LDĀDESIGN

# Chard Regeneration Framework

Implementation Plan
October 2010

A Kings Wharf, The Quay
Exeter EX 2 4AN
United Kingdom
T +44 (0) 1392 260 430
F +44 (0) 1392 260 431
W www.lda-design.co.uk

LDA Design Consulting LLP
Registered No: OC307725
17 Minster Precincts, Peterborough PE1 1XX

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Version: 3

Version date: 11.10.2010

*This document has been prepared and checked in accordance with ISO 9001:2000.*

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## 1.0 Introduction

The Chard Vision and the Chard Regeneration Plan provide the means to guide the regeneration and growth of the town over the next 20 years. The 'Vision' clearly sets out the aims to be pursued through public, private and community initiatives [Box 1] and paints a compelling image of what sort of place Chard could be if these aims are achieved. The 'Regeneration Plan' identifies where growth and regeneration should occur and provides a toolkit of framework plans and design codes to guide change to deliver the vision.

On their own these documents could be used to effectively shape incremental development over a long period through the planning and development control process. Unfortunately this is not enough on its own to ensure the type and quality of the change and the timescale over which it comes forward. There is a need for a clear plan of action that actively seeks to bring forward and influence change, direct investment and positively deliver the vision.

This document, 'The Implementation Plan' seeks to set out that clear plan of action. It summarises the major proposals in the 'Regeneration Plan' and describes the process whereby they might be delivered. The delivery processes have been tested by a broad development appraisal to identify where proposals lack economic viability and require public sector support to come forward. Where public sector support is required the timing and sources of potential funding are identified.

Regeneration and development is ultimately delivered by people working together to achieve change. This document also sets out the structure by which the various authorities, agencies, businesses and communities active in Chard can work together to guide and initiate appropriate change.

Box 1: The aims of the Chard Vision

Aim | 1
Chard should build on its long tradition of innovation and manufacturing excellence to develop and attract businesses associated with products and services of the highest quality that offer well paid, skilled jobs.

Aim | 2
Regeneration and investment should strengthen the community and make the town increasingly self-sufficient with all the services, facilities and events necessary to make it a great place to live.

Aim | 3
Chard should develop and enhance its urban environment so that it has a quality that is comparable to its stunning natural setting and rich cultural heritage.

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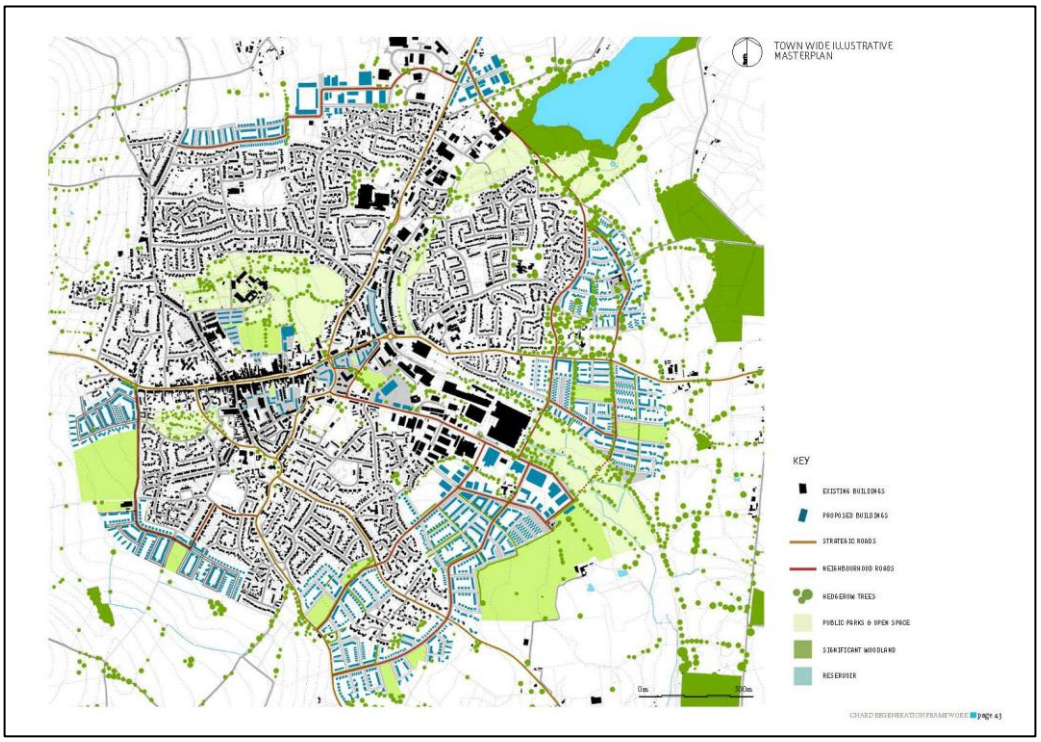
## 2.0 The Proposals

The various proposals for regeneration and growth are set out in full in the Regeneration Plan. Figures 1 and 2 shows the proposed town wide and town centre masterplans for Chard, larger copies are included in section 5 of the Chard Regeneration Plan. This document does not repeat these but summary descriptions are set out below to establish a context for the Implementation Plan. The proposals were developed following an assessment of the town to identify the key areas requiring regeneration and those areas with particular capacity to accommodate growth. It should be noted that the masterplans represent a growth to 'natural limits' scenario which is based on the capacity of the landscape to accept development. The regeneration plan presents a series of four development options offering different levels of overall growth each of which have been assessed using a sustainability appraisal considering social, economic and environmental factors in determining the impacts of different growth scenarios.

Figure 1 – Town Wide Masterplan




### 2.1. Town Centre Regeneration

The town centre is the heart of the town and must be a priority for growth. Peripheral growth without town centre regeneration would not deliver the wider social, economic and environmental aims set out in the Vision and Regeneration Plan. A suite of framework plans have been prepared for the town centre which establish a cohesive structure for regeneration. These framework plans relate to all parts of the town centre. However there are four key areas of major change.

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Figure 2 – Town Centre Masterplan


### 2.1.1. Back Plots

The 'Back Plots' lie to the south of Fore Street, between the Guildhall and Boden Mill. The proposals include a permeable and pedestrian friendly sequence of lanes which will be structured by three public spaces. The creation of 'Mill Square' will involve the redevelopment of the ACI factory and Boden Mill, providing a new mixed use development around a new public space and a new destination for Chard. 'Town Garden' will see the redevelopment of the existing Boden Street car park with new mixed use development centred around an existing garden space to the south of Fore Street. 'Town Square' will become the civic heart of Chard with the creation of a new public space bordered by the Guildhall, Council Offices and Library. These spaces will all be linked by a new public realm which provides a new pedestrian route from Guild Hall to the Boden Mill.

The Regeneration Plan proposes a mix of houses, apartments, cafes, restaurants, shops and offices within the Back Plots. There is also potential for a new market for the town at the end of the Marketfields car park. The overall aim is to create a new diagonal urban spine between the Guildhall and Boden Mill with strong pedestrian laneway connections to Fore Street.

### 2.1.2. East End

The regeneration of the East End aims to provide an improved gateway to Chard from the East. A new one-way system allows for significant improvement to the streets and spaces on

the entrance to the town and opens up the areas behind East Street for the creation of a new mixed use 'artisan' quarter in which opportunities for living and working are provided. The 'artisan quarter' is a part of the wider Stop Line corridor which runs through the town along the line of the former railway. This corridor is the town's main focus for business and industry.

### 2.1.3. Green Heart

Chard has a large area of green space at its centre which it does not currently engage with. Proposals will enable the reorganisation of this 'Green Heart' creating a new public park in the centre of the Chard, providing residential development that engages with the park and new leisure facilities that bring people into the area. Improved access and redevelopment of the school will complete the reorganisation of this key community area.

### 2.1.4. Commercial Streets

The spine of Chard that links all of these town centre areas is the High Street and Fore Street. It is proposed that this is regenerated with improved public realm, reorganised parking and the regeneration of any vacant or derelict sites. Key areas for improvement include Holyrood Street which has the potential to be designed as a pedestrian friendly 'shared space'. The bottom end of Fore Street where it widens out at the junction with Spring Street also has potential for significant improvement and redesign as a key civic space.

## 2.2. The Growth Area

The Regeneration Plan identifies major growth for Chard to the east of the town. The growth of Chard is hindered by the lack of existing traffic capacity in the town centre, a major issue confirmed by traffic modelling carried out by Peter Brett Associates. The only way to solve this issue is to provide linkage around the eastern side of the town together with connections into the town centre. The Growth Area proposal can be phased to simultaneously provide new homes and commercial development and highway infrastructure to incrementally increase the traffic capacity.

The growth area development to the east of the town will create four new character areas or neighbourhoods served by, and integrated with, the primary street infrastructure. These are referred to in the Regeneration Plan as Avishayes, Stopline Slopes, Millfileds and Holbear. Each neighbourhood will be planned to provide excellent connectivity, a mix of uses and community facilities where required, establishing a sense of place. They will have a distinct character drawing on existing natural features and be integrated with proposed green infrastructure.

In addition to the growth areas to the east, the capacity study carried out as a part of the Regeneration Plan also identifies growth areas to the north and south west of the town. The growth area to the north of the town is suitable for employment development as an extension of the Chard Business Park. It can also potentially accommodate a relocated football club. Areas identified as residential development in these areas should however be considered as later stages of development which are unlikely to come forward in the current plan period. The priority for the growth is to develop the eastern side of the town to deliver a

continuous network of linkages and connections between the A358 Furnham Road and the A358 Tatworth Road. The growth area includes a new sports and leisure hub providing playing fields and park space for the town.

# 3.0 Delivery

## 3.1. Approach

The delivery of regeneration and growth in Chard has been frustrated in the past by the complexities associated with the delivery of the necessary road infrastructure to provide access and unlock highways capacity constraints within the town. The private sector has not been able to find a means to fund and deliver the infrastructure as a consortium and the public sector has, hitherto, not stepped in to take a lead role in delivery itself.

The deliverability of the infrastructure necessary to unlock the regeneration and development of the town is further complicated by the complex land ownerships (Figure 9: Growth Area Land Ownership Parcels) across the growth area and the requirement, on the part of the planning authority, that the means to deliver the main highways infrastructure in its entirety is in place before major development proceeds. This requirement for upfront investment creates a cash flow blockage which, in the current economic climate, undermines the viability of the growth area.

In order to kick start regeneration and development LDA Design has proposed a phased approach to the development of the growth area which seeks to bring development forward as a series of phases in which the need for major upfront investment is minimised and, where possible, positive cash flow is maintained.

A phased approach can direct growth towards positive place making to incrementally build neighbourhood centre and regenerate the existing town centre. A clear sequence of phasing also allows flexibility, allowing development to be delivered incrementally and respond to changes in the social, economic and environmental drivers to the development of the town.

## 3.2. Phasing Principles

There are 6 key principles behind the phasing strategy and these need to be applied to all development proposals in addition to normal planning considerations:

1) The quantum of development for each phase should be within the capacity of the infrastructure of the town (in particular the highways network) to accommodate it;

2) Where this capacity will be exceeded by a proposed development, additional infrastructure and/or other initiatives will be brought forward as a part of that development to deliver new capacity and scope for further growth;

3) An equalisation strategy will be agreed to ensure that the cost of infrastructure provision is shared equitably across all viable development phases within a comprehensive masterplan area

4) Generally development and highways infrastructure and/or initiatives will be brought forward in the same area to maximise efficiencies between the two.

5) Phasing needs to take into account the need for positive placemaking and the delivery of a critical mass of development to support community heat and/or power provision.

6) In certain circumstances the location of new development and highways infrastructure and/or initiatives can be de-linked, but only where appropriate contributions are made to fund any necessary works required elsewhere to create capacity for further growth.

## 3.3. Spatial Planning Sequence

The key driver of phasing is the need to incrementally increase the capacity of the highways infrastructure to accommodate increased traffic as the town grows, in particular to relive the Convent Signals (Furnham Road/Fore Street/East Street).Traffic modelling by Peter Brett Associates shows these are already over capacity in the 2008 base case. Without long term investment to relieve this junction traffic modelling to 2031 shows a worsening of the current situation and a knock-on impact by traffic using other routes to avoid these signals, especially Victoria Avenue.

The long-term relief of the Convent Signals, together with the provision of infrastructure to provide access to the growth area, requires the phased delivery of a continuous route to the east of the town from the A358 Furnham Road to the A358 Tatworth Road and connections into adjacent urban areas. There are only a small number of ways that these capacity improvements and the continuous network of connections to the east of the town can be delivered in a phased way. Peter Brett Associates have identified the need for 5 phases of highways infrastructure investment which will need to underpin the regeneration and growth of Chard. Within each of these primary phases of investment is the potential for a number of sub-phases as regeneration and growth is brought forward in line with the infrastructure capacity created.

The quantum of development accompanying each of the primary phases 1-5 has to be carefully balanced with the capacity of the available infrastructure at each stage to accommodate growth whilst at the same time achieving sufficient value to minimise the funding gap at each stage and, where possible, maintain positive cash flow.

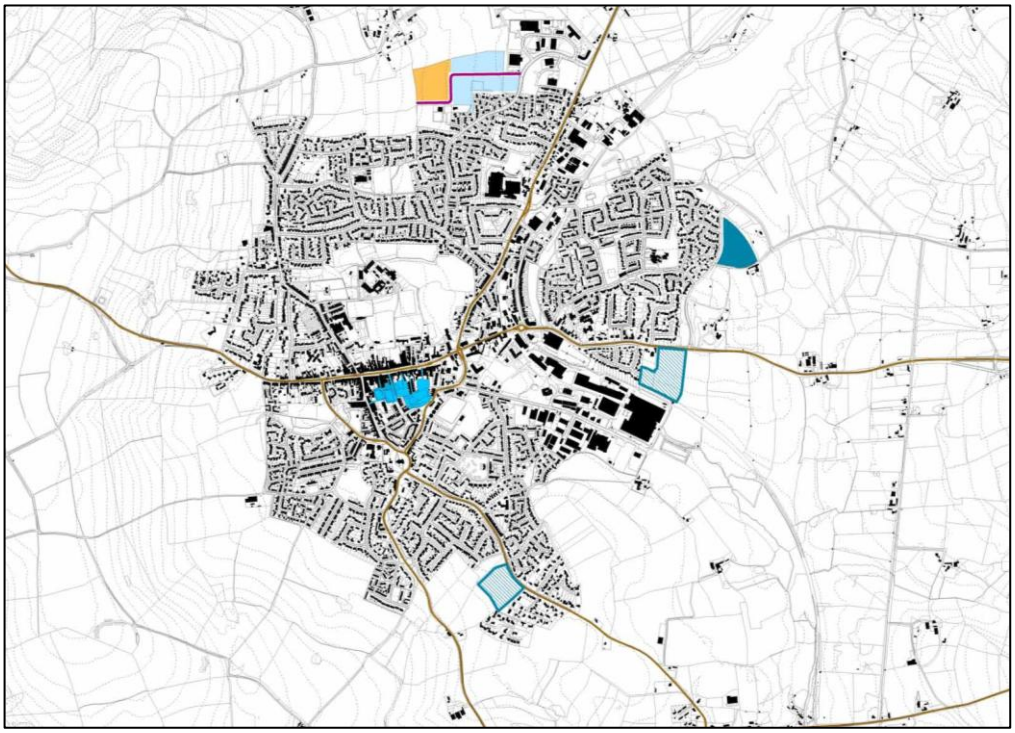
## 3.4. The Development Phases

The proposed development phases are described below. As explained above, these phases are driven by the interrelationship between highways capacity and place making, with the size of each phase being a balance between optimum scale and the capacity of the infrastructure to accommodate it.

### 3.4.1. Phase 1: Early momentum

An initial phase is required in the short term to demonstrate delivery and commitment to the implementation of the framework plan. The Local Authority has committed to this and has invested in MOVA signalisation improvement technology at the Convent junction towards the east of the town centre (shown on the phasing diagrams as Phase 2a for traffic modelling purposes, in reality these works will come forward in tandem with development shown in Phase 1) to release some traffic capacity to enable some housing growth to be released and unlock a subsequent phase of development. Phase 1 includes the mixed use regeneration of the town centre focusing on the redevelopment of the 'Back Plots' character area including the Boden Mill site, existing Boden Street car park site and the area behind the Guild hall. This can be achieved in a number of steps. Mill Square would come first followed by the Town Garden and finally the civic area around Town Square which would likely require some public funding. The regeneration of the back plots could provide a mix of uses including retail, varied employment space, places to eat and drink and some housing.

Figure 3 – Phase 1



Allied to the town centre regeneration is the opportunity to develop some employment land to the north of the town including a section of primary street infrastructure that will ultimately create a link across the north of Chard. This site could include the relocation of Chard Town football club, and provide employment land to kick-start the economic regeneration of the town, freeing up the sites required to regenerate the town centre. The development of this northern site could provide 4.1 hectares of employment land and 2.25 hectares for a newly developed football club.

Part of the growth area is included in this initial phase to signal the intent to get the development up and running. This will provide the first additional housing including affordable. This development will make use of the available traffic capacity created by the implementation of signalisation improvements in the town centre (Phase 2a). This element of initial growth area development is 'footloose' and can be provided in any growth area location provided that it meets the following criteria:

- infrastructure costs are low;
- provides 35% affordable homes;
- developer on-board with the capacity to rapidly move forward; and,
- provision of a high quality scheme to set the benchmark for all subsequent phases.

The Phase 1 scenario includes the following development:

- 80 residential dwellings to the east of Oaklands Avenue;

- 20,489m2 employment development to the north of the town just off Thorndun Park Drive;
- 3,677m2 of employment development to be removed / relocated from the town centre.
- The introduction of 59 dwellings in the town centre;
- The introduction of 3,176m2 of employment in the town centre;
- The introduction of 1,316m2 of retail in the town centre;
- The introduction of 568m2 of A3 in the town centre.

Infrastructure included within this phase will include access roads for the development and the closure of Boden Street to all traffic with the exception of buses at its junction with the High Street.

### 3.4.2. Phase 2

Development implemented at Phase 2 is illustrated within Figures 4-7. The following development is included within Phase 2 over and above that of Phase 1:

- 167 dwellings directly to the south of the A30 Crewkerne Road;
- 29 dwellings to the north of Henderson Drive;
- 152 dwellings to the south east of the existing Millfield Industrial Estate;
- 12,420m2 of employment to the east of the existing Millfield Industrial Estate;
- 4,326m2 of retail to the east of the existing Millfield Industrial Estate;
- The introduction of 97 dwellings in the town centre.

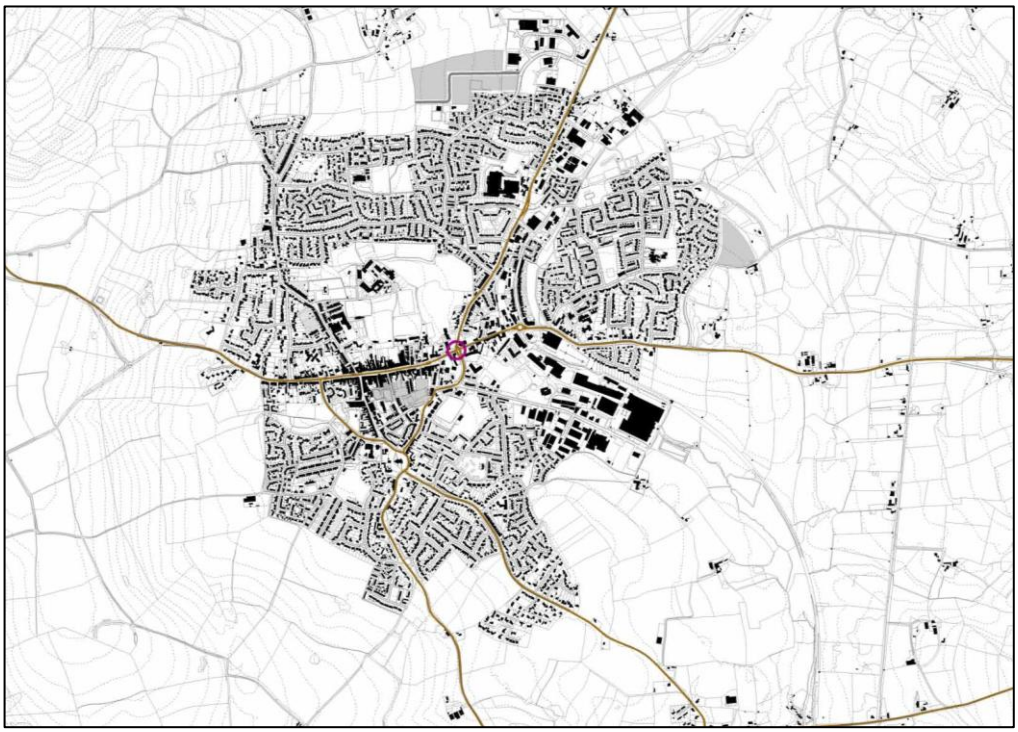
Infrastructure required for this phase will include access roads required for development including a link between Millfield and the A30 Crewkerne Road (Railway Fields Link).

In development and investment terms this Phase is subdivided into Phases 2a, 2b, 2c and 2d as described

### 3.4.3. Phase 2a: Convent Signals and East End Enhancement:

This phase involves investment at the Convent Signals to create the capacity for further growth at minimal upfront cost. In practice it involves implementing a MOVA traffic light management system which will boost traffic capacity at the signals in peak periods by approximately 6%. These signal improvements have been shown as an individual phase for traffic modelling purposes however will be required to come forward simultaneously with the developments outlined in Phase 1 to enable the growth area housing in this phase to be delivered.

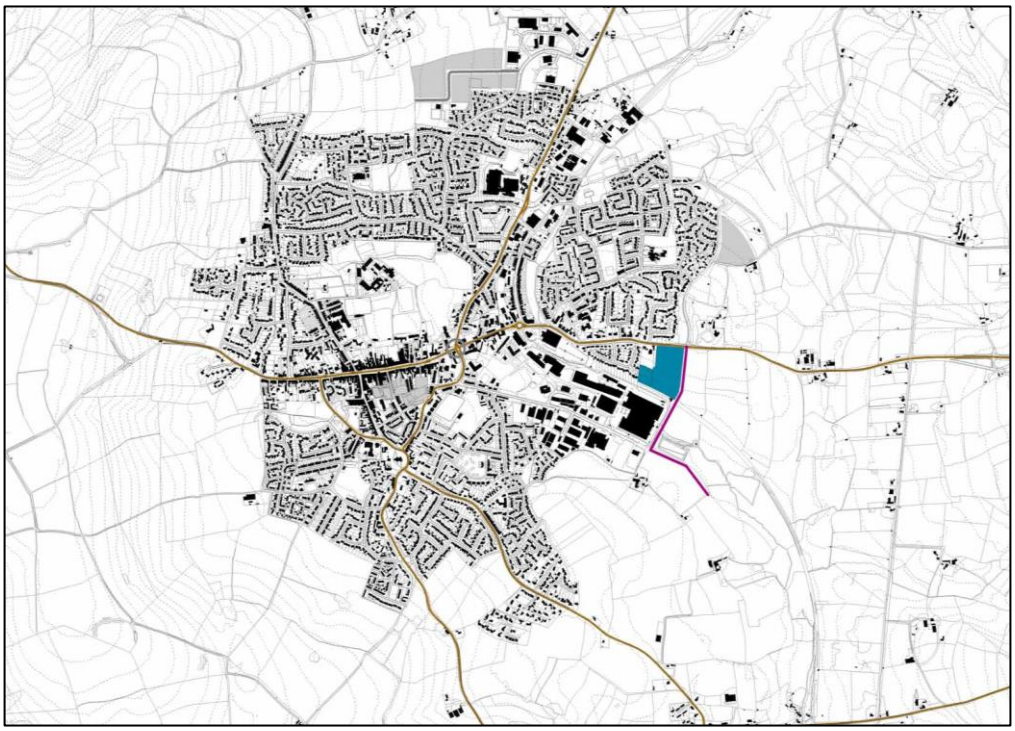
Figure 4 – Phase 2a



3.4.4. **Phase 2b: Access to Millfields:**

This phase accompanies the provision of a link between the A30 and Millfields Avenue and provides a quantum of development to offset the cost of delivering that link. This phase of development could provide 87 homes and begin the development of the 'Stop line slopes'. The scale of infrastructure provision required relative to the quantum of development means that this development phase is not viable on its own and funding support will be required. However once the road infrastructure proposed for this phase is in place the major constraint to development between the A30 and the A358 south is unlocked.

Figure 5 - Phase 2b



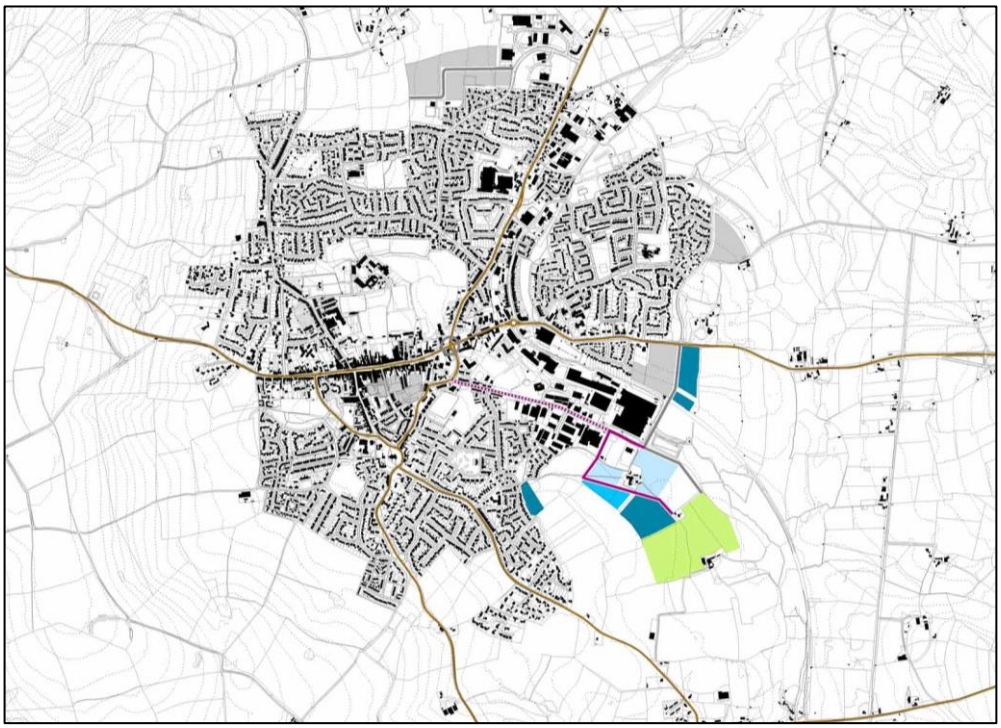
3.4.5. **Phase 2c: Making Millfields:**

This phase of development begins to extend the current employment area of Chard that occurs along the stop line corridor. This will include improvements to, and the extension of, the primary access road (Millfield Road), opening up new development parcels for employment and mixed use development providing enough value to subsidise the infrastructure. This phase of development could provide around 4.5 hectares of employment and mixed use development along with 260 homes, beginning to create the Millfields character area around a mixed use neighbourhood centre.

The new primary street infrastructure also provides access to the proposed new leisure space to the south East of Chard, allowing part of this new sport and amenity space for Chard to be established. The uses will be specifically designed and grouped to start building the sense of identity of the new growth area community.

It is essential that this phase commences the process of 'placemaking' to start to build the 'Millfields' neighbourhoods identity.

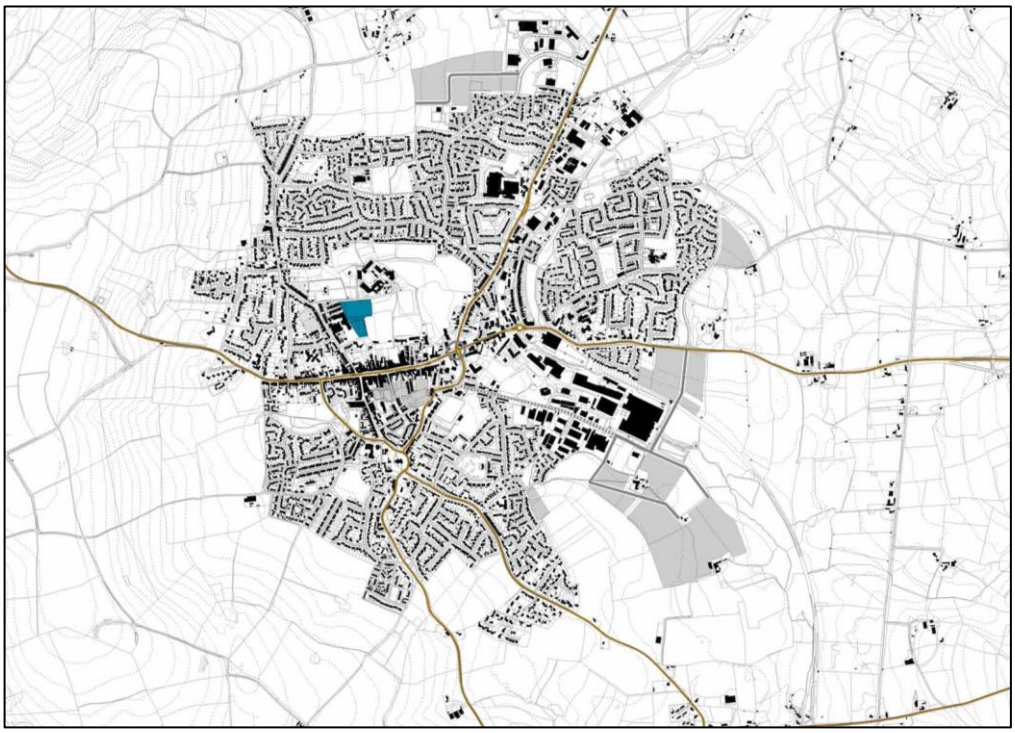
Figure 6 – Phase 2c



3.4.6. **Phase 2d: Town Centre Regeneration:**

This envisages the redevelopment of the football club site in the town centre beginning the regeneration of Chard's 'Green Heart.' This phase of development could provide around 100 dwellings. No contributions from town centre developments have been assumed in assessing viability and infrastructure funding.

Figure 7 – Phase 2d



3.4.7. **Phase 3**

Development implemented at Phase 3 is illustrated within Figures 8 and 10. Phase 3 includes the following development over and above that of Phase 2:

- 102 dwellings to the east of Oaklands Avenue;
- 2,793m2 of employment to the south of Millfield Industrial Estate;
- 296 residential dwellings to the south of Millfield and north of Henderson Drive;
- 247 residential dwellings to the south of Henderson Drive / north of A358 Tatworth Road;
- 137 dwellings to the east of the A358 Furnham Road / north of Chaffcombe Road; and
- 9,144m2 employment to the east of the A358 Furnham Road / north of Chaffcombe Road.
- A primary school south of Millfield adjacent to the new link to Henderson Drive

Infrastructure required to implement this phase will include; a link road between the A358 Furnham Road and Oaklands Avenue (Reservoir Link); connecting the A358 Tatworth Road with Henderson Drive and connecting Henderson Drive with the link across Railway Fields added in Phase 2, thus providing a continuous link between the A358 Tatworth Road in the south and the A358 Furnham Road in the north.

Phase 3 may be delivered in two steps, Phase 3a and 3b.

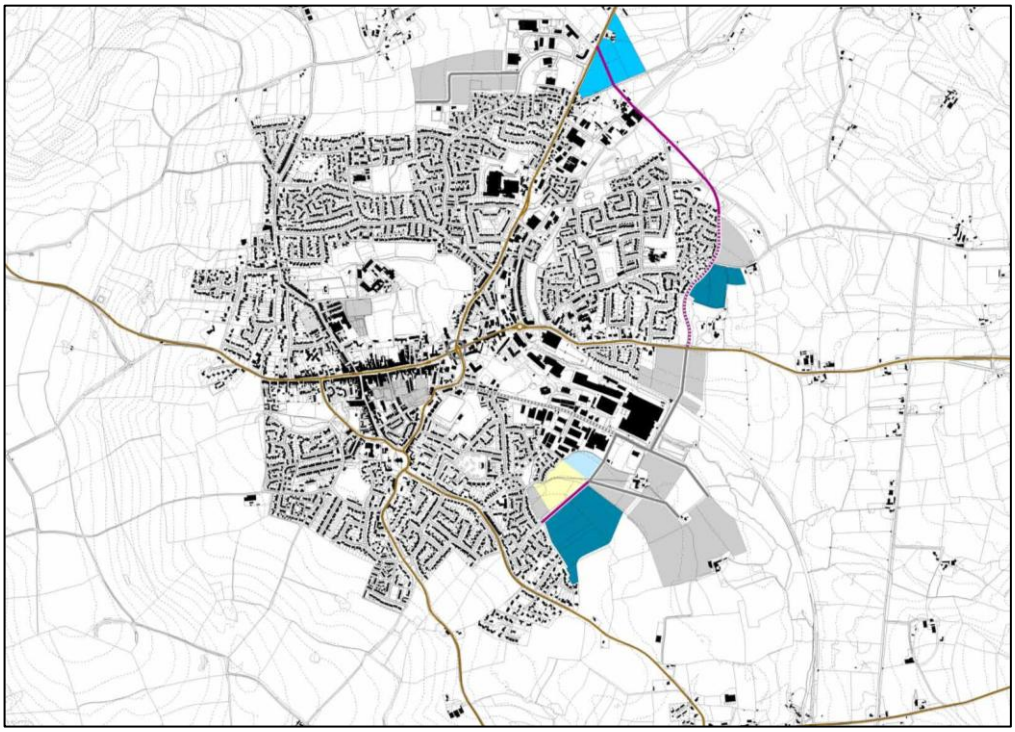
### 3.4.8. Phase 3a: Building Millfields

This phase sees the development of the new primary street infrastructure to the north east of Chard. The 'northern link' will connect the A358 north of Chard to the top of the Avishayes character area at the end of Oaklands Avenue, beginning to link the new primary street to distribute traffic through the growth area. Where the northern link meets the A358 it opens up development parcels for 4.5 hectares of mixed use development including around 137 homes. The development of primary street infrastructure in the growth area continues with the upgrade of the existing Oakland's Avenue connecting to the northern link through the Avishayes character area and linking with the primary street infrastructure developed in Phase 3. This will allow further development parcels for residential use providing around 45 homes.

This phase also sees the further development of the Millfields neighbourhood with installation of the primary street link between the Millfields neighbourhood centre and Forton Road at the top of the existing Henderson's Drive. This provides development parcels for employment, school and residential development. The development of this part of the growth area could provide over 1 hectare of employment development, a new primary school to serve the south east of Chard and around 169 homes.

This phase delivers a major element of infrastructure, the northern link between the end of Oaklands Avenue and the A358 Furnham Road.

Figure 8 – Phase 3a



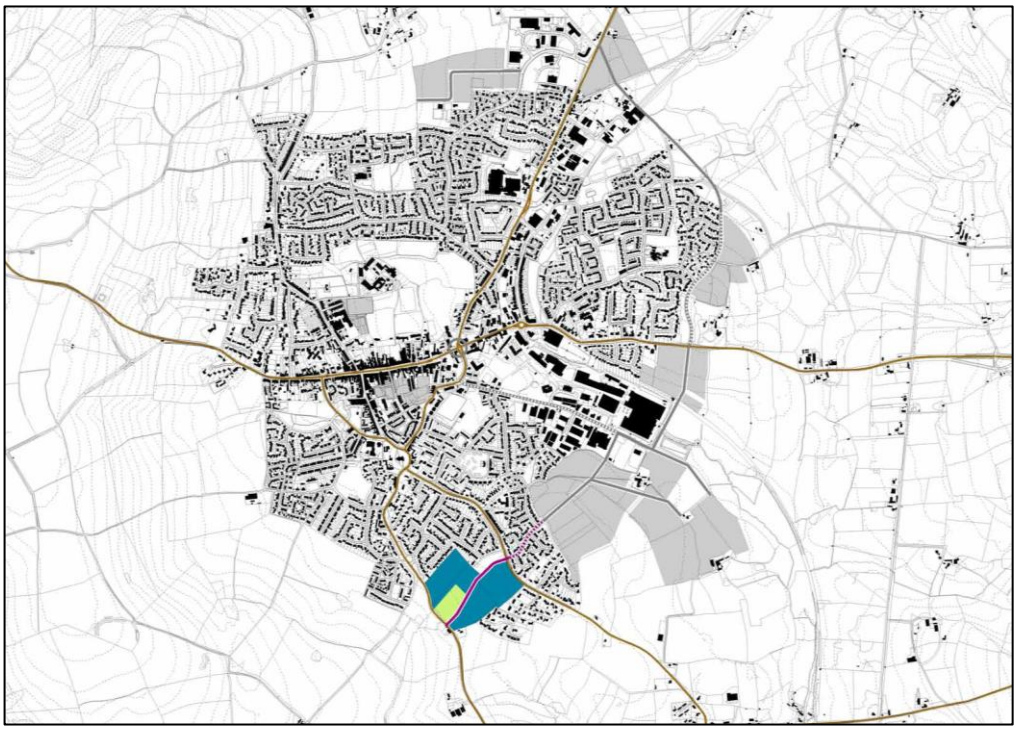
There are significant complexities associated with the delivery of the A358 Tatworth Road to Oaklands Avenue link. The land ownerships in the area are complex [see Figure 9] and not all parties are equally committed to the development of the growth area. There is also the possibility of ransom from some parties. There is likely to be environmental and community sensitivities associated with the creation of the linkage from the end of Oaklands Avenue to the A358 Furnham Road. In the absence of a strong development consortium, the public sector is likely to need to take a strong leadership role in the delivery of this link. Without this link the scale of the growth area will be constrained to a few hundred homes. A delivery team will need to be established to investigate and assess the possible need to implement Compulsory Purchas Order (CPO) procedures. This is discussed in more detail in section 6.

Figure 9 – landownership parcels

### 3.4.9. Phase 3b: Holbear

This phase sees the completion of the inner section of primary street through the growth area with the creation of a new primary street linking Forton Road and the A358. The infrastructure opens up development parcels for residential development providing enough value to develop the infrastructure, connecting existing fragmented residential development and beginning to create the Holbear character area. This phase of development could provide 264 homes.

Figure 10 – Phase 3b



3.4.10. **Phase 4:**

Development implemented at Phase 4 is illustrated within Figures 11 and 12. The Phase 4 scenario includes the following development:

- 325 dwellings south of Forton Road and north of the A358;
- 204 dwellings south of Millfield and north of Forton Road;
- 469 dwellings north of the old railway and south of A30 Crewkerne Road; and
- 178 dwellings east of Oaklands Avenue;
- 1,059m2 of existing employment to be removed / relocated from the town centre;
- 250m2 of existing retail to be removed / relocated from the town centre;
- 1 car showroom and a church hall to be removed / relocated from the town centre;
- The introduction of 174 dwellings into the town centre;
- The introduction of 468m2 of new employment into the town centre;
- The introduction of 200m2 of new retail into the town centre;
- The introduction of 150m2 of new A3 into the town centre.
- A new primary school south of the A30

Infrastructure required to implement this phase of development will include a link road parallel to the one constructed for Phase 3 between the A358 south and Millfield (Henderson Link) and from Millfield to the top of Oaklands Avenue (Oaklands Link). The introduction of a 'gyratory' type system will also be included within this phase with a new link proposed between the Victoria Avenue / Crewkerne Road / Tapstone Road / East Street roundabout junction and Furnham Road to the south of the Convent Signals (Gyratory Link). The Victoria Avenue / Crewkerne Road / Tapstone Road / East Street junction will be converted to signals with this phase.

This is subdivided into Phase 4a and 4b as illustrated below.

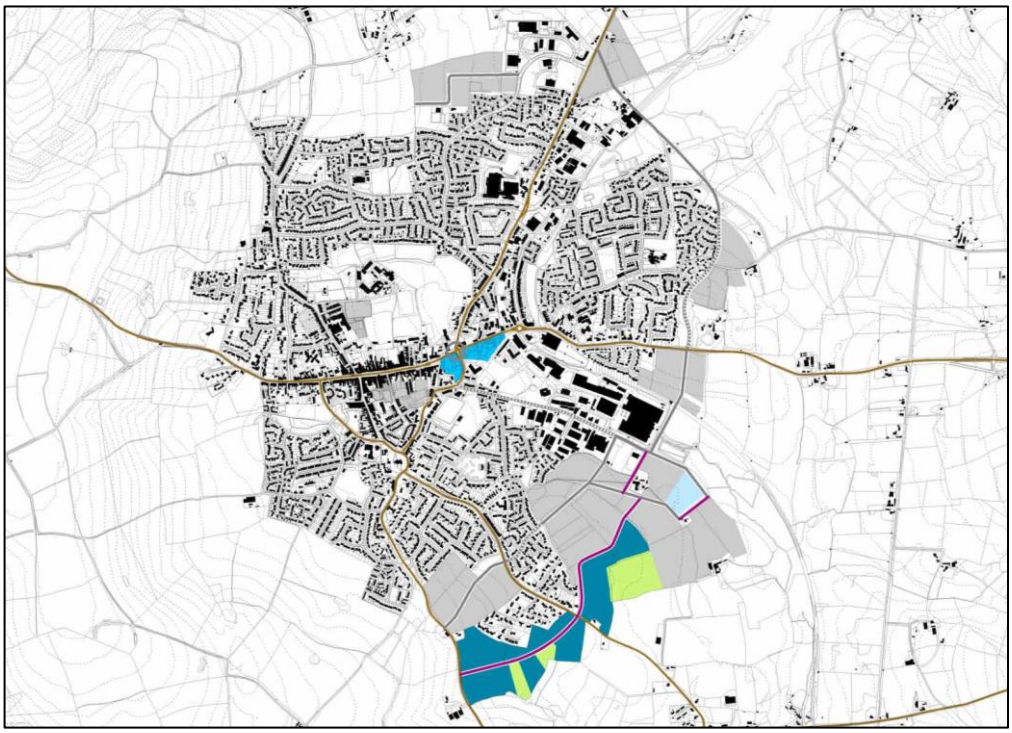
### 3.4.11. Phase 4a: The East End, Millfields and Holbear

Phase 3b saw the primary street traffic link through the growth area completed; this phase sees the continuing regeneration of the town centre taking advantage of the additional traffic capacity created. This allows the regeneration of the 'East End' of the town centre and the opening up of development parcels for mixed use development. The East End development could provide a true mix of uses including employment, some retail, some food & drink and around 116 homes. The delivery of the development of the East End will be private sector led, and will be controlled through the application of the development principles set out in the Regeneration Plan through normal planning processes.

This phase also sees the continuing development of the primary street infrastructure through the growth area with the outer primary street distributor connecting the Millfileds infrastructure provided in Phase 4 with the A358 to the south. This opens up development parcels for residential development, completing the proposed Millfileds and Holbear neighbourhoods. This development could provide around 655 homes.

Finally this phase sees the continuing development of the employment corridor with the development of the parcels set up by infrastructure in Phase 4. This could provide 1.4 hectares of additional employment development complimenting the additional dwellings created in this phase.

Figure 11 – Phase 4a

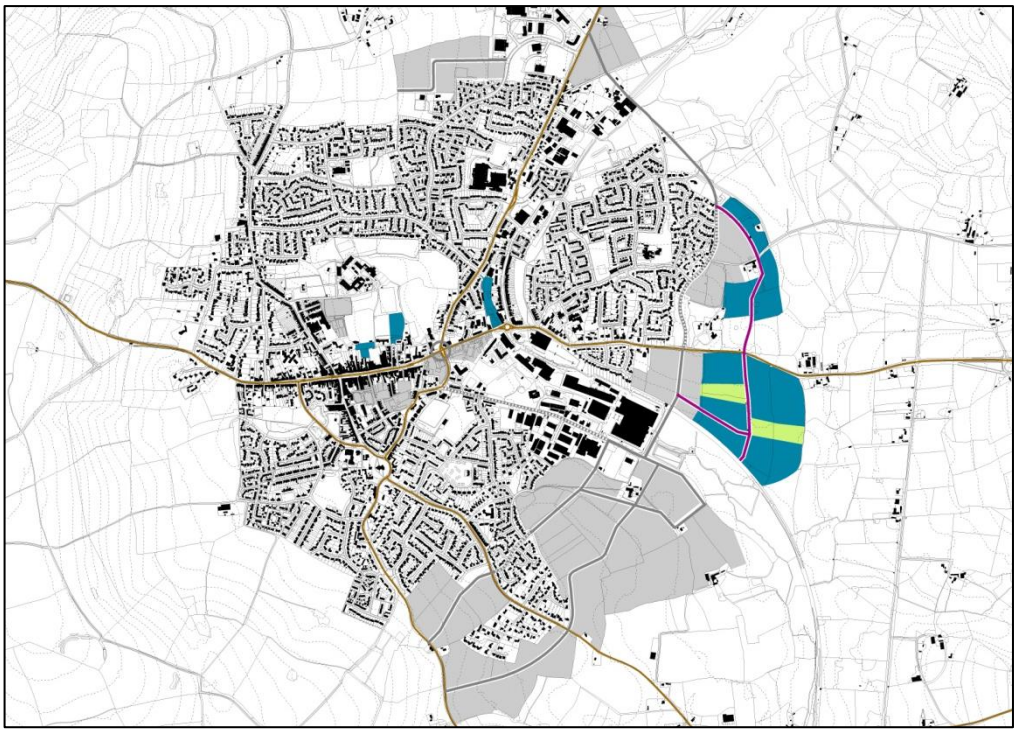


3.4.12. **Phase 4b: Town Centre, Avishayes and Stopline Slopes**

This Phase sees the continued regeneration of the town centre with additional sites redeveloped for residential use continuing to engage with the 'Green Heart' and also to regenerate the 'East End'. Development of these sites could provide around 58 homes.

The final section of the primary street infrastructure through the growth area is developed, completing the outer primary street distributor. This opens up development parcels for residential development allowing completion of the proposed Avishayes and Stopline Slopes character areas providing around 704 homes around mixed use neighbourhood centres.

Figure 12 – Phase 4b



3.4.13. **Phase 5: Natural Limits**

Development implemented at Phase 5 is illustrated within Figure 13. The phase 5 scenario includes the following development:

- 182 dwellings to the north of the town between Thorndun Park Drive and Crimchard;
- 587 dwellings to the south west of the town south of the A30 High Street and west of the A358 Tatworth Road;
- 500m2 of retail to the south west of the town south of the A30 High Street and west of the A358 Tatworth Road.

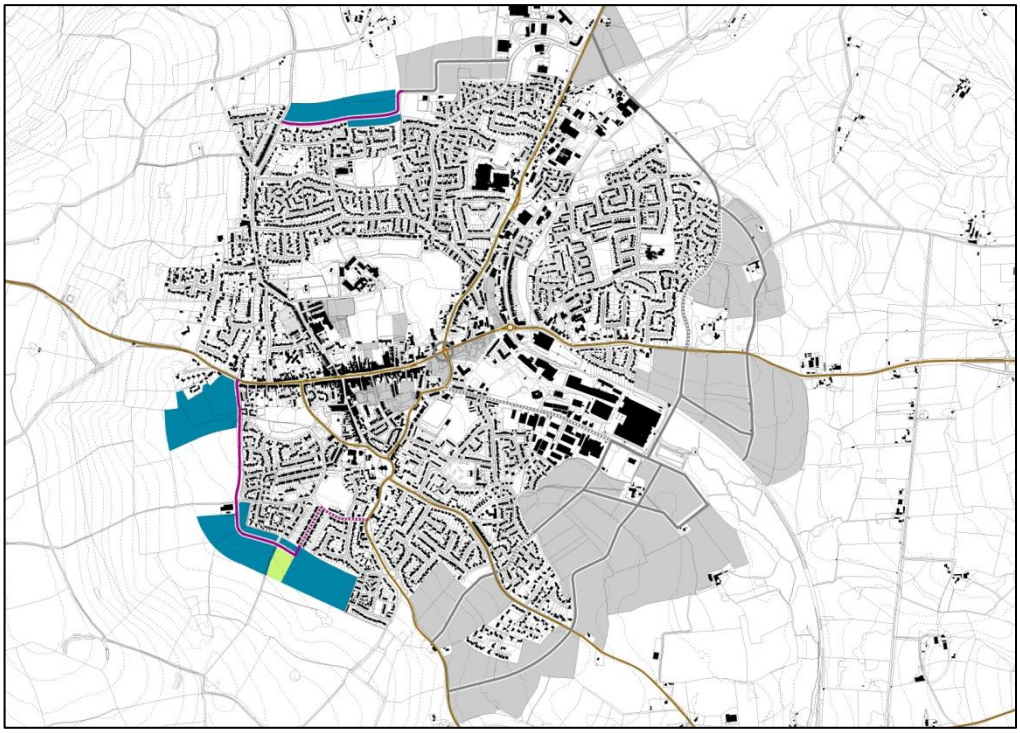
The final phase of the Chard development sees the town growing to the full potential of its natural limits as previously identified. This includes the continuation of the primary street link across the north of Chard, following on from Phase 1, opening up the remainder of the northern growth area for residential development. The development of this growth area could provide 181 homes.

The final phase also includes the development of the southwest growth area. A primary street is developed to provide access directly from the A30 linking into existing infrastructure opening up development parcels for residential use. This development could provide around 250 homes with connections to the town centre via the High Street and

Mitchell Gardens and 337 homes around a mixed use neighbourhood centre further south. It must be noted that at this stage traffic capacity issues become critical and some difficult decisions will need to be taken with regard to the positioning of highways infrastructure.

There may be a need to complete a link around the south west of the town, between the A30 and the A358 to further reduce highways impacts in the town centre however as this level of growth will not come forward in the current plan period these elements are likely to require further studies establish how best to overcome their particular delivery obstacles.

Figure 13 – Phase 5



## 3.5. Utilities and Energy Infrastructure Phasing

The previous section sets out the physical phasing of development in relation to highways capacity. Each phase will also need to be accompanied by appropriate investment in utilities provision and energy infrastructure to meet the Government's aspirations to see achieve zero carbon development by 2016.

### 3.5.1. Utilities

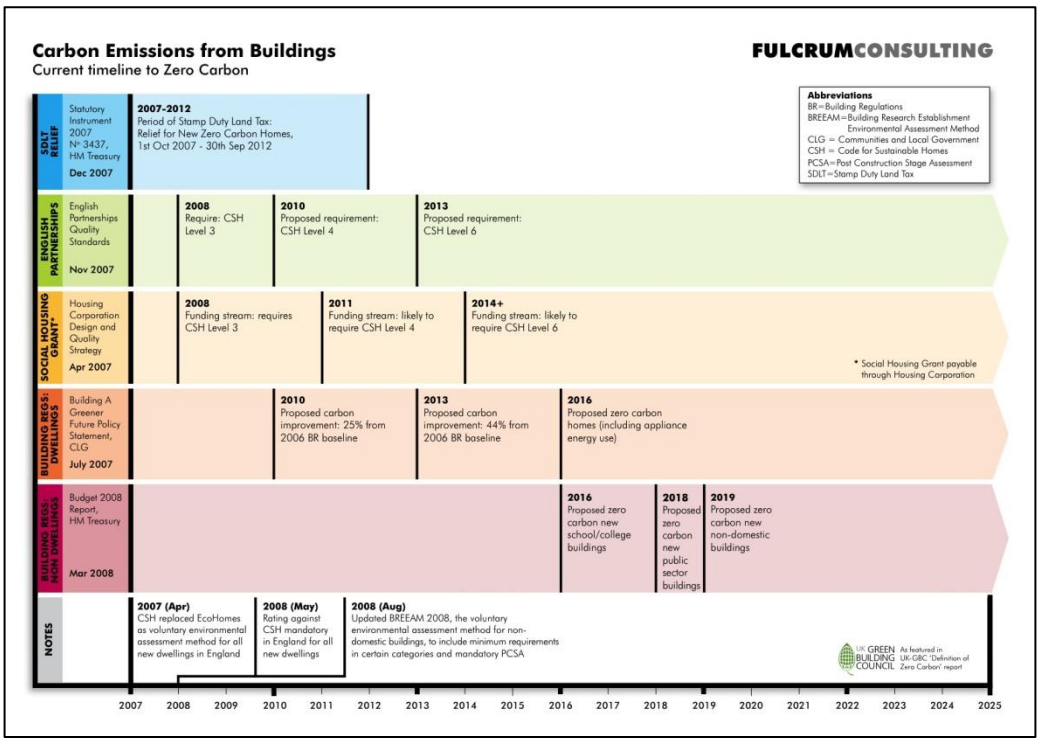
The identification of utilities infrastructure to serve each phase is relatively straightforward. A utilities infrastructure assessment has been carried out and necessary upgrades, diversions and investments have been identified for each phase. The combined utilities and energy phasing is described at the end of this section.

### 3.5.2. Energy

The identification of an energy infrastructure investment strategy and phasing is more complex because the current uncertainties with regard to future policy and technologies. However, the reality of climate change and the threats that it poses to our way of life are now almost universally accepted. Governments around the world are moving to put legislation in place designed to ensure that future development is more sustainable and it is clear the legislation relating to energy provision and use will become increasingly stringent.

The timeline to Zero Carbon is shown by Figure 14 which shows how, over the period for the implementation of the Regeneration Plan increasingly onerous energy targets will be applied with real cost and viability implications. When the zero carbon timeline was first announced in 2006, the definition of 'zero carbon' at the time required all energy demand (including 'occupant energy' from cooking and appliances) to be mitigated via on-site renewable energy generation. Then in May 2008 there was a technical review of the definition which suggested anything up to 80% of potential development sites in the UK could be physically unable to support such a requirement (i.e. they simply wouldn't have enough space, not just that it was too expensive). This led to a comprehensive review of the definition and in December 2008 CLG released a consultation on a new definition. The new definition was substantially different from the original (all on-site) and the recommendations given by the UK-GBC. The consultation closed in March of 2009 and Government is still in the process of considering the responses to the consultation.

Figure 14 – Zero Carbon Timeline



It is currently (August 2010) difficult to be definitive about what will be required of each phase of our development in terms of energy infrastructure and targets. However; all of the major political parties have given their unequivocal support for the 'zero carbon' agenda and the EU is currently considering legislation that will require member states to demand "zero-net-energy" buildings via all on-site renewables (i.e. significantly more onerous). So overall, there is no doubt that legislation is towards 'zero carbon' and all that remains to be seen is how developers are allowed to get there.

In essence there are two possible approaches to servicing large developments such as those proposed in the regeneration framework:

- Individual servicing: Individual units receive their own dedicated utilities connections, individual gas boilers or electric heating devices are used to heat individual dwellings and the owner or lease-holder takes responsibility for maintaining the equipment inside the dwelling. This is the most common approach used in the UK today with electrical power delivered via the National Grid.
- Community servicing: Groups of buildings share generation equipment, heating and in some cases cooling distributed via district heat networks. Servicing multiple buildings with different uses, and therefore different demand profiles, can help to smooth out the overall demand profile, meaning that generation equipment can be operated more efficiently.

Building Regulations and planning policies at every level are seeking to encourage more decentralised energy generation. Furthermore, tighter targets for carbon reductions are making grid delivered electricity a much less attractive option as it has a high carbon content and therefore increases the amount of carbon that must be mitigated via Low and Zero Carbon (LZC) technologies such as PV which can increase the cost significantly.

When attempting to achieve the more onerous carbon targets, individual servicing approaches to energy provision tend to add a significant cost to individual units. A community-scale approach can be more cost effective in capital terms; but the upfront cost of installing the distribution network in the earlier phases can reduce the attractiveness of the cash flow projections. Where development is due to take place across planned changes to the Building Regulations, as is the case in Chard, it can be even more complicated. Earlier phases will have much less stringent targets to achieve, and therefore are often much better able to meet their targets via individual approaches. In doing so, they may reduce the viability of a large-scale community approach being delivered in the later stages, thus increasing the cost for the later phases. Spreading this additional cost equitably, particularly where multiple developers are involved in delivering the different phases, will need careful consideration and can only be finalised when the details of the Government's Allowable Solutions scheme are available.

For the purpose of the Implementation Plan a number of scenarios for the provision of energy infrastructure to meet anticipated legislation have been tested. All of these scenarios, Described in Appendix 1, could be influenced by future developments in energy technology and legislation. Nonetheless they serve as a useful illustration of the complexities involved in delivering a comprehensive approach to the provision of low carbon technologies in a masterplanning context.

### 3.5.3. Utilities and Energy Infrastructure related to development phases

The key utilities infrastructure and possible energy infrastructure investments for each phase are set out below. A separate utilities and energy study has been prepared by Fulcrum which provides a full justification for the investments identified.

**Phase 1**

Minor diversions and reinforcement work is likely to be required in order to incorporate the new development into the existing utilities infrastructure. A medium pressure gas main runs along Touches Lane, but the proposed development site should avoid this.

The town centre utilities requirements have not been investigated in detail due to the limited quantity of the proposed town centre development, any utilities requirements are likely to be of little strategic importance and can be dealt with during detailed design and development, further investigation will be required by future developers for specific sites.

As these early tranches of development are proposed to be built in the period between 2010 and 2013 they will have to achieve compliance with 2010 Building Regulations. While the details of these regulations are still out for consultation, they are widely expected to require a 25% improvement (in terms of $CO^6 2$ emissions) compared to Part L 2006. This is likely to be achievable via good practice energy efficiency measures and individual dwelling-based solutions such as gas boilers and solar hot-water systems. However consideration should be given to installing a communal system and distributed energy network.

The town centre element and eastern development plot in this phase are likely to be able to achieve the required standards if they are served via a centralised gas boiler connected to a district heat network. The boiler could then either be replaced at a later date for a larger CHP unit, possibly using non-fossil fuels to help meet the carbon reduction targets of the later phases while maintaining the same level of carbon savings in the earlier phases, or kept on as a back-up boiler with the main supply coming from a larger unit serving the later phases.

**Phase 2a**

Works for the Millfield Link may impact on the overhead 33kW power lines. The overhead lines are will almost certainly need to be replaced by buried lines as the later phases are developed to the south and south-east of the town, therefore a decision will need to be made as to whether this is done in one go, and if so when, or whether a phased approach would be preferable from a cash-flow point of view.

There is also a rising foul main from the Edwards sewage pumping station (SPS) which will need to be taken into consideration when constructing the road.

While there are no buildings currently proposed for this phase of construction, consideration should be given to installing strategic infrastructure alongside the highway construction. For example; if it is determined that the town-centre development should be a catalyst for a district energy network in Chard, then some of the enabling infrastructure could be installed during this phase.

**Phase 2b**

Wessex Water have advised that the existing foul sewerage system would be able to accommodate approximately 100 additional properties in the Millfield Area; after which

either the Edwards Sewage Pumping Station (SPS) would need significant reinforcement or a new connecting sewer will need to be built around the edge of the town linking the new development to the south and east of the town to the main 600mm diameter gravity link sewer at the northern edge of the town. Wessex Water have stated a preference for the new connecting sewer rather than discharging flows through the existing sewer system.

While the proposed level of development for this phase is within the capacity of the existing infrastructure, later phases are due to exceed the existing capacity considerably. If it is decided that a new connecting sewer is required around the south and eastern edges of the town then consideration should be given to installing sections of this sewer as the strategic roads are built. More detailed discussions would need to take place with Wessex Water in order to determine responsibility and funding arrangements.

As for Phase 1, the development scheduled for this phase is likely to be constructed during the period of 2010 – 2013 and it is therefore expected that the buildings will be expected to achieve a 25% reduction in $CO_2$ emissions compared to Part L 2006 standards. While the development density proposed for this section of the development is reasonably low, later phases, that will be required to meet more stringent carbon targets, will be built around the development in this phase, which will increase the viability of a district heat network in the long-term. Furthermore, this phase is in close proximity to the Numatic site which has a sizeable existing thermal energy demand for their moulding process, as well as space-heating. It may be possible, subject to further investigation and discussions with Numatic, to include the Numatic site in the district system in order to increase the base load, thus increasing the viability of the scheme and potentially providing an additional revenue stream.

**Phase 2c**

The level of development proposed in this phase is likely to exceed the capacity of the existing waste water infrastructure (see above) and therefore substantial reinforcements are likely to be required. Further discussion will need to take place with Wessex Water in order to determine the best approach for delivering this new infrastructure in-line with the evolving demands of the new development being delivered in later phases.

If a phased approach to installing a new sewer connection is opted for, then it is likely that some sections of this could be installed during this phase.

The proposed development in this phase is likely to be able to achieve the expected energy targets via a dwelling-by-dwelling approach, it would be of benefit to later phases to install a community heat network, initially served by a communal gas boiler. If it is decided to co-operate with Numatic, and potentially other large industrial users in the town, then this phase may be considered for the location of the final, larger, energy centre.

**Phase 2d**

The existing sewer system serving Chard town drains through twin siphons from the old sewage works. Previously, Wessex Water have advised that the existing system should have sufficient capacity to accommodate windfall development within the town centre, however, more detailed conversations will need to continue with Wessex Water to ensure that this

remains the case as more detail becomes available about the exact quantum and timing of the proposals.

Phase 2d is likely to occur around 2013. This is when the Building Regulations are due to take their penultimate step before requiring 'zero carbon' new dwellings. This means that, depending on when the planning application is made, this part of the development is likely to be expected to achieve either a 25% or a 44% reduction in $CO_2$ compared to Part L 2006.

The optimal solution for this phase will also depend on whether it is decided to install a district heating network in the town centre.

**Phase 3a**

The northern development plot in this phase is likely to be able to connected to the existing main gravity link sewer at the northern edge of the town, but the development plots to the east and south-east will have to connect to the new connecting sewer.

There is a MP gas main running along Touches Lane and Chaftcombe Road though this should run along the edge of the development plot. Similarly, there is a pressure reducing station on the edge of the development plot, though this is not a major installation and may not affect the development.

Development in this phase is due to be delivered post-2013 and therefore would be expected to meet a 44% reduction in predicted $CO_2$ emissions compared to Part L 2006. If the earlier phases (1, 3 & 4) opted for a community-based solutions, then the south-eastern and eastern development plots in this phase should achieve this through best practice energy efficiency measures in every building and a connection to the district heat network. The larger number of dwellings now present on each network would increase the operational efficiency of the system and may make CHP a viable replacement for the existing gas boiler and could achieve a significant carbon reduction.

If the earlier phases adopted a dwelling-by-dwelling approach then this target will be much harder to meet, but should be technically possible via best practice energy efficiency measures with solar thermal and PV panels.

**Phase 3b**

As the development progresses clockwise around the eastern and southern edges of the town, the new connecting sewer will need to be extended.

Western Power Distribution (WPD) have advised that the existing network has approximately 4MVA of spare capacity. Once this spare capacity has been used, then there will either need to be a new transformer in the existing primary substation, or a new primary substation.

Phase 3B is likely to be delivered post-2016 and therefore the new dwellings would be expected to achieve 'zero carbon' status. In a recent Ministerial Statement the Minister of State for Housing and Planning announced that the carbon compliance level (i.e. that which must be delivered within the curtilage of the development or via district heat networks) will be set at 70% of regulated emissions. There are a number of ways that the 70% target can be met via community-based CHP systems. Only mitigating 70% of the regulated emissions however, would leave a substantial sum to pay in terms of allowable solutions (see Table 4

Appendix 1), therefore in terms of capital investment it is likely to be more viable to opt for a larger, whole-site solution, although further technical and economic analysis would be required in order to establish how this might work in reality.

**Phase 4a**

As the development increases and progresses around the south-eastern and southern edges of the town, there will be a need to complete diversionary works for the remaining eastern edge, such as burying overhead powerlines and continuing to extend the new connecting sewer.

These later phases of the development are likely to struggle to achieve the anticipated targets applicable to them in terms of carbon reductions if they are expected to do so in isolation. If the earlier phases have opted for a community heat network, then the ability of the Phase to achieve the full 'zero carbon' target will be strengthened. Phase 4A would be well placed to connect up with the southern development plots from Phases 2C, 3A and 4A, and could claim credits under the allowable solutions scheme for exporting heat to these earlier phases. However, if the earlier phases had opted for an individual approach, then a hybrid solution will need to be evaluated. The precise options will depend on the details of which phases are available to be connected to a larger scheme as the technology options vary at different scales and depending on the heat and power demand profiles.

**Phase 4b**

There is likely to be diversionary works required in the Avishayes area to divert 33kV overhead powerlines and an MP gas main.

As per Phase 4A, Phase 4B is likely to struggle to meet the required targets in isolation and even if it did, it is likely that the cost of the allowable solutions required to mitigate the remaining emissions would be prohibitive. As discussed above, there are a number of potential solutions that could meet the required targets, including the full 'zero carbon' target, when implemented on a whole site scale. Similarly, if some or all of the earlier phases had opted for an individual approach then the target for these later phases become increasingly difficult (and expensive) to achieve.

As is the case throughout, the town centre proposals have not been analysed in detail, but, due to the denser urban grain in the town centre, these areas are likely to find it harder still to achieve the targets based on an individual approach. However, were the decision made to install a town centre district heating system then this could also be connected to some of the existing dwellings, particularly to the south-west of the town centre where there is a high-rate of fuel poverty. Exporting heat to these dwellings would make the post-2016 targets much easier to reach and would also help to reduce fuel poverty and reduce the carbon emissions from the existing stock

**Phase 5**

The western side of Chard has not been analysed in depth as part of the infrastructure study. Due to the topography a pumping station may be required in order to link up with the new connecting sewer running around the southern and eastern edges of the town. Alternatively, it may be possible to use the existing town-centre infrastructure, although more detailed discussion would be required with Wessex Water.

If a site-wide CHP approach is being taken, then these later phases would be able to connect to this system and should achieve the anticipated targets. Further the western development plot would be well-placed to export heat to the worst of the existing stock. If these phases were unable to be connected to a district scheme then the western plots may have to rely on exporting heat to existing homes in order to achieve the targets, whereas the northern plot may have to explore standalone renewables such as wind turbines, or face the cost of allowable solutions.

### 3.5.4. Conclusions

As would be expected for a development of this scale, there are a number of normal utilities infrastructure issues that need to be addressed as each phase of development proceeds. These are not insurmountable and their costs have been taken into account in the development appraisal set out in the following section.

As each development phase progresses the challenges of meeting the requirement of energy related regulation and legislation will increase. Given the scope of this study and the current level of uncertainty regarding the future requirements that the later stages of the regeneration framework will have to meet it is impossible to pin-down a final strategy at this stage. However, analysis has shown that there are a number of ways (described in the scenarios in Appendix 1) that the various targets, as they are understood at the time of writing, could be met. Many of these scenarios will also help South Somerset District Council meet other targets that they will be required to achieve, particularly in terms of distributed energy technologies, CHP and reducing waste to landfill.

Although the technologies to be employed cannot be anticipated, the consideration of how to address energy issues at each phase, described above, highlights the extent to which the development of a community system from the outset makes it easier for later stages to achieve the more onerous targets that will come into place from 2013 onwards. Individual unit by unit systems in the early stages will make it less likely that subsequent development phases will be viable when more onerous targets are enforced.

There is potential for the energy strategy for the new development to help lower the emissions of Chard's existing buildings, an achievement that would almost certainly establish Chard as an exemplar in low carbon strategic spatial planning.

## 3.6. Development options

The growth and regeneration opportunities highlighted in this report would represent a significant level of change to the town if they were all implemented in full. However the masterplan also needs to allow for the possibility that not all phases will be implemented. Each Phase that comes forward need to make sense in spatial and design terms.

The phasing has been devised to be able to be halted or paused at any point and retain the coherence of the town. The phases can be grouped to create growth options for the town which the planning authority and community can chose to take forward as they see fit. These options can be summarised as follows;

### 3.6.1. Option 1 Town centre

This development option would focus on regenerating the town centre and only deliver low levels of peripheral housing growth. This option would include;

- Implementing the regeneration initiatives in the town centre such as the Back Plots/Boden Mill, Green Heart, East End and public realm enhancements to High Street/Fore Street;
- The relocation of the football club to the north of the town and associated employment development
- Build out of part of the eastern growth area to kick start development of the growth area and provide some short term housing.
- Housing development on the vacant football club site.

### 3.6.2. Option 2 eastern growth area part 1

This option include the town centre regeneration and continue the development of the eastern growth area, focusing on place making in the Millfields area to create a new district centre and delivering some additional highways links to the east of the town to improve highways capacity. The option would include;

- Creating a highways link from the A30 to the Millfield Industrial Estate with additional housing growth immediately south of the A30;
- Improving the Millfield road from town to the new mixed use district centre south of Millfields
- Completing the highways link from the A30 to the A358 plus associated housing development

### 3.6.3. Option 3 eastern growth area full build out

This option would continue from Options 1 and 2 and complete the growth to the east of the town, creating a second highways link and deliver maximum housing growth including;

- Additional housing to complete the new communities at Holbear and Millfields;
- Development of remaining plots around Avishayes; and,
- Completion of the second highways link around the eastern edge of the town.

### 3.6.4. Option 4 Growth to 'Natural Limits'

This option takes the level of development to the full build out scenario of the masterplan and delivers additional housing sites to the north and west of the town, this option would be delivered beyond the current plan period.

# 4.0 Delivery and funding

The Regeneration Plan will only be delivered if it has been conceived to be attractive to the private sector. It needs to be economically viable as far as is possible and have a real chance of attracting public sector support to bridge any funding gap at any stage of the project if necessary. This section describes the advocated approach to the development and regeneration of the growth area and town centre. It provides a recommended delivery strategy and summarises the results of a broad development appraisal which is intended to test the viability of the recommended approach.

## 4.1. Growth Area

### 4.1.1. Approach

The Chard growth area consists of land which is under the control of a number of landowners and developers. The masterplan promotes an integrated approach to development through a suite of framework plans and strategic design codes.

The implementation of a masterplan involving a number of developers and landowners is a complex process. In some cases the difficulties of delivery are made easier when the landowners and developers come together to form a developer consortium operating under an equalisation agreement which ensures an equitable distribution of infrastructure costs and profit. However, when a developer consortium and equalisation agreement is a prerequisite for development it can sometimes become a barrier to delivery. Agreement between a diverse group of landowners and developers can be difficult to achieve and as a result some major growth schemes simply do not come forward. This has been a difficulty in Chard in the past.

The delivery strategy for the growth area envisages that development comes forward as a series of stand-alone planning applications broadly in line with the phasing outlined previously. There will be no requirement for a formal equalisation agreement between landowners and developers. However SSDC will operate an equalisation strategy which will seek to ensure an equitable distribution of costs over all development phases. This equalisation strategy will be operated initially through the established SSDC Planning Obligations Protocol (copy included in Appendix 5) though in the future it could be replaced by the Community Infrastructure Levy (CIL) or some other replacement mechanism.

In summary the delivery advocated for the growth area envisages:

- a series of individual planning applications coming forward broadly in line with the phasing;
- the application of the masterplan principles set out in this document;
- the application of an equalisation strategy, operating through the normal SSDC planning obligations protocol, to ensure the equitable distribution of infrastructure costs;

### 4.1.2. Phasing

The phasing of the masterplan is determined by the requirement for each phase to incrementally improve the capacity of the highway network in Chard to accommodate growth and contribute to placemaking. The proposed phasing has been described previously, and seeks to kick-start development in Chard without the need for major investment in infrastructure. The phasing sequence allows for infrastructure and housing growth to come forward together. The costs of infrastructure associated with each phase have been minimised and can be offset against the value created by development, thereby avoiding a major funding gap at any point in the implementation process. A Phasing Summary Table which brings together infrastructure requirements and funding requirements (see viability testing under 'Equalisation Strategy' below) is included at Appendix 4. No phase should be allowed to ransom a subsequent phase or obstruct the implementation of the wider plan.

If a development phase comes forward out of sequence it will be the responsibility of the developer to demonstrate how it is compatible with the phasing principles and ensure an orderly provision of infrastructure.

The proposed sequence of phasing has also been devised to build a new community centre at Millfields. This requires the development of a mix of uses at an appropriate density, community facilities and open space at sufficient critical mass to create a 'place' at the heart of the development. The grouping of development in this way also provides the potential for the creation of a 'community' energy/heat network to address the emerging zero carbon agenda. A dispersed pattern of housing developments will not achieve these outcomes, even if they create additional highways capacity.

A decision making diagram to help the planning authority assess the acceptability of planning applications against these two fundamental criteria is set out below (Diagram 1). When a proposed development has been judged compliant against these criteria its acceptability in terms of layout and design can be assessed.

### 4.1.3. Masterplan Principles

As individual phases come forward development control planners will need to ensure that proposals are aligned towards the delivery of the growth area masterplan. It will be essential that the potential developers of each phase are given clear guidance on how to demonstrate to the planning authority that their development proposals accord with the principles set out in the Chard Regeneration Plan. Section 4.0 of this document provides a series of framework plans which underpin the masterplan for the site and establish the basic structure for the development of the growth area. They provide for sustainable accessibility, strategic open space provision, retention of vegetation and set out broadly where different character areas, neighbourhood centres and areas of highest density should be located. The majority of the framework plans have significance across the whole growth area; for example if only a small part of the green infrastructure network was to be implemented the overall system of green spaces, sustainable drainage and ecological mitigation would not work. If low density development was located where there should be higher density development the growth area would not have a local centre.

In a similar vein, a set of strategic design codes are provided which govern the spatial relationship of buildings to the main streets and spaces. These have been designed to ensure design coordination with regard to the main aspects of built form, for example by setting out building setback, street cross section, landscape treatment and building height. They are deliberately not too restrictive so they can be easily complied with but they provide enough information to ensure the delivery of a coherent scheme.

Developers and design teams preparing individual planning applications must set out clearly how they will deliver on the planning and design principles as conveyed by the framework plans and design codes. A number of structuring elements are particularly important:

- local centres and uses should be broadly distributed as shown by the framework plans;
- strategic pedestrian, cyclist and vehicular accessibility principles must be fully delivered;
- major open space allocations should be respected;
- there should be a clear response in terms of distribution of uses, density and design to the different character areas; and,
- street cross sections should conform with the design codes for the key strategic streets.

It will be the responsibility of the developers and their design teams to develop proposals that achieve these requirements and through any pre-application process be able to demonstrate compliance. The statutory 'Design and Access Statement' should be the place to describe how proposals are aligned with the principles of the Regeneration Plan.

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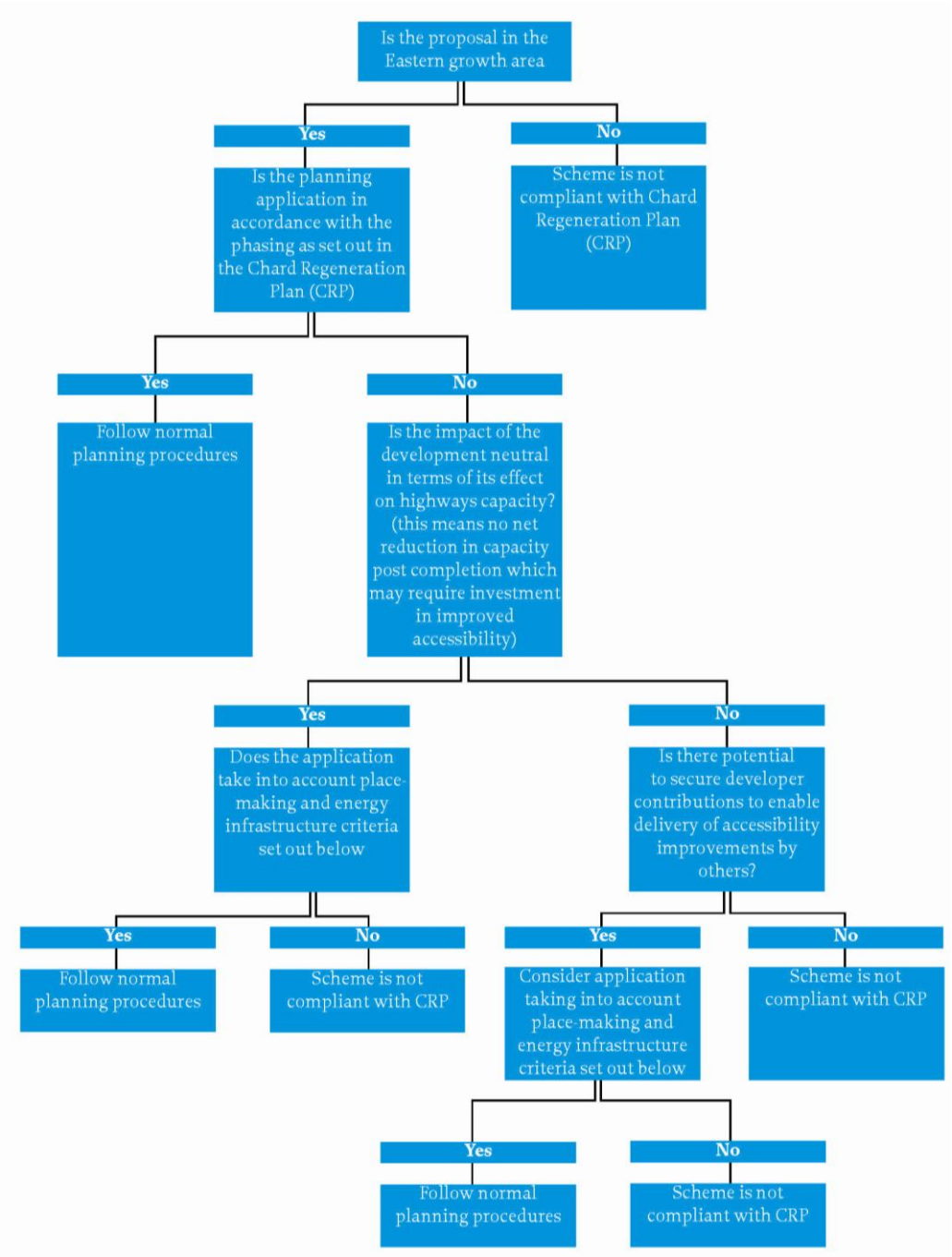
**Diagram 1: Flow diagram for assessing the acceptability of development proposals against highways capacity and place-making criteria.**



### 4.1.4. Equalisation Strategy

The growth area masterplan includes the physical and community infrastructure necessary for it to work effectively as a sustainable development. This infrastructure includes utilities provision, primary road infrastructure, strategic open spaces and schools. This infrastructure is not distributed equitably throughout the masterplan area and some land ownerships and some phases bear a greater burden of delivery than others.

In order to test the overall viability of the growth area masterplan, the phasing proposed and the potential to spread infrastructure costs across phases, a broad development appraisal has been carried out with cost information provided by Gardiner and Theobald and valuation advice by GVA Grimley. The appraisal provides only an indication of viability and is underpinned by three key assessments:

- The market value of serviced land in Chard;
- the 'abnormal' infrastructure costs associated with servicing the land and providing community infrastructure; and
- an appraisal of the minimum value landowners will expect from their land once the 'abnormal' costs of servicing the land and providing community infrastructure are deducted. This is referred to in the appraisal table as the 'target viability threshold'.

In simple terms the appraisal considers, for each phase of the development, the difference between the market value of the serviced land and the costs of servicing the land and meeting community infrastructure costs. Where the resulting figure is less than 'target viability threshold' (the minimum figure that GVA Grimley estimate landowners will expect for their land) it is likely that either, public sector investment will be required to ensure the development phase comes forward, or that a reduction in the level of community infrastructure and/or affordable housing will be required to deliver an adequate land value. Where the resulting figure is higher than the target viability threshold there is potential for cross subsidy of infrastructure costs or 'clawback' of public sector investments.

The full appraisal is included at Appendix 2. It shows a need for a net public sector investment of £13.77 million (after a 'clawback' of £2.36 million from private sector developers through developer contributions) to ensure land values achieve the target viability threshold. For the purposes of the appraisal, GVA Grimley has estimated that the maximum clawback which could be achieved per acre of land in a viable development phase is £100,000.

Also shown is a net present public sector investment of £10.6 million, which shows the present value of the public sector investment, discounted at an appropriate rate to account for the time value of money over the masterplan period. A summary of the full appraisal is provided in Table 2[1]

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**Table 2: Chard Growth Area Development Appraisal Summary**

| Chard Eastern Growth Area Appraisal<br>Year Land Value / Deficit (£m) | Summary<br>Public Sector Investment (£m) | Clawback (£m) |
|---|---|---|
| 2011 -0.81 | 1.49 | |
| 2012 -2.15 | 4.43 | |
| 2013 -1.07 | 2.42 | |
| 2014 -0.27 | 1.35 | |
| 2015 -0.27 | 1.35 | |
| 2016 -0.27 | 1.35 | |
| 2017 -0.88 | 2.97 | |
| 2018 1.65 | | 0.59 |
| 2019 1.65 | | 0.59 |
| 2020 1.65 | | 0.59 |
| 2021 1.65 | | 0.59 |
| 2022 0.99 | 0.15 | |
| 2023 0.99 | 0.15 | |
| 2024 0.99 | 0.15 | |
| 2025 0.99 | 0.15 | |
| 2026 0.99 | 0.15 | |
| Total 16.13 | | 2.36 |
| Public Sector Investment 16.13<br>Net Public Sector Investment 13.77 | | |
| Outputs<br>Number of Residential units (35% Aff) 2,716 | | |
| Net Public Sector Investment / residential unit provided £5,071 | | Base Case |
| Schools 2 (primary, two form entry)<br>Employment c. 50,000 sq m (GIA) | | |

The net developable area for the purposes of the testing exercise is taken to be those areas that will be developed as market housing. Net residential land area has been reduced by 35% to account for affordable housing provision and local play areas and open space, while employment areas have been reduced by 10% to allow for open space and service infrastructure provision within each plot.

The infrastructure costs, Appendix 3, include primary road infrastructure, green infrastructure and utilities 'abnormals' together with major elements of social infrastructure including two 2Form Entry (FE) Primary Schools. However no allowance has been made for secondary school education contributions.

Schools in Phases 3A and 4B are costed at £4.7 million each. With regard to employment land, it is assumed that employment densities (jobs per m2) will be higher than calculated in traditional employment land allocations due to the anticipated shift to higher value added, office based employment as promoted in the Regeneration Plan. In addition it is anticipated that there will be an increase in home working resulting in a denser overall employment offer.

Major utilities infrastructure costs are included in the appraisal. In practice these costs may be met by the relevant utilities company. Costs associated with the undergrounding of 33kv powerlines to the south of Millfields are also included. The infrastructure costs do not include any extra over costs associated with meeting the requirements of Building Regulations 2010 or other policy and legislative requirements which will come into force up to the zero carbon timeline of 2016.

The appraisal demonstrates that within the capacity constraints set by the infrastructure of the town there is scope for a phased approach to the development of the growth area to minimise risk and optimise cash flow at each stage. Nonetheless, fundamental constraints on capacity mean that early phases of development cannot be sufficiently large to generate development values capable of funding the full wish-list of infrastructure and affordable housing and achieve the target viability threshold for land value.

Positively however, the latter stages of the development create sufficient value for the public sector to recoup part of its investment through developer contributions and ensure that viable phases pay equitably towards the infrastructure which is necessary to bring the whole plan forward.

To achieve an equitable outcome SSDC will apply an equalisation strategy. The central principle behind this strategy is that each phase should contribute equally to physical and community infrastructure costs. There are two ways that this equalisation could be achieved through a development process involving discreet planning applications. The first approach is through the pro rata apportionment of infrastructure costs across each phase of development. Simply, this approach would involve quantifying the total costs of community and physical infrastructure and spreading them across each value generating unit of development through s106 negotiations. The alternative approach would be to apply an infrastructure tariff, established at a realistic level, to apply to the latter most viable phases which have low costs. Both approaches have difficulties in this particular development scenario.

The pro rata distribution of costs is problematic because, under current masterplan assumptions, the overall scheme does not achieve sufficient residual land value to meet the target viability threshold. Put another way, when infrastructure costs are applied to each value generating unit of development on a phase by phase basis the residual value of the land is significantly below the target viability threshold. Each phase of development involves the delivery of infrastructure, the cost of which would need to be offset against the pro rata contributions. Later phases with minimal infrastructure costs would have scope to provide an infrastructure contribution, but not at the full pro rata rate.

The ability to apply the tariff approach is complicated by current uncertainty surrounding the future of the CIL which was introduced by the previous Government. Furthermore the viability testing shows that early phases of development are not sufficiently profitable to make a CIL achievable. However, as the viability testing also shows, later phases of development do generate sufficient 'excess' value to enable some costs to be recouped through a CIL. The CIL would need to be flexible so that it accounts for changes in the development mix and composition, costs and land value.

SSDC will need to consider further the most appropriate and legally achievable means to ensure an equitable distribution of infrastructure costs over the lifetime of the implementation process. In the interim an equitable approach to the negotiation of planning contributions can be achieved through the application of the SSDC Planning Obligations protocol as follows.

- the total cost of community and physical infrastructure related to the delivery of the masterplan should be agreed and understood by the various parties to the growth area masteplan;
- the SSDC planning obligations protocol should be applied taking into account pro rata infrastructure costs and other planning obligations. The full Planning Obligations protocol is included at Appendix 5 for reference;
- the pro rata costs of infrastructure per value generating unit of development costs together with other planning obligation costs should be considered against the land budget and the actual costs of delivering infrastructure in that phase;
    - Where costs exceed the value of the site as proposed to be developed, then the scheme is not viable and costs must be minimised without compromising essential planning requirements. SSDC will work with the applicant to secure public sector funding if required;

    - Where costs do not exceed value of the site as proposed to be developed, but result in a residual site value that does not exceed the existing use value then costs must be minimised without compromising essential planning requirements and SSDC should work with the applicant to secure public sector funding if required;
    - Where costs do not exceed value of site as proposed to be developed, and do not exceed existing use value of site, then planning obligations should be achieved through negotiation. These should seek to achieve a pro rata contribution to infrastructure costs, even if that infrastructure is delivered as a part of an earlier phase. This can be achieved under Circular 5/05 via 'pooled contributions'. There will be an expectation of land value uplift for the landowner that will vary from case to case, but must be taken into account in negotiations. The negotiation must maximise infrastructure contribution and other planning obligations whilst ensuring development proceeds.

Though the viability testing carried out to test the masterplan is a useful part of this exercise, viability in the 'real world' will be influenced by a number of factors and the outcomes of negotiations around:

- residential land values;
- the level of affordable housing element flexibly;
- the potential for the affordable element of the scheme to deliver value;
- the potential for certain aspects of the infrastructure (eg energy) to deliver an income;
- the availability of external funding sources for major infrastructure elements;
- the potential for a Chard-wide community infrastructure levy allowing the costs related to the development of the area to be spread more widely;
- the ability of the developer to value-engineer key infrastructure elements;
- the potential for high quality development to raise values and return;

- the approach to the provision of carbon compliance measures and investment in allowable solutions.

Consideration of these factors through the planning and development process may significantly reduce the need for public sector support.

### 4.1.5. Public Sector Funding

The appraisal shows a need for public sector funding to kick start the scheme with 'clawback' in later stages via developer contributions. The funding climate is difficult. The South West Regional Development Agency, previously the holder of the Regional Infrastructure Fund, will be wound down by April 2012 and funding for 2011-12 is uncertain. The Homes and Communities Agency will continue to be a major player enabling and investing in regeneration and housing but over the next five years will become a smaller and more streamlined organisation. Its emphasis will be on enabling rather than investment. However even with a significantly reduced budget it will continue to have funds available for investment in properly conceived schemes. In addition the Regional Growth Fund recently announced by the Government makes available £1 billion to support growth and regeneration projects in the regions and will be accepting initial funding bids until December 2010.

Although the economic situation is difficult, there is some prospect that it will be possible to secure some public sector financial support for initial non-viable phases to kick start implementation of the wider masterplan. In order to secure this funding however it will be necessary to demonstrate that all avenues to secure private sector delivery have been exhausted. This may include considering a reduction in affordable housing provision in early phases to improve cash flow in line with the guidance set out in the HCA document 'Investment and Planning Obligations – Responding to the Downturn' (HCA 2009).

The HCA will engage with the Chard Regeneration process through the Local Investment Plan (LIP) process which is currently progressing through Somerset County Council. To be a part of the LIP the Chard Regeneration proposals will need to be incorporated into the SSDC Core Strategy, underpinned by the Regeneration Plan. The Chard Regeneration proposals will have a better chance of receiving funding if they are in the Core Strategy and LIP.

The funding of later phases of infrastructure may potentially benefit from the proposed Housing Delivery Incentives outlined by the Coalition Government. Whilst it is not clear exactly how these will work they could result in a significant income stream for local authorities that are successfully delivering new housing. The incentives will see the Government matching the additional council tax raised by every new house built for the next six years. A Council approving 100 typical new Band D houses which typically have Council tax of around £1400 per year could potentially gain an income of £840,000. This income, when applied to a large site such as the growth area, could deliver the funding necessary to support further infrastructure investment.

### 4.1.6. Growth Area Energy Infrastructure

The potential additional development costs relating to the low-carbon agenda have not been included in the development appraisal. This is because the inclusion of these technologies as

'costs' would inevitably lead to the conclusion that the growth area is not viable without major funding support. This would be misleading because of rapid developments in energy technologies and the increasing realisation on the part of developers and utilities companies that energy infrastructure investment on a community scale can ultimately deliver a return on investment. The recent advent of the feed-in tariff for example has revolutionised the viability of Solar PV and it is now a realistic prospect for initial phases of development.

It is essential that energy infrastructure issues are considered from the outset and, if need be, separate funding secured to kick-start the creation of a community energy system from the start in order to ensure that subsequent phases have the best chance of achieving the increasingly onerous targets that will apply after 2016.

A very broad high-level cost analysis of the community vs. individual options has been carried out to enable possible compliance costs to be assigned to each phase. Given that the main regulatory milestones are occurring in 2010, 2013 and 2016 the proposed development phases were aggregated into pre-2013, 2013 - 2016, and post-2016. For each of these aggregated phases, the cost of achieving compliance was assessed either via an individual, building-by-building approach (Solar Thermal, PV etc), or via a community CHP type approach. It has been assumed that dwellings are 'on average' semi-detached, and that the non-domestic is mostly employment and some retail. The costs assumptions have assumed a highly efficient approach to the design and implementation of the energy systems implemented. Inefficiencies from the use of new technologies and learning 'on the job' are not factored in.

For the individual approach the system cost per dwelling has been calculated as follows:

- Pre-2013: £9500
- 2013 - 2016: £14,000
- Post-2016: £26,000 (incl. £9,000 per dwelling for Allowable Solutions)

And for the community approach:

- Pre-2013: £11,000
- 2013-2016: £13,600
- Post-2016: £23,000 (inc. £9,000 per dwelling for Allowable Solutions)

A saving of around £3,000 - £4,000 per dwelling for avoided items like boilers and gas connections could be assumed for dwellings but this would still leave a substantial cost per dwelling. The application of these figures to each phase shows the implications of the zero carbon agenda. However if, for example a means was found to invest in a community system early in the development process which benefits from the feed-in tariff the economics of this situation could be transformed.

A range of factors will ultimately influence the outcome including the impact of energy legislation on land value, the willingness of consumers to pay more upfront for lower energy bills, the development of community energy supply companies (ESCOs and MUSCOs) who derive a return from energy investments and new and emerging technologies. What is clear however is that there needs to be a focused energy strategy for the key site from the outset.

## 4.2. Town Centre

### 4.2.1. Approach

The town centre regeneration opportunities consist of a disparate collection of sites. Some of the proposals are highly aspirational, for example the 'Green Heart' whilst others are achievable through private sector investment. The main role of the Chard Regeneration Plan in the town centre is to guide regeneration that, in the main, will come about through private sector development proposals. The responsibility of bringing these forward will rest with a wide range of parties, and most will proceed as a result of public and private investment operating within the normal processes of the planning system. The framework plans and design codes should start to play an increasingly important role in shaping change and it is assumed that they will be given some formal status as a material planning consideration. As with the growth area, proposals coming forward should be expected to demonstrate how they comply with the framework plans and design codes set out in the Regeneration Plan.

The major regeneration focus for the town centre is the area referred to as the Town Centre Key Site which runs to the south of Fore Street between Holyrood Street and Boden Mill. A number of detailed development scenarios have been tested for this area to achieve the aims of the Regeneration Plan. These seek to create a diverse mixed use area, regenerate the Mill and create a new focus to the incubation and support of business in the town.

### 4.2.2. Development Appraisal

A full development appraisal of the scheme has been carried out by GVA Grimley using costs supplied by Gardiner and Theobald. The appraised scheme includes significant element of public realm and low value generating development such as a business incubation development and workspace. This appraisal is included at Appendix 2.

### 4.2.3. Implications of the appraisal and funding sources

The appraisal shows that taken as a single private sector-led development the town centre key site proposals as set out in the Regeneration Plan are not viable. The mix of uses do not create sufficient value to fund the significant public realm improvements proposed and the creation of major new community assets such as the business incubation building and Boden Mill refurbishment. In the current economic climate this outcome is not a surprise. It is unlikely that a developer will emerge to bring forward the site as a single development proposition. It is far more likely that the development of the town centre key site will proceed as a series of small phases which will be funded through a variety of public and private sources. For example some public realm enhancements may come forward as LPA funded capital projects secured through s106 contributions whilst the business incubation space may be a candidate for a local authority / SWRDA (or Local Enterprise Partnership) rural development initiative. Within the overall mix of projects there is scope for a viable first phase centred on the Boden Mill providing a mix of café/restaurant, residential development and work space.

A number of foodstore developers are showing an interest in the site. A foodstore would transform the economic viability of the scheme. However it would also come with a number of expectations with regard to design, car parking and mix of uses. These could potentially

compound the problems the centre of Chard has in terms of poor urban quality and disconnection between the town centre and surrounding residential areas. This option has not therefore been proposed. However some retail developers are beginning to provide more innovative town centre developments which include lower parking standards, a mix of uses vertically as well as horizontally and improved architectural design. An innovative approach to town centre retail could work at the Boden Mill end of the site but the highest standards of urban and architectural design would need to be applied through the development of a detailed design brief.

A possible phased approach to the development of the town centre regeneration site is set out below.

**Phase 1 - Mill Square**

The first phase is the area centred around Mill Square, this will provide a mixed use development with sufficient residential space to provide an economically viable phase of development. It could also include a site for the proposed business enterprise centre for Chard which could be subject to public sector funding through economic development or rural development programmes.

**Phase 2 - Town Garden**

The second phase would see the area around Town Garden developed with a mix of uses including residential and A3 uses sufficient to make this phase economically viable. Some public funding may be required to support the new public realm such as Town Garden.

**Phase 3 - Town Square**

The final phase of the Back Plots would be to develop Town Square, Chards new civic space. As this area provides mainly community uses, office space and major public realm improvement, it is likely that this final phase would require public funding, however depending on the success of the initial phases and the improvement in demand, this phase may become more viable.

## 5.0 Community Regeneration

Focusing on measures to enhance the experience of the town from a community perspective is of at least equal importance to delivering physical improvements to the town. The measures set out below provide a guide as to the kinds of initiatives that the town should seek to pursue in the future. It is not an exhaustive list and should be viewed as a starting point. Once the networks, personnel and facilities are established then the creativity of the individuals involved will begin to take over developing and expanding upon the initiatives set out below.

### 5.1. Regeneration Champions

Establishing a team to champion the regeneration of the town in social, economic and environmental terms is one of the key starting points in delivering the aims and objectives set out in the Chard Vision. There are a number of key organisations, businesses, politicians, individuals and other interested parties that are committed to ensuring Chard develops into a better place to live work and visit in the future. Providing a forum for these parties to meet and discuss will be vital in the delivery of the regeneration framework.

This process has already started through the creation of the Town Team and Community Forum, who are already making valuable contributions to the regeneration process. Expanding and developing the role of these groups into an implementation role will be a key goal. The council will need to ensure that the necessary facilities are in place to allow these groups to meet, discuss and take action on their decisions to maintain momentum in the regeneration process.

The regeneration champions remit must encompass confidence building within the community, as well as marketing and broader promotion of Chard. The role of the press can be a valuable tool in assisting in this objective. Chard needs to be promoted internally and externally: i.e., the local community needs to understand and believe in the town, as well as potential visitors, tourists and investors.

### 5.2. Initiatives

There are a number of 'soft' regeneration initiatives that could be taken forward by SSDC and the regeneration champions. Some are set out below, but other initiatives and priorities will emerge as regeneration proceeds

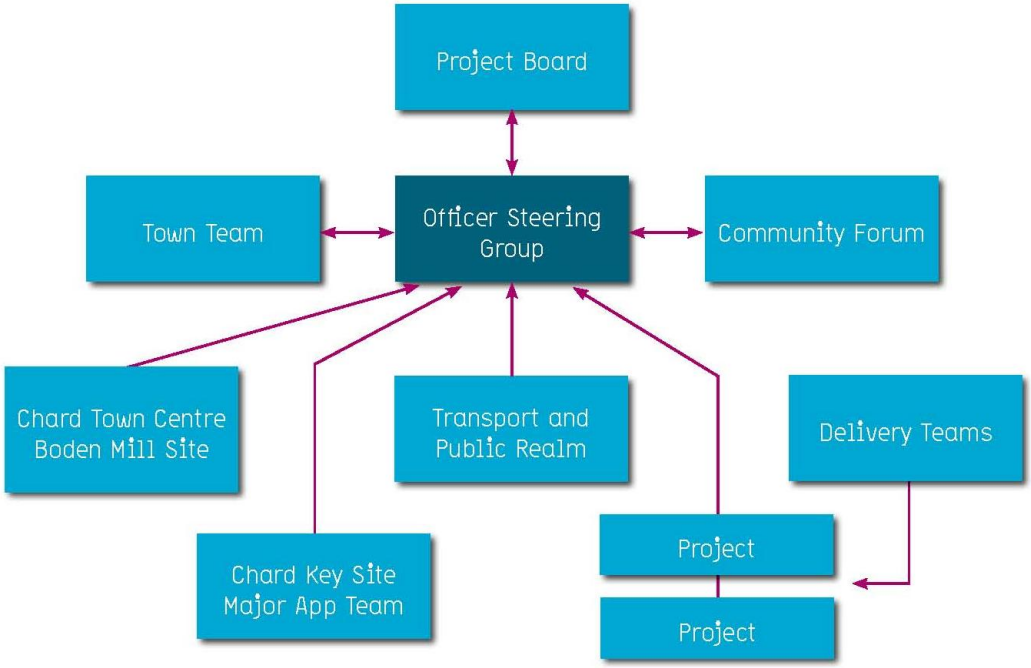
- Generate a clear 'Brand' for Chard through further engagement with the local community. Ideas for the Chard brand have already started to be developed through the visioning process that has informed this regeneration framework. Inviting community groups to propose ideas for strap lines and logos based on the themes identified in the vision and engaging residents, schools, clubs and businesses should be pursued to ensure that a clear and strong brand identify is developed for the town. The brand could be used as a marketing emblem for Chard, and should support local events and producers to create a strong brand association with local products of a high quality and standard. The extensive debate on the 'Make it in Chard' strapline is a good starting point for discussions. This strap line could inform a number of other initiatives which develop and strengthen the brand. 'Made in Chard' could be one element of this brand emphasising the quality of local goods and produce.

- There may be scope for an annual festival or event based on the idea of 'Making it in Chard' and this could ultimately build the image of the town as a place of innovation and self sufficiency.
- Utilise brand as part of a wider marketing strategy for the town: A marketing strategy should be developed targeted on potential inward investment in the towns business sector. Targeted marketing on areas that respond to Chard's strengths and vision for innovation, including the independent retail sector, professional services, voluntary sector, sports and outdoor pursuits, arts and cultural activities should be a priority.
- Promotion and preparation of an Events Strategy to coordinate events in Chard: An Events Strategy must be prepared, and subsequently reviewed, in the light of the Vision and Objectives, the Chard Regeneration Framework and emerging strategies and initiatives for the town centre. There will be opportunities to utilise the improved civic spaces created as part of the town centre physical regeneration initiatives to bring life and vibrancy back into the town. The importance of events cannot be underestimated. Most of the places that have been successfully regenerated have done so on the back of events. Examples include the Hay-on-Wye book festival; the Abergavenny Food Festival; Ludlow Food Festival and so on.
- Promote quality food and local produce as part of the Chard marketing initiatives: Encourage opportunities to buy good food in Chard town centre. Work with education providers to ensure that all schools are health-promoting and encouraging access to exercise and healthy food. It may be possible to devise a programme for the delivery of education, training and skills development with particular relation to established sectors in care, construction, energy and tourism, and additional sectors identified through the regeneration Strategy in creative industries, leisure, sports & outdoor pursuits, retail and food & drink.
- Increase provision of youth-focused facilities and activities in the town centre and new Green Heart. Work with Chard's Youth groups to identify needs and assess the deliverability of potential facilities or activities.
- Work with the council and private sector to encourage the development of new incubation workspace in the town centre to promote social enterprise and innovation. Provide multi-functional spaces that support potential business start ups and the artistic community of the area. Use the incubation spaces to promote innovation. The potential to support and develop a social enterprise with community ownership, focussed on a major public building such as Boden Mill is huge and needs to be actively pursued.

## 6.0 Delivery mechanism

One of the strengths of the development of the Chard Regeneration Scheme development is that a strong project structure has been in place since the commencement of the project in Dec 2008. This structure comprises a Project Board, an Officer Steering Group, Town Team, Community Forum and Delivery Teams. The structure is set out in the diagram below.

**Diagram 3: Delivery Team Structure**




The delivery structure appears to have worked effectively and still provides an effective mechanism to manage and deliver the project. However as delivery progresses the composition of each of the groups and delivery teams may need to be revisited to ensure it is resourced to address the challenges that will ultimately arise. For example there may an increasing need for planning, legal and development expertise.

The delivery team will need to be properly resourced and have the ability to engage in complex development, planning and financial discussions with developers as schemes come forward. In particular the range of skills must be aligned to meet the challenge of delivering the growth area. This means:

- An ability to build consensus and collaborate with a range of parties;
- A good understanding of the planning system, effective masterplanning and the importance of good design;
- Experience of development and delivery processes;
- An understanding of the property market;
- A familiarity with development appraisals and viability issues;

- Experience of bidding for and securing funding;
- Project management.

Some of the skills necessary to perform this role may need to be sourced from outside of the relevant local authorities. Regeneration and growth will not happen without a strong delivery team.

# 7.0 Key Recommendations

## 7.1. Growth Area

There are many individual tasks associated with the delivery of the Chard Vision and Regeneration Plan. All of these are ultimately linked to the delivery of the growth area. Without this the potential for the significant growth and regeneration of the town is curtailed.

Traffic modelling carried out for each phase reaffirms that there is limited scope for growth before it is necessary to bring forward significant new infrastructure to improve linkages around the eastern edge of the town. The only piece of infrastructure that unlocks significant early growth capacity at acceptable cost is the Millfield Link between the A30 and the Millfields Industrial Estate. Regardless of any uncertainty over future phases it is clear that this linkage needs to come forward as a priority as a first step towards the implementation of the wider plan. The link is a significant piece of road infrastructure and the accompanying development phase does not provide sufficient surplus value for it to be delivered by the private sector. In any case, the link is so strategically important as a means to unlock future development phases its timely delivery should be assured by strong public sector leadership.

On current build out rates the Millfield Link will need to be built in approximately 2-3 years to ensure the growth of Chard is not again curtailed. If implemented together with MOVA Signalling improvements at the Convent junction its construction will create the capacity for in the region of 445 additional homes.

The delivery of the Millfield Link must therefore be the focus for the next 2-3 years. It is a tangible project that will deliver housing and employment outputs that are likely to attract public sector funding. Its delivery will create momentum and build confidence. The Millfield Link can be considered as either a capital project with 100% public sector funding with claw-back achieved through subsequent phases, or as an exercise in gap funding a private sector led initial phase.

### 7.1.1. Capital Funding

Phase 2b, of which the Millfield Link is a part, has been costed by Gardiner and Theobald (Appendix 3). The cost estimate allows for the provision of Primary Road Infrastructure to link with Millfields Avenue together with a spur road to provide access to employment land and open space alongside the Railway Fields. The total estimated cost of these works is £2,846,000 including contractors profit and preliminaries. To this figure will need to be added scheme feasibility, planning and design costs. A normal % fee for this type of project including all actions necessary to bring the project from feasibility through to implementation is 10%. This would add £284,600 to capital costs. In addition it is likely that there would be a requirement for Environmental Impact Assessment (EIA), a process that is likely to involve a fee spend in the region of £100,000. Due to the need to achieve the standard of design stipulated by the design codes as set out in the Regeneration Plan, urban design input will also be required to set the standard for kerbs, footways and furniture. An allowance of £60,000 should be made for this element.

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| | |
|---|---|
| Primary Road Capital Costs inc. Preliminaries and Profit | £2,846,000.00 |
| Engineering Design Fees @ 10% | £284,600.00 |
| Urban Design Fees | £60,000.00 |
| Environmental Impact Assessment | £100,000 |
| **Total** | **£3290600.00** |

This figure does not include costs associated with land purchase and the resolution of possible ransom issues associated with a small area of land at the end of Millfields Avenue. Land purchase costs are assumed as neutral as the creation of the road will open up for development the land which it crosses, enabling development which would not otherwise be viable. Ransom costs are difficult to assess without further detailed study and will require an independent evaluation. If the potential ransom issue cannot be addressed GVA Grimley has estimated that a sum of £200,000 should be allocated to cover costs associated with a potential CPO process.

Any cost associated with financing and inflation has not been taken in to account.

### 7.1.2. Gap Funding

The other way to deal with the delivery of the Millfield Link is for the public sector to gap fund a private sector led development. This will be complex for the Millfield Link as the route crosses land owned by at least four separate parties. Should these landowners come forward to progress the development of the route, public sector support will be required to make the development phase viable (assuming the net developable areas in this phase is as per the LDA Design Phase 2b).

Development directly associated with Phase 2b, is not sufficiently viable to pay for the construction of the entire route between the A30 and the end of Millfields. Total abnormal infrastructure costs for the phase include an additional £464,000 for utilities over and above the £2,846,000.00 cost of the primary street outlined above. This means that total infrastructure costs associate with the development phase amount to £3,310,000.

At £500,000 per acre the value of the 4.65 net developable acres in this phase would be only £2,323,750. To bring the land value up to the minimum viability threshold of £200,000 per acre after all infrastructure costs have been applied, would require a public sector investment of £1,916,250. To this would need to be added the scheme design and development fees and EIA costs totalling £444600. This brings the total requirement for public sector gap funding to £2,360,850.

If a larger phase of development came forward together with the proposed Millfield Link it may be possible for the private sector to deliver the road with a lower level of gap funding. For example a net developable area of 10.5 acres of land for private sale (plus 3.675 acres for affordable provision) would yield sufficient land value to fund the infrastructure and scheme development costs and achieve the minimum £200,000 per acre overall target viability threshold as estimated by GVA Grimley. The quantum of development delivered by this area of development would still be within the infrastructure capacity created by the new link so a private sector-led approach is in theory achievable.

### 7.1.3. The way forward

It is not possible, without further feasibility work and negotiation with landowners and developers, to settle on a preferred funding strategy for the delivery of the Millfield Link at this stage. If the various landowners are keen to progress with development proposals then a 'gap funding' approach may apply. However if there is a risk that landowners are not ready to bring forward development in the required timeframe then the public sector may need to implement the link and claw back costs from later stages through developer contributions.

Regardless of the funding option that will ultimately apply, it is clear that the responsibility for initiating and pushing forward the Millfield Link should rest with the public sector which will be motivated by the wider benefits the link will bring to Chard. In the current funding climate it is also clear that funding bodies will only commit funds once all avenues for private sector deliver have been exhausted.

To move forward there needs to be a twin track process to test the feasibility of the link and develop an engineering alignment whilst at the same time working through possible delivery scenarios with landowners and developers. Where possible, funding bodies should be involved in this twin track process so that if a funding bid is necessary they will be confident that all avenues to minimise the public sector contribution have been taken.

- Feasibility and design: To ensure deliverability and cost certainty an engineering design for the road needs to be established and an initial environment impact scoping undertaken to identify major constraints which may add to costs or the need for mitigation measures. As this process moves forward initial discussions with the landowners and developers will need to progress to ensure the highways design complements their development aspirations and test delivery mechanisms.
- Delivery scenarios: there are various options for the delivery of the route which may involve combinations of developer and public sector delivery and gap funding. These need to be tested with landowners and developers to arrive at a solution that minimises the need for public sector investment or provide a means to recoup costs at a later date. If landowners and developers are keen to move forward with development proposals in a timeframe aligned with delivery of the link it is likely that there will need to be an open book approach to financial appraisal to justify any need for public sector funding. If a private sector led gap funded approach is achievable various options may need to be considered to minimise the public sector contribution, including:
  - Adjusting the level of affordable homes
  - Reducing s106 obligations
  - Increasing the size of the initial phase of development

The Implementation of the Millfield Link will create capacity for the following to come forward as an initial step in the growth of Chard:

- 167 dwellings directly to the south of the A30 Crewkerne Road;
- 29 dwellings to the north of Henderson Drive;
- 181 dwellings to the south east of the existing Millfield Industrial Estate;

- 12,420m2 of employment to the east of the existing Millfield Industrial Estate;
- 4,326m2 of retail to the east of the existing Millfield Industrial Estate;
- the introduction of 97 dwellings in the town centre.

The Millfield Link is a first step towards the delivery of the Growth Area. The other key linkage is between the end of Oaklands Avenue and the A358 Furnham Road. In phasing terms 584 homes can be built together with other uses within the infrastructure capacity created by the Millfield Link. This equates to a 4-5 year housing supply. In this period it will be important to make progress towards the delivery of the Oaklands Avenue to A358 Furnham Road link following a process similar to that described above.

## 7.2. Other Actions

Unlocking the Growth Area will be the key to the successful implementation of the Regeneration Plan. Other actions will however be important. Key amongst these is the following:

- Key elements of The Chard Regeneration Plan should form part of the Core strategy ensuring it has weight as a material planning consideration in making planning decisions;
- Planning officers should be given training in how to use and apply the Regeneration Plan when making planning decisions;
- The Regeneration Plan should underpin the LDF as it relates to Chard;
- Formal Development Briefs should be drawn up for the major town centre sites and these should be marketed to potential developers / investors.

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# Appendices

## Appendix 1. Individual and Community Energy Supply Scenarios

### Scenario 1: Individual servicing

The proposed development schedule for each phase was modelled such that it achieved the required standard, based on the proposed delivery timetable supplied by LDA Design, without the use of community heat networks. While the earlier phases can often meet their expected targets via good practice energy efficiency measures, efficient gas boiler and, in some cases, small amounts of solar thermal or PV, the later phases soon require significant amounts of LZC technologies which increase the expected cost substantially.

### Scenario 2: Gas CHP sized to meet Carbon Compliance targets

For the community-based scenarios it has been assumed that the earlier phases would be installed with community heat networks in place, served by smaller communal gas boilers on a phase-by-phase basis to begin with until there is sufficient demand to support a larger CHP plant capable of serving a wider development area. The first community-based scenario tested modelled a gas-fired CHP plant, sized to meet the overall on-site carbon reduction targets for each phase.

This modelling suggest that, with good practice energy efficiency in the first phase, and best practice energy efficiency measures in the later phases: 2MW of gas-fired, spark-ignition CHP engine could be used to meet the hot water load for the proposed new development. Gas boilers could then be used to supply the space-heating demand during the heating season.

This approach would achieve the on-site carbon reductions targets proposed for each stage of the development, though it would leave the later stages requiring to purchase "Allowable Solutions". Using the Government's figure of £100/tCO2/a for 30 years, the estimated cost of allowable solutions for each of the later phases is shown below, compared to the cost of PV to mitigate the same amount of carbon:

Table 4: Predicted cost of mitigating carbon via Allowable Solutions & PV

| Phase | On-site target | Amount of CO2 remaining (tCO2/a) | Cost of Allowable Solutions | Cost of PV |
|---|---|---|---|---|
| 3b | 70% | 411 | £1,323,300 | £3,024,981 |
| 4a | 70% | 1464 | £4,391,997 | £11,085,246 |
| 4b | 70% | 1724 | £5,225,748 | £11,063,809 |
| 5 | 70% | 1393 | £4,4179,864 | £9,927,655 |

**Scenario 3: Gas CHP sized to meet 100% of the heat demand**

A 6.6MW spark-ignition CHP engine, sized to meet 100% of the proposed development's heating demand could easily achieve the overall on-site carbon reduction target, mitigating just over 50% of the entire development's predicted $CO_2$ emissions, but this would still leave some emissions needing to be mitigated via allowable solutions. Furthermore, in the summer the plant would generate more heat than the development is likely to need. This additional heat could either be run through absorption chillers in order to provide some cooling via the district heat network, or it could be exported to supply industrial processes with heat.

There are two major industrial heat users in Chard; Numatic and Oscar Mayer. The excess heat generated by the CHP in summer would be equivalent to the year-round base heat demand of these two users. Therefore, potentially, the heat network could be extended to incorporate these two facilities and excess heat in the summer could be sold to them. Not only could this generate additional revenue for the operator of the CHP, making the business case more viable, but the exported heat could be counted towards the zero carbon target under the allowable solutions.

**Scenario 4: Biomass CHP sized to meet 'zero carbon' target**

A 1.75MW biomass-fuelled steam turbine CHP would mitigate sufficient carbon to achieve the carbon reductions targets for each phase and the full 'zero carbon' target (i.e. with no further allowable solutions required). A CHP of this size would be capable of supplying the full heat demand of the new development and potentially export excess heat during the summer to local industrial units. This option would also provide approximately 50% of the new development's electrical demand to be supplied from the Grid.

**Scenario 5: Gasification of Biomass + CHP sized to meet 'zero carbon' targets**

Heating substances rich in carbon such as coal, biomass or even household waste to high temperatures with little oxygen produces "syngas" which can then be burnt in a spark-ignition engine. While gasification plants tend to be expensive, it means that biomass can be used to fuel a spark-ignition engine which generally have much more favourable heat:power ratios than other biomass CHP plant. Furthermore, the gasification plant could be used to gasify household waste (MSW) providing a low carbon fuel while reducing the waste to landfill. Although there are a limited number of examples of this happening in the UK to-date, recent legislation and fiscal incentives announced by Government have made the business case for this approach very attractive.

A 2MW modulating spark-ignition engine, running on syngas produced from biomass could mitigate sufficient $CO_2$ to meet the carbon reduction targets for each stage of the

development including the full 'zero carbon' target. This option would supply approximately 60% of the proposed development's annual electricity demand.

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# Appendix 2. GVA Grimley: Chard Eastern Growth Area Base Case Appraisal

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# Appendix 3. Gardiner and Theobald: Chard Infrastructure Cost Plan

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## Appendix 4. Phasing Summary Table

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# Appendix 5. South Somerset District Council Planning Obligations Protocol