09 ADAPTABILITY
How will the buildings cope with change?

10 PRIVACY & AMENITY
How does the scheme provide a decent standard of amenity?

11 PARKING
How will the parking be secure and attractive?

12 DETAILED DESIGN
How well thought through is the building and landscape design?
The home and immediately surrounding area can have an important influence on residents’ quality of life. Homes should be sufficient in size to enable people to live comfortably through different stages of their lives, and should have high levels of amenity that make living there pleasurable.

As well as meeting current needs, people’s homes will need to be capable of adapting to their own changing needs or requirements imposed by environmental or technological changes. A home is the largest investment that many people will make and they need to be assured that their investment will continue to meet their needs now and in the future.

But, whilst meeting basic needs is important, people need to be happy in their homes – and the architecture, design and landscape design of their property is a vitally important element in ensuring high levels of satisfaction.
Adaptability
How will the buildings cope with change?

The success and sustainability of a housing development can be measured by its longevity. Much of the most successful housing of the past is still in use because it has been able to adapt to changing circumstances – for example by adapting to changing family sizes, different forms of space heating and increased car ownership.

For environmental and economic reasons, we need to ensure that the housing we build now will continue to fulfil its function for many years in the future.

Criterion 5 addressed the issue of providing housing that is energy efficient in use in order to mitigate the effect of their development on climate change and other environmental concerns. This Criterion builds on that discussion and considers the benefits of designing adaptable, loose-fit homes for the future.

The benefits that can be derived from providing adaptable homes can also be extended to designing whole neighbourhoods that are easily able to change to meet the needs of changing residents. Such neighbourhoods are often higher density, compact and walkable places that prioritise pedestrian movements. One of the key ingredients in successfully adapting neighbourhoods is a stock of high quality adaptable homes.

**RELATED DEHGL POLICY**

<table>
<thead>
<tr>
<th>Rule</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.10</td>
<td>universal design</td>
</tr>
<tr>
<td>1.7–1.8</td>
<td>national policies on climate change and energy efficiency</td>
</tr>
<tr>
<td>4.10</td>
<td>efficient use of energy</td>
</tr>
<tr>
<td>7.1–7.3</td>
<td>daylight, sunlight and energy efficiency</td>
</tr>
<tr>
<td>7.11</td>
<td>access for all</td>
</tr>
</tbody>
</table>

**POSITIVE INDICATORS**

- Designs exploit good practice lessons, such as the knowledge that certain house types are proven to be ideal for adaptation
- The homes are energy-efficient and equipped for challenges anticipated from a changing climate
- Homes can be extended without ruining the character of the types, layout and outdoor space
- The structure of the home and its loose-fit design allows for adaptation and subdivision, such as the creation of an annex or small office
- Space in the roof or garage can be easily converted into living accommodation
Designers should allow themselves to learn from successful types of homes that have managed to successfully stand the test of time. New homes should be designed to meet the needs of the early 21st century – and be recognisably of their time. But to increase their chances of surviving for more than a generation, they will need to incorporate some of the key features from pre-existing housing types.

Lessons drawn from Georgian and Victorian terraces and town houses show that generous space standards and an intelligent arrangement of space can allow the property to be split up in different ways.

There are choices in the basic form of homes. Wide-fronted, shallow units provide advantages in extendability and natural daylighting. Narrow-fronted, deep units can be more efficient in block layout.

The 19th century typology of the terraced house has proven its ability to adapt with relative ease to the requirements of different generations over the years.

Comparison of wide-fronted, shallow plan (above) and narrow-fronted, deep plan (below).
predict dryer warmer summers and warmer wetter winters for Ireland and we need to ensure that the homes we build will continue to provide enjoyable homes in a climatically uncertain future. At the same time, we need to ensure that the homes we build are designed to be heated and cooled as efficiently as possible without producing unnecessary emissions which themselves contribute to climate change. It is not a question of either/or – we must design homes that do both.

Criterion 5 of this Best practice guide discussed both mitigation and adaptation at a site level basis, but it is at the level of the home where these issues will have a real bearing on how people live.

Insulation, heating and cooling are of particular importance. The homes we build must be well insulated to minimise wasteful heat loss. The aim should be to design homes that are warm in winter and cool in summer without the need to heat and cool mechanically. For example, homes with features such as thick solid walls (thermal mass) are naturally easier to heat and cool. The thermal mass stores and releases heat in the winter and prevents heat from penetrating into the building in summer.

The measures which can be employed range from the detailed design of the dwelling right up to the strategic design of how a site layout is planned. For this reason it is important that these issues are discussed at the earliest possible stage e.g. at a pre-planning meeting.

**Passive solar design principles:**

**Orientation**
- use the sun’s energy to reduce the winter heating requirement
- orientate main façade within 30 degree of south
- locate living rooms on the south side
- avoid overshadowing

**Considerations in design of form**
- utilise thermal mass to store heat during winter and summer
- minimise glazing to north façade
- incorporate a draught lobby to act as thermal buffer
- add a glazed winter garden to south façade

**Ventilation and shade**
- use natural ventilation
- night ventilation for summer cooling
- shade glazed areas

A combination of thermally efficient terraced housing and passive solar design, articulated well with contemporary architectural treatment. In this case, the terraces have differing orientations to respond to the site and provide a garden space.
Many home owners are extending their homes – often within a few years of the date when they were originally built. This is partly a response to the increasingly high costs of moving, but also because they want to personalise their homes or their circumstances have changed and they do not want to leave a neighbourhood they have come to love.

Homes should therefore be capable of being easily extended without detracting from their appearance or the amenities of the home or its immediate neighbours. This is especially needed in homes which are designed to be smaller in order to allow less affluent buyers to access certain locations.

Designers are encouraged to think about how the homes they design could be extended in the future. As described earlier, the shallow plan form of many houses designed in the latter 20th century sought to achieve precisely this.

As the rooms should be laid out to permit future additions, the garden areas of extendable homes should be of adequate proportions to allow future enlargement of the home without leaving it with an insufficiently sized private garden area.

It may be appropriate for house builders to show the future extensions in the design of the home in order to show that such future adaptations would not affect both the living environment within the home itself or neighbouring properties, would allow for an adequate private open space provision, and would not harm the character or appearance of the home. Such pre-designed extensions could even prove a valuable marketing tool, especially if planning approvals are in place.

Two storey terraced houses in this example are designed so that occupiers can add a third storey as the need might arise in the future. The consideration of this potential in advance, creates a streetscape which, while varied, still reads as a coherent whole.
As described earlier, one of the key reasons why Georgian and Victorian homes remain popular today is their generous space standards and easily adaptable layout that accesses all rooms from a central hall/stairwell. This means that these homes can be altered to incorporate a home office or granny annex or even sub-divided into self-contained apartments or commercial uses. Such layouts mean that people are able to stay in larger family homes as they get older by sub-dividing the house to provide an income and ensure a more efficient use of space they no longer need.

As well as layout, the initial structural design of the home needs to consider possible future conversions and extensions. Firstly, if a home is being designed with a view to allowing it to be sub-divided, then the internal walls and floors will need to be of solid construction in order to ensure adequate protection from fire and sound transmission. However, this can create limitations in use – for example by making it difficult to remodel the interior of the building without major structural work. As such, this type of construction should only be used for the larger homes which lend themselves more readily to sub-division.

For smaller homes, it may be appropriate to design the building so that the internal walls can be removed with out affecting structural integrity. The cross-wall house design that was popular in the mid 20th century has proven a very adaptable building form since only the side walls and internal floors perform any structural function – freeing up the interior to be easily remodelled to suit the particular needs of the occupants. These homes have proven very popular with current home owners seeking to remove internal walls to create an open-plan layout. Additionally, since the front and rear elevations are not structural, this building type allows for the easy redesign of facades to suit the internal layout.

It is important to note that all conversions or extensions must meet all the requirements of the Building Regulations with respect to fire.
Perhaps the most common way of enlarging a home’s living space is to do so without physically enlarging the building – by converting the attic or garage. Such alterations are often a cost-effective way of increasing the size of a home and will often not require planning permission. However, whilst many older houses lend themselves to this kind of alteration, many modern home designs make it more difficult.

In order to provide a loft area that is capable of being extended into, the following design factors will need to be considered in the initial design of the house:

- The pitch of the roof will need to be sufficient to provide adequate floor-to-ceiling dimensions – taking into account the requirements for insulation.
- The useable space should be free of structural roof timbers.

Similarly, when designing a home that contains a garage that would lend itself to conversion, housebuilders will need to consider:

- Whether the conversion of the garage would inappropriately displace the parking provision
- That the space is of appropriate dimensions – taking into account the need to provide a second internal skin or insulation.
- How the change from a garage door to window would affect the appearance of the front of the home.

As with extensions described above, designers should consider how these alterations would be carried out in order to provide homes with in-built adaptability and providing plans that show how this could be done would be a valuable part of the marketing process.

The roof spaces of this development in Westport Co. Mayo have been designed to allow attic conversions without needing to extend the external envelope of the houses.
Privacy and amenity are extremely basic human needs. Such matters are particularly important in higher density schemes where good space standards, sound insulation and access to private open space can make the difference between acceptable urban living and a poor living environment.

Departmental design standards for apartments are of particular relevance to this issue in higher density schemes. The principles, such as those for storage, contained within the document are, however, transferable and designers should also pay close attention to the document when designing lower density schemes.

The core objective should be the creation of houses that people are proud to call home and which encourage people to continue living in the development and contributing towards a strong, sustainable community.

(1) Sustainable Urban Housing: Design Standards for Apartments; www.environ.ie

**RELATED DEHLG POLICY**

<table>
<thead>
<tr>
<th>4.11</th>
<th>passive solar design</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.0</td>
<td>residential amenity</td>
</tr>
<tr>
<td>7.4–7.5</td>
<td>privacy and security</td>
</tr>
<tr>
<td>7.12</td>
<td>communal services</td>
</tr>
</tbody>
</table>

**POSITIVE INDICATORS**

- Each home has access to an area of useable private outdoor space
- The design maximises the number of homes enjoying dual aspect
- Homes are designed to prevent sound transmission by appropriate acoustic insulation or layout
- Windows are sited to avoid views into the home from other houses or the street and adequate privacy is affordable to ground floor units.
- The homes are designed to provide adequate storage including space within the home for the sorting and storage of recyclables.
Each home has access to an area of useable private outdoor space

All homes, including apartments should have access to an area of outside space where the residents can comfortably sit without being directly overlooked. Any external seating areas should be orientated to achieve the best solar aspect.

This sitting-out area should be located immediately adjacent to the main living area of the home and should be conceived as an outside living room. This allows for an extension of the living space on dryer or warmer conditions.

The area should be of adequate size proportionate to the size of the home. As a general rule of thumb, the space should be big enough to allow all occupants of the dwelling to sit out at the same time. Note these areas should be designed to provide some privacy for users.

A balcony at York Street, Dublin, which is of a usable size. Note the balconies in the background which are designed to give privacy and also include movable glazed screens, allowing them to be used in cold weather.

The garden can become an extension of the living space, both in use and visually, if barriers are minimized between them.
Dual aspect homes provide residents with a greater level of amenity within their home. By ensuring that at least part of the unit receives direct sunshine for part of the day, this typology reduces the need to make use of artificial illumination. This both improves the standard of living inside the flats and uses less energy.

The requirement to maximise dual aspect units needs to be balanced with the objective of creating a coherent block form. Whilst most homes within the development should be dual aspect, single aspect homes could be provided where there is a demonstrable case in terms of benefits to the layout, consideration of the unit size and its orientation.

Designers should also consider how the scheme will provide a good mix of rooms for each elevation to provide a varied elevational treatment of the building and also ensure that all sides of the building provide a good level of passive natural surveillance.
The issue of noise is an important consideration, especially in higher density developments, and should be considered at the earliest possible stage of the design process. People’s enjoyment of their home should not be affected by the actions or amenities of neighbouring occupants. By the same token, homes in more urban locations should be protected from the ambient noise associated with more central locations.

While many people enjoy the vibrancy of living in urban centres, for most people their home is an oasis away from the hustle and bustle of life and the design of the housing should reflect and support that.

A good level of sound insulation can be provided through the careful choice of building materials in the development. Additionally, designers should explore ways in which good levels of sound insulation can be provided through the design and layout of the homes. As a general rule, this means that bedrooms should not be located immediately adjacent to neighbouring property’s living areas, and people’s outside sitting areas should not be immediately adjacent to their neighbours. As an example, winter gardens - glazed spaces similar to enclosed balconies - can be used to provide acoustic separation from noisy streets.

→ Winter gardens, used here on the street elevation of upper level apartments, can provide a buffer to outside noise.
People now expect high levels of privacy inside the home and private areas of their garden. This does not however always mean retreating behind high walls and hedges – and house designers can play a role in mediating between people’s desire for privacy and the creation of active frontages which animate the street and make it feel safe through overlooking.

Homes that front onto the street should usually not contain windows that can be looked into by passing pedestrians. This separation can be achieved through the provision of a small front garden and/or through a slight change in levels to ensure the windows serving habitable rooms are raised up. This ‘Georgian section’ can be seen to work well in most of Dublin’s inner suburbs – combining good levels of privacy with good natural surveillance of the public realm.

As well as providing a good level of privacy from the street, it is important that rooms and private outside sitting areas are not directly overlooked by neighbouring residents. Rather than establish a minimum window-to-window standard, the aim should be to assess the impact on privacy of each layout and home design based on:

- The site’s location and residents’ expected levels of privacy
- The size of the windows – both those overlooking and overlooked
- Changes in level between overlooking windows
- Ability to screen/partially obscure views through design or judicious use of planting

Example of angled windows used to avoid views into adjacent apartments.
Alongside privacy, amenity space and daylighting, the level of storage available inside the home is of increasing importance.

Amongst other issues, affluence is leading to people accumulating more and more goods – most of which will need to be stored in the home.

At the same time, the drive to encourage people to recycle more means that people are storing more recyclable goods in the home.

It is therefore important that all homes are equipped with adequate storage. This should include space within the kitchen for the sorting and storage of recyclables, space for the storage of various goods away from view, and space within bedrooms for a good sized wardrobe.

The principles of the Department of the Environment guidance on storage for apartments can also be applied to houses.

7.12 communal services

→ Recycling storage integrated into the front garden of a terraced house.

→ External storage to ground floor duplex apartments, Hanover Quay, Dublin.
How parking is dealt with on a development site can significantly affect the success of a development. The most successful developments tend to provide sufficient parking to cope with demand in a way that does not overwhelm the appearance and amenities of the public realm.

Whilst developments should be sited and laid out to encourage the most sustainable modes of transport, people will still expect to be able to own and safely park a car – even if they don’t use it on a regular basis. Many developments that have sought to restrict car-ownership through limiting parking spaces have found that ownership levels are in reality higher than expected. The consequence of this can be informal parking elsewhere in the scheme which can inconvenience residents and detract from the quality of the place.

Providing sufficient parking for residents’ vehicles can also help them to choose more sustainable modes of transport in the knowledge that their cars will be parked safely and securely at home.
Appropriate car parking is on-street or is within easy reach of the home’s front door.

Some of the most successful neighbourhoods in our towns and cities manage to efficiently accommodate relatively high levels of parking on the street. Unallocated on-street parking has been proven to be particularly efficient in use, since it allows an offsetting of parking provision between the homes in the neighbourhood. This offsetting allows households with relatively high levels of car ownership – for example parents with teenage children, to utilise space freed up by households that do not own a car. Offsetting also works at different times of the day.

On-street parking is also preferable to remote parking courts, in that it allows people to park their cars relatively close to their homes. As well as convenience, this will increase both the security of the vehicles and the safety and security of people walking between their cars and homes.

On-street parking can also bring benefits, as cars thus are not allowed to dominate other areas of the public realm. Judicious use of street tree planting can also further soften the effect, resulting in streets with a high degree of amenity. Design of high-density developments close to public transport hubs may require particular controls to limit non-resident car parking.
Parking
How will the parking be secure and attractive?

One of the key ways in which the security of parking areas can be improved is by ensuring that they enjoy high levels of passive natural surveillance through overlooking. Overlooking can be provided from windows of neighbouring properties, passing pedestrians and cars and, as described earlier, parking cars on-street will successfully achieve all three.

Parking areas that are overlooked will mean that people are happy to leave their cars there. Parking areas that do not feel secure tend to be avoided by drivers – leading to high levels of casual and inappropriate parking.

As well as providing security against theft of or from cars, ensuring such areas are overlooked will increase the safety – both real and perceived – of people parking their cars in these communal areas.

Where on-street parking cannot be utilised, parking courts should be designed to be secure. Parking courts with open access and which are not overlooked tend to be a focus for anti-social activity and car crime.

Basement or undercroft parking (e.g. parking located at ground level beneath residential blocks or a courtyard slab) have been seen to work very well in urban locations but the cost and ongoing maintenance commitments can make this unfeasible in lower density housing developments, where private parking courts with restricted access may be more appropriate.

A lower-density development providing surface parking in a combination of on-street spaces and spaces within well overlooked courtyards.

A higher-density development with basement parking within the footprint of the buildings.
The two approaches to parking described above – naturally overlooked parking on the street and secure parking courts - are primarily intended to protect cars and people walking between their car and home. But these approaches can bring significant benefits in terms of land efficiencies.

Designing for a form of development that accommodates people’s cars on their own plots tends to lead to lower density forms of development. One of the key reasons for this is that each plot will need to carry enough parking to meet the ‘worst case’ needs of the occupants of the house and this can often mean making room for 2-3 cars for each house – even when it is not needed. As described above, unallocated communal parking areas can allow offsetting between neighbouring residents and at different times of the day meaning that the total number of parking spaces needed for a development can often be significantly lower.

Alternative arrangements should be examined where appropriate, such as at the example at Vauban development in Freiburg, Germany, where parking structures are used to keep the majority of the development car-free. In the case of Freiburg, one of the parking structures carries a significant solar power array, exploiting parking management to turn a potential problem into a benefit for the community.

It should be noted, however, that such systems require proper consideration of management, demand and security, to keep the majority of the development car-free, with consequential reductions in car ownership rates.
Successful residential schemes tend to consider parking areas as part of the wider public realm, constructed out of the same high quality materials that they use in the more traditional areas of the public realm.

On the other hand, in some recent developments, parking areas are considered as an extension of the roadway – covered with black-top and given very little attention by landscape designers. As such, they let the rest of the development down.

As well as bringing benefits in terms of the appearance of the development, treating parking areas in this recommended way will have the effect of allowing them to have a dual function as hard landscaped urban spaces when not required for parking.

Well landscaped parking areas will also have the effect of reducing traffic speeds in these areas since drivers will be aware that the space is not designed for the car, but permits access by the car. This is a key part of the Shared Space philosophy set out in Criteria 7 and 8.

Parking spaces are well integrated with the landscaping of this residential courtyard at Adamstown, Co. Dublin, adding to the quality of the space and signalling the prioritising of residential users over traffic.
Providing residential cycle parking is critical to giving residents a choice of sustainable transport options. As part of encouraging residents to cycle if they choose, schemes should make adequate provision for bicycles.

All of the points discussed above in relation to car parking also apply to cycle parking – they should be secure, overlooked, provided communally and of good quality materials.

Where possible, cycle storage facilities should be provided in or immediately adjacent to the home in recognition of their relative ease of theft and vandalism compared with the car. As part of this, homes should be designed with generously proportioned entrance halls that allow for the standing of at least one bicycle. By making this provision, housebuilders will also be bringing significant additional benefits for those needing to store prams or wheelchairs.

A covered bicycle store at Vauban, Freiburg, providing sheltered storage for bikes.

Bicycle parking spaces provided adjacent to an apartment entrance.
Detailed Design
How well thought through is the building and landscape design?

The preceding chapters have shown how design can positively affect the success of a housing development from the scale of the district through to the individual dwelling.

While strategic considerations such as location, connections, and sustainability will determine much of the success of a scheme, the finished quality can have a significant effect on a development’s character, sense of place and legibility. Quality in the detail of the architecture and landscape design will help each of the elements covered by the previous 11 Criteria to meet their full potential.

### RELATED DEHLG POLICY

| 3.4  | context       |
| 4.14 – 4.20 | public open space |
| 4.24 – 4.25 | conservation of the built and natural environment |
| 7.12 | communal services |
| 8.8  | taking in charge |

### POSITIVE INDICATORS

- The materials and external design make a positive contribution to the locality.
- The landscape design facilitates the use of the public spaces from the outset.
- Design of the buildings and public space will facilitate easy and regular maintenance.
- Open car parking areas are considered as an integral element within the public realm design and are treated accordingly.
- Care has been taken over the siting of flues, vents and bin stores.
The architecture and landscape design of the scheme should work together to make a high quality coherent scheme. It should be designed to respond to its context – so that it is rooted in its place, and at the same time make full use of available advances in building technology and best practice – to make a development of its time. Issues of style and taste should not be allowed to stand in the way of providing a high quality scheme and are largely irrelevant to how a development will work.

The core aim should be to provide a development that – through careful and sensitive use of building and landscape design – serves to improve upon the current situation.

Regardless of the overall style of the development, careful attention should be paid to the materials used throughout. Particular attention should be paid to the materials used in those parts of the public realm that will be well used such as central public spaces and streets.

Whilst good quality materials might add to the construction costs, they will undoubtedly reduce the overall maintenance burden for a development over the course of its predicted lifespan and investment in this area is well advised.
As stated under Criteria 8, the core objective of public realm design should be to create spaces that are attractive and pleasant to use. Detailed landscape design has a core role in ensuring that the materials and planting used for the public spaces facilitate their use throughout the seasons. This means providing a variety of spaces and surface treatments that enable good access whatever the weather.

The choice of planting and materials should, importantly, enable access and use of the public spaces from the time of the first occupants moving into the development. Many housebuilders know that early investment in the planting and landscape design of the public realm will help to highlight the quality of the development.

The current regeneration of Ballymun places importance on good quality landscaping, as an integral part of housing renewal.

Public open space provided as part of the first phase of a residential development at Milltown in Dublin, created an amenity around which later phased development was built.

A landscape scheme completed for the initial occupation can help emphasise the quality of the scheme on completion.
As well as an appreciation of design and landscape quality, the perception that buyers have about how easy the homes and spaces will be to maintain is important. Homebuyers are becoming increasingly discerning and in particular are demanding high quality durable materials.

Developers should be encouraged to take a long term view when designing their schemes. As well as the careful selection of materials to ensure their long-term durability, the design of the buildings and outdoor surfaces will have a significant role in on-going maintenance.

Generally, simpler detailing of buildings and landscape will be easier to maintain.

Whilst schemes should also make full use of innovative building technologies that do not require regular maintenance, care should be exercised in this area as new materials will sometimes reveal unexpected failings.

It is important to note that while hard landscaping is easier to maintain, this should not detract from the importance of green spaces for bio-diversity, visual diversity and play.

A proposal for a hard landscaped residential space in Dalkey, Co. Dublin in which stone references local tradition while providing a robust surface.

Oak framed balconies, stone gabions and steel-framed balconies provide a rich palette of durable materials.
The careful choice of materials also extends to the car and cycle parking areas. As stated in Criterion 11, the materials used for these areas should be of a similar quality to that used in other parts of the scheme's public realm, so that parking areas blend seamlessly with the other parts of the public realm.

As well as careful choice of materials, the overall approach to the design of parking areas should ensure that they are integrated with the other public spaces within the development. The core aim should be the provision of a multi-use space that can serve as car parking. It should also contribute to the amenity and provide a safe and welcoming point of arrival for car users.

Car parking areas should be landscaped with street tree planting to help mitigate against the often ‘hard’ appearance of parked cars and to provide visual interest. Areas of planting should be located with the objective of crime prevention in mind, for example it should not obstruct over-looking or provide opportunities for hiding.
Care has been taken over the siting of flues, vents and bin stores

Very often, even the best intentions can be destroyed unwittingly through incremental additions to a housing development such as TV aerials, satellite dishes and bin stores. The cumulative effect of this visual clutter can often affect the appearance of the development to such an extent that it begins to lose much of its clarity and identity.

Care should therefore be taken to ensure that the paraphernalia associated with each house isn’t allowed to dominate the visual appearance of the development. So vents, flues, satellite dishes, TV aerials, rain water goods, and bin stores should be either located out of sight or should be made into a positive aspect of the design through the use of creative solutions.

Housebuilders should consider how the communal provision of certain services, for example neighbourhood TV antennas, satellite dishes or recycling facilities can help to reduce the level of visual clutter in the street scene.

It should be noted that considered design of refuse storage areas in apartment developments is already a requirement of the Department’s Design Standards for New Apartments which specifies that such storage areas must not be visible or accessible to the general public.

Integrating utilities equipment, such as electricity or gas meters, can sometimes cause complications due to their specific requirements for installation and servicing. Utilities providers should therefore be consulted during the design process so that their requirements can be properly integrated into the overall design.

This scheme in Westport, Co. Mayo, achieves a simple, uncluttered appearance through successful integration of services and well considered detailing.

Houses at Furry Hill, Dun Laoghaire-Rathdown, where bin stores and meter cupboards are integrated into an overall design for the entrances and front gardens.
This section of the Guide is structured around a basic design process that might be used to deliver a medium sized residential scheme, and in so doing seeks to explain best practice design processes used by successful clients, designers and planners. It is not designed to be a model and care should be taken not to apply the following processes unthinkingly.
In Practice

The core aim of this Guide is to provide developers, designers and planners with the information and backing they need to improve the design quality and sustainability of the development schemes they are involved with and speed their process through the planning system.

This Guide will be useful when developers are selecting a site and briefing their design team; in helping to frame design statements and planning applications; and in helping planning authorities to assess the quality of submitted planning applications.

In order for a high quality scheme to be delivered, it is essential that a good design process be followed. Each project will throw up new challenges and opportunities and all partners should be striving to innovate and constantly improve their processes – learning from their own experience and available best practice.

However, some elements of best practice remain consistent for all projects. Most importantly, it is vital that a co-operative relationship be fostered between the developer, designer, and local authority. A professional and open relationship between the main partners can help to ensure a better quality outcome – often more quickly than if an adversarial approach is pursued.

It is therefore important that early communication be facilitated between the developer, local authority and the main design professions involved in a scheme. Early engagement is essential in order to facilitate a shared thinking on the vision for the lands. Open dialogue between the main partners should be maintained throughout the design process – even after planning permission has been granted. The final quality of the scheme will depend to a large extent on the management and monitoring procedures put in place.

Unless a close eye is kept on quality at the implementation stage, there is a real risk that small seemingly unimportant decisions will cumulatively destroy the quality of a project. Such close management is also important when people are living in a scheme.

To this end, the hierarchy of public open space needs to be clearly established and the likelihood or appropriateness of the areas to be taken in charge. Clear definition is essential between

- Public accessible space and amenity,
- Communal or shared space (for the use of the residents only) and
- Private space as private gardens and balconies

The guide hopes to offer clarity to all participants in the planning and development process. The 12 Criteria contained within the Guide are based on the known elements of successful places and it is suggested that they can be used as a framework for key parts of the process – by the developer and his agents when considering the acquisition of a site; briefing the design team; during analysis and pre-planning consultations; and when deciding planning applications.
Site Selection

Most developers operate within fairly well-defined boundaries in terms of the product they build and the type of buyers they target. But all developers need to operate within a planning system that rewards design quality and sustainability.

Developers should therefore take account of the advice contained within this guide when searching for potential housing sites. Rather than building lowest-common-denominator housing that will sell in a buoyant market, developers should aim to create places where people will want to live. Such places will be near vital facilities, transport links, and amenities that people value – be it an urban park or open countryside. But perhaps most importantly, developers need to be sure that a site they buy will receive planning permission – by reassuring the local authority that the outcome will be sustainable and of sufficiently high design quality.

Planning authorities zone lands for residential development as part of their development plan, but some zoned sites have different characteristics and are suitable for different forms and intensities of development. Additionally, whilst the principle of development might be in accordance with the development plan, planning applications are increasingly turning on issues of layout or detailed design.

Developers are recommended to base their site selection procedures around the 12 Criteria in this guide. Since the Criteria are a distillation of the qualities of sustainable and successful places, testing a potential site against them will help to ensure that the right sites are selected.

Establish Design Objectives

Once a site has been selected and been tested against the 12 Criteria, the developer should clearly establish their core design objectives. These should be written down at this stage to ensure they are not forgotten once the project has become increasingly complex.

Often for a developer, early design objectives will centre around the financial aspects of the project – for instance, to ensure the scheme will return an economically sustainable profit. Good design can have a positive effect upon the profitability of a scheme – both in the short term and long term. In the short term, a high quality design can increase the ‘per square metre’ sale price of a development and can also create room for a greater quantum of development on a site through the careful consideration of density.

In the longer term, developers that become known for producing a high quality product will be able to engage more confidently with the planning system.
The Design Team

Many developers will work with an established team of design professionals – either ‘in house’ or externally. For many, however, the particular challenges of a development site will mean they need to select a design team that is particular to the project.

Briefing for Quality

It is important that all members of the design team share a co-ordinated vision for the scheme, since not doing so may risk the project and dilute its quality. There should be a clear understanding between design team members of what skills and resources are required to bring the project to realisation. Good clients tend to give the members of their design team clear instructions. These should include the core design objectives that the developer wants to see achieved, how the members of the team should work with each other and how they will involve key partners – including local authority planners.

For larger scale projects, it may be appropriate to establish conflict resolution procedures but in all cases the developer should be clear about how the project will be managed and structured.

The 12 Criteria structure of this guide can be used as a framework for a design brief that will be easily understandable and permit a consistency of message throughout the project.

Design Competitions

Design competitions are a good way of bringing fresh and innovative ideas to a project and can result in a higher quality scheme. Whilst care should be taken when drafting the briefing material for a design competition, the developer is often in the strong position of being able to choose the proposal that most closely fits with their design vision – even if they may have difficulty in expressing it to a design team.

Design competitions are often chosen for highly prominent or exemplar sites and for this reason may be promoted by a partnership formed of a private developer and the local authority. In this instance, the local authority will be able to provide detailed guidance on what will be required in planning terms.
The development brief is an output of a desktop analysis of the site which should include reference to:
- the local development plan
- flooding information
- aerial photography/ OS maps
- sites and monuments record
- utilities and services (e.g. public transport)

The site visit will identify the characteristics of the subject lands and surrounding context. A S.C.O.T. analysis (Strengths, Challenges, Opportunities, Threats) will clarify information regarding destinations within and outside the site (e.g. schools and retail) and respond to potential linkages and vistas.

Initial proposals respond to the parameters established by the development brief and site analysis. They will describe aspects of the scheme such as: Land use and density range, open space hierarchy and built form, boundary conditions and connections. It should also identify any requirement for an E.I.A. and/or appropriate assessment.

Pre-planning consultation is designed to respond to initial designs to encourage an interactive process, particularly for sites in excess of approx. 50 units.

Design proposals are refined to reflect the P.P.C. which may impact on both design brief and the resulting design response. Issues such as developed site area, access and density may be affected. If changes are substantial, a further P. P. C. may be required.

A design statement explaining proposals will make them easier to understand and may help to speed up the assessment of applications. They will be required for larger, more complex planning applications but they can also be beneficial when making any proposal. The criteria in this document may be used to structure statements.

Once sufficient testing and consultation has been carried out an application may be submitted. Refer to DEHLG document Development Management (June 2007) for detailed guidance.
Local authorities and other state agencies frequently promote sites within their control for residential development and development briefs prepared for such sites will inevitably include design guidance setting out their objectives for the development. Reference to the Department’s Guidelines can be included in the briefs to assist designers and developers.

Private developers also prepare design briefs. Many developers simply want to maximise the development potential of the site and a development brief can help to give them certainty about what development options would be viable – both in commercial and planning terms. In this scenario, a designer will generate a development brief from the objectives of the developer and policy contained in the Development Plan and Local Area Plans.

As with the design team briefs described above, it would be beneficial for a Development Brief to be set out in the same format of this guide. As well as providing for an accessible document, this will increase the chances of the final development complying with the advice contained within this document.

Core to the development brief will be articulation of the vision for the scheme. The vision should be clear, concise and outcome focused.

As part of the vision, the development brief should explain how the development will respond to each of the 12 Criteria contained in this guide.

The development brief should clearly explain the developer/local authority’s understanding of the development context. This should include a discussion of:

- **The physical context:** comprising existing built and natural features on or surrounding the site
- **The economic context:** including the economic case for development and how the proposal will affect the local housing market
- **The social context:** in terms of current aspirations for development and views held by existing communities and how the proposal will affect the existing social make-up of the local area
- **Policy context:** including, but not limited to, relevant planning policies and guidance.

Taken together, all of the above will help people to gain an understanding of how the various opportunities and challenges provided by the site can be exploited to best effect. Since the fundamental building block of a successful community is a good response to context, it is vitally important that this information be set out clearly.

Development briefs should be relevant to the proposed development and should avoid concentrating on largely irrelevant matters of detail, such as long demolished historical built forms. Whilst they will be informed by the past, they should concentrate on setting out a vision for a site’s future.
Site Analysis

The first step for any design team should be to formulate a design response to the development brief. This might entail carrying out a SCOT (Strengths, Challenges, Opportunities and Threats) analysis to identify potential barriers or paths to progress.

It may also be useful to carry out this process visually – by marking opportunities and constraints on a plan of the site and/or wider neighbourhood. This exercise can be useful in helping to unlock preliminary design solutions and can also be beneficial in using it as a basis for future discussions – both within the design team and with stakeholders and local authority planners.

Character appraisal

After the key elements of the design brief have been logged and visualised, the design team should carry out a more detailed appraisal of the site and surrounding area’s character. The most important elements will have been set out in the design brief so the detailed character appraisal should focus on more fine-grained aspects of the physical context.

This should include a:
- survey and logging of existing landscape features including trees, hedges, open water and topography;
- survey of existing built structures on the site and their location together with their architectural, historical and cultural value and conversion potential;
- visual and/or photographic survey of local architectural character types, including predominant built forms, architecture and materials;
- analysis of existing layouts and arrangement of buildings and open space in the surrounding area. This might include a block plan that shows the overall area and location of built form and open ground; and
- photographic survey of views both into and out of the site – highlighting visual links to prominent landmarks that might be used to create interesting vistas.

Movement Analysis

Also important are the existing patterns of movement in the local area and the potential for these to be enhanced or benefited by the development.

As part of the design development, a detailed movement analysis should be carried out by a team ideally comprising roads engineers and urban designers. Taking an integrated approach will ensure that the outcomes will be functional in both traffic engineering and design terms.

The movement analysis should look at existing movement patterns and levels of traffic (by all modes) in the areas surrounding the site. The analysis should then consider how these existing traffic levels will be affected by traffic generated by the development itself and natural growth over the next few years.

The movement analysis should think about ways in which existing and projected road traffic levels can be reduced by the development of the site – for example by diverting routes through the site rather than around it.

Central to the movement analysis should be a consideration of desire lines that bisect the site and how opportunities generated by the development can be utilised to help make connections between existing and proposed communities and to key amenities and facilities.
Example of Village Extension Site: Site Analysis

**Concept Proposal**

There is rarely only one possible solution to the development of a site, even if the character and movement analysis seem to strongly indicate a preferred route forwards. There is, however, usually one option that stands above the others in terms of its potential to provide a highly sustainable, well designed place that people want to live in.

The best way to uncover the best possible solution for the development of a site is to sketch up a series of options that demonstrate different interpretations of the development brief and various analyses. Each option should in itself be compliant with relevant policy and guidance and be capable of being delivered. Options that have been drawn up to make up the numbers without any thought should not be accepted as they will not provide a sufficient basis for the testing of the design objectives.

Once options have been generated, the design team should set about testing them. The testing process should include:

1. How the option will deliver the vision that has been established at the start of the process
2. Consideration of whether the development is viable in economic terms
3. Whether the option will allow for the creation of usable buildings and space
4. How the proposal contributes towards sustainable development

After full and rigorous consideration and testing of the options, a preferred way forward will emerge that satisfies the requirements of the development brief and represents the best outcome for the development site. Such an outcome should be able to demonstrate that it makes the most of the opportunities created by the development whilst minimising as many as possible of the negative aspects of the development. The preferred option should also be demonstrably viable and deliverable in economic and practical construction terms.
Once the preferred option has been selected, the design team should enter into detailed discussions with the local authority planners. The planners should have been involved in the consultation carried out at options testing stage, but this consultation should be more bilateral in nature and focus on working towards the grant of planning permission in a cooperative and constructive way.

Such discussions are vitally important to ensure that any barriers to the scheme receiving planning permission are identified and resolved before the detailed aspects of the scheme get fixed. The earlier problems are identified, then the easier it will be for the scheme to be amended without incurring unacceptable costs.

Many planners will happily enter into detailed discussions at an earlier stage in the design process, but focusing detailed discussions at this stage will mean that the preferred option represents a firm basis for ongoing discussions. The design team may wish to present the discarded options to the planners in order to demonstrate that the preferred option has come about following a rigorous process of testing.

The material generated for the pre-planning consultation with the local authority should present the preferred option simply and clearly – setting out the key features in enough detail to make the discussions meaningful but leaving out extraneous detail that may serve to distract away from the core issues.

Once the scheme has evolved to take into account areas of concern that were discussed at the pre-planning consultation, a second pre-planning consultation may be required. This will usually only be necessary for large or complex schemes.

Most significant development proposals should be discussed at pre-planning consultations. Since the aim of these early discussions is to identify potential problems at a sufficiently early stage, every opportunity to improve the scheme should be taken.

Applicants should be able to demonstrate that the comments made by the planning authority during initial consultations have been taken into account in the development of the scheme. Where it has not been possible to amend the scheme in response to planning authority comments, applicants should set out in full why such changes could not be incorporated.

The development proposal should now be ready to be refined and detailed. Most of the important strategic elements should have by now been agreed and there should not be a requirement to go back to the planners with further detailed matters. The detailed aspects of the design should however comply with earlier statements or agreements.

Where matters of detailed design result in the scheme becoming significantly different from that which was discussed with at pre-planning consultations, it may be necessary to seek further agreement on detailed matters before committing to a particular element of a scheme.

In Practice
Applying the Criteria

Pre-planning Consultation

Refine Proposals
**Design Statement**

For larger or more complex schemes, design statements are becoming a popular way of helping to speed up the process of determining planning applications. By explaining the planning proposal in more detail setting out the design decisions that have been made, a proposal can be more easily appreciated and accepted. For this reason many forward thinking developers are voluntarily submitting design statements alongside their planning applications as a matter of course (e.g. Cork City Council).

At the same time, planners may find that their task of assessing the acceptability of a proposal is made easier when they are in receipt of supporting information that shows that the proposal has been prepared through a rigorous design process that considered and rejected less suitable alternatives. As a result, many planning authorities require design statements to be submitted with certain types of application.

Design statements are advocated in the Guidelines that this Guide accompanies. The Guidelines state that they can be especially useful in explaining why an exceptional or different design approach has been taken or to show that a detailed character appraisal has been carried out as part of the design process.

A more uniform approach to setting out design statements has significant merit in that it allows those drafting and assessing the statements to be working through a commonly understood process.

It is therefore suggested that the 12 Criteria contained within this Guide will be useful in helping to frame the structure of a design statement. By structuring the design statement around answering each of the 12 Criteria – applicants will be able to clearly demonstrate how their proposed housing development complies with the requirements of the Guidelines on Sustainable Residential Development in Urban Areas.

Additionally, planning authorities will find the job of assessing design statements against design policy easier, which will have the effect of further speeding up the time taken to deal with applications for residential development.

**Planning Application**

A planning application should only be submitted once the necessary testing and consultations have been carried out. A scheme that is submitted for planning too early will find it more difficult to demonstrate that the proposal has taken full account of the site's context. Applicants should make every attempt to identify and resolve potential barriers to the scheme receiving planning permission before the application is submitted – and they should be confident of receiving an approval.

Such an approach cannot be taken without full co-operation between the applicant and planners. Rather than taking an adversarial stance, both planners and applicants should see themselves as working toward a common objective: the promotion of high quality sustainable development.

The Department’s guidelines on Development Management (June 2007) provide detailed guidance on planning application submission requirements.
Assessment of Planning Applications

The 12 Criteria approach contained within this Guide has been formulated to easily lend itself to the assessment of development proposals. By distilling a range of urban design and sustainability principles and objectives into 12 relevant Criteria, the Guide has sought to encourage a more rigorous assessment of these areas at planning stage.

In the same way as the 12 Criteria can be used as a basis for structuring design and access statements, they can also be put to good use in helping to structure pre-planning negotiations between applicants and planning authorities.

Basing the pre-planning discussions and design statements around the same 12 Criteria which will be used as part of the assessment of applications will bring significant benefits. It will promote a consistency of approach that will serve to improve planning processes and, therefore, improve the quality of development outcomes.

It will also serve to foster a more collaborative approach between developers, designers and planners with each working towards a common objective of reaching an optimal design solution.

Planning Conditions

Planning conditions are a well established method of controlling quality as they are often able to suspend development until certain requirements are complied with. Their success however often depends on the ability and willingness of the local authority to monitor and record compliance and enforce against breaches.

Planning conditions imposed on a planning permission should, where possible, be drafted in co-operative discussions between the applicant and local authority. This will ensure that the conditions imposed are acceptable to both parties.

Alternatively, applicants may wish to draft planning conditions themselves. As described above, this will demonstrate a commitment to quality that will increase levels of confidence in the eventual design quality.

Controlling Quality

It is important that the quality of the development seen at planning stage is not degraded between the award of planning approval and implementation. Unfortunately, exercises in value engineering caused by unforeseen expenditures or market conditions can result in the design quality of many development proposals being watered down.

Many planning authorities have developed standard ways of seeking to control design quality through measures such as planning conditions. Many developers however, seek to take the initiative in this area and establish or propose ways in which quality can be controlled. By doing this they are able to demonstrate their commitment to quality and increase confidence in their scheme.
The drawings in Appendix 1 show how a preliminary site analysis might be prepared for various urban typologies ranging from village through inner/outer suburban to town centre. Each analytical illustration seeks to identify the core constraints, including:

- The context of the subject lands,
- The immediately adjoining boundary conditions,
- Potential links to local facilities such as shops and schools,
- Ecologically or architecturally sensitive areas or sites and their curtilage which require protection,
- Areas prone to flooding, and
- Design opportunities which might be seized such as the incorporation of views or conversely the elimination of disamenity.

Following on this simple site analysis, broad design proposals might be suggested in a diagrammatic or semi-abstract form which should illustrate:

- Vehicular circulation and pedestrian/cycling routes within the scheme and their links to local facilities,
- The broad disposition of uses within the scheme and the approximate range of densities in the case of residential blocks and heights if appropriate,
- Broad urban design proposals such as landmark buildings or continuous edges, and
- Proposals for the protection of ecology and the promotion of biodiversity and water conservation.
Example of Village Extension Site – Site Analysis
Example of Village Extension Site – Concept Proposal
Example of Inner Suburban Site – Site Analysis
Example of Inner Suburban Site – Concept Proposal

[Diagram of Inner Suburban Site with various zones and labels, including 'Inner Suburban', 'Outer Suburban', 'Greenfield Site', 'Preliminary Design Proposals', and various density indicators.]
Example of Town Centre Brownfield Site – Site Analysis
Example of Town Centre Brownfield Site – Concept Proposal
Example of Institutional Lands – Site Analysis
Example of Institutional Lands – Concept Proposal
The Village Expansion site is examined to identify varying solutions. In Scenario A below, a sample of concerns, frequently encountered by local authorities, are illustrated. The objective is that applying the Criteria will facilitate avoidance of these issues.

**EXAMPLES OF POORLY CONSIDERED ISSUES**

1. Lack of permeability can lead to the context of the village being ignored and poor levels of inclusivity.
2. Excessive set-backs from the street edge can lead to lack of definition and loss of potential vitality on the street.
3. Easy connectivity to the school site is not provided.
4. The repetition of unit types and singular uses, reduces variety of form and diversity.
5. The continuity of the Linear park amenity is interrupted by the private development.
6. Flooding and drainage are not considered in the treatment of the River edge.
7. There is no legibility or hierarchy in the open space network, as most of it is ‘left over’ or uninviting.
8. No clear routes for pedestrians are identified.
9. Spaces lack differentiation and do not respond to the orientation of the sun.
10. Connections and spaces are edged by blank walls and are therefore unsupervised and unanimated.
11. Responses to boundary conditions do not attempt to secure the access to neighbours rear garden walls.
12. A single access point can mean a large insertion and break the continuity of streetscape.
Village expansion design scenarios – Scenario B Applying the Criteria

The sketch design solutions should respond to the various criteria and then form the basis of the initial design statement.

**CRITERIA**

1. **CONTEXT:**
   a. The layout evolves around the linkages to destinations within the village
   b. Design solutions secure the boundary to the neighbours and provide access to the amenity of the river edge

2. **CONNECTIONS:**
   The Neighbourhood connects to surrounding uses e.g. school and village

3. **INCLUSIVITY:**
   A public space at the heart of the scheme invites access for all

4. **VARIETY:**
   a. House types range from terraces edging the pavement to clusters of individual houses

5. **EFFICIENCY:**
   a. Consideration of the river flooding and drainage issues are made in determining the setbacks and treatment to the linear park
   b. External gathering spaces are orientated to the sun

6. **DISTINCTIVENESS:**
   a. Access routes converge on the focal point of the scheme
   b. Vistas to a woodland outside the site are exploited

7. **LAYOUT:**
   a. Clear navigable routes for pedestrians are generated along desire lines
   b. Layouts locate greens and public spaces edged by own door and active uses. Communal clusters are located as secondary spaces to the to the rear

8. **PUBLIC REALM:**
   All public open space is overlooked and useable in the passive riverside park or the children’s play area
Further illustration of potential solutions – Existing village
Further illustration of potential solutions – Proposed village extension

Illustrative block layouts

Maintain Street Edge

Sketch view
Accessibility
The ability of people to move around an area and to reach places and facilities, including the elderly, disabled and those with young children.

Active frontage
The ground-level edge of a building or space which offers opportunities for surveillance through e.g. front doors, shopfronts or overlooking windows.

Defensible space
Public and semi-public space that is surveyed, demarcated by real or symbolic barriers or maintained by somebody.

Desire lines
Normally the shortest route from one place to another, but can be the most convenient, easy to use or comfortable route.

Inactive frontage
The edge of a building or space which offers no opportunity for surveillance.

Legibility
The degree to which a place can be easily navigated and used.

Permeability
The degree to which an area has a variety of pleasant, convenient and safe routes through it.

Primary route
A street upon which more movement, variety and activity takes place than on smaller surrounding ones.

Sight lines
The ability to see directly from one place to another. This often helps people find their way around. Also known as visual permeability.

Undercroft
A ground-level parking area below a building or its associated outdoor areas. Unlike basement car parks, undercrofts may be naturally ventilated with careful design to avoid inactive frontages.
Bibliography

Publications

National Spatial Strategy for Ireland 2002-2020
www.irishspatialstrategy.ie/

Sustainable Urban Housing: Design Standards for New Apartments, Guidelines for Planning Authorities
Department of Environment, Heritage and Local Government, 2007
http://www.environ.ie/en/Publications/

Quality Housing for Sustainable Communities,
Department of Environment, Heritage and Local Government, 2007
www.environ.ie/en/Publications/

Achieving Liveable Sustainable New Apartment Homes for Dublin City [contained in Dublin City Development Plan 2005-2011, Section 4.5.0]
Dublin City Council, 2007
www.dublincity.ie/Planning/
DublinCityDevelopmentPlan/Pages/
CityDevelopmentPlan.aspx

Cork Rural Design Guide
Colin Buchanan and Partners Ltd and Mike Shanahan + Associates, Architects, Cork County Council, 2003
www.corkcoco.ie/co/pdf/343708010.pdf

Clustered Housing Design Guidelines (contained in Galway County Development Plan 2003-2009)
Galway County Council
www.galway.ie/en/Services/planning/developmentplan/
clustered_housing/1_GCH.pdf

Guidelines for Designing out Anti-Social Behaviour
South Dublin County Council, 2008
planning.southdublin.ie/index.php?option=com_docman&task=doc_download&gid=246&Itemid=172&lang=en

Safer Places: The Planning System and Crime Prevention
UK Home Office, 2004
www.securedbydesign.com/pdfs/safer_places.pdf

Manual for Streets
UK Department for Transport, 2007
http://www.manualforstreets.org.uk/

Traffic Management Guidelines
Department of Environment, Heritage and Local Government/Department of Transport/Dublin Transportation Office
http://www(dto.ie/web2006/publicdown.htm

Development Management, Guidelines for Planning Authorities,
Department of Environment, Heritage and Local Government, 2007
http://www.environ.ie/en/Publications/

Websites

Office of Public Works (OPW)
http://www.opw.ie/
(Information on water, drainage and flooding)

Cabe (Commission for Architecture and the Built Environment, UK)
http://www.cabe.org.uk/
(Residential design case studies)

Urban Design Compendium
http://www.urbandesigncompendium.co.uk/
(Urban design case studies)

Lifetime Homes
http://www.lifetimehomes.org.uk/
(Lifetime homes design standards)

Design for Homes
http://www.designforhomes.org/
(Residential design case studies)
## Image & Design Credits

<table>
<thead>
<tr>
<th>Page</th>
<th>Image</th>
<th>Designer</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>National Building Agency</td>
<td>National Building Agency</td>
</tr>
<tr>
<td>16</td>
<td>National Building Agency</td>
<td>National Building Agency</td>
</tr>
<tr>
<td>17</td>
<td>Ivan Lazarevic / Design for Homes</td>
<td>Diamond Redfern Anderson</td>
</tr>
<tr>
<td>17</td>
<td>Seán Harrington</td>
<td>...</td>
</tr>
<tr>
<td>17</td>
<td>Ros Kavanagh</td>
<td>Simon J Kelly Architect</td>
</tr>
<tr>
<td>18</td>
<td>Murray O’Laoire Architects</td>
<td>Murray O’Laoire Architects</td>
</tr>
<tr>
<td>22</td>
<td>Simon Wall</td>
<td>Cox Power Architects</td>
</tr>
<tr>
<td>24</td>
<td>Urban Initiatives</td>
<td>Urban Initiatives</td>
</tr>
<tr>
<td>25</td>
<td>MacCabe Durney</td>
<td>...</td>
</tr>
<tr>
<td>27</td>
<td>M. V. Cullinan Architects</td>
<td>M. V. Cullinan Architects</td>
</tr>
<tr>
<td>27</td>
<td>M. V. Cullinan Architects</td>
<td>M. V. Cullinan Architects</td>
</tr>
<tr>
<td>28</td>
<td>Ivan Lazarevic / Design for Homes</td>
<td>Paul Keogh Architects</td>
</tr>
<tr>
<td>29</td>
<td>Design for Homes</td>
<td>Stockholm City Planning Bureau (masterplan)</td>
</tr>
<tr>
<td>30</td>
<td>Murray O’Laoire Architects</td>
<td>Murray O’Laoire Architects</td>
</tr>
<tr>
<td>30</td>
<td>Ivan Lazarevic / Design for Homes</td>
<td>Murray O’Laoire Architects</td>
</tr>
<tr>
<td>31</td>
<td>Sheridan Woods Architects</td>
<td>Sheridan Woods Architects</td>
</tr>
<tr>
<td>33</td>
<td>Jan Bitter</td>
<td>S333</td>
</tr>
<tr>
<td>33</td>
<td>Zedfactory.com</td>
<td>Zedfactory.com</td>
</tr>
<tr>
<td>35</td>
<td>Design For Homes</td>
<td>Zedfactory.com</td>
</tr>
<tr>
<td>36</td>
<td>O’Mahony Pike</td>
<td>Lundgaard &amp; Tranberg Arkitektfirma</td>
</tr>
<tr>
<td>36</td>
<td>Dublin City Council</td>
<td>Dublin City Council</td>
</tr>
<tr>
<td>36</td>
<td>David Churchill</td>
<td>Jestico + Whiles Architects</td>
</tr>
<tr>
<td>36</td>
<td>Gerry O’Leary</td>
<td>O’Mahony Pike</td>
</tr>
<tr>
<td>41</td>
<td>Modelworks</td>
<td>O’Mahony Pike / Metropolitan Workshop</td>
</tr>
<tr>
<td>42</td>
<td>O’Mahony Pike</td>
<td>Stockholm City Planning Bureau (masterplan)</td>
</tr>
<tr>
<td>43</td>
<td>Zedfactory.com</td>
<td>Zedfactory.com</td>
</tr>
<tr>
<td>44</td>
<td>M. V. Cullinan Architects</td>
<td>M. V. Cullinan Architects</td>
</tr>
<tr>
<td>44</td>
<td>HKR Architects</td>
<td>HKR Architects</td>
</tr>
<tr>
<td>45</td>
<td>Envac</td>
<td>Envac</td>
</tr>
<tr>
<td>45</td>
<td>Philip Lauterbach</td>
<td>Seán Harrington Architects</td>
</tr>
<tr>
<td>47</td>
<td>Calary Photography/Park Developments</td>
<td>Frank Gibney / Bord na Móna</td>
</tr>
<tr>
<td>47</td>
<td>David Davison</td>
<td>Sean Harrington Architects</td>
</tr>
<tr>
<td>48</td>
<td>BRL Architects</td>
<td>BRL Architects</td>
</tr>
<tr>
<td>49</td>
<td>Gerry O’Leary</td>
<td>Newenham Mulligan Associates</td>
</tr>
<tr>
<td>49</td>
<td>Denis Byrne Architects</td>
<td>Denis Byrne Architects</td>
</tr>
<tr>
<td>50</td>
<td>National Building Agency</td>
<td>National Building Agency</td>
</tr>
<tr>
<td>50</td>
<td>Calary Photography/Park Developments</td>
<td>Frank Gibney/Bord na Mona</td>
</tr>
<tr>
<td>51</td>
<td>Metropolitan Workshop</td>
<td>Metropolitan Workshop</td>
</tr>
<tr>
<td>51</td>
<td>Icon Architecture</td>
<td>Icon Architecture</td>
</tr>
<tr>
<td>53</td>
<td>O’Mahony Pike</td>
<td>Brady Shipman Martin/O’Mahony Pike</td>
</tr>
<tr>
<td>54</td>
<td>Gerry O’Leary</td>
<td>O’Mahony Pike</td>
</tr>
<tr>
<td>55</td>
<td>Richard Collins</td>
<td>...</td>
</tr>
<tr>
<td>Page</td>
<td>Image</td>
<td>Designer</td>
</tr>
<tr>
<td>------</td>
<td>-------</td>
<td>----------</td>
</tr>
<tr>
<td>56</td>
<td></td>
<td>Anew McKnight Murray O’Laoire</td>
</tr>
<tr>
<td>57 below</td>
<td>Eugene Gribbin</td>
<td>Dun Laoghaire Rathdown Co. Council</td>
</tr>
<tr>
<td>58</td>
<td>National Building Agency</td>
<td>National Building Agency</td>
</tr>
<tr>
<td>60 above right</td>
<td>HKR Architects</td>
<td>HKR Architects</td>
</tr>
<tr>
<td>61</td>
<td>CABE</td>
<td>MacCreanor Lavington</td>
</tr>
<tr>
<td>62</td>
<td>CABE</td>
<td>Stockholm City Planning Bureau (masterplan)</td>
</tr>
<tr>
<td>65 above</td>
<td>HKR Architects</td>
<td>HKR Architects</td>
</tr>
<tr>
<td>65 below</td>
<td>Burke-Kennedy Doyle Architects</td>
<td>Burke-Kennedy Doyle Architects</td>
</tr>
<tr>
<td>66</td>
<td>Ivan Lazarevic / Design for Homes</td>
<td>O’Mahony Pike</td>
</tr>
<tr>
<td>67 below</td>
<td>Ivan Lazarevic / Design for Homes</td>
<td>O’Mahony Pike</td>
</tr>
<tr>
<td>71 below left</td>
<td>Ros Kavanagh</td>
<td>Boyd Tynan Architects</td>
</tr>
<tr>
<td>71 below right</td>
<td>Paul Tierney</td>
<td>Boyd Cody Architects</td>
</tr>
<tr>
<td>72 above</td>
<td>Stride Treglown</td>
<td>Ecos Homes/Stride Treglown</td>
</tr>
<tr>
<td>72</td>
<td>Richard Mullane / Design for Homes</td>
<td>Stride Treglown</td>
</tr>
<tr>
<td>73 below</td>
<td>Sheridan Woods</td>
<td>Sheridan Woods</td>
</tr>
<tr>
<td>75</td>
<td>Ivan Lazarevic / Design for Homes</td>
<td>Simon J. Kelly Architects</td>
</tr>
<tr>
<td>77 above</td>
<td>Ros Kavanagh</td>
<td>Derek Tynan Architects</td>
</tr>
<tr>
<td>77 below</td>
<td>Philip Lauterbach</td>
<td>Seán Harrington Architects</td>
</tr>
<tr>
<td>78 above</td>
<td>Ros Kavanagh</td>
<td>O’Mahony Pike</td>
</tr>
<tr>
<td>78 middle</td>
<td>Paul Keogh Architects</td>
<td>Paul Keogh Architects</td>
</tr>
<tr>
<td>78 bottom</td>
<td>Philip Lauterbach</td>
<td>Seán Harrington Architects</td>
</tr>
<tr>
<td>80 left</td>
<td>Design for Homes</td>
<td>...</td>
</tr>
<tr>
<td>83 left</td>
<td>Ivan Lazarevic / Design for Homes</td>
<td>O’Mahony Pike</td>
</tr>
<tr>
<td>83 right</td>
<td>Design for Homes</td>
<td>Chetwoods</td>
</tr>
<tr>
<td>85 right</td>
<td>Andy Wright</td>
<td>...</td>
</tr>
<tr>
<td>85 below</td>
<td>Ivan Lazarevic / Design for Homes</td>
<td>Murray O’Laoire Architects</td>
</tr>
<tr>
<td>86</td>
<td>Gerry O’Leary</td>
<td>O’Mahony Pike</td>
</tr>
<tr>
<td>87 above</td>
<td>Christian Suignard</td>
<td>...</td>
</tr>
<tr>
<td>87 below</td>
<td>Ivan Lazarevic / Design for Homes</td>
<td>O’Mahony Pike</td>
</tr>
<tr>
<td>89 left</td>
<td>MacCabe Durney</td>
<td>...</td>
</tr>
<tr>
<td>89 above right</td>
<td>David Davison</td>
<td>Seán Harrington Architects</td>
</tr>
<tr>
<td>89 below right</td>
<td>Taylor Architects</td>
<td>Taylor Architects</td>
</tr>
<tr>
<td>90 above</td>
<td>BRL Architects</td>
<td>BRL Architects</td>
</tr>
<tr>
<td>91 left</td>
<td>HKR Architects</td>
<td>HKR Architects</td>
</tr>
<tr>
<td>91 right</td>
<td>Tim Crocker Photography</td>
<td>Feilden Clegg Bradley Studios</td>
</tr>
<tr>
<td>92 below</td>
<td>Sheridan Woods Architects</td>
<td>Sheridan Woods Architects</td>
</tr>
<tr>
<td>93 above</td>
<td>Ros Kavanagh</td>
<td>Simon J. Kelly Architects</td>
</tr>
<tr>
<td>93 below</td>
<td>Eugene Gribbin</td>
<td>Dun Laoghaire Rathdown Co. Council</td>
</tr>
<tr>
<td>101</td>
<td>MacCabe Durney</td>
<td>...</td>
</tr>
<tr>
<td>108-115</td>
<td>MacCabe Durney</td>
<td>...</td>
</tr>
<tr>
<td>118-119</td>
<td>Richard Collins</td>
<td>...</td>
</tr>
</tbody>
</table>

Where not otherwise credited, remaining diagrams and images are by O’Mahony Pike Architects