CLIMATE CHANGE RELATED

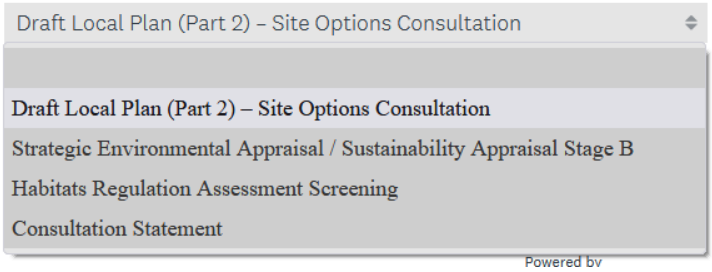
RESPONSE TO PART 2 OF LOCAL PLAN CONSULTATION

Section 1. Background/Context

The current Local Plan (**LP**) which runs 2013-2033, is being revised and extended to cover the period 2020-2040. Par1, which focuses on policies, was consulted on in 2020 but the result of this and any changes are as yet unpublished. This specifies the policies associated with new developments.

Part 2 is being consulted on now, closing date is 9th August. The on-line consultation requires the user to select one of four areas to respond to:

* 1. Which Local Plan document would you like to comment on?



ACT is not responding to the 1st of these, i.e. site specific in relation to Climate Change.

The following sections contain the responses ACT is submitting. They are in response to the 2 other areas above,

Strategic Environment/Sustainability Appraisal and

the Consultation Statement/Documents.

Although it is possible to respond on-line or use the downloadable response form, this response will be sent by e-mail to localplanreview@teignbridge.gov.uk.

Section 2. Responding to # 2 (Environment/Sustainability)

ACT would like to make a number of points in relation to this document. While we appreciate that some may not be within the scope of this consultation, we believe they have a significant bearing on how sites are eventually allocated and what developments take place on these sites.

Our points are:

1. While housing numbers are difficult for the planning authorities to challenge, it is still important to make the following point.
   New developments should be about meeting necessary and appropriate demand while minimising overall greenhouse gas emissions (Net-Zero by 2030, incl. embodied emissions). Delivering a pre-set number of housing units to maintain, or even stimulate, economic growth should NOT be the driver. There are much easier ways of maintaining sustainable economic activity without causing environmental damage at the scale proposed.

2. According to statements and evidence presented in the consultation material, many of us nowadays live in one or two-person households; this trend requires appropriately-sized dwellings, not predominantly 3–5-bedroom houses. If we build smaller units, we of course lower the greenhouse gas emissions whilst still delivering the housing numbers required. The Plan could address this more effectively.

   Although the plan suggests this has been/will be done, our analysis in appendix A shows significant improvements can still be achieved through higher housing densities for smaller units. In particular the planning authority should use its powers to specify the size and type of housing needed. There is little evidence that this power has been or will be used to deliver on Climate mitigation.

   The government guidance on "Identifying the need for different types of housing" provides some examples of such groups (e.g. older people). The guidance does not preclude including the group of single or two-person occupancy which the council has identified as need/trend.

   The NPPF section 11 "Making effective use of land", especially para 120 d & e make reference to options for increased housing densities of smaller units.

   Appropriately sized dwellings in line with an aging population and increasingly lower occupancy could result in 30% lower embodied emissions based on our analysis (see appendix A). They would also result in a reduced land footprint, which could be as much as 50% on the current plans. Ongoing annual emissions and fewer sites will be some of the measurable benefits. Other social, wellbeing and environmental benefits could also be a consequence of such planning, while still meeting current government housing numbers.

3. Per-capita greenhouse gas emissions in Teignbridge are typically 30% lower in urban areas, this is true throughout the UK. Benefits of housing units within, or very close to, urban areas are clear. Provision of goods and services as well as travel can be minimised.

   Energy efficiency in buildings can be significantly improved by building appropriately sized housing

units within single buildings. This suggests, where appropriate, but not exclusively, units should be located within, or very close to, urban areas. These must have good connectivity to minimise travel and emissions from utilities (heating and electricity). The issues identified of multiple ownership or higher risk/cost should not take precedence over exacerbating Climate Change impacts.

The consultation's comprehensive scenario analysis of this is very helpful. We also support the summary conclusions drawn.

4. However, we are concerned that the SA (Sustainability Appraisal) Framework for Climate Change Mitigation is limited or inappropriate. For example:
    - It includes "Air", which we interpret as air quality. This is not a Climate Change related criterion.
    - While the topic of transport and Energy efficient buildings are mentioned, the latter is restricted to renewable generation. It ignores the higher priority of energy reduction as suggested by widely accepted Energy Hierarchy models.
    - Without defining "low-carbon" generation in terms of Carbon Intensity, the criterion is open to interpretation.
    - Apart from transport related criteria, there appears to be no assessment of the correlation between renewables (as defined in chapter 11) and the assessments for the individual sites. In other words, the criteria of Low Carbon development is meaningless without numeric targets of greenhouse gas emissions set out in policy. This should not be limited to ongoing emissions, but include embodied emission targets associated with the building and the impact on the disturbed ground.
      The average embodied emissions for homes being built in Teignbridge is ~60 T CO2e. This is equivalent to between 10- and 20-years' worth of ongoing emissions from these homes. We do not have the luxury of this number of years of emissions at current rates before exceeding the Climate tipping points. Simply ignoring them doesn't solve the problem either!

5. Other important criteria for site selection/rating appear to be either absent or incorrectly applied. These include:
    - ability to provide higher levels of electricity supply for heating/transport decarbonisation;
    - other infrastructure such as low-carbon transport especially public transport and walking/cycling must be present or provided as part of the development;
    - air quality criteria and monitoring for some sites appears to be either inaccurate and/or out of date.

Section 3. Response to # 4 (Consultation Statement/Documents)

We recognise the extensive effort put into this and the previous part-1 of the local plan. It is a shame that respondents are not given sufficient time to do justice to this. Having to digest the detailed responses to the consultation of part-1 (the policies) without actually seeing the resulting policies, makes it nigh on impossible to properly assess the criteria used for part-2 of the plan (site selection).

Of greatest concern has been the confusion ACT has seen amongst several local councils and residents. This partly because of the complex presentation (multiple documents) of the evidence and how it has been applied to individual sites. The lack of an overview of all sites which we have had to provide to help overcome this.

The following are general responses to some of the non-site specific consultation information

1. Introduction (Chapter 1)

   ACT welcomes the vision and objectives that are to underpin the new local plan for 2020-2040, in particular:

   "*Teignbridge will be a leader in tackling climate change and nurture an environment in….*"

   The last of six "robust assessment which looked at "The impact of new development on climate change."

   It would be wonderful if the new development plan's outcomes don't repeat the mistakes of the current plan. The words of the vision do not imply 'business as usual' with more urban sprawl of large unaffordable housing, resulting in more commuter-belt developments. We need radical solutions for major challenges!

2. Development Strategy (Chapter 2)

   The government currently requires ~750 new homes per annum. Your assessment, given all the factors highlighted, for an additional ~7,300 homes, is sound. ACT of course do not support this level of house building on the grounds that:

   - It flies in the face of the government's legal obligations under the Paris accord on mitigating Climate Change. It is also incompatible with the local authority's declared Climate Emergency.
   - It does not in any way reflect actual local or even regional demand. It only serves to sustain an ever-expanding housing sector which has more to do with economic growth than the need for homes.
   - The plan's justification "The less affordable homes are, the more homes we are tasked with building." could easily be achieved by building significantly more affordable homes to address the stated local needs, including:
     - An aging population, 1 in 3 will be over 65
     - More people living alone

   Irrespective of the number of homes allocated by the current national formula, we broadly agree with the distribution of these sites based on the criteria set and scenarios analysed. We do not however believe that the limitations mentioned on use of brownfield sites has adequately considered the stated objectives/reasons. Nor does the allocation make full use of the powers available to the council to both deliver the numbers required and minimise the Climate and Ecological impacts. We have provided the explanation and potential solutions which would address these shortcomings in Section 2 points 2 & 3.

   It is encouraging to see that sites and measures are being considered to increase the availability of renewable energy and the reduction in energy consumption from building and transport. These

are very important steps, but they do fall short of meeting the 5 year Carbon Budgets set by government and the councils own stated targets for the district, namely Net-Zero by 2025.

ACT has already highlighted several of these shortfalls in its response to Part-1 policies, we are yet to see the policies which reflect this. The “Evidence Base” on this, from Exeter University, highlights many of these points, including embodied emissions. There is currently no account taken of the evidence provided. We therefore welcome discussions on how this evidence can be made use of when refining/finalising Part-1 & 2 of the new local plan.

Section 4. Appendix A- Example Analysis of housing for the Heart of Teignbridge

This is the text of an article posted on ACT's website at the start of the local plan consultation.

The government demands that the local plan provides sites for about 750 houses per year over the next 20 years in Teignbridge.

Where homes are built makes a difference to carbon emissions.

If you build small flats in town centres:

- There are fewer emissions from construction.
- There are fewer ongoing emissions.
- You don't need a car, so there is a chance of no private transport emissions.

This post considers how far this could be achieved in the Heart of Teignbridge using the sites already identified in part 2 of the local plan. It is quite a long post which includes some feasibility calculations, which considers:

4.1 Overall allocation of sites in the plan

Part 2 of the local plan identifies more new sites than are needed to meet this when sites already allocated in the existing plan are taken into account.

The plan proposes that the allocations are split between the areas identified as follows:

- Heart of Teignbridge: 40% (c. 2,920 homes)
- Edge of Exeter: 24% (c. 1,800 homes)
- Dawlish: 14% (c. 1000 homes)
- Teignmouth: 1% (c. 100 homes)
- Bovey Tracey: 3.5% (c. 250 homes)
- Ashburton: 3.5% (c. 250 homes)
- Villages: 14% (c. 960 homes)

Each site has a suggested minimum and maximum number of homes, the following table is derived from these, and shows the level of choice in each area:

Proposed distribution	Proposed Distribution	Min	Max	Min<=1ha	Max<=1ha	%required min	%required max	Notes
Heart of Teignbridge	2920	4345	6079	181	324	67.20%	48.03%	
Edge of Exeter	1800	1860	1910	0	0	96.77%	94.24%	Little practical choice
Dawlish	1000	1891	2397	43	43	52.88%	41.72%	
Teignmouth	100	91	101	0	0	109.89%	99.01%	No practical choice
Bovey Tracey	250	378	478	5	5	66.14%	52.30%	
Ashburton	250	250	250	0	0	100.00%	100.00%	No practical choice
Villages	960	1800	2237	174	221	53.33%	42.91%	

The columns in this table are sourced from the local plan documents as follows:

- **Proposed distribution** comes from 'How much housing development is required' in chapter 2.
- **Min** is the sum of the lower number of homes for each site in the area, taken from chapters 3 to 10.
- **Max** is the sum of the higher number of homes for each site in the area, taken from chapters 3 to 10
- **Min <= 1ha** is the sum of the lower number of homes for each site in the area, where the site is less than 1 hectare (and so suitable for a smaller developer).
- **Max <= 1ha** is the sum of the higher number of homes for each site in the area, where the site is less than 1 hectare (and so suitable for a smaller developer).
- **%required min** is the proportion of Min that would be required to satisfy the proposed distribution.
- **%required max** is the proportion of Max that would be required to satisfy the proposed distribution. This indicates the level of choice between sites given in the plan.
- **Notes** are any observations.

For the sake of argument let's accept this distribution. It shows that there is a considerable amount of choice of sites in the Heart of Teignbridge, Dawlish, Bovey Tracey and the villages.

The rest of this post considers a possible allocation for the Heart of Teignbridge.

4.2 Allocation in the Heart of Teignbridge

Within the Heart of Teignbridge the sites are subdivided into Urban Renewal sites, which are on existing land that has already been developed for other purposes, and the rest of the Heart of Teignbridge.

Enough of the sites in the Heart of Teignbridge to meet the allocation of 2920 are shown in the following table:

Name	Location	Developable Size(ha)	Homes Min	Homes Max	Max Density dwelling / hectare
Urban Renewal					
Brunel Industrial Estate	Buckland & Milber	10	300	600	60.00
Cattle Market	Bushell	0.7	25	50	71.43
Cricketfield	Bushell	4.2	150	250	59.52
Highweek Way	College	0.14	15	38	271.43
Jetty Marsh and Wharf Road	Bushell	2.7	80	160	59.26
Kingsteignton Retail Park	Kingsteignton	13.5	300	500	37.04
Newton Abbot Leisure centre	Bushell	0.7	25	50	71.43
Newfoundland Way	College	0.7	35	70	100.00
Osbourne Street	Buckland & Milber	1.12	45	90	80.36
Wolborough way	College	0.5	20	40	80.00
Sub Total		**34.26**	**995**	**1848**	
Heart of Teignbridge					
Berry Knowles	Teigngrace	12.98	244	276	21.26
Caravan storage at Linden Lea	Bradley	0.4	8	12	30.00
Forches Cross	Bradley	15	279	360	24.00
Howton Lane (part)	Bradley	6.12	80	80	13.07
North of Broadway Road	Kingsteignton	1.96	50	50	25.51
Zig Zag Quarry	Kingskerswell	1.61	74	96	59.63
Fluder Farm, Torbay Fringe	Kingskerswell	6.68	80	120	17.96
Greenhill	Kingsteignton	0.23	8	8	34.78
Greenhill way / Hackney lane	Kingsteignton	0.27	10	10	37.04
Land east of rydon	Kingsteignton	1.4	22	34	24.29
Land at strap lane	Kingsteignton	1.32	21	32	24.24
Sub Total		**47.97**	**876**	**1078**	
Total		**82.23**	**1871**	**2926**	

Some of the sites towards the bottom of the table have been chosen to make up the numbers, but this allocation tries to avoid using green field sites that are away from current development.

This post considers putting the maximum possible amount of development into the Urban Renewal sites, this has a number of advantages:

- The homes delivered will all be within easy walking distance of:
    - Newton Abbot Station
    - Bus services
    - Newton Abbot town centre
    - The combined cycleway/footpath towards Bovey Tracey and Moretonhampstead to the north, and currently to the Passage House, soon to be extended to Teignmouth.
    - Hackney marshes
- The need for car ownership for day to day use would be minimised:
    - occasional car use could be provided by a car club.
    - Day to day car use would only be needed if work demanded it.
    - The need for further car parking would be minimised.
    - Car traffic growth would be minimised.
- These sites suit smaller dwellings and these is a proven demand for smaller dwellings.

- The combination of smaller dwellings and possibilities for active travel and use of public transport will give the smallest carbon footprint.
- Development of green field sites further out away from the centre is minimised.

We then consider other sites as near to the Town Centre as possible. The A382 development is already in progress, and there is relatively level access to the town centre along this corridor. This favours the Berry Knowles, Caravan Storage and Forches Cross sites. Unfortunately we still need to find 424 homes from the remaining sites.

4.3 Housing Need

The latest TDC housing policy document states that there is a waiting list of about 1000 applicants, and that 51% of these applicants are looking for a single bed property the proportion of property types required by applicants is shown in the following table:

Beds	Proportion
1 bed	51%
2 bed	24%
3 bed	18%
4+ bed	7%

Additionally 1 in 3 Teignbridge residents is over 65 years old, so probably doesn't have children.

This says that there is a need to smaller properties, which could be flats.

There is clearly a need for social and affordable housing, as the waiting list recently has been about 1000 applicants, with about 350 applicants being housed each year. If the waiting list were to be substantially reduced over say 4 years to 100, then an additional 225 affordable homes per year would be required.

On average 137 new affordable homes are provided, other applicants are housed from existing stock. So the number of new affordable homes needs to increase to about 425. That would leave 325 open market homes from the obligatory 750 allocation.

4.4 Housing Density

Housing density is expressed in dwellings per hectare (dph), the area part of this measure includes estate roads, but excludes major thoroughfares.

The Teignbridge Urban design guide gives suggested densities for different situations:

Min Density	Max Density	Situation
40	60	Density ranges for Major Urban Thoroughfares and avenues/principal streets
	80	however densiΘ es may be increased to up to 80dph in some areas for townscape reasons.
40	60	Density ranges for neighbourhood centres should be between 40-60dph.
50	70	Density ranges for town centre areas should be between 50-70dph.
40	55	Density ranges for park edges and other green spaces should be between 40-55dph
35	50	Density ranges for all other areas should be between 35-50dph

From the developable area and maximum homes stated for Urban Renewal areas we can calculate the maximum dwellings per hectare:

Name	Location	Developable Size(ha)	Homes Min	Homes Max	Max Density dwelling / hectare	Max Homes @ 50 dph	Max Homes @ 70 dph
Brunel Industrial Estate	Buckland & Milber	10	300	600	60.00	500	700
Cattle Market	Bushell	0.7	25	50	71.43	35	49
Cricketfield	Bushell	4.2	150	250	59.52	210	294
Highweek Way	College	0.14	15	38	271.43	7	10
Jetty Marsh and Wharf Road	Bushell	2.7	80	160	59.26	135	189
Kingsteignton Retail Park	Kingsteignton	13.5	300	500	37.04	675	945
Newton Abbot Leisure centre	Bushell	0.7	25	50	71.43	35	49
Newfoundland Way	College	0.7	35	70	100.00	35	49
Osbourne Street	Buckland & Milber	1.12	45	90	80.36	56	78
Wolborough way	College	0.5	20	40	80.00	25	35
Total		**34.26**	**995**	**1848**		**1713**	**2398**

Kingsteignton retail park site has a maximum density of 37.04, which is low for an urban area. This is a large site, so makes a big difference to the overall numbers, developing this at 50dph delivers an additional 175 homes.

If all the sites were developed at a density of 70 dph, then only 522 more homes would be required, so only the Berry Knowles and Forches Cross sites would be needed in addition to the Urban Renewal sites. Some sites are already allocated at more than 70 dph, so setting this as a minimum gives 2466 homes, so we are left with 454 to find.

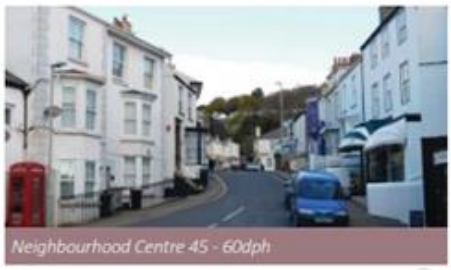
If a minimum of 84.5 dph was set over this area, then 2932 homes would be delivered, which is enough to satisfy the Heart of Teignbridge allocation.

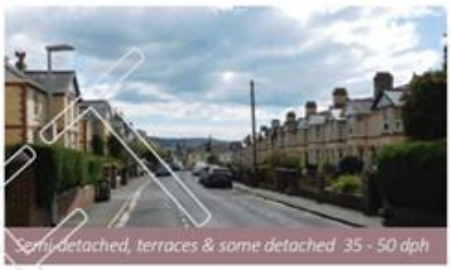
When I originally wrote this section I has misread the developable area of Brunel as 22 hectares, which makes the calculations better. If the developable are of Brunel or Kingsteignton retail park could be increased by 7ha between both sites, then the average density required overall could be reduced to 70dph.

4.5 What does 70 dwellings per hectare look like?

The following pictures are from the TDC Urban Design Guide:

Teignbridge residential densities:





So the Teignmouth block to the top left is at 70 dph. These examples are in the Teignbridge Vernacular. For a larger development such as Brunel, a complementary, but more modern style might be appropriate.

Mews houses at 80dph

Consider the following example from the paper on housing density from Havant council:

I am sure that an imaginative architect could manage better!

So it looks like 70 dph is achievable if most dwellings are small and development is up to 3 storeys.

4.6 What should the housing mix be?

In order to substantially reduce the housing waiting list we need to deliver about 425 affordable homes per year. The mix for these should follow the mix of dwelling sizes required by applicants. If the urban renewal area were developed using this mix then the numbers would be as follows:

Dwelling type	Proportion	Homes
1 bed flats	51%	383
2 bed flats	12%	90
3 bed flats	9%	68
2 bed houses	12%	90
3 bed houses	9%	68
4+ bed houses	7%	53

Here we have split 2 and 3 bed dwellings equally between flats and houses.

4.7 What would the carbon footprint of this development be?

The carbon footprint that can be attributed to this development is made up from:

- Embedded emissions from construction of dwellings.
- Operational emissions from buildings in use.
- Transport emissions

For buildings emissions can be approximately calculated from floor area, we assume that development is to the minimum space standard introduced in 2015. This standard takes into account the number of

occupants as well as the number of bedrooms, so a one bedroom flat may have one or two occupants. Apply the minimum floor areas in this standard to our required annual housing numbers:

Dwelling type	Bed spaces	Min floor area	Homes	Floor area
Small 1 bed flat	1	37	191	7067
Large 1 bed flat	2	50	192	9600
2 bed flat	3	61	90	5490
3 bed flat	4	70	68	4760
2 bed house	4	79	90	7110
3 bed house	5	93	68	6324
4 bed house	6	106	53	5618
Totals			**752**	**45969**

Embedded emissions from construction depend on the construction type, the following values are assumed, and are applied to a floor area of 45969 m^2:

Construction	tonnes CO_2e/m^2	tonnes CO_2e
Steel frame	1.27	58381
Concrete frame	0.877	40315
Brick	0.731	33603
Timber frame	0.585	26892
Timber frame and clad	0.468	21513
CLT	0.351	16135

CLT stands for cross laminated timber, which is a lightweight construction that can be used for up to 9 storeys. It lends itself to offsite pre-fabrication. CLT panels have good thermal properties.

The above embedded emissions do not take account of sequestration caused by the carbon sequestered whilst trees are growing being locked up in the structure of a dwelling. If this is taken into account it could be that CLT construction is carbon negative.

The operational emissions can be approximated from past energy performance certificates, combined with an aspiration that the new building regulations will reduce operational emissions to 25% of current building regulations. The average current CO_2 emissions from properties with an EPC rating C and above since 2015 is about 24kg CO_2e/m^2/year. So we assume that these dwellings will be built to 6kg CO_2e/m^2/year. This gives operational emissions of 276 tCO_2e per year.

As no car travel is necessary with these sites, there are no additional transport emissions.

If the urban renewal sites are built at 750 dwellings per year, it will take nearly 4 years to construct these dwellings. If we allocate embedded emissions to the year of construction, then the total emissions over the first few years would be:

Item	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Homes built this year	750	750	750	750	0	0
Total homes so far	0	750	1500	2250	3000	3000
Floor area this year	45969	45969	45969	45969	0	0
Cumulative floor area	0	45969	91938	137907	183876	183876
Embedded construction emissions	16135	16135	16135	16135	0	0
Operational emissions	0	276	552	827	1103	1103
Essential private transport	0	0	0	0	0	0
Total emissions	16135	16411	16687	16963	1103	1103

4.8 Comparison with development of more out of town sites

Suppose that instead we built 750 brick built 3/4 bedroomed homes on sites 3 miles from the town centre.

Assume these have an average floor area of 100m^2, then the embedded emissions would be 73.1 tonnes per house, or 54,825 tonnes for 750 houses.

The operational emissions would be 450 tonnes per year.

We assume that a resident 3 miles from the town centre travels everywhere by car including travel to work, shopping and leisure. This might amount to 8,000 miles per year. Worse sites 3 miles from the town centre are generally at a higher altitude, so will require additional energy to go uphill that is not regained downhill. 8,000 miles in an average petrol or diesel car emits 2.5 tCO_2e/year, and a diesel 2.2 tCO_2e/year. Even an EV powered from grid electricity would emit 0.8tCO_2e/year. If we assume 20% EV, 40% diesel and 40% petrol, then the average car would emit about 2t CO_2e/year.

Even if we assume 1 car per house, then there are an additional 1500 tonnes from cars. It would be more realistic to assume 2 cars with one being used less, so effectively 1.5 cars.

Putting all this together for the first few years we get:

Item	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Homes built this year	750	750	750	750	0	0
Total homes so far	0	750	1500	2250	3000	3000
Floor area this year	75000	75000	75000	75000	0	0
Cumulative floor area	0	75000	150000	225000	300000	300000
Embedded construction emissions	54825	54825	54825	54825	0	0
Operational emissions	0	450	900	1350	1800	1800
Essential private transport (1.5 cars / hh)	0	2295	4590	6885	9180	9180
Total emissions	54825	57570	60315	63060	10980	10980

Once built this option has nearly 10 times the emissions than the alternative low carbon option.