

# Popular, Profitable Places

How To Implement the NPPF And The Urban Design Principles Behind It To Protect Long-Term Profits and Reputation

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### **1. BUILDING FOR THE BRAIN**



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### 1

## Foreword

### "We shape our buildings and thereafter, they shape us."

Winston Churchill

Some buildings are around for centuries – the ones we really care about. Others bite the dust sooner or later and most of them sooner.

The Architectural Wellbeing Institute shines a light on why we care about some buildings more than others and how, whichever building design we go with, our urban environment will shape us one way or another.

It is an area of study which has gone under the radar. More obvious factors in wellbeing, like education, nutrition and human relationships, have enjoyed far more headlines.

As humans, we like to believe that we control how we see the world and our reactions to it, but in reality, research by academics in our network shows that we are a lot more connected to the world around us than we think.

The Institute connects academic research with those it affects: property developers, politicians, planners, architects and urban designers. With guides like these, as well as events, we bring to life the breakthrough research of academics around the world so that, together, we can build a better world.



**Thomas Hogg** Director, Architectural Wellbeing Institute

Architectural Wellbeing Institute

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Nicholas Boys Smith – senior planning adviser to the UK Government and Chair of the Government's Office of Place. Nicholas and his social enterprise CreateStreets have helped property developers and councils up and down the country build places the local communities support.

## Editors



Prof. Nikos Salingaros – named as 11th most influential urban thinker of all time by ... magazine, Prof. Salingaros' research uses the latest technology and research techniques to study the effect of the urban world on the brain and how humans perceive the world around them



**Prof. John Simpson** – a highly respected architect known for his elegant and timeless designs. He has been awarded the CVO for his services to architecture and his contributions to the Royal Institute of British Architects. With over 40 years of experience in the field, John Simpson has a wealth of knowledge and expertise in creating beautiful and functional buildings that stand the test of time.

### **Executive Summary**

According to research by Savills, developers who followed the principles set out in this guide have enjoyed values per hectare 43% higher than the average for the local area in the two areas studied. A Prince's Foundation analysis found similar results in other areas.

Property developers who follow these principles can get projects done faster and in budget, while protecting both their long-term brand and the environment. They can build better relationships with communities, while enabling the self-sustainability of the local economy in the major developments they build. Less NIMBY, more YIMBY.

Crucially, these principles help you fulfil large parts of the Government's National Planning Policy Framework and the guide references the NPPF throughout.

The keys to highly profitable developments which communities support are:

- Designing buildings for the brain's automatic response

- Gentle density

- 10-minute neighbourhoods
- Consulting with the community early and often
- Including local services
- Greenery

This guide will take you step-by-step through how to achieve this, based on a huge consultation of over 250,000 ratings of scenes around the UK, real case studies and comparisons and academic research studying neurological responses to visual stimuli.

### 3

## Why Developments Get Delayed

We have all heard of the NIMBY – Not In My Backyard.

Typically, these people are thought of as intransigent, that there is no way of persuading them and so they must be fought with perfectly-worded planning applications and potentially battles down the line at the Council and, in some cases, in court.

But these delays are costly. According to one survey from 2017, delays can cause costs to increase by up to 20%<sup>1</sup>. And 85% of construction companies said they had faced delays on a recent project.

Almost all small to medium-sized developers (94%) cited securing planning permission as a problem.<sup>2</sup>

Planning reform may come one day, but even if it does, developing against the wishes of local people is a major hazard for a property developer's brand. While some NIMBYs are intransigent, many others who oppose developments can be won over.

The problem is that the local community often feels ignored. They believe that property developers are there to make a profit, regardless of the effect they have on people's surroundings.

This has led to a stand-off, in which neither party gives any benefit of the doubt to the other. Twenty-two hours of interviews<sup>3</sup> by the Centre For London has proven this to be the case in London, but the community consultation work of CreateStreets shows that all communities care about being heard.

But it doesn't need to be this way. There are plenty of developments which get fast-tracked planning approval, with both communities and the local council supporting them. We will provide examples of this and how to achieve it in Chapters x, y and z.

### 4

### Why Brands Get Tarnished

"It takes 20 years to build a reputation and five minutes to ruin it. If you think about that, you'll do things differently."

Warren Buffett

Protracted disagreements with the local community can spread like wildfire, in the local newspaper, TV, radio and word-of-mouth. The longer it continues, the more controversial the developer becomes.

If an unpopular application gets approval and the building works start, the drilling, hammering and lorry movement can last for a long time, almost literally driving the point home to local people that they will be ignored.

And when the building work is over and there is a permanent new development in an area, if that development does not fit well to the local area, people will have to live with it day-in, day-out, long after the property developer has left – a permanent mark on their lives.

In just the last month (since the date of writing this), several major developments have been in the news, having costed both the property developer and the local population a lot of time and money fighting each other.

Taylor Wimpey has just lost a huge battle4 with Inverclyde Council for 100 new houses in Renfrewshire, which will have hurt their reputation across the whole area.

David Wilson Homes have just won a 10-year battle<sup>5</sup> to build 188 homes in Nantwich, despite strong local opposition. The resentment many will feel in the local area will linger.

And many houses which get built are demolished only decades later, sometimes sooner, which only contributes to bad news associated with developers. Britain demolishes 50,000 houses a year<sup>6</sup>, which is an environmental catastrophe.

The fact that housing developments face so much resistance and so many houses get demolished each year shows that, in many cases, the development design and build did not work well.

Luckily, we now have a depth of academic research and real-life examples which show how people react more positively towards buildings and urban design. More on this in Chapter 9.

### 5

## Why Budgets Get Broken

As the amount of land, houses and roads needed for a development increases, the risk of breaking your budget increases exponentially. On top of that, the costs of fighting planning rejections increases the burden too.

Not knowing when you can get started, and thus have a less clear forecast for the costs of materials and labour, also increases this risk.

The ideal housing development uses the least amount of land needed, keeps the community onside and can get started quickly.

In this guide, we explain how to achieve this ideal mix.

### 6

## **Regulatory Requirements**

The Government's National Planning Policy Framework (NPPF) sets out the requirements on housebuilders and local councils.

The NPPF provides the outcomes that need to be achieved and this guide demonstrates how many parts of it can be achieved, including:

- 1. Delivering a sufficient supply of homes (NPPF Chapter 5)
- 2. Building a strong, competitive economy (NPPF Chapter 6)
- 3. Ensuring the vitality of town centres (NPPF Chapter 7)
- 4. Promoting healthy and safe communities (NPPF Chapter 8)
- 5. Promoting sustainable transport (NPPF Chapter 9)
- 6. Making effective use of land (NPPF Chapter 11)
- 7. Achieving well-designed and beautiful places (NPPF Chapter 12)
- 8. Meeting the challenge of climate change (NPPF Chapter 14)
- 9. Conserving and enhancing the natural environment (NPPF Chapter 15)

All planning applications will be considered based on their compliance with the NPPF.

The specific parts of these chapters which can be achieved will be referenced throughout the guide in the relevant places. There are also references to the National Model Design Code, which can be useful to cite in your planning application.

omes (NPPF Chapter 5) nomy (NPPF Chapter 6) es (NPPF Chapter 7) unities (NPPF Chapter 8) NPPF Chapter 9) Chapter 11) tiful places (NPPF Chapter 12) nange (NPPF Chapter 14) ural environment (NPPF Chapter 15)

### Why Regulators Are Getting Stronger On Environmental Protection

Construction produces 126 million tonnes of waste7, almost two thirds of all waste produced in the UK. The built environment, of which the construction sector is a crucial component, currently contributes a quarter of the UK's carbon emissions.8

This is partly due to the materials used. Concrete, steel, aluminium and glass are energy-intensive to produce. The production of materials like cement also involves chemical processes, releasing additional greenhouse gases (GHGs), and leads to the depletion of natural resources like sand and the erosion of ecosystems. Concrete is responsible for an incredible 4-8% of global carbon emissions.9

These materials are not just energy-intensive to produce, but some have a short lifespan. Reinforced concrete can start to deteriorate after as little as 10 years<sup>10</sup>, with their lifespan between 50 and 100 years.

To reach Net Zero, which the Government is committed to, we cannot demolish houses at such a rate left unsafe due to deterioration of the materials used.

However, the other reason for demolition is the unpopularity of some buildings. There are some buildings which communities want to maintain and protect, which is why we have Government schemes like Listed Buildings, and others no-one would be sad to see the back of.

There are reports around the world<sup>11</sup>, and especially in Britain, of brutalist buildings being torn down, which suggests that buildings built to follow a short-term architectural trend rather than for the brain's evolutionary wiring will always be at high risk of demolition. And this will release huge amounts of carbon into the atmosphere. As an example, the demolition of the Marks & Spencer's building on Oxford Street has been calculated to release 40,000 metric tons of carbon, the equivalent of driving to the Sun.

To reach Net Zero, we need to minimize the carbon<sup>12</sup> footprint of homes in construction, maintenance and use, while avoiding demolition as much as possible.

### **COMPLIANCE**

To satisfy NPPF Chapter 14, paragraph 154, part b, please read Chapters 11 and 12.

### 8

## How To Get The Local **Community's Support**

The local community will be most likely to support your property development proposal if you have done the following things:

- 1. Brain-Based Design: start by designing the buildings with the brain's also help you satisfy NPPF Chapter 12, para. 132, part b
- NPPF Chapter 12, para. 133 and N.3.iii of the NMDC
- 3. Reduce land usage: use as little land as possible to reduce the mark your development will leave on the local area – you can do this by taking "Resources", para. 197 and 198
- 4. Boost business: demonstrate how your development will benefit local

evolutionary wiring and visual perception in mind. To do this, follow the principles set out in this guide and use the tools mentioned to help you do so – cutting-edge software recently released can help you do this. This will

2. Greenery: include foliage and trees for a more natural visual effect which also helps reduce the carbon footprint of the development. This is vital for

advantage of terraced housing and using the principle of 'Gentle Density' to build upwards without going too far (which can dominate the skyline and isolate people in flats). This is for NPPF Chapter 11 and NMDC section on

businesses – more on this in Chapter 11. This is vital for NPPF Chapter 6

- 5. Protect local roads: minimise the need for cars on your development, thus showing local people that their roads will be able to cope with the increased number of people – more on this in Chapter 12
- 6. Include local services: include much-needed local services like health centres and schools, as well as good transport links. (Helping to fulfil NPPF Chapter 9 and U. 3.ii of the NMDC)
- 7. Consult early and often: consult with local people at an early stage to be able to take their thoughts and local insight into account without having to re-do work (For NPPF Chapter 12)

### 9

### **Designing Brain–Friendly** Buildings

We can design buildings to reduce mental stress by building urban environments that our eyes have evolved to understand.

For nearly 300,000 years, humans have been hunter-gatherers or working on the land. Our eyes and brain have evolved to interpret the natural world best. In the last 30 years, much academic research has been undertaken to understand the effect of the urban environment on our brains.

This research has produced a series of architectural principles which can be used to build all sorts of architecture in a harmonious way, like music theory can be used to make all sorts of music, from classical to rap, harmoniously.

The principles are:

- 1. Avoidance of specific repetitive patterns
- 2. Use of fractals
- 3. Symmetry
- 4. Human-scale design
- 5. Arches
- 6. Use of plants and trees

### **COMPLIANCE**

Following these principles, (and if you wish, you can also reference the academic materials of Prof. Wilkins, Moat, Preis, Salingaros, Sussman and others behind these principles), demonstrates your application of NPPF Chapter 12, para. 132, part b. It will also help you avoid your application being rejected in the way mentioned in Ch. 12, para. 136.

They are also connected to the National Model Design Code chapter "Homes and Buildings", paragraph 187 on health and wellbeing.

THE EFFECT OF REPETITIVE PATTERNS ON THE HUMAN BRAIN Professor Arnold Wilkins has spent the last 30 years of his career focusing on visual perception. His research shows that humans struggle with sharplycontrasting, simplistic, monotonously repeating patterns on any scale.

These patterns can cause major problems for the human brain, making the urban environment more harmful for those with epilepsy, migraines, autism and more. They affect us all, but those with these conditions are especially hard hit.<sup>12</sup>

It is best to avoid them as a feature of design, particularly stripes.

However, if the use of repetitive patterns is inevitable (e.g. as the result of modular construction), the general principles are:

- units that are themselves complex.
- Keep the contrast low (e.g. if having a painted row of houses, use tints instead of hues. See Appendix 3 for more details)
- better than thicker ones, while still keeping them proportionate)

Thinner stripes or dots with more space between them are less likely to cause visual discomfort. The maximum size of pattern elements must be no greater than 10% of the distance between them:

- Avoid simplistic patterns repeating too much, both at an urban design scale (i.e. a bit of diversity in the size and type of buildings is good). Repeat only

Thinner stripes are better (e.g. on sash windows, thinner glazing bars are



Copyright Prof. Arnold Wilkins

Less contrast between stripes or dots makes them less likely to cause visual discomfort. The difference in luminance between the pattern elements divided by the average luminance must not exceed 20%:



Copyright Prof. Arnold Wilkins

#### These facades are more likely to cause problems for the brain:







Building facades which are more likely to cause problems for the brain, as they include simple, repeating stripes. Copyright Prof. Arnold Wilkins



Copyright Prof. Arnold Wilkins, University of Essex

You can see the full results in "Discomfort From Urban Scenes: Metabolic Consequences", in the Landscape and Urban Planning Journey, 2017.

These results are explained by the former conforming to the visual rules of nature less than the latter, according to the university's researchers. When a building does not look like something we have been evolutionarily wired to understand, it is more difficult for the brain to interpret.

Specifically, the repeating, simple patterns and stripes in the former are the factors causing the greatest problems for the brain.

#### FRACTALS

One of the most common themes in nature is fractals. A fractal is simply including complexity at multiple levels of magnification.



Building facades that are less likely to cause problems for the brain, as these include complexity on multiple elements, thus diluting the effect of repeating patterns.

To provide context, a tree is a perfect fractal, as it gets increasingly complex as the trunk becomes branches, then twigs and finally leaves, which have complexity at magnification themselves.

Our brain experiences stress when there is no complexity in the world around it, as shown by eye-tracking and photo-sensitivity studies.

Fractals on buildings include:

- Ornaments
- Glazing bars on sash windows \_
- Ornamental roof eaves
- Door canopies with patterns
- Flower boxes under windows
- Ivy and other plants on the walls
- Window frames \_
- **External shutters**
- Balcony railings with complex patterns (avoiding stripes)



Examples of fractals on buildings **Copyright Thomas Hogg** 

#### HUMAN-SCALE DESIGN

Buildings and patterns within them and between them should be at human-scale, so the human brain can interpret them. Pillars which are disproportionately large in dimensions will intimidate and those too small impractical. The most common human scale is 1 metre by 2 metres.

An example of human-scale design is that pillars the brain is comfortable with are the width of the human body, according to Prof. Salingaros.



Example of human-scale dimensions Copyright Nikos Salingaros and Michael Mehaffy

SYMMETRY ABOUT THE VERTICAL AXIS

Symmetry is not essential for all buildings, but symmetrical buildings can be interpreted better by the human eye than those which are not. Symmetry could be found on a smaller scale than the whole building without the whole building being symmetrical.

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This building is an example of a house symmetrical on the vertical axis.

#### ARCHES

Arches are not essential for buildings but can help improve them.

When designing arches, these principles based on the academic research of Prof. Salingaros and Sussman can help:

- 1. Create a sense of enclosure and spatial coherence: arches can be used to create a sense of enclosure and spatial coherence in a building. This can be achieved by using arches of different sizes and types, such as round arches, pointed arches, and lancet arches, to create a sense of progression and guide the viewer's eye through a building. For example, an entrance or door arch can be mimicked in window arches, something noticed unconsciously by the brain and leads to sensory coherence.
- 2. Foster a sense of community: arches can be used to create a sense of connection and continuity between different spaces, which is essential for fostering a sense of community. To achieve this, arches can be used to connect different rooms or spaces within a building.







From Pixabay



Arches of all kinds can improve a building or urban space **Copyright Thomas Hogg** 

### USING AI TO DESIGN FOR MENTAL HEALTH

Professor Nikos Salingaros of the University of Texas undertook research to study how people interpret the world around them. He did this using eyetracking technology and subsequently software which was trained by 3M to have a similar accuracy to eye-tracking technology.

The results of the study showed which parts of an urban scene people focus on first and which parts were focused on most. The parts of a scene which were most ignored are the parts which the human brain can least interpret.

This was an objective way to measure how the human brain interprets urban scenery rather than rely on subjective opinion.

This is one of the studies which shows the importance of using fractals in architecture, and has been repeated in several other studies.

You can feed in your architectural designs to the eve-tracking software on 3M's website here: https://vas.3m.com/

#### **INTERPRETING THE RESULTS**

Prof. Salingaros has provided the following guidance for interpreting the results:

Good buildings have a relatively even distribution of attention focus, ideally with a bit more on the front door and windows (more on the door than on the windows). Any hotspots on the edges, outside the building itself, or in small unimportant gaps are a red flag. This is because the VAS does not distinguish between a uniformly low interest and a uniformly high interest design (both show as blue glows). But in the low interest case, there's something drawing the eye's attention outside the building or on irrelevant points. In the high interest case, all the attention is contained within the building's façade.

Try to compare regions with vegetation present, which is hard-wired in the human brain to draw our attention. If trees, bushes, or potted plants draw all the attention, then the building's design is weak. A good design competes with nature for the eye's attention.

Beware of industrial-modernist aesthetics that could manifest themselves as a visually deadly large area, which could be a garage door or driveway. Patterned driveways exist in traditional cultures for a good reason: to connect the building to the ground visually.

Here are some examples of how to interpret results:



A traditional house that uses greenery on its body to enhance attractiveness. Hot spots are appropriately at the door and windows. Uniformly distributed attention shows as a blue glow all over. Copyright Thomas Hogg



A building so well designed that the blue glow is uniformly distributed throughout the façade, and does not distinguish the building from the hedge (which as a perfect fractal ordinarily has primary visual attraction). Copyright Thomas Hogg



Ignore the focus on the car, which is an artefact of VAS. Bad design: (1) garage doors attract no interest, yet occupy a dominant area. (2) Hot spot on the sky on L roof corner means that not enough interest exists in the façade itself. (3) Front door is invisible. Copyright Thomas Hogq



Fragmentation because of poor design without coherence. Hot spots all over but at irrelevant places, such as top of gable. Too many empty regions (black) reveals bad design. Don't be fooled by attention on glass front window; it's due to the reflection of a tree, not the window itself. Front door is invisible. Copyright Thomas Hogg

### 10

### Consulting With The Community

Consulting effectively with the community on new property developments is a critical step in ensuring that new developments are well-received and meet the needs of the community.

It is also a requirement of NPPF Chapter 12 and referenced in the National Model Design Code section called "Community Engagement".

Here are some tips for consulting effectively:

- responsive to the community's needs.
- 2. Collaborate on design: Collaborate with community members on the

1. Start early and involve the community from the beginning: It is important to involve the community in the planning process as early as possible. This allows for community members to provide input and feedback on the proposal, which can help shape the development and make it more

design of the development. This can include working with architects, urban designers, and community members to develop a proposal that meets the community's needs and reflects their values. See the section on workshops

below for more information on how to do this.

- 3. Be transparent and open: Develop clear and open communication channels to ensure that community members are informed and engaged throughout the process. This can include regular updates on the development, public meetings, and online forums.
- Listen and respond to community feedback: Community members often have valuable insights into the needs and concerns of their neighbourhood. It is important to listen to their feedback and respond to their concerns in a meaningful way.
- 5. Consider the community's needs: New developments should be designed to meet the needs of the community. This can include providing affordable housing, creating public spaces that are accessible to all, and designing streets that are safe and easy to walk on.
- 6. Be flexible and adaptable: The community's needs and priorities may change over time, so it is important to be flexible and adaptable in order to respond to these changes.

By following these tips, developers can build trust with local communities from an early stage, decreasing the chances of resistance when submitting a planning application.



**Copyright Thomas Hogg** 

#### COMMUNITY CONSULTATION EXAMPLE

An example of a property development that was co-designed with the local community is the Nansledan development in Cornwall, UK. This development is led by the Duchy of Cornwall and the developer, the Duchy Originals Property Development Company.

The developer proposed to build a new town of 3,500 homes on a greenfield site in a rural area of Cornwall, near the town of Newquay. Before submitting a planning application, they worked closely with the local community to gather input and feedback on the proposal, holding public meetings, workshops, and online surveys.

The community's input was used to shape the development proposal, which included the following features:

- meet the needs of different income groups.
- create a vibrant and active neighbourhood centre.
- residents.
- A network of new cycle paths, walkways and footpaths for leisure and transportation.
- environmental impact.

The development was approved by the local council and it was opened in 2017. It's still under construction and new homes are being built.

There were no planning approval delays or disputes with the local community.

HOW TO UNDERTAKE WORKSHOPS AND SURVEYS The best resource for understanding how to undertake workshops with the local community is CreateStreet's Health Streets For London: Co-Designing Charette Processes. Although London is referenced, the use of Charette Processes are a helpful part of community engagement everywhere.

The National Model Design Code section on Community Engagement can help further on this point too.

• A mix of housing types, including affordable, social and market housing, to

A new village square with shops, cafes, and other community amenities to

A new primary school and a new health centre to serve the needs of the new

Incorporation of sustainable design features such as green roofs, rainwater harvesting and renewable energy systems to reduce the development's

## **Designing A Self-Sustaining** Local Economy

A "commuter town" is an unsustainable one in the long-term. Local shops and businesses cannot thrive with most residents out of town during the day, and if the town commuters are commuting to has an economic crash, the whole commuter town becomes redundant, left to slowly deteriorate.

A self-sustainable local economy needs three factors:

- 1. Enough footfall for the high street
- 2. Avoid the brain drain enough skilled local people staying put and/or attracting skilled workers from outside
- 3. Businesses to become entrenched in the community

You can achieve this by:

- 1. Designing spaces to reduce mental stress
- 2. Using gentle density to achieve critical mass
- 3. Placing commercial buildings among residential ones
- 4. Designing "10-minute neighbourhoods"

We have covered designing spaces to reduce mental stress above, so we can move onto point 2, Gentle Density.

#### **GENTLE DENSITY**

At its best, gentle density is a network of beautiful streets and squares, of mansion blocks and terraced and semi-detached houses anchored around a village green or a local corner-shop; tree-lined avenues and streets that children can safely walk along. Such places tend to be more popular, and more prosperous.

No one ever complained that a town had too many squares. People respond more warmly, innately and organically to streets which have coherent complexity, colour, texture, and whose forms and features mimic, however imperceptibly, some of the patterns of nature. And they walk in them more.

This is how you help people lead sustainable, and better connected, lives. While greater density reduces the amount of space required, too much density isolates residents in their high-rise flats. For a community to flourish, people need easy access out of their homes and onto communal spaces like a town square or park.

Living higher than the fourth storey, with no lift, makes you feel less connected to the rest of the community, as it becomes much harder to get out of your flat, which is why 'gentle' density means buildings should be higher than two storeys, but generally not higher than five.

GENTLE DENSITY'S EFFECT ON THE LOCAL ECONOMY One of the key benefits of gentle density is that it allows for a more diverse mix of housing types, including apartments, townhouses, and single-family homes. This can attract a range of residents, from young professionals and families to retirees, creating a more vibrant and diverse community.

When applied to a high street, gentle density can lead to a more diverse mix of uses, such as residential, commercial, and community spaces, which can create a more resilient and sustainable community. For example, having a mix of retail shops, cafes, and residential units on the high street can create a more active street environment that is attractive to both residents and visitors. This can lead to an increase in foot traffic, which can help to support local businesses and create a sense of community.

Additionally, gentle density can help to create more sustainable transportation by reducing the need for cars. When there is a mix of uses and a higher population density, everything is closer together, so people are more likely to walk, bike or take public transportation, which can help to reduce traffic congestion and air pollution. It also makes shops less reliant on car users from out of town.



Copyright CreateStreets



Copyright CreateStreets

#### **COMPLIANCE**

Gentle Density is a key part of fulfilling NPPF Chapters 5, 6, 7, 9, 11, 12 and 14, as well as U.1.i and B.1 in the NMDC.

#### **MIXED-USE DEVELOPMENTS**

Mixed-use developments are where retail, working and housing environments are all set within the same development.

They can create an ecosystem where retail, working spaces and housing can support each other.

Stuart Hatton, the Managing Director of Umberslade, is the developer behind Bristol's Wapping Wharf, a mixed-use regeneration scheme that has transformed the harbourside area in the city.

He told Business Leader magazine: "Residentially-led mixed-use development is all about creating places people want to be. At Wapping Wharf, it's been integral to our approach in creating this thriving new neighbourhood of homes, shops, eateries and other businesses. In the early stages, I sat down and thought: If I lived here, what would I want on my doorstep?"

Chris Pickup, Associate Director at national planning and development consultancy Turley, commented:

"Mixed-use centres benefit from increased footfall and expenditure, which create consumer markets for retail, services, food and beverage and leisure activities which can strengthen the overall economies and health of town centres. Town centres with strong economies, services and activities can be attractive for multiple generations and more appealing for people to live, work and spend their leisure time within central locations.

"In order to have a future place in the shopping hierarchy, many traditional retail destinations will need to become multi-purpose destinations that combine retail, leisure and eating out into their tenant line-ups in order to attract additional customers and achieve sustainable economic growth. These trends confirm that diversification and the attraction of a mix of uses (in addition to retail) are necessary if traditional town centres are to achieve a viable and sustainable future."

Where and how to fit in commercial buildings with residential ones

There are two principles for fitting in commercial buildings: 1. Building design should fit in with the residential buildings around them

#### **COMPLIANCE**

Creating mixed-use developments helps to fulfil NPPF Chapters 5, 6, 7 and 8, as well as U.1.ii of the NMDC.

#### HOW TO DESIGN NEIGHBOURHOODS WHERE EVERYTHING IS WITHIN A **10-MINUTE WALK**

The more shops, services, jobs and community areas which are reachable within a 10-minute walk, the more sustainable the local economy will be and the more likely that people will want to stay in that town.

- 1. Density: we have outlined the principle of gentle density above and it is vital if all residents are to be able to reach the things they need.
- 2. Mixed-Use: we outline above the importance of including commercial neighbourhoods too.

2. They should be located close to local centres, like a town square, in order to make them reachable for most residents and support the local High Street

buildings among residential ones and this is important for 10-minute

- 3. Landmark buildings: by making these buildings (see an example below) visible from a distance along streets (via the curvature of the road, for example) or with a feature like a tower, people can recognise where they are and find their way around.
- 4. Connectivity: this requires the neighbourhood to be well-connected, with a network of pedestrian-friendly streets and pathways that connect residents to all necessary services, work, and transportation links. This can be achieved through the use of a grid-like street pattern, which allows for easy navigation and reduces the need for cars.
- 5. Walkability: the neighbourhood should be designed to be walkable, with wide, well-maintained pavements, ample street lighting and walls not too far away so walkers do not feel exposed.
- 6. Public transportation: The neighbourhood should be well-connected to public transportation, with frequent and reliable bus and train service that allows residents to easily reach all necessary services, work, and transportation links. This can be achieved through the use of bus rapid transit (BRT) systems, which can provide fast and efficient service.
- 7. Green spaces: The neighbourhood should include a variety of green spaces, such as parks, gardens, and open spaces, that provide residents with a place to relax and enjoy nature. These spaces can also serve as community gathering spaces and can promote social interaction and a sense of community.
- 8. Diversity: The neighbourhood should be designed with a mix of housing types and affordability levels that cater to a range of residents. This allows multiple generations to visit each other, which is important for many families.

#### HOW TO DESIGN A 10-MINUTE NEIGHBOURHOOD

The idea of designing developments as series of 10-minute neighbourhoods was successfully pioneered at Fairford Leys. Professor John Simpson, urban designer of many of the most successful walkable mixed-use housing developments, illustrates how he designed Fairford Leys to achieve this:



1. Fairford Leys, Aylesbury, showing the disposition of the neighbourhood centres in relation to one another, almost as if a series of villages are set in open countryside, each no more than ten minutes' walk away from the next. These would form the main public spaces for each neighbourhood providing viable facilities. The most direct routes between them provide pedestrian and active transport links for cycling



2. Put Figure 2 shows how other major infrastructure, such as the roads, were introduced so that they did not interfere with this organisation, and how they were threaded through at the interface between the neighbourhoods where they would serve businesses and give access to public facilities such as the school



3. Figure 3 deals with the structural landscape, which was used to establish a hierarchy between the neighbourhoods with one designed to function as the main centre to Fairford Leys with the Church, community centre and main shopping. The landscaping was designed as linked green amenity spaces providing green walks and children's play areas across the development



4. Figure 4 Fairford Leys as built. Organised as a series of connected neighbourhoods, with taller buildings and a gentle higher density at the centre and where the architecture of the buildings is used to give each neighbourhood a sense of Place of its ownCopyright Prof. John Simpson

buildings.

#### **COMPLIANCE**

Building walkable, 10-minute neighbourhoods, each with its own heart in a small square or green, helps to fulfil:

- NPPF Chapter 6, para, 83 and para. 84, part b
- NPPF Chapter 7, para. 88, part a -

- NPPF Chapter 14, para. 156, part b \_



Example of a landmark building from Poundbury

### This way, each neighbourhood is developed with its own centre and landmark

NPPF Chapter 8, paragraphs 94, 95 and 100
NPPF Chapter 9, para. 106, parts c and d, para. 108, part d, para. 114

## Energy Efficiency And Environmental Friendliness

The more self-sustaining a town is, both economically and socially, the less of a need there is to travel elsewhere.

The better the public transport links are, the less need there is for a car. The faster and more enjoyable it is to walk to your destination, the less need there is for a car.

The less land used, the less damage to the countryside and the more greenery in the town, the greater the mitigation of damage caused.

The more terraced housing is used, the fewer outside walls there are and therefore the more energy efficient each house is.

The overall effect of building using all the principles of sustainable urbanism together is greater than the sum of their parts.

#### COMPLIANCE

This helps to fulfil your obligation to NPPF Chapter 14, para. 156, part b

#### **CAR CLUBS**

It is worth mentioning one other low-cost, easy way to improve the environmental friendliness of your development: car clubs.

A car club is a service that allows members to have access to vehicles on an as-needed basis, rather than owning a car themselves. The cars are owned and maintained by the car club company, and members can reserve them for specific times and locations. This can be a more cost-effective and sustainable option for individuals who do not use a car regularly, and also saves on the expense of owning and maintaining a personal vehicle.

According to CoMoUK, one car club can take away 20 cars from the road and provides flexibility to residents at low cost, so they are a vital part of the

transport network.

Consultation with car clubs as part of the development planning process ensures that they can be accommodated. Some car clubs just need normal parking bays, while others require reserved bays, sometimes with electric charging available.

The more cars removed from the road, the happier the local community will be, the safer the roads will be for pedestrians (especially children) and the cheaper it will be for the local authority to look after the roads – something that can help you win over the support of local councillors.

### 13

### Keeping Costs Low

As mentioned at the start of this guide, as the amount of space needed for the development increases, the risk of breaking your budget rises faster.

The key to keeping costs low is to use as little land and materials as possible. Gentle density is the key to achieving this goal, with tall, terraced housing. Fewer bricks and less land is used terraced housing, while increased height means more people can fit into a smaller space.

Using less space is also a great way of keeping the local community onside. The good news is that neighbourhoods using the principle of gentle density enjoy increased property values compared to those which do not, according to multiple studies.<sup>13</sup>

### 14

## While Selling At A Premium

When you bring these factors together:1.Designing buildings to put the human brain at ease2.Designing urban spaces to let the community thrive

3. Designing urban spaces to create a self-sustaining local economy 4. With everything residents need in walking distance – local services, their work, transport links 5.Offering energy-efficient homes in a development which is environmentally-friendly

It is not a surprise that the homes you build can sell at a premium. In a report by Savills and the Prince's Foundation, the key findings are that homes in new developments built with these principles sell at a much higher value than other homes nearby.

For example, values per hectare in Poundbury are 43% higher than Dorchester. In Fairford Leys, they are nearly double neighbouring Aylesbury and +42% versus a nearby typical suburban residential development (based on current or equivalent current new build values on the developments).

House prices and sales activity in Poundbury prove more resilient to the market cycle than in neighbouring Dorchester: resales have achieved a 25% average premium over the local market.

#### COMPARISON WITH A TYPICAL NEW BUILD SCHEME

We can make a direct comparison between a development using the 'sustainable urbanism' principles above and a typical new build scheme.

Berryfields is a new build development of 3,000 homes to the North-West of Aylesbury. It is a typical consortium-led housing development with over seven house builders delivering a high volume of new homes into the market. In comparison to Fairford Leys, there has been less investment in place and fewer features of sustainable urbanism employed. The first homes were sold in 2011 and development is ongoing.



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Despite their smaller size, Fairford Leys homes have achieved a greater terraces and semi-detached homes, i.e. all types of homes except detached houses.

Average, unit value premium, size and size premium of home compared to Aylesbury second hand by type.								
	Flat	Terraced	Semi Detached	Terraced	Terraced			
Unit value relative to Aylesbury (average over sales period)								
Fairford Leys	41%	27%	13%	-17%	9%			
Berryfields	30%	24%	8%	-9%	11%			
Size (square foot)								
Fairford Leys	648	761	788	1.005	805			
Berryfields	657	1.051	1.051	1.417	1.123			
Aylesbury	573	770	899	1.256	828			
Size relatively to Aylesbury								
Fairford Leys	13%	-1%	-12%	-20%	-3%			
Berryfields	15%	36%	17%	13%	36%			

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Fairford Leys Town Centre in Buckinghamshire. Copyright Tom Andrews

# premium over the Aylesbury second-hand market than Berryfields for flats,

## Last Words

Property development can be a more predictable, lower cost, higher profit endeavour than it commonly is today. Using the evidence-based design, density, community and micro-economic principles laid out in this guide, your business can get on with building and gain a great reputation while you are doing it, leading both to short-term financial success and long-term financial sustainability.

With more property developers currently falling into insolvency in the past year than the previous several<sup>14</sup> (81 in Q1 of 2022 alone), taking these steps can never have more impact than now.

### Appendices

## **Building For The Brain**

#### **WINDOWS**

Windows make a big difference to the appearance of a building. These tips can help your buildings go easy on the brain.

- A general guide is for window arrangements to remind us of facial symmetries, not distortions
- Windows on upper floors are either equal or smaller than windows on the ground floor
- Pivot windows and windows with asymmetrical subdivision create confusion
- Setting back: a sense of depth is another element of complexity buildings need. Windows making up a flat wall surface make the building harder

to interpret, so windows should be slightly set back. Windows should generally be set back at least 50mm from the building face, creating a shadow line and a sense of solidity. This sense of depth is mentioned in the MNDC I.2.

- nearest party wall or to a corner of the building
- scale mentioned in the guide

#### BRICK DESIGN AND BOND

Bricks can lead to repeating patterns that can cause visual stress. This can be mitigated in the following ways:

- A slight variation in colour reduces the sense of repetition
- Using English or Flemish bond breaks up the regular pattern with an alternating one
- regular pattern

#### HOUSE COLOURS

Home Owners Alliance research has shown<sup>15</sup> that streets with complementary house colours are sought after by house-buyers, increasing house value by an average of 20%. However, house colours can look jarring if the combination is not considered carefully.

Tints allow colour to form part of the street without overwhelming it and allows more light into the street than other colour types. They are also lower contrast than hues or many shades, which lowers the risk of repeating patterns which can make streets less accessible to some. As a guide, you may wish to choose from these colours:



Windows should be placed no closer than 750 mm to the centre line of the

Windows should be longer than they are wide to keep the sense of human-

Hand-made bricks, or at least those which have been made to look handmade, lead to an uneven surface, which is another way of breaking up a



#### **SHOPFRONTS**

Creating a vibrant and welcoming storefront is essential for the vitality of cities. A well-designed storefront can activate the street, making it a more prosperous place for small businesses.

When developing mixed-use communities, it's important to not simply build a box for commercial space on the ground floor, with offices or apartments above. Instead, effort should be made to attract passersby into shops, businesses, or amenity spaces, bringing the street to life.

Another key aspect of creating a successful storefront is to have a high concentration of shops and businesses in a small area. This fine graininess not only provides more things for people to do on a given block, but it also stimulates the brain with many different things to look at every few steps. Developers should avoid building large "white box" spaces for their ground floor, as these spaces are difficult for most businesses to occupy and are often too expensive.

To create a vibrant High Street, property developers should focus on:

- Encouraging a high concentration of shops and businesses in small spaces
- Using ornamentation, colour and depth to create an inviting storefront
- Leasing to small, local businesses
- Incorporating large windows, but being mindful not to make them overly dominant
- Separate fascias one from another, allowing the buildings to reach the ground
- The detailing of the shopfront works best when it fits with the architectural style of the building, to produce a harmonious whole, which can create a

valuable marketing image

illuminating the lettering



Copyright Thomas Hogg



Copyright free

### You can avoid shopfronts dominating buildings at night by externally lighting lettering using warm, yellow light, rather than any internal light



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#### STREET LIGHTS

Street lights should include complex, natural patterns. Good examples include DW Windsor and Urbis.

For example:





Street lights should have top shielding to avoid light pollution and on the side when the light might go straight into a resident's window.

#### **COMPLIANCE**

This is vital for NPPF Chapter 15, para. 188, part c.



Lights must shine softer, yellower or redder tones (usually not exceeding 3000K)<sup>16</sup>. Bluish light must be avoided, as it has a greater negative effect on natural circadian sleep rhythms.

Where street lamps are directly outside a house, a shade should be used to avoid the light entering the house through the window.

For example, see here:



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#### **COURTYARDS**

When buildings become too deep to admit air and light, or when they would benefit from private outdoor space within them, lay them out as courtyard buildings. Create porches fronting them, or wrapping two or more sides. If the courtyards are not entirely enclosed by buildings, enclose them with appropriate walls or fences, so that they function as private outdoor spaces.

Courtyards have remarkable energy and comfort performance (able to remain relatively cool in warm weather, and warmer in cool weather, without high consumption of fuels or other resources). In addition, courtyard buildings bring sunlight (modulated by shading devices) directly into otherwise deep buildings.

The performance of courtyard buildings can be improved with galleries or porches along one or more sides of the courtyard, shading from excessive sun, and also form a connecting transition zone.



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## Street Design

#### TRAFFIC CALMING

As far as possible, streets should be designed to control speed naturally rather than incorporate 'bolt on' measures such as speed humps and artificial width restrictions.

The objective is to reduce the speed and flow of motor vehicles in order to minimise conflict between various users of the street. To this end, a range of design speeds for each street in the hierarchy has been established.

For primary streets it is between 20 and 25mph (varies according to location), for secondary streets it is 20mph and for tertiary streets the aim is 10mph. A variety of design principles can be deployed to achieve these goals and the manner in which they are achieved will vary according to the position of the street within the overall hierarchy.

The principles are:

- Shifts in perception and psychology between driver and pedestrian
- lavout
- Reduced street dimensions
- Reduced visibility

#### CLOSING THE VISTA

Layout design for each of the neighbourhoods should make great effort to use buildings as focal points and terminate views of internal routes. The main building and entrance should be the focus and not its garage or driveway in any key vista. Plot arrangement should originate from a key building strategy that will create landmarks and local distinctiveness between areas. Key building / landmark distinction can be achieved by careful choice of material and colour; a higher order and feature rich door and windows surround; its height and roof form; or its use (i.e shop front).

Physical features that are a natural consequence of built form and street



Example of closing the vista with houses at the end. Copyright Thomas Hogg

#### LIMITED VIEW CORRIDORS ALONG STREETS

The combination of built form and street alignment should be utilised to provide visual interest along routes. Although a longer straight section of road can be appropriate in some instances, such as channelling a long view out over the adjoining landscape or towards a high street, it is often more appropriate to create streets with visual stops for greater intimacy and sense of place in residential areas. A meandering building line limits the view corridor, regulates traffic speed and is inviting for further exploration and the discovery of new places in the locality.



Curvature of the street closes the view. Copyright Thomas Hogg

#### NARROW STREETS

Narrow streets are encouraged to limit vehicular speeds along residential streets.



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#### FOOTWAY CROSSOVERS

Footway crossovers should be designed for pedestrian priority. Key pedestrian routes and Public Rights of Way should be provided with step free movement for pedestrians. Raised tables at crossing points forcing vehicular traffic to slow is of great benefit to sustain local walking and cycling patterns and provides the extra safety to encourage both young and old people to enjoy an active lifestyle.

#### **TOWN SQUARES**

Town squares are the centre of a thriving community. The core features of a thriving town centre are:

- Community activities
- Spontaneity

For example, it is not important for theatres to be in the town square since people commonly pre-planning their visits and so will visit them even if they are in an out-of-the-way location.

But more spontaneous activities require enough people to bring them alive. Therefore, chess tables, allotments, outside gyms, children's play areas or other spontaneous community activities would be especially appropriate in town squares – activities which bring people together, sometimes even those who don't yet know each other.

Town squares are best surrounded by community buildings like:

- Libraries
- Cafes
- Community centres

And occasionally aesthetically-pleasing office buildings which fit with the character of the plaza.

#### COMPLIANCE

This is important for NPPF Chapter 7, para. 92, part b

#### PAVEMENTS

Pavements with enough width make urban spaces safer and more walkable. Ideally, they would be:

- 3-5m wide on primary streets.
- 2m wide on both sides on secondary streets
- 2m wide on both sides on tertiary streets or on narrow streets, the surface can be shared with cyclists and cars if the street is designed for very slow car movement and a clear shared service.

Their materials should let light in rather than absorb it. Avoid dark materials where possible (e.g. tarmac), as these absorb light and make streets darker and harder to navigate, especially at night.

Instead, lighter materials can brighten up a street, like:

- Granite
- Slate
- Sandstone
- Brick lay pavers
- Golden gravel
  - Including Resin-bound gravel
- 'Found objects' from local reclamation yards such as granite gateposts, carved stones, cobbles, setts and diamond chequered brick pavers.

#### QUIET WALKING/CYCLE ROUTES

A network of tertiary streets providing shared surface areas with much reduced vehicle speeds gives pedestrians and cyclists route options through the development for quiet and uninterupted movement in the locality. Quiet shared surface routes should be connected between quarters providing a pedestrian and cycle sub-network where young children can safely walk to school or use a bicycle to visit local friends.

#### COMPLIANCE

This is important for the NMDC section M.2 and NPPF Chapter 8, para. 94, part c.

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