The Manual of Housing Density
- a valuable resource for local authorities and residential developers

bluepencil DESIGNS
Bluepencil Designs Ltd is an RIBA Chartered Practice specialising in residential design and masterplanning. We have been involved in over 50 major strategic residential masterplans in the south of England.

Bluepencil Designs is one of the leading architectural consultancies specialising in this field, with outstanding planning successes. This is due to a unique combination of experience in the industry and an intelligent, sensitive and detailed approach to urban design.

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1. Introduction

1.1 Why you need this manual

This manual has been produced to assist the residential development industry and those associated with it.

It is designed and written with the benefit of many years experience in the industry which has given the author a deep understanding of the development industry from land assembly through detailed planning, construction, delivery and sales, as well as a comprehensive understanding of planning policy at national and local level.

Understanding density is fundamentally important, and the earlier in the design process the better. Density is measured in a number of different ways at different stages of the design development, which can cause no end of problems and frequently does so.

It is not uncommon for land buyers and land agents to acquire a site (or options on a site), measure the site area on Promap or Google maps, establish a site area in hectares or acres and then ‘apply a density’ to estimate the number of homes that could be built within the red-line boundary of the site.

Although this is a cost effective and quick method, and although the design and development teams know that these are ‘a bit inaccurate’ and just ‘ball park’ figures, they nevertheless somehow become fixed.

Soon they are firmly embedded in the appraisal work upon which the costs and viability of the site are measured and which the architects and masterplanners, development managers, sales and marketing teams, accountants and surveyors have to make work. The trouble is, it often does not work -

- there isn’t enough room!

If this sounds familiar to you, as a member of the development team, a design or planning consultant or a local authority planning officer, rest assured, it doesn’t need to be that way!
This manual will help you to establish a viable density for your site at the earliest opportunity, usually when considering a site for development (not after it has been purchased) and you will have a robust set of figures based on a well considered set of criteria.

A viable density will give you a total number of units, houses and apartments based on your preferred mix of unit types and the net area of your site.

This manual and a few simple calculations will give you all you need to determine an accurate yield for your site.

- You will know how to calculate your net site area, even before any drawings have been produced.
- You will know your net density and total unit numbers, giving you a realistic place to start your development proposals.
- You will understand what different densities will look like when built.
- You will know how to avoid the ‘planning policy pitfalls’ which are triggered at certain density thresholds.
- You will know how to determine the density of the surrounding settlement and how to create an appropriate neighbouring density.
- You will understand the many implications of changing the unit mix.
- You will understand the implications of vehicles, cycle storage, refuse collection and SuDS on your density (and unit numbers).
- You will have a big advantage over those who don’t use this manual!
1.2 How to use this manual

This manual has been designed to be a useful reference book.

It shows how to calculate the density of a site without requiring a site layout plan.

It also sets out a number of planning policies which affect the site layout and will trigger a change in unit mix at certain density thresholds. The term ‘unit’ refers to a dwelling type.

By using the information in this manual you will be able to predict what sort of unit mix can be delivered at different densities, as well the level of density that can be achieved with a variety of different unit mixes.

This section of the manual explains the terms, definitions and measures that are commonly used and also some simple calculations.

The next section shows a series of density ‘rules’ which are explained by using 1 hectare samples of masterplans. The 1 hectare samples are standard 100m x 100m squares so that direct comparisons are easy.

The data shown within the 1 hectare sample relates to that 1 hectare only and is not indicative of the density of the complete masterplan from which it is extracted.

There is also a section showing 4 density ‘tiles’, using 4 different unit types to show how the unit type has an impact on the density.
All the masterplans used in the density samples, plus a few more, are re-produced in the third section of this document with further information including the gross to net ratio and the overall net density.

The house types used in the density samples are all 'standard' and have the same data (number of bedrooms, floor area etc) in order to ensure consistency between the samples.

There are two versions of each masterplan, a presentation version and a colour-coded masterplan, as illustrated by the two extracts below.

Each masterplan has a schedule of information attached to it and a key showing the different units.

Example of a presentation masterplan
Example of a colour-coded masterplan
Site Number 3 - Hertfordshire
21 dwellings per hectare (8 dwellings per acre)

The Data

<table>
<thead>
<tr>
<th>Units per Hectare</th>
<th>21</th>
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</thead>
<tbody>
<tr>
<td>Units per Acre</td>
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<td>Habitable Rooms per Hectare</td>
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<td>Sq ft Coverage per Acre</td>
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<td>Parking</td>
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<tr>
<td>Storey Heights</td>
<td>2</td>
</tr>
</tbody>
</table>

Extracted from the masterplan on page 42 where full details are set out for this site

This density is appropriate for:

- Detached, semi and terraced properties
- Double and single garages
- Cart lodges
- Drives
- Front gardens
- Large back gardens
- Incidental open space
- Medium to high values
- Level sites
- Small feature landscape areas
- Organic Layout
- Various SuDS options
20 dph

The Rules

1. Ensure that back gardens are in proportion to the footprint of the dwelling.
2. Ensure that there is additional landscape to add value.
3. Ensure that every dwelling has an attractive outlook to the front.

Watch out for:

- Vehicle tracking is advisable for refuse collection and emergency services.
- Refuse collection points may be needed.
- Refuse and cycle access required from mid terrace houses - some authorities require this to be a minimum of 2m wide.
Site Number 3 - Hertfordshire

Gross to net ratio = 30%

This layout has a well balanced mix of different unit types and includes within the net area: the triangular green, the secondary roads; and the private drives. It makes an interesting comparison to the site on pages 54 an 55.

The gross site area measures 3.5ha (8.7a)
Gross density = 28dph (11dpa).

The net site area measures 2.6 ha (6.4a)
Net density = 37dph (15dpa).

The mix is 20% apartments, 80% two storey houses.

Excluded from the gross site area:
• Spine road
• Buffer planting
• Landscape entrance green
• PRoW
For over 1000 years people have lived in and visited the Historic town of Thaxted, one of this country’s finest towns. With its famous Guildhall, magnificent Church and restored Windmill set against a backdrop of Medieval houses it is considered the jewel in the crown of Essex.

Thaxted remains today what is has been for the last ten centuries - a thriving town which moves with the times, but also treats its heritage from the past with great respect. It was a privilege for Bluepencil Designs to be selected to design a new residential area in this town.

The trapezoid shape of the site meant that we were able to plan a layout that ensured that every property had either road frontage or overlooked green space. There are two village greens within the development. One is at the entrance to the site, creating a gateway and ‘sense of arrival’. The other is in the heart of the development creating a space for the community. These green spaces have been shaped by analysis of the local village greens and spaces in and around the town.

With the two greens and the internal road junction we were able to create three character areas within this site, reflecting the urban characteristics of the historic town.

The masterplan is data-linked, as illustrated in the colour-coded plan and 3D model with its accompanying schedule.