable) would be selected based on a number of criteria, including quality, reputation and financial strength, and land sales would be under Development Agreements to ensure the development meets the garden city's objectives in design, tenure, delivery, public domain etc. Proven ability to generate value through quality, and profit margin expectations and risk appetite will also be material. Deferred payment for land could be available to reduce interest charges in return for commitments to keep prices affordable.

Development at scale, modern methods of construction, long term supply agreements, local labour and supply chains, and enhanced value through high quality designs will produce higher than normal margins. This will provide a substantial value base on which the whole funding model for the garden city can be based.

Secondly, costs can be minimised by doubling up infrastructure, for example roads and drainage where new main access roads are also used as spine roads for development, thereby avoiding duplication. Other new development in the area would also benefit from such infrastructure and so it is only fair that Community Infrastructure Levy (CIL) and s.106 payments are sought from the developers of the land which benefits from the new infrastructure.

It is essential that the GCDC adopts a tax efficient structure, including use of "golden brick" arrangements[26] if selling serviced sites. In addition, there may be a case for favourable tax treatment of surpluses of a GCDC in recognition of its public body status and investment in local infrastructure for the benefit of the wider community.


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## 5.7. Demonstrating viability

It is important that Charthills Green is able to demonstrate viability without exceptional or ongoing public subsidy, and that the costs to provide the infrastructure and develop the city are borne by private investment. The following assumptions have been made:

**New Homes Bonus** (NHB) – This would be beneficial but the project can survive without, (which is fortunate as a 30 year lifespan for any government subsidy, particularly when public subsidies are generally declining and the subsidy in question was introduced to stimulate a now fully recovered market, is very optimistic), but if generally available it should be available to this project, which would increase the residual land value.

**Affordable Housing Grant** (AHG) – Included in principle because it is not a grant to the development, and would be available irrespective of whether the RP actually spends it at the garden city, although most RP development is likely to be under s.106 agreements where AHG is not permitted. If AHG is not used then the RP would find alternative means of cross subsidising affordable homes.

**Regional Growth Fund** (RGF) – Included, but for innovation which has wider promotional benefits and/or benefits to the regional economy– e.g. a new station (for the County Town) on HS1, or a BRT scheme. New homes here would also assist London's housing predicament which is a further argument for RGF funding.

RGF could also be sought as start-up capital for a major off-site manufacturing facility ( - where there is a potential market of over 1,000 homes pa before 2020 and a peak demand of c.2,500 homes pa from three garden cities proposed in Kent, even before supply to the wider London and SE markets). This could be a significant source of employment for the area local to SE Maidstone, or alternatively in one of the former dockyards of North Kent, or even Manston airport in East Kent, and so would be of interest to the South East LEP.

**HCA funding for accelerating building** – not specific to this site and so permissible

**TIF** – use for infrastructure, including HS1 station, BRT lanes, or major local facilities such as sports centre.

Viability has been tested and demonstrated at varying sizes of settlement, from garden suburbs of 5,000 homes to garden cities of 15,000 but this paper focuses specifically on a garden city of 15,000 homes, which as the threshold size for consideration as a city would in all probability be the most challenging to demonstrate viability for.

The project plan is at the heart of the financial modelling. The action of interest and inflation on the model will be significant and so there needs to be a clear and accurate assessment of each which is only possible when accurately plotting the timing of key activities and expenditure, particularly a project with such large cash flows (both expenditure and income) at different times and over a 35 year plan.

A copy of the project plan (in both tabular and Gantt chart form) is attached at Appendix H. In summary the plan assumes a 2½ year period of planning and preparation prior to any works commencing on site in early 2017. The infrastructure


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delivery period spans the period 2017-19, and the housing delivery period commences in early 2019, with the first homes ready for occupation in late 2019.

This is an ambitious project plan, and unashamedly so, but it is deliverable. The project needs to be confident in its planning and delivery phases and delivering the homes Britain, and especially the south east, needs as soon as possible. Thereafter the delivery period is phased at a very manageable pace to meet prudent absorption rates, although the rate can easily be accelerated which would deliver new homes more quickly, shorten the delivery period overall and improve the financial results.

The base case scenario makes the assumptions in Figure 34 below, with the changing assumptions shaded grey.

| Scenario Summary: Base case and cost and value factors | Base Case | Infrastructure costs increase 5% | Values reduced 5% | Infrastructure and construction costs up 5% and values down 5% | Road and Infrastructure costs up 30% |
|---|---|---|---|---|---|
| **Changing Cells:** | | | | | |
| Access spine road | 91,128,300 | 95,684,715 | 91,128,300 | 95,684,715 | 118,466,790 |
| Local roads, drainage and infrastructure | 300,000 | 315,000 | 300,000 | 315,000 | 390,000 |
| Average dwelling size m2 (Sale) | 88.08 | 88.08 | 88.08 | 88.08 | 88.08 |
| Average dwelling size m2 (Affordable) | 76.52 | 76.52 | 76.52 | 76.52 | 76.52 |
| Current average costs m2 CSH Level 4 | 1,200 | 1,200 | 1,200 | 1,200 | 1,200 |
| Extra over cost per m2 Zero Carbon Standard | 60 | 60 | 60 | 60 | 60 |
| Average cost / m2 (Sale) | 1,358 | 1,358 | 1,358 | 1,358 | 1,358 |
| Average cost / m2 (Affordable) | 1,356 | 1,356 | 1,356 | 1,356 | 1,356 |
| Average prime cost construction Sale | 119,582 | 119,582 | 119,582 | 119,582 | 119,582 |
| Average prime cost construction Affordable | 103,777 | 103,777 | 103,777 | 103,777 | 103,777 |
| Developers overheads & profit | 20% | 20% | 20% | 20% | 20% |
| Base Rate | 0.50% | 0.50% | 0.50% | 0.50% | 0.50% |
| Developers Financing Margin over Base | 6.00% | 6.00% | 6.00% | 6.00% | 6.00% |
| GCDC Financing Rate Margin over Base | 4.00% | 4.00% | 4.00% | 4.00% | 4.00% |
| Average dwelling value open market | 310,202 | 310,202 | 294,692 | 294,692 | 310,202 |
| Average development value affordable | 141,324 | 141,324 | 134,258 | 134,258 | 141,324 |
| Total New Homes Bonus | - | - | - | - | - |
| Cost of local roads, drainage and infrastructure | 312,228,300 | 327,839,715 | 312,228,300 | 327,839,715 | 405,896,790 |
| Total cost of access road, local roads and infrastructure | 20,815 | 21,856 | 20,815 | 21,856 | 27,060 |
| Community Infrastructure Total_ | 172,732,000 | 181,368,600 | 172,732,000 | 181,368,600 | 224,551,600 |
| Community Infrastructure per dwelling | 11,515 | 12,091 | 11,515 | 12,091 | 14,970 |
| CIL / s106 per open market dwelling | 3,000 | 3,000 | 3,000 | 3,000 | 3,000 |
| General CIL / s106 Contributions | 27,000,000 | 27,000,000 | 27,000,000 | 27,000,000 | 27,000,000 |
| Total infrastructure CIL and s106 per dwelling | 34,131 | 34,131 | 34,131 | 34,131 | 34,131 |
| Total construction cost (excl infrastructure etc) | 1,698,900,795 | 1,698,900,795 | 1,698,900,795 | 1,698,900,795 | 1,698,900,795 |
| Average (gross) construction costs/acre (incl infrastructure) | 2,999,812 | 3,032,712 | 2,999,812 | 3,032,712 | 2,999,812 |
| Average (gross) construction costs/hectare (incl infrastructure) | 7,412,684 | 7,493,984 | 7,412,684 | 7,493,984 | 7,412,684 |
| Average (gross) construction cost (exc infrastructure) psf | 164 | 164 | 164 | 164 | 164 |
| Average gross development cost per dwelling (exc land) | 147,391 | 149,007 | 147,391 | 149,007 | 147,391 |
| House Price inflation relative to CPI | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |

**Figure 34: Scenario assumptions**

## Infrastructure

All necessary infrastructure is costed to the project, in this case including a new road to dual carriageway standards, and new schools, health centres, community centres and the like, all phased to match the growth of the new city. The cost of the access road and all related infrastructure and signalling were calculated by DavisLangdon using comparable cost elements from 10 recent projects, with a 30% contingency for design and construction. General estate infrastructure (roads, drainage, utilities etc) and construction costs have been based on current rates in mid-Kent. Any new garden city would need to include appropriate commercial space, both for employment and retail uses. These have been excluded from this viability exercise as the land requirements and the costs can vary considerably, but these land uses should impact positively on the appraisal result as, at the very least, developers would finance the development independently but would be prepared to pay for the land required. The model includes land at a base price of £100,000 per acre (see section 5.2).


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### Housing

The tenure of homes provided meets current expectations of 60% open market housing and 40% affordable. The income assumption from affordable housing is an average of 50% of the open market values. This is low compared to current market expectations, but is seen as part of the dividend for the local community, and part of the challenge to produce a new garden city which is not reliant on public funding. The results based on this income assumption are generally still positive, and a higher level of income generated from the affordable housing would improve the financial results, although it would adversely affect affordability.

The type of homes responds to changing demographics, with 45% of market homes of two beds or less and 78% of three beds or less, whilst 55% of affordable homes are of two beds or less and 95% of three beds or less. The changing demographics also point to an increasing proportion of the housing being for older people. A large part of the need for housing for older people will be met within the general provision of one and two bedroom properties but there will also be a need for specially designed and located homes to meet the needs of this group. Given the uncertainties of revenue funding this has not been separately modelled, but the appraisal results indicate an ability to respond positively (see below).

The garden city is to be developed to higher standards of construction and sustainability than generally employed for new development and so the cost modelling has been adjusted accordingly. Construction costs of £1,200 per $m^2$, which is above the middle of the range of currently expected costs in mid-Kent, have been assumed, and an additional cost premium of 5% added to upgrade from Code for Sustainable Homes Level 4 based on Cyril Sweett and Partners work for the Zero Carbon Hub.

Financing rates have been included based on those reported in section 5.4, and developers overheads and margin included at 20%.

Sales comparables have been taken from an extensive review of current and recently marketed properties from a new settlement less than 10 miles away (Kings Hill, West Malling) and where values are likely to parallel those in a new garden city. These equate to £327psf in the current market and have been positioned cautiously when funding and sales valuers are currently signing off on £350psf.

### Appraisal assumptions

Any modelling of this kind will be sensitive to inflation and interest rate assumptions. For the purposes of the base case build cost inflation and house price inflation were assumed at a level 2% throughout, matching the Bank of England's long term targets. In reality this is likely to introduce a significant element of prudence as long term house price inflation has consistently exceeded construction cost inflation (see Figure 39). It is felt better to model on this cautious basis to demonstrate the robustness of the model even though in a real world situation it unnecessarily burdens the appraisal.

Other important input factors have been set on a cautious basis, with Base Rate assumed at 0.50% (before flexing) and no New Homes Bonus funds received.


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All scenarios have been prepared on a 35 year cash flow basis to reflect the real world challenges of funding initial investment and differential income and expenditure flows.

The financial modelling behind this was tested and independently validated for Golding Homes by leading cost consultants DTZ.

Four groups of scenarios were then tested, as follows.

### 5.7.1. Cost and value scenarios

Any financial appraisal will be sensitive to key inputs around costs and values and these have been tested including costs increased by 5%, values reduced by 5%, costs increased by 5% and values reduced by 5%, and the road and infrastructure costs increased by 30%. The only one of these scenarios which results in a negative NPV is the combination of costs increase of 5% and values reduction of 5%. This combination of factors is felt to be extremely cautious as a reduction of values is likely to be caused by a reduction in demand which in turn would moderate input prices rather than increase them. In any event the model does not assume any revenue from New Homes Bonus.

The results are reported in Figure 35 and Table 3 below. Each of these iterations makes a profit over the life of the project, ranging from £456m (8.55%) to £165m. (3.22%) after financing costs. The best results are returned by the base case, which is based on very prudent assumptions.

The model is "burdened" with a high level of infrastructure in the early years – arguably much higher than is generally experienced in housing development. This is accepted as a new development needs early delivery of infrastructure both to reassure the local area that new residents will not burden local schools, surgeries etc to their detriment and also to provide the right start for the new community – a point made strongly by the TCPA's New Communities Group (see http://communitiesgroup.org.uk/eco-standards/delivery-of-infrastructure/item/54-model-standards.html).

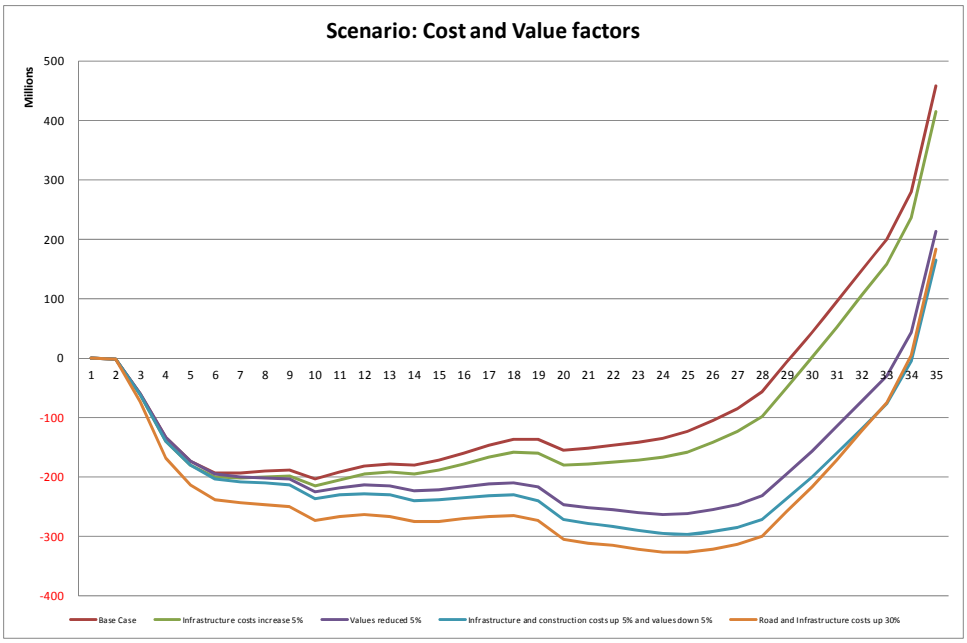


Figure 35:Base case and effect of cost and value factors on NPV


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The detail of the financial results are reported in Table 3 below.

**Table 3: Base case and effect of cost and value factors on financial results**

| Scenario Summary: Base case and cost and value factors | Base Case | Infrastructure costs increase 5% | Values reduced 5% | Infrastructure and construction costs up 5% and values down 5% | Road and Infrastructure costs up 30% |
|---|---|---|---|---|---|
| **Changing Cells:** | | | | | |
| **Result Cells:** | | | | | |
| Land (cost spread evenly over 25 years reflecting steady release of land) | 146,627,025 | 146,627,025 | 146,627,025 | 146,627,025 | 146,627,025 |
| Main access road | 95,757,982 | 100,545,881 | 95,757,982 | 100,545,881 | 124,485,377 |
| Local Roads and services (cost spread evenly over 25 years) | 424,515,717 | 445,741,503 | 424,515,717 | 445,741,503 | 551,870,432 |
| Community Infrastructure (Profiled to reflect growth of population) | 200,759,813 | 200,759,813 | 200,759,813 | 200,759,813 | 200,759,813 |
| Construction cost Private | 1,592,279,716 | 1,592,279,716 | 1,592,279,716 | 1,592,279,716 | 1,592,279,716 |
| Construction cost Affordable | 917,595,586 | 917,595,586 | 917,595,586 | 917,595,586 | 917,595,586 |
| **Total construction costs** | 4,449,327,397 | 4,475,341,082 | 4,444,419,122 | 4,470,432,807 | 4,605,409,507 |
| Income from sale housing | 4,090,327,033 | 4,090,327,033 | 3,885,815,549 | 3,885,815,549 | 4,090,327,033 |
| Income from affordable housing | 1,250,392,284 | 1,250,392,284 | 1,250,392,284 | 1,250,392,284 | 1,250,392,284 |
| New Homes Bonus | - | - | - | - | - |
| **Income sub-total** | 5,340,719,317 | 5,340,719,317 | 5,136,207,833 | 5,136,207,833 | 5,340,719,317 |
| IRR over 35 years | 8.95% | 8.49% | 7.01% | 6.60% | 6.50% |
| Peak Debt over 35 Years | - 204,267,857 | - 215,805,409 | - 262,882,496 | - 296,714,349 | - 327,396,666 |
| **Overall Surplus** | 456,877,106 | 414,117,247 | 213,344,017 | 165,249,988 | 181,963,997 |
| **Guaranteed Overage per acre** | 7,934 | 7,934 | 7,934 | 7,934 | 7,934 |
| **Profit Margin over 35 years** | 8.55% | 7.75% | 4.15% | 3.22% | 3.41% |

Notes: Current Values column represents values of changing cells at time Scenario Summary Report was created. Changing cells for each scenario are highlighted in gray.

### 5.7.2. Base rate changes

The next set of major factors to be tested was the impact of Base Rate changes. At the time of writing Base Rate has remained at historically low rates for five years but there is an expectation of an increase within the next six months. Current market opinion envisages a steady rate of increase over several years, as the economy strengthens, but unlikely to rise beyond 3%. For the purposes of testing robustness the model has been tested at Base Rate increases of 1%, 2%, 3%, 4% and 5%. The upper levels of increase are 2.5% above the currently expected levels and so are very unlikely, but as can be seen in Figure 36 rates hovered in the 4-7% range from the early 1990's to the financial crisis of 2007 and so these rates are included to test the resilience of the model.

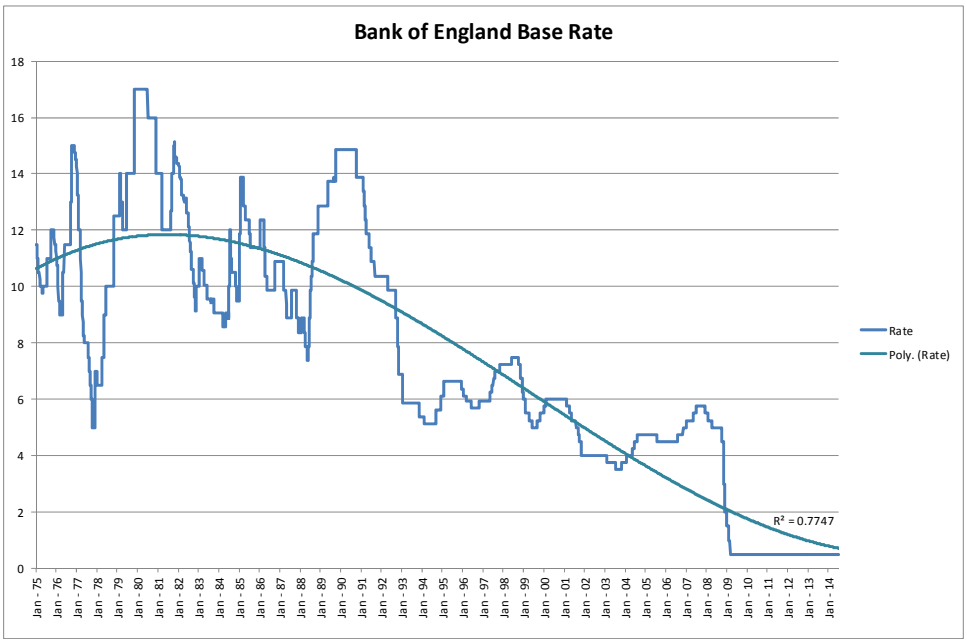


**Figure 36: Bank of England Base Rate 1975-2014**

Source:
http://www.bankofengland.co.uk/boeapps/iadb/index.asp?Travel=NIxSTxRPx&From=Repo&C=13T&G0Xtop.x=1&G0Xtop.y=1 Retrieved 16 July 2014 @ 15:55


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Figure 37 shows graphically the significant impact that base rate changes could have, with the overall profitability varying from £367m (6.87%) down to a negative £540m (-10.12%) at base rates of 5.5%. The spread of results is high because the Base rate has been flexed in isolation, whereas in reality there will be a number of factors which will have prompted the changes, including inflationary pressures (where price inflation in the housing market has consistently outpaced general CPI in the long run) which would significantly increase income and so mitigate this result.

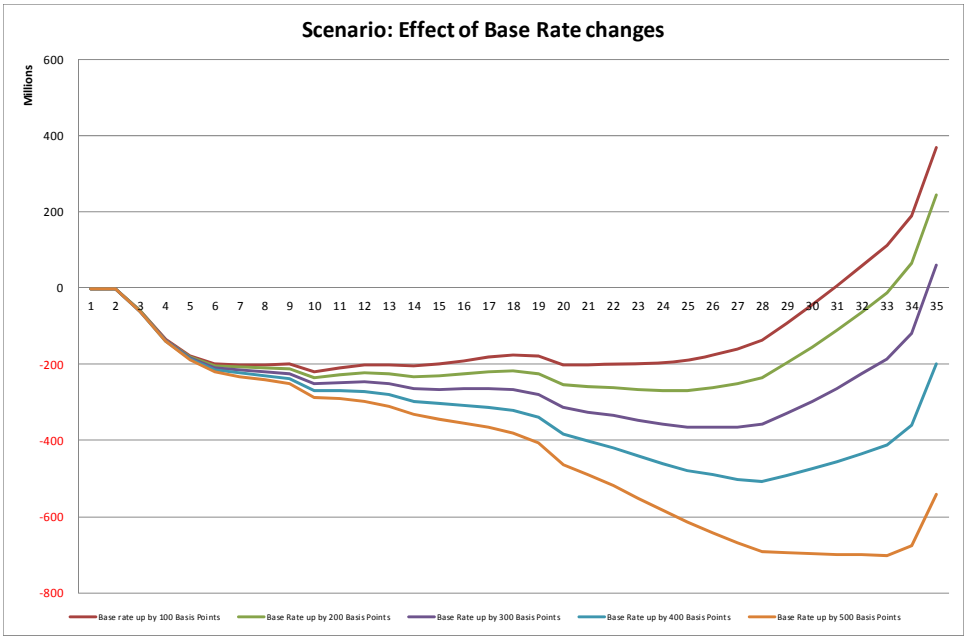


**Figure 37: Effect of Base rate changes on NPV**

Table 5 reports the actual results.

**Table 4: Effect of Base rate changes on financial results**

| Scenario Summary: Base Rate changes | Base rate up by 100 Basis Points | Base Rate up by 200 Basis Points | Base Rate up by 300 Basis Points | Base Rate up by 400 Basis Points | Base Rate up by 500 Basis Points |
|---|---|---|---|---|---|
| **Changing Cells:** | | | | | |
| **Result Cells:** | | | | | |
| Land (cost spread evenly over 25 years reflecting steady release of land) | 146,627,025 | 146,627,025 | 146,627,025 | 146,627,025 | 146,627,025 |
| Main access road | 95,757,982 | 95,757,982 | 95,757,982 | 95,757,982 | 95,757,982 |
| Local Roads and services (cost spread evenly over 25 years) | 424,515,717 | 424,515,717 | 424,515,717 | 424,515,717 | 424,515,717 |
| Community Infrastructure (Profiled to reflect growth of population) | 200,759,813 | 200,759,813 | 200,759,813 | 200,759,813 | 200,759,813 |
| Construction cost Private | 1,592,279,716 | 1,592,279,716 | 1,592,279,716 | 1,592,279,716 | 1,592,279,716 |
| Construction cost Affordable | 917,595,586 | 917,595,586 | 917,595,586 | 917,595,586 | 917,595,586 |
| **Total construction costs** | 4,467,160,930 | 4,484,994,463 | 4,502,827,996 | 4,520,661,529 | 4,538,495,061 |
| Income from sale housing | 4,090,327,033 | 4,090,327,033 | 4,090,327,033 | 4,090,327,033 | 4,090,327,033 |
| Income from affordable housing | 1,250,392,284 | 1,250,392,284 | 1,250,392,284 | 1,250,392,284 | 1,250,392,284 |
| New Homes Bonus | - | - | - | - | - |
| **Income sub-total** | 5,340,719,317 | 5,340,719,317 | 5,340,719,317 | 5,340,719,317 | 5,340,719,317 |
| IRR over 35 years | 8.77% | 8.59% | 8.41% | 8.23% | 8.05% |
| Peak Debt over 35 Years | - 219,101,438 | - 269,533,180 | - 365,175,307 | - 506,612,168 | - 701,929,064 |
| **Overall Surplus** | 367,122,331 | 242,673,637 | 59,755,379 | - 198,648,838 | - 540,365,958 |
| **Guaranteed Overage per acre** | 7,109 | 6,410 | 5,815 | 5,305 | 4,865 |
| **Profit Margin over 35 years** | 6.87% | 4.54% | 1.12% | -3.72% | -10.12% |

Notes: Current Values column represents values of changing cells at time Scenario Summary Report was created. Changing cells for each scenario are highlighted in gray.

### 5.7.3. New Homes Bonus

The base case for the modelling made the assumption of no New Homes Bonus income. The New Homes Bonus was introduced in 2010 as a reflationary measure for the housing market. In large parts of the UK the market has now passed the high points of 2007 and the challenges from the market are focussed more on meeting demand than stimulating supply, and so the need for the New Homes Bonus is less


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clear, and it is felt that any long term reliance on such funding would expose the model to risk. Nevertheless the model has been run with assumptions of 33% of NHB (the remainder going to the Local Authority), 50% and 100% and the results shown in Figure 38 and Table 5 below.

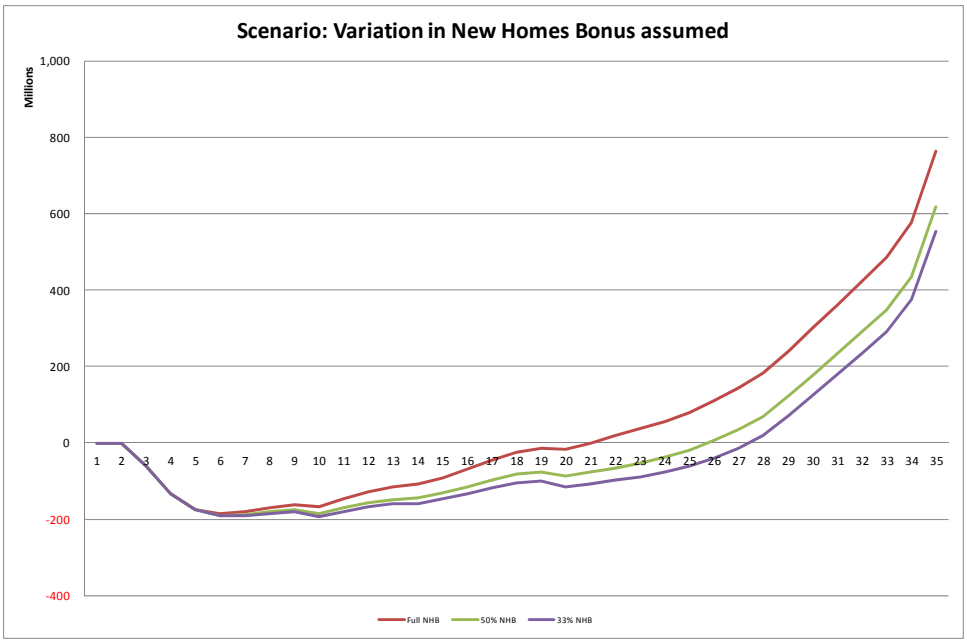


**Figure 38: Effect of New Homes Bonus on NPV**

As this series of iterations simply brings in grant, at a considerable level, following the first completions of new homes the results are not unexpectedly all positive, with the overall profit margin increasing to £554m (10.21%) for 33% and £763m (13.56%) for all New Homes Bonus being credited to the garden city. These produce IRR of 9.81% and 11.81% respectively.

**Table 5: Effect of New Homes Bonus on financial results**

| Scenario Summary: New Homes Bonus | Full NHB | 50% NHB | 33% NHB |
|---|---|---|---|
| **Changing Cells:** | | | |
| **Result Cells:** | | | |
| Land (cost spread evenly over 25 years reflecting steady release of land) | 146,627,025 | 146,627,025 | 146,627,025 |
| Main access road | 95,757,982 | 95,757,982 | 95,757,982 |
| Local Roads and services (cost spread evenly over 25 years) | 424,515,717 | 424,515,717 | 424,515,717 |
| Community Infrastructure (Profiled to reflect growth of population) | 200,759,813 | 200,759,813 | 200,759,813 |
| Construction cost Private | 1,592,279,716 | 1,592,279,716 | 1,592,279,716 |
| Construction cost Affordable | 917,595,586 | 917,595,586 | 917,595,586 |
| **Total construction costs** | 4,449,327,397 | 4,449,327,397 | 4,449,327,397 |
| Income from sale housing | 4,090,327,033 | 4,090,327,033 | 4,090,327,033 |
| Income from affordable housing | 1,250,392,284 | 1,250,392,284 | 1,250,392,284 |
| New Homes Bonus | 289,184,477 | 144,592,239 | 86,755,343 |
| **Income sub-total** | 5,629,903,795 | 5,485,311,557 | 5,427,474,661 |
| IRR over 35 years | 11.81% | 10.38% | 9.81% |
| Peak Debt over 35 Years | - 186,036,861 | - 189,681,242 | - 193,448,677 |
| **Overall Surplus** | 763,365,805 | 616,733,112 | 554,129,560 |
| **Guaranteed Overage per acre** | 7,934 | 7,934 | 7,934 |
| **Profit Margin over 35 years** | 13.56% | 11.24% | 10.21% |

Notes: Current Values column represents values of changing cells at time Scenario Summary Report was created. Changing cells for each sce

## 5.7.4. House price inflation relative to CPI

The final set of iterations addressed the impact of house price inflation moving at a differential to CPI. The base case made the very prudent assumption that house prices


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and CPI would move at the same rates. This is a very cautious assumption, with long term house prices significantly outstripping inflation - see Figure 39 which shows house price inflation both unadjusted and adjusted for inflation, where house prices have raced ahead of inflation by 87.3% over the 22 years 1991-2013, which is equivalent to 2.763% compound every year. The actual margin of difference has been fairly constant as shown in Figure 39.

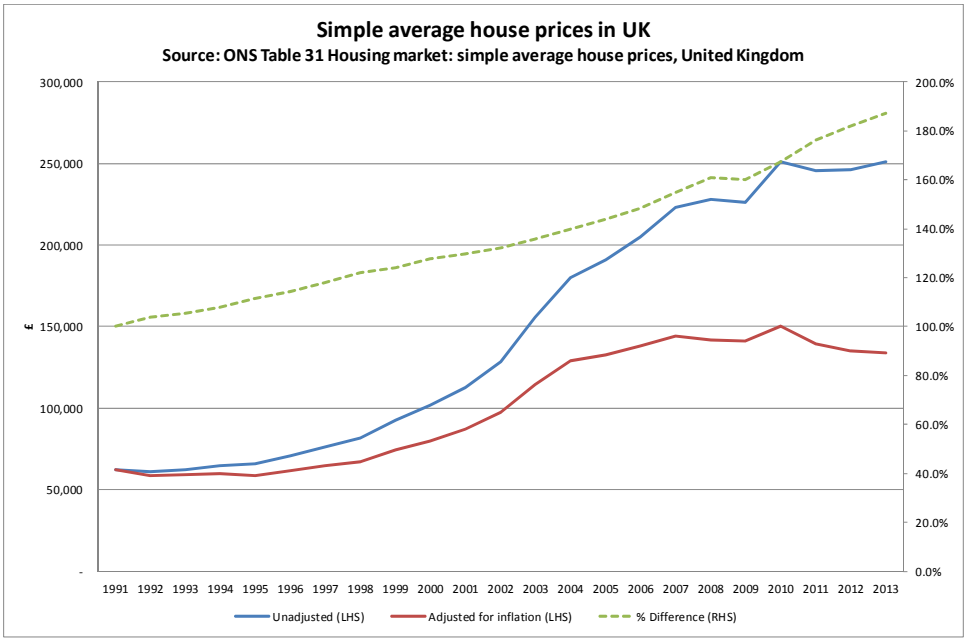


**Figure 39: House Price inflation relative to CPI**

Figure 40 and Table 6 below show the financial effect of a range of scenarios, ranging from house price lagging inflation by 1% (which results in a negative NPV and an IRR of -10.61% through to an NPV of £6,923m and an IRR of 51.37%. House price inflation is generally expected to run higher than general inflation in the long term, given the shortage of housing available in the market which will last for the foreseeable future, and so a mid-range figure of 3% (closely matching the long run average rate of 2.763% reported above) is a more likely scenario. At a 3% differential between HPI and CPI the model predicts a NPV of £2,249m (29.93%) and an IRR of 18.2%.


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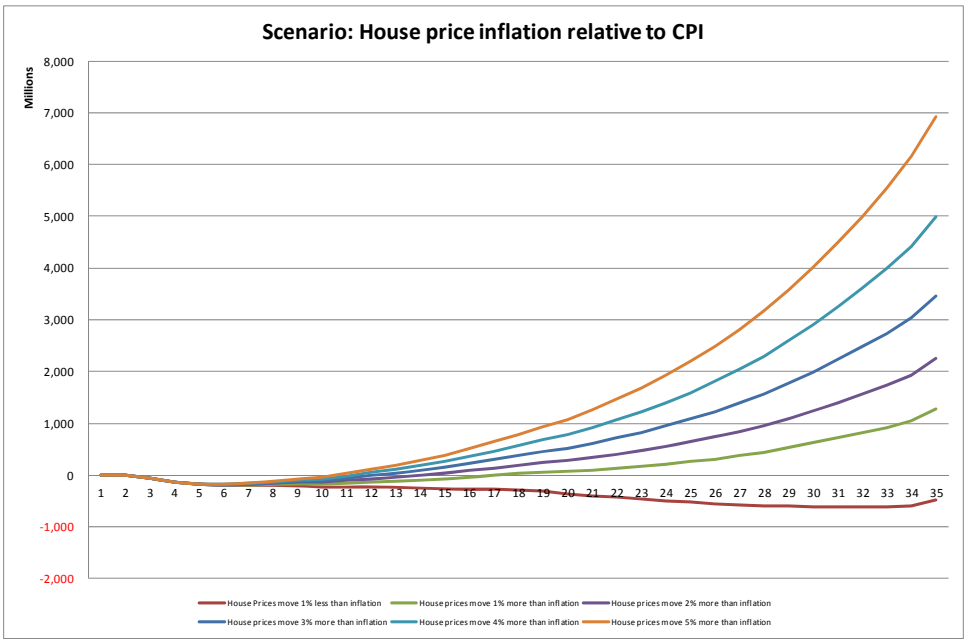


Figure 40:Effect of House Price Inflation differential to CPI on NPV

Table 6: Scenario results – Effect of House Price Inflation differential to CPI on financial results

| Scenario Summary: House Price Inflation differential to CPI | House Prices move 1% less than inflation | House prices move 1% more than inflation | House prices move 2% more than inflation | House prices move 3% more than inflation | House prices move 4% more than inflation | House prices move 5% more than inflation |
|---|---|---|---|---|---|---|
| **Changing Cells:** | | | | | | |
| **Result Cells:** | | | | | | |
| Land (cost spread evenly over 25 years reflecting steady release of land) | 146,627,025 | 146,627,025 | 146,627,025 | 146,627,025 | 146,627,025 | 146,627,025 |
| Main access road | 95,757,982 | 95,757,982 | 95,757,982 | 95,757,982 | 95,757,982 | 95,757,982 |
| Local Roads and services (cost spread evenly over 25 years) | 424,515,717 | 424,515,717 | 424,515,717 | 424,515,717 | 424,515,717 | 424,515,717 |
| Community Infrastructure (Profiled to reflect growth of population) | 200,759,813 | 200,759,813 | 200,759,813 | 200,759,813 | 200,759,813 | 200,759,813 |
| Construction cost Private | 1,592,279,716 | 1,592,279,716 | 1,592,279,716 | 1,592,279,716 | 1,592,279,716 | 1,592,279,716 |
| Construction cost Affordable | 917,595,586 | 917,595,586 | 917,595,586 | 917,595,586 | 917,595,586 | 917,595,586 |
| **Total construction costs** | 4,431,042,942 | 4,472,367,361 | 4,501,478,381 | 4,538,347,341 | 4,585,136,956 | 4,644,619,184 |
| Income from sale housing | 3,328,474,721 | 5,050,325,506 | 6,263,284,670 | 7,799,491,359 | 9,749,058,637 | 12,227,484,794 |
| Income from affordable housing | 1,250,392,284 | 1,250,392,284 | 1,250,392,284 | 1,250,392,284 | 1,250,392,284 | 1,250,392,284 |
| New Homes Bonus | - | - | - | - | - | - |
| **Income sub-total** | 4,578,867,005 | 6,300,717,790 | 7,513,676,954 | 9,049,883,643 | 10,999,450,921 | 13,477,877,078 |
| IRR over 35 years | 2.02% | 14.02% | 18.20% | 21.89% | 25.26% | 28.43% |
| Peak Debt over 35 Years | - 623,178,091 | - 191,018,998 | - 188,621,033 | - 186,129,044 | - 183,540,292 | - 182,163,480 |
| **Overall Surplus** | - 485,774,335 | 1,286,293,500 | 2,248,956,623 | 3,458,342,309 | 4,986,410,050 | 6,923,233,559 |
| **Guaranteed Overage per acre** | 7,934 | 7,934 | 7,934 | 7,934 | 7,934 | 7,934 |
| **Profit Margin over 35 years** | -10.61% | 20.42% | 29.93% | 38.21% | 45.33% | 51.37% |

Notes: Current Values column represents values of changing cells at time Scenario Summary Report was created. Changing cells for each scenario are highlighted in gray.

## 5.8. Risk mitigation and management

These results are encouraging and demonstrate that even on extremely cautious appraisal assumptions the garden city is fundable and the model has sufficient resilience to ensure viability. For the most likely scenarios the results are financially very strong. It is, nevertheless, important to consider and address material risk factors particularly given the lifespan of the project which is likely to span several economic cycles.

One of the risks which can be assessed is the likelihood of agreement on land prices. Notwithstanding the periodic calls for land throughout the development phase this would be addressed very early in the project, and before any major infrastructure investment. The risk would be that agreement could not be reached with the landowners, particularly on price. The permutations set out in section 5.7 give rise to predicted land values (including the NPV of overage) consistently in excess of £200,000 per acre (excepting where property values rise by less than inflation), and in the case of property inflation outstripping CPI by 3% values in excess of £600,000 per acre. Figure 31 shows the land values generated in this way.


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Given current agricultural land values of around £10,000 per acre it is reasonable to expect this to be a sufficiently persuasive proposition for most landowners. Any recalcitrant landowners who would seek to hold out for higher prices would be at risk of CPO, and proposals are set out elsewhere in this paper for the capping of compensation at a level likely to be lower than the voluntary compensation proposed here.

Other risks to the funding and delivery would focus on the availability and terms of funding and the overall performance of the economy and the housing markets. Key factors have been assessed above but before commitment a wider range of factors would need to be modelled, in combination. There is a likelihood of complex cross-elasticities between a number of factors, particularly in the interaction of global and national economic performance and monetary policy and the operation of the housing markets, both on price and as a driver of demand through the supply chain. These would need to be modelled more extensively as part of the preparation and business planning for the development.

The strong message which comes through from the above analysis is that the garden city is a viable and fundable proposition, with strong prospects of securing the land, developing the infrastructure early, developing the housing and commercial elements on a phased basis and returning a margin to the local community for locally determined projects.

The key aspects of viability and deliverability are summarised in Figure 41 below.

***Economic Viability Key Principles***

- *Garden City Development Corporation (GCDC) to deliver the infrastructure, with clear "Grampian" conditions re. delivery.*
- *GCDC vested with CPO powers to ensure delivery.*
- *GCDC vested with Planning powers, with reciprocal duties to co-operate with Local Planning Authority and County on structure issues*
- *Deferred "overage" payment to land owners in recognition of planning consent.*
- *Use of all existing funding support measures e.g. CIL / s.106*
- *Community Interest Companies be given powers to borrow from the PWLB, which would require some fine tuning of current regulations but is unlikely to be controversial*
- *Mixed tenure, incl market rented*

**Figure 41: Economic Viability key principles**


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WOLFSON
ECONOMICS PRIZE
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# Enduring quality and good governance


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# 6. Enduring quality and good governance.

The original garden city movement was based on community ownership of land and long term stewardship of assets, and that approach would still be popular today, and more likely to win support for the development of the new garden city. When complete the new community will be of sufficient size to merit its own governance structure, although clearly still functionally part of the local government unit in which it is located.

Residents choosing to live there because of the quality of life will give it a sense of identity but there will still need to be a period of intensive community development to allow the new community to develop and to gel with the adjoining communities.

There will be a significant amount of higher quality public realm, together with public buildings and community assets, which will need maintenance and periodic improvement, and consequently the garden city should stand separate from the Borough or District Council in which it is located.

During the development period the GCDC will have a key role to play in organising both the development and also, in the early years, the provision of collective services to the first residents. The GCDC however is primarily a development vehicle and will doubtless wish to devolve management to a new Garden City Community Council who would assume responsibility for the “softer” aspects of building community.

The governance of the new settlement should be community driven. In the early years of development this is challenging as there would be few residents but significant other parties whose interests it is right to reflect. Thus, a changing balance of representation is proposed with more formal community representation from the local authority and parish councils in the short term, tapering out over the first 20 years development phase, leading to increased representation from the actual resident population, together with representation from a housing association and the Local Economic Partnership to reflect the local business community.

## 6.1. Sustaining quality of place

Charthills Green will be a special place and it is vital that arrangements are put in place early to keep it that way. This is necessary for three reasons, namely to protect residents’ quality of life, to protect the value of residents’ investments and to protect the value of funders’ investments.

There is a collective self interest in maintaining values. Effective management will be needed to remain true to the original design and standards, both for public realm and also the presentation of private properties to the public realm. This will require mechanisms to impose and manage standards. Maintaining standards protects the value of everyone’s investments but it needs to be done in a way that does not impair sales values at the outset. There are freehold and leasehold solutions to this. Leasehold gives a direct control through lease covenants, and also a flow of income through service charges (and ground rent) but can impair values compared to freehold. There are also questions as to enforceability where forfeiture for non-compliance is a draconian remedy the courts are often unwilling to enforce.


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The alternative would be freehold ownership (except for flats) backed up by covenant and estate service charges. This system is in use effectively elsewhere, and is successful in maintaining character and standards at the Kings Hill development 10 miles away which provided the reference information for local property values used in the financial modelling. This is the preferred approach and would give the GCCC an ongoing contractual relationship with residents and a flow of income from which to provide local services.

The garden city will be of a scale to provide for a number of its own servicing needs, and if these are different from the local authority there is a compelling case for the GCCC to take on a direct service delivery role, analogous to the New Towns albeit in the case of Charthills Green on a smaller scale. Specialist estate management teams, liveried and with the right materials and mandate to maintain to a very high standard, would provide a firm foundation for value retention. But there would be other services which would best be provided at Local Authority or County Council level and the responsibility, accountability and funding arrangements need to be clearly allocated. Table 7 sets out a proposed division of responsibilities (where in some situations there will be responsibilities as direct service provider and in others indirect responsibilities through consultation or partnership).

**Table 7: Proposed division of responsibility for services provision in Charthills Green**

| Service | | County | District | GCCC | Parish |
|---|---|---|---|---|---|
| **Regulatory** | Structure Planning | ✓ | ✓ | ✓ | |
| | Transport Planning | ✓ | ✓ | ✓ | ✓ |
| | Development control | | ✓ | ✓ | ✓ |
| **Delivery** | Social services | ✓ | | | |
| | Education | ✓ | | | |
| | Housing | | ✓ | ✓ | |
| | Public Health | | ✓ | | |
| | Highways | | ✓ | ✓ | |
| **Public Realm** | Parks etc | | | ✓ | |
| | Street cleansing | | | ✓ | |
| | Refuse | | | ✓ | |
| **Community** | Leisure and Play | | ✓ | ✓ | ✓ |
| | Sports | | ✓ | ✓ | ✓ |
| | Community Development | | ✓ | ✓ | ✓ |

The new GCCC would be expected to take on responsibility for the provision and maintenance of public realm, including open spaces, community halls and the like, although this may entail outsourcing to the relevant local authority, together with a wide and diverse range of community development activities. The example of the Letchworth Garden City Foundation provides a perfect example of the way this could develop.


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Going beyond this the new community may wish to take on additional roles such as the provision of a business support centre or the generation and distribution of energy for the local area (which recent polling by Populus has found to be a very persuasive factor in seeking support from local communities).

The cost of these services can be met either by Council Tax (including a local precept to cover self provision of services by the GCC) or through local service charges. Residents would also need to contribute to general local taxation (as they will consume other local services) and it is right that as local citizens and consumers of locally provided public services they should make an appropriate financial contribution.

The new GCCC would thus have significantly greater responsibilities than a Parish Council but less than a Local Authority and its constitution and governance would need to be developed to recognise this.

In order to meet these responsibilities there needs to be a reliable source of income. Table 8 extrapolates from current Council Tax funding to estimate the annual revenue if the garden city were operational today. Based on an indicative mix of dwellings (by type and tenure) and local 2014/15 Council Tax rates this predicts an annual income of £24.235m to be split between the different service providers. There is also a substantial New Homes Bonus income generated, which converts to £4.847m on an annualised basis, although as commented in section 5 this is not regarded as a reliable source of income in the long term.

**Table 8: Council Tax revenue in Charthills Green**

| **Market** | | | | | | |
|---|---|---|---|---|---|---|
| | **Band** | **Rate** | **No** | **Yield** | **NHB** | **Annualised** |
| 1 Bed Flat | C | 1,345 | 750 | 1,008,908 | 6,053,445 | 201,782 |
| 2 Bed Flat | D | 1,513 | 1,400 | 2,118,704 | 12,712,224 | 423,741 |
| 2 Bed House | D | 1,513 | 2,250 | 3,405,060 | 20,430,360 | 681,012 |
| 3 Bed House | E | 1,850 | 2,800 | 5,179,048 | 31,074,288 | 1,035,810 |
| 4 Bed House | F | 2,186 | 1,400 | 3,060,344 | 18,362,064 | 612,069 |
| 4+ Bed House | G | 2,522 | 400 | 1,008,908 | 6,053,448 | 201,782 |
| | | | **9,000** | **15,780,972** | **94,685,829** | **3,156,194** |
| **Affordable** | | | | | | |
| | **Band** | **Rate** | **No** | **Yield** | | |
| 1 Bed Flat | B | 1,009 | 550 | 554,901 | 3,329,403 | 110,980 |
| 2 Bed Flat | C | 1,345 | 1,125 | 1,513,361 | 9,080,168 | 302,672 |
| 2 Bed House | C | 1,345 | 1,700 | 2,286,857 | 13,721,142 | 457,371 |
| 3 Bed House | D | 1,513 | 2,250 | 3,405,060 | 20,430,360 | 681,012 |
| 4 Bed House | E | 1,850 | 375 | 693,623 | 4,161,735 | 138,725 |
| 4+ Bed House | E | 1,850 | 0 | - | - | - |
| | | | **6,000** | **8,453,801** | **50,722,808** | **1,690,760** |
| | | | **15,000** | **24,234,773** | **145,408,637** | **4,846,955** |

The overwhelming conclusion from Table 7 is that once developed the garden city would be substantially well funded and in all probability a significant contributor to the exchequer of the relevant local and county councils, police and fire services etc. There is no doubt that the garden city, once developed, would be financially very viable.


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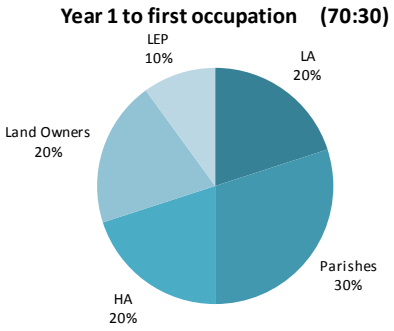
## 6.2. A Garden City Community Council.

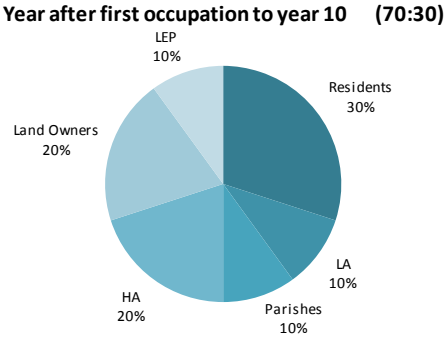
Having demonstrated financial viability it is important to demonstrate governance viability. The scale and breadth of services, together with the financial management, will require a well skilled administration. The governance of the garden city will similarly require a breadth of skills, but it is important that the city is self governing with local residents taking the lead. In the early days the limited number of residents would imply a wider membership of the GCCC from other interested parties but over time the composition should change from being a minority of residents to a majority of residents. Given that the local housing associations who provide the affordable housing are substantial investors they should have a proportion of places on the GCCC reserved for them, and in the early years the need for integration with the local community would justify representation from local government, but the principle of this being a resident led body is central. Table 9 outlines a possible generic membership structure for the development period and beyond, with a gradual increase of resident membership and corresponding reduction of others until the end of the development period and transition into long term steady state management, when the GCCC is fully a resident led body.

**Table 9: Illustrative governance of GCCC**

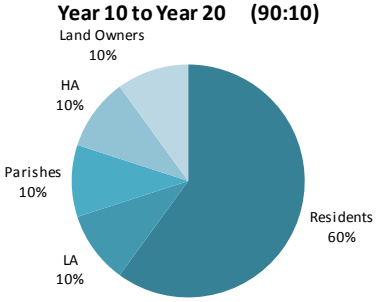
| | |
|---|---|
| Year 1 to first occupation: | |
| LA | 2 |
| Parishes | 3 |
| HA | 2 |
| Land Owners | 2 |
| Local Economic Partnership | 1 |
| (70% community and 30% commercial) | |




| | |
|---|---|
| Year after first occupation to year 10: | |
| Residents | 3 |
| LA | 1 |
| Parishes | 1 |
| HA | 2 |
| Land Owners | 2 |
| Local Economic Partnership | 1 |
| (70% community and 30% commercial) | |




| | |
|---|---|
| Year 10 to year 20: | |
| Residents | 6 |
| LA | 1 |
| Parishes | 1 |
| HA | 1 |
| Land Owners | 1 |
| ( 90% community and 10% commercial) | |





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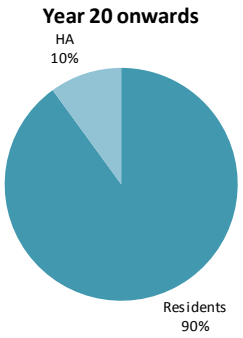
| Year 20 onwards: | |
|---|---|
| Residents | 9 |
| HA | 1 |
| (100% community) | |




Whilst it will be able to undertake provision of many of the necessary public services it is unlikely that the Garden City would be the sole provider. Education, Police, Fire and Emergency services etc would all be provided at a different tier of local government. Similarly, the community of the new Garden City would be expected to make a fair and equitable contribution for public services for the wider society in which it is set, e.g. social services, affordable housing, consumer protection etc. For these reasons the revenue raised from local taxation in the Garden City should be shared proportional to the responsibilities assumed.

In the early days of developing the Garden City it is likely that costs will outstrip revenue, and so dowry type funding will be needed, (probably from the GCDC), but as the development nears completion the revenue stream will be very strong and this will support high quality environmental etc services.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WOLFSON ECONOMICS PRIZE MMXIV

# Hearts and Minds


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## 7. Hearts and Minds.

At the heart (and minds) of the popularity queston is the proposition of a better place. A better place by design, better infrastructure and resources, a better economic proposition for the whole of the community, and a better managed place where people can share in the success. Taken in isolation these are all attractive ideas but in the real world the challenge of persuading public opinion has to deal with a complex set of factors around collective versus self interest which will either win popularity or excite hostility.

Those who have visited a successful example would be hard pressed to find reasons to object to a garden city per se, notwithstanding that it may well be "in their back yard". In this case the loss of something valued (e.g. a landscape or a view) over-rides appreciation of something which may have merit but simply isn't wanted, or is feared because of a perception of the potentially damaging effect on the value of property. This has now been recognised and government has mooted the possibility of an underwrite of values against losses consequent on the development of a garden city[27].

Compensation is a complicated question, considered further in section 7.3, but not everything revolves around compensation. There is evidence of a changing attitude in society generally towards the development of new homes. The British Social Attitudes Survey (2014) reported a significant swing of opinion on a range of questions about development in the 3 years from 2010 to 2013. When asked the headline question "Would you support or oppose more homes being built in your local area?" 46% opposition turned into 47% support (see Figure 42).

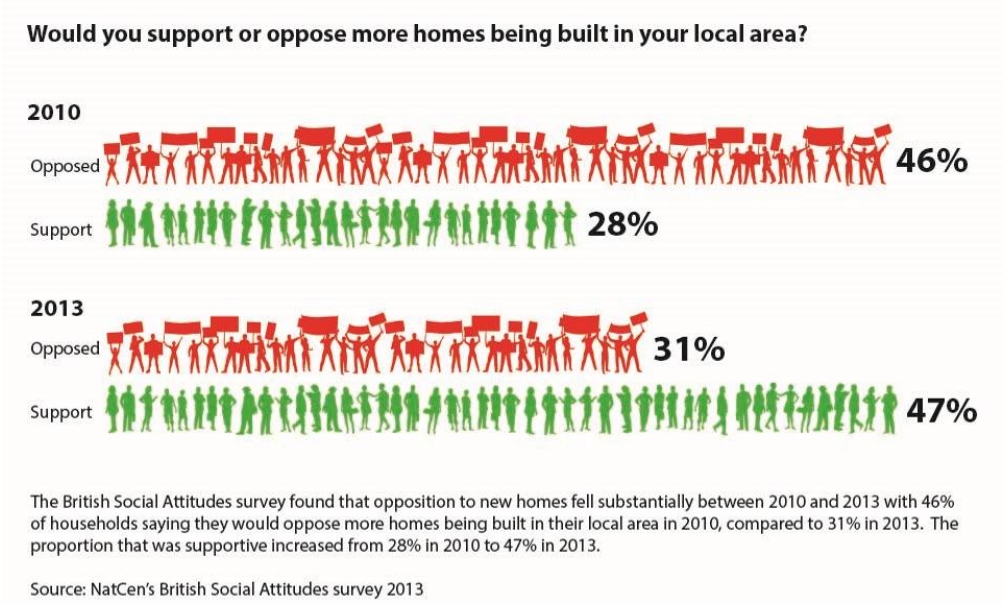


Figure 42: Changing levels of support for new housebuilding

The survey examined a number of aspects of public opinion towards development and the results suggest that opposition to development has decreased across all age, tenure, and income groups and that it has declined among those living in all types of


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areas, although home owners and those living in smaller settlements are less favourably disposed.

The question of location can be significant, and unsurprisingly the survey generally found more positive attitudes in areas with highest housing stress, but there appears to have been a significant swing of opinion across the country – see Figure 43 below.

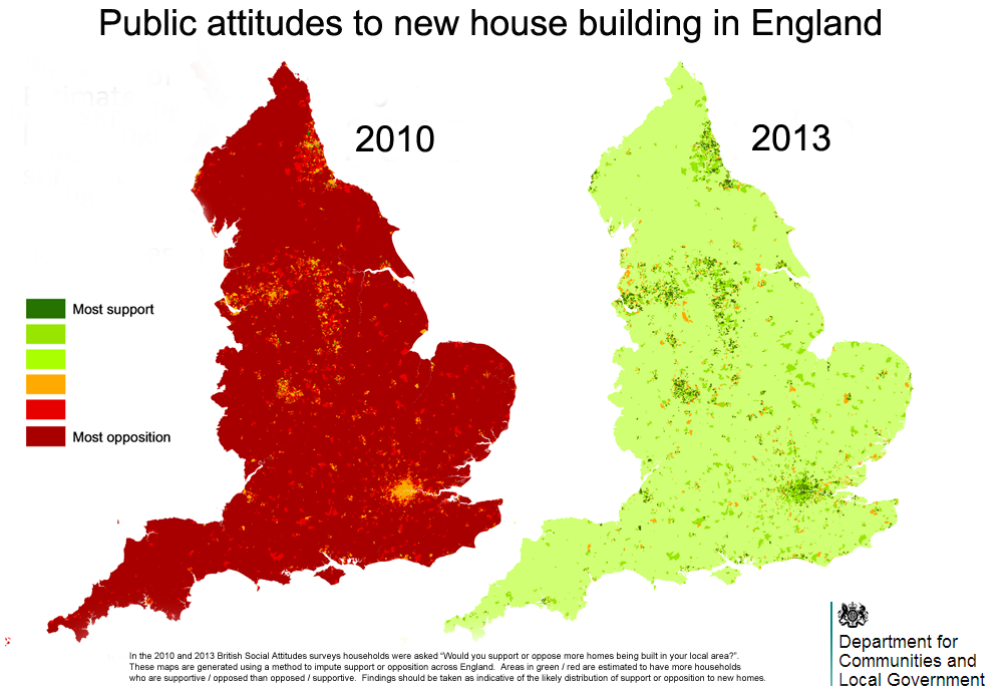


**Figure 43: Public attitudes to new house building**

Source: Department for Communities and Local Government. 2014

In considering the factors which are likely to influence public attitudes 60% of respondents would be more supportive if there was more local control over the development and management, while 50% would be more supportive where funding for services increased alongside new development. Quality of development was a lesser but still significant factor.

A parallel poll in May 2014 found even stronger support with 66% of respondents favouring more homes being built to keep Britain's economy growing (and only 23% opposed), with strong support among all ages, income groups and political persuasions[28].

These high level results are encouraging but in order to effectively address the question of developing a garden city it is necessary to understand the factors which would influence opinion in favour. The Populus survey found that the most popular incentive was free or cheap energy, with 71% of respondents reporting that this would make them more favourable. Among those who started with a pre-disposition against development of a garden city an even higher 77% were likely to change their opinion if free or cheap energy was offered. Other popular incentives were council tax


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discounts, an indemnity against a fall in value of the respondents home and the promise of improved public services.

### 7.1. Engaging. Listening. Consulting.

Effective engagement is predicated on trust. The expectation that ideas and opinions will be respected and will inform decisions is an important basis of the social contract behind consultation. Unfortunately some communities have in the past experienced consultation which has been superficial and with little intention to engage those most directly affected in the outcomes. A new garden city has to start from a different premise, namely that opinions do matter, and local opinions and knowledge can be a positive force .

The most effective techniques for consultation start with a structured approach to finding out what residents see as positive and want to see delivered. If the developer wants to be successful in promoting the land through a major and detailed planning process there is an expectation from all sides that the community engagement will be open, inquisitive, receptive, perceptive and sincere. Any other approach would be seen through and carry the potential of significant harm to the credibility of the project and the promoter. For this reason Charthills Green will establish a well resourced team to engage with the local community, ranging from regular communications to all residents and a full Enquiry by Design process through to detailed engagement with community and special interest groups on the things that matter to them. The premise of developing a new community that reflects and respects all that is best about the local area really does mean engaging fully with those who have their roots in the area.

Listening and enquiring has to be followed by action. If the local community advise that something is important then it should be accepted as such. Equally, if it becomes clear that early delivery of infrastructure is important, or the provision of cheap energy they should be addressed as key early deliverables. Early symbols of good faith will be important, both as a mark of progress and also as a way of maintaining confidence.

Whilst development is often perceived to be a burden on an area it is important to convey the message that it can, and often does, enhance values and bring benefits. Improved transport, education, recreation and leisure facilities, employment opportunities and even shopping facilities would all benefit an area and can materially enhance values. However, there is an argument that compensation should be available during the development period in the form of a temporary abatement of local taxation (i.e. Council Tax of local Parish precept) to reflect the disturbance. The Populus survey in 2014 confirmed this.

Development of this scale will need resources to ensure the new community becomes established and integrated with the wider community. s.106 funding should be directed to improving amenities in local parishes, both to compensate for any adverse impacts and also to improve local amenities for the benefit of all. Community development funding should be invested to bind established and new communities together. The new development would have a range of opportunities for interaction between established residents and newer arrivals. This can be facilitated by offering concessionary rates at new amenities to residents of local parishes.


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The real challenge in making the case for new garden cities is the instinctive aversion to development on greenfield sites among large sections of the public and the political and administrative mirroring of this. In order to deal effectively with this it is necessary to first understand that aversion and then frame the arguments in a way that deals with the underlying issues and concerns.

When presented with evidence based assessment of the need for new housing resistance tends to coalesce around the scale of new provision rather than the needs evidenced. For many involved in development it is hard to avoid the conclusion that whilst development is feared and mistrusted most people will be instinctively averse unless there are clear and tangible benefits to them. The stated reasons for objection are many and varied. Some are held with more conviction than others. For example, the impact of additional traffic on an already over-burdened area can be a strongly held view. Other concerns may be held with great conviction by a small number, but may nevertheless become rallying calls for a campaign of opposition. Thus, for example, the importance of the natural habitat for particular species of flora or fauna may become central to a campaign whereas prior to the publication of proposals for development there were few signs of public awareness of the existence of the species in question, or of a particularly developed sense of environmental awareness in general.

Many in the development industry believe that the real reason is a sense of loss consequent on any new development, and in particular the loss of a favoured view or outlook. Whilst in Planning law the loss of an attractive and publicly valued view can be an important consideration there is no individual right to a view in current planning legislation.

### 7.2. The benefits of focussed investment

One of the wider issues that needs to be addressed is how a garden city would influence planning policy in the area, particularly the demand for and delivery of housing. It is inevitable that a development on this scale would have a distorting effect on local housing markets. In areas of land shortages a garden city can alleviate pressures elsewhere. Where there are infrastructure constraints to growth a focussed approach to new supply, where new roads, drainage and other key infrastructure can be provided, can be a powerful argument. Equally, where development is proposed simply to meet objectively assessed housing needs identified in a SHMA and which would adversely affect the scale and character of local communities a concentrated development in a garden city could offer a much more acceptable solution. Smaller communities generally have less well developed (and in some case outworn) infrastructure and so the prospect of new development at scale with generous planned infrastructure both makes sense in its own right and also alleviates unwelcome pressures elsewhere.

### 7.3. Fair Compensation for all

A common view in economic theory is that an ideal allocation of resources occurs when those who benefit from a decision compensate those who are disadvantaged, to cancel out that disadvantage, and an optimum decision arrived at when it is impossible


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to make any one individual better off without making at least one individual worse off – known as Pareto Optimality[29].

It is widely accepted that development can and does introduce costs, or externalities. This may involve real (e.g. property devaluation) or perceived (e.g. the loss of a valued outlook or view, despite English law being unequivocal that there is no such thing as a right to a view) losses, but in either case a person who suffers those externalities will feel aggrieved.

Some externalities are compensated for in the Planning system in the form of improvement of amenities or resources in the public domain e.g. road improvements or a new school or community centre to mitigate the effects of a new development. Other externalities arising from major development (but currently not housing developments) are compensated more directly in monetary compensation through the statutory land compensation process. Many individuals who are affected however can be left feeling disadvantaged by development which affects them, or their property, and yet they are not compensated for losses.

As mentioned previously the possibility of indemnity against loss arising from the designation and then development of a garden city has been mooted. The possibility of value enhancement consequent on improved amenities to an area is usually disregarded in this as the focus remains on the losses experienced or perceived. In developing a new garden city however it is important to keep the general improvement in infrastructure and services in the public eye so that opinion focuses on the positive. The developers of the garden city should also consider appropriate direct compensation to individuals materially disadvantaged. The economist's concept of willingness to accept, being how much a person is willing to accept to abandon a good or to put up with something negative, is central to this for if that meeting point between the developer and a person who is, or perceives themselves to be, disadvantaged can be found the project is likely to win public support.

When applied to the development of a new garden city the advantages of the development, of which there are many, would need to outweigh the (actual or perceived) disadvantages or costs and those who bear the costs should be fully compensated by those who gain. One way of ensuring this would be through a combination of compensation, either in cash or in kind, matched to a put-option whereby those adversely affected could require a buy-out by the developer. Householders (and businesses) who do not wish to move but whose assets were devalued or diminished should also be compensated. In CPO procedures this is commonly known as compensation for blight.

Compensation should be on terms comparable to the Compulsory Purchase (CPO) system[30]. Some would argue that the terms should be more generous but if the statutory compensation is appropriate for those affected by, say, a new motorway it is difficult to make the case that compensation should be higher here. Furthermore, setting such a precedent could be difficult to legislate for given the ramifications for other public projects whose compensation bills would soar.

The moral and political constraints to compensation exceeding statutory compensation limits could, however, be overcome by a voluntary compensation scheme. The net effect would be the same as it would be the party undertaking the development who would pay the enhanced compensation. This ties back comfortably to the Pareto Optimality principle.


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Such compensation should be generous – Morton has suggested that residents within the proposed development area should receive compensation to the value of 75% of their property (or 150% where compulsorily purchased) and those just outside should receive 25% (Morton, 2011, p22). Whilst a statutory basis is inappropriate it is not unreasonable for government to signal its views though official advice on such matters, and for the compliance with such advice to be either written into any Order used to establish a GCDC or a material consideration in the conferring Planning powers. Compensation should be payable once consultation has been undertaken and detailed Planning Permission issued.

Compensation should be payable in cash. However there is an argument for creating structures for shared long term benefit both to the GCDC and the local community. One way of achieving this would be through a GCDC Bond, carrying an attractive rate of return, linked to the financial performance of the development stage[31]. Investment by local residents could be incentivised by discounted pricing, so that any deferred compensation rights are awarded at a multiple of original value in Bond purchase. The bonus should be awarded after a reasonable period to avoid short selling as a simple means of bolstering compensation. This could be extended to allow investment by both original and new residents and businesses and the wider local population, particularly if the bond is to be trade-able in the market.

The benefit of such an arrangement would be to develop shared interest and give the local community an enduring stake in the success of the new development. The returns for Bond holders would be expected to be materially higher than the costs of finance available either from the PWLB or commercially, but the costs of this would be unlikely to significantly impair the overall business plan and the gains in terms of shared stake in the performance of the garden city considerable.

The GCDC would, in addition to its land assembly and development co-ordination function, have investment opportunities including both development for sale and for long term rent which could be used to generate surpluses to be returned to the local community. Carrying that principle forward a proportion of the surpluses from such development could be paid back to the wider local community as a dividend, to be determined by the Directors of the development company. This dividend could be used to fund services, or improvements or even reduce local taxation.

There are clearly bounds to what would be appropriate for a public interest company to undertake, but the principle of a shared stake for local people in the financial performance and well being of the garden city is felt to be worth further development.

It is not just property owning individuals who would potentially suffer as a consequence of a major new development in their neighbourhood. A wide cross section of local residents may be affected by disruption and so their needs and any possible detriment should be considered.

### 7.4. A place where the good life is affordable

As noted previously recent surveys by Populus and the British Social Attitudes Survey have identified an increase in support for more house-building, both to bolster the economy and also to provide much needed new housing to address shortages and affordability concerns. The support is stronger where housing is in short supply and market forces push housing to unaffordable levels, particularly in the south east.


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The Maidstone area has an objectively assessed housing need for 19,600 homes up to 2031[32]. The highest house prices and the greatest challenges to affordability are in London and the South East. The London area is a magnet for growth and creativity, and as a consequences of severe shortages of housing is showing the highest sustained rates of housing inflation. London is the economic powerhouse of the country, and without its strength the whole country is poorer. But many of the young wealth creators and aspiring new households can't afford the extremely high and rapidly inflating house prices in the capital. London has a crisis of affordability. The Mayor of London, whilst renowned for not being shy of hyperbole, accurately described rising house prices in the capital as a '*scourge and a blight'* that is causing misery for millions of Londoners not on the property ladder. (Inside Housing 17 July 2014). London's workforce needs somewhere to live – or else London suffers and the nation's economy suffers.

London needs more housing to restore prices to more affordable levels, but space is finite and opportunities limited. The area surrounding the capital therefore has an important role to play for the economic wellbeing of the whole country. With the right investment in transport infrastructure there will be a viable and attractive lifestyle alternative in a new garden city. An alternative for those who can no longer afford London prices, and for those searching for a better quality of life and who need to be connected to the capital quickly and conveniently, for economic reasons.

This may not be an immediately attractive idea for the local community, but if there are benefits for the national economy then a case can be made for compensation for the local area for accepting development. That compensation can be applied to reduce the externalities of the development and create a genuinely world leading garden city.

If one of the arguments is about creating a solution to London's shortage of supply and consequent unaffordable housing then the housing to be provided has to be both of a high quality and affordable. Table 10 shows the typical costs of taking on and sustaining a mortgage for a property at Charthills Green. Current mortgage policy requires that lenders stress test mortgage affordability and so a spread of rates from 4-7% is shown. This is then expanded to consider housing costs for a wider group including shared ownership leaseholders, market rent tenants and affordable rent tenants.

**Table 10: Housing costs in Charthills Green**

| | | Min | Mortgage pcm over 25 yrs @ 95% ratio | | | | | | | Shared Ownership | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Market sale | Value | salary required @ 5% | 4.00% | 4.50% | 5.00% | 5.50% | 6.00% | 6.50% | 7.00% | (25%) @ 5% over 25 yrs | Market Rent pcm | Affordable Rent pcm | Affordable Rent pw |
| 1 Bed Flat | 150,000 | 31,667 | 752 | 792 | 833 | 875 | 918 | 962 | 1,007 | 562.97 | 671.42 | 530.23 | 122.36 |
| 2 Bed Flat | 234,399 | 49,484 | 1,175 | 1,238 | 1,302 | 1,367 | 1,435 | 1,504 | 1,574 | 879.73 | 778.34 | 656.50 | 151.50 |
| 2 Bed House | 294,833 | 62,243 | 1,478 | 1,557 | 1,637 | 1,720 | 1,805 | 1,891 | 1,980 | 1,106.55 | 979.01 | 656.50 | 151.50 |
| 3 Bed House | 306,571 | 64,721 | 1,537 | 1,619 | 1,703 | 1,788 | 1,876 | 1,966 | 2,058 | 1,150.60 | 1,017.99 | 774.19 | 178.66 |
| 4 Bed House | 423,179 | 89,338 | 2,122 | 2,235 | 2,350 | 2,469 | 2,590 | 2,714 | 2,841 | 1,588.25 | 1,405.19 | 1,010.01 | 233.08 |
| 4+ Bed House | 592,333 | 125,048 | 2,970 | 3,128 | 3,290 | 3,456 | 3,626 | 3,800 | 3,977 | 2,223.11 | 1,966.88 | 1,010.01 | 233.08 |

Table 11 shows the housing costs in a comparator London location. Enfield was chosen as, assuming a new station on the HS1 line, Charthills Green would be c.30 mins travel time to St Pancras. Enfield would be an approximately similar journey time and as a lower cost outer London Borough the comparison is felt to be fair (as opposed to, say, Hampstead or Highgate). Data for Enfield is drawn from the Land


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Registry website and only records property type rather than the number of bedrooms and so the difference has to be interpreted[33]. Nevertheless the difference in prices is significant as shown in Table 12. The minimum salary requirement[34] differential reveals the scale of difference in costs and hence the difference between being able to afford to live in London and being priced out. The commuting cost from Maidstone to London would clearly be higher than the costs of commuting within London but the difference is at least partially offset by lower living costs in Maidstone[35].

**Table 11: Housing costs in LB Enfield**

| | | Mortgage pcm over 25 yrs | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Market sale | Value | 4.00% | 4.25% | 4.50% | 4.75% | 5.00% | 6.50% | 7.00% | Min salary required @ 5% deposit |
| 1 Bed Flat | 237,920 | 1,256 | 1,322 | 1,391 | 1,461 | 1,533 | 1,526 | 1,597 | 50,228 |
| 2 Bed Flat | 237,920 | 1,256 | 1,322 | 1,391 | 1,461 | 1,533 | 1,526 | 1,597 | 50,228 |
| 2 Bed House | 314,365 | 1,659 | 1,747 | 1,838 | 1,930 | 2,025 | 2,016 | 2,111 | 66,366 |
| 3 Bed House | 512,780 | 2,707 | 2,850 | 2,998 | 3,149 | 3,304 | 3,289 | 3,443 | 108,254 |
| 4 Bed House | 697,133 | 3,680 | 3,875 | 4,075 | 4,281 | 4,492 | 4,472 | 4,681 | 147,173 |
| 4+ Bed House | 697,133 | 3,680 | 3,875 | 4,075 | 4,281 | 4,492 | 4,472 | 4,681 | 147,173 |

**Table 12: Difference in housing costs between Charthills Green and Enfield**

| | | Mortgage pcm over 25 yrs | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Market sale | Value | 4.00% | 4.25% | 4.50% | 4.75% | 5.00% | 6.50% | 7.00% | Min salary required @ 5% deposit |
| 1 Bed Flat | 87,920 | 464 | 489 | 514 | 540 | 566 | 564 | 590 | 18,561 |
| 2 Bed Flat | 3,521 | 19 | 20 | 21 | 22 | 23 | 23 | 24 | 743 |
| 2 Bed House | 19,532 | 103 | 109 | 114 | 120 | 126 | 125 | 131 | 4,123 |
| 3 Bed House | 206,209 | 1,088 | 1,146 | 1,205 | 1,266 | 1,329 | 1,323 | 1,385 | 43,533 |
| 4 Bed House | 273,954 | 1,446 | 1,523 | 1,602 | 1,682 | 1,765 | 1,757 | 1,839 | 57,835 |
| 4+ Bed House | 104,800 | 553 | 583 | 613 | 644 | 675 | 672 | 704 | 22,124 |

Charthills Green could thus perform an important role as a viable and affordable alternative to London, on top of which the advantages in terms of quality of housing, environment and other aspects of day-to-day life make it an attractive alternative.

The mechanics of the calculation were then reversed to assess the affordability of rented housing. Here, the property price[36] the rent can sustain at a target yield of 4% was calculated, together with the actual yield for a given purchase price and the Local Housing Allowance (LHA) rate. Table 13 shows that at a 4% cost of finance[37] the weekly rent outstrips the LHA by a significant margin. The LHA is however only intended as a reference point for determining subsidy entitlement and so this is not unexpected for market rented properties. The table also shows the rent which would be required to deliver a 4% net yield for debt service and the real question is whether this represents fair value for those seeking to rent on the market compared to other possible locations.

Table 14 repeats the calculations for affordable rented properties but using the discounted property prices assumed in the model. The results here are reassuring in that all except the 2 bed houses produce rents within the LHA when using a 4% cost of finance. The 2 bed house rents are 109% of the LHA, although these rents may be fine tuned or smoothed across the different dwelling types to deal with this issue.


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**Table 13: Market Rents in Maidstone**

**Market rents set at 4% net yield for financing based on full OMV**

| Market Rents | Finance Charges | Mgt and Maint | Gross rent pw | LHA (2014/15) | Check | % | Rent as proportion of 3B House | Yield at LHA | Max rent @ 4% yield |
|---|---|---|---|---|---|---|---|---|---|
| 1 Bed Flat | 147.82 | 20.77 | 168.59 | 122.36 | Problem | 138% | 51% | 4.26% | |
| 2 Bed Flat | 231.00 | 23.08 | 254.07 | 151.50 | Problem | 168% | 78% | 3.37% | 179.62 |
| 2 Bed House | 290.55 | 23.08 | 313.63 | 151.50 | Problem | 207% | 96% | 2.68% | 225.93 |
| 3 Bed House | 302.12 | 25.38 | 327.50 | 178.66 | Problem | 183% | 100% | 3.04% | 234.92 |
| 4 Bed House | 417.04 | 25.38 | 442.42 | 233.08 | Problem | 190% | 135% | 2.88% | 324.28 |
| 4+ Bed House | 583.73 | 27.69 | 611.43 | | | | 187% | 0 | 453.90 |

**Table 14: Affordability calculations**

**Affordability calcs**

| Affordable Rents | Finance Rent PW | Mgt and Maint | Gross rent pw | LHA (2014/15) | Check | % | Rent as proportion of 3B House |
|---|---|---|---|---|---|---|---|
| 1 Bed Flat | 72.43 | 20.77 | 93.20 | 122.36 | OK | 76% | 54% |
| 2 Bed Flat | 113.19 | 23.08 | 136.26 | 151.50 | OK | 90% | 79% |
| 2 Bed House | 142.37 | 23.08 | 165.45 | 151.50 | Problem | 109% | 95% |
| 3 Bed House | 148.04 | 25.38 | 173.42 | 178.66 | OK | 97% | 100% |
| 4 Bed House | 204.35 | 25.38 | 229.73 | 233.08 | OK | 99% | 132% |
| 4+ Bed House | 286.03 | 27.69 | 313.72 | | | | 181% |

These results are extended to different interest rates and shown graphically in Figure 44. This shows that smaller flats are the most viable dwelling type with viability decreasing with the number of bedrooms. It also demonstrates that rents in the affordable sector at the LHA level can sustain a 4% cost of finance, but 5% is challenging for all except 1 bed flats, and at 6% LHA rents produce significantly less than the income required for debt service. LHA level rents are substantially below the level required for non-discounted properties at all yields.

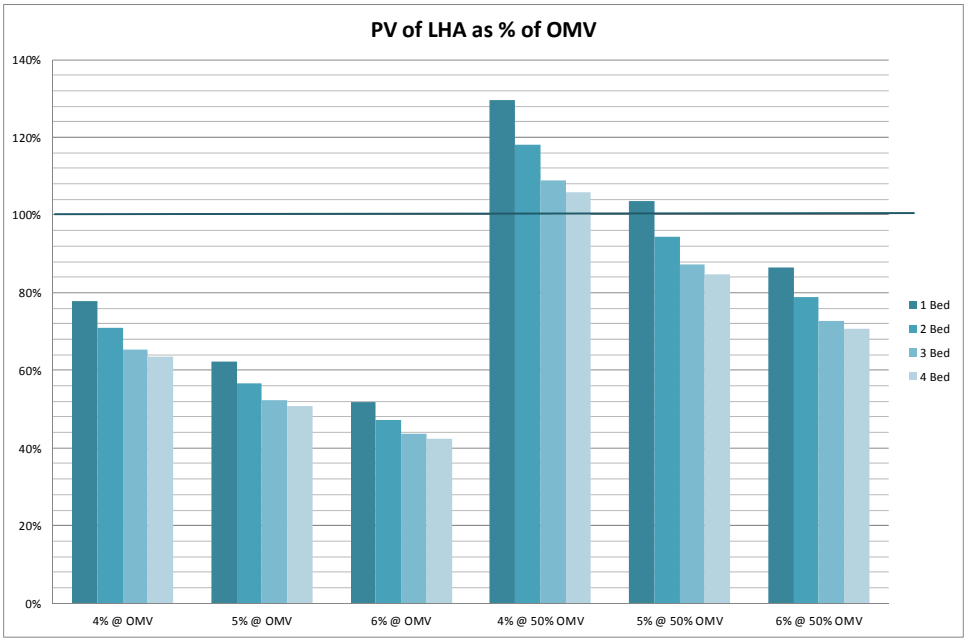


**Figure 44: Present Value of Local Housing Allowance as a % of Open Market Value**

This is translated into a debt lookup chart (se Appendix O) for use elsewhere.


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To distil the essence of this, property prices in Charthills Green are significantly more affordable than a London comparator, where a salary of c.£20,000pa higher would be required to secure the same size (if not quality) of accommodation (Table 12) while affordable rents at Charthills Green could service the discounted property purchase price at 4% financing costs and a margin above (but probably not 5%). The development can therefore afford to internally subsidise the provision of its own (40%) quota of affordable housing. Market rents are much more affordable than for comparably sized outer London property, alongside the better quality of housing and environment for family life. Whilst some would always opt for London Charthills Green is an affordable and very attractive alternative for the "young wealth creators".

## 7.5. Boosting the local economy

*"Every new home built brings £116,635 into the South East and creates 2.4 jobs directly and in the wider regional economy. 78% of South East businesses surveyed warned a lack of affordable housing would stall local economic growth and 68% said it would affect their ability to attract and keep workers[1]." (NHF 2013 p3.)*

The construction sector is a significant part of the productive economy. The measures instigated by government to marshal a recovery from the economic crisis in 2007 demonstrate its position as a good engine of growth. Direct construction spending has a multiplier effect so that every £1 spent in construction results in £2.60 total spend in the economy[38], and each new home creates 2.4 jobs[39]. Construction, then, is important to us all.

The direct and indirect expenditure of construction locally would be substantial as illustrated in Figure 45 below.[40]

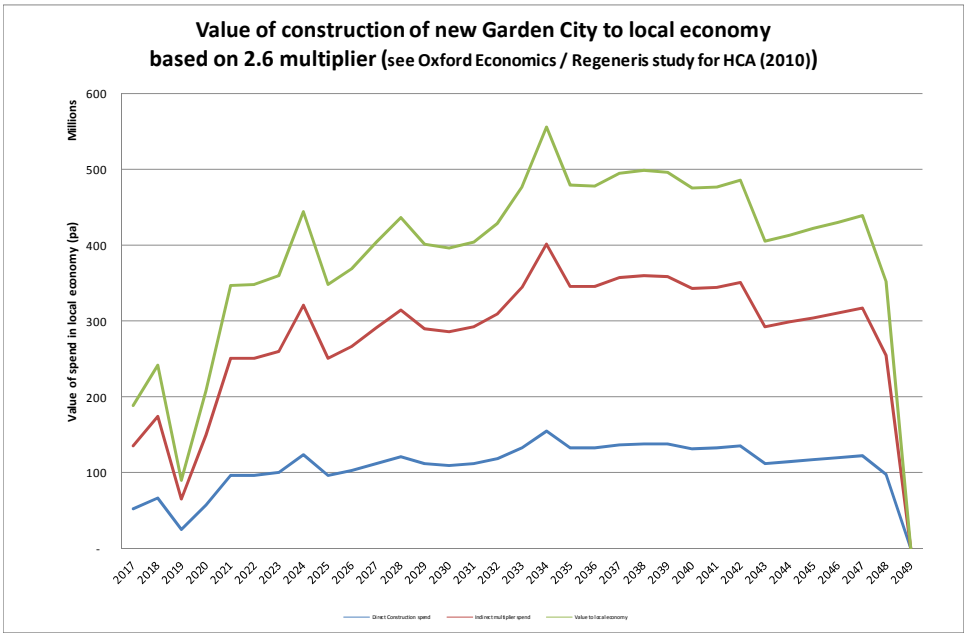


Figure 45: Value of Garden City to local economy


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A significant part of the fixed capital formation of the medieval period was in the development of the high quality craftsman-built timber framed homes that still grace the area today. The development of a timber framed homes industry could similarly define a new era of prosperity in Kent given the potential offered by three new garden cities. The combined requirement for a large number of new homes would pose challenges to the sector in the terms of a high volume and sustained demand but these would support a modern off-site homes manufacturing sector. The word off-site is conventionally used but arguably a better term would be "engineered" reflecting the higher standards and craftsmanship involved. There are certainly the skills in the area, particularly if production was Kent-wide, drawing on the engineering legacy of the dockyards of the Medway Towns and latterly the availability of large facilities and engineering skills at Manston in the economically challenged East of the county. There are already established key members of a local construction supply chain including Rowe (timber frames) at Manston, Knauf (Plasterboards and insulation), Marley (plastics and roofing), Ryarsh and Celcon (Bricks and blocks).

The 2014 Budget saw the announcement of a new garden city at Ebbsfleet and two of the five Finalist submissions to the Wolfson Economics Prize 2014 propose new garden cities in mid-Kent, which together add up to 90,000 new homes[41] and the potential demand has been modelled. Figure 46 shows the aggregated demand assuming 80% of the new homes were built in local manufacturing, and Figure 47 shows the value of spend, both on timber frame and on total build cost, both modelled at 50% and 100% of the potential market. Even before servicing the London and wider south-east markets is factored in the numbers speak for themselves. The potential boost to less economically favoured parts of Kent would be profound, sparking a new era of prosperity. Jobs and training (for both modern and traditional craft based construction) would flourish based on sustained high levels of demand. The skills boost would even feed through to the heritage sector by the resurgence of craft based skills alongside modern construction training to provide a much needed boost to the skilled pool of labour for repair and maintenance of the legacy of traditional buildings.


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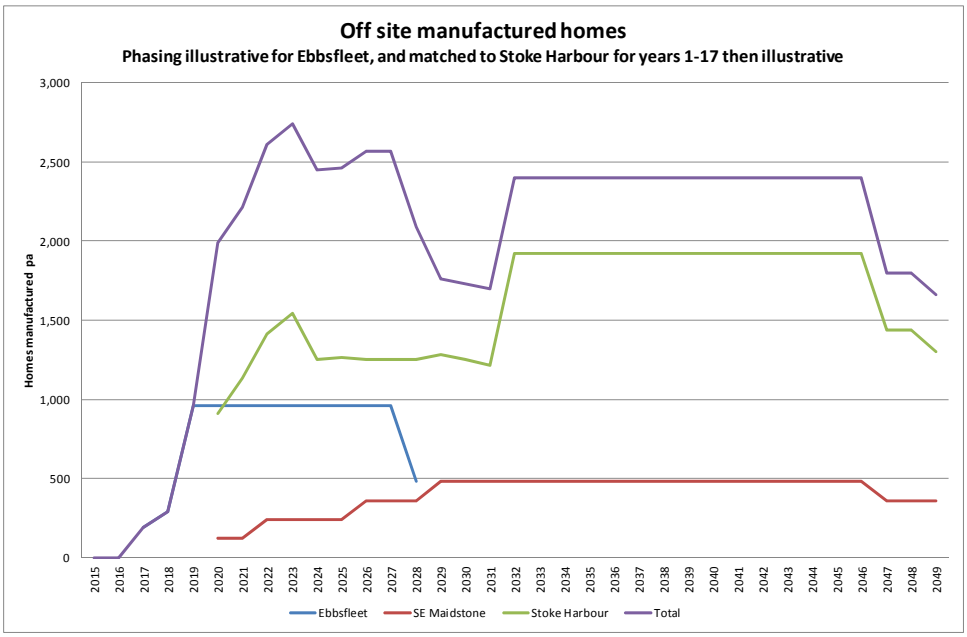


Figure 46: Potential market for engineered homes arising from three new garden cities

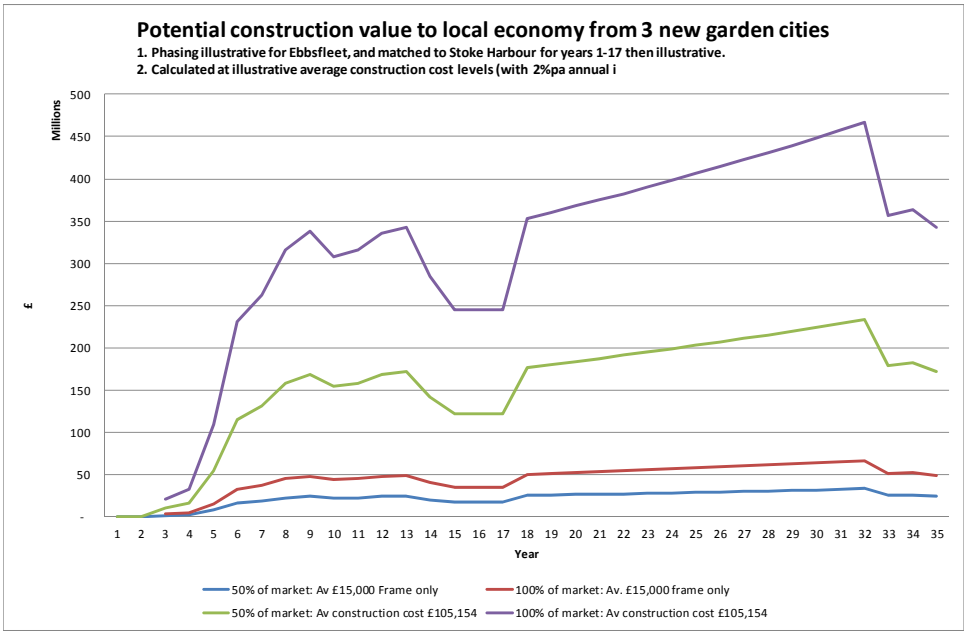


Figure 47: Potential construction value to Kent economy

Whilst the boost to the construction economy is an obvious and highly valuable benefit in itself Charthills Green will also seek to draw in jobs from London through the migration of “young wealth creators” in the information, finance and professional service sectors. This would be supplemented by the attraction of a major employer attracted by the high quality location, accessibility to London and the continent and the pool of young talent among the “pioneers”.

Kent is irrevocably interlinked to the London economy. Over 7,000 Maidstone residents commute daily to London and there is a symbiotic relationship. Providing homes for workers from London may not be popular but it is in the national interest,


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and equally importantly it can support the local economy boosting direct and indirect expenditure throughout the town.

### 7.6. Shared investment in long term success.

Start up support may be needed for a nascent construction industry and this would be a perfectly proper and reasonable use for the Regional Growth Fund given its potential to support the Kent, London and wider south-east markets. In the medium to longer term it would be reasonable for the GCDC to take over any residual loans to the company and to provide further investment if needed on appropriate terms. This would keep the industry local in terms of ownership, and generate returns which would be re-invested in the garden city or in supporting other local services.

The garden city would also be the principal agent of land assembly and servicing before trading it on to developers. That role would however also open the possibility of the GCDC retaining land for investment, for example for an exemplary new office development close to the HS1 station to attract a major new employer to the area. The GCDC would be a patient investor itself, developing the right type of facility to attract the best enterprise for the city. In doing so it would develop an asset of considerable value which would be expected to provide a stream of revenue and an underlying capital value which would eventually be bequeathed to the GCCC as its successor body, transferring benefit back to the community.

In order to do this the GCDC would need to access capital. Most is assumed to be sourced commercially or from the PWLB but a Garden City Bond is also a possibility. The fundamentally strong long term proposition should mean this is an attractive investment for institutional and private investors alike. The CIC status of the company would both reassure investors and also ensure the benefit is retained locally.

A company would naturally look to source capital at the most advantageous rates available, and the PWLB borrowing rate is certainly much higher than rates for conventional savings. There is a case for a limited pool of bonds at enhanced rates to be made available for local residents and original landowners to take a stake in the success of the company, and this is something which a Garden City Task Force is recommended to review further.

### 7.7. Let the community decide.

The Localism Act 2011 contained requirements for a local referendum in circumstances where it is considered that an excessive increase in Council Tax is proposed. Surely a development such as this is just as important ?

The powers to consent or deny the development of a new settlement reside with the local planning authority (LPA) who have a duty to consider all applications fairly, with an open mind and in accordance with planning law. This is all well and good but it fails to adequately deal with the question of pressures exerted over local councillors who frequently find themselves subject to high pressure lobbying. Whilst in no way impugning integrity or questioning judgement on planning matters it is not unknown for Councillors to have one eye on the ballot box when making these extremely important decisions.

It is vital however that decisions are taken in the best interests of the community as a whole. Questions of what development is consented, and where, are of interest to society as a whole and it is important that localised interests and viewpoints are


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balanced against those of the community at large. The most effective way to ensure this would be a local authority wide referendum. If the community as a whole is involved in the decision of what development takes place and where (i.e. whether a garden city is to be built), the moral authority for that development is stronger.

The possibility of Local Plan Regulation 18 or Regulation 19 Consultation[42] being used as a local referendum should therefore be considered further. The local planning authority is required by law to consult but they themselves choose the matters which will be consulted on and so a well founded proposal for a garden city could be side-lined before consultation. There are important issues of local accountability here, both for the LPA and also for the promoters of a garden city. For this reason it is recommended that this be subject to further consideration by a Garden City Task Force.

These ideas are summarised in Figure 48 below.

***Key Arguments***

- *Design reflecting and respecting the character and traditions of the local area, with Masterplan developed through Enquiry by Design*
- *Significantly enhanced voluntary compensation scheme for all existing residents affected by proposals*
- *Shared benefit from long term development value through share capital subscription in GCDC Bond, so that share of profits available for the local communities*
- *Local authority wide referendum*
- *Garden City Community Council to ensure locally focussed long term governance*

**Figure 48: Securing popular consent**


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# A Call to Action


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## 8. A Call to Action.

There is impetus and wind in the sails of a new movement for garden cities, which is welcome news. The cross party support evident to date takes the issue out of politics, and the government prospectus[43] makes an important statement of intent[44], but in order for Garden Cities to deliver the there is a need for further action from government.

This paper is due to be published 8 months prior to a general election, at a time when the parliamentary agenda for the final term of the current administration has long been established and so it will fall to the next administration to take any major steps. As there is a broad political consensus around the need for more investment in housing, for both economic and social reasons, and the three largest parties have all strongly endorsed garden cities as an important way forward, there is every reason to expect prompt action. The following steps are proposed:

1. **Establish a Garden Cities Task Force** to guide the development of a new wave of Garden Cities and develop the operational framework, including:
    a. It makes no sense for each new garden city to be developed in isolation, each having to take the cost and risk of innovating on governance, funding etc, so a Task Force should develop model governance and funding structures, establish their validity, legality, robustness and market acceptance
    b. A task force should look to best practice internationally in garden city development and design so that we learn from the best, and avoid costly mistakes. In doing so this would increase market and investor confidence.
2. **Funding guarantees** – Garden cities are a fundable proposition but government guarantees materially improve the likely funding rate improving the payback and the return to the local community, further improving prospects of support.
3. **Operational Support** (e.g. from the HCA's ATLAS Team) and intervention if the local planning authorities fail to process applications in reasonable time.
4. **Investment** through LEPs
    a. Seedcorn funding for nascent construction sector enterprises to support garden city development
    b. Seedcorn funding to establish communities of entrepreneurship – analogous to Enterprise Zones
5. **Reform** compensation for land acquisition through CPO. The TCPA has advanced a clear case for change and made recommendations which need to be enacted so that compensation accrues where due, but not where any uplift in land value derives from public investment.
6. **Promotion** of new Garden Cities to the market, and internationally.
7. **Support** the process of identification of areas for new garden cities.


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A positive vote would pave the way for government action. Formation of a GCDC would require detailed work to define the scope, powers, governance and accountability of the new body but this work could be templated to speed implementation. As outlined above a Garden Cities Task Force could undertake the development of model structures to avoid duplication or concerns about inappropriate allocation of powers and responsibilities, with recommendations laid before Parliament by the appropriate Minister.

The necessary powers to take on debt, invest, acquire land, undertake planning and the like are, however, already in place in the form of the New Towns Act. It is possible that a garden city would need to be specifically included as part of a new class of new town, but the powers needed are available, and again the Garden Cities Task Force could undertake the detailed work, with recommendations laid before Parliament for endorsement.

The Planning Inspectorate should review proposals for new garden cities given their scale and significance and the need for expert review of proposals. This is analogous to the principle that nationally significant infrastructure projects are considered at a higher level authority. Pragmatically, however, government has an easy path to promote and support the development of a new generation of garden cities where local communities have shown their support at the referendum ballot box.


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# Conclusions


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## 9. Conclusions.

The original garden cities have delivered the vision of the early pioneers of the garden city movement. We now need to rediscover and re-engineer all that is best in garden cities in a style relevant to 21st Century Britain. This essay proposes that this is achieved by involving local people from day one through Enquiry by Design planning forums. They know the area and what works. Their support is essential. They will live there once the new garden city is developed. There should be no prescription. There must however be guidance and support so that the best outcome is achieved in the form of designs reflecting and respecting the best of local character.

The creation of a free standing garden city means the design process is likely to pick up many of the original design themes. A number of walkable suburbs would each have their own identity within an overall garden city defined by architecture reflecting the best of local and regional character. Neighbourhoods would be defined by a series of green routes, avenues, play and recreation areas and with strong vistas picking out public or important buildings.

Development would pick up contemporary themes in the form of integrated and sustainable transport networks, and homes and public buildings designed to higher standards of energy efficiency. The Zero Carbon standard would be the baseline but higher levels of energy efficiency and sustainability should be designed in. New jobs will need to be created and this will involve recruiting companies who buy into this vision. The provision of workspace and better ICT connectivity within the home, and local business support services at neighbourhood level, would also improve employment prospects and support modern and flexible lifestyles.

This process of winning local support carries through to the formation of a GCDC to take on responsibility for designing, co-ordinating, planning and delivery. Powers to acquire land, compulsorily if necessary, and to pay generous compensation should be vested in the GCDC. For simplicity and to avoid the need for additional legislation this is proposed as a voluntary compensation scheme, but endorsed by government to establish norms which would be a material consideration in the Planning process.

The financing for master-planning and infrastructure can be sourced at beneficial rates through access to PWLB loans, but the funding for detailed design, land assembly and overall co-ordination of development should be sought commercially. There are major investors willing to fund new garden cities and the modelling undertaken demonstrates viability. This may need to be underpinned by SLICs or TIFs.

The option for local residents to take a stake in the financial success of the GCDC would be significant in both enlisting local support and buy-in to the development and also incentivising shared success.

Detailed modelling demonstrates that the development will generate significant returns, and proposals are made to share these equitably, including opportunities for returns on investment by the local community.


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The ongoing management and maintenance will require a new Community Council and recommendations are made for long term funding and the distribution of powers and responsibilities between the GCCC and appropriate levels of local government.

The key recommendations from this paper are included at Appendix A.

This essay presents a challenge to politicians from forward thinking citizens of today on behalf of all citizens of the future. Strengthen resolve, let ambition and imagination free and let spirits soar, for we have nothing to lose but ....


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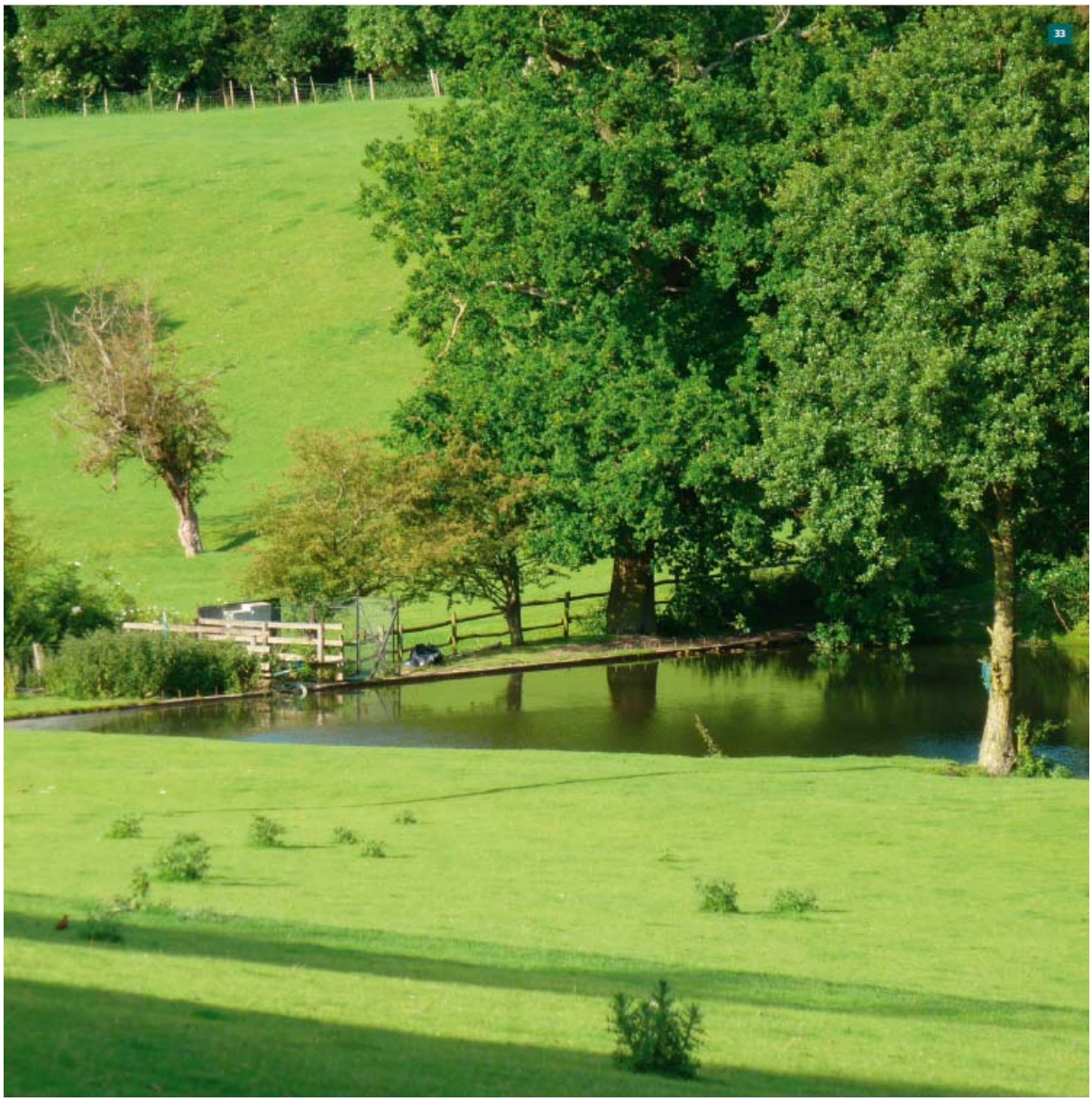

Photograph taken by author in area adjoining proposed development of SE Maidstone Garden City:


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## Appendix A: Summary of Recommendations

The following recommendations are drawn from the main body of the essay and are ordered according to the three elements of the question rather than in accordance with their order of appearance in the main body of the essay or their perceived importance.

### 1. Vision

#### 1.1 Architecture and Design

1. Masterplan drawing inspiration from the local area, and from local residents, formed through Enquiry by Design, leading to greater overall design coherence.
2. Design reflecting and respecting the history and traditions of the area, picking up the form and characteristics of buildings and palate of materials employed.
3. Utilisation of that history through identification of design “elements” to develop a new and forward thinking vernacular style for the area.
4. Development following the pattern of fields to define neighbourhoods, retaining hedgerows as green corridors and incorporating local allotments and play space.
5. One design palate to provide coherence across wider settlement, but key theme for each neighbourhood (walkable suburb) to give local character.
6. Design competition to select lead architect for each neighbourhood.
7. Increased provision of green and civic space (33% of total land area).
8. Higher levels of investment in public realm.
9. Local centre for each neighbourhood, based around a primary school with multi-purpose use designed in from the start, and well resourced overall centre to garden city.

#### 1.2 Sustainability

10. New employment creation in the financial, information and creative sectors.
11. Minimum of Zero Carbon Standard but target Level 6 of CSH, each stressing passive systems.
12. Local sourcing of materials policy
13. Promotion of Self Build
14. Neighbourhood community stores, with higher order Garden City shopping area
15. Retention of all trees of grade A and otherwise a policy of 10 for 1 replacement.
16. Water saving and harvesting policy, including extensive use of SUDS
17. Walkable suburbs to discourage car use, foster community spirit and support low carbon lifestyles
18. Integrated transport systems to the centre and to the regional transport infrastructure, with interconnectivity to London via high speed rail system
19. Public transport based on low carbon energy sources


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### 1.3 Training and employment

20. Construction (MMC) and traditional crafts skills centre of excellence and training colleges
21. Local labour policy, linking award of construction work to firms who commit to achieve target percentage of local labour and commitment to local training.

## 2. Economic Viability and Governance

22. Development vehicle empowered to deliver the infrastructure, with clear "Grampian" conditions re delivery to ensure adequate infrastructure during development phase.
23. Development vehicle vested with CPO powers to ensure delivery.
24. Development vehicle vested with Planning powers, with duty to co-operate with Local Planning Authority and County on structure issues.
25. Multiple of agricultural value plus deferred "overage" payment to land owners in recognition of planning consent.
26. Use of all existing funding support measures e.g. CIL / s.106.
27. Community Interest Companies should be given powers to borrow from the PWLB, which would require some fine tuning of current regulations but is unlikely to be controversial.
28. Long term commercial finance available via institutional sources e.g. Pension Funds who are seeking safe long term returns.
29. Mixed tenure, incl market rented.
30. Garden City Community Council to ensure locally focussed long term governance.

## 3. Popularity

31. Significantly enhanced voluntary compensation scheme to all affected households.
32. Shared benefit from long term development value through share capital subscription and distribution so that share of profits available for the local communities.
33. Significant yield available for community investment and infrastructure.
34. Local authority wide referendum

## 4. A call for action

35. Establish a Garden Cities Task Force.
36. A programme of funding guarantees in lieu of grant.
37. Operational Support.


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38. Investment through LEPs , particularly infrastructure and seed-corn funding.
39. Reform compensation for land acquisition through CPO.
40. Promotion of new Garden Cities to the market, and internationally.
41. Support the process of identification of areas for new garden cities.


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## Appendix B: Garden City Principles

- Land value capture for the benefit of the community
- Strong vision, leadership and community engagement
- Long-term stewardship
- Mixed-tenure homes and housing types that are genuinely affordable and meet the requirements of those most in need
- A wide range of local jobs in the Garden City within easy commuting distance from homes
- Beautifully and imaginatively designed homes with gardens, combining the best of town and country to create healthy, vibrant communities
- Development that enhances the natural environment, providing net biodiversity gains and using zero-carbon and energy-positive technology to ensure climate resilience
- Strong cultural, recreational and shopping facilities in walkable, vibrant, sociable neighbourhoods
- Integrated and accessible transport systems, with walking, cycling and public transport designed to be the most attractive forms of local transport

*TCPA. 2014a.The Art of Building a Garden City. Town and Country Planning Association, London.*


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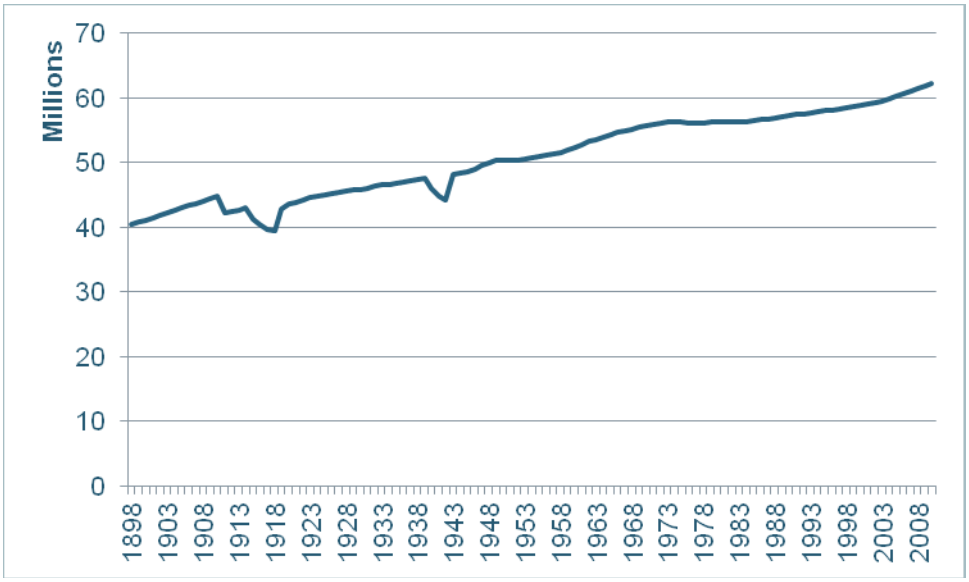
## Appendix C: Demographic Change

The changing demographics of the UK population will influence both the need for more homes and the type of homes required. This inevitably influences the need for, and character of, garden cities.

The overall size of the population is now more than 50% higher than when Howard's proposals for garden cities were first published (see Figure 49). The economic geography of the country has changed dramatically with the gradual decline of heavy industry in the Midlands and the North and the rise of the information, finance and services sectors which are more strongly concentrated in the South East. A much lower proportion of the population live in rural areas and a much higher proportion crowd into the major cities, again particularly in the South-East.




(Source: Office for National Statistics, 2012. Mid-1851 to 2010 Population Estimates: United Kingdom; estimated resident population)

**Figure 49:UK Population from publication of "Tomorrow: A Peaceful Path to Real Reform" to 2010**

Household structures are now more diverse, and more fluid than ever before. The combined effects of changing social norms and economic circumstances mean the traditional or stereotypical norm of a nuclear household with two parents and 2.4 children is now something of a rarity. Later household formation, smaller household sizes and a significant increase in divorce rates, together with increased life expectancy all contribute to the need for smaller accommodation, with the norm for planning services now assuming 2.7 people per household.

Figure 50 demonstrates this in the form of a significant increase in the number of households over the period 2001-2011, and this increase is particularly focussed in one, two and three person households. The number of households of four persons was broadly static and the number of five person households fell slightly.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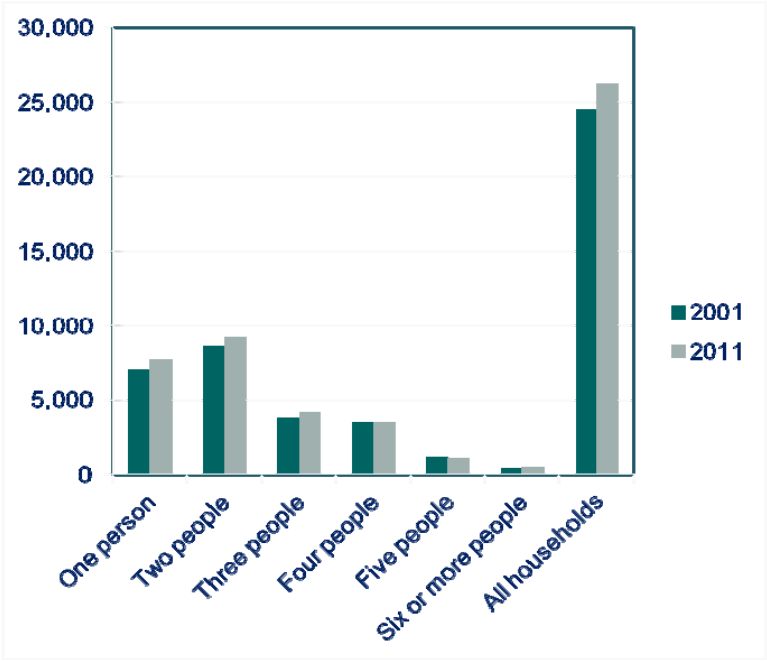
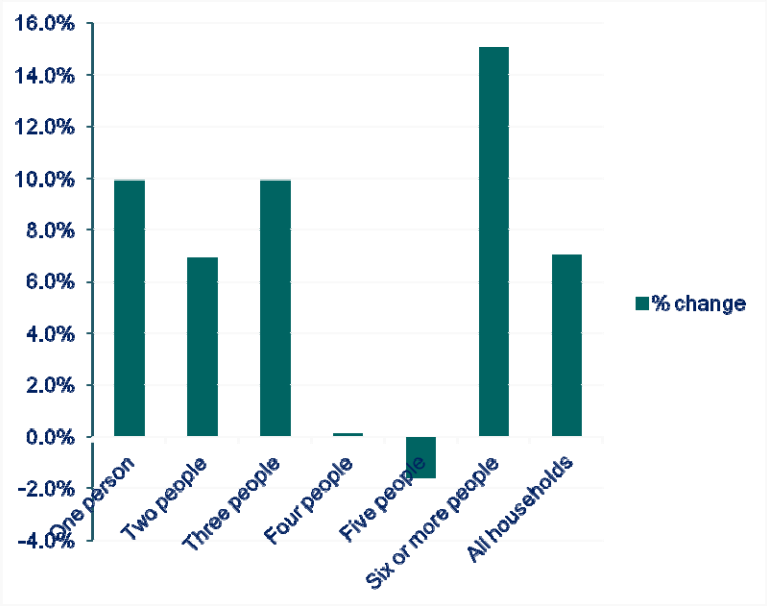



(Source: ONS review of 2001-2011 data)

**Figure 50:Number of households ('000s) 2001-2011**

Figure 51 shows this more starkly with an 7% overall increase in the number of households, but approximately 10% increases in one and three person households. The increase in single person households includes both new household formation and also the effects of ageing, with greater numbers living to old age in single person households.




(Source: ONS review of 2001-2011 data)

**Figure 51:Percentage change in number of households 2001-2011**

This significant change in the composition and character of housing needs poses a challenge given the inherent housing market difficulties in responding quickly where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new supply is needed. The evolution of housing needs and expectations requires more flexibility and adaptability over time from existing housing stock and the new homes we build. There is little likelihood of this trend reversing (see Figure 52) so the homes we produce will need to incorporate adaptability to future household needs.

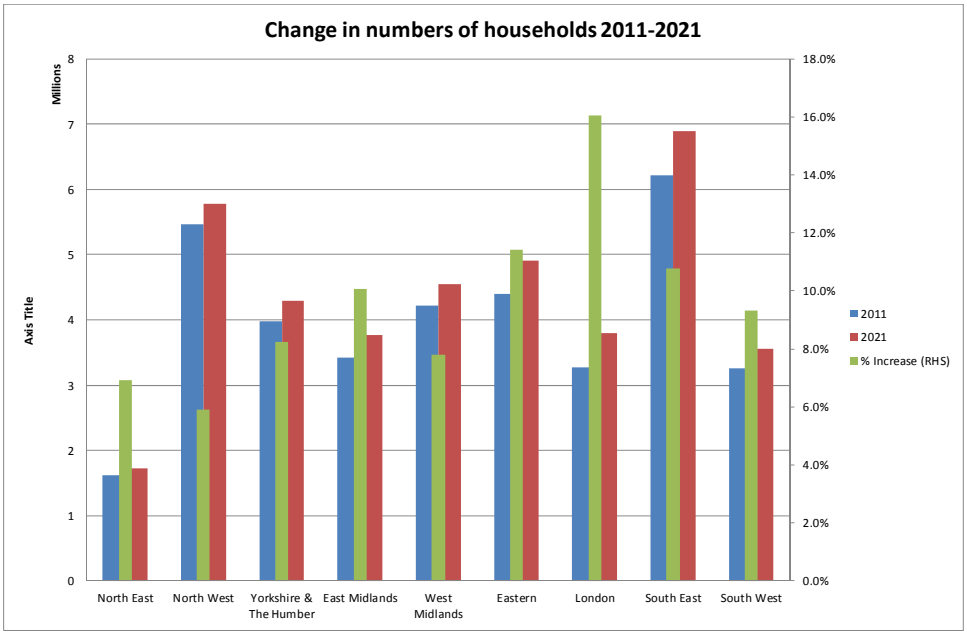


**Figure 52: Household interim projections, 2011-2021**

Source: DCLG, Household interim projections, 2011-2021, England.

*There has been a long-term decline in average household size, reflecting the increased proportion of older households, as well as increasing levels of divorce and separation. The 2011-based projections assume that the decline will continue, but at a much slower rate than in earlier projections. ….It is now assumed that the average household size will decline from 2.36 in 2011 to 2.33 in 2021. The 2008 projections assumed a decline from 2.31 to 2.23 over the same period, and as a result a higher rate of projected household growth. The lower projected rate of decline reflects the experience of the last decade, as shown by both the initial 2011 Census results, and Labour Force Survey data. However, embedded within those revised assumptions about household size is the continuation of the high numbers of 'concealed' households.*

Wilcox S. and Perry J. 2014. UK Housing Review 2014.p40.

We are also an ageing population. Figure 53 shows changes in the overall UK population 2012-31 by age cohort and the significant shift upwards and to the right of the green line (representing 20131 projections) confirms this increase and, significantly, ageing of the population. This has clear implications for what housing is built, with what support, and where.


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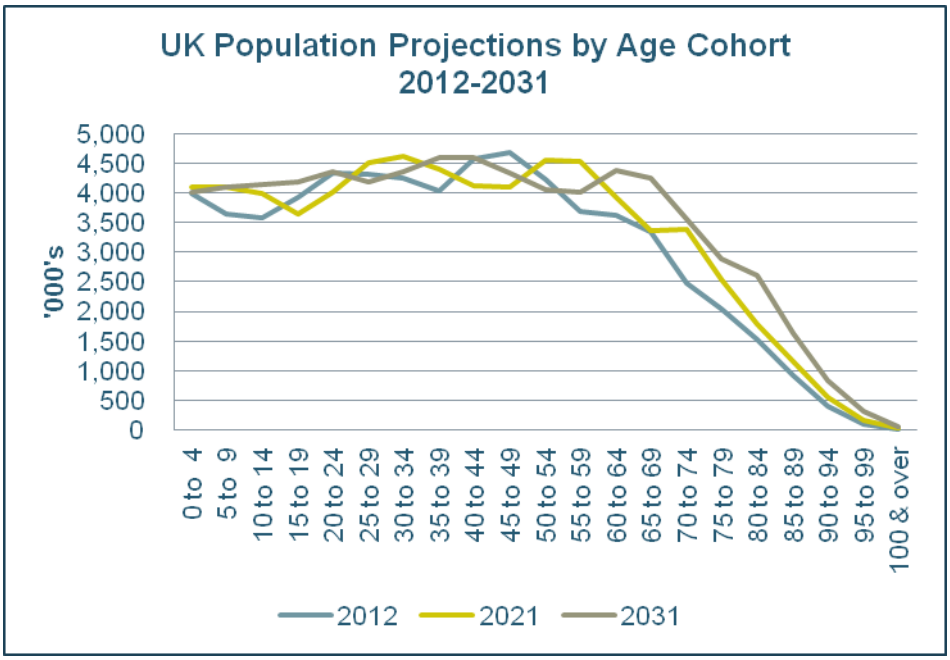


(Source: ONS)

**Figure 53:UK Population Age Distribution 2012-2031**

This is confirmed in Figure 54 and Figure 55 which show an overall 12% increase in population but with a significant increase in the over 65 age cohort (- up from 17% to 22.6% of the total) matched by a decrease in the 20-65 age cohort (- down from 59.2% to 54.4%).

| | 2011 | 2021 | 2031 |
|---|---|---|---|
| **Total Pop'n** | **63,704** | **67,550** | **71,380** |
| % Under 5 | **6.3%** | **6.1%** | **5.6%** |
| % under 20 | **23.8%** | **23.4%** | **23.0%** |
| % 20 – 65 | **59.2%** | **57.3%** | **54.4%** |
| % over 65 | **17.0%** | **19.2%** | **22.6%** |

(Source: ONS)

**Figure 54:UK Population change 2011-2031**

| Percentages | 2011 | 2031 | Change |
|---|---|---|---|
| **0-14** | 17.6 | 17.1 | -0.5 |
| **15-29** | 19.7 | 17.8 | -1.9 |
| **30-44** | 20.2 | 18.9 | -1.3 |
| **45-59** | 19.8 | 17.4 | -2.4 |
| **60-74** | 14.8 | 17.1 | 2.3 |
| **75 & over** | 7.9 | 11.7 | 3.8 |
| **All ages** | 100 | 100 | 0 |
| **Mean age** | 40.1 | 42.7 | 2.6 |
| **Median age** | 39.7 | 41.9 | 2.2 |

(Source: ONS)

**Figure 55:Percentage change in population 2011-2031 by age cohorts**


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## Appendix D: Housing need and supply in England

The increasing housing needs deriving from the demographic data as discussed in Appendix 2 are self evident. Rates of new household formation shout out the need for more new homes. In practice the rate of new home production has declined substantially as shown in Figure 56 and investment has failed to keep pace with increasing household formation Figure 57, even before the effect of demolitions.

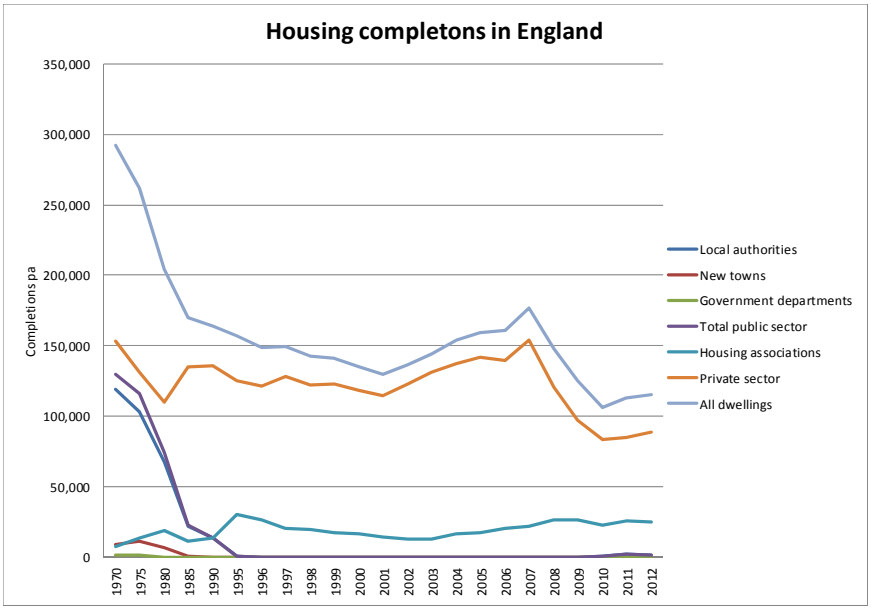


Figure 56: Housing completions 1970 to 2012

Source: Wilcox S. and Perry J. 2014. UK Housing Review 2014. Table 19.

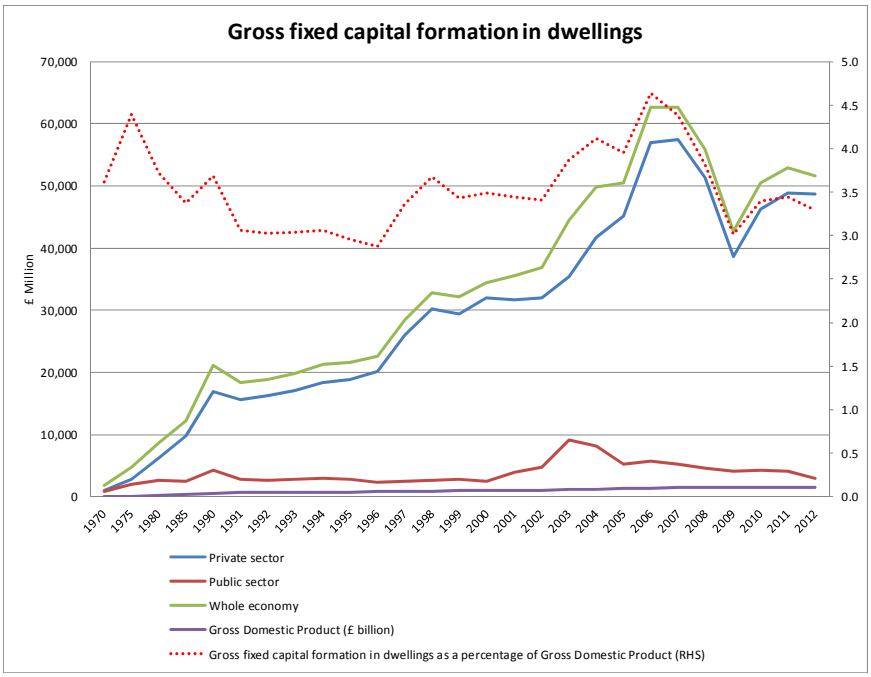


Figure 57: Gross Fixed Capital Formation in Housing 1970-2012

Source: Wilcox S. and Perry J. 2014. UK Housing Review 2014. Table 18.


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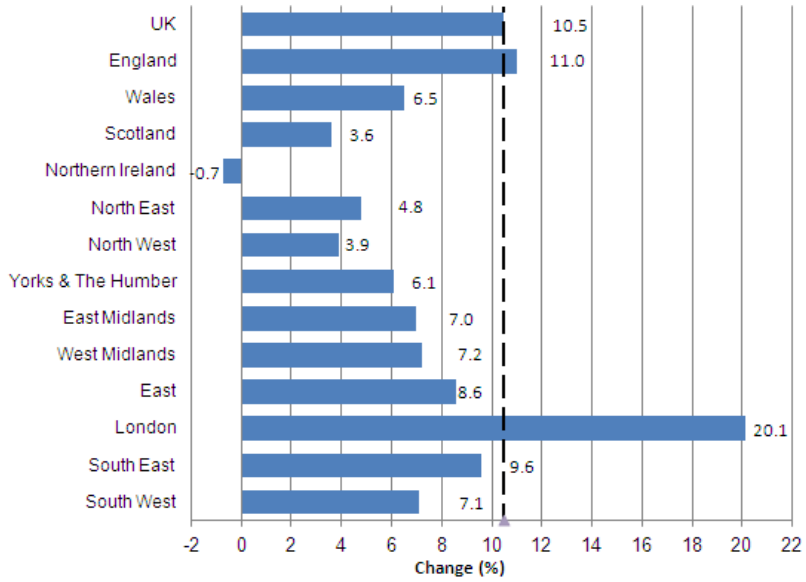
## Appendix E: House Price movements

Following the housing market collapse of 2007 prices are substantially outstripping inflation across all areas of the UK except Northern Ireland, with an average increase of 11% across England and extremely high rates of year on year inflation in London (20%) and the South East (9.5%).




Source: Office for National Statistics House Price Index, May 2014, p8.

Figure 58: Annual house price inflation to Q2 2014

Table 15: House price inflation across London Boroughs

| Borough | Flat | Terrace | Semi-Detached | Detached | Grand Total | No. |
|---|---|---|---|---|---|---|
| BARKING AND DAGENHAM | 162,711 | 225,683 | 231,543 | 328,000 | 201,743 | 209 |
| BARNET | 291,053 | 479,346 | 686,394 | 1,430,300 | 496,708 | 414 |
| BEXLEY | 161,095 | 238,007 | 302,603 | 435,622 | 250,485 | 289 |
| BRENT | 295,327 | 646,269 | 493,838 | 833,250 | 399,581 | 306 |
| BROMLEY | 243,018 | 365,187 | 421,377 | 775,344 | 400,454 | 517 |
| CAMDEN | 707,481 | 1,335,386 | 3,132,865 | 2,507,500 | 835,614 | 272 |
| CITY OF LONDON | 874,491 | | | | 874,491 | 28 |
| CITY OF WESTMINSTER | 1,147,224 | 2,210,569 | 2,915,000 | | 1,269,852 | 341 |
| CROYDON | 201,872 | 277,357 | 388,646 | 603,292 | 278,933 | 541 |
| EALING | 335,755 | 579,571 | 747,439 | 1,094,286 | 478,020 | 289 |
| ENFIELD | 237,920 | 314,365 | 512,780 | 697,133 | 322,529 | 338 |
| GREENWICH | 324,001 | 358,662 | 411,705 | 650,749 | 346,910 | 350 |
| HACKNEY | 399,908 | 876,109 | 997,000 | 215,000 | 484,166 | 248 |
| HAMMERSMITH AND FULHAM | 554,158 | 1,412,831 | 2,000,034 | 1,242,500 | 761,081 | 260 |
| HARINGEY | 334,370 | 593,570 | 1,071,028 | 3,413,750 | 521,622 | 245 |
| HARROW | 300,115 | 391,986 | 477,697 | 749,603 | 411,274 | 215 |
| HAVERING | 164,595 | 243,025 | 312,042 | 489,631 | 269,766 | 334 |
| HILLINGDON | 204,114 | 310,090 | 345,553 | 550,569 | 314,295 | 294 |
| HOUNSLOW | 302,309 | 398,259 | 580,812 | 700,625 | 390,661 | 276 |
| ISLINGTON | 528,182 | 1,234,137 | 1,465,000 | 1,276,667 | 665,556 | 239 |
| KENSINGTON AND CHELSEA | 1,309,053 | 2,989,311 | 8,646,600 | 2,750,000 | 1,676,463 | 305 |
| KINGSTON UPON THAMES | 316,531 | 431,724 | 551,148 | 705,576 | 425,036 | 233 |
| LAMBETH | 533,535 | 743,571 | 605,296 | 925,000 | 580,225 | 421 |
| LEWISHAM | 257,266 | 433,474 | 554,121 | 786,667 | 344,932 | 384 |
| MERTON | 354,933 | 478,720 | 853,078 | 2,732,606 | 527,932 | 280 |
| NEWHAM | 230,873 | 282,958 | 191,500 | 335,000 | 253,286 | 255 |
| REDBRIDGE | 211,926 | 338,202 | 409,139 | 716,840 | 319,509 | 293 |
| RICHMOND UPON THAMES | 440,267 | 724,495 | 908,309 | 1,145,283 | 647,373 | 310 |
| SOUTHWARK | 423,445 | 637,952 | 885,568 | 1,753,000 | 495,114 | 368 |
| SUTTON | 201,662 | 303,513 | 396,179 | 616,913 | 316,371 | 218 |
| TOWER HAMLETS | 452,974 | 696,587 | 499,950 | | 464,319 | 498 |
| WALTHAM FOREST | 233,560 | 359,099 | 414,828 | 373,000 | 310,008 | 266 |
| WANDSWORTH | 474,619 | 939,667 | 1,412,034 | 3,383,594 | 663,093 | 566 |
| **Grand Total** | **446,185** | **557,150** | **568,123** | **880,938** | **506,760** | **10,402** |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House prices in London are running far ahead CPI and while this may please some (e.g. those who see a substantial appreciation in the value of their assets, and commission-driven London estate agents) it is not good for London, for those priced out of home ownership and for the country at large, and as remarked by the Mayor for London (see para 7.4) this is creating "a '*scourge and a blight'* that is causing misery for millions of Londoners not on the property ladder".

If London is unaffordable that will impinge on its productivity and its reputation. There needs to be an alternative and so a new wave of garden cities surrounding the capital and well connected to the centre of London to provide viable and attractive alternatives is required.

Table 16 and Table 17 below show house price levels and inflation across a number of East and South London Boroughs where Charthills Green demand may come from.

**Table 16: House price inflation across East and South London Boroughs**

| Direction | Borough | Flat | Terrace | Semi-Detach | Detached | No. |
|---|---|---|---|---|---|---|
| North | Hackney | 399,908 | 876,109 | 997,000 | 215,000 | 248 |
| | Haringey | 334,370 | 593,570 | 1,071,028 | 3,413,750 | 260 |
| | Enfield | 237,920 | 314,365 | 512,780 | 697,133 | 245 |
| East | Tower Hamlets | 452,974 | 696,587 | 499,950 | - | 215 |
| | Newham | 230,873 | 282,958 | 191,500 | 335,000 | 334 |
| | Barking | 162,711 | 225,683 | 231,543 | 328,000 | 294 |
| North East | Waltham Forest | 233,560 | 359,099 | 414,828 | 373,000 | 276 |
| | Redbridge | 211,926 | 338,202 | 409,139 | 716,840 | 239 |
| Sou East | Greenwich | 324,001 | 358,662 | 411,705 | 650,749 | 305 |
| | Bexley | 161,095 | 238,007 | 302,603 | 435,622 | 233 |
| | Bromley | 243,018 | 365,187 | 421,377 | 775,344 | 421 |
| South | Lewisham | 257,266 | 433,474 | 554,121 | 786,667 | 384 |
| | Southwark | 423,445 | 637,952 | 885,568 | 1,753,000 | 280 |
| | Croydon | 201,872 | 277,357 | 388,646 | 603,292 | 255 |

Source: Land Registry June 2014

**Table 17: Annual House price inflation across East and South London Boroughs**

| Direction | Borough | Flat | Terrace | Semi-Detach | Detached |
|---|---|---|---|---|---|
| North | Hackney | 208% | 297% | 325% | 42% |
| | Haringey | 174% | 201% | 349% | 672% |
| | Enfield | 124% | 107% | 167% | 137% |
| East | Tower Hamlets | 236% | 236% | 163% | 0% |
| | Newham | 120% | 96% | 62% | 66% |
| | Barking | 85% | 77% | 76% | 65% |
| North East | Waltham Forest | 122% | 122% | 135% | 73% |
| | Redbridge | 110% | 115% | 133% | 141% |
| Sou East | Greenwich | 169% | 122% | 134% | 128% |
| | Bexley | 84% | 81% | 99% | 86% |
| | Bromley | 126% | 124% | 137% | 153% |
| South | Lewisham | 134% | 147% | 181% | 155% |
| | Southwark | 220% | 216% | 289% | 345% |
| | Croydon | 105% | 94% | 127% | 119% |

Source: Land Registry June 2014


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LB Enfield has been focussed on as it is approximately the same travel time to a central London terminus with good employment prospects in the new economy as Charthills Green would be given a new HS1 station.

**Table 18: Housing costs in LB Enfield**

**London (Enflied used for illustration)**

| Market sale | Value | Mortgage pcm over 25 yrs 4.00% | 4.25% | 4.50% | 4.75% | 5.00% | Min salary required @ 5% deposit |
|---|---|---|---|---|---|---|---|
| 1 Bed Flat | 237,920 | 1,256 | 1,289 | 1,322 | 1,356 | 1,391 | 50,228 |
| 2 Bed Flat | 237,920 | 1,256 | 1,289 | 1,322 | 1,356 | 1,391 | 50,228 |
| 2 Bed House | 314,365 | 1,659 | 1,703 | 1,747 | 1,792 | 1,838 | 66,366 |
| 3 Bed House | 512,780 | 2,707 | 2,778 | 2,850 | 2,923 | 2,998 | 108,254 |
| 4 Bed House | 697,133 | 3,680 | 3,777 | 3,875 | 3,974 | 4,075 | 147,173 |
| 4+ Bed House | 697,133 | 3,680 | 3,777 | 3,875 | 3,974 | 4,075 | 147,173 |

Source: Land Registry June 2014


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## Appendix F: Community Infrastructure planned.

The following workings were used to assess the level and cost of community infrastructure assumed in the financial modelling.

| | Health Centre |
|---|---|
| Total population | 35,250 |
| Size (100m2 per 1,000 pop'n) | 3,525 |
| Build Cost / m2 | 2,000 |
| Fees and O/h etc | 20% |
| Total Cost | 8,460,000 |
| Cost per centre (3 no) | 2,820,000 |

**Public Buildings**

Source:

| | "Civic Centre" | Community Centre | Sports Centre |
|---|---|---|---|
| Size (m2 - estimated) | 5,000 | 1,500 | 5,000 |
| Build Cost / m2 | 2,000 | 2,000 | 2,000 |
| Fees and O/h etc | 20% | 20% | 20% |
| Cost | 12,000,000 | 3,600,000 | 12,000,000 |

**Leisure and Recreation**

Source for school sports fields: s77 of School Standards and Frameworks Act 1998 and "Area guidelines for mainstream schools. Building Bulletin 103" (pp 35-38). Department for Education. June 2014

| | Green spaces | Local Play | Sports Fields |
|---|---|---|---|
| Size (M2) | 2,000 | 25,000 | 90,000 |
| Cost / m2 | 1,000 | 250 | 100 |
| Cost | 2,000,000 | 6,250,000 | 9,000,000 |

**Education**

Source: Area guidelines for mainstream schools. Building Bulletin 103 (Annex A). Department for Education. June 2014

| | Secondary school | Primary school | Childrens Nursery |
|---|---|---|---|
| Total places | 700 | 450 | |
| Size | 6,750 | 2,310 | |
| Build Cost / m2 | 2,000 | 2,000 | |
| Fees and O/h etc | 12% | 12% | |
| Cost | 15,120,000 | 5,174,400 | 0 |
| No required | 5 | 5 | |
| | 54,080,131 | 24,919,017 | |
| Land requirement | 75,600,000 | 25,872,000 | |


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# Appendix G: 10 Point Sustainability Action Plan

**This is a repetition of the Charthills Green 10 point sustainability action plan included in the document but repeated here in more easily readable form.**

## Charthills Green 10 point sustainability action plan

Charthills Green will develop plans which embody high standards of sustainability across the development, and with particular focus on housing and transport infrastructure.

It will also commit to the following 10 point action plan in its first year:

### Biodiversity

1. A detailed survey of the area will be undertaken in the 2nd half of 2015 to develop a strategy for conserving and enhancing local biodiversity. The process will engage the local community as widely as possible, particularly through local schools who will be involved in planning and developing new habitat for any necessary translocations.

### Landscape and Historic Environment

2. A key theme is the way that history and tradition can and should inform the future development and so particular steps will be taken to address this. The area local to the site(s) has a rich history and a number of important heritage assets although these are almost all outside the specific area for development. A landscape and historic environment assessment will be undertaken in the 2nd half of 2015, again seeking to engage extensively with local schools and the local community.
3. Proposals will be brought forward which seek to identify, document and exhibit local history, with specific evidence on interpretation for local schools so that the importance of heritage is reinstated in popular thinking. Leeds Castle is ideally placed to play a central role for long term exhibition of the local history and how it has informed community and construction over the years.
4. Given this focus on the built heritage it would be wholly in keeping for Charthills Green to earmark a portion of the Community Dividend fund arising from development surpluses for a programme of support for owners of important listed buildings. Up until March 2014 VAT relief was offered on improvements to Listed Buildings, but this was cancelled in the 2013 Budget. As a practical demonstration of its commitment Charthills Green could offer to underwrite the VAT on repairs (as opposed to the misguided VAT exemption on improvements) for local properties, supporting owners in keep local heritage assets in good condition despite the higher costs involved.

### Energy

5. Charthills Green will aim to be zero carbon in that over a year the net carbon dioxide emissions from all energy use within the buildings on the development as a whole will be zero or below. The initial masterplanning and all subsequent planning applications will demonstrate how this will be achieved.


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### Green Infrastructure

6. 30% of the new community land will be allocated to green space, of which at least two thirds should be public including a network of well managed, high quality green spaces, which are linked to the wider countryside.
7. Each neighbourhood will have adequate land given over to allow local production of food, with allotments available on nominal rents.
8. Neighbourhoods will be designed and planned to support healthy and sustainable lifestyles, particularly by creating delightful public places to encourage interaction and play, and with cycle routes and pathways encouraging walking and cycling over car use.

### Waste

9. Develop a sustainable waste and resources plan, covering both domestic and non-domestic waste, which:
    - sets targets, for residual waste levels, recycling levels and landfill diversion, as well as demonstrates how they will be achieved, monitored and maintained.
    - provides evidence that the use of locally generated waste as a fuel for combined heat and power generation for local use has been considered,
    - demonstrates how construction process waste (demolition, building, excavating) will avoid being sent to landfill (exception for the materials for which it is the least environmental damaging).

### Water

10. Set ambitious targets for water efficiency starting with a water cycle strategy that will:
    - set out measures to limit additional water demand from both new housing and new non-domestic buildings
    - demonstrate that the development will not result in a deterioration in surface water or ground-water arising from the new community,
    - set out measures for improving water quality and avoiding surface water flooding from surface water, groundwater and local watercourses; and
    - incorporate widespread sustainable drainage systems (SUDS) and avoid unnecessary connection of surface water run-off into sewers.

*The above commitments are based on the TCPA's New Communities Group recommendations.*


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## Appendix H: PWLB Finance rates

The Public Works Loan Board has powers to lend to local authorities and parish councils. PWLB's lending arrangements are set out in Circular 156. Two types of loan are available from the Board, namely fixed rate loans and variable rate loans.

**Fixed rate loans** are repayable by one of three methods:

- Annuity or Equal Repayments (ER): fixed half-yearly payments to include principal and interest; or
- Equal Instalments of Principal (EIP): equal half-yearly instalments of principal together with interest on the balance outstanding at the time; or
- Maturity: half-yearly payments of interest only with a single repayment of principal at the end of the term.

Repayments are at half-yearly intervals, with an initial broken period as necessary. Loans are automatically secured by statute on the revenues of the authority.

From 1 November 2012, the Government reduced the interest rates on loans from PWLB to principal local authorities for long-term borrowing and associated capital spending by 20 basis points (0.20%) (the Certainty Rate). From 1 November 2013 rates for lending in respect of an infrastructure project nominated by a Local Enterprise Partnership (LEP) (the Project Rate) were reduced by 40 basis points (0.40%). Figure 59 below only shows interest rates for loans up to 30 years but loans are available for terms up to 50 years on comparable interest rates to those available for 30 year terms

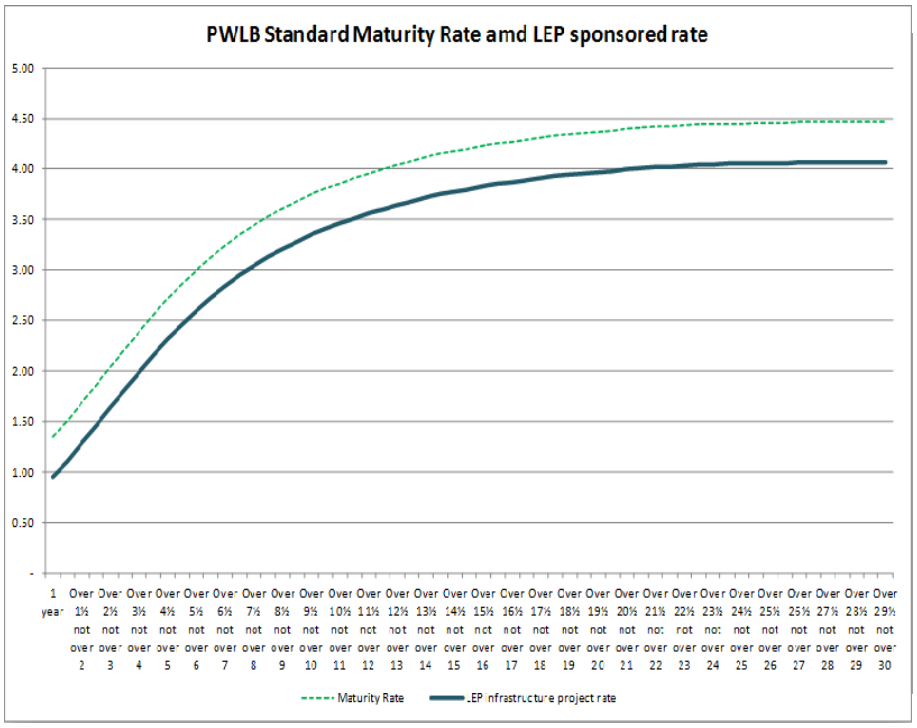


**Figure 59:PWLB rates including infrastructure rates through LEPs**


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## Appendix I: Project Plan: Key dates and dependencies

The following table of key dates and extract from the project plan show the assumptions on timing which drive the cash flow of the financial model.

**Garden City Project Plan Key Dates and Dependencies** — **Chris Blundell** — **Secondary Stage Submission**

| Task No. | Task | Duration | Start | Finish | Predecessors | Notes |
|---|---|---|---|---|---|---|
| 1 | **Initial Phase** | 2400 days? | Sep-14 | Nov-23 | | |
| 2 | Promotional activity and community engagement | 120 mons | Sep-14 | Nov-23 | | 10 months assumed, until first schools operational and take over |
| 3 | Local referendum in May 2015 elections | 1 day | May-15 | May-15 | | Notional referendum : same day as national and local elections |
| 4 | Securing Local Plan allocation | 1 mon? | May-15 | Jun-15 | 3FF+1 mon | Indicative to match Maidstone BC Local Plan process |
| 5 | Examination in public | 3 mons | Sep-15 | Dec-15 | 4FS+3 mons | Indicative to match Maidstone BC Local Plan process |
| 6 | Local Plan ratified by SOS | 1 mon | Dec-15 | Dec-15 | 5 | Indicative to match Maidstone BC Local Plan process |
| 7 | **Masterplanning** | 395 days? | Jun-15 | Dec-16 | 4 | |
| 8 | Site surveys | 6 mons | Jun-15 | Dec-15 | 4 | Timed to commence once Local Plan allocation secured |
| 9 | Data modelling | 6 mons | Jul-15 | Dec-15 | 8SS+1 mon | Concurrent with site surveys, but 1 month lag for data collection |
| 10 | Enquiry by Design | 1 mon | Mar-16 | Apr-16 | 9FS+3 mons | Timed to commence shortly after Local Plan ratification by SOS |
| 11 | Plan development | 3 mons | Apr-16 | Jul-16 | 10FS+1 wk | EBD ongoing with detailed design work |
| 12 | Outline application for masterplan | 3 mons | Jul-16 | Oct-16 | 11 | 3 months allowed |
| 13 | Outline PP for Masterplan | 1 day? | Oct-16 | Oct-16 | 12 | |
| 14 | Outline approval for Design Codes | 1 day? | Oct-16 | Oct-16 | 13 | |
| 15 | Detailed PP for infrastructure | 3 mons | Sep-16 | Dec-16 | 12SS+10 wks | Further 3 months allowed for DPP |
| 16 | **GCDC** | 12 mons | Jun-15 | May-16 | 4 | GCDC indicative commencement once Local Plan allocation secured |
| 17 | Land assembly | 3 mons | Oct-16 | Jan-17 | 13 | Land Assembly (first stage) triggered by OPP |
| 18 | Procurement | 6 mons | May-16 | Nov-16 | 16 | Procurement in parallel with Planning |
| 19 | **Infrastructure** | 3261 days | Jan-17 | Jul-29 | 17,15 | |
| 20 | Roads | 480 days | Jan-17 | Nov-18 | 18 | |
| 21 | Spine Road / Bus / Tram | 24 mons | Jan-17 | Nov-18 | 15 | Commences 2 months after DPP and 24 months assumed |
| 22 | Local Roads | 12 mons | Dec-17 | Nov-18 | 21SS+12 mons | Overlaps with spine road, but 12 month lang assumed |
| 23 | Community facilities | 1741 days | Nov-22 | Jul-29 | | |
| 24 | Schools | 360 days | Nov-22 | Mar-24 | 15 | |
| 25 | First Secondary School | 18 mons | Nov-22 | Mar-24 | 15,22,37FS+12 mons | First secondary school planned for opening @ population of |
| 26 | First Primary School | 12 mons | Nov-22 | Oct-23 | 15,22,37FS+12 mons | First primary school planned for opening @ population of |
| 27 | First Nursery | 12 mons | Nov-22 | Oct-23 | 15,22,37FS+12 mons | First nursery planned for opening @ population of |
| 28 | Health centre | 12 mons | Nov-22 | Oct-23 | 15,37FS+12 mons | First Health Centre planned for opening @ population of |
| 29 | Community Centre | 12 mons | Nov-22 | Oct-23 | 15,37FS+12 mons | First Community Centre planned for opening @ population of |
| 30 | Civic Centre | 18 mons | Feb-28 | Jul-29 | 15,42FS+36 mons | Civic Centre planned for opening @ population of |
| 31 | **Construction** | 7701 days? | Nov-18 | May-48 | 21,22 | |
| 32 | Phase 1 | 800 days? | Nov-18 | Dec-21 | 22 | |
| 33 | Detailed PP | 0 mons | Nov-18 | Nov-18 | 13 | To be secured before end of infrastructure period |
| 34 | Infrastructure | 6 mons | Dec-18 | May-19 | 33FS+1 mon | Site specific infrastructure |
| 35 | Construction | 36 mons | Mar-19 | Dec-21 | 34SS+3 mons | 3 years (keep construction compact) - 3 months delay to Infrastructure |
| 36 | First new home occupied | 1 day? | Nov-19 | Nov-19 | 35SS+9 mons | Milestone before end of decade |
| 37 | Completion | 1 day? | Dec-21 | Dec-21 | 35FF | Phase 1 completes |
| 38 | Phase 2 | 901 days? | Dec-21 | May-25 | 37 | |
| 39 | Detailed PP | 3 mons | Dec-21 | Feb-22 | 13,33FS+24 mons | |
| 40 | Infrastructure | 6 mons | Feb-22 | Aug-22 | 39 | Can be accelerated to overlap with phase 1, depending on market |
| 41 | Construction | 36 mons | Aug-22 | May-25 | 40 | |
| 42 | Completion | 1 day? | May-25 | May-25 | 41 | |
| 43 | Phase 3 etc through to final stage | 300 mons | May-25 | May-48 | 42,37 | |
| 44 | **Completion** | 240 days | May-48 | Apr-49 | 43 | |
| 45 | GCDC transfers to GCCC and winds down | 12 mons | May-48 | Apr-49 | 43 | 12 months assumed for final wind down and transfer to GCCC |


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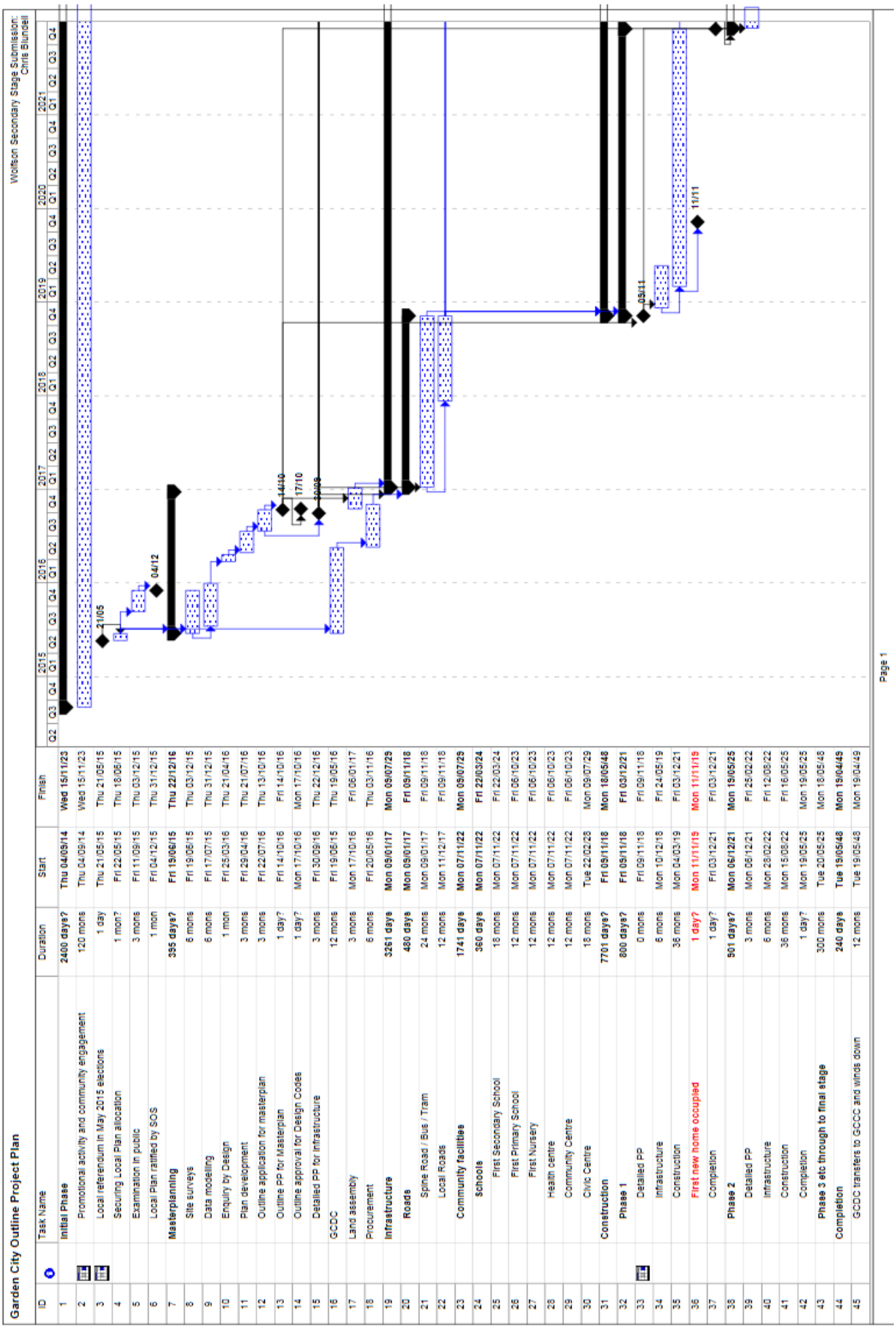


| ID | Task Name | Duration | Start | Finish |
|---|---|---|---|---|
| 1 | **Initial Phase** | **2400 days?** | **Thu 04/09/14** | **Wed 15/11/23** |
| 2 | Promotional activity and community engagement | 120 mons | Thu 04/09/14 | Wed 15/11/23 |
| 3 | Local referendum in May 2015 elections | 1 day | Thu 21/05/15 | Thu 21/05/15 |
| 4 | Securing Local Plan allocation | 1 mon? | Fri 22/05/15 | Thu 18/08/15 |
| 5 | Examination in public | 3 mons | Fri 11/09/15 | Thu 03/12/15 |
| 6 | Local Plan ratified by SOS | 1 mon | Fri 04/12/15 | Thu 31/12/15 |
| 7 | **Masterplanning** | **355 days?** | **Fri 19/06/15** | **Thu 22/12/16** |
| 8 | Site surveys | 6 mons | Fri 19/06/15 | Thu 03/12/15 |
| 9 | Data modelling | 6 mons | Fri 17/07/15 | Thu 31/12/15 |
| 10 | Enquiry by Design | 1 mon | Fri 25/03/16 | Thu 21/04/16 |
| 11 | Plan development | 3 mons | Fri 29/04/16 | Thu 21/07/16 |
| 12 | Outline application for masterplan | 3 mons | Fri 22/07/16 | Thu 13/10/16 |
| 13 | Outline PP for Masterplan | 1 day? | Fri 14/10/16 | Fri 14/10/16 |
| 14 | Outline approval for Design Codes | 1 day? | Mon 17/10/16 | Mon 17/10/16 |
| 15 | Detailed PP for infrastructure | 3 mons | Fri 30/09/16 | Thu 22/12/16 |
| 16 | GCDC | 12 mons | Fri 19/06/15 | Thu 19/05/16 |
| 17 | Land assembly | 3 mons | Mon 17/10/16 | Fri 06/01/17 |
| 18 | Procurement | 6 mons | Fri 20/05/16 | Thu 03/11/16 |
| 19 | **Infrastructure** | **3261 days** | **Mon 09/01/17** | **Mon 09/07/29** |
| 20 | **Roads** | **480 days** | **Mon 09/01/17** | **Fri 09/11/18** |
| 21 | Spine Road / Bus / Tram | 24 mons | Mon 09/01/17 | Fri 09/11/18 |
| 22 | Local Roads | 12 mons | Mon 11/12/17 | Fri 09/11/18 |
| 23 | **Community facilities** | **1741 days** | **Mon 07/11/22** | **Mon 09/07/29** |
| 24 | **Schools** | **360 days** | **Mon 07/11/22** | **Fri 22/03/24** |
| 25 | First Secondary School | 18 mons | Mon 07/11/22 | Fri 22/03/24 |
| 26 | First Primary School | 12 mons | Mon 07/11/22 | Fri 06/10/23 |
| 27 | First Nursery | 12 mons | Mon 07/11/22 | Fri 06/10/23 |
| 28 | Health centre | 12 mons | Mon 07/11/22 | Fri 06/10/23 |
| 29 | Community Centre | 12 mons | Mon 07/11/22 | Fri 06/10/23 |
| 30 | Civic Centre | 18 mons | Tue 22/02/28 | Mon 09/07/29 |
| 31 | **Construction** | **7701 days?** | **Fri 09/11/18** | **Mon 18/05/48** |
| 32 | **Phase 1** | **800 days?** | **Fri 09/11/18** | **Fri 03/12/21** |
| 33 | Detailed PP | 0 mons | Fri 09/11/18 | Fri 09/11/18 |
| 34 | Infrastructure | 6 mons | Mon 10/12/18 | Fri 24/05/19 |
| 35 | Construction | 36 mons | Mon 04/03/19 | Fri 03/12/21 |
| 36 | First new home occupied | 1 day? | Mon 11/11/19 | Mon 11/11/19 |
| 37 | Completion | 1 day? | Fri 03/12/21 | Fri 03/12/21 |
| 38 | **Phase 2** | **901 days?** | **Mon 06/12/21** | **Mon 19/05/25** |
| 39 | Detailed PP | 3 mons | Mon 06/12/21 | Fri 25/02/22 |
| 40 | Infrastructure | 6 mons | Mon 28/02/22 | Fri 12/08/22 |
| 41 | Construction | 36 mons | Mon 15/08/22 | Fri 16/05/25 |
| 42 | Completion | 1 day? | Mon 19/05/25 | Mon 19/05/25 |
| 43 | **Phase 3 etc through to final stage** | **300 mons** | **Tue 20/05/25** | **Mon 18/05/48** |
| 44 | **Completion** | **240 days** | **Tue 19/05/48** | **Mon 19/04/49** |
| 45 | GCDC transfers to GCCC and winds down | 12 mons | Tue 19/05/48 | Mon 19/04/49 |


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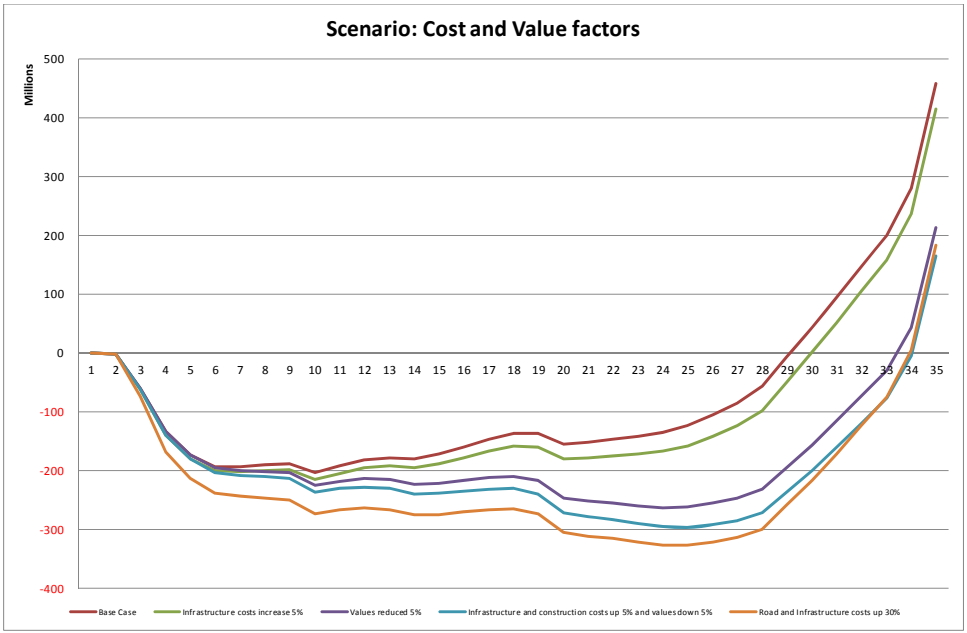
## Appendix J: Scenario Results – Costs and values

*These scenario results are repeated here simply for ease of reference.*




| Scenario Summary: Cost and Value Factors | Base Case | Infrastructure costs increase 5% | Values reduced 5% | Infrastructure and construction costs up 5% and values down 5% | Road and Infrastructure costs up 30% |
|---|---|---|---|---|---|
| **Changing Cells:** | | | | | |
| Access spine road | 91,128,300 | 95,684,715 | 91,128,300 | 95,684,715 | 118,466,790 |
| Local roads, drainage and infrastructure | 300,000 | 315,000 | 300,000 | 315,000 | 390,000 |
| Average dwelling size m2 (Sale) | 88.08 | 88.08 | 88.08 | 88.08 | 88.08 |
| Average dwelling size m2 (Affordable) | 76.52 | 76.52 | 76.52 | 76.52 | 76.52 |
| Current average costs m2 CSH Level 4 | 1,200 | 1,200 | 1,200 | 1,200 | 1,200 |
| Extra over cost per m2 Zero Carbon Standard | 60 | 60 | 60 | 60 | 60 |
| Average cost / m2 (Sale) | 1,358 | 1,358 | 1,358 | 1,358 | 1,358 |
| Average cost / m2 (Affordable) | 1,356 | 1,356 | 1,356 | 1,356 | 1,356 |
| Average prime cost construction Sale | 119,582 | 119,582 | 119,582 | 119,582 | 119,582 |
| Average prime cost construction Affordable | 103,777 | 103,777 | 103,777 | 103,777 | 103,777 |
| Developers overheads & profit | 20% | 20% | 20% | 20% | 20% |
| Base Rate | 0.50% | 0.50% | 0.50% | 0.50% | 0.50% |
| Developers Financing Margin over Base | 6.00% | 6.00% | 6.00% | 6.00% | 6.00% |
| GCDC Financing Rate Margin over Base | 4.00% | 4.00% | 4.00% | 4.00% | 4.00% |
| Average dwelling value open market | 310,202 | 310,202 | 294,692 | 294,692 | 310,202 |
| Average development value affordable | 141,324 | 141,324 | 134,258 | 134,258 | 141,324 |
| Total New Homes Bonus | - | - | - | - | - |
| Cost of local roads, drainage and infrastructure | 312,228,300 | 327,839,715 | 312,228,300 | 327,839,715 | 405,896,790 |
| Total cost of access road, local roads and infrastructure | 20,815 | 21,856 | 20,815 | 21,856 | 27,060 |
| Community Infrastructure Total_ | 172,732,000 | 181,368,600 | 172,732,000 | 181,368,600 | 224,551,600 |
| Community Infrastructure per dwelling | 11,515 | 12,091 | 11,515 | 12,091 | 14,970 |
| CIL / s106 per open market dwelling | 3,000 | 3,000 | 3,000 | 3,000 | 3,000 |
| General CIL / s106 Contributions | 27,000,000 | 27,000,000 | 27,000,000 | 27,000,000 | 27,000,000 |
| Total infrastructure CIL and s106 per dwelling | 34,131 | 34,131 | 34,131 | 34,131 | 34,131 |
| Total construction cost (excl infrastructure etc) | 1,698,900,795 | 1,698,900,795 | 1,698,900,795 | 1,698,900,795 | 1,698,900,795 |
| Average (gross) construction costs/acre (incl infrastructure) | 2,999,812 | 3,032,712 | 2,999,812 | 3,032,712 | 2,999,812 |
| Average (gross) construction costs/hectare (incl infrastructure) | 7,412,684 | 7,493,984 | 7,412,684 | 7,493,984 | 7,412,684 |
| Average (gross) construction cost (exc infrastructure) psf | 164 | 164 | 164 | 164 | 164 |
| Average gross development cost per dwelling (exc land) | 147,391 | 149,007 | 147,391 | 149,007 | 147,391 |
| House Price inflation relative to CPI | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |
| **Result Cells:** | | | | | |
| Land (cost spread evenly over 25 years reflecting steady release of land) | 146,627,025 | 146,627,025 | 146,627,025 | 146,627,025 | 146,627,025 |
| Main access road | 95,757,982 | 100,545,881 | 95,757,982 | 100,545,881 | 124,485,377 |
| Local Roads and services (cost spread evenly over 25 years) | 424,515,717 | 445,741,503 | 424,515,717 | 445,741,503 | 551,870,432 |
| Community Infrastructure (Profiled to reflect growth of population) | 200,759,813 | 200,759,813 | 200,759,813 | 200,759,813 | 200,759,813 |
| Construction cost Private | 1,592,279,716 | 1,592,279,716 | 1,592,279,716 | 1,592,279,716 | 1,592,279,716 |
| Construction cost Affordable | 917,595,586 | 917,595,586 | 917,595,586 | 917,595,586 | 917,595,586 |
| **Total construction costs** | 4,449,327,397 | 4,475,341,082 | 4,444,419,122 | 4,470,432,807 | 4,605,409,507 |
| Income from sale housing | 4,090,327,033 | 4,090,327,033 | 3,885,815,549 | 3,885,815,549 | 4,090,327,033 |
| Income from affordable housing | 1,250,392,284 | 1,250,392,284 | 1,250,392,284 | 1,250,392,284 | 1,250,392,284 |
| New Homes Bonus | - | - | - | - | - |
| **Income sub-total** | 5,340,719,317 | 5,340,719,317 | 5,136,207,833 | 5,136,207,833 | 5,340,719,317 |
| IRR over 35 years | 8.95% | 8.49% | 7.01% | 6.60% | 6.50% |
| Peak Debt over 35 Years | - 204,267,857 | - 215,805,409 | - 262,882,496 | - 296,714,349 | - 327,396,666 |
| **Overall Surplus** | 456,877,106 | 414,117,247 | 213,344,017 | 165,249,988 | 181,963,997 |
| **Guaranteed Overage per acre** | 7,934 | 7,934 | 7,934 | 7,934 | 7,934 |
| **Profit Margin over 35 years** | 8.55% | 7.75% | 4.15% | 3.22% | 3.41% |

Notes: Current Values column represents values of changing cells at time Scenario Summary Report was created. Changing cells for each scenario are highlighted in gray.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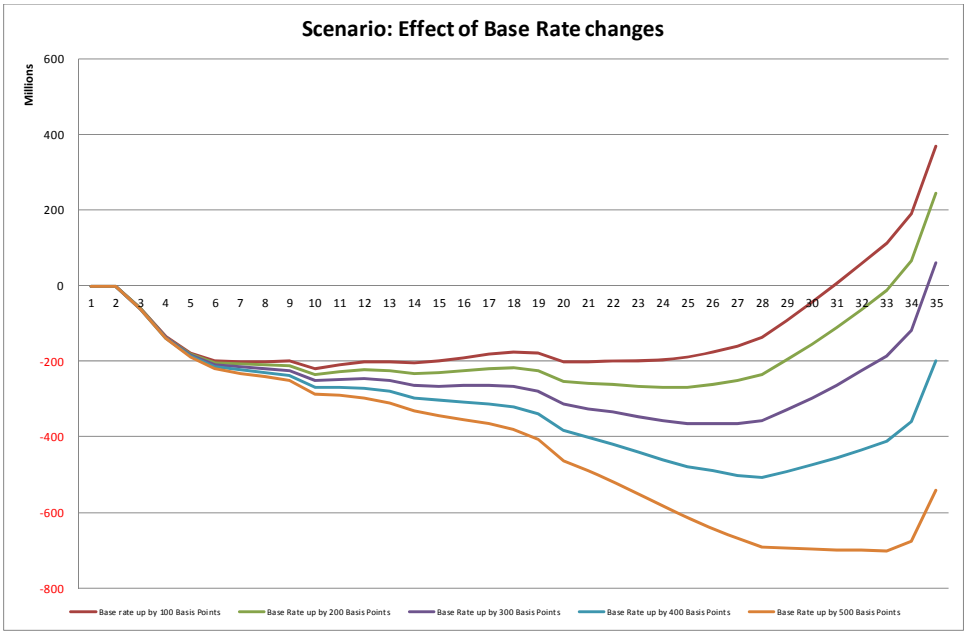
## Appendix K: Scenario Results – Base Rate changes

*These scenario results are repeated here simply for ease of reference.*




| Scenario Summary: Effect of Base Rate changes | Base rate up by 100 Basis Points | Base Rate up by 200 Basis Points | Base Rate up by 300 Basis Points | Base Rate up by 400 Basis Points | Base Rate up by 500 Basis Points |
|---|---|---|---|---|---|
| **Changing Cells:** | | | | | |
| Access spine road | 91,128,300 | 91,128,300 | 91,128,300 | 91,128,300 | 91,128,300 |
| Local roads, drainage and infrastructure | 300,000 | 300,000 | 300,000 | 300,000 | 300,000 |
| Average dwelling size m2 (Sale) | 88.08 | 88.08 | 88.08 | 88.08 | 88.08 |
| Average dwelling size m2 (Affordable) | 76.52 | 76.52 | 76.52 | 76.52 | 76.52 |
| Current average costs m2 CSH Level 4 | 1,200 | 1,200 | 1,200 | 1,200 | 1,200 |
| Extra over cost per m2 Zero Carbon Standard | 60 | 60 | 60 | 60 | 60 |
| Average cost / m2 (Sale) | 1,358 | 1,358 | 1,358 | 1,358 | 1,358 |
| Average cost / m2 (Affordable) | 1,356 | 1,356 | 1,356 | 1,356 | 1,356 |
| Average prime cost construction Sale | 119,582 | 119,582 | 119,582 | 119,582 | 119,582 |
| Average prime cost construction Affordable | 103,777 | 103,777 | 103,777 | 103,777 | 103,777 |
| Developers overheads & profit | 20% | 20% | 20% | 20% | 20% |
| Base Rate | 1.50% | 2.50% | 3.50% | 4.50% | 5.50% |
| Developers Financing Margin over Base | 6.00% | 6.00% | 6.00% | 6.00% | 6.00% |
| GCDC Financing Rate Margin over Base | 4.00% | 4.00% | 4.00% | 4.00% | 4.00% |
| Average dwelling value open market | 310,202 | 310,202 | 310,202 | 310,202 | 310,202 |
| Average development value affordable | 141,324 | 141,324 | 141,324 | 141,324 | 141,324 |
| Total New Homes Bonus | - | - | - | - | - |
| Cost of local roads, drainage and infrastructure | 312,228,300 | 312,228,300 | 312,228,300 | 312,228,300 | 312,228,300 |
| Total cost of access road, local roads and infrastructure | 20,815 | 20,815 | 20,815 | 20,815 | 20,815 |
| Community Infrastructure Total_ | 172,732,000 | 172,732,000 | 172,732,000 | 172,732,000 | 172,732,000 |
| Community Infrastructure per dwelling | 11,515 | 11,515 | 11,515 | 11,515 | 11,515 |
| CIL / s106 per open market dwelling | 3,000 | 3,000 | 3,000 | 3,000 | 3,000 |
| General CIL / s106 Contributions | 27,000,000 | 27,000,000 | 27,000,000 | 27,000,000 | 27,000,000 |
| Total infrastructure CIL and s106 per dwelling | 34,131 | 34,131 | 34,131 | 34,131 | 34,131 |
| Total construction cost (excl infrastructure etc) | 1,698,900,795 | 1,698,900,795 | 1,698,900,795 | 1,698,900,795 | 1,698,900,795 |
| Average (gross) construction costs/acre (incl infrastructure) | 2,999,812 | 2,999,812 | 2,999,812 | 2,999,812 | 2,999,812 |
| Average (gross) construction costs/hectare (incl infrastructure) | 7,412,684 | 7,412,684 | 7,412,684 | 7,412,684 | 7,412,684 |
| Average (gross) construction cost (exc infrastructure) psf | 164 | 164 | 164 | 164 | 164 |
| Average gross development cost per dwelling (exc land) | 147,391 | 147,391 | 147,391 | 147,391 | 147,391 |
| House Price inflation relative to CPI | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |
| **Result Cells:** | | | | | |
| Land (cost spread evenly over 25 years reflecting steady release of land) | 146,627,025 | 146,627,025 | 146,627,025 | 146,627,025 | 146,627,025 |
| Main access road | 95,757,982 | 95,757,982 | 95,757,982 | 95,757,982 | 95,757,982 |
| Local Roads and services (cost spread evenly over 25 years) | 424,515,717 | 424,515,717 | 424,515,717 | 424,515,717 | 424,515,717 |
| Community Infrastructure (Profiled to reflect growth of population) | 200,759,813 | 200,759,813 | 200,759,813 | 200,759,813 | 200,759,813 |
| Construction cost Private | 1,592,279,716 | 1,592,279,716 | 1,592,279,716 | 1,592,279,716 | 1,592,279,716 |
| Construction cost Affordable | 917,595,586 | 917,595,586 | 917,595,586 | 917,595,586 | 917,595,586 |
| **Total construction costs** | 4,467,160,930 | 4,484,994,463 | 4,502,827,996 | 4,520,661,529 | 4,538,495,061 |
| Income from sale housing | 4,090,327,033 | 4,090,327,033 | 4,090,327,033 | 4,090,327,033 | 4,090,327,033 |
| Income from affordable housing | 1,250,392,284 | 1,250,392,284 | 1,250,392,284 | 1,250,392,284 | 1,250,392,284 |
| New Homes Bonus | - | - | - | - | - |
| **Income sub-total** | 5,340,719,317 | 5,340,719,317 | 5,340,719,317 | 5,340,719,317 | 5,340,719,317 |
| IRR over 35 years | 8.77% | 8.59% | 8.41% | 8.23% | 8.05% |
| Peak Debt over 35 Years | - 219,101,438 | - 269,533,180 | - 365,175,307 | - 506,612,168 | - 701,929,064 |
| **Overall Surplus** | 367,122,331 | 242,673,637 | 59,755,379 | - 198,648,838 | - 540,365,958 |
| **Guaranteed Overage per acre** | 7,109 | 6,410 | 5,815 | 5,305 | 4,865 |
| **Profit Margin over 35 years** | 6.87% | 4.54% | 1.12% | -3.72% | -10.12% |

Notes: Current Values column represents values of changing cells at time Scenario Summary Report was created. Changing cells for each scenario are highlighted in gray.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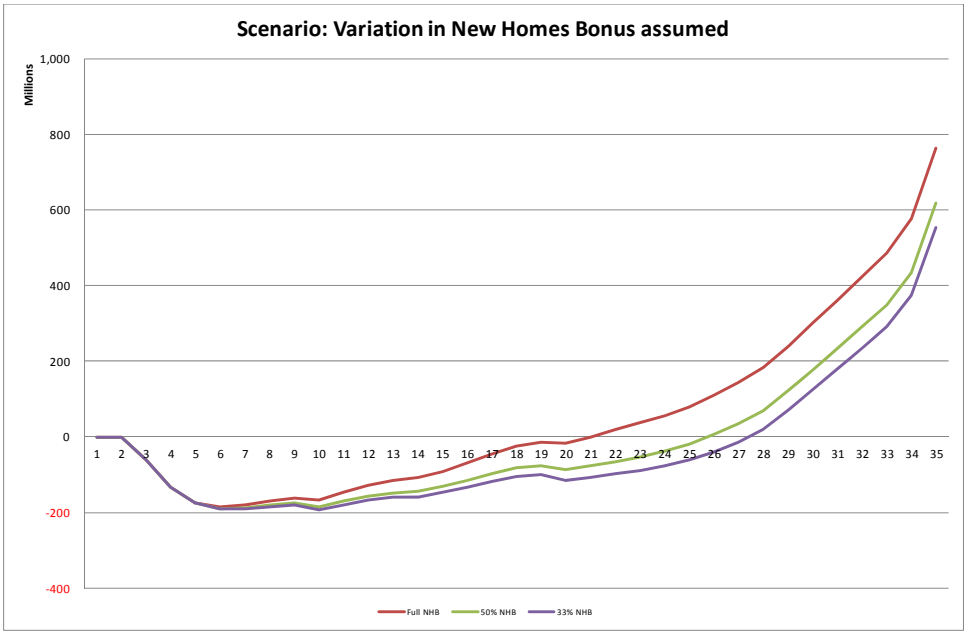
## Appendix L: Scenario Results – New Homes Bonus

*These scenario results are repeated here simply for ease of reference.*




| Scenario Summary: New Homes Bonus | Full NHB | 50% NHB | 33% NHB |
|---|---|---|---|
| **Changing Cells:** | | | |
| Access spine road | 91,128,300 | 91,128,300 | 91,128,300 |
| Local roads, drainage and infrastructure | 300,000 | 300,000 | 300,000 |
| Average dwelling size m2 (Sale) | 88.08 | 88.08 | 88.08 |
| Average dwelling size m2 (Affordable) | 76.52 | 76.52 | 76.52 |
| Current average costs m2 CSH Level 4 | 1,200 | 1,200 | 1,200 |
| Extra over cost per m2 Zero Carbon Standard | 60 | 60 | 60 |
| Average cost / m2 (Sale) | 1,358 | 1,358 | 1,358 |
| Average cost / m2 (Affordable) | 1,356 | 1,356 | 1,356 |
| Average prime cost construction Sale | 119,582 | 119,582 | 119,582 |
| Average prime cost construction Affordable | 103,777 | 103,777 | 103,777 |
| Developers overheads & profit | 20% | 20% | 20% |
| Base Rate | 0.50% | 0.50% | 0.50% |
| Developers Financing Margin over Base | 6.00% | 6.00% | 6.00% |
| GCDC Financing Rate Margin over Base | 4.00% | 4.00% | 4.00% |
| Average dwelling value open market | 310,202 | 310,202 | 310,202 |
| Average development value affordable | 141,324 | 141,324 | 141,324 |
| Total New Homes Bonus | 193,691,663 | 96,845,832 | 58,107,499 |
| Cost of local roads, drainage and infrastructure | 312,228,300 | 312,228,300 | 312,228,300 |
| Total cost of access road, local roads and infrastructure | 20,815 | 20,815 | 20,815 |
| Community Infrastructure Total_ | 172,732,000 | 172,732,000 | 172,732,000 |
| Community Infrastructure per dwelling | 11,515 | 11,515 | 11,515 |
| CIL / s106 per open market dwelling | 3,000 | 3,000 | 3,000 |
| General CIL / s106 Contributions | 27,000,000 | 27,000,000 | 27,000,000 |
| Total infrastructure CIL and s106 per dwelling | 34,131 | 34,131 | 34,131 |
| Total construction cost (excl infrastructure etc) | 1,698,900,795 | 1,698,900,795 | 1,698,900,795 |
| Average (gross) construction costs/acre (incl infrastructure) | 2,999,812 | 2,999,812 | 2,999,812 |
| Average (gross) construction costs/hectare (incl infrastructure) | 7,412,684 | 7,412,684 | 7,412,684 |
| Average (gross) construction cost (exc infrastructure) psf | 164 | 164 | 164 |
| Average gross development cost per dwelling (exc land) | 147,391 | 147,391 | 147,391 |
| House Price inflation relative to CPI | 0.00% | 0.00% | 0.00% |
| **Result Cells:** | | | |
| Land (cost spread evenly over 25 years reflecting steady release of land) | 146,627,025 | 146,627,025 | 146,627,025 |
| Main access road | 95,757,982 | 95,757,982 | 95,757,982 |
| Local Roads and services (cost spread evenly over 25 years) | 424,515,717 | 424,515,717 | 424,515,717 |
| Community Infrastructure (Profiled to reflect growth of population) | 200,759,813 | 200,759,813 | 200,759,813 |
| Construction cost Private | 1,592,279,716 | 1,592,279,716 | 1,592,279,716 |
| Construction cost Affordable | 917,595,586 | 917,595,586 | 917,595,586 |
| **Total construction costs** | 4,449,327,397 | 4,449,327,397 | 4,449,327,397 |
| Income from sale housing | 4,090,327,033 | 4,090,327,033 | 4,090,327,033 |
| Income from affordable housing | 1,250,392,284 | 1,250,392,284 | 1,250,392,284 |
| New Homes Bonus | 289,184,477 | 144,592,239 | 86,755,343 |
| **Income sub-total** | 5,629,903,795 | 5,485,311,557 | 5,427,474,661 |
| IRR over 35 years | 11.81% | 10.38% | 9.81% |
| Peak Debt over 35 Years | - 186,036,861 | - 189,681,242 | - 193,448,677 |
| **Overall Surplus** | 763,365,805 | 616,733,112 | 554,129,560 |
| **Guaranteed Overage per acre** | 7,934 | 7,934 | 7,934 |
| **Profit Margin over 35 years** | 13.56% | 11.24% | 10.21% |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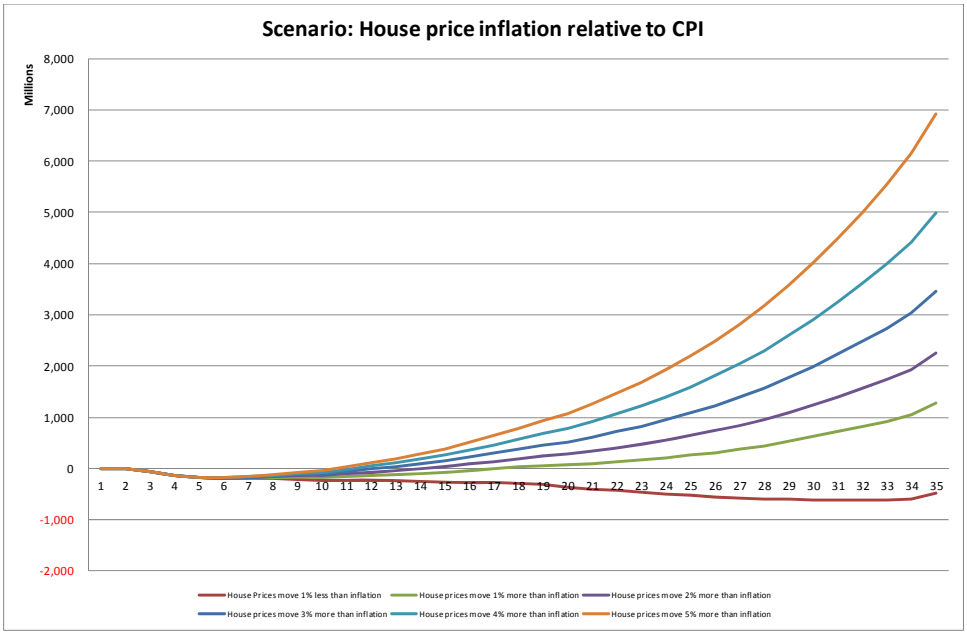
## Appendix M: Scenario Results – House Price movements relative to CPI

*These scenario results are repeated here simply for ease of reference.*




| Scenario Summary: House Price Inflation differential to CPI | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Current Values | House Prices move 1% less than inflation | House prices move 1% more than inflation | House prices move 2% more than inflation | House prices move 3% more than inflation | House prices move 4% more than inflation | House prices move 5% more than inflation |
| **Changing Cells:** | | | | | | | |
| Access spine road | 91,128,300 | 91,128,300 | 91,128,300 | 91,128,300 | 91,128,300 | 91,128,300 | 91,128,300 |
| Local roads, drainage and infrastructure | 300,000 | 300,000 | 300,000 | 300,000 | 300,000 | 300,000 | 300,000 |
| Average dwelling size m2 (Sale) | 88.08 | 88.08 | 88.08 | 88.08 | 88.08 | 88.08 | 88.08 |
| Average dwelling size m2 (Affordable) | 76.52 | 76.52 | 76.52 | 76.52 | 76.52 | 76.52 | 76.52 |
| Current average costs m2 CSH Level 4 | 1,200 | 1,200 | 1,200 | 1,200 | 1,200 | 1,200 | 1,200 |
| Extra over cost per m2 Zero Carbon Standard | 60 | 60 | 60 | 60 | 60 | 60 | 60 |
| Average cost / m2 (Sale) | 1,358 | 1,358 | 1,358 | 1,358 | 1,358 | 1,358 | 1,358 |
| Average cost / m2 (Affordable) | 1,356 | 1,356 | 1,356 | 1,356 | 1,356 | 1,356 | 1,356 |
| Average prime cost construction Sale | 119,582 | 119,582 | 119,582 | 119,582 | 119,582 | 119,582 | 119,582 |
| Average prime cost construction Affordable | 103,777 | 103,777 | 103,777 | 103,777 | 103,777 | 103,777 | 103,777 |
| Developers overheads & profit | 20% | 20% | 20% | 20% | 20% | 20% | 20% |
| Base Rate | 0.50% | 0.50% | 0.50% | 0.50% | 0.50% | 0.50% | 0.50% |
| Developers Financing Margin over Base | 6.00% | 6.00% | 6.00% | 6.00% | 6.00% | 6.00% | 6.00% |
| GCDC Financing Rate Margin over Base | 4.00% | 4.00% | 4.00% | 4.00% | 4.00% | 4.00% | 4.00% |
| Average dwelling value open market | 310,202 | 310,202 | 310,202 | 310,202 | 310,202 | 310,202 | 310,202 |
| Average development value affordable | 141,324 | 141,324 | 141,324 | 141,324 | 141,324 | 141,324 | 141,324 |
| Total New Homes Bonus | - | - | - | - | - | - | - |
| Cost of local roads, drainage and infrastructure | 312,228,300 | 312,228,300 | 312,228,300 | 312,228,300 | 312,228,300 | 312,228,300 | 312,228,300 |
| Total cost of access road, local roads and infrastructure | 20,815 | 20,815 | 20,815 | 20,815 | 20,815 | 20,815 | 20,815 |
| Community Infrastructure Total_ | 172,732,000 | 172,732,000 | 172,732,000 | 172,732,000 | 172,732,000 | 172,732,000 | 172,732,000 |
| Community Infrastructure per dwelling | 11,515 | 11,515 | 11,515 | 11,515 | 11,515 | 11,515 | 11,515 |
| CIL / s106 per open market dwelling | 3,000 | 3,000 | 3,000 | 3,000 | 3,000 | 3,000 | 3,000 |
| General CIL / s106 Contributions | 27,000,000 | 27,000,000 | 27,000,000 | 27,000,000 | 27,000,000 | 27,000,000 | 27,000,000 |
| Total infrastructure CIL and s106 per dwelling | 34,131 | 34,131 | 34,131 | 34,131 | 34,131 | 34,131 | 34,131 |
| Total construction cost (excl infrastructure etc) | 1,698,900,795 | 1,698,900,795 | 1,698,900,795 | 1,698,900,795 | 1,698,900,795 | 1,698,900,795 | 1,698,900,795 |
| Average (gross) construction costs/acre (incl infrastructure) | 2,999,812 | 2,999,812 | 2,999,812 | 2,999,812 | 2,999,812 | 2,999,812 | 2,999,812 |
| Average (gross) construction costs/hectare (incl infrastructure) | 7,412,684 | 7,412,684 | 7,412,684 | 7,412,684 | 7,412,684 | 7,412,684 | 7,412,684 |
| Average (gross) construction cost (exc infrastructure) psf | 164 | 164 | 164 | 164 | 164 | 164 | 164 |
| Average gross development cost per dwelling (exc land) | 147,391 | 147,391 | 147,391 | 147,391 | 147,391 | 147,391 | 147,391 |
| House Price inflation relative to CPI | -1.00% | -1.00% | 1.00% | 2.00% | 3.00% | 4.00% | 5.00% |
| **Result Cells:** | | | | | | | |
| Land (cost spread evenly over 25 years reflecting steady release of land) | 146,627,025 | 146,627,025 | 146,627,025 | 146,627,025 | 146,627,025 | 146,627,025 | 146,627,025 |
| Main access road | 95,757,982 | 95,757,982 | 95,757,982 | 95,757,982 | 95,757,982 | 95,757,982 | 95,757,982 |
| Local Roads and services (cost spread evenly over 25 years) | 424,515,717 | 424,515,717 | 424,515,717 | 424,515,717 | 424,515,717 | 424,515,717 | 424,515,717 |
| Community Infrastructure (Profiled to reflect growth of population) | 200,759,813 | 200,759,813 | 200,759,813 | 200,759,813 | 200,759,813 | 200,759,813 | 200,759,813 |
| Construction cost Private | 1,592,279,716 | 1,592,279,716 | 1,592,279,716 | 1,592,279,716 | 1,592,279,716 | 1,592,279,716 | 1,592,279,716 |
| Construction cost Affordable | 917,595,586 | 917,595,586 | 917,595,586 | 917,595,586 | 917,595,586 | 917,595,586 | 917,595,586 |
| **Total construction costs** | 4,431,042,942 | 4,472,367,361 | 4,501,478,381 | 4,538,347,341 | 4,585,136,956 | 4,644,619,184 | |
| Income from sale housing | 3,328,474,721 | 5,050,325,506 | 6,263,284,670 | 7,799,491,359 | 9,749,058,637 | 12,227,484,794 | |
| Income from affordable housing | 1,250,392,284 | 1,250,392,284 | 1,250,392,284 | 1,250,392,284 | 1,250,392,284 | 1,250,392,284 | |
| New Homes Bonus | - | - | - | - | - | - | |
| **Income sub-total** | 4,578,867,005 | 6,300,717,790 | 7,513,676,954 | 9,049,883,643 | 10,999,450,921 | 13,477,877,078 | |
| IRR over 35 years | 2.02% | 14.02% | 18.20% | 21.89% | 25.26% | 28.43% | |
| Peak Debt over 35 Years | - 623,178,091 | - 191,018,998 | - 188,621,033 | - 186,129,044 | - 183,540,292 | - 182,163,480 | |
| **Overall Surplus** | - 485,774,335 | 1,286,293,500 | 2,248,956,623 | 3,458,342,309 | 4,986,410,050 | 6,923,233,559 | |
| **Guaranteed Overage per acre** | 7,934 | 7,934 | 7,934 | 7,934 | 7,934 | 7,934 | |
| **Profit Margin over 35 years** | -10.61% | 20.42% | 29.93% | 38.21% | 45.33% | 51.37% | |

Notes: Current Values column represents values of changing cells at time Scenario Summary Report was created. Changing cells for each scenario are highlighted in gray.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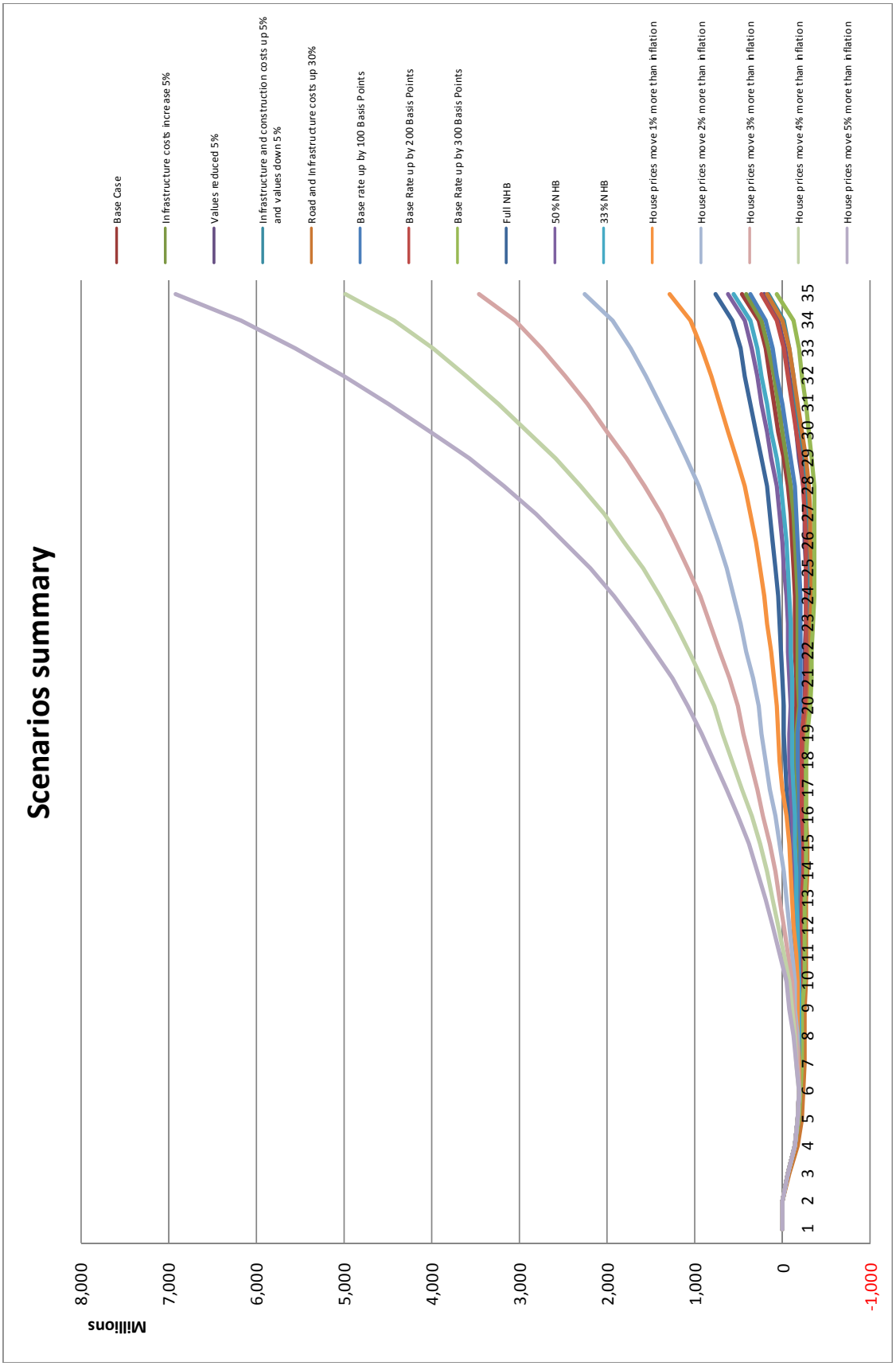
## Appendix N: Scenarios Summary

*These scenario results are repeated here simply for ease of reference.*





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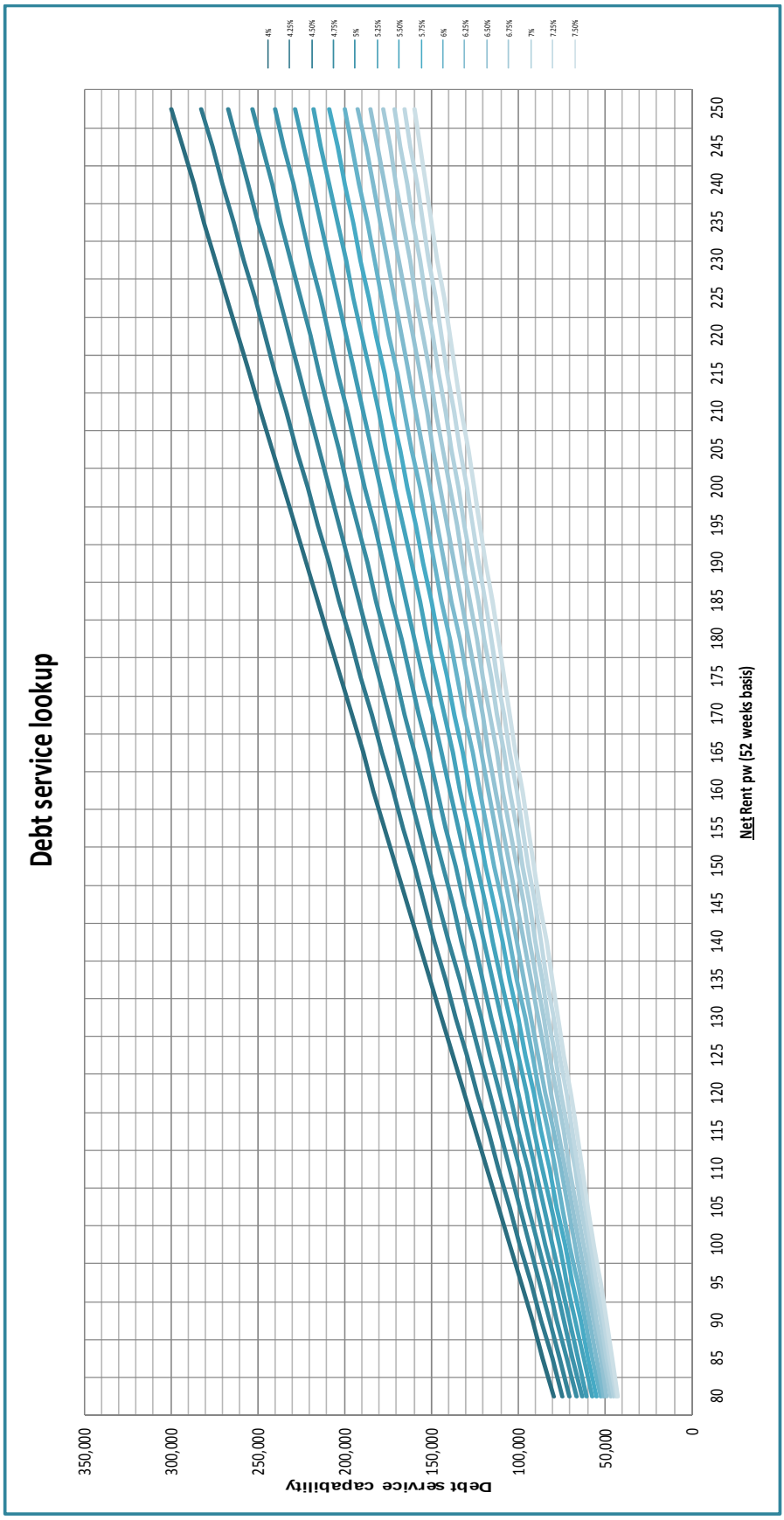
## Appendix O: Debt service lookup chart





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## Appendix P: Prospectus: A Garden Suburb for the Garden of England

A prospectus for the new garden suburb in SE Maidstone was submitted to Maidstone BC by Golding Homes on 25th January 2013. This document is in the public domain.

An Executive Summary of the prospectus is available at http://goldinghomes.org.uk/se-maidstone-garden-suburb



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## Notes

[1] A number of primary stage submissions to the Wolfson Economics Prize 2014 addressed location factors and a range of issues were identified, including site and commercial drivers.

[2] As reported in the Halifax House Price Index monthly bulletin for July 2014. This is taken across the whole of Great Britain and the ratio of house prices to incomes is higher in London due to severe shortages of housing relative to demand.

[3] "Subtopia" was a term coined by architectural critic Ian Nairn in his 1959 book "Outrage", referring to the areas around cities that had in his view been failed by urban planning, losing their individuality and spirit of place and instead replaced by endless repetition of drab architecture with little regard to the place in which it was set.

[4] The concept of walkable suburbs is central to New Urbanism and is a reaction to urban sprawl and over-reliance on car transport. Walkable suburbs are designed to support easy and safe pedestrian (and cyclist) access around their neighbourhood, and each walkable suburb would contain key services such as a primary school, shops and play and recreation space. Because of this the typical size of a walkable suburb is c.1,500 homes.

[5] See the Prince of Wales address to the Sustainable Urbanism Seminar, 7th November 2012

[6] For example, the name "Esledes" deriving from the Middle English name for the local village, Leeds, home to Leeds Castle, and derived from "hlio" meaning slope or hillside. Leeds village stands on the slope above the valley of the river Len which describes the northern part of the site. This name was not chosen however as it is open to mispronunciation and in addition the sloping northern part of the site is not proposed for development due to environmental constraints. (Source: Wikipedia).

[7] An urban extension to the south-east of Maidstone was proposed and taken to public consultation as Option 7c in a 2007 Local Development Framework consultation. The local community were broadly in agreement with that proposal although delays in the Local Plan process and the requirements of the NPPF have resulted in new plans coming forward with a revised pattern of development currently not including this area.

[8] The inaugural HS1 journey from St Pancras to Ashford reached this point in 18 minutes (- based on Information provided by a senior member of the local business community, and now a member of the South East Local Economic Partnership, who was a passenger on the inaugural journey). Neither Stratford nor Ebbsfleet International stations were in operation at that time, but allowing approximately six minutes additional journey time for each stop would result in a journey time to St Pancras station of approximately 30 minutes.

[9] London was ranked 15th in the Economist Intelligence Unit's 2014 Worldwide Cost of Living survey.

[10] The phrase is borrowed from the film "Field of Dreams" which describes the story of a man who follows his dreams and instincts, no matter how implausible, and builds a new baseball stadium on the remote prairies which, against all expectation, proves a success.

[11] See Pearson et al (1994) in the Royal Commission on Historic Monuments trilogy of studies of the medieval buildings of Kent

[12] This natural use of the original hedgerows has many attractions but would need detailed Secure by Design consideration because of the potential fear of crime.

[13] The large former Council estates in south-east Maidstone have a high proportion of Right to Buy properties where prevailing values are modest. A value lift consequent on proximity to a new higher value settlement would be likely to have proximity effects, increasing prices and


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encouraging investment, thus spreading the benefits to a wider range of people on modest incomes.

14 Maidstone BC owns the reversionary freehold interest on the large Parkwood Trading Estate. It is widely regarded in the local commercial property sector that rents are suppressed because of poor accessibility, and that a new SE Maidstone relief road would improve rents consequent on improved access.

15 This study based on 48,070 transactions in two suburbs of Portland, Washington concluded that, holding other attributes constant, properties located in a neighbourhood with new urbanist features command an estimated 15.5% premium.

16 See, for example, Kings Hill in West Malling, Kent, where Rouse have created a new settlement with a mixture of very high quality housing and employment.

17 By this it is meant that land would be valued and the uplift applied as a multiple of the base value. That was unproductive set-aside land would not generate the same land receipt as land which has been carefully tended. It would, however, generate the same (10 times) multiple of existing use value.

18 See Valuation Office Agency Land Compensation Manual http://www.voa.gov.uk/corporate/Publications/Manuals/LandCompensationManual/sect1/b-lc-man-s1.html#P74_932

19 Legal and General, one of the investors in the English Cities Fund, has confirmed interest in investing long term in both infrastructure and housing. Nigel Wilson, Group CEO said: "We support Garden Cities: we need imagination from all sides to create the right homes and communities for a growing population. We also support 'towns within cities' – high-quality purpose-built communities within urban areas. "The UK needs innovative housing solutions. Demand far outweighs supply, and if we're going to tackle this problem we should look at what has worked in the past, and see how it can be updated and improved." http://www.legalandgeneral.com/about-us/social-purpose/recent-news/articles/improving_the_UKs_housing_and_infrastructure.html

20 See United Kingdom Debt Management Office website http://www.dmo.gov.uk/index.aspx?page=PWLB/PWLB_Concessionary_Rates

The government announced a £1.5 billion programme of investment in strategic infrastructure projects in the March 2013 budget. "*The Public Works Loan Board (PWLB) project rate, 40 basis points below the standard rate across all loan types and maturities, will be available to local authorities in England from 1 November 2013. This discounted borrowing is being made available to support strategic local capital investment projects*." http://www.dmo.gov.uk/documentview.aspx?docname=PWLB/pwlb2013guidance1HMT.pdf&page=

21 The 4th February 2014 rate for 20 year money is 4.37%, but with the 0.4% discount would reduce to 3.97% which is a highly attractive rate.

22 There are precedents for this e.g. Hastings BC borrowed at advantageous rates from the PWLB and then on-lent to AmicusHorizon, a local housing association, for investment in the Borough. Given the transference of risk this would normally carry a margin for the local authority and the modelling in this paper assumes such a margin at 0.5%.

23 "*A Strategic Land and Infrastructure Contract (SLIC) links the delivery of strategic, as well as local, infrastructure to the contribution of funds from landowners/developers. These contributions supplement, rather than replace, central and local government funding, which*


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*would itself be subject to greater certainty than is normally the case. They make it possible to secure interim funding on better terms by de-risking investment – and thereby enable timely and predictable provision of essential infrastructure at an early stage, thus enhancing general investor and public confidence in the quality and deliverability of growth*." Town and Country Planning Association, 2012, p.3.

24 *TIF is a mechanism developed in California in the 1950's for using anticipated future increases in tax revenues to finance the current improvements (such as new or improved infrastructure) that are expected to generate those increased revenues. In simple terms, it enables a local authority to trade anticipated future tax income for a present benefit*. BPF 2008. P3.

25 The infrastructure projects dealt with by the Planning Inspectorate are known as Nationally Significant Infrastructure Projects (NSIPs). Projects are within the five general fields of energy, transport, water, waste water and waste. Examples include power stations, railways and major roads, reservoirs, harbours, airports, wind farms and sewage treatment works - in other words, the kinds of large scale facilities that support the everyday life of the country.

26 Golden Brick is an arrangement whereby VAT incurred in the preparation of land for sale can be recovered by the seller of land without it being a burden on a housing association purchasing the land. This is achieved by constructing a development to foundations plus one course of bricks above dpc level, which then qualifies the development as a "development in progress" for VAT purposes, so the property being sold can be taxed at 0% but the VAT incurred in the site recovered in full by the seller.

27 In an interview for the Countryfile programme on BBC on 3 August 2014 the Deputy Prime Minister mooted the possibility of indemnifying local residents against a reduction in the value of their property following the development of a garden city close to their home.

28 Populus carried out an online poll between 16-26 May 2014 and received 6,166 responses. The survey results were reported by the Wolfson Economics Prize on 6th August 2014 who state that "the results have been weighted to be representative of the national population as a whole". Wolfson Economics Prize press release 6th August 2014.

29 Pareto Optimality is defined as an economic state where resources are allocated in the most efficient manner so that one party's situation cannot be improved without making another party's situation worse.

30 "Compulsory purchase powers are provided to enable acquiring authorities to compulsorily purchase land to carry out a function which Parliament has decided is in the public interest" Office of the Deputy Prime Minister 2004a (p.6).

"Compensation following a compulsory acquisition of land is based on the principle of equivalence. This means that you should be no worse off in financial terms after the acquisition than you were before. Likewise you should not be any better off. Because the effects of the CPO on the value of a property are ignored when assessing compensation, it is necessary to value the land on the basis of its open market value without any increase or decrease attributable to the scheme of development which underlies the CPO. Office of the Deputy Prime Minister 2004b (p.7).

31 There are a number of reasons to encourage investment among the local community, including generating local support and buy in (literally) and distributing benefits from success locally. Share ownership is not appropriate given the CIC regulatory environment but there is no reason why a preferential Bond could not be issued for local residents to buy into, although this may need some safeguards against short selling if it is to achieve its stated purpose.

32 GL Hearn Strategic Housing Market Survey for Maidstone 2013


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[33] For the purposes of comparison where the Land Registry records data for a flat this is shown against 1 and 2 bedroom flats; where it shows a terraced house this is shown against a 2 bed house; where it shows a semi-detached house this is shown against a 3 bed house and where it shows a detached house this is shown against a 4 and 4+ bed house. The translation is approximate rather than accurate and as such caution has to be exercised in making direct comparisons.

[34] The minimum salary requirement is based on a 4.5 times salary multiplier on a 95% mortgage.

[35] Basic living costs, from Council Tax through to foodstuffs would be cheaper in Maidstone than in London.

[36] The property price used was the un-discounted rate for each type of property assumed consistently in the modelling.

[37] 4% was used as a number of the large institutional funders are interested in long term rental portfolio investment at this target rate of return.

[38] Oxford Economics, 2010, para 5.24

[39] NHF Home Truths 2013-14, South East, page 3

[40] This chart uses the higher Construction Confederation estimate of total spend in the economy as compensation for the very cautious value estimates used for the properties for modelling the Charthills Green viability.

[41] Ebbsfleet is assumed to meet the Government's preferred definition of a minimum size for a garden city of 15,000 homes. Shelter proposed a new Garden City of 60,000 homes at Sutton Harbour on the Hoo Peninsula, and Charthills Green has proposed a 15,000 home new Garden City to the south-east of Maidstone.

[42] Regulations 18 and 19 of the National Planning Policy Framework require that local planning authorities formally consult with the local community on the initial draft (Regulation 18) and on the final draft (Regulation 19) of the Local Plan.

[43] See DCLG. 2014. Locally-led Garden Cities.


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