Gloucester City Plan
Housing Background Paper
September 2019

1. Housing supply

Introduction

1.1 Gloucester currently has a good supply of housing, but there are limited sites within the city and the authority has to look to its neighbours for cooperation and support. Gloucester City, Cheltenham Borough, and Tewkesbury Borough have jointly prepared a Joint Core Strategy (JCS) as part of the development plan for the area and this was adopted in December 2017. The JCS, which covers the period from 2011 to 2031, is the strategic-level plan and it sets out the identified needs for housing and economic growth and the spatial strategy for delivery. The JCS is currently being reviewed and an Issues & Options consultation was undertaken between 12th November and 11th January 2019 and this will address, amongst other things, the identified shortfall. A summary table if the City Council's housing supply position as of end of March 2019 is provided below.

	Net Completions in 2018/19	544
	Commitments (dwellings granted permission – issued in 2018/19)	740
Urban Capacity	Net Completions since start of JCS Period (2011/12)	3,993
	Total Commitments from April 2019 onwards	2,339
	Windfall Allowance (10 years of 64*) *This is the broad figure, which on the trajectory is adjusted slightly through the lapse rate	640
	City Plan Potential	972
	Urban Capacity = All Net Completions + all Net Commitments + Windfall Allowance + City Plan Potential	7,944
Strategic Allocations	Innsworth = 1,300 Twigworth = 995 South Churchdown = 1,100 North Brockworth = 1,500 Winnycroft = 620	**5,515** (5,140 in the JCS period, 375 after 2031)
		Total supply = 13,084

Gloucester's Urban Capacity (Supply) compared to position at JCS Adoption

	JCS – Page 25	**Current**	**+ / -**
Completions	2,962	3,993	+1,031
Commitments	2,460	2,339	-121
Windfall Allowance	832	640	-192
City Plan Potential	1,518	972	-546
Winneycroft SA	620	620	same
Total	**8,392**	**8,564**	**+172**

Note: Current commitments would be higher if the 280 was added for the Allstone site. But this has been taken out since there seems to be limited prospect of a reserved matters planning application following grant of outline permission. This is in accordance with the latest NPPF stipulations.

Gloucester's Objectively Assessed Need

1.2 Through Policy SP1: *The Need for New Development* the JCS sets out a total housing requirement for Gloucester City of 14,359 dwellings from 2011-2031. The requirement consists of the demographic objectively assessed need, plus an uplift for economic growth and a further 5% uplift to boost the supply of housing. Over the 20-year plan period this housing requirement equates to the need for 718 dwellings per year.

1.3 The Government recently consulted on and then introduced a standard methodology for calculating housing need. The standard method uses a formula to identify the minimum number of homes expected to be planned for in a way that addressed projected household growth and historic under-supply. The standard method identifies a minimum annual housing need figure; it does not produce a housing requirement figure. As the JCS is very recently adopted, Gloucester City Council considers the JCS figure of 718 per annum to be the most up to date and robust figure on which to base the five-year housing land supply calculation.

1.4 The housing requirement for the five-year period from 2019/20 to 2023/24 is 3,590 dwellings. This requirement is the 718 annual requirements multiplied by 5.

Affordable housing

1.5 Like many cities, Gloucester has an acute shortage of affordable housing. The Council's general housing supply will be critical in meeting the needs of the City as evidenced by several Housing Need, and Strategic Housing Market Assessments. These demonstrate the range of housing the City requires including affordable housing need. The latest iteration of this evidence base the Local Housing Needs Assessment is due to be completed in winter 2019/20.

Previous delivery

1.6 Housing completions in Gloucester City have totalled 3,993 over the plan period so far (to 31st March 2019) falling short of the annual requirements. However, from 2019/20 to 2024/25 the trajectory indicates that there will be an annual oversupply which will help to make up the shortfall via delivery at strategic allocations. For example, years 2021/21, 2022/23 and 2023/24 are all expected to deliver over 1,000 dwellings in those years. Some of the other major housing schemes that are contributing to this good supply are: Bakers Quay (166), Former Kwik-save (Black Dog Way) (95), Norville (63), Former Bishops College (90), Kingsway Area B3 (130), Land South of Grange Road (250) and also significant levels of student accommodation (some of which is counted) at Oxstalls and Barbican phase 1.

Planning permissions issued

1.7 Once permitted, to a large degree it is up to builders to deliver schemes. It is interesting to compare housing permissions with housing delivery over the past 5 years:

Year	Permissions (Net)	Completions (Net)
2014/15	133	554
2015/16	1,057	470
2016/17	1,222	439
2017/18	272	487
2018/19	740	544
Total	3,424 = av. 684 per year	2,494 = av. 498 per year

Housing Requirement with NPPF Buffers

1.8 Paragraph 73 of the NPPF (2019) also requires that the five-year requirement includes an additional buffer moved forward from later in the plan period. This buffer should be either be:

a) 5% to ensure choice and competition in the market for land; or
b) 10% where the local planning authority wishes to demonstrate a five-year supply of deliverable sites through an annual position statement or recently adopted plan38, to account for any fluctuations in the market during that year; or
c) 20% where there has been significant under delivery of housing over the previous three years, to improve the prospect of achieving the planned supply.

1.9 A footnote to point c) states that from November 2018, under supply will be measured against the Housing Delivery Test, where this indicates that delivery was below 85% of the housing requirement. The Housing Delivery Test results for 2018 (issued by MHCLG) indicated that Gloucester City was on 143% delivery and thus the use of a 5% buffer is suitable in terms of the 5 Year Housing Land Supply calculation.

1.10 Using the Liverpool Method with a 5% buffer, the five-year requirement is 4,534 dwellings. The five-year supply calculations are shown in Figure 1. and the results show that a five-year supply can be demonstrated.

Housing supply sources

1.11 The following sources of supply have been included within the five-year housing land supply calculation in Figure 1:

- Small sites (1-4 dwellings) – those completed and still under construction.
- Small sites (1-4 dwellings) with extant permissions but which have not started.
- Small sites windfall allowance based on an analysis of historic windfall delivery since 2003. This has produced an average annual windfall delivery of 64 dwellings. However, the windfall supply does not contribute to the trajectory until 2020/21 and has been discounted by the number of extant dwellings from small sites. This approach to windfall has been established through the JCS examination.
- Large sites (5 dwellings and more) – those completed and still under construction. (See Gloucester's 5 Year Housing Land Supply Statement (2019) Appendix 1 for the trajectory of these sites).
- Large sites (5 dwellings and more) with extant permissions but which have not started. (See Gloucester's 5 Year Housing Land Supply Statement (2019) Appendix 1 for the trajectory of these sites).
- City Plan Potential i.e. proposed housing allocations. (See the Draft City Plan and Appendix 2 of Gloucester's 5 Year Housing Land Supply Statement (2019) for the trajectory of these sites).
- Strategic Allocations in Tewkesbury Borough but attributed to Gloucester. These are:
    - Innsworth = 1,300
    - Twigworth = 995
    - South Churchdown = 1,100
    - North Brockworth = 1,500
    - Winnycroft = 620

  (These figures have been trajectorised (see Appendix 1 of this chapter of the Report) and note, certain of the SAs now have the benefit of planning permission).
  (Note: As per The Housing Delivery Test 2018 Measurement Technical Note (19th Feb 2019) student dwellings are calculated at a 2.5:1 ratio; meaning that for every 2.5 student bedrooms, 1 dwelling is counted towards housing supply. The ratio for Communal bed spaces is 1.8:1).

1.12 Anticipated delivery from these sources of supply over the five-year period from 2019/2019 to 2023/24 is 4,997.

Housing Delivery

1.13 Where no site-specific information is present, the following assumptions are made for the delivery of sites and their anticipated trajectory:

Lead-in times and build out rates

1.14 Deliverable sites without planning permission and under 100 dwellings will have a 1-year lead-in from planning consent to first house being completed. For sites over 100+ there will be an 18-month lead-in period from planning consent to the first house being delivered.

1.15 The build-out rates used are based on local circumstances and evidence including that provided by developers. Where no delivery trajectory developer update has been provided the following assumptions are made: 25 dwellings in the first year and 50 dwellings per annum per developer. In Gloucester, with the development of relatively high-density schemes including flats, in some cases it is assumed that more than 50 dwellings per annum can be achieved.

1.16 This approach to lead-in times and build-out rates has been established through the Strategic Assessment of Land Availability (SALA) process and has been subject to review by the independent SALA sites assessment panel. Through the annual monitoring of planning consents and the SALA process further information on site delivery, particularly for larger sites, may be obtained which provides additional detail and greater certainty.

1.17 A Housing Supply Deliverability Schedule is provided at Appendix 1 of the 2019 Housing Monitoring Report. This sets out the housing trajectory and commentary for each of the larger sites which contribute towards the five-year land supply. The current City Plan sites trajectory is provided at Appendix 2.

Five Year Land Supply Calculation

1.18 Figure 1. below shows the five-year supply for Gloucester for 2019/20 to 2023/24. Based on the Liverpool Method (agreed at the JCS examination) with a 5% buffer, Gloucester's supply is 5.4 years.

Delivery		5% Buffer	5% Buffer
GCC Annual Housing Requirement	**a**	718	718
Number of years into the plan period	**b**	8	8
Requirement 31st March 2018	**c**	5744	5744
Actual Delivery 2011-2017	**d**	3993	3993
Shortfall	**e** = c - d	1751	1751
5YHLS		**Sedgefield**	**Liverpool**
5 Year Requirement	**f** = a x 5	3590	3590
Remainder of plan period	**g**	12	12
Plan Period Shortfall to be met within the five year	**h**, Sedge = e, Liv = (e/g) x 5	1751	729
NPPF Buffer	**i** = 5% of (f + h)	267	215
Total no. of dwellings required	**j** = f + h + i	5608	4534
Total anticipated supply 2019/20 to 2023/24	**k**	4967	4967
Percentage of total requirement met	**l** = k/j x 100	**88.5%**	**109.5%**
Supply in Years	**m** = k/j x 5	**4.4**	**5.4**

Figure 1. Five Year Land Supply Calculation

The total supply in the JCS (pg.25) was 13,287, the current supply is 13,084. The reason for the shortfall against the JCS supply figure is that 375 units from JCS Strategic Allocations in Tewkesbury have dropped off past 2031.

2. Accessible & adaptable homes

2.1 The issue of accessible and adaptable housing is increasingly important as an older person households increase as a proportion of the overall population and an increasing number of households which include a disabled person. A study modelling disability and life expectancy published by the Lancet (2017) reported that:

"Between 2015 and 2025, the number of people aged 65 years and older will increase by 19·4% (95% uncertainty interval [UI] 17·7–20·9), from 10·4 million (10·37–10·41 million) to 12·4 million (12·23–12·57 million).

The number living with disability will increase by 25·0% (95% UI 21·3–28·2), from 2·25 million (2·24–2·27 million) to 2·81 million (2·72–2·89 million).

The age-standardised prevalence of disability among this population will remain constant, at 21·7% (95% UI 21·5–21·8) in 2015 and 21·6% (21·3–21·8) in 2025.

Total life expectancy at age 65 years will increase by 1·7 years (95% UI 0·1–3·6), from 20·1 years (19·9–20·3) to 21·8 years (20·2–23·6). Disability-free life expectancy at age 65 years will increase by 1·0 years (95% UI 0·1–1·9), from 15·4 years (15·3–15·5) to 16·4 years (15·5–17·3).

However, life expectancy with disability will increase more in relative terms, with an increase of roughly 15% from 2015 (4·7 years, 95% UI 4·6–4·8) to 2025 (5·4 years, 4·7–6·4)".[1]

2.2 The NHS reports that there are currently around 1.2 million wheelchair users in the UK. Two thirds of them are regular users[2]. Disability Sport reported in 2014 that there were 11 million disabled persons in Britain[3].

2.3 According to the 2011 Census, 16.8% of the Gloucestershire population had a long-term health problem or disability which limited their day-to-day activities; 7.3% reported that their activities were limited 'a lot' and 9.5% reported their activities were limited 'a little'. The 2011 Census showed that 41.9% of people in Gloucestershire who had a long-term health problem/disability were aged between 16 and 64,

2.4 The National Planning Practice Guidance states:

"Accessible and adaptable housing enables people to live more independently, while also saving on health and social costs in the future. It is better to build accessible housing from the outset rather than have to make adaptations at a later stage – both in terms of cost and with regard to people being able to remain safe and independent in their homes.

Accessible and adaptable housing will provide safe and convenient approach routes into and out of the home and outside areas, suitable circulation space and suitable bathroom and kitchens within the home. Wheelchair user dwellings include additional features to meet the needs of occupants who use wheelchairs or allow for adaptations to meet such needs.

Where an identified need exists, plans are expected to make use of the optional technical housing standards to help bring forward an adequate supply of accessible housing. In doing so planning policies for housing can set out the proportion of new housing that will be delivered to the following standards:

[1] Forecasted trends in disability and life expectancy in England and Wales up to 2025: a modelling study.
[2] https://www.england.nhs.uk/wheelchair-services/
[3] http://www.disabilitysport.org.uk/facts-and-figures-about-disabled-people-in-the-uk.html

- *M4(1) Category 1: Visitable dwellings (the minimum standard that applies where no planning condition is given unless a plan sets a higher minimum requirement)*
- *M4(2) Category 2: Accessible and adaptable dwellings*
- *M4(3) Category 3: Wheelchair user dwellings".*

2.5 This section of the Housing Background Paper provides a reasoned justification for the policy position set out in the GCP, which the Joint Cores Strategy (JCS) provides a number of policy hooks.

2.6 JCS Policy SD11 states that:

"Housing should be designed to be accessible and adaptable as far as is compatible with the local context and other policies, including Policy SD8".

2.7 It elucidates within the supporting text at paragraphs 4.12.6 and 4.12.7:

"New housing should be designed in a way that enables households, including older people and those with disabilities, to live comfortably. This will include having adequate space to allow home working or study, space for visitors in housing for older people, and space to allow ease of movement in specialist accommodation. Within the JCS area this will be achieved by meeting or exceeding minimum space standards (see Delivery section below). New housing should also be built to high standards of sustainable design and construction in accordance with Policy SD3.

Properties should also be adaptable in order to meet people's changing needs and help to sustain independent living. In 2011, some 16.8% of the resident population in Gloucestershire had a long-term health problem or disability (SHMA 2014). Developers should therefore ensure that new housing is built to a high standard of accessibility and adaptability and that a proportion of housing are built in accordance with recognised standards. District plans may include further guidance and/or requirements on this issue".

2.8 Current Building Regulations require all new homes must be built to Category 1. This standard is met when a new dwelling has level access, a flush threshold, sufficiently wide doorways and circulation space, and a WC at entrance level. Reporting to the House of Commons Communities and Local Government Committee Habinteg said that this standard was "not sufficiently accessible for most older and disabled people and it is only 'visitable' in the loosest sense". The committee noted that:

"…in 2014, only 7% of all homes (existing as well as new stock) in England had been built to Category 1 however, the overall proportion of new homes being built to this standard has increased from 13% before 2001 to 68% since 2001"

2.9 The committee went on to state:

"…that the Housing White Paper states that the forthcoming Neighbourhood Planning Act guidance will "set a clear expectation that all planning authorities should set policies using the Optional Building Regulations". However, we believe that mandatory Category 1 standard is too low and that all new homes should be built to be 'age proof' for the current and future needs of an ageing population. We recommend therefore that the baseline standard for all new homes should be Category 2. The Government should work with local authorities to collect data on the number of homes built to Category 2 and 3 standards and require that homes built to such standards are advertised as such in sales and lettings literature, so they are easily identifiable".

2.10 The Gloucestershire Inform Population Estimates indicate in 2017 those aged 60 made up 21% of the overall population of Gloucester with those over 75 7.4%. The numbers and proportions are predicted to increase over the next 10 years; those over 65 will increase by 10,452 to 38,200 persons, those over 75 increasing by almost 5,000 persons to 14,200. In terms of the overall increase in population of 13,517, those over 65 years of age will make up 77% of this increase, representing 26.8% of the population in 2030.Those over 75 will represent 10% of the population.

2.11 Since 2004 the Greater London Authority has had a policy requiring all new homes to offer higher levels of access. All London boroughs are expected to have Local Plans in general conformity with the London Plan which requires 90% of all new homes to meet M4(2) accessible, adaptable standards, with the remaining 10% to M4(3) wheelchair user dwelling standard.

2.12 The Cambridge City Plan, adopted in 2018, includes the following policy;

"In order to create accessible homes:

a) all housing development should be of a size, configuration and internal layout to enable Building Regulations requirement M4 (2) 'accessible and adaptable dwellings' to be met; and
b) 5 per cent of the affordable housing component of every housing development providing or capable of acceptably providing 20 or more self-contained affordable homes, should meet Building Regulations requirement M4 (3) 'wheelchair user dwellings' to be wheelchair"

2.13 The Insight Report "A forecast for accessible homes" (June 2019)[4] for Habinteg identified that at present only 7% of homes in England provide the four basic accessibility criteria to be deemed 'visitable' according to the English Housing Survey. Yet there are 13.9 disabled people in the UK, with numbers continuing to rise. The NHS estimates there are 1.2m wheelchair users in the UK. Introducing this report in Habinteg has highlighted the important role that local plans play in delivering suitable housing stating "as our population ages and rates of disability increase, it is clear that to meet housing needs adequately, it is vital that we ensure the accessibility and adaptability of new homes is sufficient to meet the needs of our diverse population. Without this, disabled and older people will be increasingly excluded from ordinary aspects of daily living with negative consequences for individuals, families, communities and public services".

Wheelchair user housing - M4(3) Category 3

2.14 Advice provided by Habinteg: Towards Accessible Housing – A Toolkit for Planning Policy, provides a methodology for calculating the number of wheelchair user households with unmet housing need[5] i.e. not wheelchair adaptable.

2.15 The report estimates that 2% of all households in the East of England are wheelchair user households and 9% of wheelchair user households have unmet wheelchair housing need.

2.16 By using the most recent estimate of households in the City of 53,658 households[6], the table below based on the following two step approach establishes an unmet need of 97 wheelchair accessible homes.

- **Step 1:** Number of households in local authority area X % of all households that are wheelchair user households
- **Step 2:** Step one X number of wheelchair user households with unmet housing need

[4] https://www.habinteg.org.uk/download.cfm?doc=docm93jijm4n2151.pdf&ver=2575
[5] (pp. 18-19, Habinteg [online], 2016).
[6]Office F for National Statistics, Table 406: Household projections, mid-2001 to mid-2041.

2.17 Application of Habinteg Methodology to Gloucester City.

	%	Est. No. in Glos
No of households with a wheelchair user	2	1073
No of households with a WCU and unmet housing need	9	97
Need met over 10-year period	Dwellings	10
Need met over 5-year period	Dwellings	19

2.18 The average affordable housing completion rate from delivery statistics 2006 to date is equivalent to 24% of all total net housing completions reflecting the variance in value areas across the City. The JCS has identified the housing required up to 2031 as follows.

Gloucester City JCS requirements	14,359
Supply	13,251
Shortfall	1,108

2.19 Based on previous delivery between 2006 and 2019, it is estimated that 3,180 affordable homes could be achieved over the plan period with 2,385 affordable rent properties. By dividing the unmet and future wheelchair housing need (97) by the estimated future affordable rented housing (2,385) it can be established that 4.0% of affordable housing would need to be wheelchair accessible to meet unmet and future wheelchair housing need.

Adaptable housing - M4(2) Category 2

2.20 The English House Condition Survey Adaptations and Accessibility of Homes Report 2014-15[7] surmised that approximately 7% (around 1.7 million homes) possessed all four key features which render a dwelling 'fully visitable'. Around two thirds (64%) of homes had a toilet at entrance level but the presence of the other three visitable features was less common, especially level access (18%). Out of the 93% of homes that were not fully visitable, 57% of homes required minor or moderate work to bring them up to fully visitable standard (Table 2).

Proportion of all homes in England not fully visitable	Description and estimated cost of work to make home fully visitable	
11.9	Minor work	< £1,000
45.1	Moderate work	£1,000-£15,000
15.3	Major work/problematic	> £15,000
24.7	Not feasible to make fully visitable	

Table 2: Estimates of work needed to make homes in England fully visitable 2014- 15
Source: Annex Table 2.3: Level of work required to make homes 'visitable', by dwelling characteristics, (CLG [online] 2016) and page 57of CLG [online], 2015d.

2.21 If the results for England are applied to Gloucester it is estimated that just over 30,000 dwellings require minor or moderate work to make them visitable whereas over 21,000 require major work or are not feasible

[7] Department of Communities and Local Government, Office of National Statistics English House Condition Survey Adaptations and Accessibility of Homes Report 2014-15.

to make visitable. This illustrates that the existing stock poses a number of a challenges in meeting the needs of an aging population.

2.22 The table below provides an estimate of the number of properties within Gloucester that can or cannot be made visitable based on Table 100 Dwelling stock: Number of Dwellings by Tenure and district: England; 2018. Total housing stock is 56,160

Minor work	6683
Moderate work	25328
Major work/problematic	8592
Not feasible to make fully visitable	13872

Estimated existing household need

2.23 The 2011 Census identified 16,439 persons aged over 65 living in Gloucester which made up 15% of the population, this population made up 9,577 households. Of these households 5,685 were one person households, just under 60% of the over 65 households. The population projections suggest a significant increase in the population aged over 65 in Gloucester, increasing from mid-year estimate of 21,144 (16.4% of the population) to 29,300 (20.5%) and 4% increase, (8,156) over the period.

2.24 County-wide the increase is from 132,400 in 2017 to 176,800 by 2030, with this age demographic accounting for almost 26% of the County's population, an increase of almost 5%.

Age Band	Mid 2017 est.	%	2020	&	inc/dec	2030	%	inc/dec
0-19	32,157	24.9	33,200	24.9	1,043	35,000	24.5	2,843
20-64	75,782	58.7	77,400	58.2	1,618	78,400	55.0	2,618
65-90+	21,144	16.4	22,500	16.9	1,356	29,300	20.5	8,156
	129,083		133,100			142,600		13,517

Table 3: Gloucester- Population Projections from 2017 Mid-year estimate to 2030

2.25 To cater for the needs of any long-term health problems as a result of an ageing population, it is argued that all homes accommodating a person over 65 years should at the least be fully accessible and adaptable. This is not to say that a person of 65 will need the attributes of a M4(2) home, but that the provision of these standards will ensure the individual or household will be able to live independently for longer, helping in maintaining social networks. Age UK reports that "Research suggests that having close ties to friends and family, and participating in meaningful social activities, may help people maintain their thinking skills better in later life and slow down cognitive decline. People who are socially engaged seem to have a lower risk of dementia"[8]

2.26 Even by making the extremely cautious assumption that all 7% of the estimated fully visitable homes (3,731) in Gloucester belong to households who house at least one person over 65 years, a current need would still remain to make 5,846 (9,577-3,731) homes fully visitable (a further 11% of the existing housing stock). Making home fully visitable is only achieving the mandatory element of the Building Regulations Part M

[8] https://www.ageuk.org.uk/information-advice/health-wellbeing/mind-body/staying-sharp/looking-after-your-thinking-skills/social-connections-and-the-brain/

standards. Addressing the needs of a diverse and in particular aging population requires new homes to meet the discretionary standard M4(2) in order to deliver lifetime homes.

2.27 Based on the above assumptions 584 homes would need be delivered each year over a 10-year period to meet the need of the over 65 population in terms of adaptable homes. Annual monitoring figures show actual delivery is less that the estimated need for visitable/adaptable housing for the over 65 population.

3. Specialist housing

3.1 The National Planning Policy Framework (NPPF) at paragraph 61 requires that "the size, type and tenure of housing needed for different groups in the community should be assessed and reflected in planning policies (including, but not limited to, those who require affordable housing, families with children, older people, students, people with disabilities, service families, travellers, people who rent their homes and people wishing to commission or build their own homes."

3.2 *As already stated in relation to the need for adapted and adapted able housing increases in people living with disability and or frailty are predicted. A study modelling disability and life expectancy published by the Lancet (2017) reported that:*

"Between 2015 and 2025, the number of people aged 65 years and older will increase by 19·4% (95% uncertainty interval [UI] 17·7–20·9), from 10·4 million (10·37–10·41 million) to 12·4 million (12·23–12·57 million).

The number living with disability will increase by 25·0% (95% UI 21·3–28·2), from 2·25 million (2·24–2·27 million) to 2·81 million (2·72–2·89 million).

The age-standardised prevalence of disability among this population will remain constant, at 21·7% (95% UI 21·5–21·8) in 2015 and 21·6% (21·3–21·8) in 2025.

Total life expectancy at age 65 years will increase by 1·7 years (95% UI 0·1–3·6), from 20·1 years (19·9–20·3) to 21·8 years (20·2–23·6). Disability-free life expectancy at age 65 years will increase by 1·0 years (95% UI 0·1–1·9), from 15·4 years (15·3–15·5) to 16·4 years (15·5–17·3).

However, life expectancy with disability will increase more in relative terms, with an increase of roughly 15% from 2015 (4·7 years, 95% UI 4·6–4·8) to 2025 (5·4 years, 4·7–6·4)".[9]

3.3 In Gloucester in 2016 about 2.2% of the population were over the age of 85. By 2036 the percentage is expected to be 4.1% and the percentage of people in Gloucester over 90 years old will increase from 0.8% in 2006 to 1.7% in 2036. (ONS).

3.4 Planning for this demographic change therefore needs to happen now providing a range of options that older people may want to move into. The plan seeks to address this through the provision of M4(2) and M4(3) Category Homes as set out in the adaptable and adapted housing policy, specialist accommodation will provide one option where evidence of need exists.

3.5 The Council takes the view that meeting the housing needs and aspirations of older frail and disabled people is a priority given national and local evidence and that such housing should focus on the provision of well-designed adaptable, care-ready, HAPPI, general needs accommodation which should:

1. Help to meet identified need.
2. Be accessible to amenities, shops and easily accessible by public transport.
3. Reflect current best practice in design for example Housing our Ageing Population: Panel for Innovation (HAPPI) guidance.
4. Be affordable/sustainable for households in the long term in relation to local incomes and earning.
5. That ensures the integration of a range households within the community.

[9] Forecasted trends in disability and life expectancy in England and Wales up to 2025: a modelling study

3.6 Proposals providing for wider mix of housing options for older frail and disabled people within existing neighbourhoods will be supported were they meet the above criteria and comply with other GCP policies.

3.7 Older people are more likely to be owner occupiers without a mortgage and to under occupy their property. However, as the population of the City ages some elderly people will remain in housing need.

3.8 National research demonstrates that many older people would prefer accommodation that is part of the ordinary housing stock but is designed to meet their needs. Therefore, adapting existing housing stock to extend housing choice for older people will be encouraged particularly where it can release family sized accommodation. This will help deliver the mixed communities as identified in the JCS.

3.9 It is vital in relation to the fixed income of older persons that charges are affordable in the long term. In relation to extra care housing, the access to facilities and services may be provided through off site provision, that provides for activity and interaction whilst reducing cost

3.10 Specialist Housing Schemes also play a role in meeting the needs of particular households and will be supported in line with the policy statement.

3.11 Specialist Housing is defined as housing designed and designated for occupation by older people, disabled people, and vulnerable people with specific housing needs. Such provision will include an element of care and support needed to allow residents to live as independently as possible.

3.12 Specialist Housing includes the following types of provision:

- Sheltered housing
- Residential care and nursing homes
- Extra-care housing
- Shared homes
- Cluster units
- Respite, rehabilitation and convalescent accommodation
- Hostel accommodation
- Specialist provision for homeless persons.

3.13 The Council is aware of range of evidence indicating there is an “in principle” need for specialist accommodation.

3.14 This need can be driven by market conditions e.g. homelessness provision policy, practice, commissioning approaches as well as changing demographics. Proposals will therefore be assessed on their own merits in relation to evidence of locally arising need for the specialist provision.

3.15 For example The Joint Strategic Needs Assessment estimates “that in 2017 there are approximately 11,600 adults in Gloucestershire who have a learning disability equating to 2.3% of the adult population; of this group, about 2,400 are estimated to have moderate or severe learning disabilities equating to 0.5% of the population[10]. The County and District Councils’ are currently working on a strategy on “housing with Care” which will be founded upon a clear understanding of the housing needs for household groups such as those with Learning disability, physical disability and or mental illness.

3.16 Current evidence indicates a need for temporary and interim accommodation, as the local authority have a duty to provide interim accommodation to vulnerable households while homeless enquiries are ongoing and

[10] Learning Disability Profile, Public Health England.

the demand for such accommodation is closely linked to market conditions and as such the Council's Housing Register and homelessness data provides up to date evidence on the need for such provision.

4. Space standards

Technical Housing Standards – Nationally Described Space Standard

4.1 In the Written Ministerial Statement of March 2015[11], the Government gave Local Authorities the option to set technical standards for new housing, which are additional technical requirements exceeding the minimum standards required by building regulations. One of these optional standards is the Nationally Described Space Standard (NDSS 'the standard')[12]. This aims to ensure properties have a minimum internal floorspace area as seen in the table below:

Table 1 - Minimum gross internal floor areas and storage (m^2)

Number of bedrooms(b)	Number of bed spaces (persons)	1 storey dwellings	2 storey dwellings	3 storey dwellings	Built-in storage
1b	1p	39 (37) *			1.0
	2p	50	58		1.5
2b	3p	61	70		2.0
	4p	70	79		
3b	4p	74	84	90	2.5
	5p	86	93	99	
	6p	95	102	108	
4b	5p	90	97	103	3.0
	6p	99	106	112	
	7p	108	115	121	
	8p	117	124	130	
5b	6p	103	110	116	3.5
	7p	112	119	125	
	8p	121	128	134	
6b	7p	116	123	129	4.0
	8p	125	132	138	

* Notes (added 19 May 2016):
1. Built-in storage areas are included within the overall GIAs and include an allowance of 0.5m2 for fixed services or equipment such as a hot water cylinder, boiler or heat exchanger.
2. GIAs for one storey dwellings include enough space for one bathroom and one additional WC (or shower room) in dwellings with 5 or more bedspaces. GIAs for two and three storey dwellings include enough space for one bathroom and one additional WC (or shower room). Additional sanitary facilities may be included without increasing the GIA provided that all aspects of the space standard have been met.
3. Where a 1b1p has a shower room instead of a bathroom, the floor area may be reduced from 39m2 to 37m2, as shown bracketed.
4. Furnished layouts are not required to demonstrate compliance.

4.2 The City Council has considered whether there is a case for requiring these standards for new homes within the District as prescribed in the Housing Optional Standards NPPG of March 2015[13] , which states:

"Local planning authorities will need to gather evidence to determine whether there is a need for additional standards in their area and justify setting appropriate policies in the Local Plans. National guidance states that

[11] Written Statement to Parliament : Planning Update March 2015
[12] Technical Housing Standards – Nationally Described Space Standard, DCLG March 2015
[13] NPPG Housing: Optional Technical Standards, DCLG March 2015

where LPAs are to include these additional standards, they need to provide evidence to justify why this is considered necessary.

Need *– evidence should be provided on the size and type of dwellings currently being built in the area, to ensure the impacts of adopting space standards can be properly assessed, for example, to consider any potential impact on meeting demand for starter homes.*

Viability *– the impact of adopting the space standard should be considered as part of a plan's viability assessment with account taken of the impact of potentially larger dwellings on land supply. Local planning authorities will also need to consider impacts on affordability where a space standard is to be adopted.*

Timing *– there may need to be a reasonable transitional period following adoption of a new policy on space standards to enable developers to factor the cost of space standards into future land acquisitions."*

Need

4.3 To assess the need for the adoption of the NDSS, an average gross delivery rate was taken from the last 3 years.

2018/19	515
2017/18	491
2016/17	445
Total	1451

483 unit delivery average

4.4 A statistically significant sample was taken randomly from recently delivered applications. The final sample size was 29.8% which equates to 144 units. This included a variety of house types and sizes, market and affordable housing as well as new build and conversions.

4.5 The results of the sampling show that in terms of gross internal floor area just over half of the homes (51.38%) delivered meet the standard (74 homes comply, and 70 homes do not comply). 27 (18.75%) homes were short of meeting the standard by 3.5m2 or less.

4.6 This indicates that the majority of new homes (51.38%) meet, or are close to meeting (70.13%), the minimum gross internal floor area required by the standard.

4.7 Where homes do not comply with the standard this is by an average of 7.11 m2. This average is thrown out by 5 homes that are significantly under the standard. This includes an infill dwelling (3 bed 5 person -32.75m2 under the standard) and four conversions (-25.96m2, -25.4m2, -22.35m2, -20.86m2 under the standard). Excluding these homes shows an average shortfall of -5.07m2 per dwelling.

4.8 When looking at storage space only 38 of the 144 homes sampled had the required built-in storage space. 59 homes met the minimum gross internal floor area but did not have adequate internal storage. As built-in storage areas are included within the overall gross internal floor area, providing the required storage space would help to increase the number of homes that comply with the standard to 67%. This indicates that the majority of new homes are capable of meeting the standard.

4.9 Gloucester City Council is actively encouraging the conversion of vacant upper floors in the City Centre for other active uses, including residential. The data shows that the conversions sampled often fall below the NDSS. 66% of conversions were below the standard for internal floor area. It is important therefore that the NDSS is adopted to prevent substandard accommodation being provided particularly in the City Centre. This

will help to ensure that the City Centre becomes a vibrant and attractive place to live with adequately sized accommodation that meets people's needs.

4.10 In addition to the demonstrated quantitative need Gloucester City Council places great importance on the quality of life and the health and wellbeing of its residents. Schemes falling below the NDSS can have a negative impact on health and wellbeing.

Viability

4.11 The impact of adopting the NDSS was fully and robustly tested as part of the whole plan viability reporting for the Gloucester City Plan. This included modelling and the inclusion of any additional costs associated with meeting the NDSS. A copy of the viability report can be found on the City Council's website.

Timing

4.12 Given that the Joint Core Strategy, adopted in 2017, indicated through Policy SD11 that new housing should meet and where possible exceed appropriate minimum space standards, and that district plans may include further guidance or requirements on this issue, it is not considered necessary to bring an additional transitional period following adoption.

5. Intensification

5.1 Chapter 11 of the NPPF requires planning policies and decisions to promote an effective use of land in meeting the need for homes and other uses, while safeguarding and improving the environment and ensuring safe and healthy living conditions.

5.2 Part of the solution for meeting the demand for housing is to intensify existing residential properties through the conversion of the property into multiple flats or a large HMO, including student accommdation. While this does provide additional numbers of units it does result in the loss of much needed family sized accommodation. The City Plan therefore needs to provide a balanced approach which allows some intensification whilst protecting the character of the area and taking account of the necessary parking and services intensified properties require.

5.3 The following policy is included in the Pre-Submission Gloucester City Plan:

Policy A1: Effective use of land and buildings

Proposals are required to make effective and efficient use of land and buildings. Development proposals should:

1. **Result in overall improvements to the built and natural environment; and**
2. **Be of a suitable scale for the site and not have a significant adverse impact on the character of the locality, the appearance of the street scene, or the amenities enjoyed by the occupiers of the neighbouring properties; and**
3. **Not lead to a saturation of intensified properties within the area; and**
4. **Provide adequate off-street parking, access, covered and secure cycle storage which provides for the existing and proposed use; and**
5. **Not prejudice the potential for the comprehensive development of adjacent land; and**
6. **Provide outdoor amenity space and garden space at a level that reflects the character of the area and the scale of the development; and**
7. **Provide adequate, well designed, appropriately located and accessible bin storage areas.**

Mixed-use developments and the re-use of vacant floors above commercial premises will be supported where it can be demonstrated that the uses are compatible and will result in safe and healthy living conditions.

5.4 Saturation is deemed to be reached if:

1. It would result in any residential property (C3 use) being 'sandwiched' between two intensified properties; or
2. Intensified properties represent more than 10% of households within a 100-metre radius of the application property.

5.5 These saturation criteria have been determined by considering the amenity of neighbouring occupiers and the character of the area. It is considered that intensification of more than 10% of the households within a 100-metre radius would unsatisfactorily erode the character of an area.

5.6 Intensified dwellings often result in additional waste and waste storage, cycle storage, off street parking, increased movements, increased noise, increased cooking smells, reduced garden areas and a more transient population which can have negative impacts on the formation of healthy and sustainable communities.

5.7 It is considered that living in a family home sandwiched between two intensified properties is likely to have an adverse impact on the amenity of the occupiers of the family home. Where bedrooms are typically located next to bedrooms in adjoining homes, and bathrooms and corridor spaces located next to each other, in an intensified property it is likely that bedrooms in the family home could be located next to living rooms, kitchens or bathrooms. On both sides of a property this is considered unacceptable. There are also the increased movements, noise and smells which have the potential to have an adverse impact on the occupiers of the neighbouring property.

5.8 In making effective use of land the NPPG suggests setting minimum densities. However, it is not considered appropriate to set minimum densities for Gloucester City. This is because of the sensitive historic context within this area, with over 700 Listed Buildings and almost total coverage by different Conservation Areas, each with its own special character and distinctiveness. The most appropriate approach therefore is for applications to seek the most efficient use of land on a case-by-case basis, in the context of its location and character. Gloucester City has already achieved a significant number of high-density schemes and will continue to ensure developments make the most efficient use of land while safeguarding the environment and ensuring safe and healthy living conditions.

6. Self and custom build housing

6.1 The Council is required to keep a Self & Custom Build Register to understand the demand for this type of housing and ultimately to try to ensure that those that wish to build their own houses or have them custom built have the opportunity to do so.

6.2 As a new area of policy there has been no Local Plan facilitation in the past, but the Pre-Submission City Plan policy following national guidance is as follows:

Policy A7: Self build and custom build homes

For all housing sites* either allocated in this plan or which come forward as windfall developments, and which comprise 20 or more dwellings, a minimum of 5% of the net developable area shall be set aside as serviced plots. The serviced plots shall be offered for sale to self and custom builders, subject to demand being identified on the Council's Self & Custom Build Register.

Self and custom build plots which come forward through this policy shall be made available and appropriately marketed for a minimum of 12 months from grant of planning permission. Marketing should be directed at those on the Council's Self and Custom Build Register as well as the general public. If, after a 12-month period, the plots have not been sold it will be for the developer to consider whether the plots continue to be marketed as self / custom build opportunities or if they will be built out by the developer. Evidence of sustained marketing will need to be submitted to the Council.

Elsewhere, windfall sites for self-build and/or custom build housing will be supported where they meet other policies within the Joint Core Strategy and City Plan.
*** Excluding sites and applications for flats/apartments.**

Self-build housing is where the individual or group has a high degree of autonomy and involvement in house design and construction. Custom-build housing involves an individual or a group commissioning specialist such as architects and/or builders to assist with the project.

The Self-Build and Custom Housebuilding Act 2015 requires the Council to keep, and have regard to, a register of people who have expressed an interest in self-build / custom build projects in the Local Authority area. Based on evidence of demand from the Self and Custom Build Register, the Act also requires the Council to put in place policies to support the delivery of planning permissions to meet the demand.

Developers are expected to liaise with the Council to ensure that plots available for self and or custom build are marketed to those on the register as well as to the general public.

6.3 The current demand in Gloucester is 38. This is the number on the Self-Build Register as of June 2019. This is people on the Register with a local connection.

6.4 The potential issues with understanding demand are as follows:

- People may not be seriously interested/genuine.
- People may be on multiple registers e.g. on Stroud's, Cheltenham's and FoD's etc.
- The supply to be offered (e.g. on urban sites) may not actually reflect what people really want which may (anecdotally) be rural / peri-urban sites. In Gloucester City is difficult, if not impossible to offer such sites.

Year	Signed up to the Register
2016/17	13
2017/18	16
2018/19	9
Total	48 Average per year = 12

6.5 The evidence suggests (in the short time that the register has been up and running) that on average about **12** people are signing up every year.

6.6 The policy requires that for housing applications (20 or more dwellings) 5% of the proposed dwellings are to be set aside for serviced plots (not including flats/apartments) – so how many plots (on average) would be delivered for self-build?

6.7 In the last 5 years from 2014-15 on average 223 dwellings have been permitted (houses – in schemes of 20 or more). Take 5% of these and this equates to c. 11 plots per year. This could be delivered if this trend continues. (See Table 1 below).

6.8 In the last 5 years from 2014-15 on average 216 dwellings have been completed (houses – in schemes of 20 or more). Take 5% of these and this equates to c. 11 plots per year. This could be delivered if this trend continues. (See Table 2 below).

6.9 In terms of proposed housing allocation through City Plan, it is estimated that in the short to medium delivery term only an estimated 130 dwellings would be delivered which would be subject to this policy. So, at 5% only 6.5 self/custom build dwellings would be delivered. (See Table 3 below).

6.10 It is difficult to estimate delivery by looking at the trajectory of commitments, because none of them (under their current permissions) are required to contribute and self/custom build plots.

Table 1. Housing C**ommitments** (20 units and over, not including any flats) Permission issued in the year.				
2014-15	2015-16	2016-17	2017-18	2018-19
0 units	**389 units** This is from: 172 St Gobain 86 Contract Chemicals 131 Kingsway 4B1	**493 units** This is from: 90 Former Bishops College 130 Kingsway 4 – 4B3 250 Land South of Grange Road 23 St Aldates	**85 units** This is from: 85 Old Hempsted Fuel Depot	**150 units** This is from: 50 Land East of Hempsted Lane 100 Civil Service Club
0+389+493+85+150=223/100x5 **5-year average = 223 dwellings permitted every year. 5% of this is 11.17**				

Table 2. Housing C**ompletions** (from schemes of 20 units and over, not including any flats).				
2014-15	2015-16	2016-17	2017-18	2018-19
339 Barton St = 32 Hallmark Hotel = 41 Framework 4 = 7,56,40,46,21,25 (total 195) Mayo's Land = 15 Bodiam Av = 25 Travis Perkins = 6 (Not included the 70 at former Gloscat – as this was mostly flats). TOTAL = **314**	Hucclecote centre = 26 Hallmark Hotel = 17 Framework 4 = 75,46,40 (total 161) Mayo's Land = 33 (Not included the 50 at Bakers Quay and the 14 at Bruton House = flats). TOTAL = **237**	Hucclecote centre = 27 Framework 4 = 28,15,28,15,44 (total 130) Mayo's Land = 1 (Not including the 76 at Gloscat, 3 at Bruton House, 17 at Albion House = flats). TOTAL = **158**	St Gobain = 42 Kingsway = 87,111 (total 198) (A number of other schemes are not included because they were flats). TOTAL = **240**	St Gobain = 40 Wellman Graham = 25 Kingsway = 46,19 (total 65) Former Bishop's College = 3 Land adj Newark Farm =1 (A number of other schemes are not included because they were flats). TOTAL = **134**
5-year average = 216 dwellings completed every year. 5% of this is 11.17 = 10.8				

Table 3. City Plan proposed allocations – potential self/custom build delivery.		
SA01	Land at the Wheatridge	Under threshold
SA02	Land at Barnwood Manor	Likely to come forward prior to plan adoption
SA03	Former Prospect House, 67-69 London Road	Flats
SA04	Wessex House, Great Western Road	Flats
SA05	Land at Great Western Road Sidings	Flats
SA06	Blackbridge Sports & Community Hub	N/A
SA07	Lynton Fields, Land east of Waterwells Business Park	N/A
SA08	King's Quarter	Flats
SA09	Former Quayside House - Greater Blackfriars	Likely to be flats
SA10	Former Fleece Hotel and Longsmith Street Carpark	Likely to be flats
SA11	Land at St Oswalds	Likely to be flats but some houses (estimate 50)
SA12	Land at Rea Lane	Likely to come forward prior to plan adoption
SA13	Former Colwell Youth & Community Centre	Likely to be flats
SA14	Land adjacent to Blackbridge Sports & Community Hub	Yes (30)

SA15	Land south of Winneycroft Allocation	Yes (30)
SA16	Land off Lower Eastgate Street	Under threshold
SA17	Land south of Triangle Park (Southern Railway Triangle)	N/A
SA18	Jordan's Brook House	Yes (20)
SA19	Land off Myers Road	Under threshold
SA20	White City Replacement Community Facility	N/A
SA21	Part of West Quay, the Docks	N/A
SA22	Land adjacent to Secunda Way Industrial Estate	N/A
		Total = 130 dwellings 5% of this is 6.5 dwellings.

Appendix 1 - Gloucester City Housing Delivery and Trajectory

Total Supply GCC		2011-12 Net Delivery	2012-13 Net Delivery	2013-14 Net Delivery	2014-15 Net Delivery	2015-16 Net Delivery	2016-17 Net Delivery	2017-18 Net Delivery	2018-19 Net Delivery	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	Total
Small Site Completed and Under Construction	1.11, 1.21	20	31	34	37	39	77	55	36	17	0	0	0	0	0	0	0	0	0	0	0	346
Small Site Extant Permissions	1.31	0	0	0	0	0	0	0	0	68	5	0	0	0	0	0	0	0	0	0	0	73
Small Site Windfall Allowance	5	0	0	0	0	0	0	0	0	0	0	64	64	64	64	64	64	64	64	64	64	640
Large Site Completed and Under Construction	1.12, 1.22	573	399	442	517	431	362	432	508	363	242	97	40	0	0	0	0	0	0	0	0	4406
Large Site Extant Permissions	1.32	0	0	0	0	0	0	0	0	243	406	424	226	132	50	25	0	0	0	0	0	1506
City Plan Completed and Under Construction Large	3.12, 3.22, 4.12, 4.22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
City Plan Consented Delivery Large Sites	3.32 and 4.32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
City Plan Potential	3.42 and 4.42	0	0	0	0	0	0	0	0	0	53	223	285	276	135	0	0	0	0	0	0	972
Strategic Allocations attributed to Gloucester	6.2	0	0	0	0	0	0	0	0	75	250	400	400	600	600	600	570	500	500	420	225	5140
CGG Total Delivery (without lapses)		593	430	476	554	470	439	487	544	766	956	1208	1015	1072	849	689	634	564	564	484	289	13083
Annual Requirement		718	718	718	718	718	718	718	718	718	718	718	718	718	718	718	718	718	718	718	718	14360

									2011-12 to 2018-2019	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25 to	
Element of Supply		**Deliverability Reduction**	**Source**													
Plan Period Delivery to 31st March 2019		n/a	n/a						3993							
Small Sites Commitments and Windfall																
Extant permission on sites under construction		None								17						
Extant permission on sites not under construction		Implementation of 77% of 73 dwellings	5 Year Lapse Rate assessment							13	10	7	3	3	20	
Small Site Windfall Allowance		64 per annum reduced for commitments	Windfall assessment									57	61	61	428	
Large Site Commitments and District Plan Contribution																
Extant permission on sites under construction										363	242	97	40	0	0	
Extant permission on sites not under construction										243	406	424	226	132	75	
City Plan consented delivery										0	0	0	0	0	0	
Other deliverable dwellings		None	Deliverability Based on City Plan Capacity							0	53	223	285	276	135	
Strategic Allocation Contribution																
Innsworth	A1	None	Trajectory	0	0	0	0	0	0	0	25	50	50	125	875	
Twigworth	A1b	None	Trajectory	0	0	0	0	0	0	0	25	50	50	125	745	
South Churchdown	A3	None	Trajectory	0	0	0	0	0	0	0	0	50	50	100	700	
North Brockworth	A4	None	Trajectory	0	0	0	0	0	0	75	150	150	150	150	825	
Winnycroft	A10	None	Trajectory	0	0	0	0	0	0	0	50	100	100	100	270	
			Total						**3993**	**711**	**961**	**1208**	**1015**	**1072**	**4073**	**13033**

Appendix 2 – Internal floorspace calculations

Bedrooms	Persons	Storeys	NDSS GIA	Actual GIA	Difference	NDSS Storage	Actual Storage m2	Difference	New or Conversion
2	3	2	70	70	0	2	2	0	N
2	3	2	70	70	0	2	2	0	N
2	3	2	70	70	0	2	2	0	N
2	3	2	70	70	0	2	2	0	N
2	3	2	70	70	0	2	2	0	N
2	3	2	70	70	0	2	2	0	N
2	3	2	70	70	0	2	2	0	N
2	3	2	70	70	0	2	2	0	N
2	3	2	70	70	0	2	2	0	N
2	3	2	70	70	0	2	2	0	N
2	3	2	70	70	0	2	2	0	N
2	3	2	70	70	0	2	2	0	N
2	4	2	79	78.5	-0.5	2	2.7	0.7	N
2	4	2	79	78.5	-0.5	2	2.7	0.7	N
2	4	2	79	78.5	-0.5	2	2.7	0.7	N
2	4	2	79	78.5	-0.5	2	2.7	0.7	N
3	5	2	93	93.6	0.6	2.5	2.4	-0.1	N
3	5	2	93	93.6	0.6	2.5	2.4	-0.1	N
3	5	2	93	93.6	0.6	2.5	2.4	-0.1	N
3	5	2	93	93.6	0.6	2.5	2.4	-0.1	N
3	5	2	93	86.8	-6.2	2.5	3.4	0.9	N
3	5	2	93	86.8	-6.2	2.5	3.4	0.9	N
3	5	2	93	86.8	-6.2	2.5	3.4	0.9	N
3	5	2	93	86.8	-6.2	2.5	3.4	0.9	N

3	5	2	93	86.8	-6.2	2.5	3.4	0.9	N
1	2	1	50	46.8	-3.2	1.5	1.5	0	N
1	2	1	50	46.8	-3.2	1.5	1.5	0	N
1	2	1	50	46.8	-3.2	1.5	1.5	0	N
1	2	1	50	46.8	-3.2	1.5	1.5	0	N
1	2	1	50	46.8	-3.2	1.5	1.5	0	N
1	2	1	50	46.8	-3.2	1.5	1.5	0	N
1	2	1	50	46.8	-3.2	1.5	1.5	0	N
1	2	1	50	46.8	-3.2	1.5	1.5	0	N
1	2	1	50	46.8	-3.2	1.5	1.5	0	N
1	2	1	50	46.8	-3.2	1.5	1.5	0	N
3	5	2	93	80	-13	2.5	3	0.5	N
4	6	3	112	115.74	3.74	3	2	-1	N
4	6	3	112	115.74	3.74	3	2	-1	N
4	6	3	112	115.74	3.74	3	2	-1	N
4	6	2	106	108.18	2.18	3	2	-1	N
4	6	2	106	161.94	55.94	3	2	-1	N
4	6	2	106	144.12	38.12	3	2	-1	N
3	4	2	79	58.14	-20.86	2	0	-2	c
2	4	1	70	69	-1	2	0	-2	N
3	5	2	93	60.25	-32.75	2.5	0	-2.5	N
2	4	2	70	150.86	80.86	2	8.41	6.41	N
3	5	2	93	81.41	-11.59	2.5	0.99	-1.51	N
1	1	1	39	41.77	2.77	1	0	-1	c
1	2	2	58	72.95	14.95	1.5	0	-1.5	c
3	5	3	99	102.02	3.02	2.5	4.2	1.7	N
1	2	2	58	32.6	-25.4	1.5	0	-1.5	c
1	2	1	50	48.84	-1.16	1.5	0	-1.5	c

1	2	1	50	48.7	-1.3		2.88	2.88	c
2	4	2	79	72.48	-6.52	2	0	-2	c
1	1	1	39	41.4	2.4	1	0	-1	c
1	2	1	50	48.94	-1.06	1.5	0	-1.5	c
1	2	1	50	65.27	15.27	1.5	0	-1.5	c
1	2	1	50	51.23	1.23	1.5	0	-1.5	c
1	2	1	50	44.23	-5.77	1.5	0	-1.5	c
1	2	1	50	65.24	15.24	1.5	0	-1.5	c
1	2	1	50	95.94	45.94	1.5	2.89	1.39	c
2	3	1	74	48.04	-25.96	2	0	-2	c
2	4	2	79	56.65	-22.35	2	0	-2	c
3	6	3	108	143.43	35.43	2.5	0.97	-1.53	c
3	6	3	108	143.43	35.43	2.5	0.97	-1.53	c
3	6	3	108	143.43	35.43	2.5	0.97	-1.53	c
3	6	3	108	143.43	35.43	2.5	0.97	-1.53	c
1	2	1	50	46	-4	1.5	0	-1.5	c
1	2	1	50	58	8	1.5	0	-1.5	c
3	5	1	86	101	15	2.5	0	-2.5	c
1	2	1	50	55	5	1.5	0	-1.5	c
1	2	1	50	45	-5	1.5	0	-1.5	c
1	2	1	50	66	16	1.5	0	-1.5	c
1	2	1	50	46	-4	1.5	0	-1.5	c
1	2	1	50	40	-10	1.5	0	-1.5	c
1	2	1	50	45	-5	1.5	0	-1.5	c
1	2	1	50	42	-8	1.5	0	-1.5	c
1	2	1	50	42	-8	1.5	0	-1.5	c
1	2	1	50	42	-8	1.5	0	-1.5	c
1	2	1	50	42	-8	1.5	0	-1.5	c

1	2	1	50	42	-8	1.5	0	-1.5	c
1	2	1	50	42	-8	1.5	0	-1.5	c
1	2	1	50	42	-8	1.5	0	-1.5	c
1	2	1	50	42	-8	1.5	0	-1.5	c
1	2	1	50	42	-8	1.5	0	-1.5	c
1	2	1	50	42	-8	1.5	0	-1.5	c
1	2	1	50	42	-8	1.5	0	-1.5	c
3	5	2	86	87.74	1.74	2.5	0.77	-1.73	N
3	5	2	86	87.74	1.74	2.5	0.77	-1.73	N
3	5	2	86	87.74	1.74	2.5	0.77	-1.73	N
3	5	2	86	87.74	1.74	2.5	0.77	-1.73	N
3	5	2	86	87.74	1.74	2.5	0.77	-1.73	N
3	5	2	86	87.74	1.74	2.5	0.77	-1.73	N
3	5	2	86	87.74	1.74	2.5	0.77	-1.73	N
3	5	2	86	87.74	1.74	2.5	0.77	-1.73	N
3	5	2	86	87.74	1.74	2.5	0.77	-1.73	N
3	5	2	86	87.74	1.74	2.5	0.77	-1.73	N
3	5	2	86	87.74	1.74	2.5	0.77	-1.73	N
3	5	2	86	87.74	1.74	2.5	0.77	-1.73	N
3	5	2	86	87.74	1.74	2.5	0.77	-1.73	N
3	5	2	86	87.74	1.74	2.5	0.77	-1.73	N
3	5	2	86	87.74	1.74	2.5	0.77	-1.73	N
3	5	2	86	87.74	1.74	2.5	0.77	-1.73	N
3	5	2	86	87.74	1.74	2.5	0.77	-1.73	N
3	5	2	86	87.74	1.74	2.5	0.77	-1.73	N
3	5	2	86	87.74	1.74	2.5	0.77	-1.73	N
3	5	2	86	87.74	1.74	2.5	0.77	-1.73	N
3	5	2	86	87.74	1.74	2.5	0.77	-1.73	N

3	5	2	86	87.74	1.74	2.5	0.77	-1.73	N
3	5	2	86	87.74	1.74	2.5	0.77	-1.73	N
3	5	2	86	87.74	1.74	2.5	0.77	-1.73	N
3	5	2	86	87.74	1.74	2.5	0.77	-1.73	N
4	7	2	115	135.02	20.02	3	1.73	-1.27	N
4	7	2	115	135.02	20.02	3	1.73	-1.27	N
4	7	2	115	135.02	20.02	3	1.73	-1.27	N
4	7	2	115	135.02	20.02	3	1.73	-1.27	N
4	7	2	115	135.02	20.02	3	1.73	-1.27	N
4	7	2	115	135.02	20.02	3	1.73	-1.27	N
4	7	2	115	135.02	20.02	3	1.73	-1.27	N
4	7	2	115	135.02	20.02	3	1.73	-1.27	N
4	7	2	115	135.02	20.02	3	1.73	-1.27	N
4	8	2	130	121	-9	3	4.04	1.04	N
4	8	2	130	121	-9	3	4.04	1.04	N
4	8	3	130	121.71	-8.29	3	2.17	-0.83	N
4	8	3	130	121.71	-8.29	3	2.17	-0.83	N
4	8	3	130	121.71	-8.29	3	2.17	-0.83	N
4	8	3	130	121.71	-8.29	3	2.17	-0.83	N
4	8	3	130	121.71	-8.29	3	2.17	-0.83	N
4	8	3	130	121.71	-8.29	3	2.17	-0.83	N
4	8	3	130	121.71	-8.29	3	2.17	-0.83	N
4	7	3	121	117.67	-3.33	3	1.65	-1.35	N
4	7	3	121	117.67	-3.33	3	1.65	-1.35	N
4	7	3	121	117.67	-3.33	3	1.65	-1.35	N
4	7	3	121	117.67	-3.33	3	1.65	-1.35	N
4	7	3	121	117.67	-3.33	3	1.65	-1.35	N
4	7	3	121	117.67	-3.33	3	1.65	-1.35	N

4	7	3	121	117.67	-3.33	3	1.65	-1.35	N
1	2	1	50	41	-9	1.5	0	-1.5	N
1	2	1	50	41	-9	1.5	0	-1.5	N
2	4	1	70	59	-11	1.5	0	-1.5	N
2	4	1	70	59	-11	1.5	0	-1.5	N
2	4	1	70	67	-3	1.5	0	-1.5	N
2	4	1	70	60	-10	1.5	0	-1.5	N
2	4	1	70	69	-1	1.5	0	-1.5	N