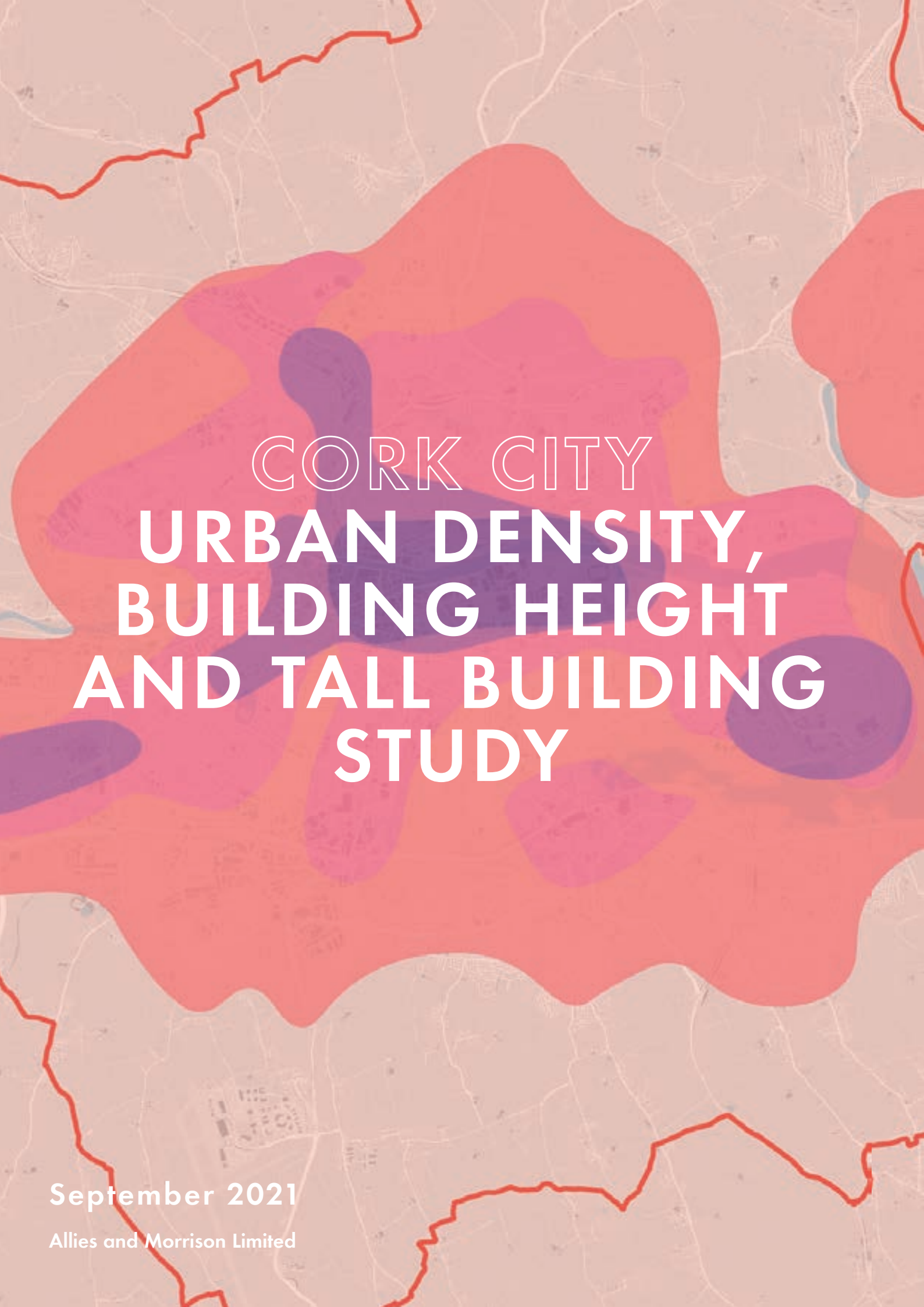


CORK CITY
URBAN DENSITY, BUILDING HEIGHT AND TALL BUILDING STUDY

September 2021

Allies and Morrison Limited

CONTENTS

INTRODUCTION

Compact growth is the first of the ten national strategic outcomes of the National Planning Framework, which is the first, and primary, national level planning policy statement. The planning and development system face an adaptive challenge to deliver the step-change required in the delivery of a new quantum and nature of development. This transformation will be supported by significant funding through the multiple funding streams of the National Development Plan, including through the Urban Regeneration and Development Fund.

Cork's housing targets in this context will require a radical rethink of how growth is delivered. Renewed emphasis must now be placed on ensuring all new development makes the very best use of land and exploits embedded capacity in existing urban areas which are supported by infrastructure and services.

This Urban Density, Building Height and Tall Building Study for Cork has been prepared as a practical tool to help inform policy and planning decisions about appropriate densities of new development.

Time zone and density map taken from City of Cork Civic Survey (1926)

Who has been involved?

Cork City Council have commissioned a team led by architectural and urban planning practice Allies and Morrison, and including transport engineers ARUP and architectural practice Foley and Crowley, to undertake an Urban Density, Building Height and Tall Buildings study for the recently enlarged Cork City Council administrative area.

Why is the study required?

The study comes at an important moment for the city, which is set to see major growth in the coming years. The Cork City Council boundary was extended in 2019, expanding the administrative area to nearly five times its size and growing its population from 85,000 to 210,000. Cork's population is set to grow further in the coming years, with significant international investment and growth anticipated, particularly in the technology and innovation sectors.

Cork City Council needs to ensure that its policy framework is fit-for-purpose and supports the ambition for Cork City set out in Project 2040: National Planning Framework (Government of Ireland, February 2018), which sets a target population growth for Cork City of 125,000 by 2040. This target is now transposed into the Regional Spatial and Economic Strategy (RSES) and the Metropolitan Area Strategic Plan (MASP) included within it (Southern Regional Assembly, December 2019).

Cork City Council seeks to develop and improve the city according to its core values, these being: to create a city of strong neighbourhoods and communities; to create a healthy and connected city; a city of learning; a resilient city that is addressing the challenges and risks posed by climate change; a city that values its culture and heritage; a city that belongs to and offers equal opportunities to all of its residents; and a city that offers an excellent quality of life.

The National Planning Framework is supported by a wide number of policy and delivery guidance documents. The publication of the Urban Development and Building Heights (UDBHGPA) Guidelines for Planning Authorities (DHPLG, December 2018) sets out a requirement for all local planning authorities to update their policy framework in relation to tall buildings, building height and density of development in order to be taken into account in the development management process. This reflects the objective of achieving improved densities in Ireland's urban centres.

This study will assist Cork City Council in identifying those areas of the City that may be appropriate to locate higher density development and tall buildings whilst enhancing Cork's unique sense of place and community.

Structure of the study

The study is structured in six parts, as follows:

1. **Introduction** provides an overview of the study, reflecting on why it is required and what it will cover.
2. **What density looks like in Cork** sets the scene by providing a visual representation of what different levels of density look like within a Cork context.
3. **Density in Cork** provides an assessment of attributes which make areas more or less suitable for enhanced density, resulting in a spatial density strategy for Cork City which helps to inform the final strategy.
4. **Building heights in Cork** provides analysis of existing building heights in Cork and an assessment of attributes which make areas more or less suitable for tall buildings.
5. **Density and Building Height Strategy** - an evolution of the spatial density strategy which takes into account all analysis and responds to national and CCC's compact city policy.
6. **Density done well** provides a review of case studies of developments from across Europe which deliver enhanced density in a range of settings. A set of principles for good density is derived from these case studies and serves as guidance for new development in Cork.

Cork City's Core Values

Set out below are Cork City Council's eight objectives for Cork City. This strategy will help CCC to achieve a number of these objectives:

A city of strong communities, with liveable neighbourhoods

This study provides a strategy for good growth, setting out evidence-based advice which ensures that appropriate growth takes place where it can be supported in a sustainable way. The study also provides guidance on how density can be achieved to ensure that resulting neighbourhoods are liveable and support communities, as well as delivering much needed housing in Cork.

A resilient city that addresses challenges and risks posed by climate change and pandemics

In helping to deliver a compact city, this study aims to limit urban sprawl and deliver walkable neighbourhoods where people chose to walk, cycle or use public transport, rather than use a car.

An architecturally rich and beautiful city by the River Lee

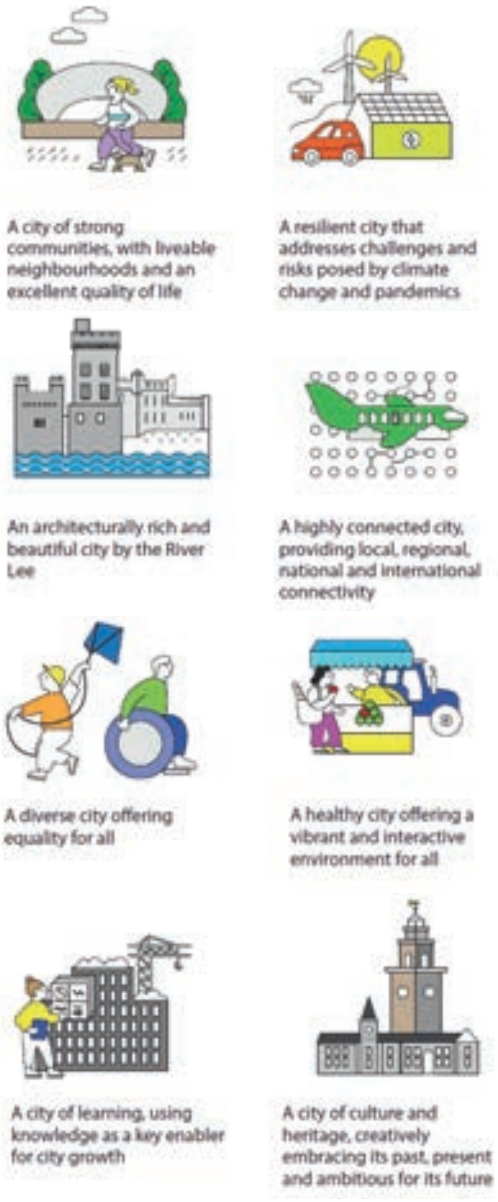
This study sees Cork's architectural richness, diversity and beauty as an opportunity to inspire new forms of higher density development which take inspiration from, whilst remaining sensitive to Cork's unique architecture and landscape in order to further strengthen its identity.

A highly connected city, providing local, regional, national and international connectivity

This study recognises and responds to Cork's existing and future connectivity at a regional and national level, and the impact of this on future development. At a local level, the study encourages high quality development which incorporates strong urban design principles relating to clear hierarchies, connectivity, accessibility and people-centric design.

A diverse city offering equity for all

This study supports sustainable growth, meaning that new development should be able to comfortably support the community who live there no matter who they are, including access to public transport, amenities and services, and green and blue infrastructure.



A healthy city offering a vibrant and interactive environment for all

A compact city will help to support residents to walk and cycle. This study encourages high quality design which provides attractive environments for pedestrians and delivers diversity and interest in the urban surroundings.

A city of learning, using knowledge as a key enabler for city growth

This study provides guidance and best practice case studies from around the world to help inform good growth and high density design principles.

A city of culture and heritage, creatively embracing its past, present and ambitious for its future.

The process for this study has involved extensive research and analysis of Cork and its strong cultural and historic identity. This has helped to inform our method and the guidance which follows, encouraging future development to respond to this strong and unique identity.

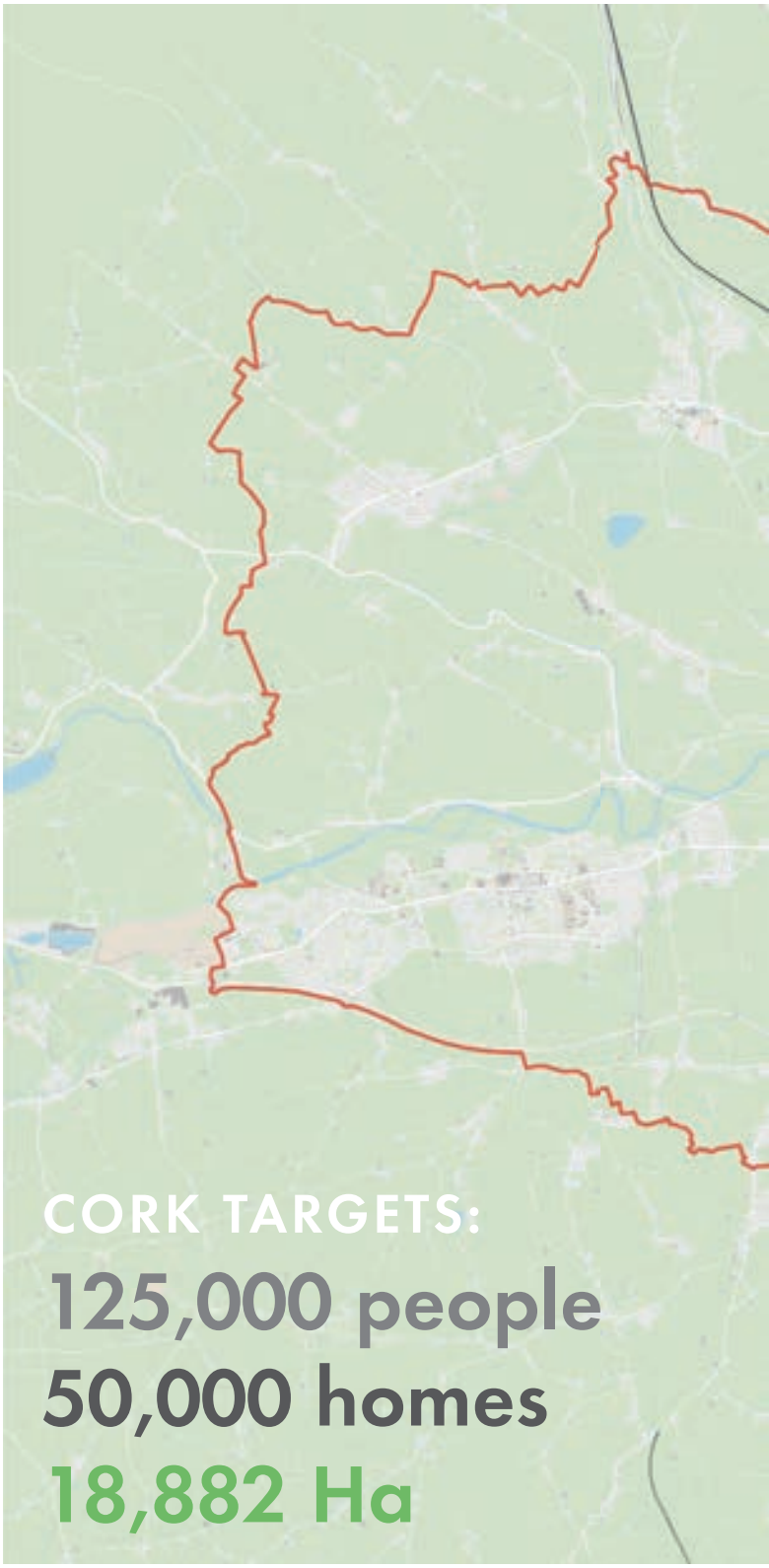
The scale of the challenge

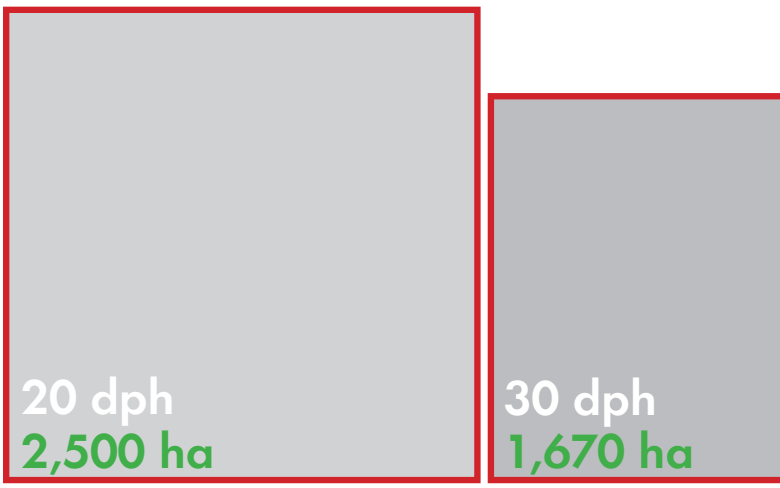
Project 2040: National Planning Framework (Government of Ireland, February 2018), which sets a target population growth for Cork City of 125,000 by 2040. This target is now transposed into the Regional Spatial and Economic Strategy (RSES) and the Metropolitan Area Strategic Plan (MASP) included within it (Southern Regional Assembly, December 2019).

But what does a population increase of 125,000 mean for Cork?

The diagram opposite highlights the role housing density will play and how different approaches to housing density could result in radically different outcomes for Cork. For the purposes of this simplified diagram, we can assume that a population increase of 125,000 could be said to equate very roughly to 50,000 new dwellings. The grey boxes below the map are presented at the same scale as the map and represent the amount of land that would be required to deliver 50,000 new homes at different levels of housing density.

The total area of the Cork City Council is approximately 18,882 Ha. At 20 dwellings per hectare (dph), a density typically found in outer suburbs, 50,000 new dwellings would hypothetically require 2,500 Ha of this total area. If the density was increased to 100 dph, a density level only currently found in city centre locations in Cork, the land required would fall to 500 Ha.





50 dph
1,000 ha

75 dph
670 ha

100 dph
500 ha

WHAT DENSITY LOOKS LIKE IN CORK

Density can be delivered in a number of ways. The previous section provided a spatial expression of the growth needed in Cork at a range of different densities in plan view. However, this level of density is hard to appreciate in real terms. This section therefore aims to provide a better visual representation of what different levels of density look like from the perspective of a pedestrian experiencing it on the ground.

The following pages therefore set out the following:

Density and urban analysis of Cork

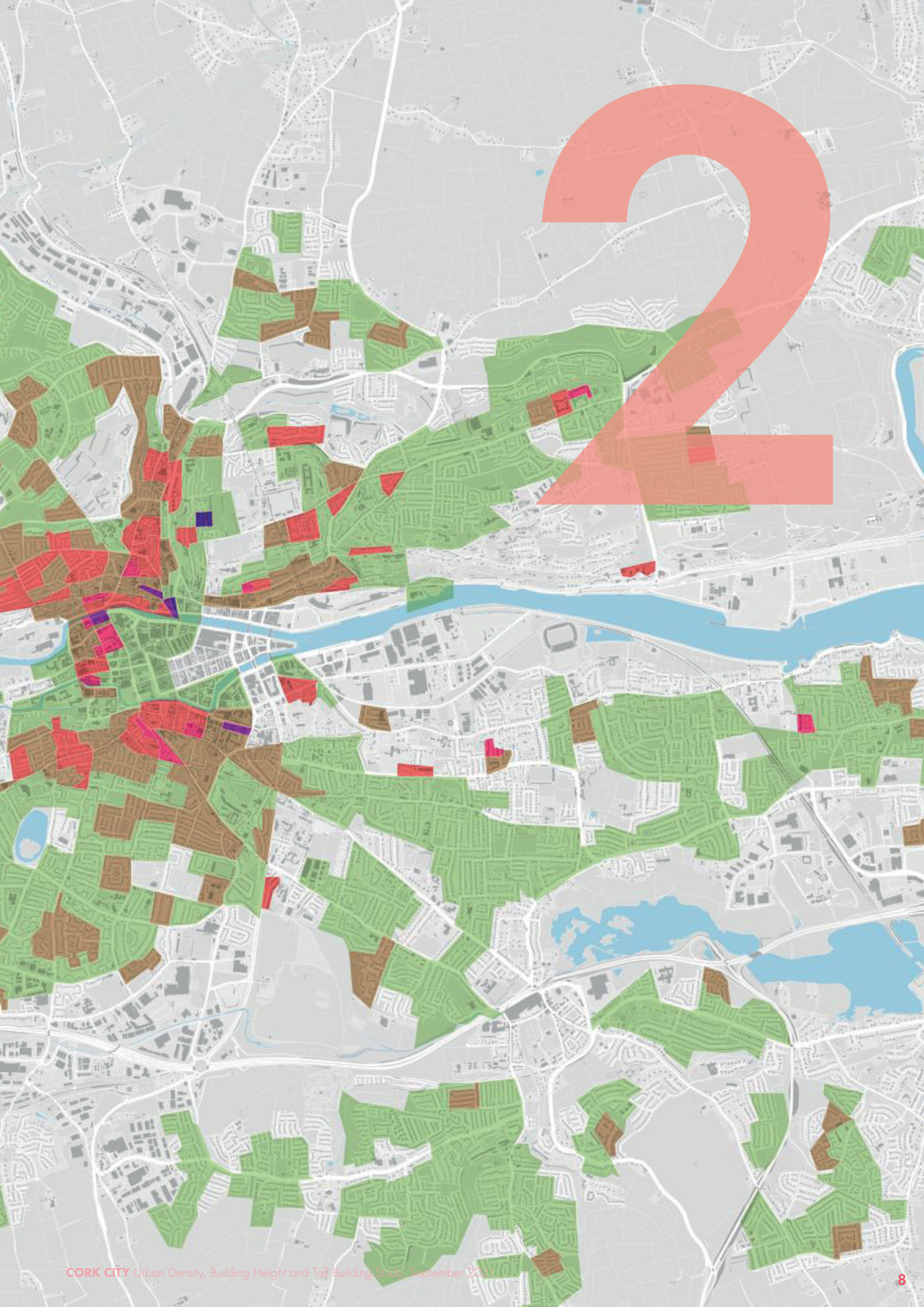
This analysis is intended to help set the scene by providing a description of the current levels of density in Cork, as well as the varying building heights and urban form which influence density.

Density ranges and examples across Cork

The following pages provide an overview of the locations where different densities occur across Cork. Each example represents a different level of density and uses plans, birds-eye images and photos of the streetscape to provide a more tangible view and experience of density.

To note:

The analysis used to present density is Dwellings per Hectare (DPH) and Floor Area Ratio (FAR). This helps to reveal a more accurate view of density across the city. However, it should also be noted that DPH and FAR can vary depending on a building's use, with DPH appearing lower than FAR within a more mixed-use context. This is due to the fact that DPH measures residential density, and in more urban areas there are fewer or no dwellings.



2

Cork City administrative area

City and its hinterland

Floor area ratio

Floor area ratio (FAR) is the ratio of a building's total floor area to the size of the piece of land upon which it is built.

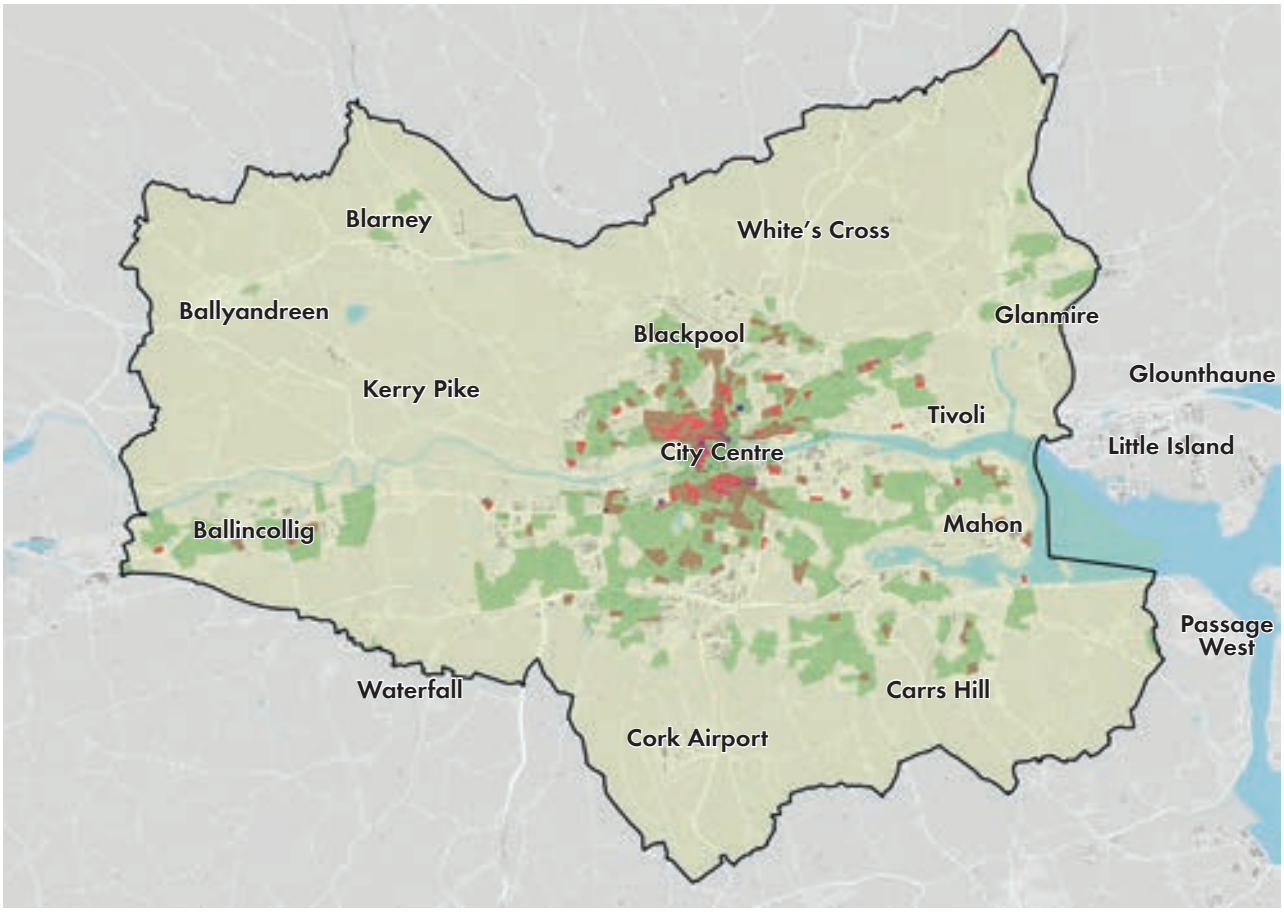
FAR presents a more complete reflection of density because it is not concerned only with housing or any other specific land use.

Areas with a high FAR density do not necessarily present a high population or housing density. The area south of the northern branch of the River Lee tends to be more densely developed, between Glasheen Road and the river corridor including the University area.

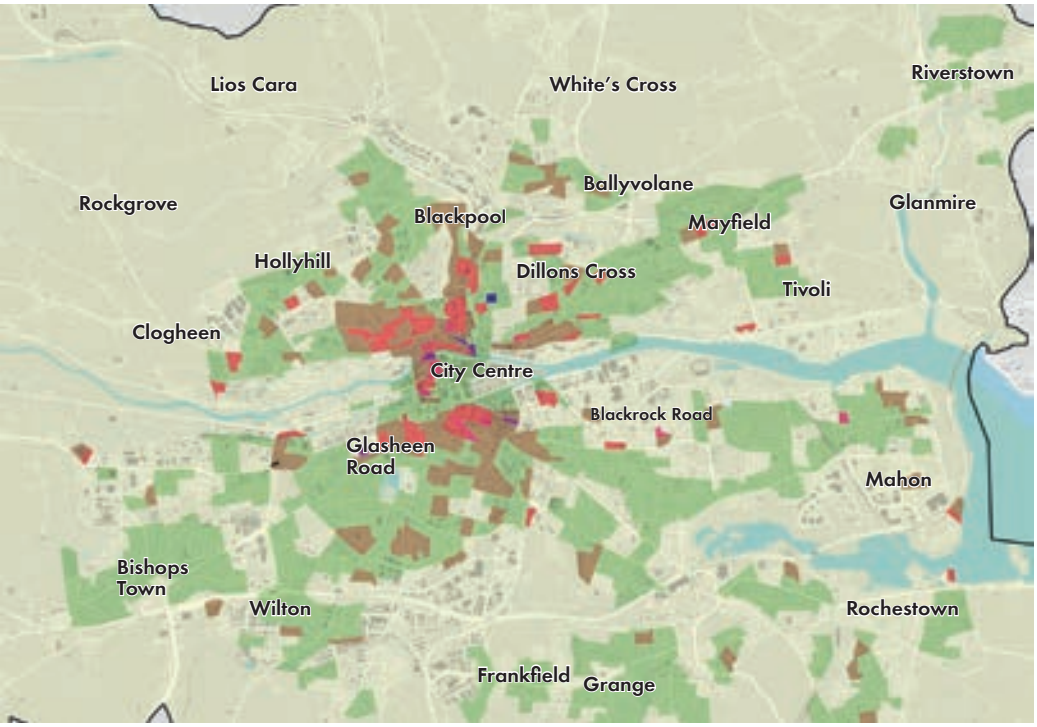
The area around Kent Station is surprisingly low density although the Horgan's Quay development - not represented in this data - will go some way to transform that.

There is a stark difference between area east and west of Grand Parade as reflected on earlier figure ground analysis.

Note that the FAR data presented here, using information provided by the City Council, takes account of Cork's more significant recently constructed and consented major development schemes.



Dwellings per hectare (by 2011 census data) - entire Cork City administrative area



City and its hinterland

dwellings per hectare

- 0 - 10
- 10 - 25
- 25 - 40
- 40 - 70
- 70 - 100
- 100 - 200
- 200 - 400
- 400 - 600

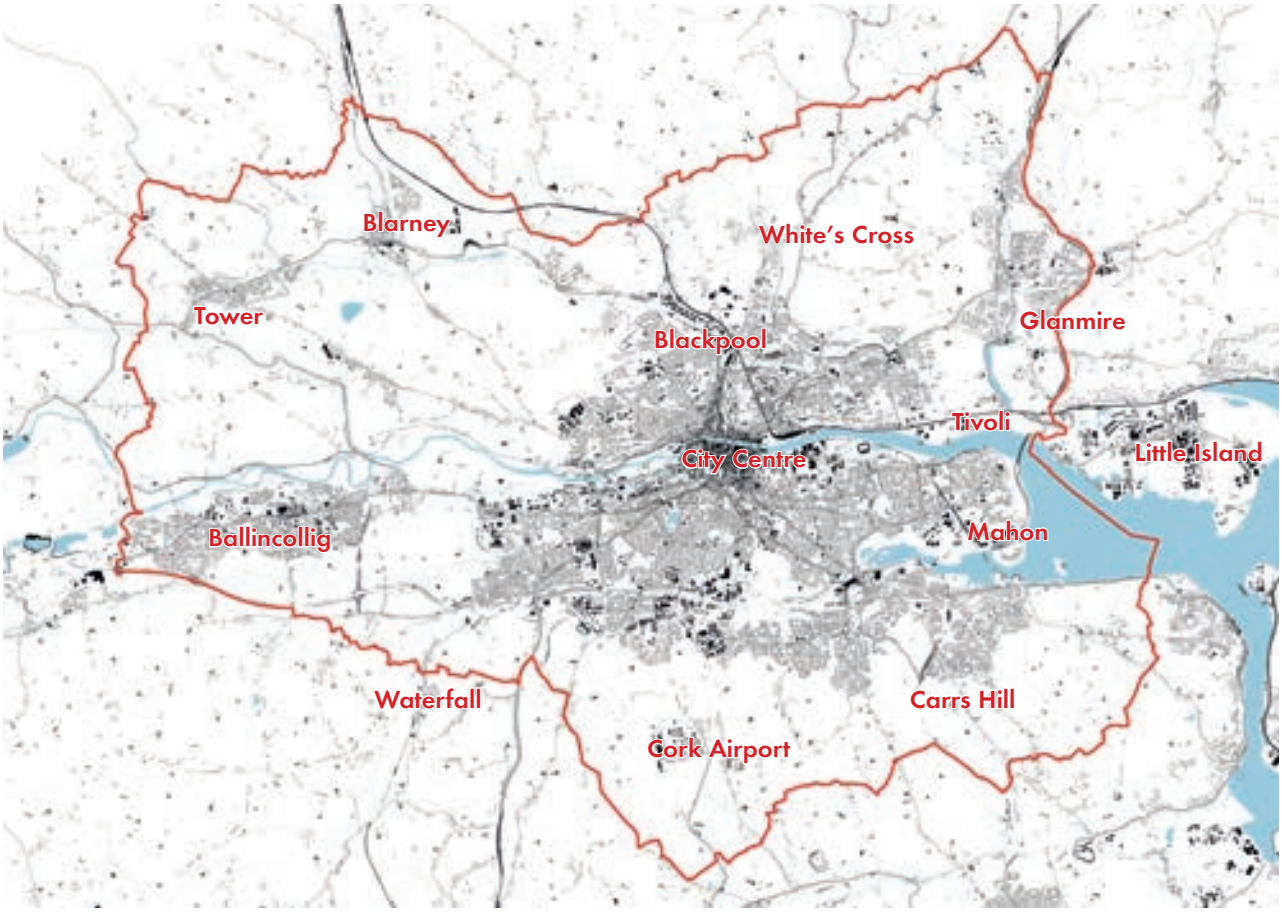
Dwellings per hectare

The established measure of housing density for planning is dwellings per hectare (dph). Whilst new developments are measured and assessed in terms of proposed dph, data on existing dph is not generally available. However, using filtered census data, maps can be produced which present a good picture of dph.

Not surprisingly there are many echoes of the population density data outlined above. However, the analysis highlights that prevailing densities are generally lower than those called for in new development under the existing density policy regime. The existing policy regime is explored spatially in the pages that follow.

East Cork - both north and south of the city - is shown as being an area of very low dwellings per hectare. This corresponds to the relatively affluent areas of Blackrock and Tivoli.

As with the population density plans, there would appear to be significant potential to increase housing densities in the north and south docks - as already envisaged in existing policy frameworks.



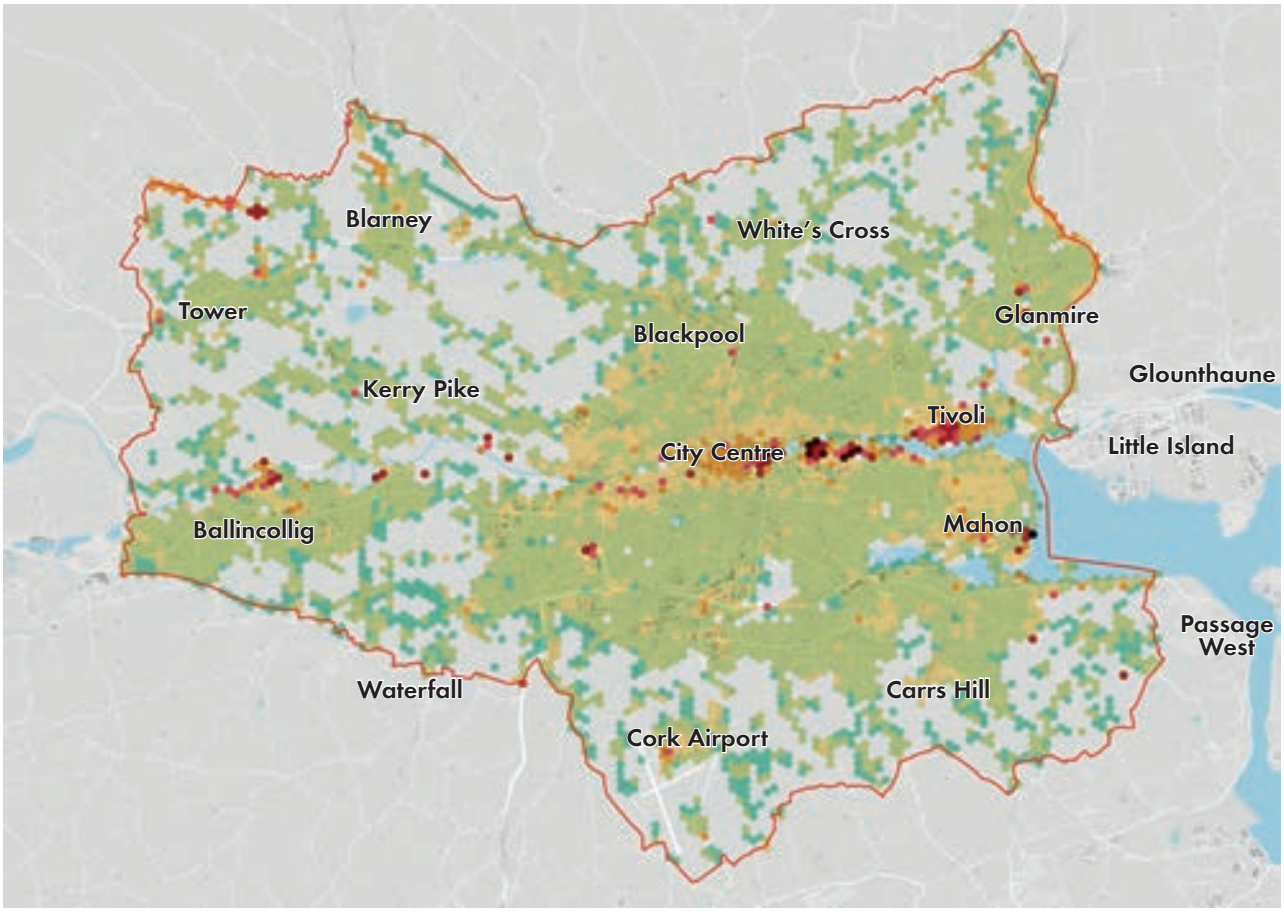
Cork City administrative area

City and its hinterland

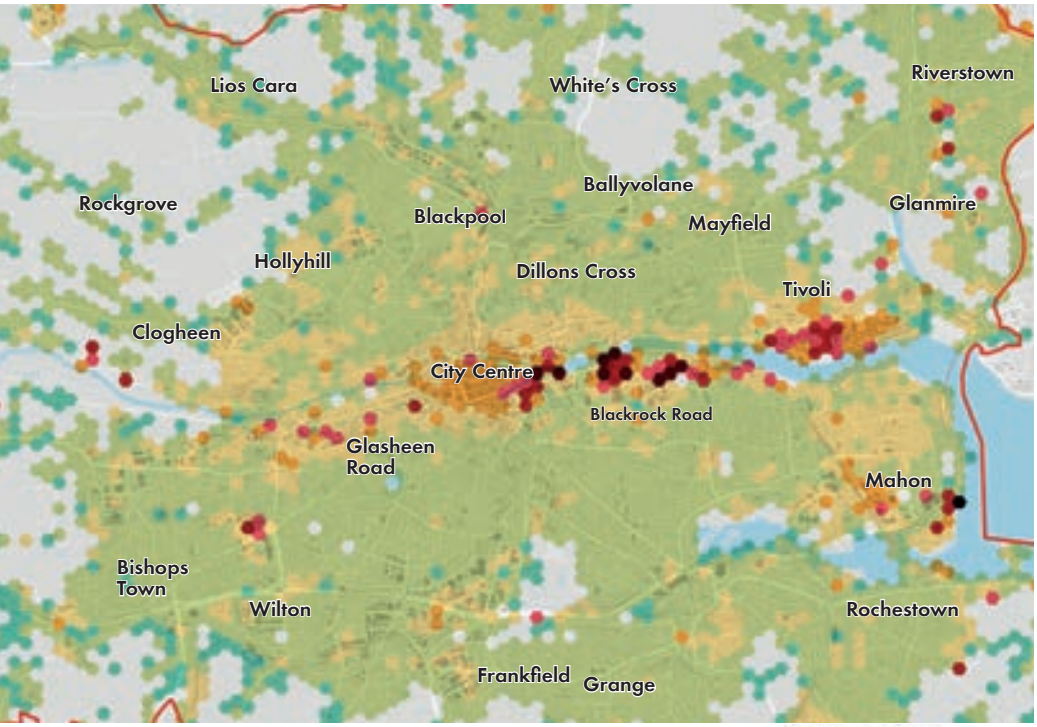
Urban morphology

The series of urban morphology plans, and particularly the widest scale plan showing the city's new wider administrative extent, highlights the compact nature of the city of Cork. The city scale plan opposite, and the way development sweeps up towards Blackpool and west towards the University corridor reveals the pattern of development responding directly to the local topography.

The city centre figure ground plan reveals the densely developed core area bound by the two branches of the River Lee and Grand Parade and Cornmarket Street to the west. The courser grain industrial and dock related developments of the north and south docks are also clearly evident and distinct in their form.



Building heights - entire Cork City administrative area



City and its hinterland

Please note that building heights are shown in metres not number of storeys. Building heights are based on GIS data provided by the Council. Note that storey heights can vary in buildings of different ages and uses. A range of potentially likely storey heights is included in the key as a guide to take account of the range of conditions that can be found across Cork. Please note these storey heights are therefore included as an estimated assessment not an accurate record.

Building heights

Combined DTM and DSM GIS data enables building heights to be mapped. However, it should be noted that the combined analysis of these datasets only provide mean rather than absolute values of height.

With the support of information provided by the City Council, the baseline GIS data which underpins this existing building height analysis has been updated with information relating to some of Cork's more significant recently constructed and consented major development schemes.

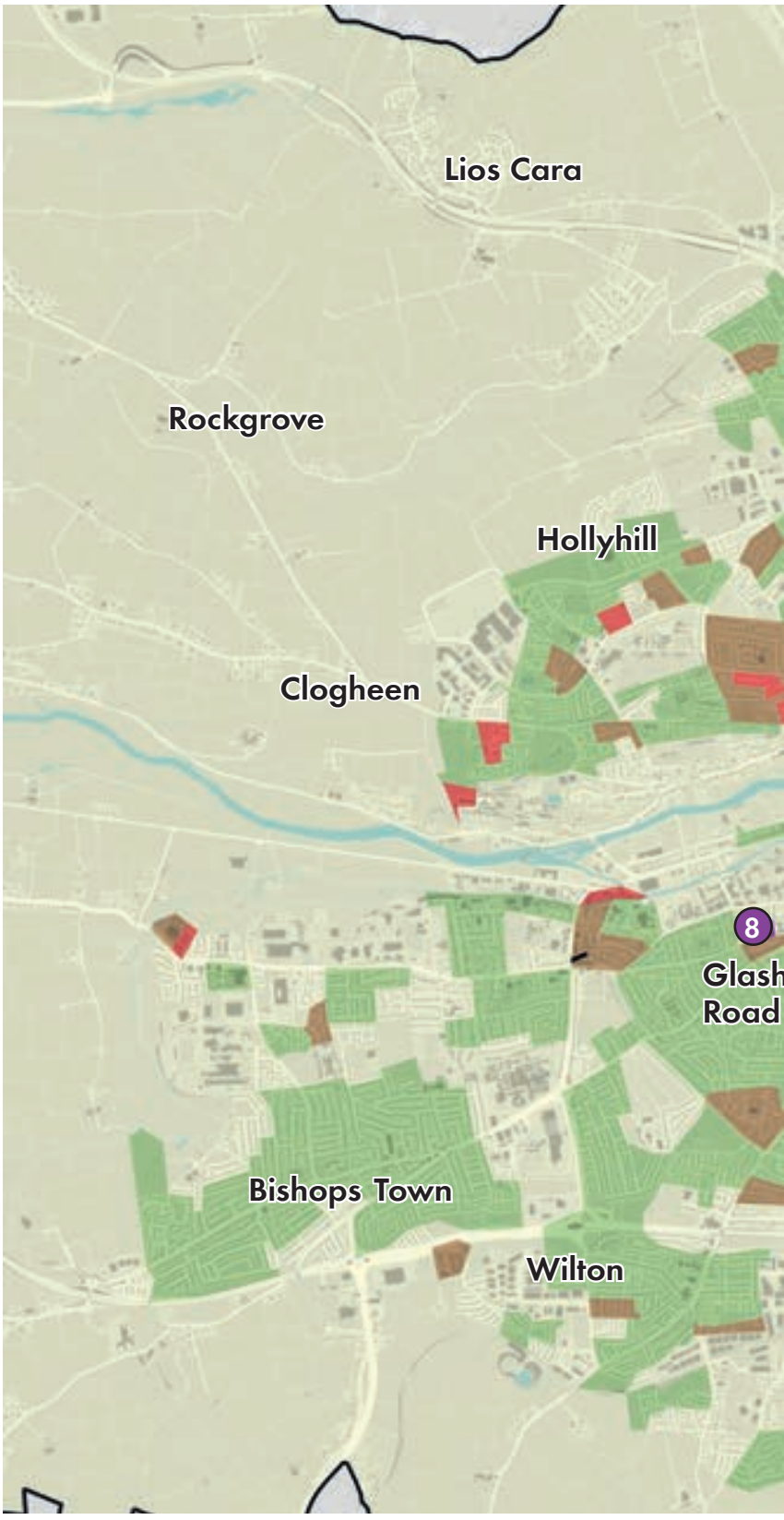
There is a notable concentration of height along the N20 corridor to the north, towards Blackpool. The N22 Western Road corridor towards and around the University is another area with higher average heights.

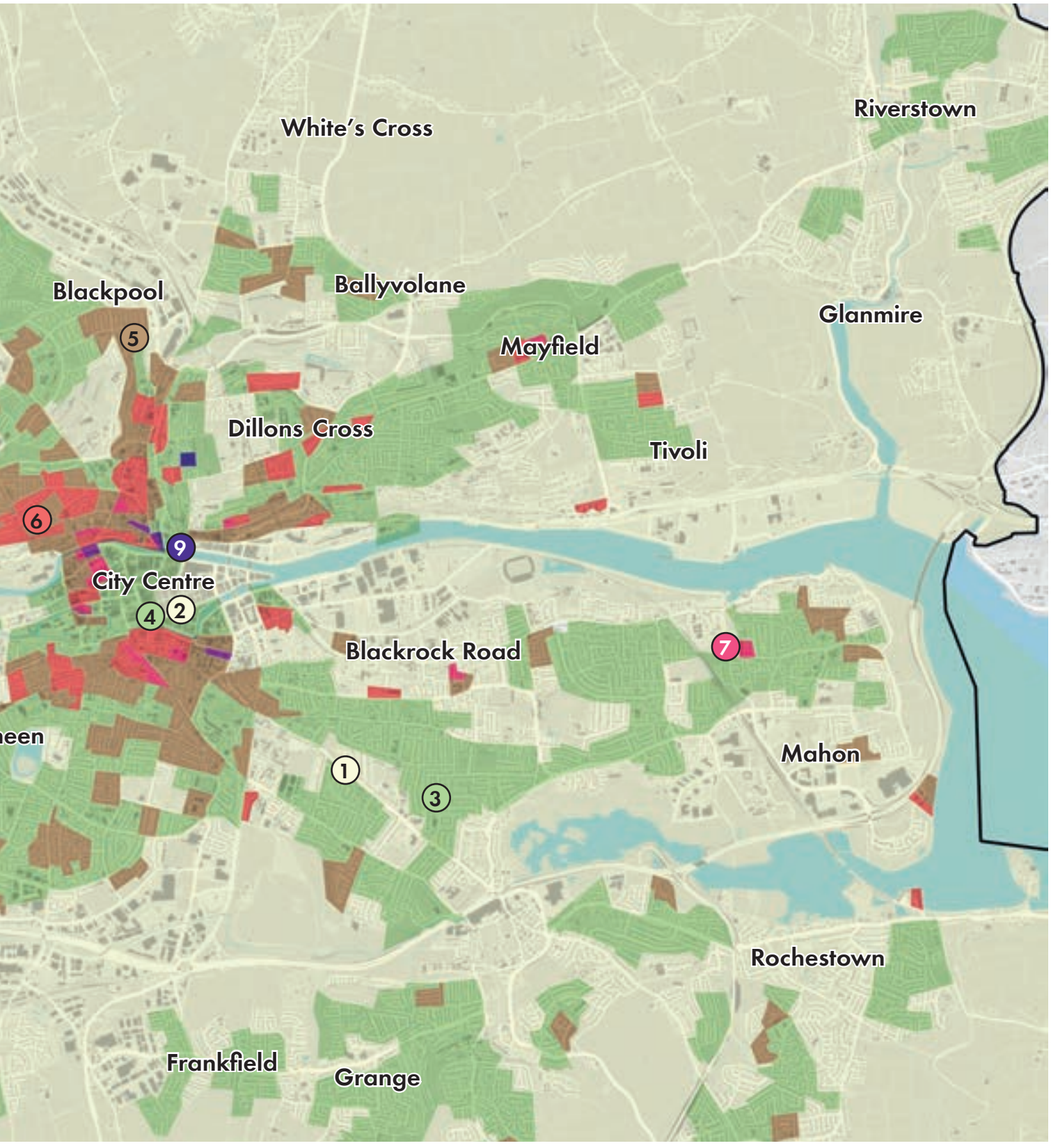
Whilst heights rise a little in the commercial centre, there is far less variety of building heights in Ballincollig. The city's surrounding hinterland, including its villages, is far more homogeneous in terms of building heights.

Density ranges across Cork

This map reveals DPH within the Cork City central area. The numbers on the plan represent the examples set out on the following pages. This plan is intended to show the distribution of these examples across Cork. The examples provided on the following pages help to provide an idea of what low density housing in Cork's inner suburbs looks like, with some higher density exceptions. The examples help to note the differences between the densities, particularly in relation to dwelling size, form, gardens and amenity space and parking.

0 - 10 DPH	1. Ballinlough 2. City centre
10 - 25 DPH	3. Ballinlough 4. City centre
25 - 40 DPH	5. Blackpool
40 - 70 DPH	6. Gurranabraher
70 - 100 DPH	7. Blackrock
100 - 200 DPH	8. City centre/ South Terrace
200 - 400 DPH	9. Popes Quay/N20

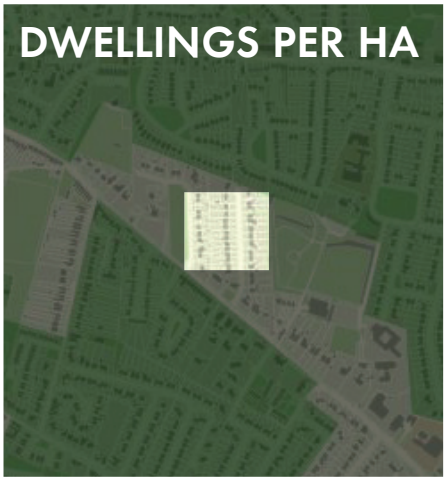


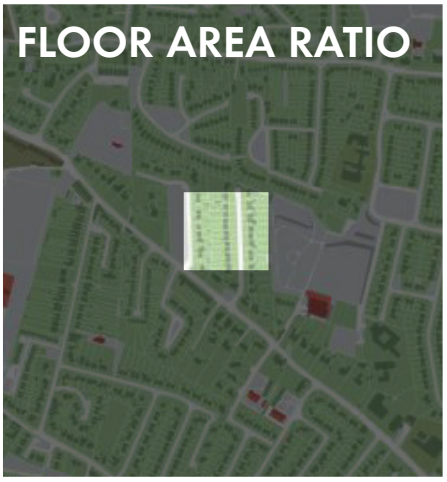

White's Cross
Riverstown
Blackpool
Ballyvolane
Glanmire
Mayfield
Dillons Cross
Tivoli
City Centre
Blackrock Road
Mahon
Rochestown
Frankfield
Grange
1
2
3
4
5
6
7
9

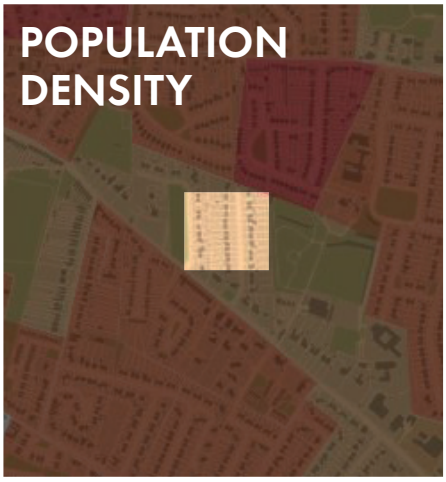
0 - 10 DPH

1. Ballinlough

Low density suburban large semi-detached and detached housing with good sized gardens and driveways.





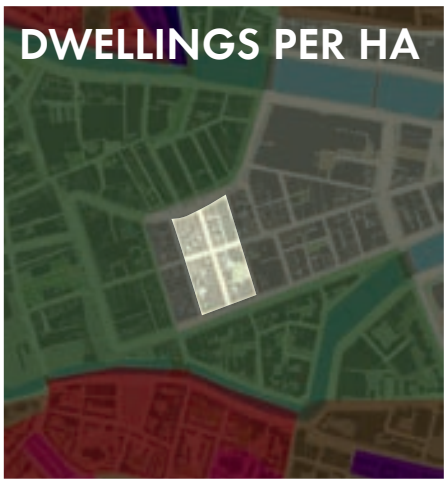


0 - 10 DPH

2. City centre

This city centre location has a low DPH because of the lack of 'dwellings' within the buildings, but has a much higher FAR density indicating a high density typology.

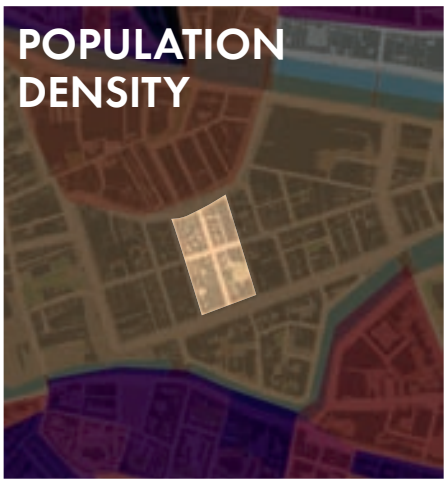
DPH would be considerably higher if non-residential floorspace was brought into residential use. This change of use represents a very significant potential source of capacity.



0 - 10

2.5 - 3.5

3.5 - 4.5

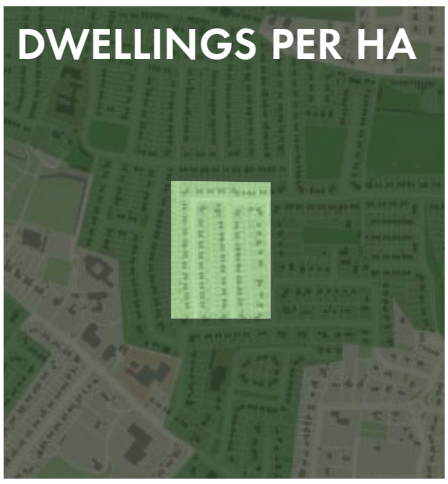


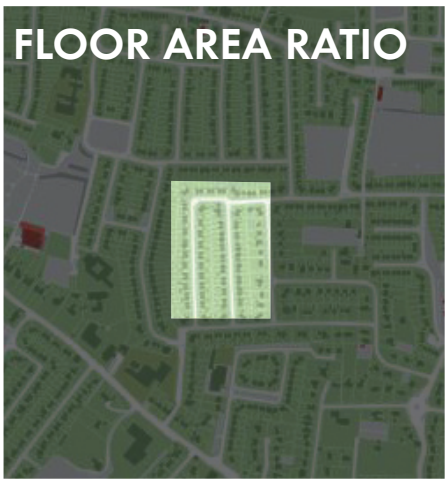
1,500 - 3,000

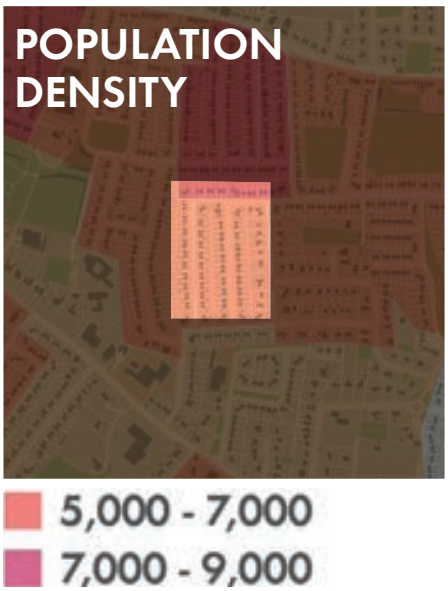
10 - 25 DPH

3. Ballinlough

Low density suburban semi-detached housing with gardens and driveways set out in a linear grid form with relatively narrow roads.





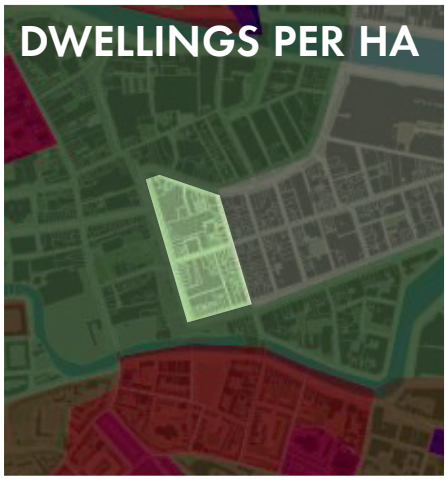


10 - 25 DPH

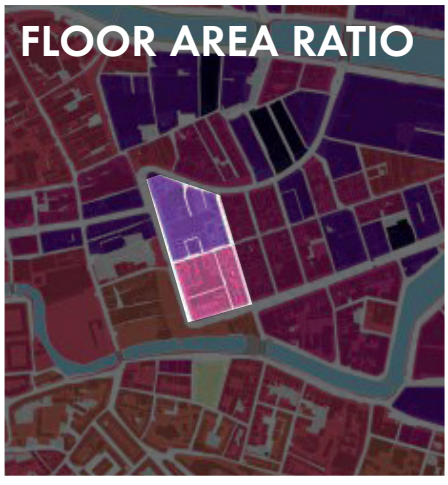
4. City centre

A high density, commercial city centre location with a low DPH, due to minimal residential use, and high FAR.

DPH would be considerably higher if non-residential floorspace was brought into residential use. This change of use represents a very significant potential source of capacity.

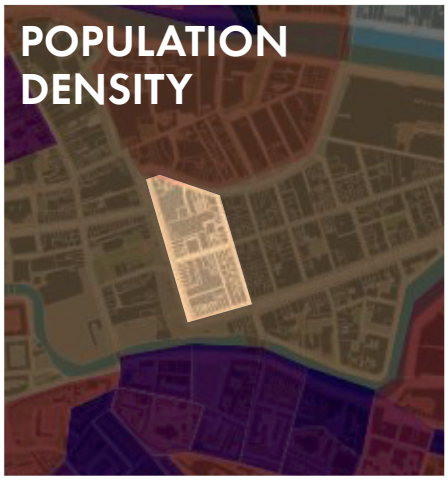


10 - 25



2.5 - 3.5

3.5 - 4.5

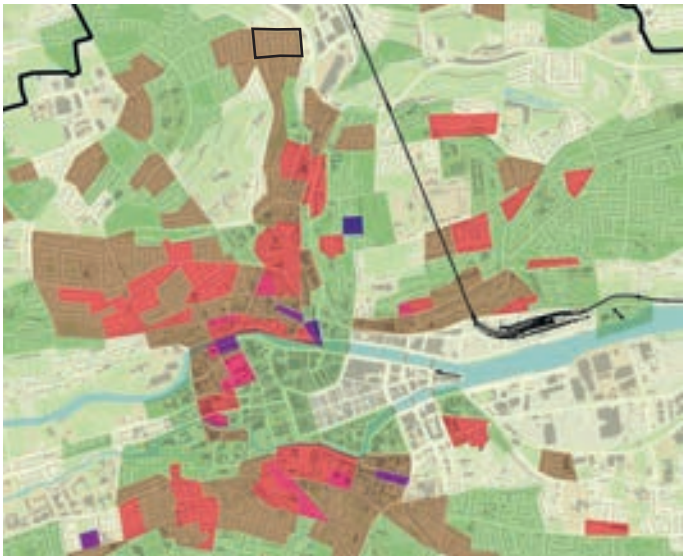


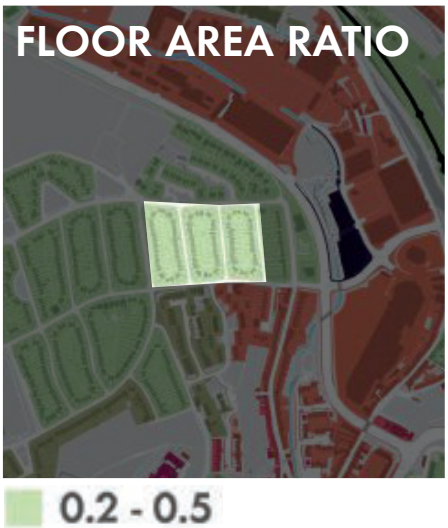
1,500 - 3,000

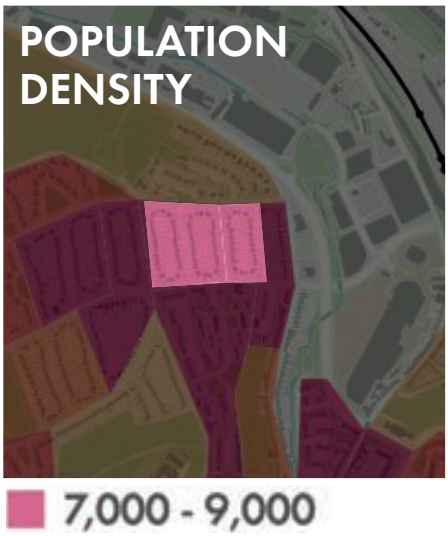
25 - 40 DPH

5. Blackpool

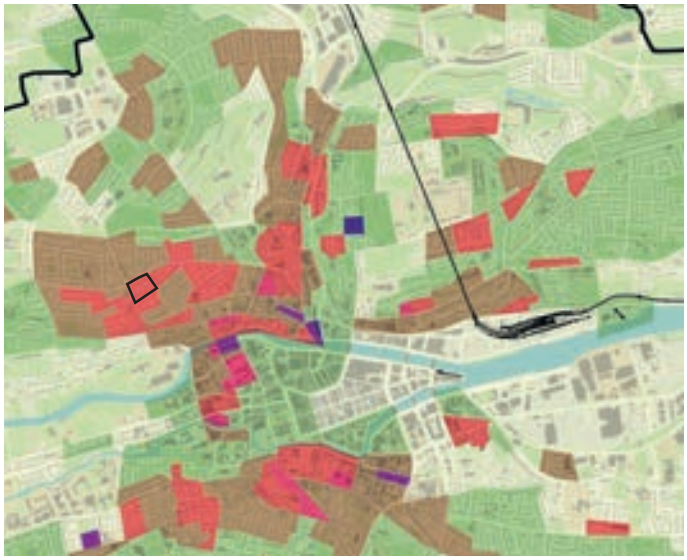
Medium density terraced and semi detached housing with back to back gardens and driveways accessed from narrow roads within the plot.





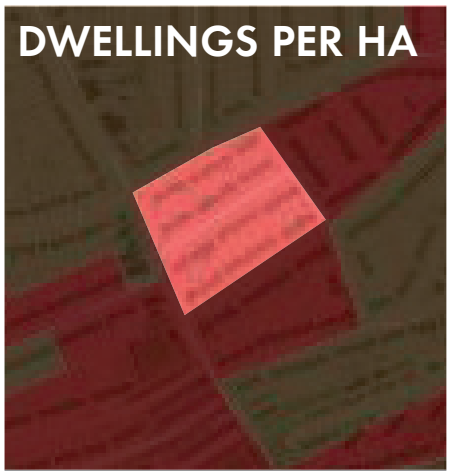


40 - 70
DPH



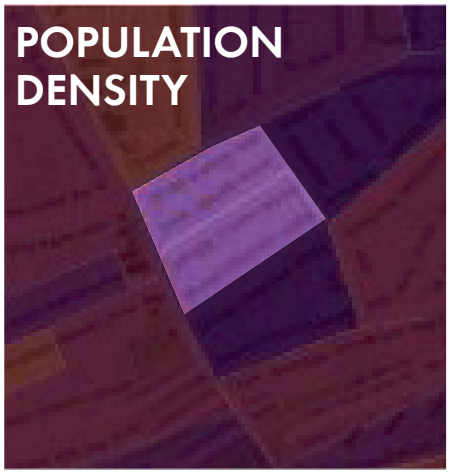
6. Gurranabraher

Medium density terraced and semi detached housing with smaller back to back gardens and driveways accessed from a narrow road within the plot. Wider roads with on street parking around the plot.



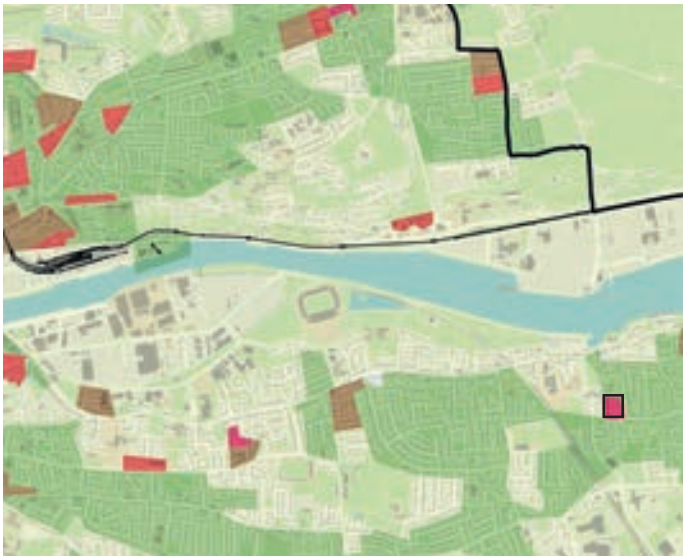
40 - 70

0.5 - 0.7



11,000 - 15,00

70 - 100 DPH

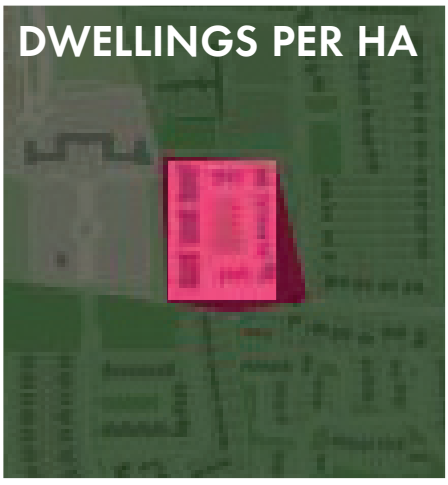


7. Blackrock

Higher density terraced housing and apartments with a range of building heights from 3 to 6 storeys, with shared parking and private garden square.

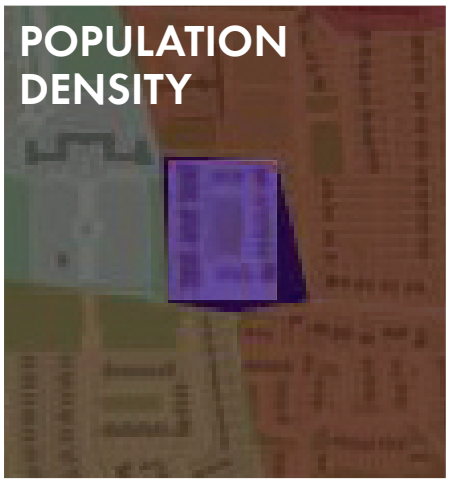
Blackrock Mews, Covent Rd

Blackrock Mews (taken from Covent Mews)



70 - 100

0.5 - 0.7

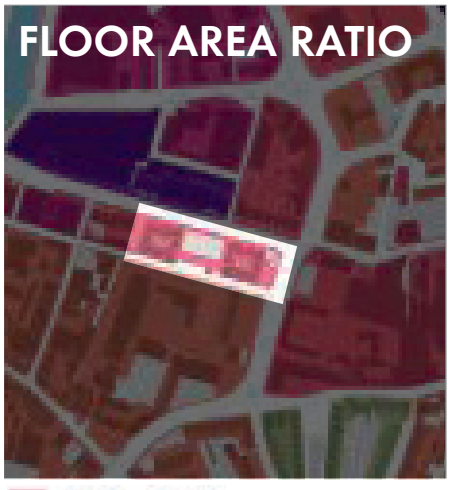


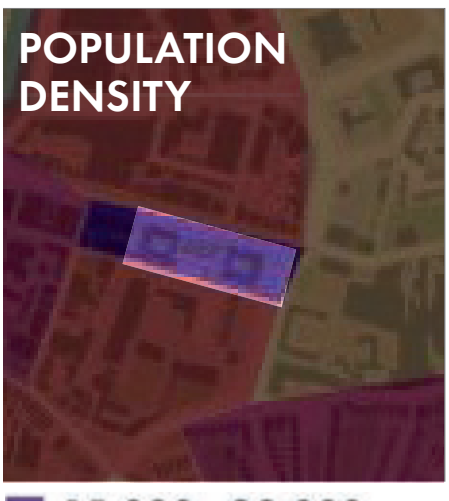
15,000 - 20,000

100 - 200 DPH

8. City centre/ South Terrace

High density apartments with limited amenity space and podium parking.

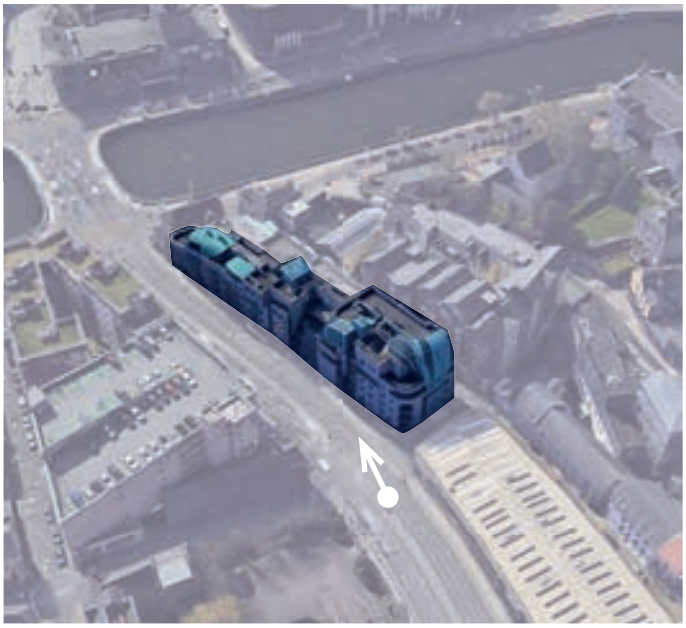




200 - 400 DPH

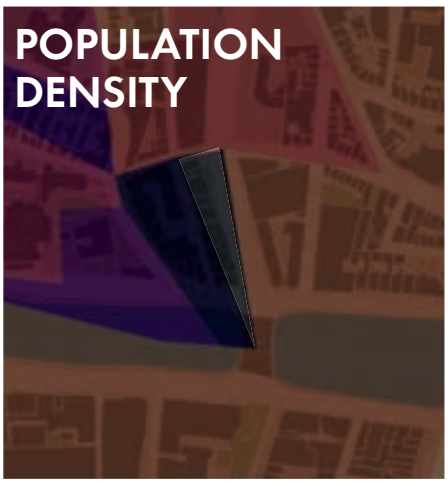
9. Popes Quay/N20

High density apartments ranging in building height from 3 to 6 storeys with limited amenity space with some alternative uses at ground floor level and no parking.



200 - 400

3.5 - 4.5



35,000 - 61,000

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DENSITY IN CORK
TOWARDS A SPATIAL STRATEGY

The context of this strategy relates to the need to plan positively and promote development densities which help to meet very challenging housing targets across Cork City's local authority area. Assessing, measuring and reporting development density is a complex issue. There are many variables at play and small variations can compound to make big differences.

Existing planning policy relating to housing density refers directly to dwellings per hectare (dph) as the standard unit of housing density. However, the Cork Development Plan (Chapter16, Part B) also raises the related issues of plot ratio and building heights. Both of these are also relevant measures of urban density. Plot ratio (or Floor Area Ratio, FAR) provides an overall measure of development density, irrespective of land use. Building height is only one way of increasing the density of development.

This strategy provides guidance on all three of these measures/facets of urban density. Whilst dph is perhaps the primary measure given the need to support the delivery of good quality new homes, in some locations where housing is not the predominant land use FAR may be a more appropriate measure of density.

This **Density in Cork – Towards a spatial strategy** section of the report provides the foundation for a new spatial density strategy for Cork City Council's administrative area. The principal objective of this part of the strategy is to assess the entire administrative area against a series of criteria which combine to make locations more suitable for high density development. Factors including how well served any given location is by future or planned public transport, community infrastructure, access to shops and services, etc. The more criteria any given location meets, the more suitable that area is for higher density development.

It should be noted however that this part of the strategy only assesses the spatial distribution of locations considered more suitable for high density development. It does not assess what level of density is considered appropriate in any given location. That guidance is outlined in Section 5.

This density spatial strategy is structured as follows:

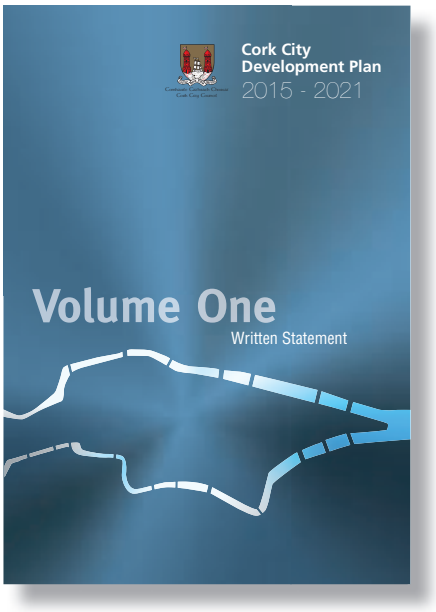
1. **Policy review** – high level review of existing Development Plan policy relating specially to housing density (and also, for completeness) building heights;
2. **Suitability assessment** – a sequential assessment against relevant spatial criteria of relative suitability for higher density development;
3. **Density spatial strategy** – analysis of the suitability assessment to reveal a density spatial strategy for Cork; and
4. **Where are we now** – reflections on how existing (rather than planned) levels of transport accessibility and access to services and facilities can best support high density development today.

3

Existing policy

This strategy has been prepared to help inform the replacement Cork City Development Plan. Whilst there are many policies that will influence development densities – including car parking standards, amenity space standards and housing mix policy – it is useful to review existing planning policies relating to housing densities for new development and new development building heights.

New national planning policy and guidance is directly relevant to the preparation of new and replacement density planning policies, but the following table provides a concise summary of the key Development Plan policies to be reviewed and revised. The Baseline section of this Strategy provides a more comprehensive policy context overview.



Housing density – Cork City Development Plan, Chapter 16, Part C

AREA	GUIDE DENSITY	NOTES	POLICY REF
Central and inner suburban (pre-1920) areas	Higher than 75 dph	• Needs to respond to context • Likely to be controlled by other considerations • Plot ratios (FAR) will be an important issue	Para 16.42
Principal bus corridors; larger development sites and mixed-use /retail centre areas	Greater than 50 dph	• Larger sites are considered >0.5 Ha • Mixed use / centres include central areas, District, Neighbourhood and Local centres)	Para 16.41
All other suburban areas	35 - 50 dph		Para 16.41

Building heights - Cork City Development Plan, Chapter 16, Part B

AREA	GUIDE DENSITY	NOTES	POLICY REF
City centre	3 - 5 storeys	• Historic character of City centre is a key issue / constraint • Development should respect the area's existing character, context save in exceptional circumstances • 1 or 2 additional storeys may be appropriate on prominent corners	Para 16.29
River Lee Corridor: *North channel*	Max storeys: 6 north side 5 south side	-	Para 16.31 Table 16.3
South channel	Max storeys: 5 north side 4 south side	-	
Inner Urban Areas	1.5 - 3 storeys	-	Para 16.33
All other suburban areas	1 - 3 storeys		Para 16.27

Methodology for determining sustainable locations for density

A series of suitability criteria have been assessed spatially across the Cork City Council administrative area. Criteria have been selected in view of the relevance they have to supporting sustainable patterns of living. Areas which provide good access to a range of services because they are located in a designated centre are clearly more suitable than rural locations where residents would need to arrange to travel much further to access these services. Similarly, areas which benefit from good or potentially good levels of public transport accessibility are considered more sustainable and therefore more suitable for new developments of higher densities. Access to blue and green infrastructure has been shown, during the COVID-19 pandemic, to be an increasingly important criteria in supporting a good overall quality of life.

The criteria have been selected and disaggregated to ensure that all criteria considered relevant make a meaningful and visible contribution to the strategy in the knowledge that some informed judgements will also need to be made to reflect on local circumstances when considering suitability for different forms of development and proposed densities on a case by case basis.

The criteria forming part of this density spatial strategy assessment are as follows:

1. Access to services: Areas within or immediately adjacent to the city centre or the city's district and neighbourhood centre or within the numerous identified local centres.

2. Proximity to community facilities: Within walking distance of community facilities.

3. Proximity to green and blue infrastructure: Within walking distance of the River Lee or identified open space.

4. Identified opportunity areas: Some locations have already been identified for potential housing growth in the Development Plan and/or CMATS strategy.

5. Proximity to railway stations: Regional and national services terminate in Kent Station but other stations also serve the area.

6. Proximity to high frequency bus services: These are defined as routes with bus frequencies of every 15 minutes or less.

7. Proximity to 'normal' bus services: In addition to the high frequency routes, this area covers routes which benefit from regular but less frequent services.

8. Proximity to the planned Light Rail Transit (LRT): The Council are committed to the delivery of a Luas light rail service for Cork running at high frequency between Ballincollig and Mahon via Cork city centre.

These criteria generally fall within two cohorts from which the spatial density strategy is comprised, as follows:

A Access to services, facilities and amenities: That is, access to town, district, neighbourhood and local centres; access to community facilities and access to green and blue infrastructure.

B Access to public transport: That is rail, bus and potential LRT services. Note that the disaggregation of the different types of public transport means that significant weight is attributed to this cohort of criteria in the spatial density strategy for the city.

The identified opportunity area criteria fall beyond these two groupings. Their designation has been informed by knowledge of the broad location of planned transport infrastructure investment.

Tension between physical characteristics and policy framework

The analysis presented below assesses how different physical characteristics – levels of public accessibility, proximity to shops and services – help to make areas suitable. But it also gives weight to the existing policy framework in making areas suitable. However, access to a potential LRT station, the location of a new opportunity area identified through the CMATS – these are areas with the potential to be suitable locations but don't yet benefit from the access to shops, services and facilities.

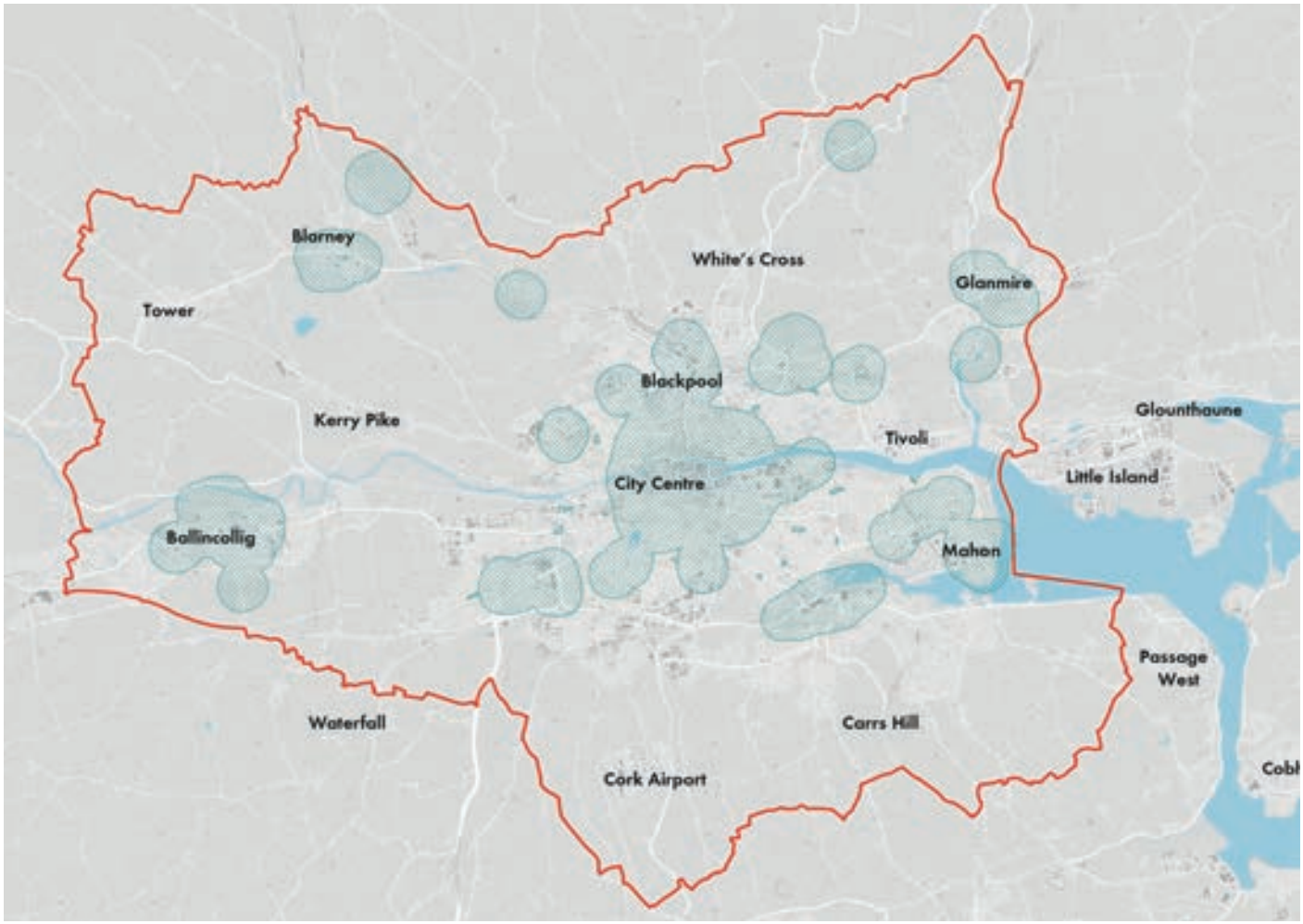
This highlights a tension between the extent to which the density strategy can be used to inform and review existing policy or is itself informed by, and in part based on, existing policy. It is considered that both existing attributes of a place and known investments are relevant and necessary elements of the strategy. The final part of this section provides reflections on the strategy in this regard.

Reflecting on the baseline research undertaken and discussions with relevant officers and departments regarding the potential attribution of relative levels of importance for different criteria or sub-criteria, the strands of the strategy relating to each of these criteria have been given equal weighting. This view emerged as the most pragmatic because of the need for the strategy to be clear, accessible and capable of providing practical support to the development plan review process.

During the course of strategy production mapping was prepared and analysis undertaken which gave a weighted and consequently more nuanced assessment of the relative importance of criteria (public transport against access to services) and sub-criteria (proximity to train stations against proximity to bus routes). However, these subtleties were found to weaken the overall strategy evolution given the wide range of relevant criteria. The strategy became too subtle and less useful and practical if these weightings were retained.

The criteria have however been selected and disaggregated to ensure that all criteria considered relevant make a meaningful and visible contribution to the strategy in the knowledge that some informed judgements will also need to be made to reflect on local circumstances when considering suitability for different forms of development and proposed densities on a case by case basis.


Bus Éireann
VDL



1. Access To Services

A hierarchy of centres is defined in the existing City and County Development Plans. These range from Cork City Centre; the district towns of Ballincollig, Blarney, Glanmire, Mahon, and a network of lower order neighbourhood and local centres. Reflecting on the challenges posed by the COVID-19 pandemic, the concept of the 15 minute city has emerged. The concept, was developed by Carlos Moreno of the University of Paris and advocates the creation of a city of neighbourhoods in which those who live there can find everything they need in terms of work, retail and leisure within 15 minutes of their home.

This concept – which effectively also encapsulates the compact growth concept promoted through the National Development Plan NSO1 – is at the heart of identifying central areas as suitable for dense forms of development, but it also helpfully effectively calls for an additional buffer zone around designated larger centres encompassing neighbourhoods which benefit from close proximity to concentrations of shops and services available in central areas.

For the purposes of the spatial density strategy, an 800 m (10 minute walk to the outer edge of the designated centre) buffer has been included around the city centre. A 400 m (5 minute walk) buffer around the network of Cork's district centres is included with the same buffer also placed around smaller neighbourhood centres. The small local centres are considered too small to warrant buffer areas.

2. Proximity to community facilities

A dataset of point locations of community facilities has been provided by Cork City Council. Encompassing schools, health facilities and other community uses, these facilities, many of them concentrated in central locations, help to support the day-to-day operation and long-term sustainability of the local neighbourhoods they serve.

For the purpose of the spatial density strategy, priority was given to health and education facilities where a 400 m buffer has been applied. Other facilities have been allocated a 200 m zone around them.

3. Proximity to green and blue infrastructure

COVID-19 has also led to a heightened recognition of the importance of easy access to waterside environments and designated open spaces. An accessible network of green and blue infrastructure is therefore able to help support higher densities in light of the amenity value they provide.

800 m walking thresholds are defined around the River Lee corridor and open spaces of 5 Ha or more and a 400 m threshold around small identified open spaces have been mapped as part of the spatial density strategy.

4. Identified opportunity areas

The Cork Development Plan and the Cork Metropolitan Area Transport Strategy (CMATS) both identify locations for development, regeneration and growth. These designations have been informed by anticipated investments in public transport, most particularly the planned Cork LRT route. Unlike the other criteria, these opportunity areas reflect layers of existing policy. Therefore, some of the areas identified may not otherwise be considered suitable as they may not benefit from good levels of access to existing public transport or other services.

The Monard Strategic Development Zone is a case in point. This has been a location earmarked for strategic development includes the creation of a new railway station in a currently rural location north-east of Blarney. The vision for the area including the establishment of a new town centre.

Tivoli Docks

The NPF 2040 and RSES for the Southern Region 2031 both recognise Tivoli Docks as a nationally significant urban regeneration opportunity and a valuable asset in the delivery of ambitious compact growth in Cork City and the wider Cork Metropolitan Area out to 2040. Its location and assets allow for Transport Orientated Design (TOD) through the delivery of new central train station, a central bus corridor and a pedestrianised waterfront and greenway. Cork City Council have progressed the long-term planning of the site through the preparation of an Area Based Transportation Assessment (the Draft Tivoli Docks ABTA 2021), an Urban Design and Landscape Framework Plan (Tivoli Docks UDLFP, 2019) and the Tivoli Docks Urban Density and Buildings Heights Strategy (Tivoli UDBHS, 2021). These site-specific studies have informed the planning, urban design, density and building height policies and objectives for the future regeneration of the site, as set out in the Draft Cork City Development Plan 2022-2028.

5. Proximity to railway stations

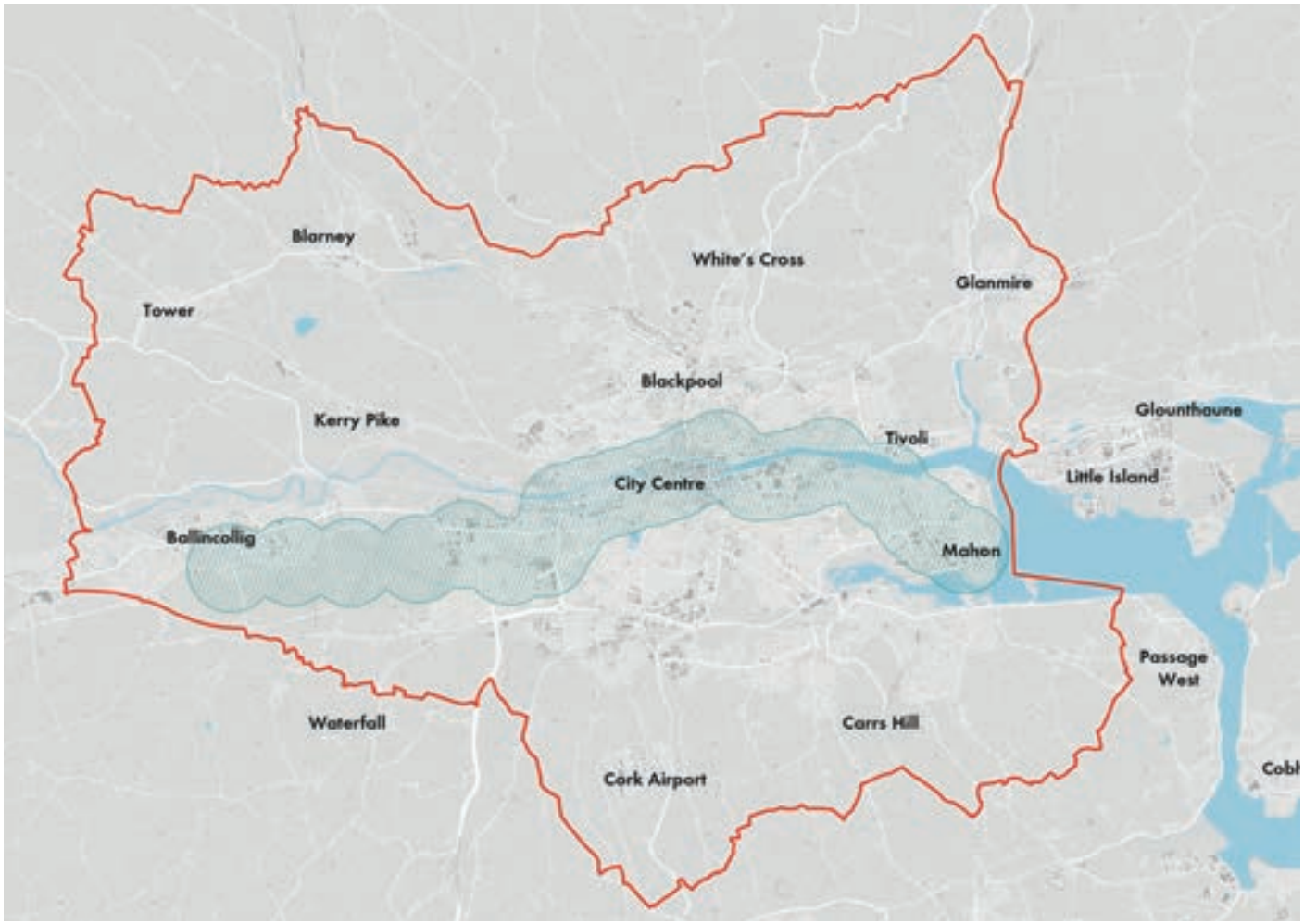
Regional and national services terminate in Kent Station in the North Docks area. Other stations extend along the rail lines that traverse the north and east of the administrative area. With heavy rail stations supporting high volumes of passengers and with stations acting as hubs for public transport interchange, the area around stations extending 800 m (10 minute walk) is included in the assessment.

6. Proximity to high frequency bus services

High frequency bus services are considered to be routes which benefit from bus services every 15 minutes or less. High frequency routes are mapped as a separate dataset. Whilst the data is complex and some routes benefit from multiple high frequency routes, it should also be noted that the location of bus stops is not an available dataset. As a result the data is presented for the route as a whole on the basis of the location of individual stops. A threshold of 400 m along high frequency bus routes has been mapped.

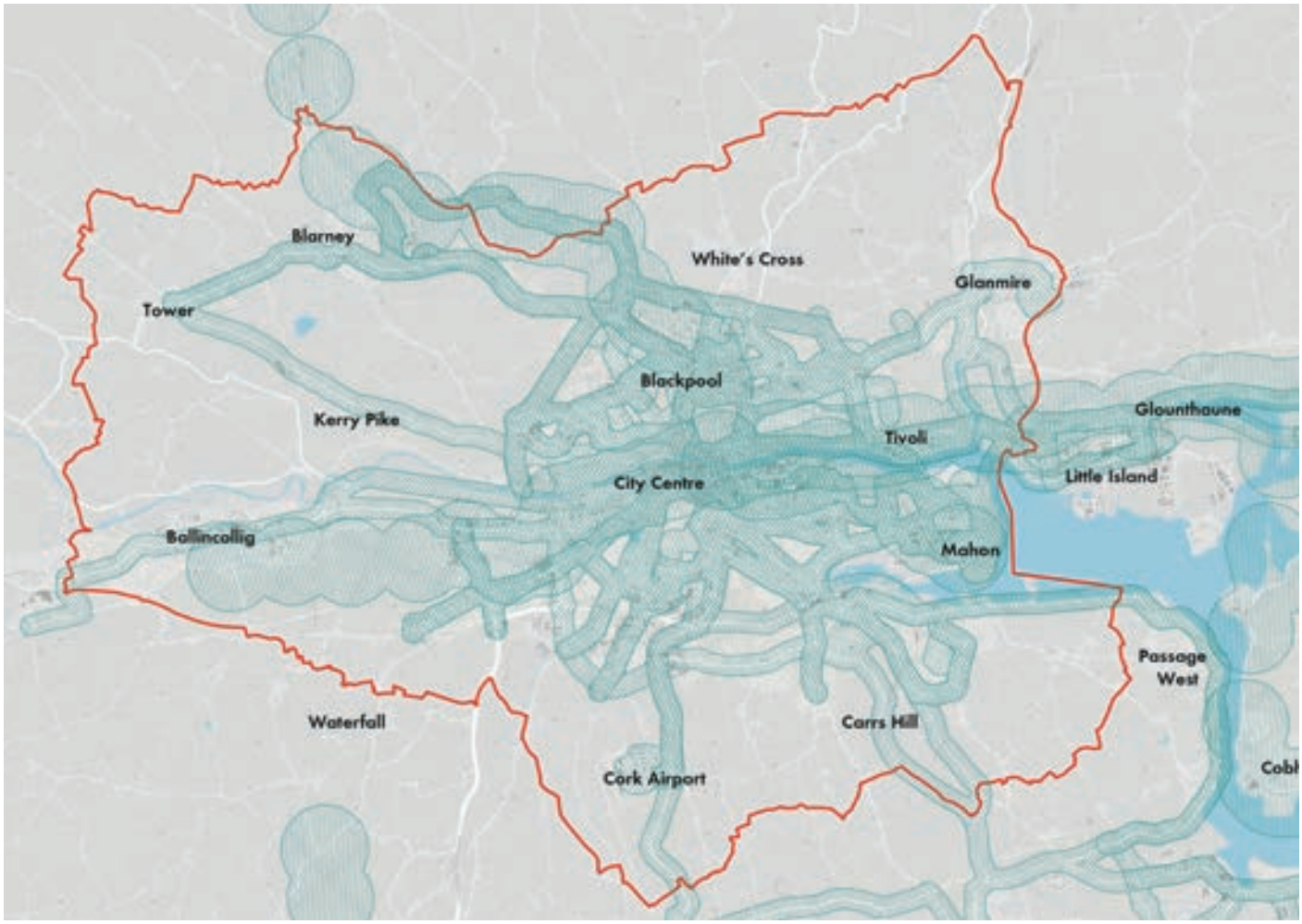
7. Proximity to 'normal' bus services

In addition to the high frequency routes, this area covers routes which benefit from regular but less frequent services. These cover a much more expansive network of streets and neighbourhoods although it should be noted that these routes will also pass along the routes of the high frequency bus routes. We have placed a 400 m walking zone around these service routes across the whole of the Cork administrative area.



8. Proximity to the planned Light Rail Transit (LRT)

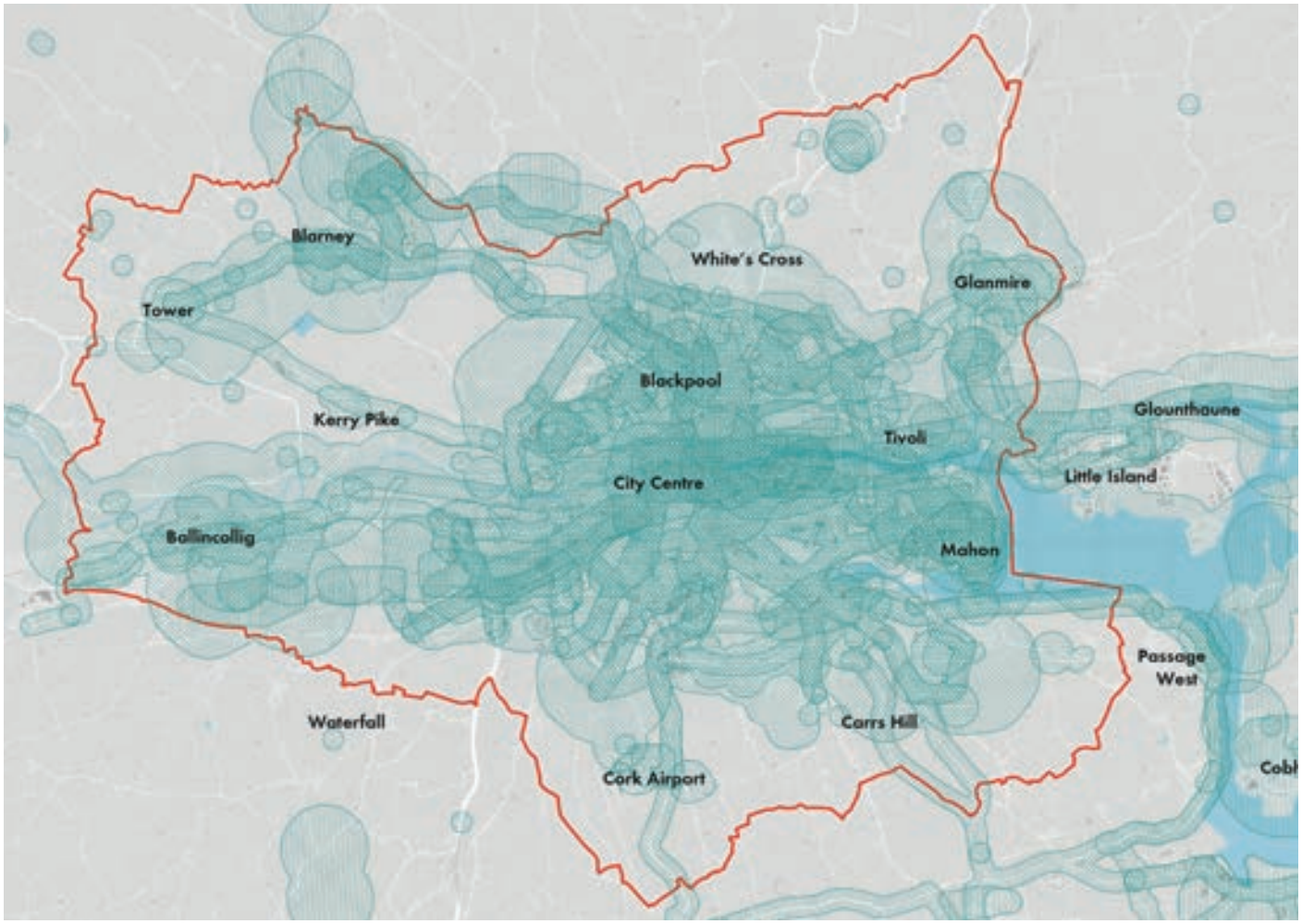
The central proposal in the ambitious CMATS strategy for Cork is the LRT route extending between Ballincollig and Mahon via Cork city centre and the south and north docks area. Whilst exact locations of proposed LRT stations have not yet been fixed, some potential stop locations are already envisaged. A high frequency 5 minute service is envisaged. Like heavy rail stations, an 800m zone is placed around the planned stations.



Access to public transport – composite picture

The plan above overlays all four public transport criteria to provide a more complete picture of the relative access to public transport across the city. The threshold around services remains unchanged (800 m around existing and planned train and future LRT stations; 400 m along bus routes).

The east-west links provided by the rail and potential LRT routes are evident, as is the prominence of strong links northwards to and beyond Blackpool. Connections with Mahon to the east, Blackpool to the north and along the banks of the Lee east of the city encompassing both North and South Docks are perhaps revealed as the corridors best served overall as these are locations which benefit from multi-mode services.



Suitability composite

The data underpinning this spatial density strategy could be further refined. New layers could be added, different buffer zones applied. However, the test will be whether guidance can be drawn from the strategy when the layers, and the degree to which they overlap, are interrogated and reviewed.

The multifaceted nature of its composition protects the strategy against an over-reliance on any given criteria. Conclusions informing practical guidance on the delivery of appropriate increases in development density can be drawn from a close look at where and how multiple layers of criteria overlap - how they compound the case for some areas being far more suitable than others.

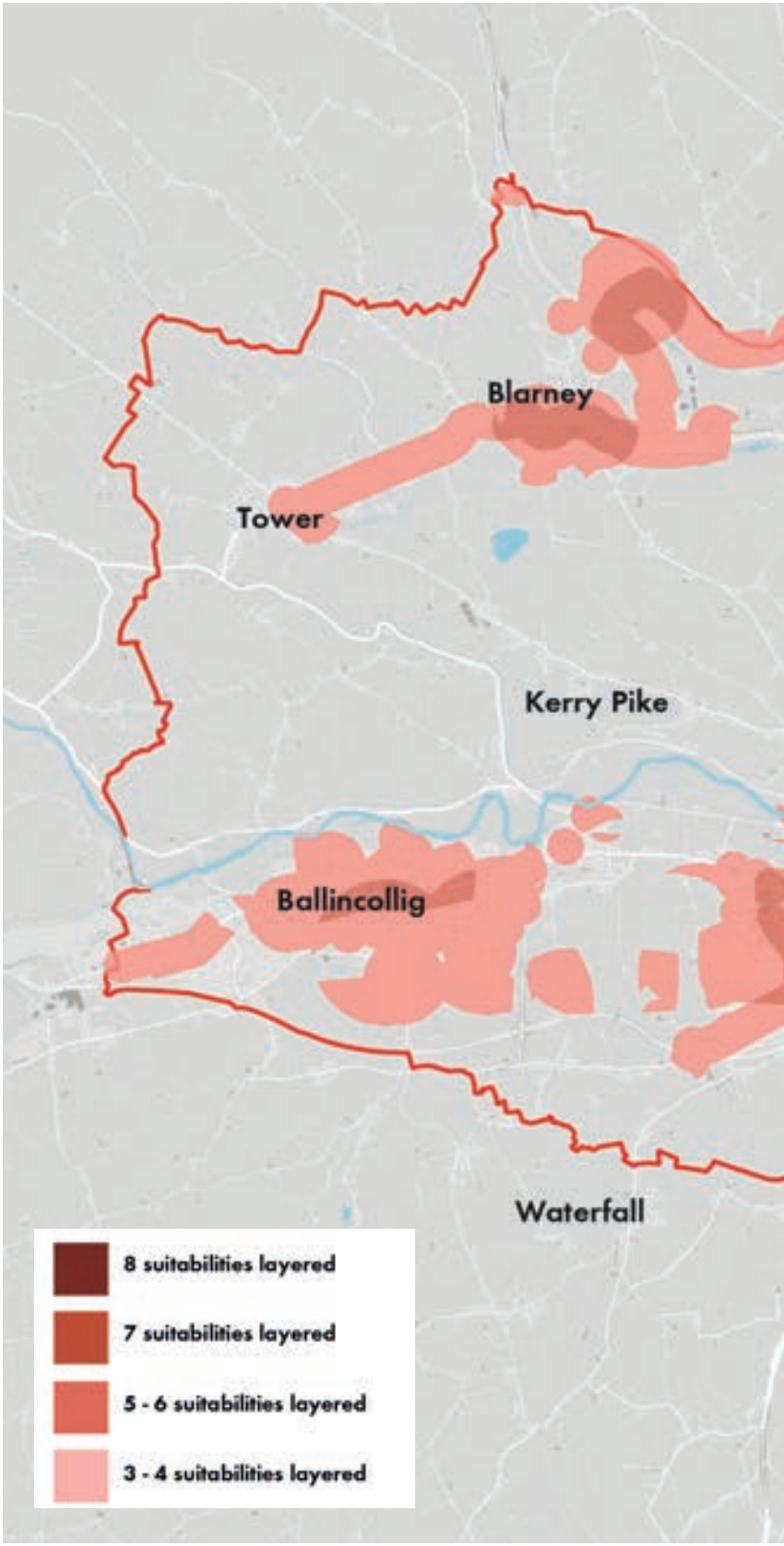
An existing density policy is in place in the Development Plan but it is not expressed spatially. Whilst the emerging spatial density strategy presented here will not present a radical shift in the approach to be taken to the density of new development, it does provide a new, evidence-based, strategy which takes account of the primary factors which should determine relative density levels.

The following section takes a closer look at where overlaps in criteria have identified locations considered most suitable for the highest densities, where a slight reduced but still strong degree of overlap identify areas suitable for higher densities and where a range of overlapping criteria - different in different areas - help to identify areas suitable for urban intensification.

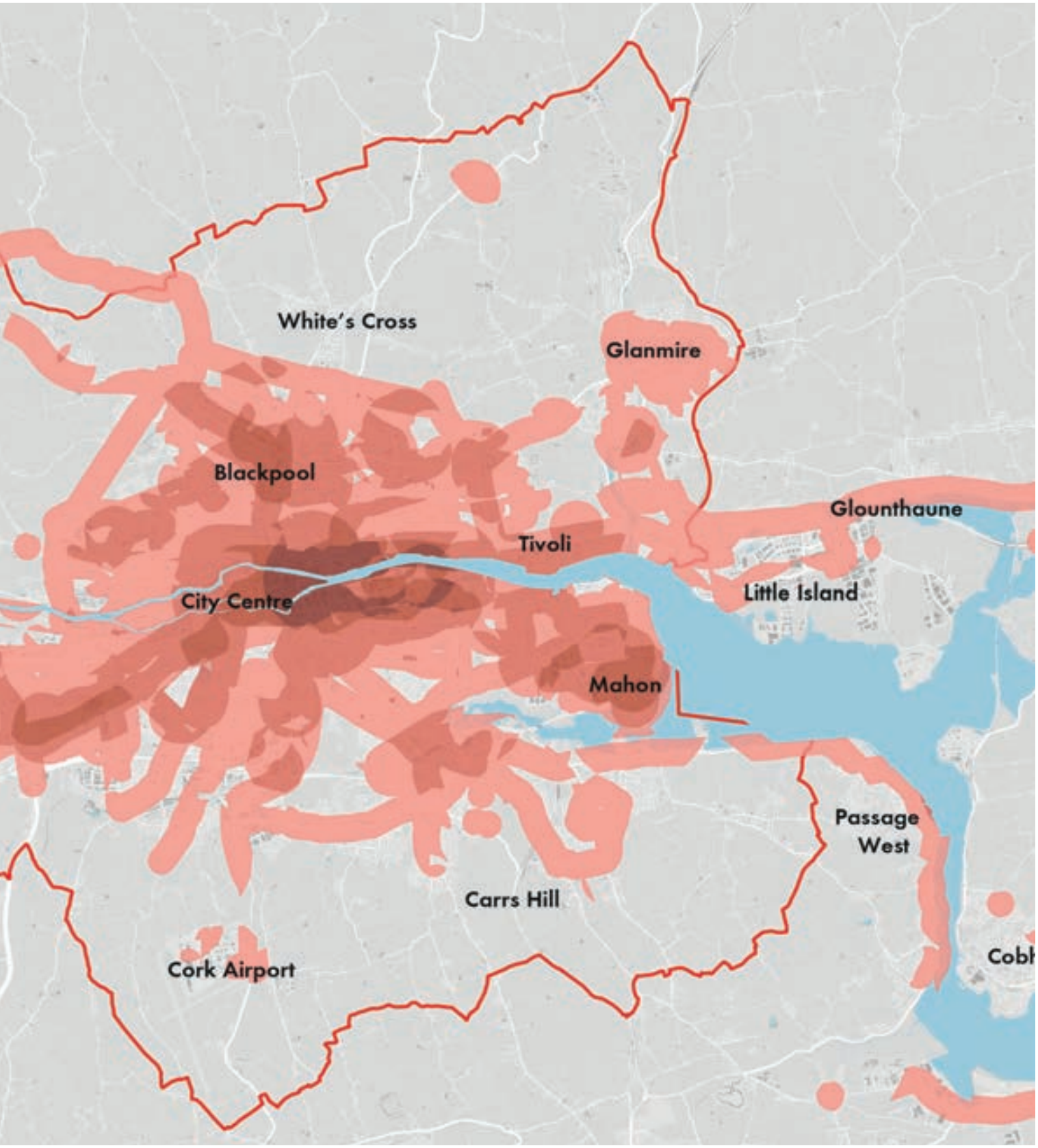
Emerging spatial strategy

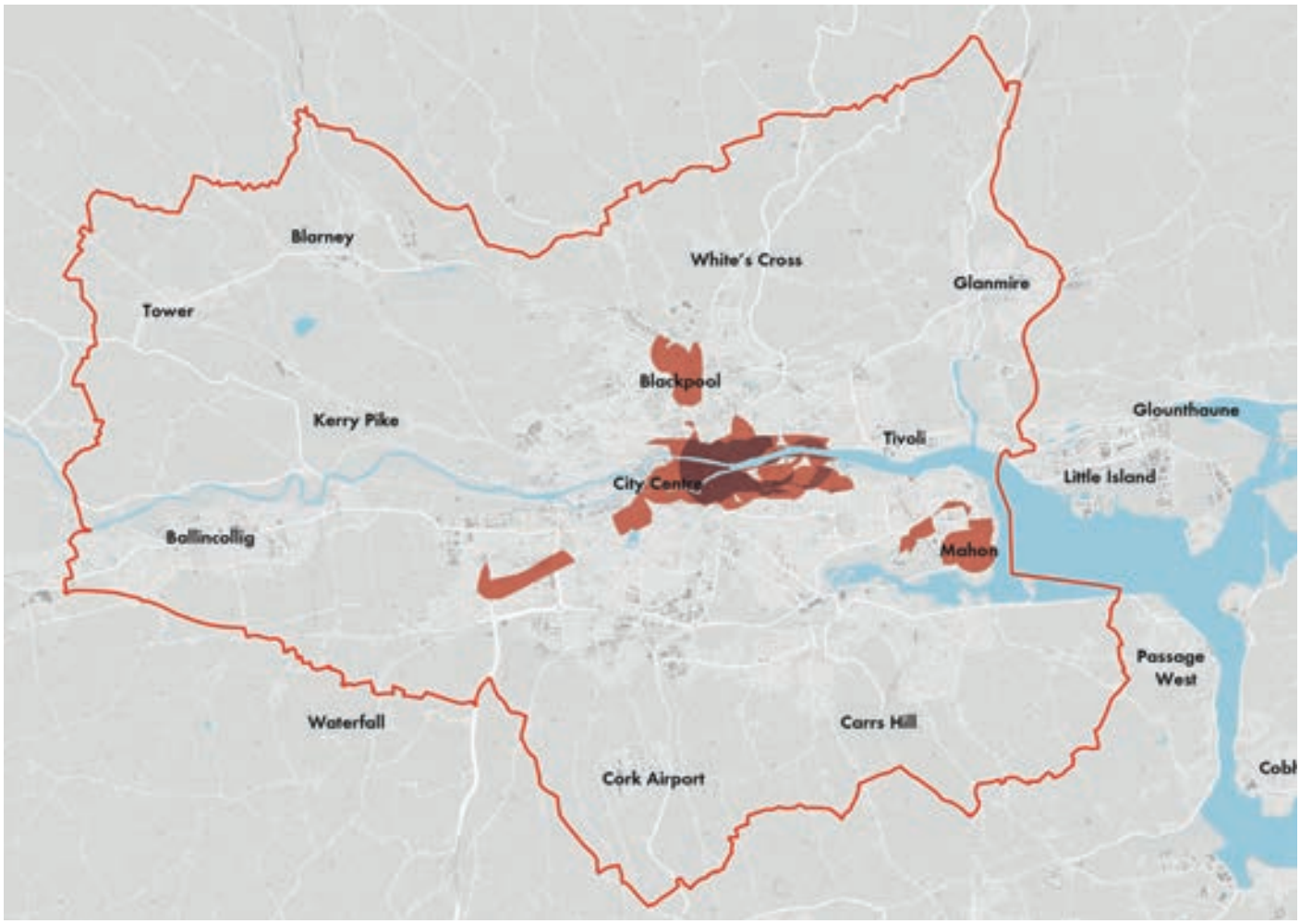
Whilst all criteria make important contributions to making any given location suitable and appropriate for higher density development, it is the compounding effect of multiple, overlapping criteria which makes certain areas particularly suitable.

The density strategy presents a complex picture – a function of multi-faceted, layered analysis. For this strategy to underpin policy in a robust and clear way, it needs to be interpreted – key messages need to be drawn out and articulated. These key messages – which form the central strands of the Cork density strategy – can be summarised as follows on the next pages.



Spatial density strategy




Blarney
White's Cross
Glanmire
Tower
Blackpool
Kerry Pike
Glounthaune
Tivoli
City Centre
Little Island
Ballincollig
Mahon
Passage West
Waterfall
Carrs Hill
Cork Airport
8 suitabilities layered
7 suitabilities layered

Areas most suitable for the highest densities (7 and 8 layers)

The locations where the highest number of criteria apply are put forward as the areas most suitable for higher density development. These locations will therefore play a critical and central role in Cork meeting its growth targets over the plan period and beyond. These locations are shown to comprise:

Cork city

Encompassing areas on both the north and south side of the River Lee, the area meeting all 8 criteria is focussed on the eastern side of the city and does not include any areas on City Centre Island west of Commercial Street. It is notable that not all of the City Centre Island is covered, with the area between the River Lee and Henry Street and Adelaide Street falling outside of this area. It is convenient access to good quality public transport services that this particular part of City Centre Island perhaps lacks.

The North Docks area around Kent Station

The entire North Docks area around Kent Station is flagged as an area most suitable for the highest densities of development. This is underpinned by the very good quality public transport links that serve the area. High-density mixed-use regeneration is already progressing with the Horgan's Quay and adjacent Penrose Dock schemes.

The South Docks area

The South Docks are already earmarked for transformative change. The South Docks Area Plan is over 10 years old but outlines a spatial framework for comprehensive redevelopment of the area. The Land Development Agency and the City Council have recently established a Cork Docklands Delivery Office which will help promote and programme investment and significant growth in jobs and homes across 146 Ha of land. It is probably a relative lack of high frequency bus services that is excluding this area from the very highest and most suitable density zone in this strategy.

The suburban district centre of Mahon

Mahon is very well served by infrastructure which sees it meet all density strategy criteria save the provision of a heavy rail station. The prospect of the LRT service starting and terminating in Mahon providing very frequent services to Cork city centre underpins the area's suitability. Intensification of the Mahon area however needs to be seen in context.

Mahon does not present patterns of organic growth. The commercial centre is isolated by major road infrastructure and is itself characterised by a highly engineered road network with large scale building in an office park or out of centre format. The adjacent housing areas to the north, some of which fall within the identified zone, are separated by major roads and in no way present any form of transition in scale being all two storey semi-detached houses or short terraces, all of a similar age.

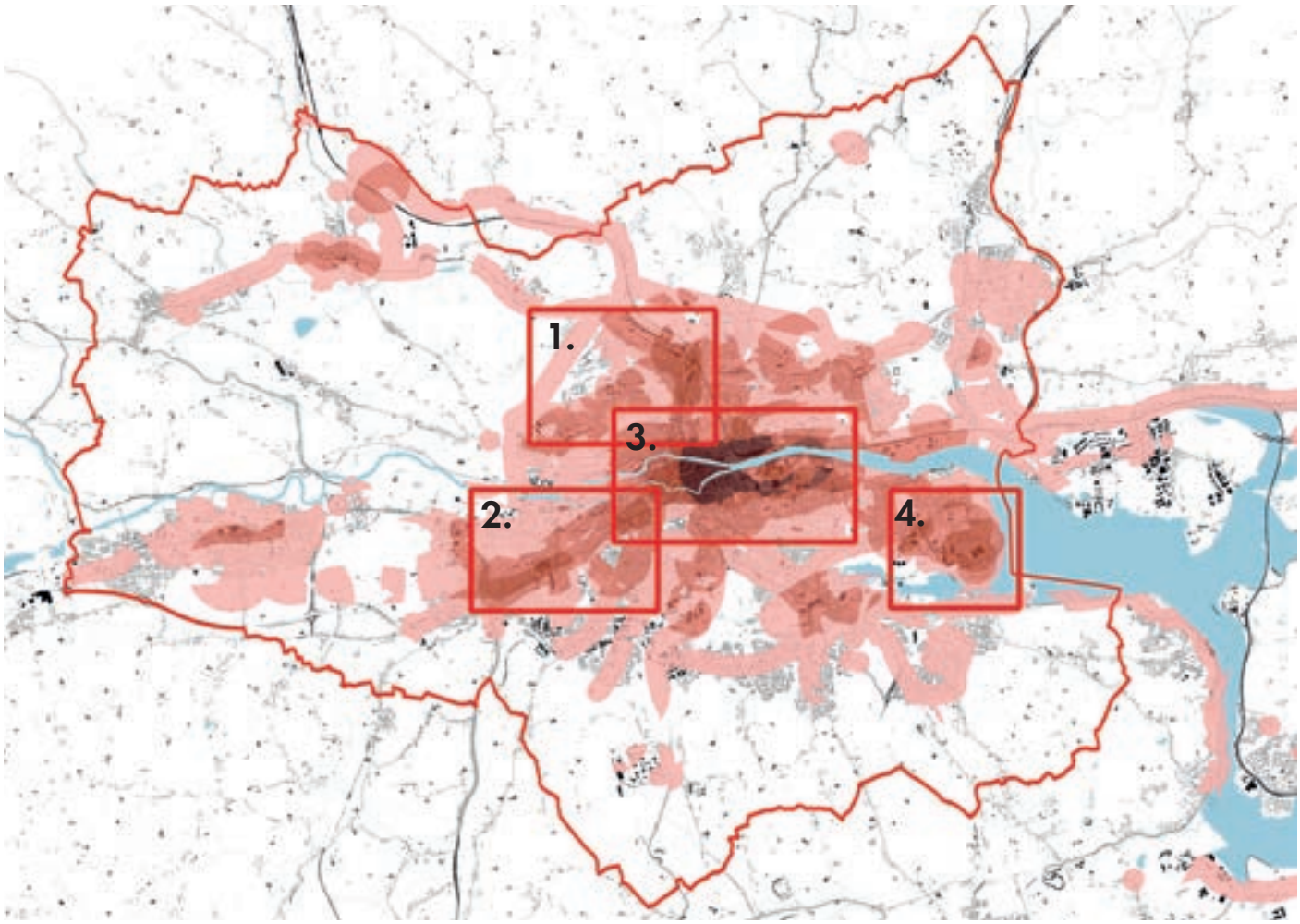
The suburban district centre of Blackpool

Blackpool shares many of Mahon's characteristics – it is well served by infrastructure and therefore is likely to have significant 'capacity' for growth, but it is essentially an out of centre environment and therefore lacks a sense of place.

Wilton

With a large shopping centre, a cluster of community facilities centred on the University Hospital and being earmarked to be on the planned route of the LRT system, Wilton and Bishopstown are well suited to accommodating more dense forms of housing development. These are more integrated centres than Mahon and Blackpool with development appearing to have occurred in a more organic manner and over a longer period of time. The road network, whilst heavily engineered which causes some severance, acts as much to connect communities together which will help to facilitate further intensification and growth.

Places of note

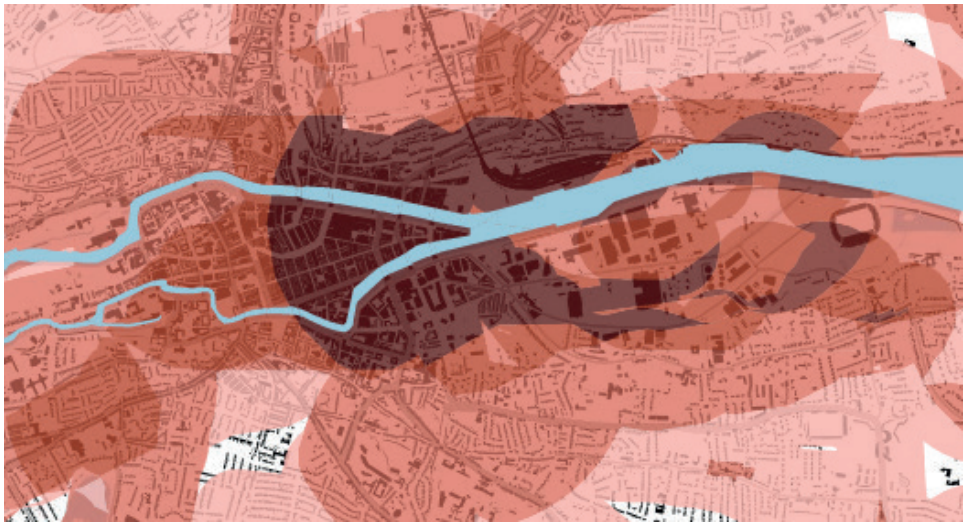


The spatial density plan can be useful in analysing and scrutinising important areas in greater detail. It helps to reveal particular areas or corridors which are likely to be better suited to higher density. It may also help to reveal areas which are expected to deliver development over the coming years' deficiencies in suitability, indicating a need to improve services in these locations in order to support sustainable development.

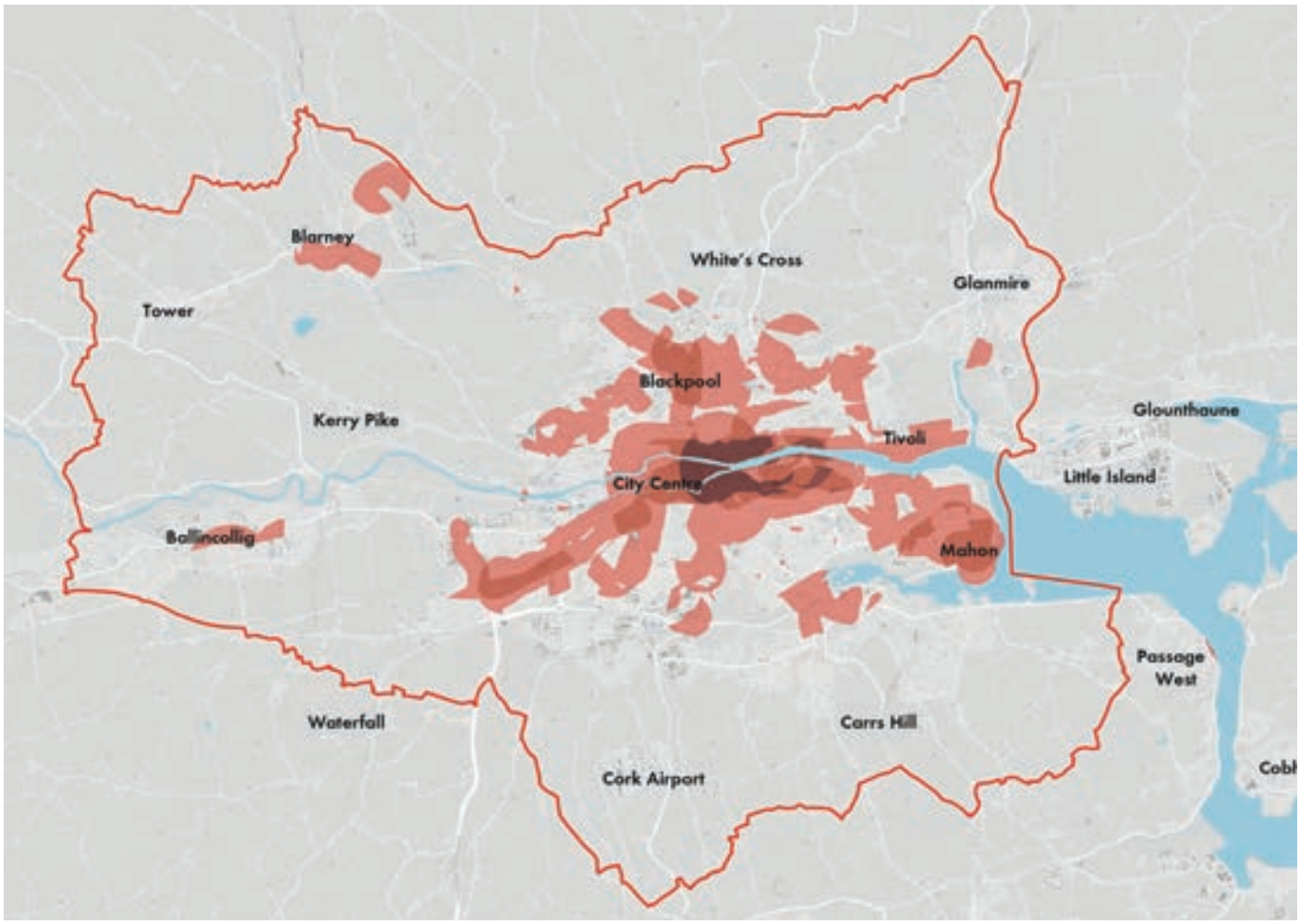
2. Curraheen Road corridor

1. Blackpool

4. Mahon



3. City centre


Blarney
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Little Island
Ballincollig
Mahon
Passage West
Waterfall
Carrs Hill
Cork Airport
8 suitabilities layered
7 suitabilities layered
5 - 6 suitabilities layered

Areas suitable for higher densities (5+6 and 7+8)

Beyond these most suitable locations where almost all assessment criteria are met, typically there are zones that still show positive assessments against numerous criteria.

In view of their relative assessment, these locations are considered to be suitable for higher density development as they will meet numerous suitability criteria.

The pattern of their distribution is clear from the density strategy plan and can be characterised by three types of distribution:

1. Areas encircling those areas considered to be most suitable

These locations are the inner suburbs of Cork city and the areas beyond the most suitable central areas of Mahon and Blackpool. The challenges facing these more peripheral locations will vary depending on their respective characters. The inner suburbs of Cork offer environments with variety and history which should make these locations more response and receptive to intensification. The areas around Mahon and Blackpool are characterised less by variety and more by consistency. It is this consistent low density, two storey housing-based character which will present challenges to ensure these well served and 'suitable' locations make a more meaningful contribution to Cork's growth.

2. Smaller commercial or community centres

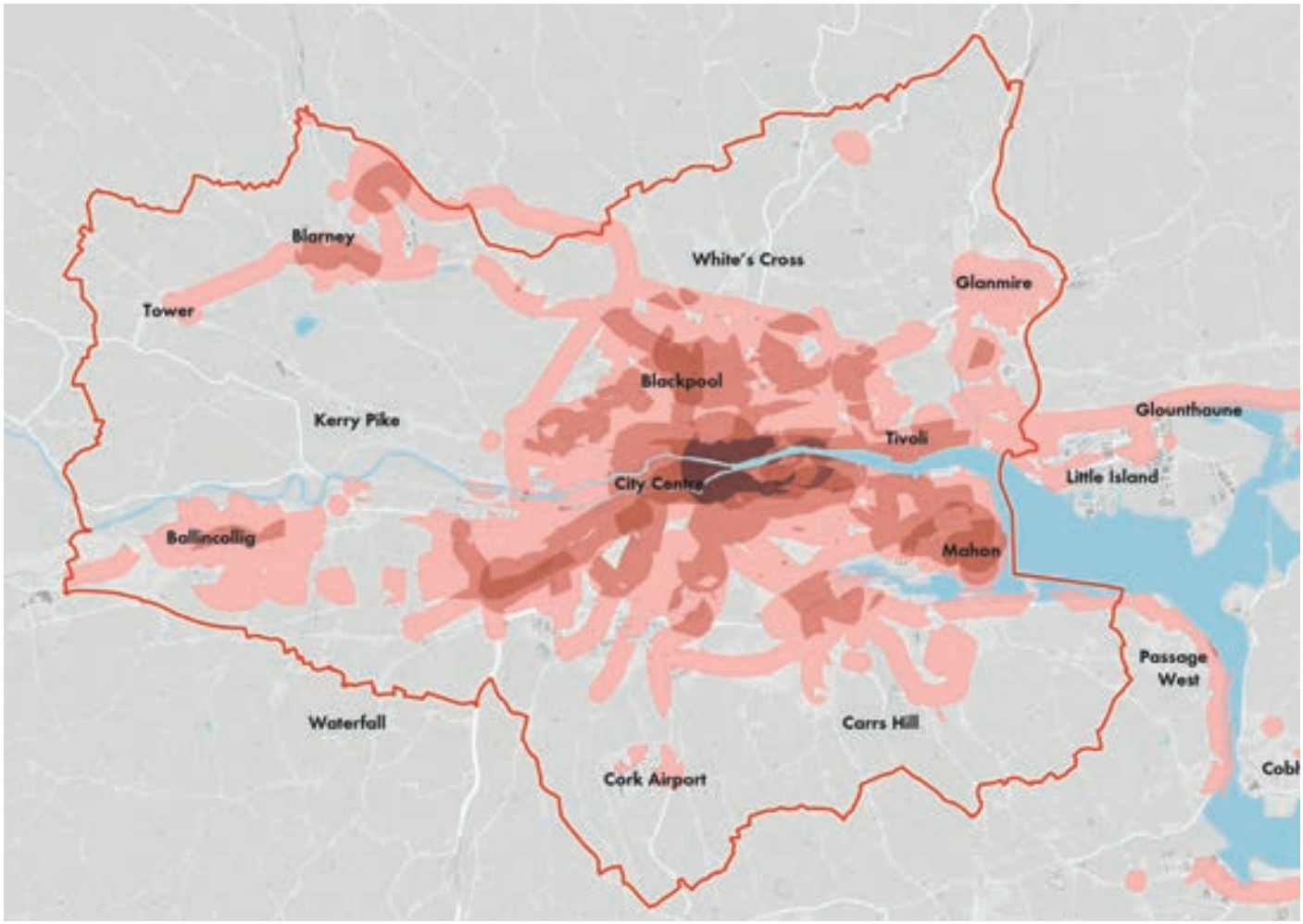
These centres include Blarney, Glanmire, Douglas and Ballincollig. These settlements are identified as areas suitable for higher densities principally because of the good range of services they provide to local people. They all have their own character however and bespoke design solutions will be required – particularly in the more historic centres such as Blarney. However, the particular urban characteristics and constraints of these centres should be embraced and should result in sensitively designed, contemporary but contextual developments which respond not only to the local character but also the sustainable credentials of the location.

3. Principal urban corridors

The N20 corridor which runs north to Blackpool and ultimately connecting Cork with Limerick is an appropriate environment for higher densities. Some relatively recent developments along this corridor already respond positively to this opportunity. The Bandon and Glasheen Road corridor which connects Wilton and Bishopstown with the city also emerges as appropriate, driven by the high frequency bus services which run along it, the range of services provided in the local centres along it and with the area already being identified as an opportunity area in CMATS. The connections linking Mahon with the city along Boreenmanna Road and Blackrock Road also feature, chiefly because of the existing good bus services that run along them together with the prospect of the LRT stations serving local communities here.

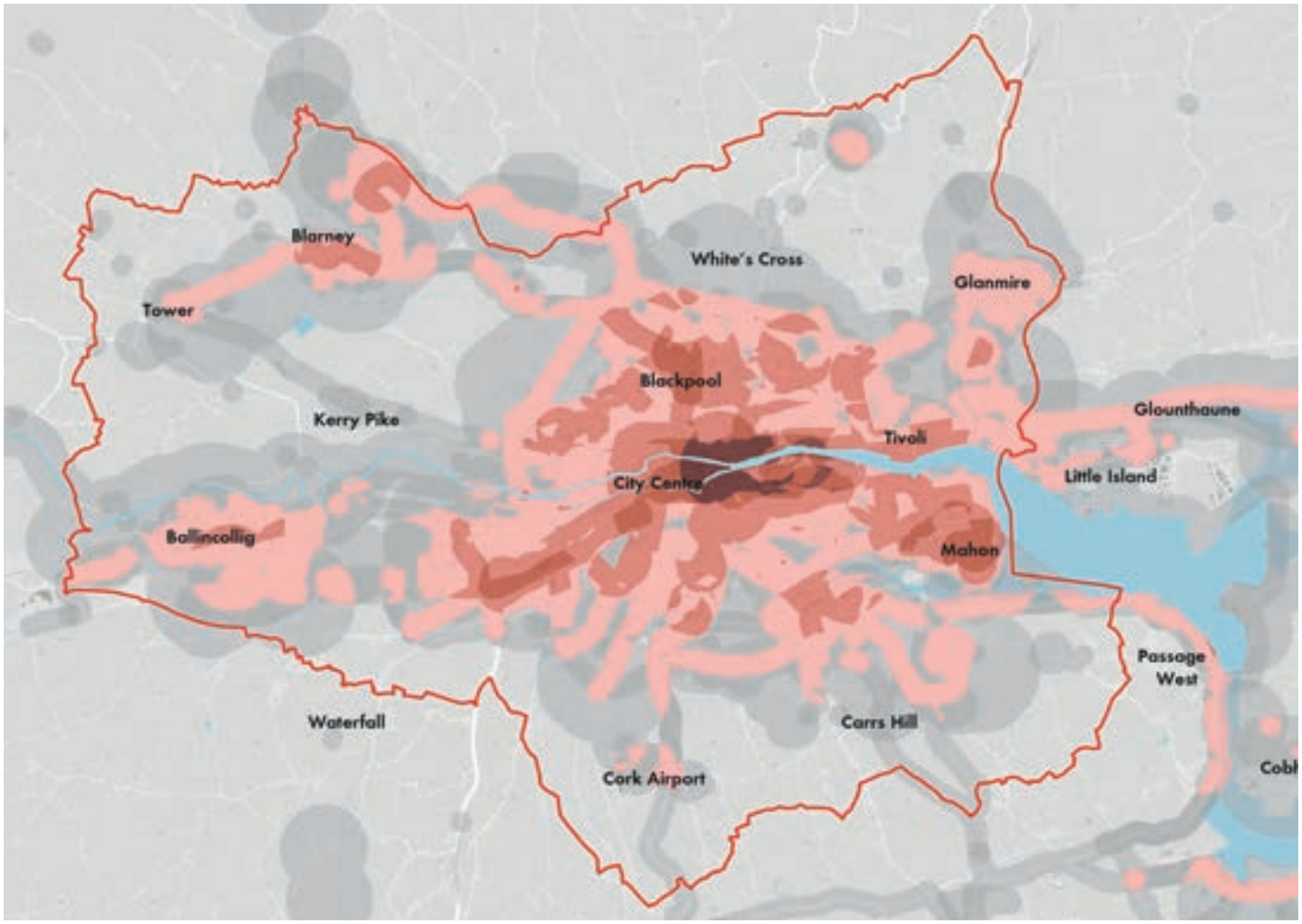
4. Fairhill

Good quality bus services are likely to continue to play a key role in the ongoing transformation of the Fairhill area of north Cork. The area has seen investment in its social and community infrastructure and renewal of some of the area's housing estates has resulted in much more efficient patterns of development which make better use of urban land. Lots of jobs have been created in this part of Cork which makes this area a sustainable place to live.



Urban areas for intensification (3+4 and 5+6 and 7+8)

Areas benefiting from 3 or 4 of the suitability conditions tend to fall beyond the urban areas of Cork and its surrounding towns. The northern half of the city is shown to be particularly suitable for general urban intensification, with the larger industrial areas in the Blackash area and the large open spaces resulting in lower suitability assessment in the south.



All layers shown

For interest, the above plan shows all of the layers of plans, including those which only had one or two of the suitabilities listed.

Some reflections on Cork's spatial density strategy

While the density strategy outlined above is useful in providing analysis demonstrating locations in Cork suitable and appropriate for higher density development in the future, this strategy has in part been informed by the prospect of forthcoming investment in transport infrastructure through the delivery of the proposals outlined in CMATS. The tension between the strategy helping to establish a new policy framework whilst also ensuring that policy framework is itself informed by existing policy has already been flagged.

The LRT is a long-term project. It will take some considerable time to be delivered. Many of the opportunity areas identified in the suitability criteria relate directly to CMATS identifying areas for new housing growth in light of this planned transport infrastructure coming forward.

It could be said that a more current assessment of suitability would be presented if those future layers were removed from the strategy – that is, if the LRT routes and the opportunity areas were turned off. This would help to identify more clearly areas that may be considered suitable for higher density development notwithstanding this planned future investment or the investment and development in the proposed opportunity areas.

Where are we now?

While the density strategy shown on the previous pages is useful in providing analysis demonstrating locations in Cork which are suitable and appropriate for higher density development in the future, considering future investments in transport and growth, it may also be helpful to consider locations in Cork which are suitable for higher density now.

A number of the opportunity areas set out in Cork's Development Plan, as well as the Light Rail Transit (LRT) planned as part of the Cork Metropolitan Area Transport Strategy, may take a number of years to be realised in full. It is noted that construction on the LRT will not begin until after 2031. Keeping this in mind, this plan is intended to provide a snapshot of Cork now, indicating those areas which may be suitable for higher density without reliance on additional access to public transport provided by the LRT, and investment and development in the proposed opportunity areas.

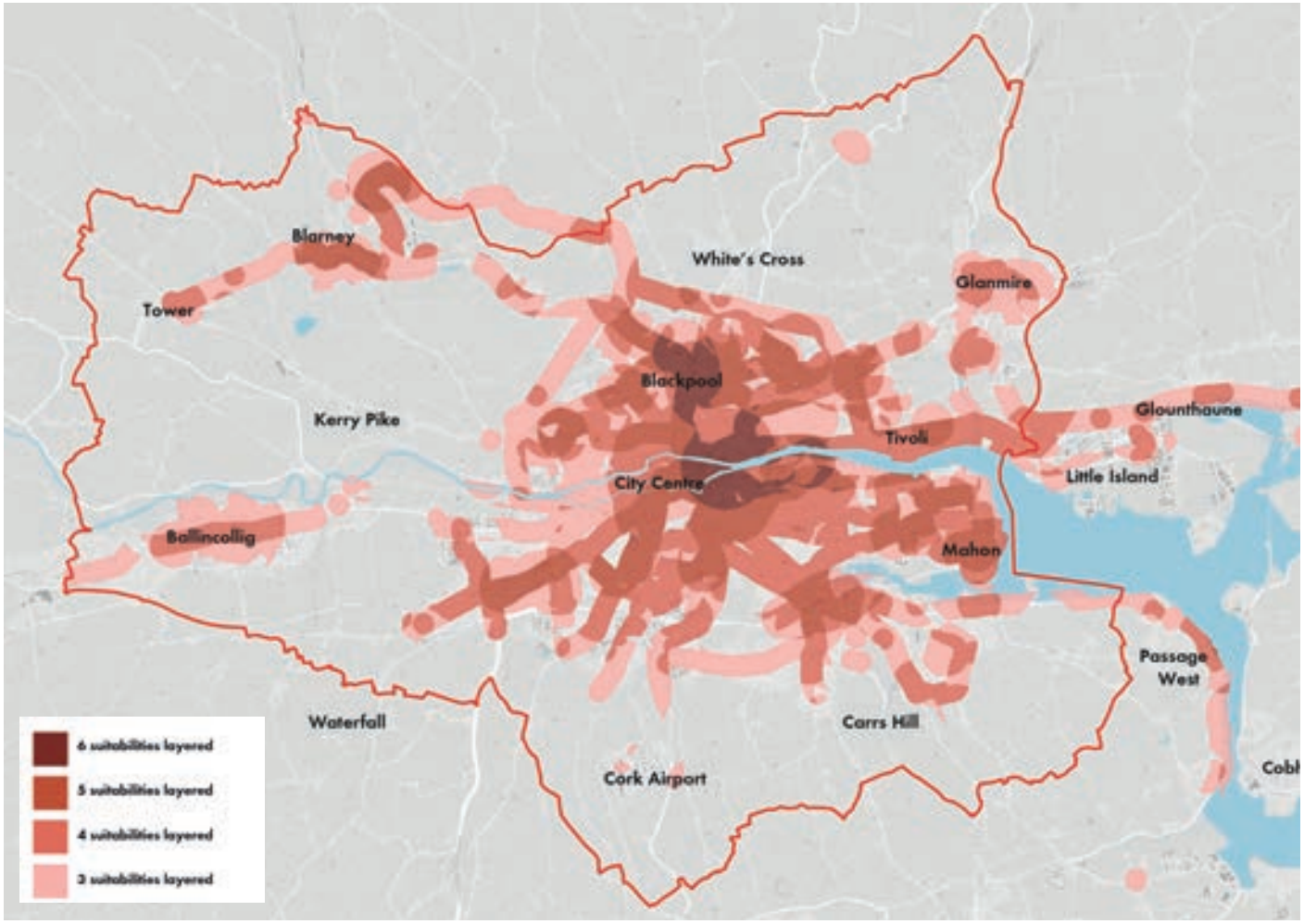
Whilst it should be noted that, as currently presented, whilst proposed LRT services are now excluded, proposed heavy stations such as that earmarked for Blackpool remain included.

Notwithstanding that, a few notable issues emerge from this alternative perspective on Cork's spatial density strategy, including:

The significant opportunity presented by Blackpool as a new growth node. The area is well served by infrastructure, is in part of the city which has been the focus of major economic development initiatives and unconstrained by heritage assets.

- The suitability of Ballincollig and Mahon to accommodate more dense forms of development is heavily reliant on the LRT investment.
- The strategy is more traditional in its form - with a more orbital form driven by radial transport corridors.
- This version of the strategy highlights the need for strategic investment in transport infrastructure. Locations outside the Cork urban area are not identified as particularly suitable for intensification which places too much pressure on the city of Cork to deliver and support the required levels of growth.

An alternative spatial density strategy for now

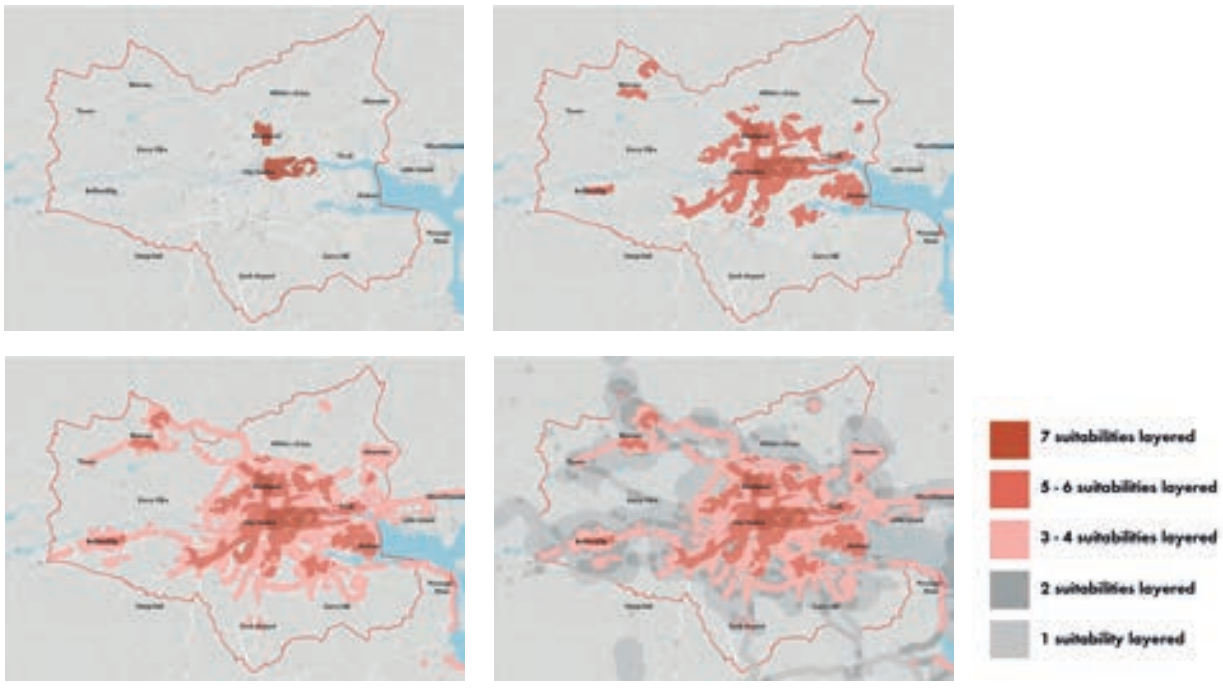


Where will we be in the interim?

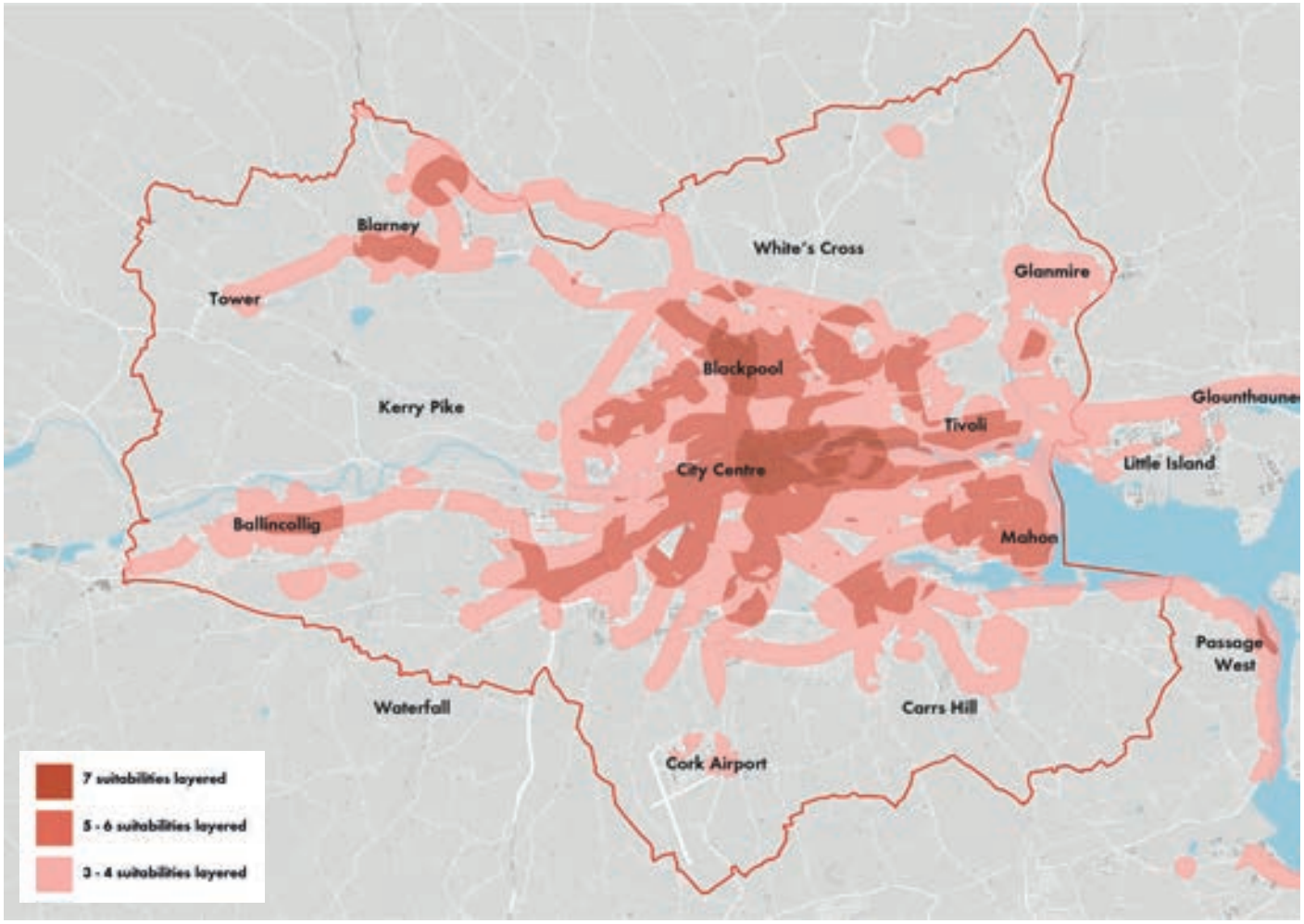
The delivery of the LRT system is some considerable time off. As outlined in the CMATS, the intention is to introduce high frequent bus routes along the majority of the length of the planned LRT route as an interim measure. Whilst it will not be possible to replicate the entire planned route, existing routes should provide the opportunity to establish an improved level of bus service for the majority of the route.

This scenario has been tested in terms of suitability criteria on the plans below with a concluding interim strategy plan outlined opposite. In this analysis, the LRT route layer is replaced with an amended version of the high frequency bus layer which has been adjusted to reflect an informed estimate of the likely alignment of this interim bus service enhancement.

One subtle but important change to the resulting suitability strategy plan is the upgrading of the Victoria Cross area west of the city centre. This is an axis that is likely to benefit from improved bus services in this scenario which will make this area more suitable for high density development.



An alternative spatial density strategy for the interim period



BUILDING HEIGHTS ANALYSIS

Cork is traditionally a relatively low-rise city. However, the city is seeing an emerging trend for new applications for taller buildings. Some have already been delivered and others are in the pipeline. They are generally understood to be a dense form of development and are one way of using urban land in an efficient way. In the right locations, tall buildings can make a very positive contribution to a city centre. Individually, or in groups, they affect the image and identity of a city as a whole and can help improve the image and legibility of a city. They can serve as beacons of regeneration and stimulate further investment.

Tall buildings however will only be appropriate in a very limited number of locations. Meeting the acute housing needs of the city will require higher density developments across many parts of the city, not just those which might be more suitable for tall buildings. It is therefore important to devise an approach to building heights across the Cork City Council administrative area as a whole. Establishing a range of appropriate building heights across all areas will help to ensure the best use of land is made, particularly in locations considered appropriate for higher density development.

The planning system does not itself design buildings, but it is often on the receiving end of blame when development is built which is not considered to complement its urban context. The planning system can however set out controls to help ensure appropriate forms and heights of new development are encouraged.

Well-conceived designs for new buildings should be informed by prevailing urban characteristics of the neighbourhood it will inhabit. It follows that design policies must also emerge from a detailed understanding of the prevailing urban character of the places they are written to help govern.

This all highlights the need to adopt a city-wide approach to building heights and to plan positively for taller buildings in the most appropriate locations. In order that the compact cities envisaged in the National Development Plan and National Planning Framework can deliver sustainable growth, density will need to increase.

The urban character of Cork is varied and complex. Tall can only therefore be understood as a relative term when we consider the whole of the administrative area of Cork City. Policies relating to building heights should acknowledge this.

4

Methodology for determining appropriate building heights in Cork

Whilst the adopted Local Plan does contain planning policy guidance relating to the appropriate density range of housing developments in different parts of the city, there is less detail relating to building heights.

Some specific locations are identified where tall buildings are considered appropriate – including sites in Mahon and in the South Docks area. That said, building height guidance is included which relates to the city centre locations around the twin branches of the River Lee. A more complete review of planning policy context relevant to the building height and tall building strategy is contained in the associated project baseline report.

This part of the strategy has three distinct parts as follows:

1. What is tall? Analysis is presented of the pattern and distribution of existing building heights right across the Cork City Council administrative area. Analysis of prevailing building heights depends on undertaking analysis within small defined sub areas. The city's existing neighbourhood areas are used to help determine prevailing building heights for the city as a whole. For the city centre, this analysis is repeated on a more detailed block by block basis. The degree of variation in building heights within any given neighbourhood is recorded and this data is then used to help inform the sensitivity analysis.

2. Suitability The core elements of the density spatial strategy's suitability analysis (outlined in Chapter 3) are also directly relevant to this building height spatial strategy – as increasing building heights is one approach to increasing density.

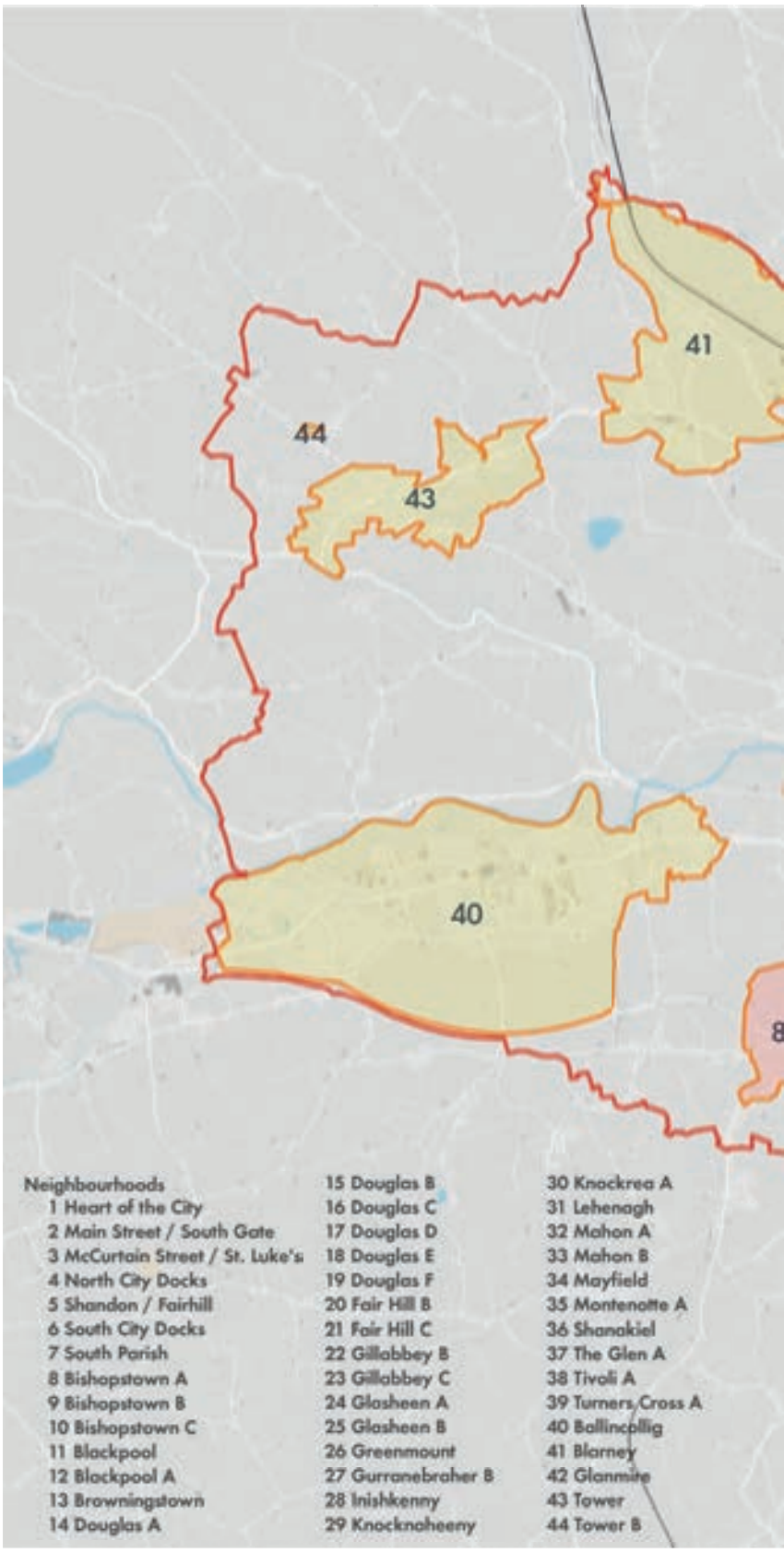
3. Sensitivity The range of criteria which make any given area more sensitive to the potential impacts of taller buildings is outlined. The criteria include the distribution and concentration of heritage assets, views, areas characterised by very consistent prevailing heights, flight path and topography.

What is tall?

Given the varied urban character across Cork, tall is relative. A three-storey building could be considered tall if it is surrounded by bungalows, and likewise, a seven-storey building may not be considered tall if it is dwarfed by a nearby 25 storey tower block.

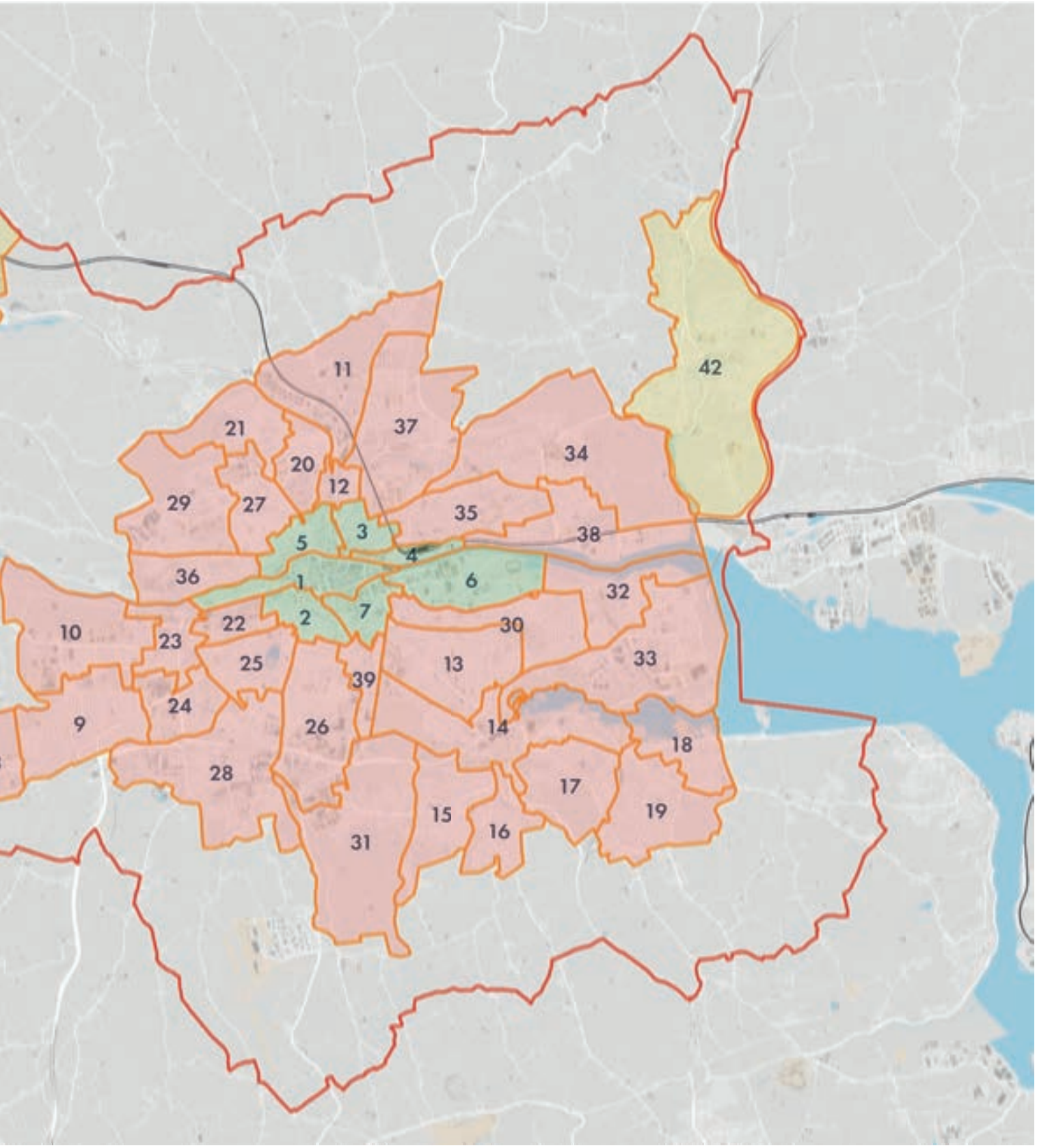
Therefore, in order to determine what is tall we need to devise a approach which is sensitive and responsive to the prevailing heights in that area. We do this by devising an equation based on the prevailing height of an area.

In order to determine prevailing heights, we have used Cork City Council's existing and recently defined neighbourhoods which generally group areas of a similar character together.



Main areas
- City Centre
- Suburb Neighbourhoods
- Urban Town

Neighbourhoods



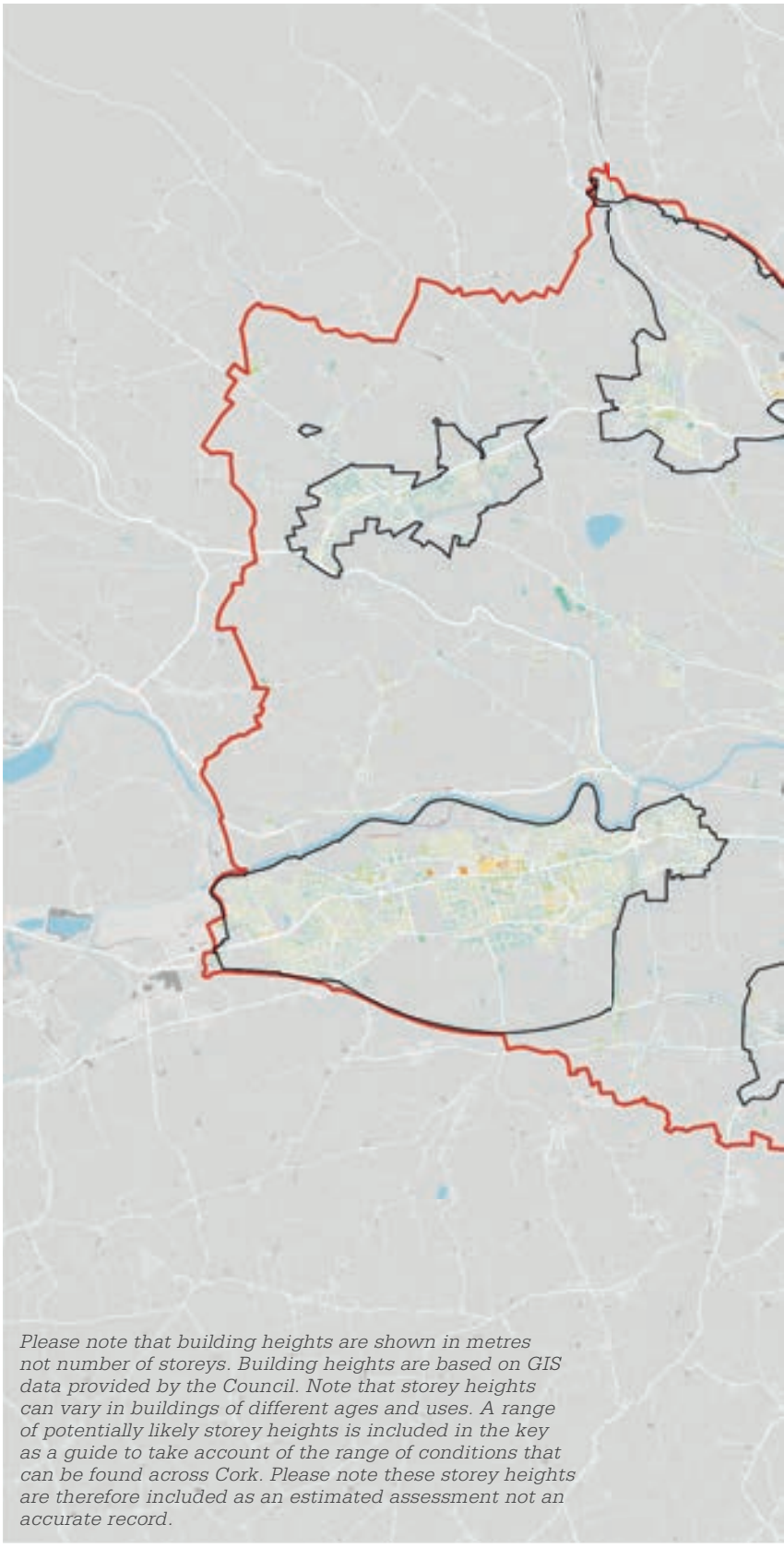
Building heights

The assessment of existing building heights across the Cork City Council administrative area is the key data set on which all analysis is based.

Combined DTM and DSM data enables building heights to be mapped. However, it should be noted that the combined analysis of these datasets only provide mean rather than absolute values of height. The adjacent plan presents existing building heights calculated from these two combined datasets.

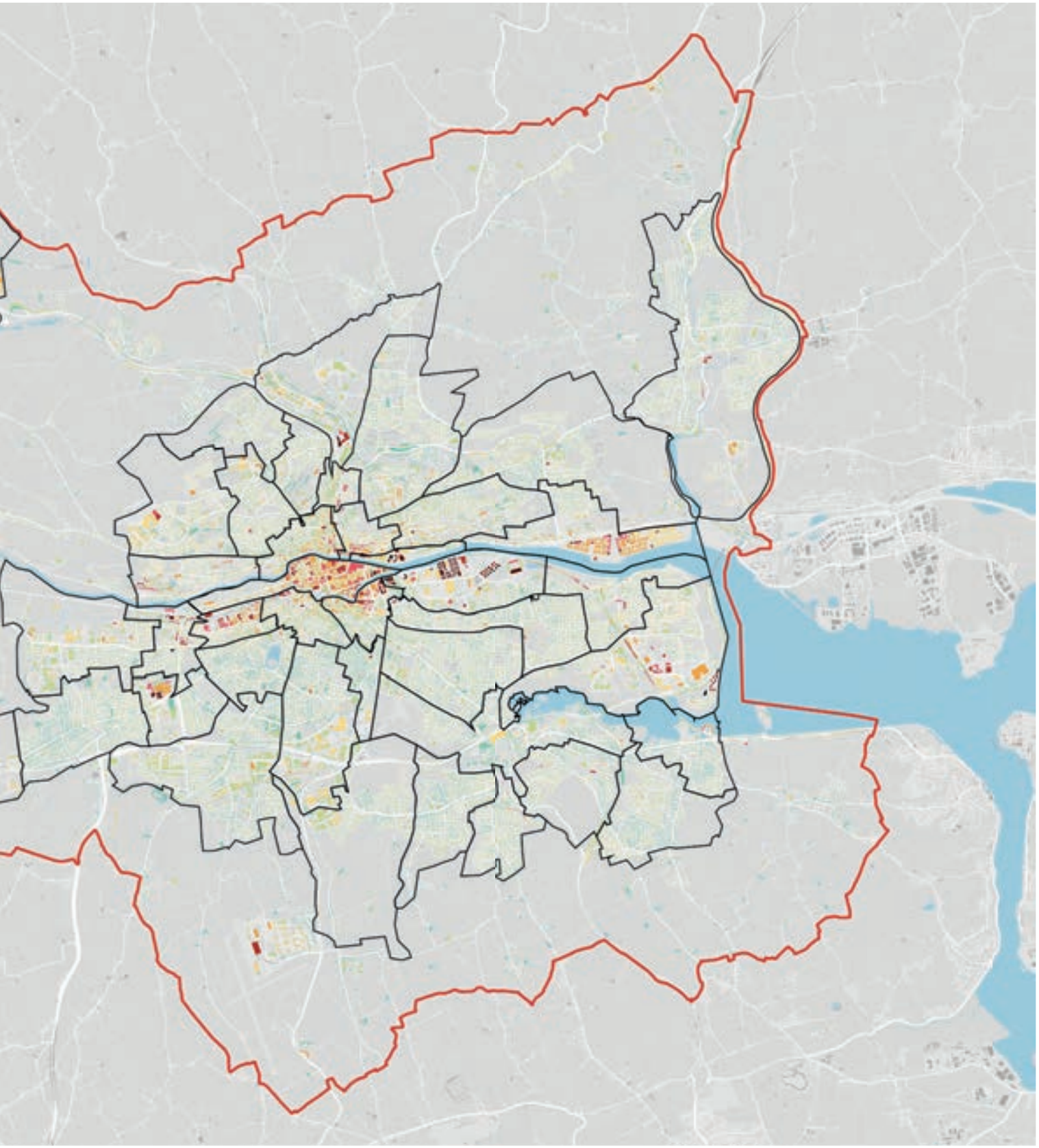
There is a notable concentration of height along the N20 corridor to the north, towards Blackpool. The N22 Western Road corridor towards and around the University is another area with higher average heights.

Whilst heights rise a little in the commercial centres of Ballingcollig and Mahon, there is generally far less variety of building heights in these surrounding neighbourhoods. The city's surrounding hinterland, including its villages, is far more homogeneous in terms of building heights.



Please note that building heights are shown in metres not number of storeys. Building heights are based on GIS data provided by the Council. Note that storey heights can vary in buildings of different ages and uses. A range of potentially likely storey heights is included in the key as a guide to take account of the range of conditions that can be found across Cork. Please note these storey heights are therefore included as an estimated assessment not an accurate record.

Building heights



Central neighbourhoods building heights

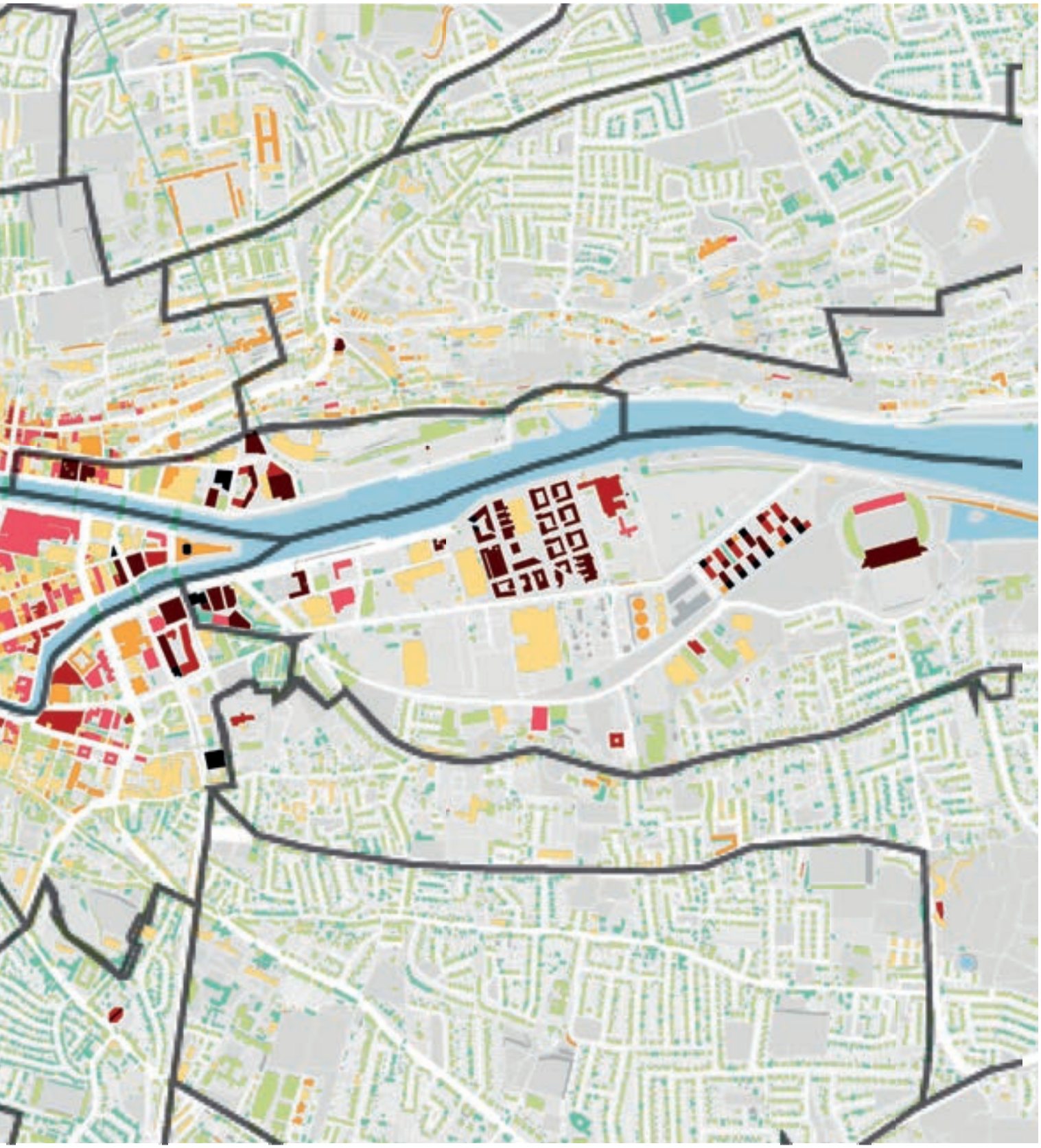
A closer look at the data for the central area of Cork suggests opportunities for redevelopment within the North and South Docks area although the progress being made at Horgan's Quay and other recent schemes involving taller buildings is not yet captured in this data.

The data also highlights the north-western area of City Island, west of Cornmarket Street and in particular west of North Main Street, is perhaps an area which could accommodate greater building heights as redevelopment opportunities come forward.

However, before we assess areas of suitability for or sensitivity to taller buildings which is an integral part of the building height and tall building strategy for Cork, we need to look more closely at existing building heights in order to help determine what constitutes a tall or taller building across all of Cork's neighbourhoods.

Please note that building heights are shown in metres not number of storeys. Building heights are based on GIS data provided by the Council. Note that storey heights can vary in buildings of different ages and uses. A range of potentially likely storey heights is included in the key as a guide to take account of the range of conditions that can be found across Cork. Please note these storey heights are therefore included as an estimated assessment not an accurate record.

Central neighbourhoods building heights



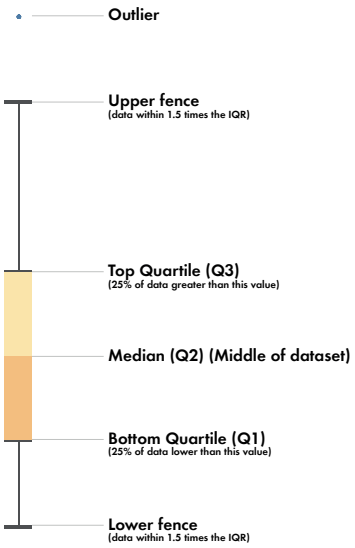
Boxplot analysis

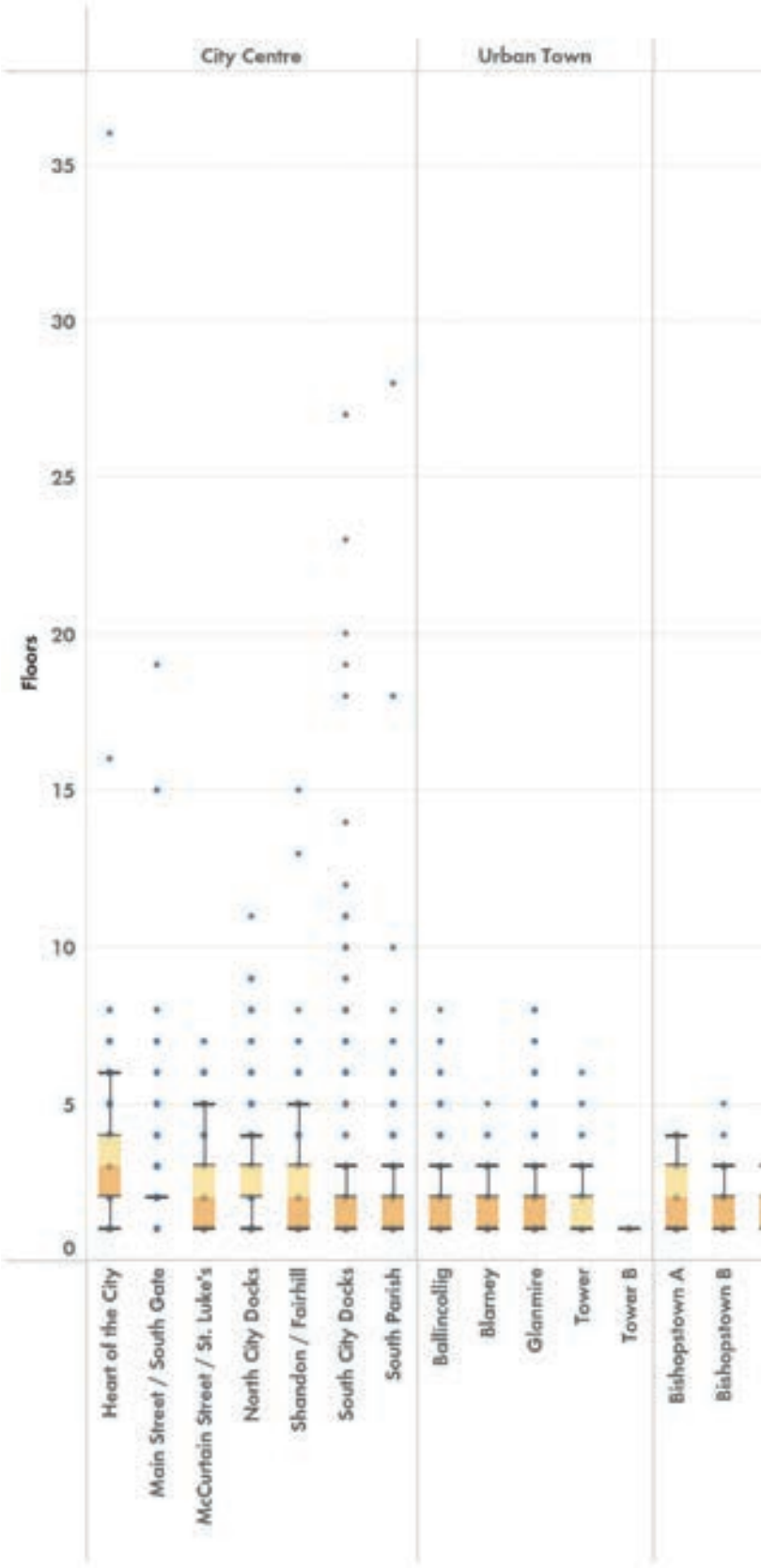
Boxplot analysis of existing building heights across Cork's identified neighbourhoods enables a picture to be presented of the prevailing building heights in each neighbourhood.

This diagram helps to visually demonstrate the range of building heights, and the median, or prevailing, building height for each area.

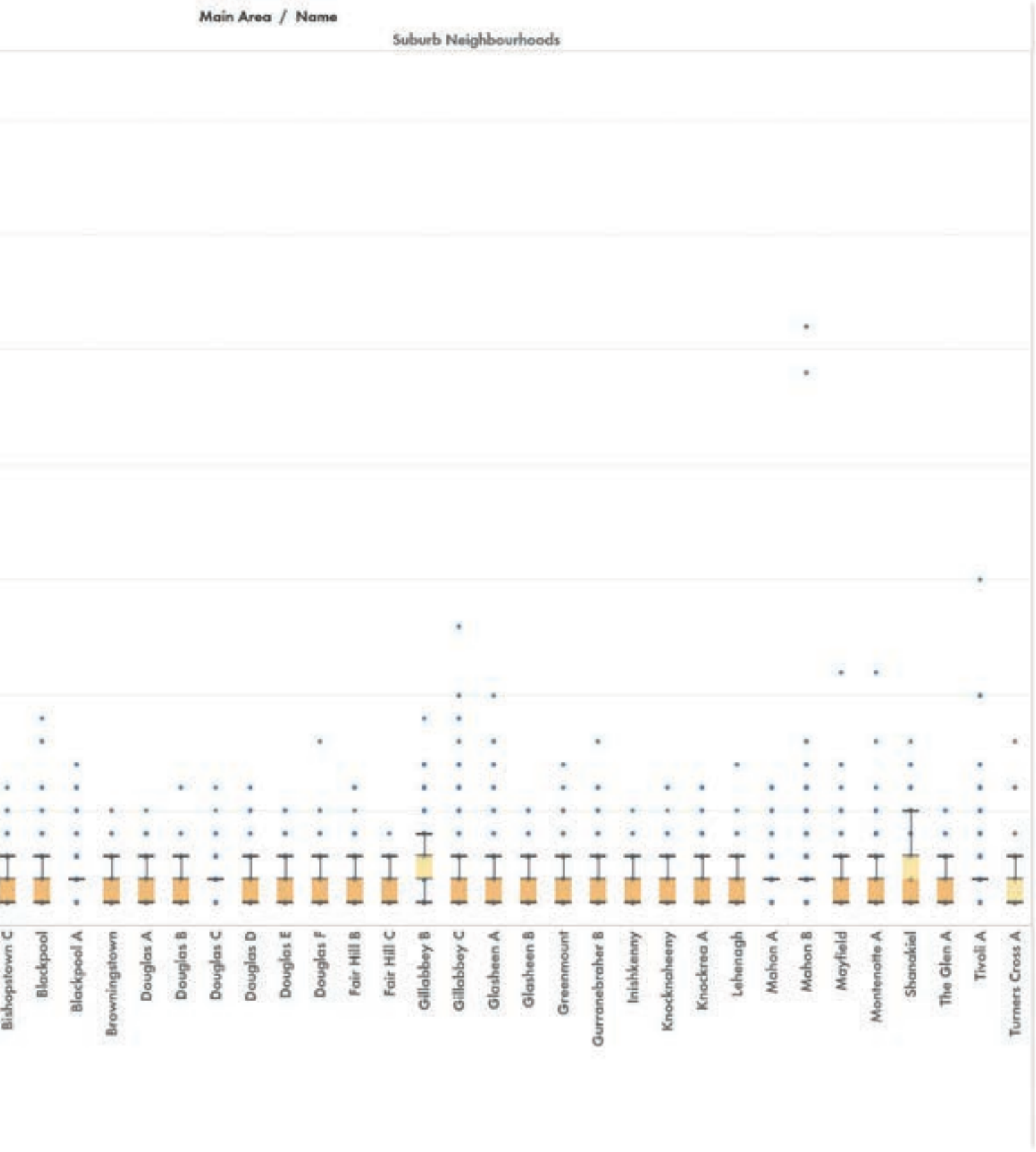
It is helpful in illustrating which areas have predominantly taller buildings, and those which have predominantly lower rise buildings. It is also helpful in revealing areas which are characterised by a consistent building height - a potential sensitivity when considering areas suitable for tall buildings.

This analysis provides us with two important results, Firstly it determines a value for prevailing building heights in all neighbourhoods. Secondly it highlights the extent to which building heights vary within each neighbourhood. Both data sets are explored in-turn across the following pages.





Boxplot analysis - building height



Prevailing heights

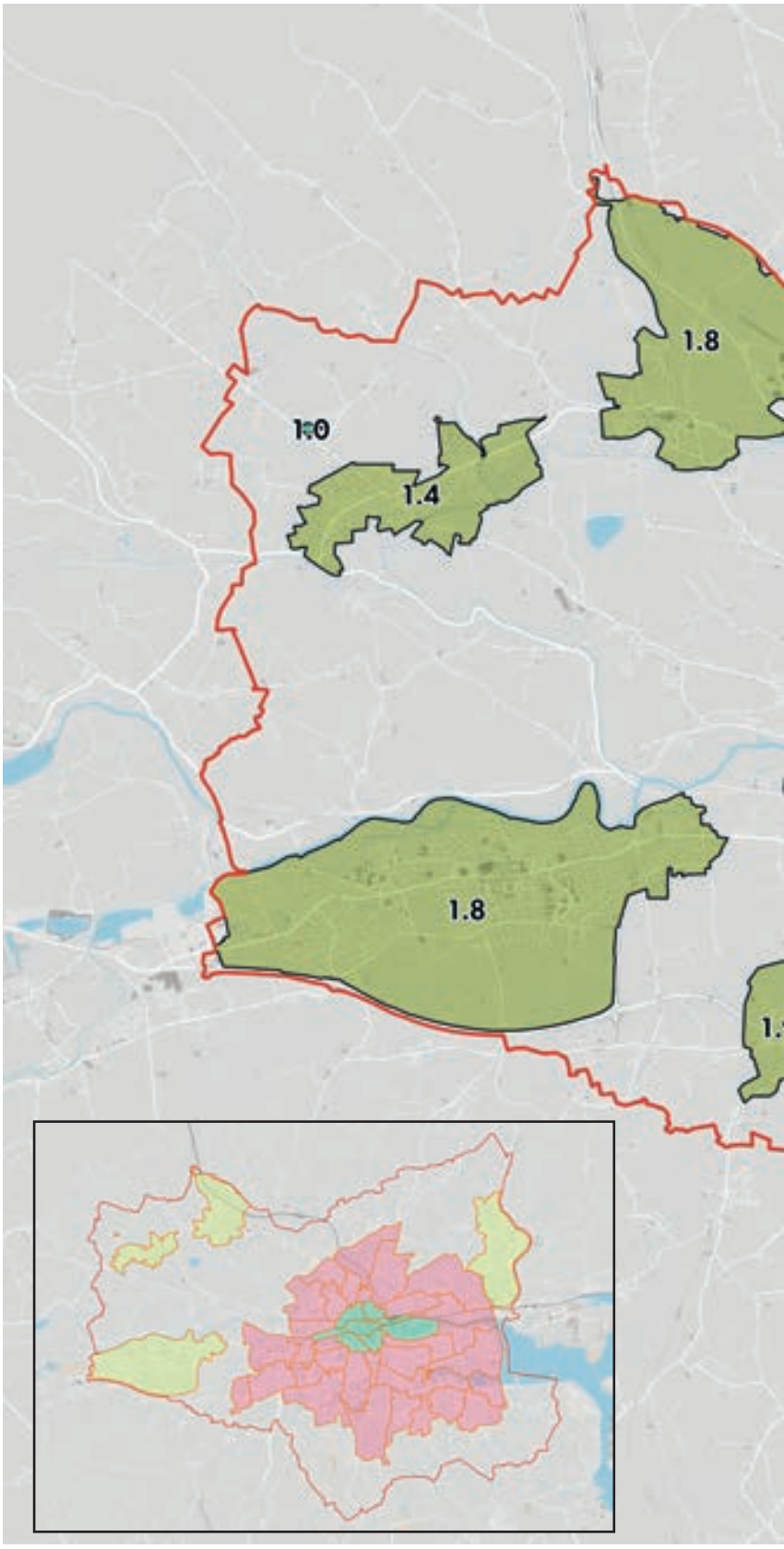
To establish what is considered tall in different parts of Cork, one must identify the prevailing heights in these areas. This has been done both at the 'sub-area' level (to provide a general overview of building heights across the city's administrative area) and also at the 'neighbourhood' level so that the prevailing heights represent a more nuanced and accurate description of each place.

Building heights were calculated using Digital Terrain Model and Digital Surface Model, the values were projected in detailed building polygons provided by OSi. The Prevailing Weighted (median) Height Average within each area was calculated using the following equation:

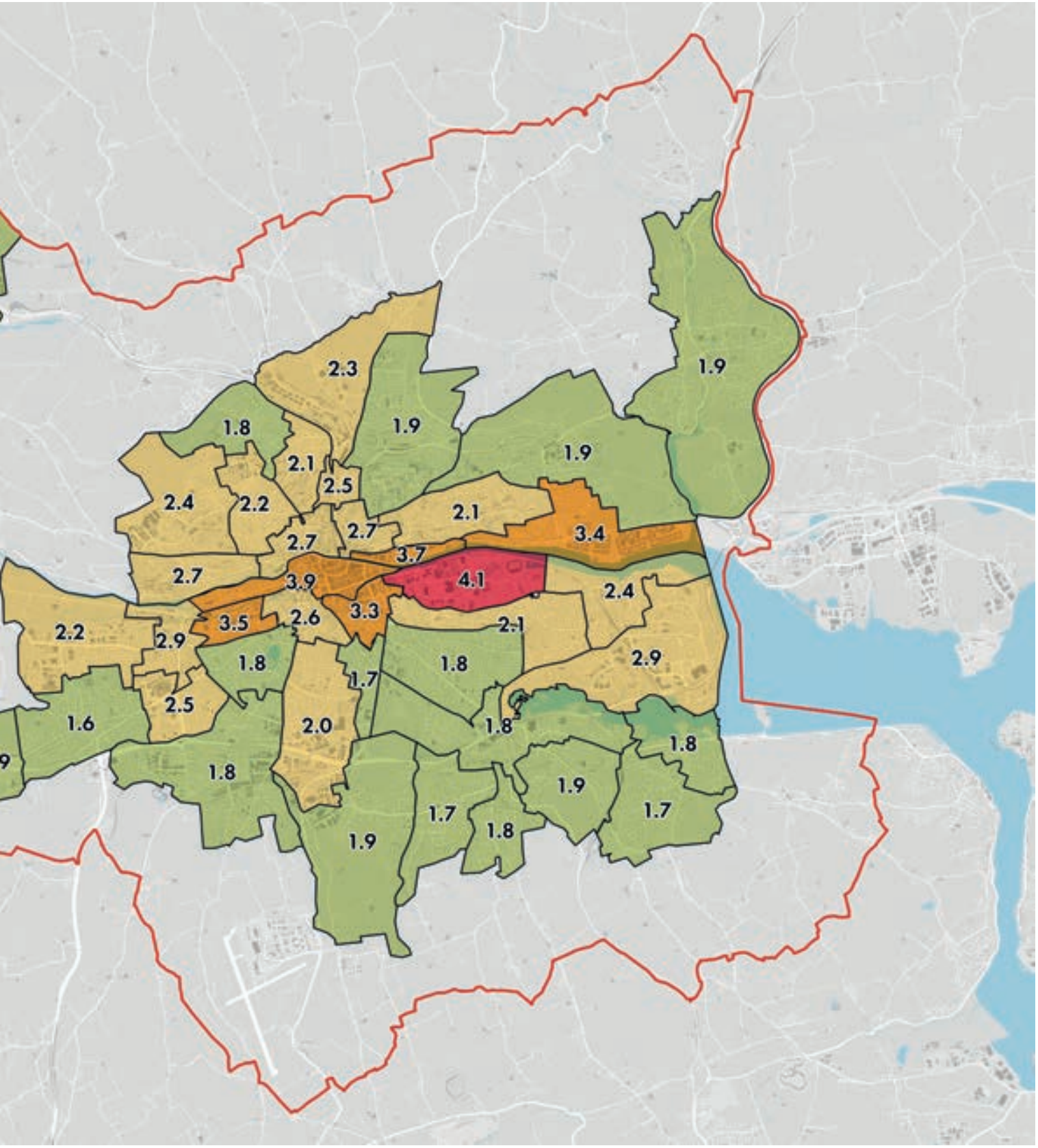
$$\frac{\textit{sum [(Number of floors)* (Area of footprint)]}}{\textit{sum of building footprints}}$$

The resulting prevailing height ensures that the heights of buildings with larger floor areas are given more weight, reflecting the visual impact of the buildings when viewed on the ground.

It should also be noted that in calculating prevailing building heights, all buildings of 2.5m or below were excluded from the analysis in an attempt to ensure garden sheds and outbuildings did not feature in, and therefore unduly influence, the analysis.



Prevailing heights (Weighted Height Average)



Height variance

The presence of existing tall buildings is likely to be one of a range of factors which might make that location more suitable for further tall buildings. Conversely, areas characterised by extremely consistent building heights, i.e. typically suburban area with lots of streets of 2 storey houses, will likely make that location more sensitive to the impact of tall buildings.

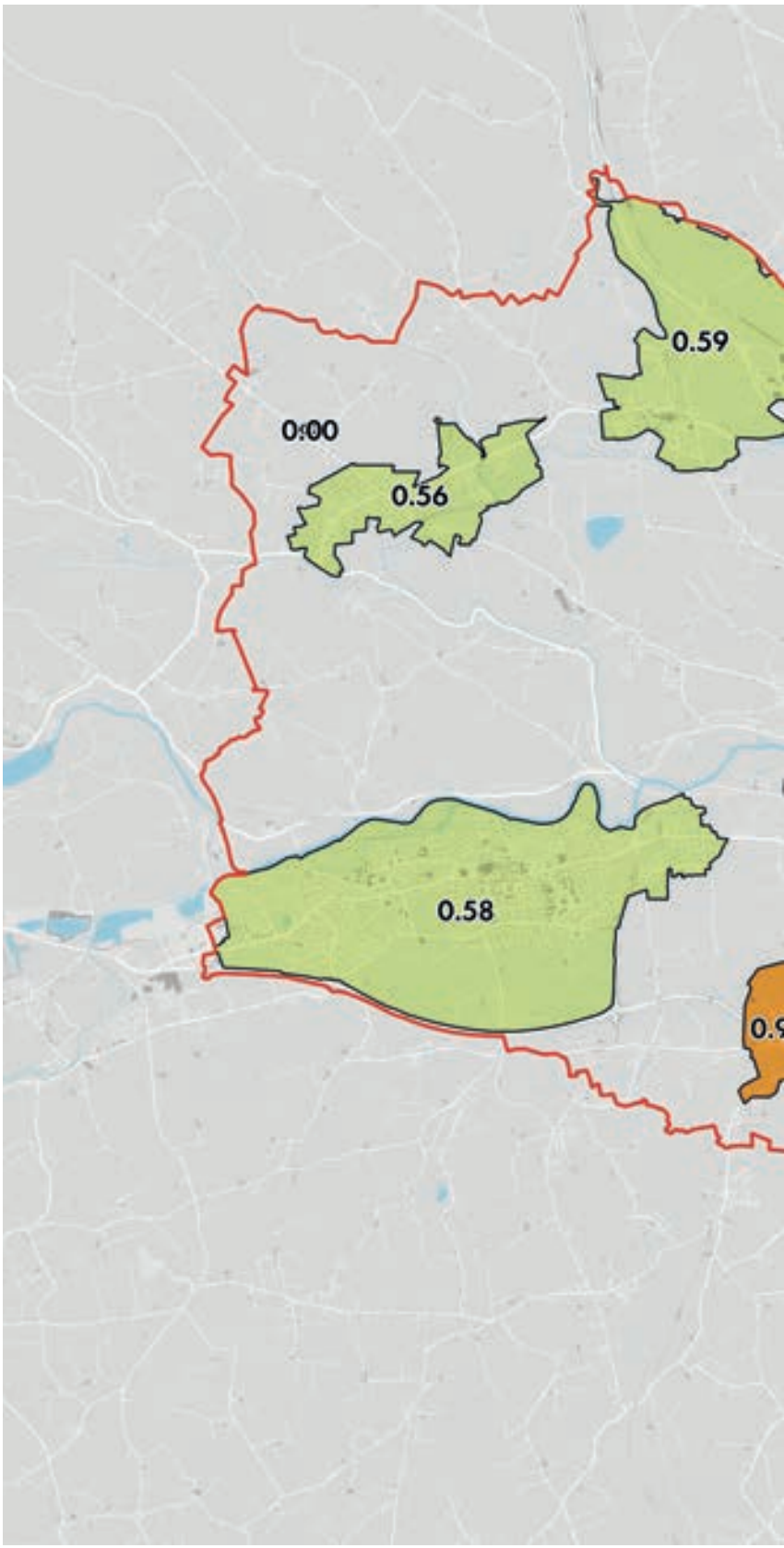
With results presented for each defined neighbourhood, this plan reveals locations in Cork which have the largest variance in building height, and also those which have the most consistent building heights.

This analysis is important in determining areas which may be more appropriate for taller buildings as discussed in the following pages. The areas considered to be particularly sensitive to the impact of tall buildings form part of the sensitivity analysis which follows.

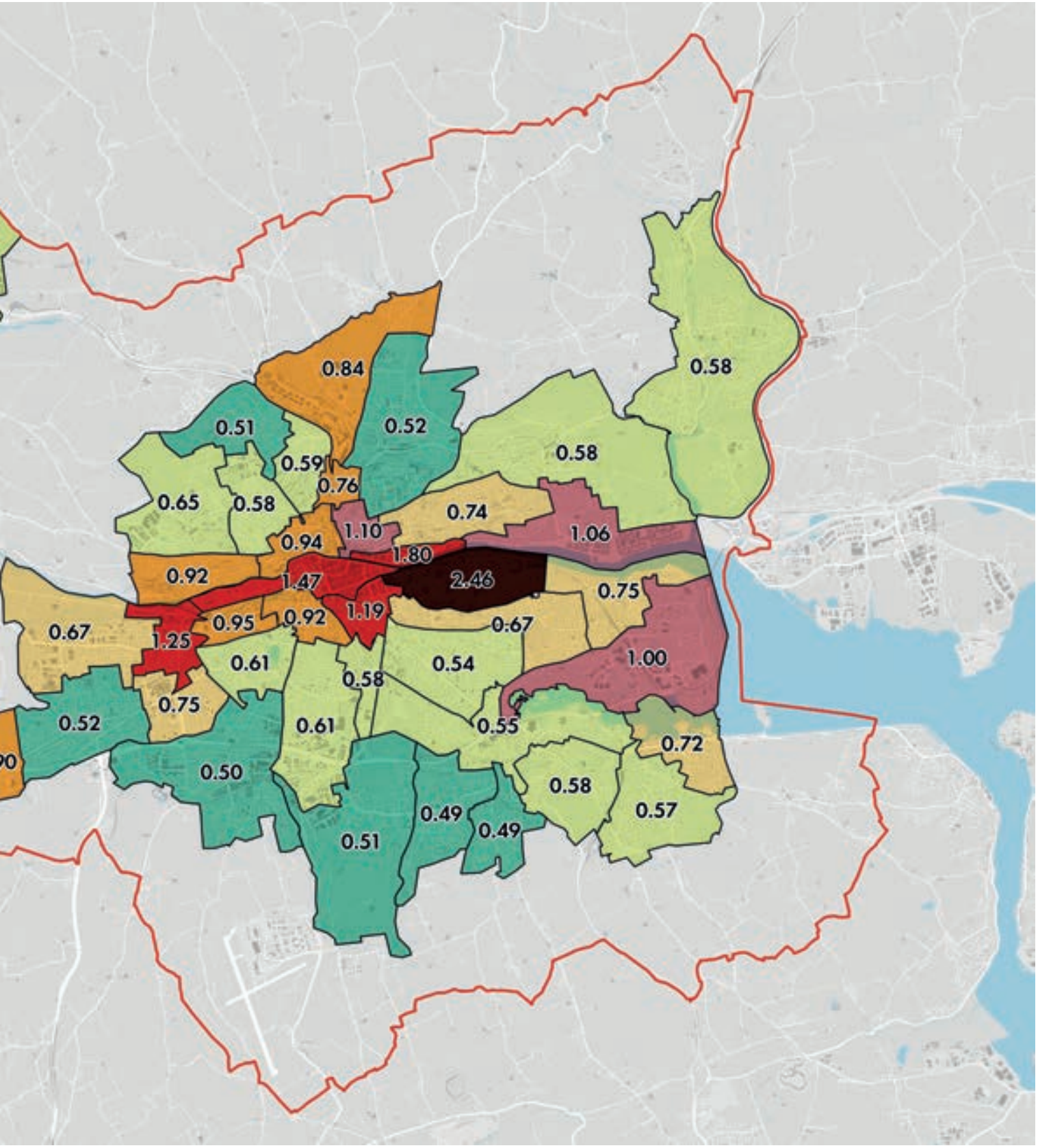
The higher the coefficient, the higher the degree of building height variance within any given neighbourhood.

The map is clear that the city centre, north and south docks and the most central neighbourhoods which surround it are characterised by the largest degree of variance in building heights.

Conversely, the outer suburbs and surrounding towns are generally characterised by a more consistent array of building heights.



Height variation



City centre and docklands prevailing heights

The above results for each neighbourhood scale are useful at the city-wide scale. But in areas with a higher degree of building height variance - and in particular the central and docklands areas of the city, the analysis is too course. A closer look at the data will be necessary to help provide a finer grain picture of how prevailing building height varies across different city blocks.

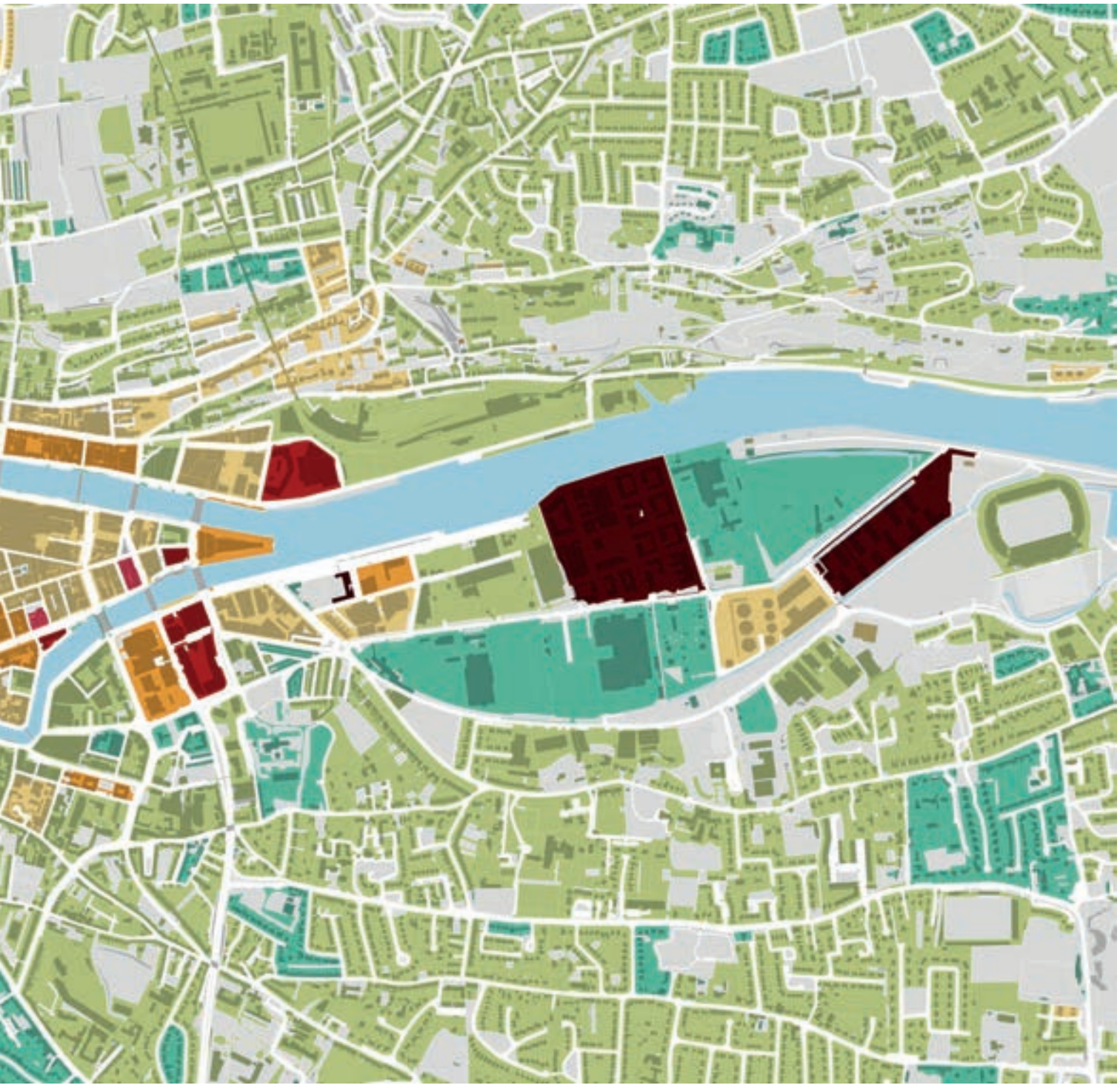
Unlike an average measure of building heights, the median reading prevents outlier buildings (rare examples which do not fall within that inter-quartile range and are significantly taller than others) from warping the prevailing height level in a neighbourhood.

The adjacent plan presents the analysis of prevailing building heights but on a block-by-block basis. The neighbourhood boundaries have also been included.

Proposed but as yet unimplemented regeneration schemes in the South Docks area are clearly apparent.

Please note that building heights are shown in metres not number of storeys. Building heights are based on GIS data provided by the Council. Note that storey heights can vary in buildings of different ages and uses. A range of potentially likely storey heights is included in the key as a guide to take account of the range of conditions that can be found across Cork. Please note these storey heights are therefore included as an estimated assessment not an accurate record.

City centre and docklands prevailing heights (incl consented) by block (median)



Suitability

Tall buildings are a form of high density development. When measured in Floor Area Ratio they provide high levels of floor area in a compact way, occupying little ground space.

Tall buildings provide accommodation - whether that be residential or employment - for high densities of people. To support these people in a sustainable way - to provide for their daily travel and service needs - only locations that are very well serviced and supported by existing or planned public transport facilities and community and commercial services will be suitable locations for this form of development.

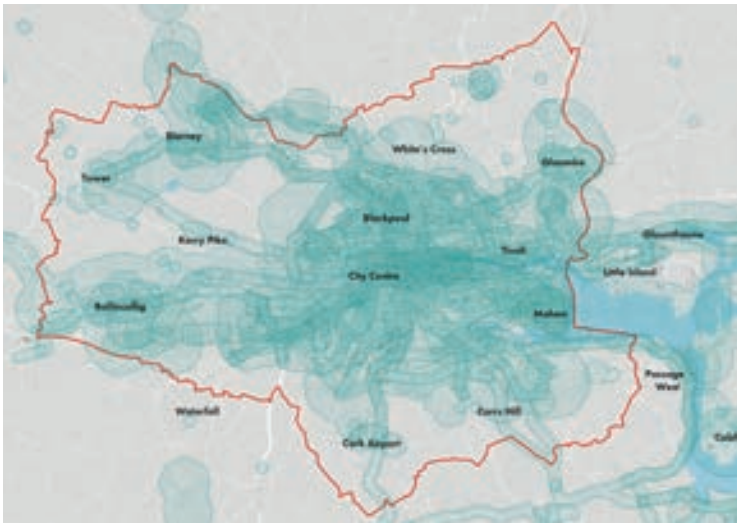
The preceding Cork Density Strategy set out a methodological approach designed to determine areas considered to be most suitable for high density development. This analysis is therefore also directly relevant to Cork's building height and tall building strategy, as follows:

1. **Access to services:** Areas within or immediately adjacent to the city centre or the city's district and neighbourhood centre or within the numerous identified local centres.
2. **Proximity to community facilities:** Within walking distance of community facilities.
3. **Proximity to green and blue infrastructure:** Within walking distance of the River Lee or identified open space.
4. **Identified opportunity areas:** Some locations have already been identified for potential housing growth in the Development Plan and/or CMATS strategy.
5. **Proximity to railway stations:** Regional and national services terminate in Kent Station but other stations also serve the area.
6. **Proximity to high frequency bus services:** These are defined as routes with bus frequencies of every 15 minutes or less.
7. **Proximity to 'normal' bus services:** In addition to the high frequency routes, this area covers routes which benefit from regular but less frequent services.
8. **Proximity to the planned Light Rail Transit (LRT):** The Council are committed to the delivery of a Luas light rail service for Cork running at high frequency between Ballincollig and Mahon via Cork city centre.

The distribution of existing tall buildings could also be said to be a criteria which makes a location more suitable. An existing cluster of tall buildings would, in townscape terms, be a more suitable location for an additional tall building than a location with no existing tall buildings.

However, as development proposals come forward, this distribution will continually vary. It is, therefore, recommended that this factor is reflected on separately. In addition, the corollary is to identify areas considered most sensitive to new tall buildings i.e. those areas characterised by low and very consistent existing building heights.

This composite plan of the spatial distribution of suitability for high density development is set out below. This plan represents the suitability of different locations across Cork for high density, including taller buildings, forms of development.



Composite high density development suitability plan

1. Access To Services

2. Proximity to community facilities

3. Proximity to green and blue infrastructure

4. Identified opportunity areas

5. Proximity to railway stations

6. Proximity to high frequency bus services

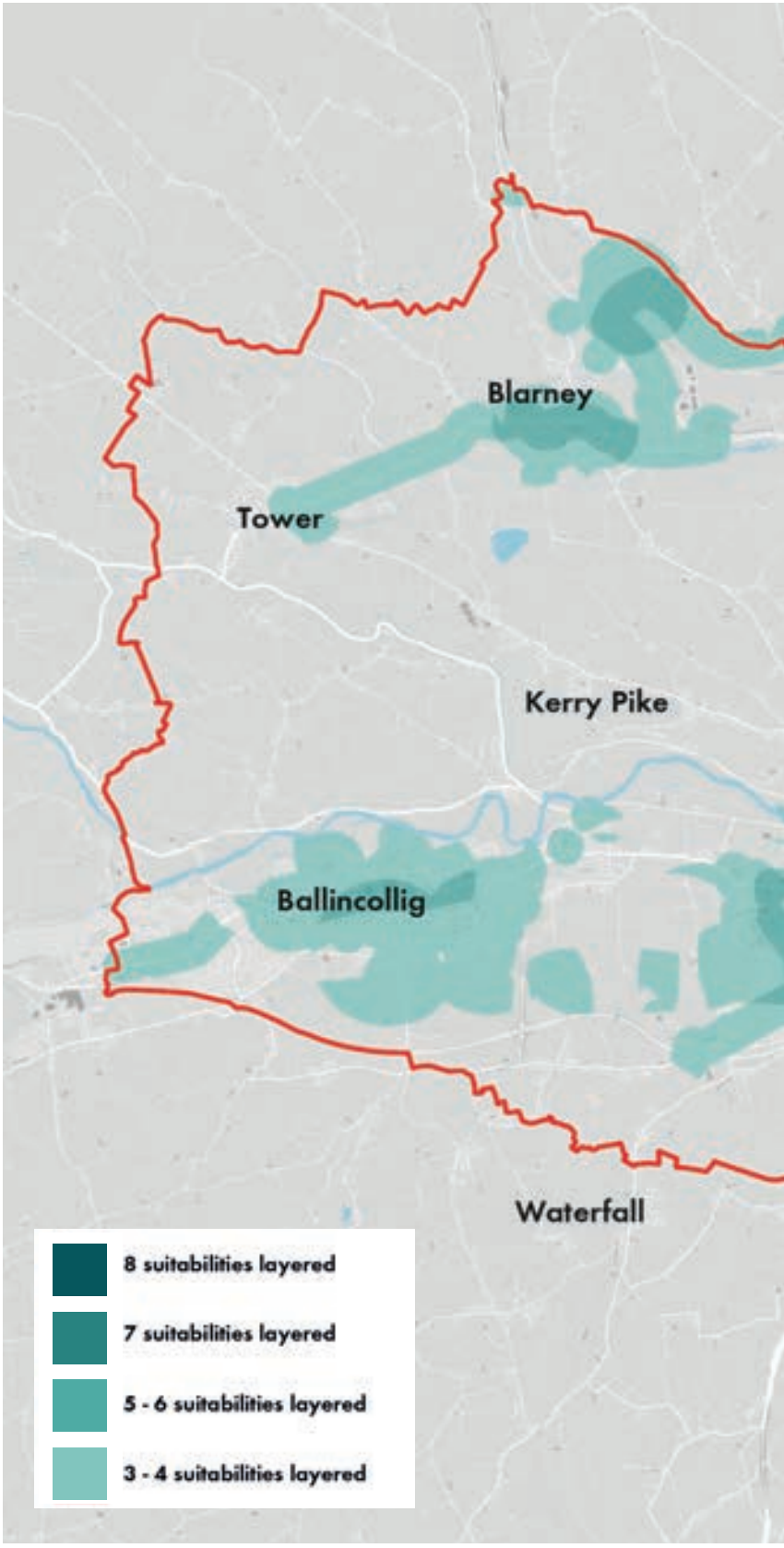
7. Proximity to 'normal' bus services

8. Proximity to the planned Light Rail Transit

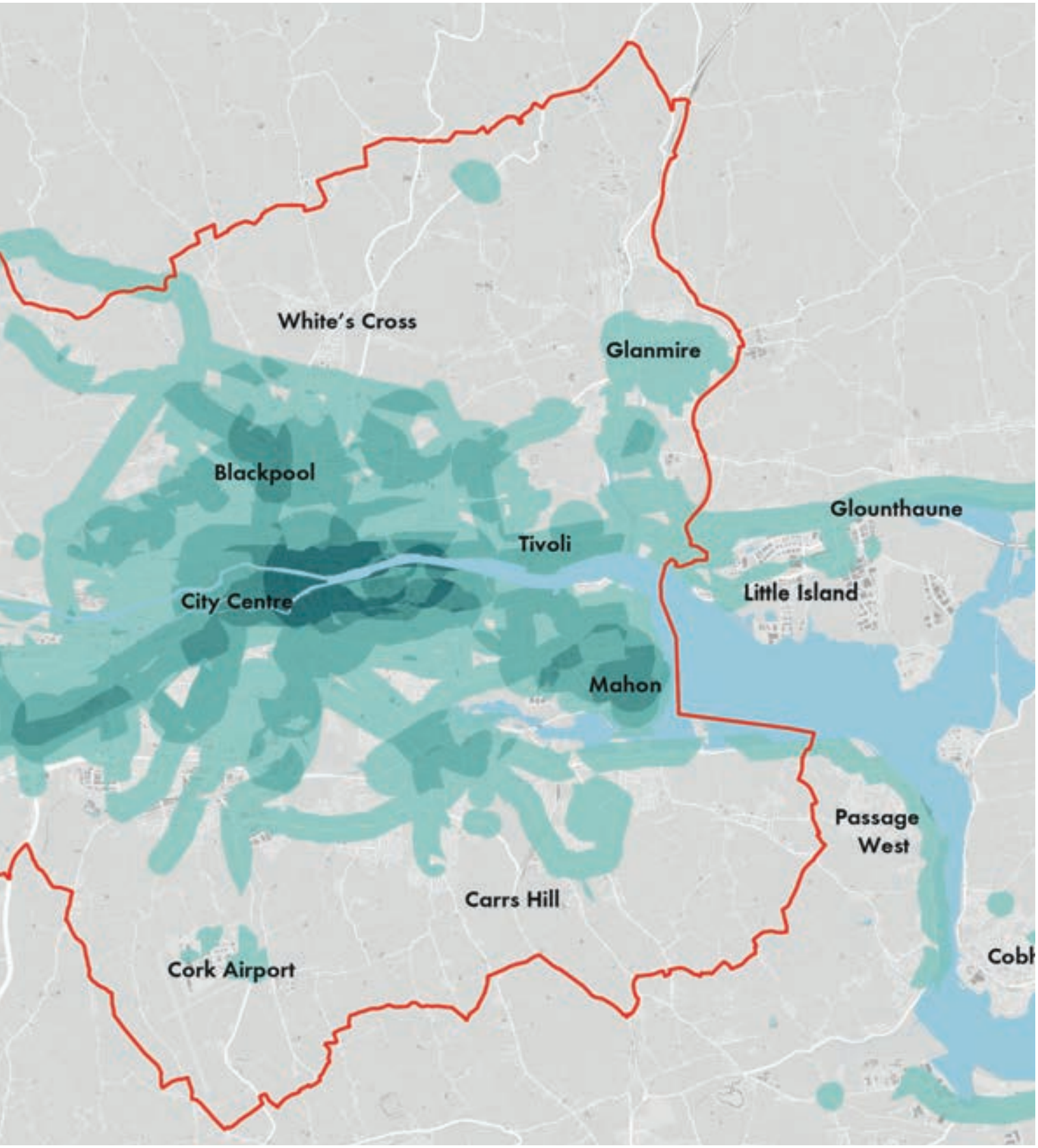
This simplified version of the composite high density development suitability plan forms an integral part of the tall buildings strategy.

However, appropriateness of these 'suitable' locations should be weighed against how sensitive these locations are to the impacts of tall buildings on local townscape character.

It should also be noted that the appropriate heights of buildings in locations considered either suitable or appropriate for taller buildings will vary based on the local definition of what tall might mean in any given location.



Spatial density strategy / suitable areas



Sensitivities

Tall buildings can have a very significant impact on local townscape. They can impact on the skyline of the city from key vantage points, on key and otherwise important views across the city, on local townscape character - particularly in low rise suburban locations, and on the setting of heritage assets.

This section presents analysis of these sensitivities across the administrative area of Cork. Using GIS data supplied by Cork City Council, the plans provide an assessment of relative levels of sensitivity for all of Cork.

It is recognised that some criteria represent issues that are likely to be considered more sensitive than others. Assessing the relative level of importance between different criteria is a qualitative exercise. Each criteria has been attributed a relative level sensitivity on a scale of 0-5 where 0 is not sensitive and 5 is highly sensitive.

Architectural Conservation Areas (ACA)

A total of 39 ACAs are currently designated across the city of Cork. New development within ACAs is controlled under Objective 9.32 of the adopted Development Plan. ACAs seek to recognise the special architectural character of an area. New development will inevitably impact on this special character and new tall development in ACA is likely to raise particular concerns given the associated visual impact.

Beyond the city centre, this dataset also includes Historic Street Character Areas which include a number of older residential areas outside of the City Centre. Similar to ACAs, the areas have street frontages and groups of buildings of architectural and social interest in terms of their group value, building volume, roof pattern, and elevation treatment.

Protected buildings and structures

The Record of Protected Structures (RPS) includes buildings or structures which the Local Planning Authority consider to be of special architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest.

Special regard needs to be had to the desirability of preserving the protected building or its setting or any features of special architectural or historic interest which it possesses. Preservation in this context means not harming the interest in the building, as opposed to keeping it utterly unchanged.

It should be noted that city-wide mapping is not the optimum tool to express and define the extent of any such sensitivity as the distribution of protected structures is point data and does not map the area around any given building or structure where new development might materially impact on its setting. However, the mapping analysis undertaken flags the importance of listed buildings and presents an image of their widespread distribution right across the city's administrative boundary.

Views and prospects

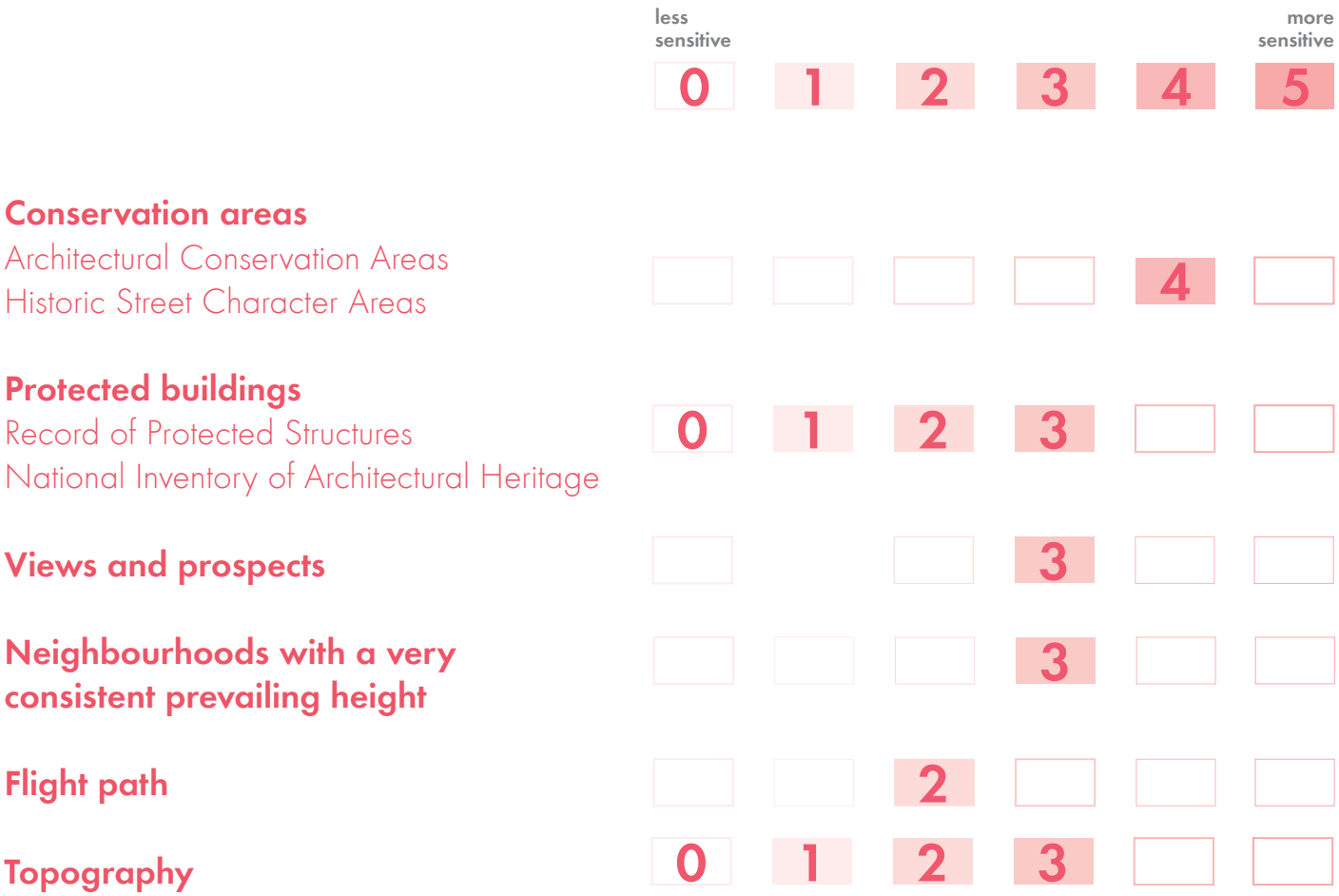
Cork City benefits from the prominent ridges which provide a series of striking viewing points of the city. This important resource helps to define the character and identity of the city. The adopted development plan defines five types of views in Cork: linear views of landmarks; panoramic views; river prospects; townscape and landscape features; and approach road views. Each view corridor has been mapped and is included in the sensitivity assessment.

Neighbourhoods with a very consistent prevailing height

Box-plot analysis has been undertaken of building heights across each of Cork's identified neighbourhoods. This reveals areas characterised by particularly consistent building heights. These areas of consistent height are considered to be particularly sensitive to the impact of tall or taller buildings and are therefore included in this analysis.

Flight path

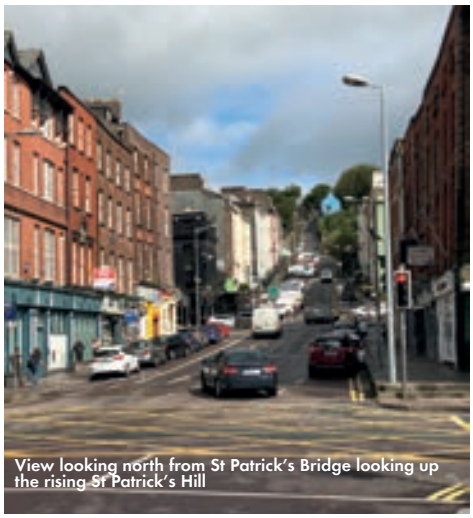
Flight path data associated with the approach and take-off flight paths for Cork Airport have been included in this analysis.



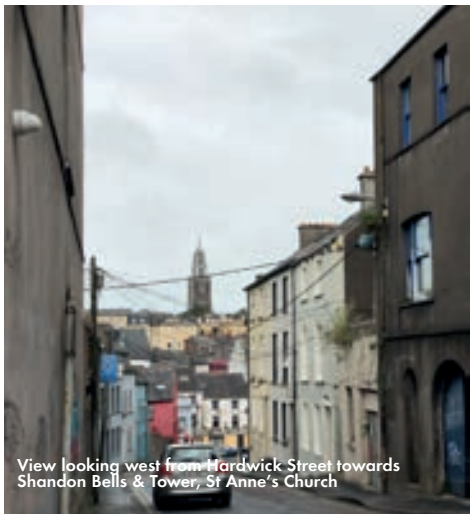
Topography
Cork's topography is unique to the city and one of its most important characteristics. As land rises either side of the River Lee, the land becomes increasingly sensitive to new tall buildings.

Baseline mapping data
The existing data underpinning each of the identified criteria for this sensitivity assessment is included in the associated baseline report.

View looking north from Cleve Hill, Blackrock across the River Lee basin towards the elevated slopes of the Montenotte and Tivoli areas

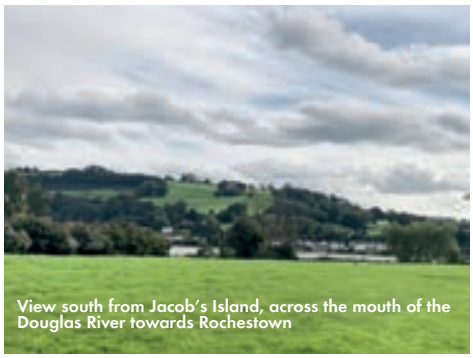


View looking north from St Patrick's Bridge looking up the rising St Patrick's Hill

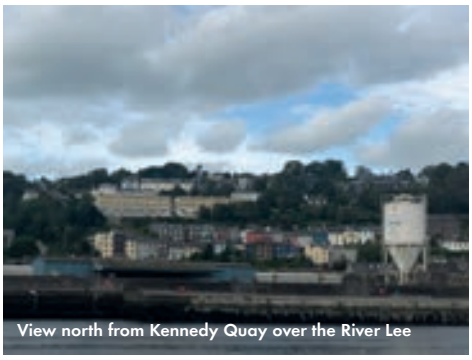


View looking west from Hardwick Street towards Shandon Bells & Tower, St Anne's Church

View looking south over the city from the gates of St Angela's College towards the top end of St Patrick's Hill



View south from Jacob's Island, across the mouth of the Douglas River towards Rochestown



View north from Kennedy Quay over the River Lee

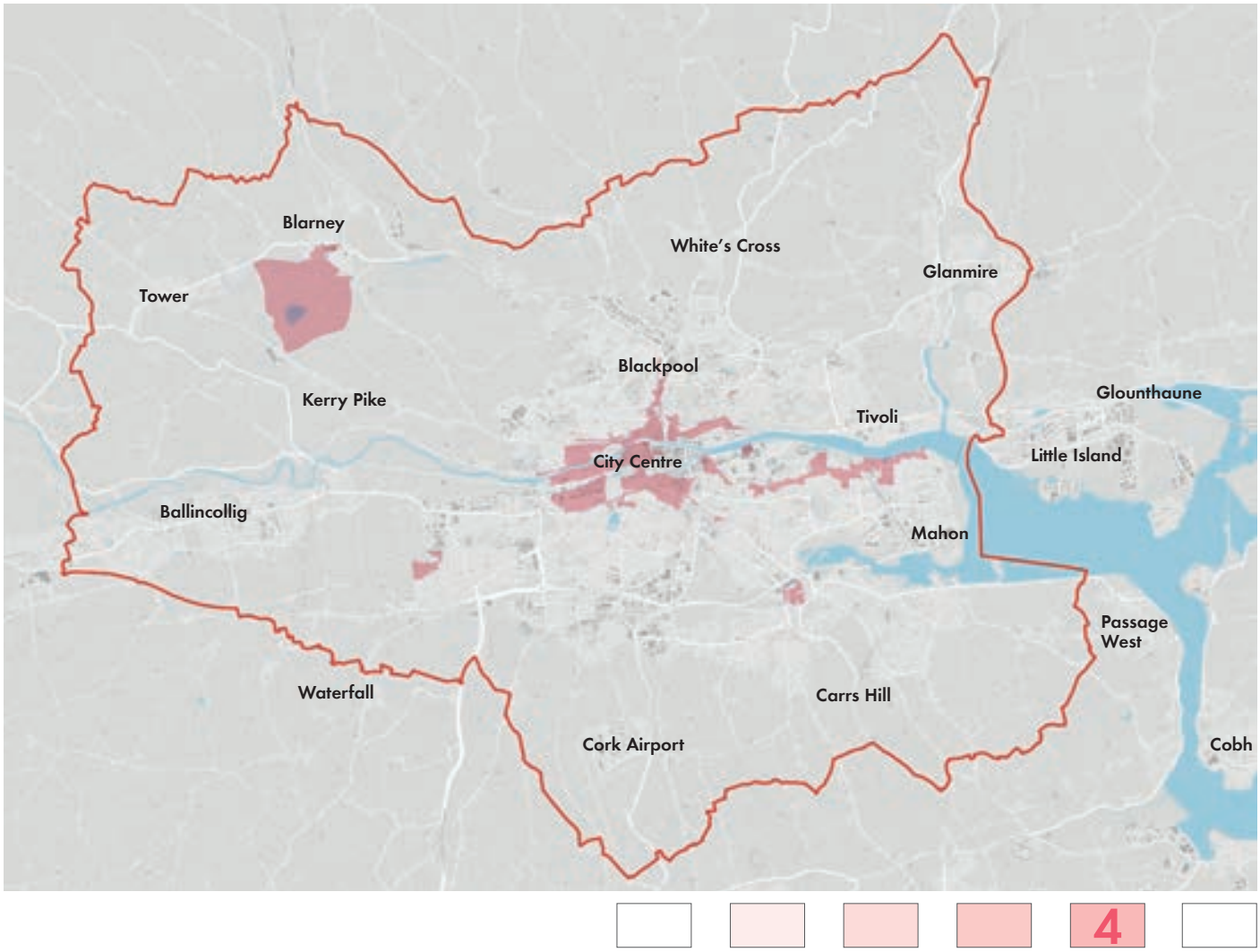
View north-west from The Marina Park on the banks of the River Lee towards the hills of Tivoli Estate

View from the South Docks to the Horgan's Quay development adjacent to Kent Railway Station

Looking north up St Patrick's Hill from corner with Hardwick Street

Topography

The steep hills and layered hillside of the northern side of Cork is a defining feature of the city, contributing to its unique character and identity. This is why it is important to incorporate it as a particular sensitivity when considering new development, particularly tall buildings.



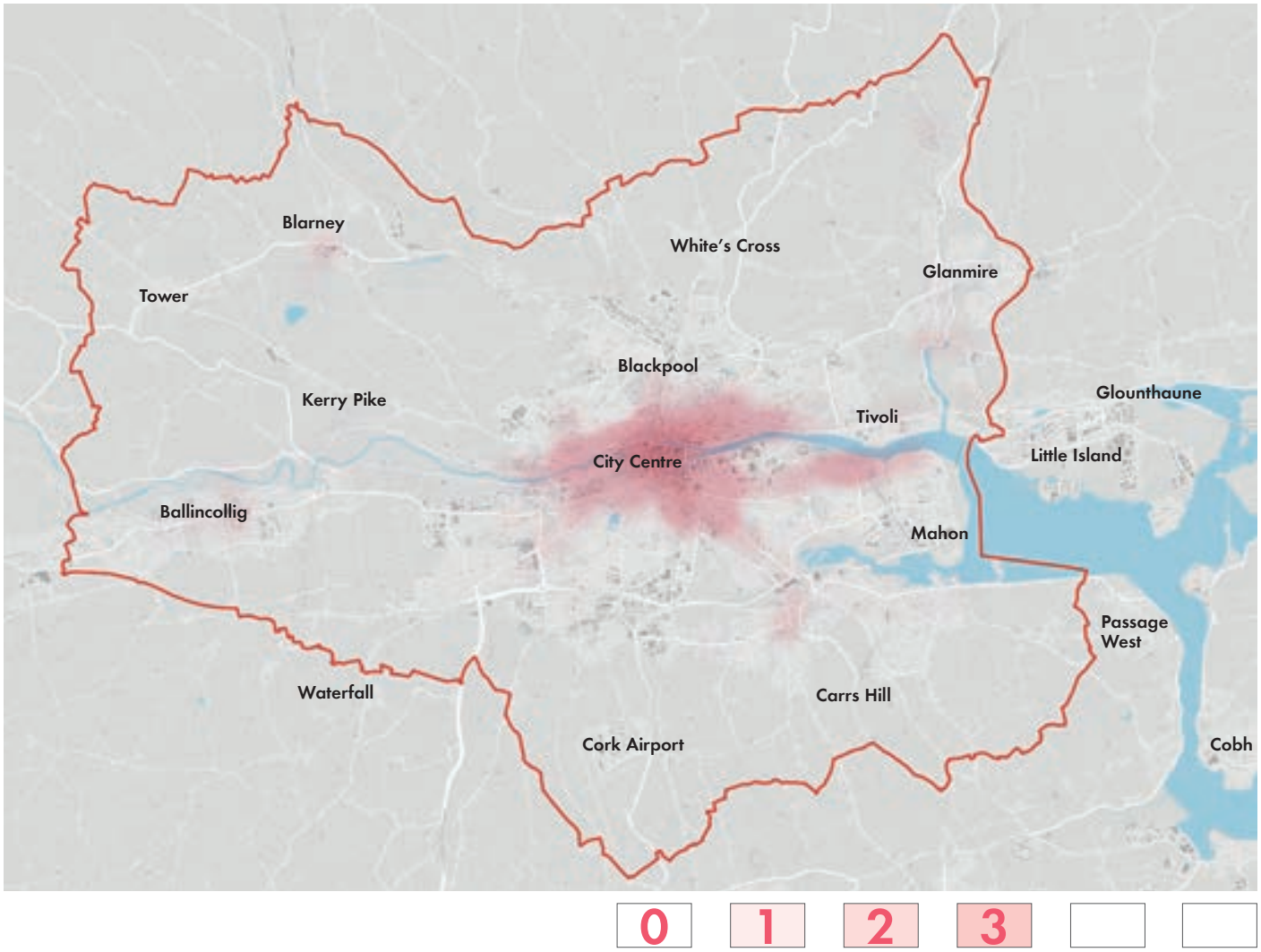
1. Architectural Conservation Areas

An Architectural Conservation Area (ACA) is designated in recognition of an area's special character. This might be as a result of individual elements such as building heights, roof lines, materials, designed landscapes and architectural features. Where the visual character and appearance of these features combine to give a place a special quality, ACA's can be designated to protect this character.

Protecting the special character of ACAs is important to protect the identity of these areas, as they represent an important part of Ireland's cultural and architectural heritage.

The principal aim of ACAs is to provide for change while protecting character. The aim of the planning process in managing development within ACAs is therefore to focus on ensuring that future development is carried out in a manner sympathetic to the special character of that area. This is achieved by giving particular consideration to the impact of proposed development on the character of the ACA, in order to achieve a balance between the need for change and the objective of retaining the special qualities for which the area was designated.

ACAs have been given an sensitivity rating of 4 in recognition of the sensitivity associated with this important designation.



2. Protected buildings

A Protected Structure is a building, which is identified by Cork City Council as having special architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest. Cork City Council has compiled a list of these buildings on the 'Record of Protected Structures' which is contained in the Cork City Development Plan.

When a building is designated a Protected Structure it is then protected under Part IV of the Planning and Development Act 2000. This means that owners and occupiers must ensure that the structure or any element of a protected structure is not endangered through harm, decay or damage, whether over a short or long period, through neglect or through direct or indirect means.

The National Inventory of Architectural Heritage (NIAH) is a state initiative under the administration of the Department of Culture, Heritage and the Gaeltacht and established on a statutory basis under the provisions of the Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act 1999.

Plan showing distribution of protected buildings in Cork

The purpose of the NIAH is to identify, record, and evaluate the post-1700 architectural heritage of Ireland, uniformly and consistently as an aid in the protection and conservation of the built heritage. NIAH surveys provide the basis for the recommendations of the Minister for Culture, Heritage and the Gaeltacht to the planning authorities for the inclusion of particular structures in their Record of Protected Structures (RPS).

As the data it point data, the analysis has been presented as a heat map.

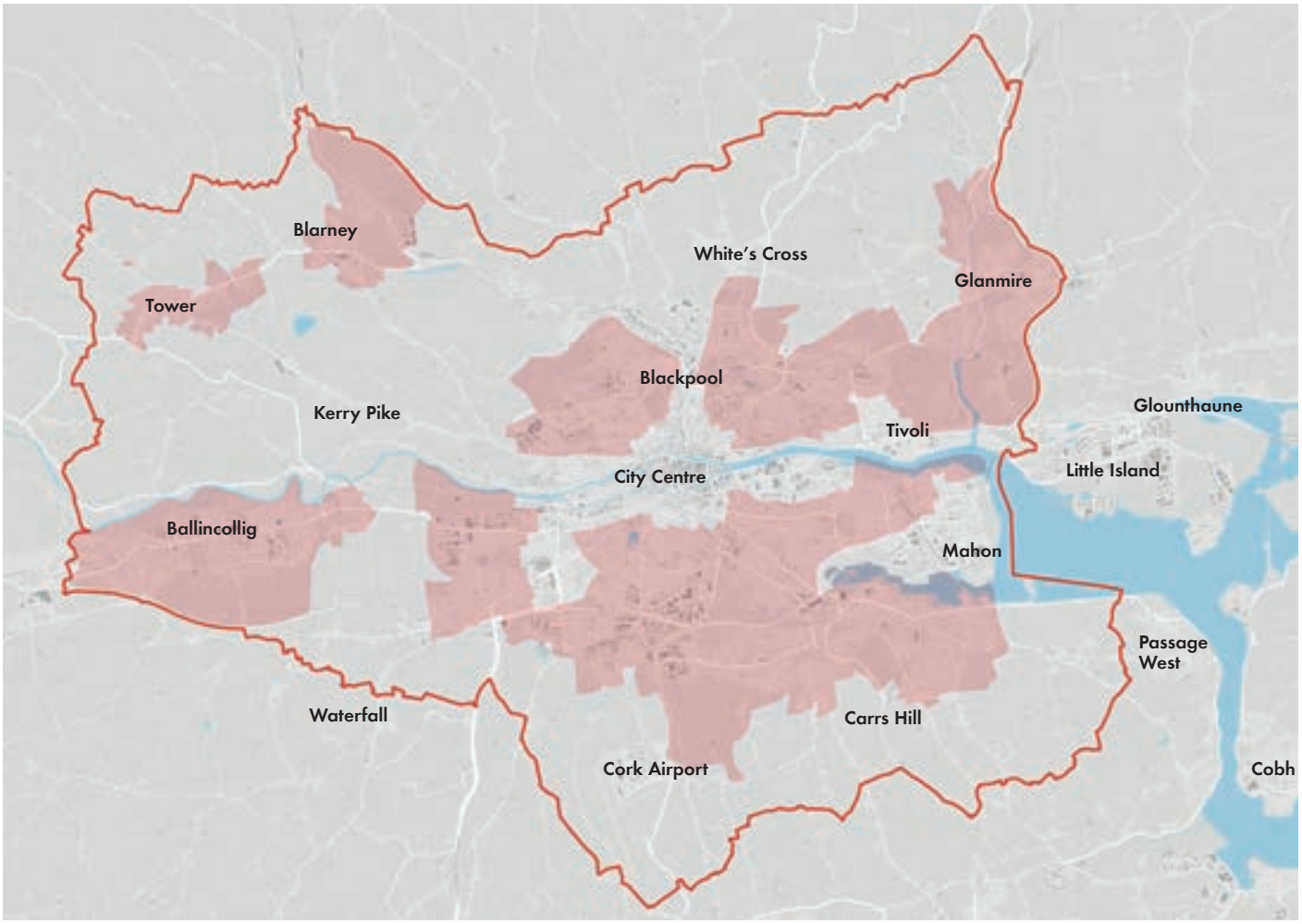
3. Views and prospects

Cork's View Management Framework reflects Cork's cityscape, landscape, topography and river corridors, combined with its built heritage assets. Given the high number of views, a sensitivity assessment rating of 3 has been assigned in this analysis.

The views and prospects illustrated reflect the adopted views and prospects of special amenity value protected by the adopted development plan.

The Draft Cork City Development Plan includes a refreshed view management framework of designated views and assets to be considered as key contexts to future development proposals. When adopted, the updated policy will impact on the mapped sensitivities and this revised framework will be an important consideration in determining planning applications.

Network of views and prospects as currently identified in the adopted Development Plan



4. Areas of consistent building heights

Large areas of the city are characterised by suburban housing with very consistent modest building heights. These areas are likely to be more sensitive to the impacts of tall buildings than areas characterised by a more varied range of building heights.

Cross checking the building height variance data with analysis of existing building heights reveals that the areas where building heights are typically most consistent are also areas where building heights are typically modest and principally domestic in scale.

The neighbourhoods with a standard deviation in building heights below approximately 0.8 have been identified as areas characterised by consistent building heights and therefore more sensitive to the townscape impacts of tall buildings.

A sensitivity assessment rating of 3 has been assigned to areas of consistent low building heights.

Height variation plan (Standard deviation)
It has been determined that those neighbourhoods with a standard deviation of less than 0.75 are considered to be characterised by a consistent building height.

5. Flight path / Public Safety Zone (PSZ)

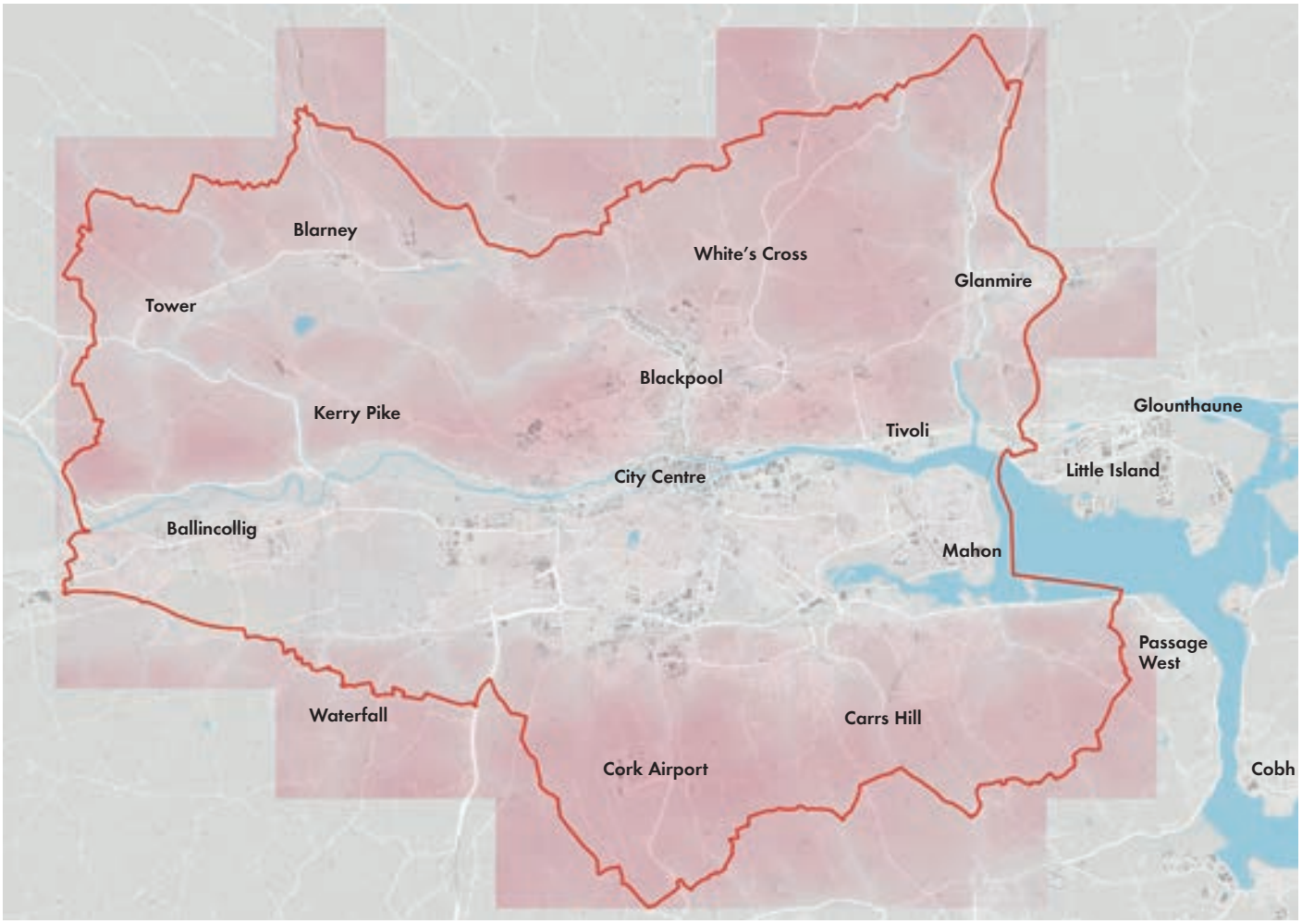
The purpose of PSZs is to protect the public on the ground from the small, but real possibility that an aircraft might crash in a populated area. Essentially, a PSZ is used to prevent inappropriate use of land where the risk to the public is greatest.

The zones run parallel to the runways with triangular sections narrowing away from the end of the runways. The inner zones are located closest to the runways. The ground-area located within these inner zones has the greatest likelihood of an aircraft accident occurring. It is proposed that no new development will be permitted but all existing developments can remain.

The likelihood of an accident in the outer zones is less than in the inner zones, and future development will be permitted, subject to a number of restrictions. High density housing development, and the building of schools, hospitals and facilities attracting large numbers of people will not be permitted, but all existing developments can remain.

A sensitivity assessment rating of 2 has been assigned to the Public Safety Zone in view of the alignment of the zone not passing over the city centre coupled with the fact that prevailing building heights will be quite low in the areas covered.

Map of Public Safety Zones at Cork Airport
source: https://www.gov.ie/en/publication/29d232-public-safety-zones/



6. Topography

Goal 5 of the adopted Development Plan states that "*Cork City's unique character derives from the combination of plan, topography, built fabric and the setting provided by the River Lee valley. The dramatic east west ridges create the visual setting for the city*".

The city's topography is one of its defining features with the Landscape Study of 2008 identifying that the city's ridges, escarpments and slopes were a particular asset.

The policies in the Plan are clear that new development must take account of surrounding topography. A sensitivity assessment rating of 3 has been assigned to topography, with higher slopes and terrain having a higher assessment score given the more sensitive nature of these locations.

Topography plan of the city of Cork and immediate surroundings

Composite sensitivity assessment

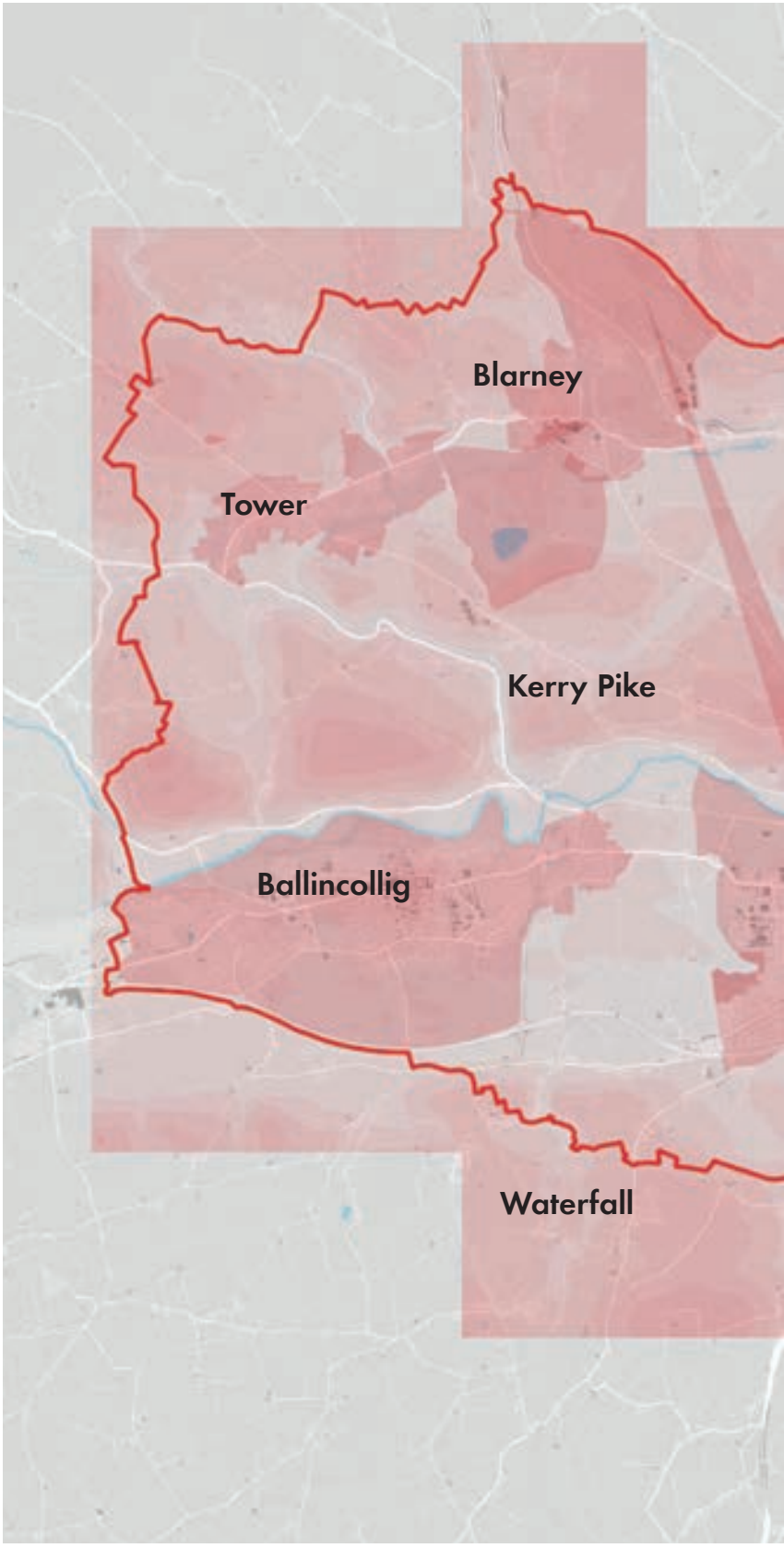
This composite plan of sensitivity to tall or taller buildings across the whole of the administrative areas of Cork City Council is produced by the cumulative build up of all criteria assessments.

A number of points emerge relating to the areas shown to be most sensitive:

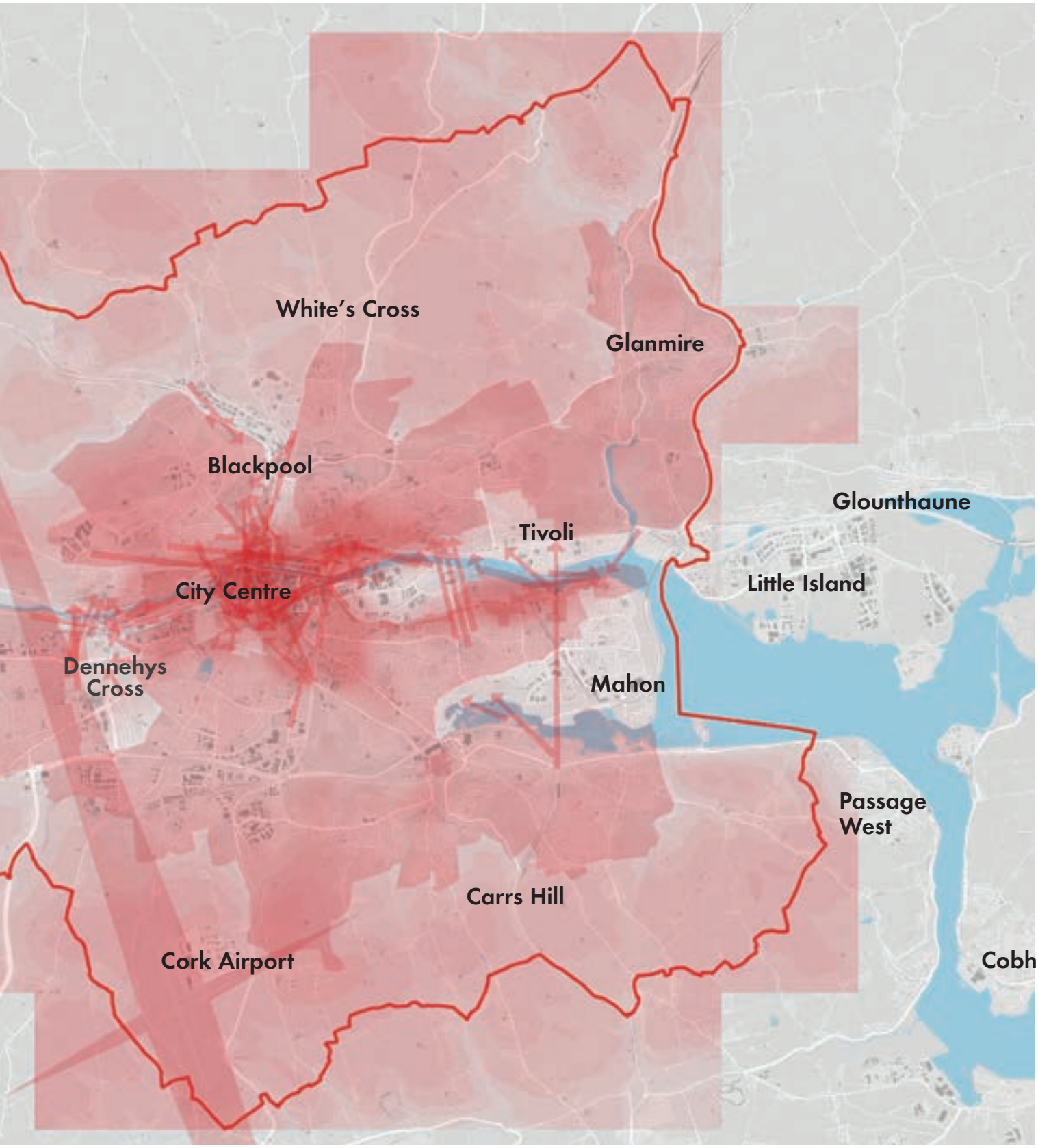
1. The city centre (City Island) area is the most sensitive location. This is principally because of the concentration of protected buildings and the identified protected views which criss cross the city.
2. The surrounding suburban areas are also sensitive, principally because of the low level but consistent prevailing heights of its neighbourhoods compounded by the rising topography both north and south of the River Lee.
3. Blarney is particularly sensitive to tall buildings because of its architectural history and consistent prevailing building heights.

Conversely, a number of points emerge regarding areas shown to be less sensitive which will be of direct relevance to the building heights and tall buildings strategy for Cork, as follows:

4. The South Docks area is one of the least sensitive locations in the city for new tall buildings.
5. Mahon and Blackpool would also both appear to not be particularly sensitive to new tall buildings.
6. The Dennehys Cross area in the vicinity of University College Cork (UCC), Cork Institute of Technology (CIT) and the principal offices of Cork County Council is shown to not be sensitive to new tall buildings. This is interesting as this is also a location with something of a minor cluster of existing taller buildings including County Hall and some apartment blocks.
7. Ballincollig is also seen to be not particularly sensitive to tall buildings.



Sensitivity map



Findings and observations

The adjacent plan combines the assessment of areas considered to be more suitable for, and areas considered to be more sensitive to, tall or taller buildings.

In so doing, a picture of areas considered to be most appropriate for tall and taller buildings emerges.

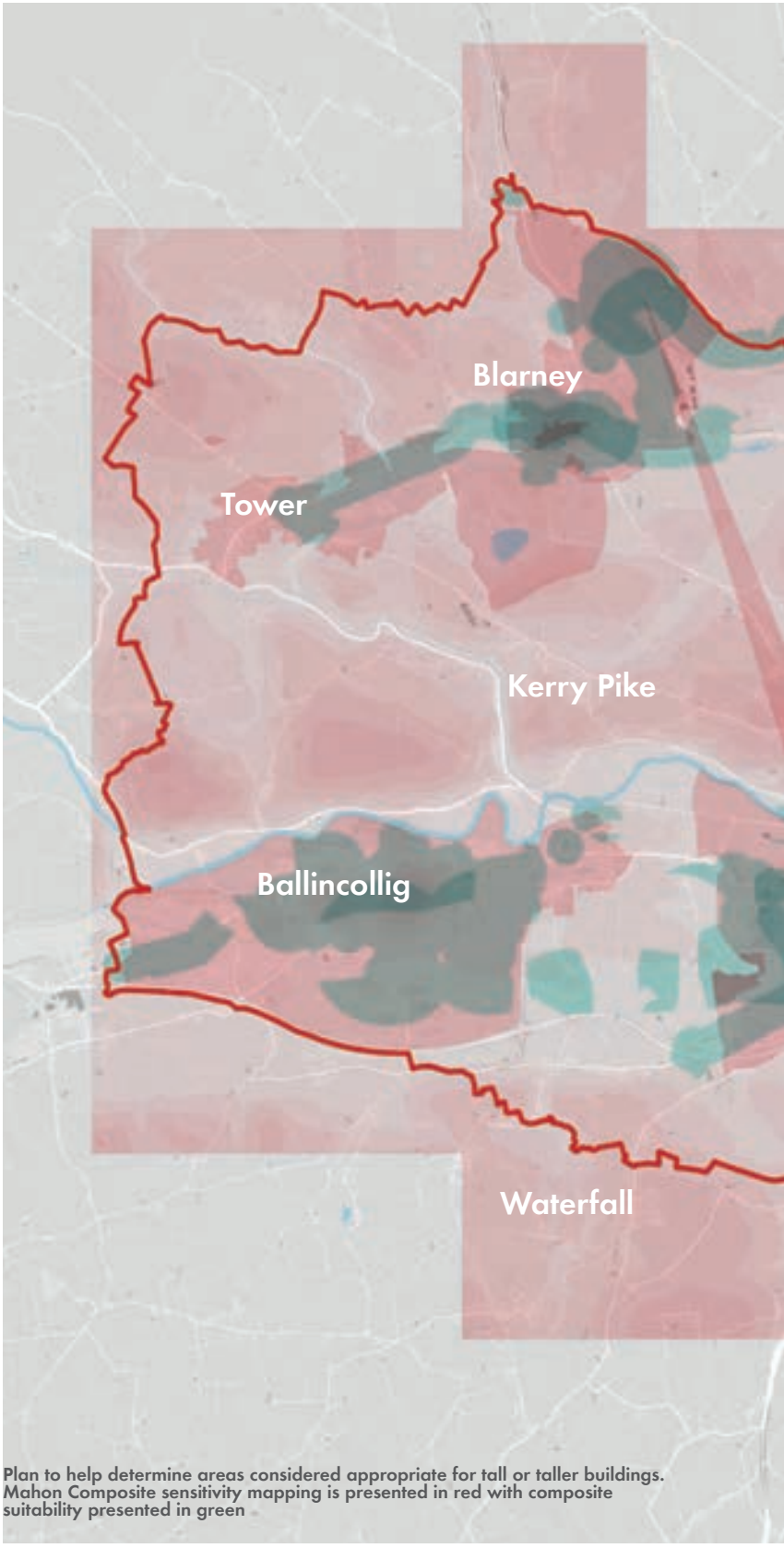
The areas most suitable often coincide with the areas considered to be most sensitive to new tall buildings. The city centre is a case in point. There is no doubt that the levels of public transport infrastructure and the range and concentration of commercial and community services in the city centre make it a very suitable location for new taller buildings.

Conversely, the concentration of heritage assets and designations and the confluence of protected views combine to highlight the acute sensitivity of this central location to the impact of new tall buildings.

However, beyond this central conclusion, a number of further findings emerge, as follows:

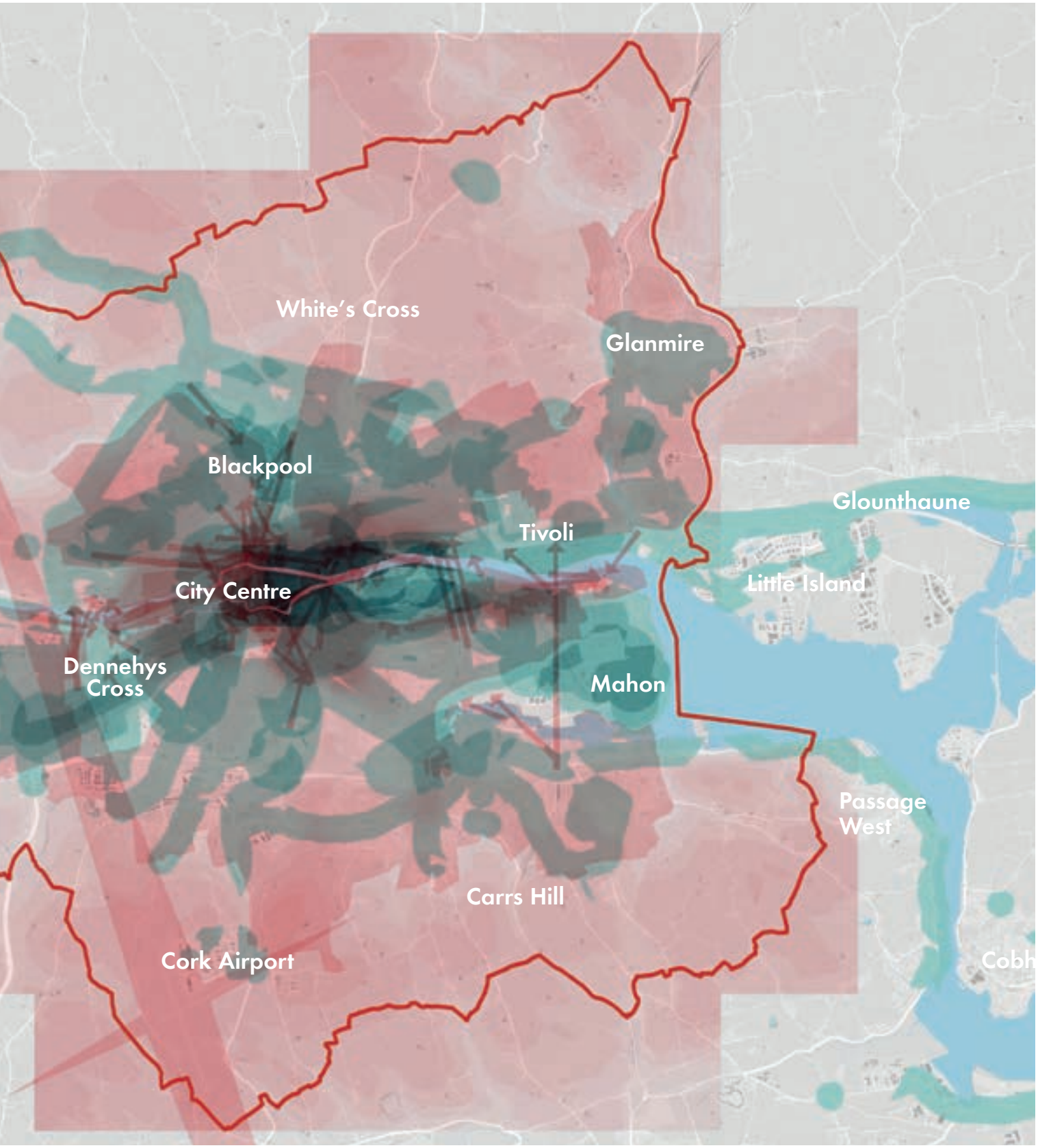
1. Mahon, Blackpool and the Dennehys Cross areas are show to be appropriate for taller buildings by virtue of being generally suitable without being particularly sensitive locations.

2. Ballincollig might also be considered, to some extent, to be a location which is appropriate for tall or taller buildings.



Plan to help determine areas considered appropriate for tall or taller buildings. Mahon Composite sensitivity mapping is presented in red with composite suitability presented in green

Appropriate areas



DENSITY AND BUILDING HEIGHTS STRATEGY

The final density and building heights spatial strategy plan emerges as a direct evolution of the multi-layered suitability analysis and resultant density spatial strategy. It is important that the strategy is read and used in the context of a series of caveats and notes which precede the area-based guidance. The strategy should also be used in the context of a general understanding of the benefits of density and some of the associated design priorities, challenges and good practice that should go alongside promoting higher density developments.

The core part of the strategy comprises four spatial zones across the city, determined by their relative suitability for density. The four areas are:

1. **City and central areas;**
2. **City fringe, primary urban corridors and principal towns;**
3. **Inner / urban suburbs; and**
4. **Outer suburbs.**

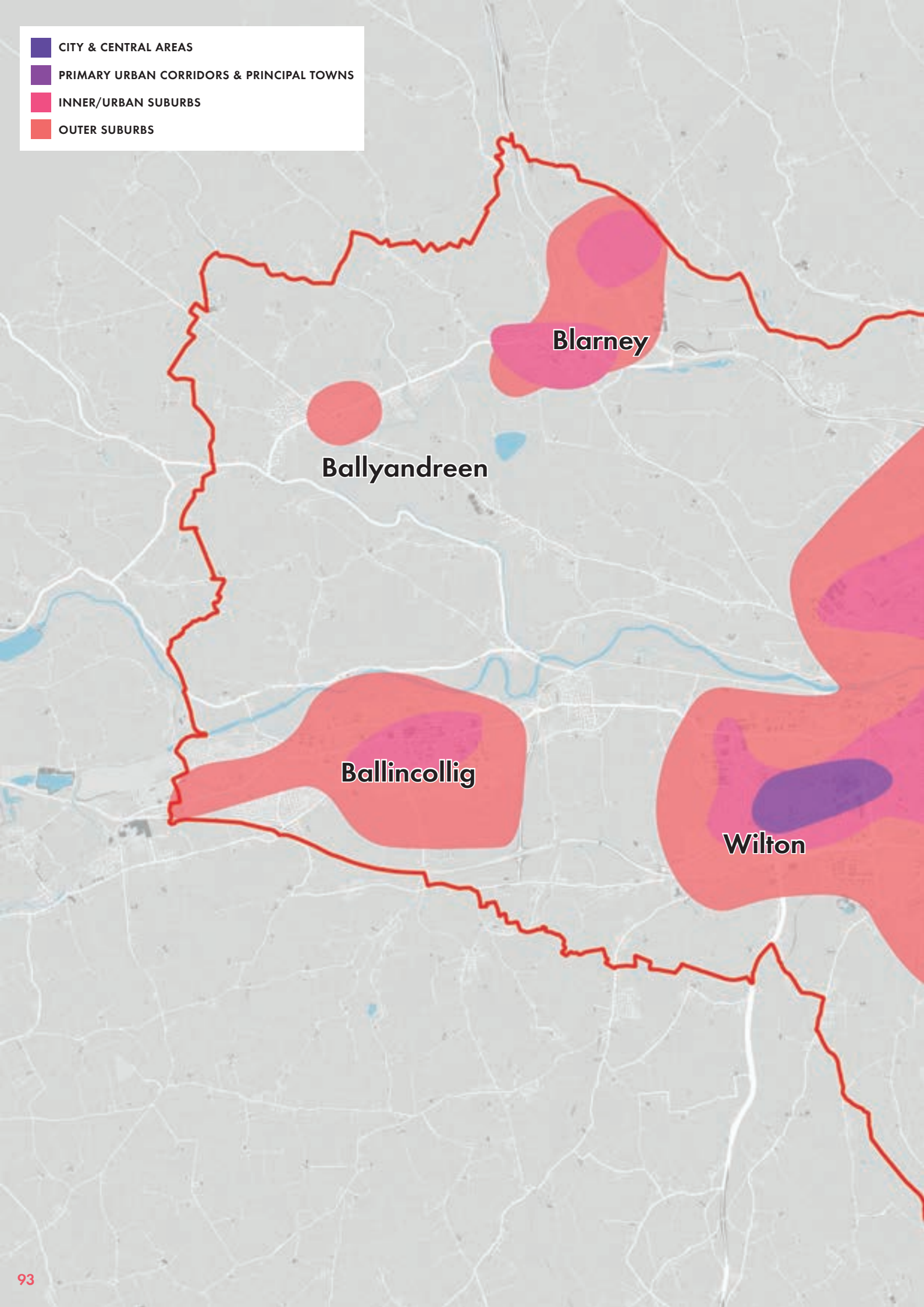
For each of these zones, guidance is provided on the following:

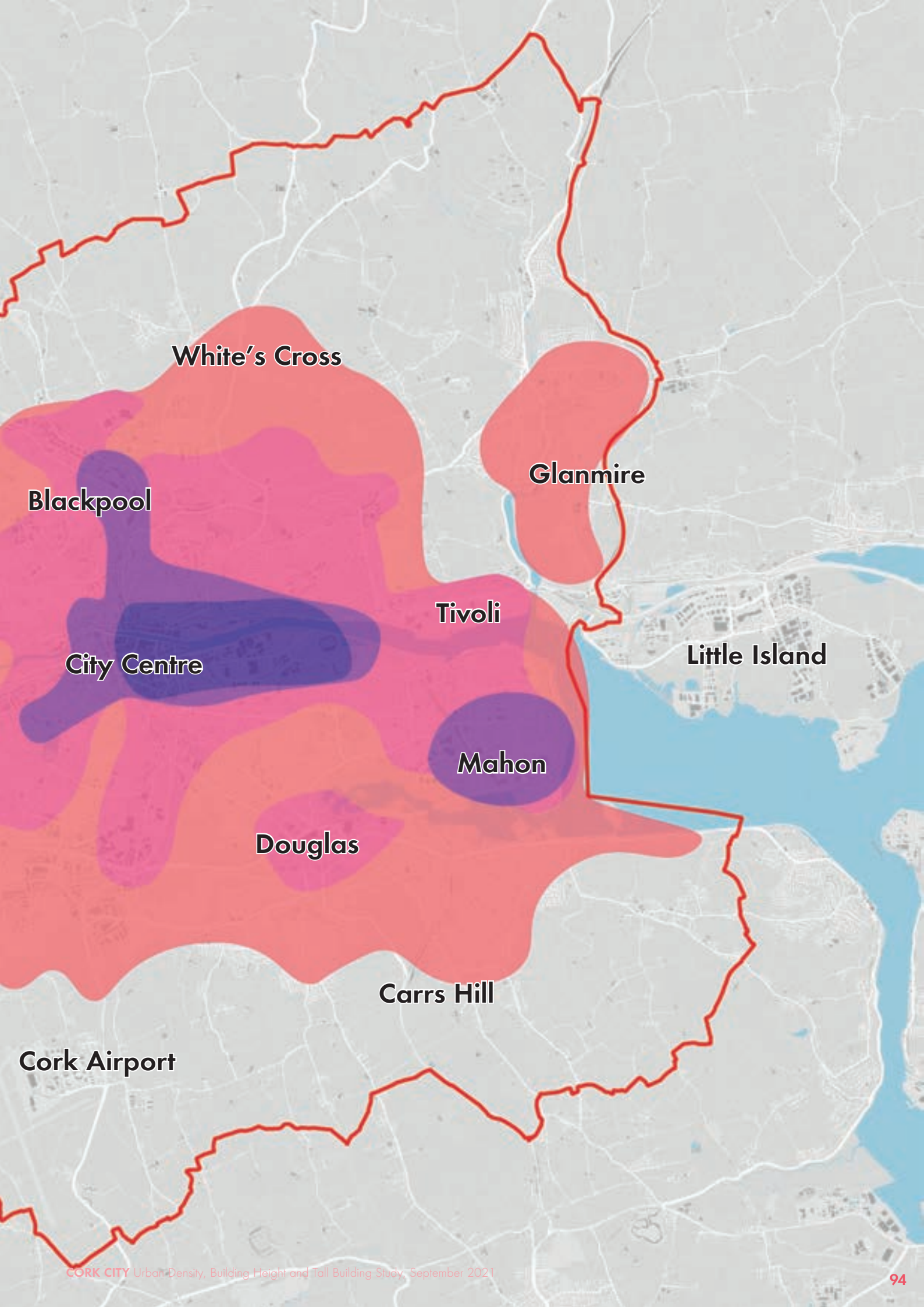
1. Description of the character of the zone – this is important because some of the zones cover an extensive area and include areas and neighbourhoods whose character contrast in both form and function. It is essential that the design and form of new development proposals respond positively to this character. Any given area's inclusion with a specific density or building height range doesn't justify a form of development at the extremes of that range. Evidence will need to support development proposals to demonstrate what a proposed form of development is appropriate in its local context.

2. Reflections on prevailing character – the strategy has built up a comprehensive body of evidence which captures important facets of urban character. Local authority-wide analysis of urban grain, development density, building heights, accessibility, topography, land use, green infrastructure and other factors have all contributed to the spatial density and building height strategy. We reflect here on some key facets of character of each specific zone.

3. Density guidance – a statement which should be read alongside the corresponding density targets in the strategy table.

4. Building height guidance – a statement which should be read alongside the corresponding building height targets in the strategy table.


CITY & CENTRAL AREAS
PRIMARY URBAN CORRIDORS & PRINCIPAL TOWNS
INNER/URBAN SUBURBS
OUTER SUBURBS
Blarney
Ballyandreen
Ballincollig
Wilton


White's Cross
Glanmire
Blackpool
Tivoli
City Centre
Little Island
Mahon
Douglas
Carrs Hill
Cork Airport

DENSITY AND BUILDING HEIGHTS STRATEGY

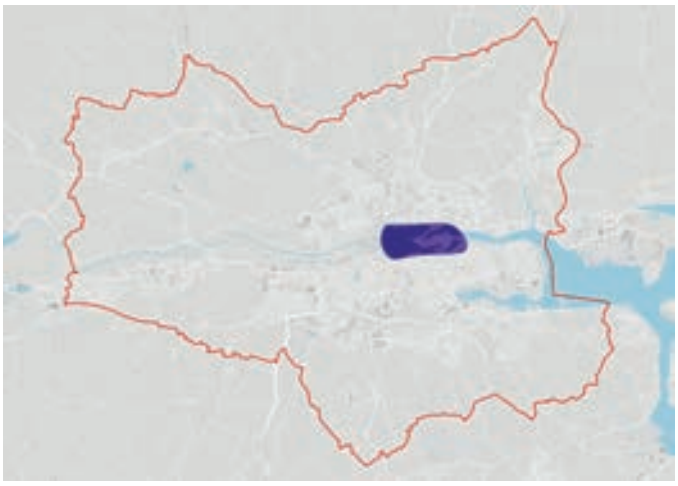
	DENSITY				
	FAR		Dwellings per hectare		
	Prevailing	Target	Prevailing	Target*	
				Lower	Upper
CITY	**2.5 - 7**	**4+**	**10 - 25**	**100**	**N/A**
City Centre	2.5 - 7	4+	10 - 25	100	N/A
North docks	0.5 - 1	3+	0 - 40	100	N/A
South docks	0.5 - 1.5	4+	0 - 10	100	N/A
FRINGE/CORRIDOR/CENTRE	**1.0 - 3.5**	**2.5 - 4+**	**25 - 100+**	**50**	**150**
City fringe / corridor	1.5 - 3.5	2.5 - 4.5	25 - 100	50	150
Mahon	0.5 - 3.5	1 - 4	10 - 40	50	120
Blackpool	0.5 - 3.0	1 - 4	0 - 40	50	120
Wilton	0.5 - 3.5	1 - 4	10 - 25	50	120
INNER URBAN SUBURBS	**0.2 - 1.5**	**0.5 - 2.5**	**10 - 40**	**45**	**100**
1 The urban north	0.2 - 0.7	0.5 - 1.5	10 - 25	50	100
2 Tivoli	0.2 - 0.7	0.5 - 3.5	0 - 10	50	100
3 Ballintemple & Blackrock	0.2 - 1.5	0.5 - 1.5	10 - 25	40	80
4 Douglas	0.2 - 2.5	0.5 - 3.5	5 - 20	50	100
5 South Link Road corridor	0.2 - 1.5	0.5 - 2.5	15 - 40	50	100
6 South west corridor	0.2 - 1.5	0.5 - 2.5	20 - 40	50	100
7 North west	0.2 - 1.5	0.5 - 1.5	10 - 25	40	80
8 North Blackpool	0.2 - 1.5	0.5 - 1.5	0 - 25	40	100
9 Central Ballincollig	0.5 - 3.0	0.7 - 3.5	10 - 25	50	100
10 Blarney	0.2 - 1.5	0.5 - 1.5	0 - 25	25	50
11 Stoneview	0.2 - 0.7	0.5 - 1.5	0 - 25	40	80
OUTER SUBURBS	**0 - 1.5**	**0.2 - 1.5**	**0 - 25**	**35**	**60**

* Assuming resi-led scheme

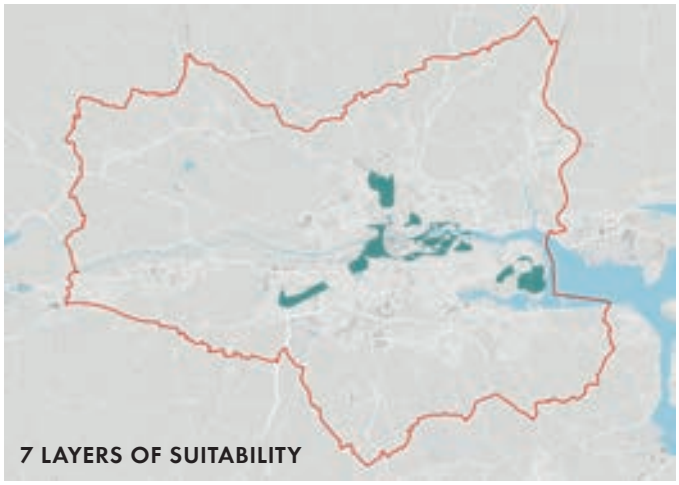
** Potentially suitable for exceptional tall building(s)

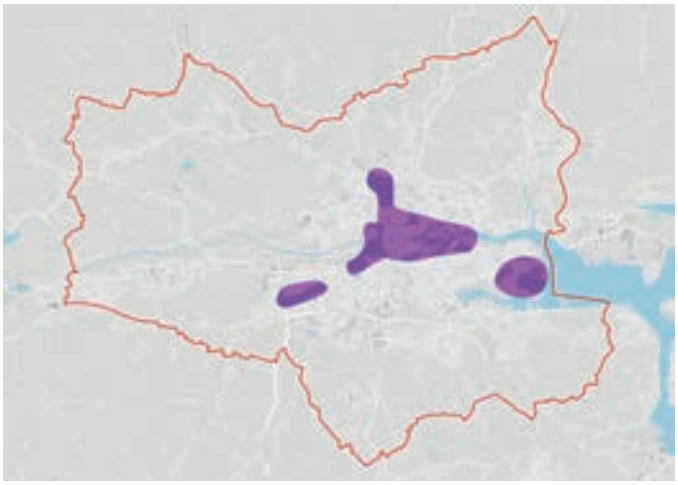
HEIGHTS			
No. of storeys			
Prevailing		Target	
Lower	Upper	Lower	Upper
2	**5**	**4**	**8****
2	5	4	6
2	3	4	7
2	4	5	10**
2	**6**	**4**	**7**
3	6	5	7
2	5	4	6
2	5	4	6
2	4	3	5
2	**4**	**3**	**5**
2	3	3	4
2	4	3	5
2	4	3	5
2	3	3	4
2	3	3	4
2	3	3	4
2	2.5	2	4
2	4	3	5
2	4	3	5
1	2	2	3
1	2	2	3
2	**3**	**2**	**4**


8 LAYERS OF SUITABILITY

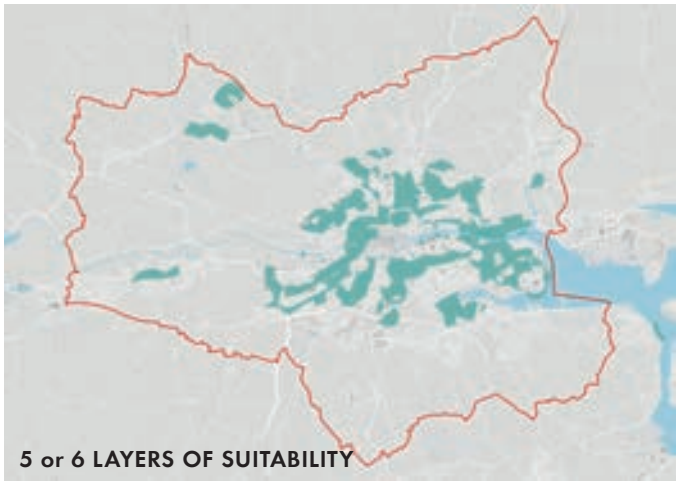


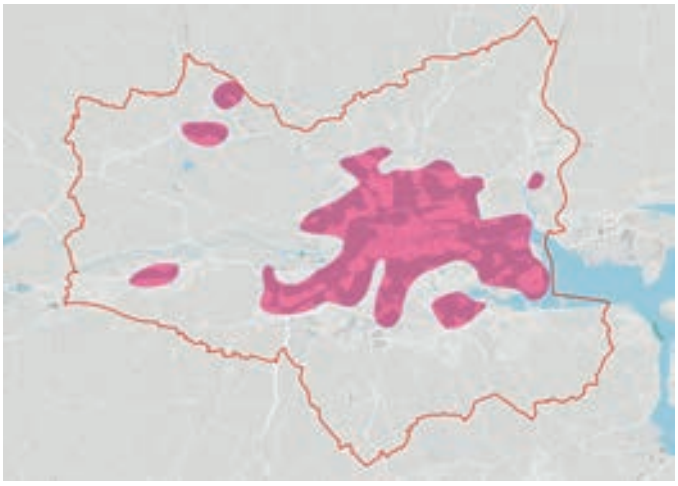

CITY & CE


7 LAYERS OF SUITABILITY

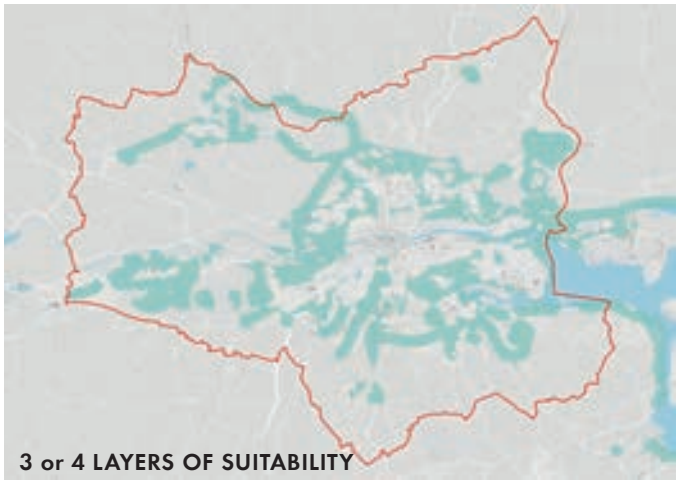


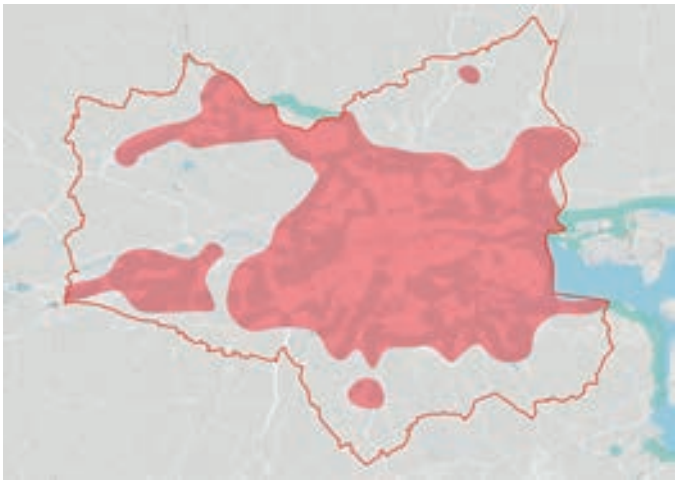

PRIMARY
& PRINCI


5 or 6 LAYERS OF SUITABILITY

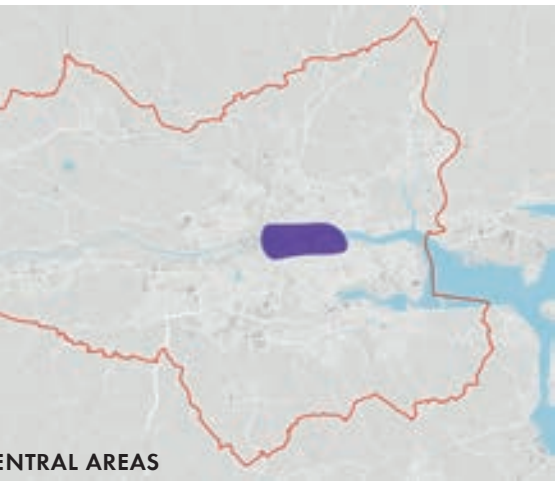


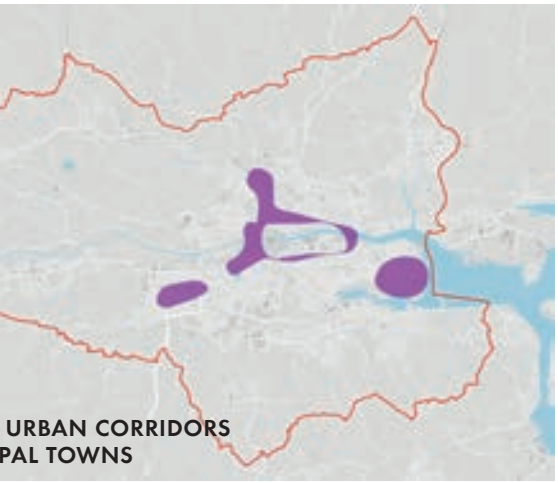

INNER UR

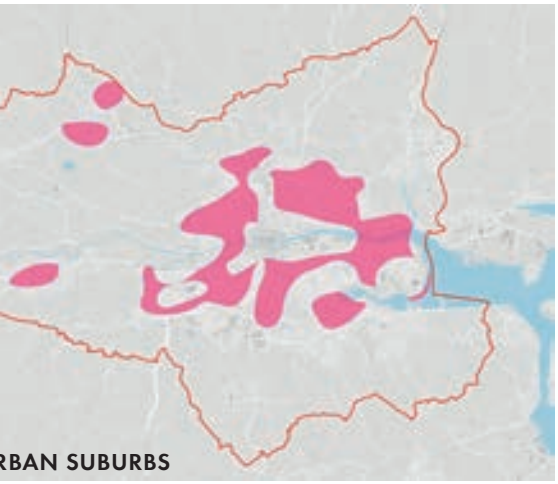

3 or 4 LAYERS OF SUITABILITY




OUTER SU







STRATEGY EVOLUTION

The suitability plan used to inform the density strategy was determined through the spatial assessment of a set of criteria which make a place suitable for supporting development. By layering the range of suitability criteria, the plan revealed areas which had multiple suitability criteria. Areas ranged from zero to eight layers of suitability criteria. Those with 0 to 2 layers of suitability criteria were discounted as less suitable for development. It was determined that areas which had more suitability criteria associated with it were more suitable for higher densities.

The areas shown as suitable are urban, readily accessible by public transport, areas with access to services within a centre, or areas planned for future development and infrastructure.

The resulting suitability plan has four layers. Within each of the layers, urban characters have begun to emerge which reflect those of a typical city.

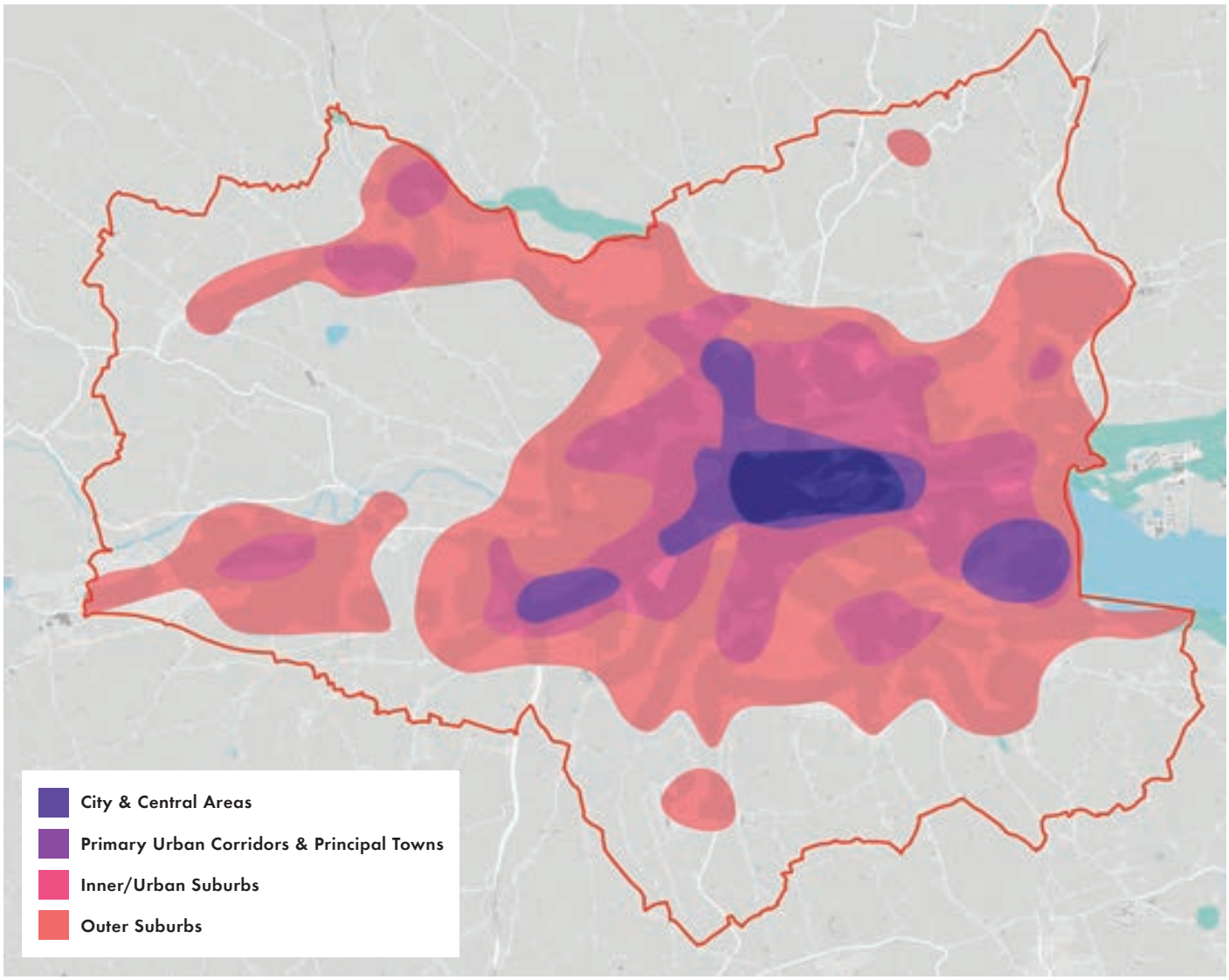
In creating a density matrix which will guide development in the City of Cork, it was important to create defined areas to which the policy will apply. The suitability plan naturally lent itself to these defined areas, whilst reflecting their various suitability for enhanced density.

To create a plan which has more defined areas, each of the suitability layers was rounded up at its extents to create a shape which better reflects the character of each area set out in the density strategy matrix.

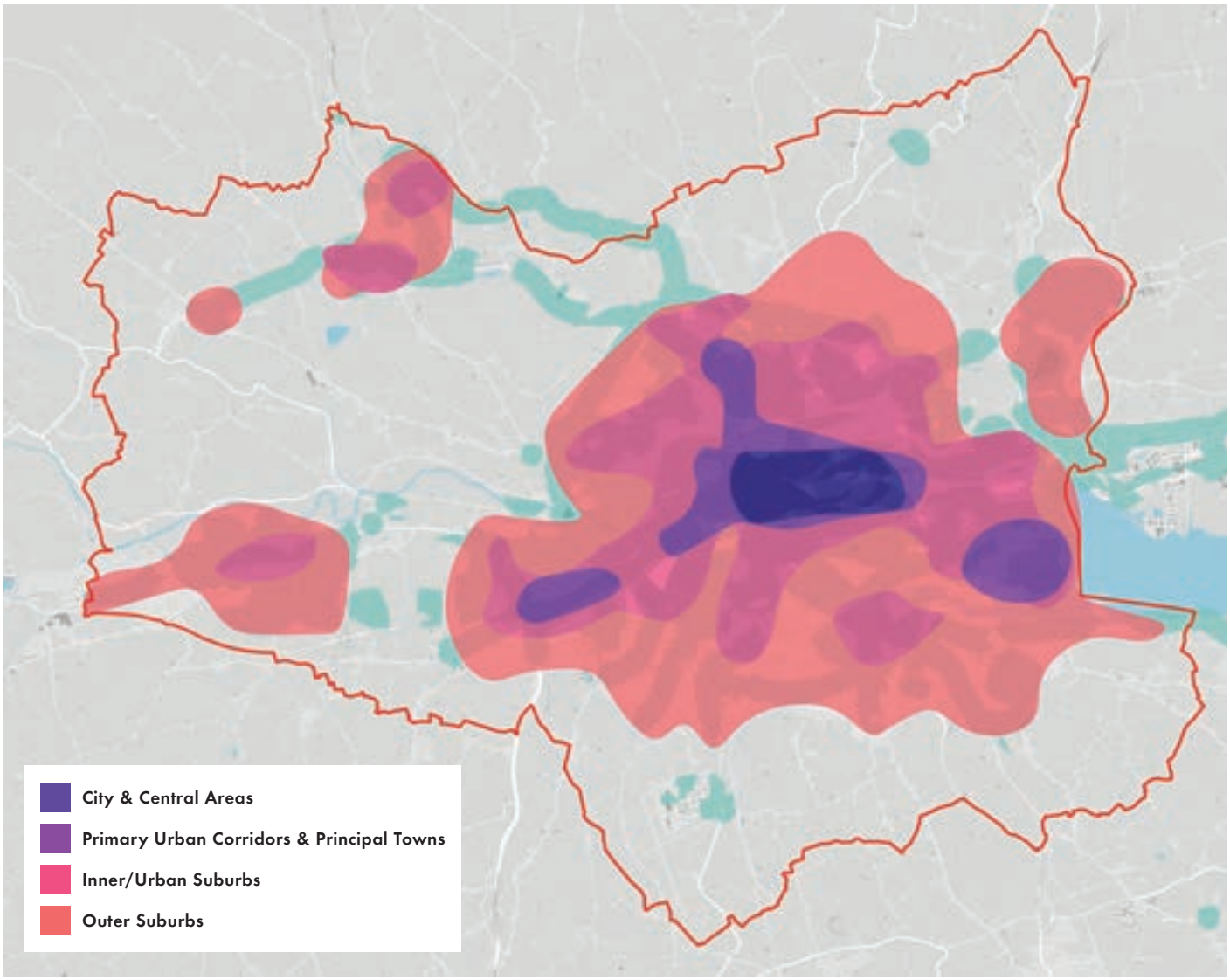
The resulting plan shows clearly defined areas for:

- **The city centre and central area** where high density is most appropriate, as well as most suitable as demonstrated by the suitability plan
- **The primary urban corridors** which are suitable for higher density because of their proximity to the town centre, and access to transport connections.
- **The principal towns** which are both well connected to the city centre and well served by local services and transport.
- **The inner urban suburbs** which are suitable for increased density because of their proximity to the city centre.
- **The outer suburbs** which are suitable for development based on their proximity to local services and transport, as indicated by the suitability plan.

A strategy for a Compact City



The above plan is the direct result of the suitability assessment with the different zones representing areas with increasing levels of overlapping suitability criteria. Having reflected on the progress being made on the draft replacement Development Plan, it is necessary to tune and amend this strategy plan to ensure it properly reflects the compact city objectives.



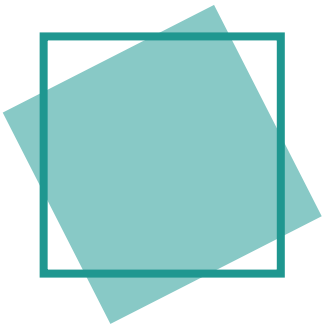
The above plan is the adjusted final strategy which excludes more rural and outlying areas. The main differences are as follows:

- The separation between the city's north-west extents (Blackpool) and Blarney and other north-western settlements;
- The separation between the city's south-west extents (Wilton) and Ballincollig;
- The separation between the city's north-east extents (Lotabeg and Banduff) and Glanmire; and
- The removal of Cork Airport from the density and building heights strategy.

THINGS TO NOTE

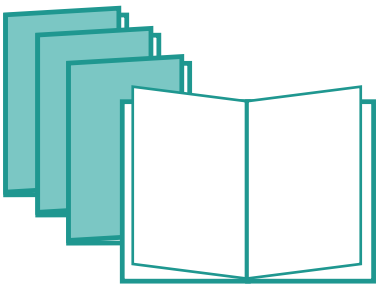
There are number of important notes, caveats and issues that may be relevant when using this strategy – either to help inform planning policy, to help the local authority in the development management process or to support applicants in preparing development proposals.

Not a blueprint...



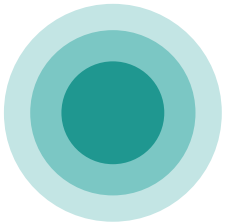
This density and building heights strategy is not a blueprint. Each case should be considered on their merits, but this guidance is put forward to help ensure the very best use of urban land is made to meeting current and future acute housing needs. There will be instances, given a site's particular context, where densities and heights lower or higher than those outlined in the strategy may be appropriate. Compliance with height and/or density guidance in this strategy does not alone justify densities or heights that might othewsie be considered inappropriate when assessed against other relevant planning policies or guidance.

Policy priority...



The zones identified within the spatial strategy are wide and varied and therefore capture a wide range of types of environment. Within these different zones, a number of different planning policies will also be relevant to any given location. This strategy should therefore be considered in this context and a view will need to be taken to weigh up the relative importance and priority that should be given to the different layers of planning policy.

Identified centres...



The different measures of development density expressed in the strategy (FAR, dph, building heights) are generally expressed as ranges. Within identified centres, it is likely to be more appropriate to target the upper parts of those ranges, although it should be recognised that the distribution of defined centres was an important criterion in the suitability analysis underpinning this spatial strategy.

Historic townscape and sensitivities...

Cork City Centre is an historic environment with a sensitive, high quality and special townscape. Buildings which are considerably taller than those around them can therefore have a significantly adverse impact on townscape character.

Site size threshold...

The strategy table relates more to larger sites both in terms of overall site size and development capacity. Larger sites are generally more capable of generating their own character as well as responding to existing prevailing character which could present a significant constraint on over development capacity. It is more difficult to project accurate densities for smaller sites with unusual or irregular geometries as they require bespoke design solutions.

Housing the predominant use...

It is more difficult to assess housing density of mixed-use redevelopment schemes. The dph densities in the strategy table are put forward on the assumption that development proposals are 100% residential. Where mixed use developments are appropriate, particularly in the city centre and central zone, FAR may be a more appropriate measure of density.

Redevelopment rather than refurbishment...

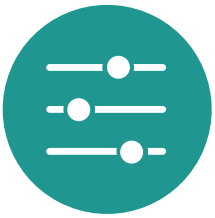
The table relates primarily to redevelopment rather than refurbishment. This does not however convey any preference for the former over the latter.

Open space and density...

When measuring housing density, the site area should be net of areas of required open space and should be limited to the area within which the housing development is proposed.

Density and building height ranges...

The density and building heights strategy includes ranges for each spatial zone. These ranges should be used as a guide and there may be reasons which justify deviation of these ranges. No upper dph limit is given for the central / city zone. Complex sites may give rise to opportunities for exceptional forms of development



DENSITY AND GOOD DESIGN

Strategies to increase levels of residential density in new development will give rise to a number of challenges and competing issues. The compact city is promoted nationally as a key element in the delivery of sustainable patterns of development. However, promoting more compact centres in order to promote the best use of urban land will require judgements to be made on the relative importance of different aspects of planning and environmental control.

Before the main density and building heights strategy for Cork is unpacked, this short sequence of pages provides an overview of some of the key benefits of urban density and how the issues and challenges it raises may need to be balanced with flexibility and compromise.

challenges ⟵ **DENSITY** ⟶ **opportunity**

Policies - standards - guidance

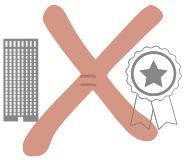
Parking provision	Review and revise relevant policies and guidance to streamline process of densification and challenge the status-quo
Overlooking distances	
Private amenity space	
Dwelling mix	

Strategic issues

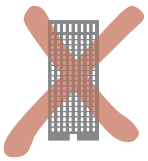
Public transport frequency/accessibility	Link transport planning to density targets
Land assembly and urban grain	Plan for minimum levels of permeability
Local walkability	Promote principles of sustainable, walkable neighbourhoods

Cork is a populous, compact city which in general uses land efficiently and has developed a strong civic character and urban form.

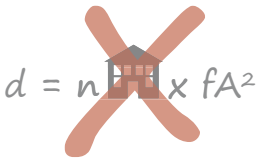
Density IS important to Cork's future...



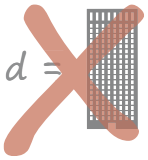
...but density IS NOT a synonym for urban quality



IS NOT an architectural style



IS NOT a planning formula



IS NOT the same as tall buildings

IS NOT a fashion or a fad

IS NOT an idea imported from elsewhere

IS NOT good in its own right...

...density IS helpful if it also brings...

IDENTITY: this is where I belong

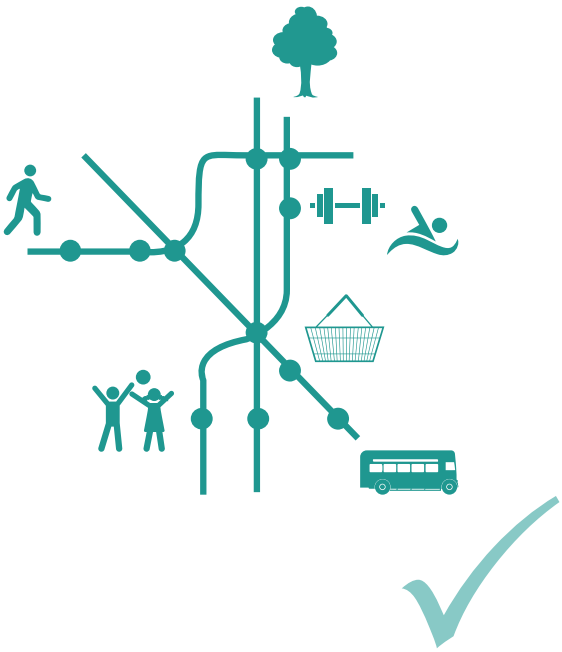
This means: Cultivating and reinterpreting Cork's unique urban characteristics for present and future generations

- nurturing a strong sense of place
- fostering a shared sense of community
- exploiting the unique assets of the site
- connecting with the past while reshaping the future

DIVERSITY: in everything it contains

This means: Complementing Cork's rich urban and social history –a place of many places, a community of many communities

- mixing uses
- varying plot sizes
- mixing tenures
- providing for all ages
- experimentation
- encouraging biodiversity through the design of green spaces



AMENITY: meeting the practical needs of the community

This means: Understanding and anticipating the real things the people of Cork want and expect

- access to attractive outdoor space
- access to services
- access to public transport
- access to schools and play
- access to sports facilities

WALKABILITY and PERMEABILITY: so that walking is the easiest option

This means: Preserving and intensifying Cork's compact, legible form and repairing rifts in its urban fabric

- creating attractive, convenient and safe pedestrian routes
- maximising active frontages and overlooking
- providing a legible and continuous urban structure
- providing linked green infrastructure
- helping facilitate a healthy lifestyle
- ensuring new development is properly and fully integrated with its immediate neighbourhood

The table below shows how the relationship between developments at different housing densities and the range of planning standards relevant to new developments will need to vary as densities increase. Whilst new developments of all densities will need to be assessed against all relevant planning policies and standards, it might be appropriate to apply standards more flexibly as densities increase.

DPH	0 - 10	10 - 25	25 - 40	40 - 70	70 - 100	100 - 200	200 - 400	400 - 600
HOUSING MIX								
detached								
semi-detached								
mews								
short terrace rows								
terraced townhouses								
maisonettes / duplex								
low-mid rise apartments								
mid-high rise apartments								
AMENITY SPACE								
large front and back garden								
large back garden								
small garden/terrace								
large balcony /roof terrace								
small balcony								
communal garden space								
communal roof terrace								
PARKING PROVISION								
2+ parking spaces on the property								
1 parking space on the property								
on street car parking								
dedicated communal car park								
dedicated podium level parking								
dedicated underground parking								
no parking / support car club								
PRIVACY AND OVERLOOKING								
no overlooking								
potential overlooking								
some overlooking								
DAYLIGHT AND SUNLIGHT								
full daylight and sunlight								
occasional overshadowing								
some overshadowing								



Short terrace rows
35-55 dph



Terraced townhouses/maisonettes
50-80 dph

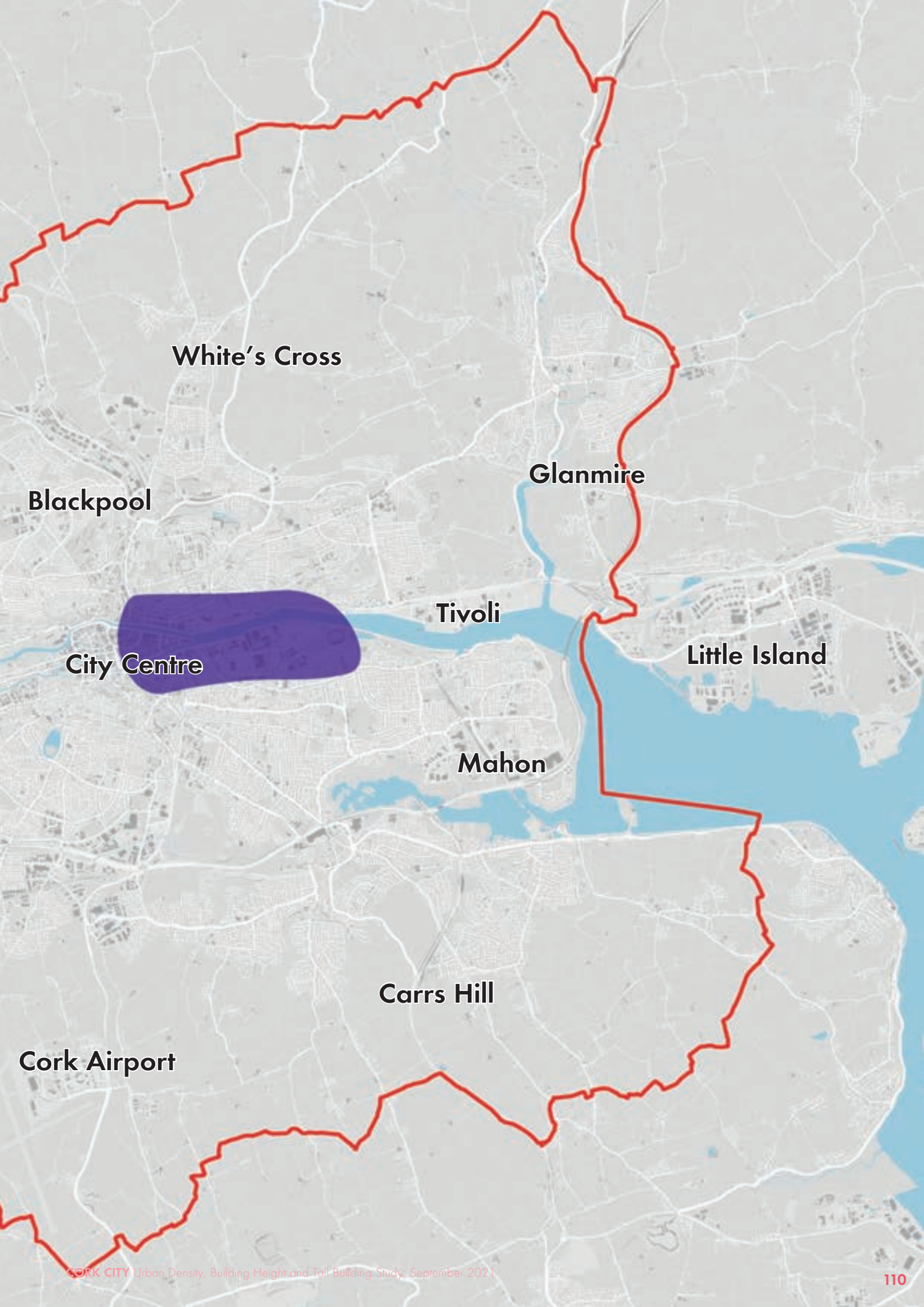


Low-mid rise apartments
50-120 dph



High rise apartments
500 dph

CITY AND CENTRAL AREAS


White's Cross
Glanmire
Blackpool
Tivoli
City Centre
Little Island
Mahon
Carrs Hill
Cork Airport

CITY AND CENTRAL AREA

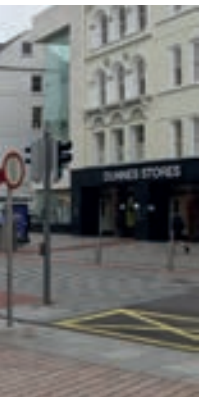
This central area covers City Centre Island east of Grand Parade, the South Docks and the North Docks areas. In doing so, the area captures the majority of the historic city and docklands area of Cork and contains the city's highest profile areas of waterfront including the Port of Cork.

The area has seen significant regeneration over recent years. Major regeneration schemes have included, in chronological order, the mixed use City Quarter development on Lapps Quay (City Centre Island) which incorporates corporate office, co-working office and hotel space; the residential-led mixed use Elysian development on Eglinton Street which sits at the threshold between the city centre and the South Docks area and, at the time of its construction, was the tallest building in the Republic of Ireland; and, directly adjacent and occupying a high profile river-front site, the corporate office-led development at One Albert Quay. North of the River, the area also hosts the ongoing regeneration of Horgan's Quay in the vicinity of Kent Railway Station.

The area is highly accessible by public transport with national and regional services via Kent Railway Station and regional and local bus services via Cork Bus station both situated within the zone.

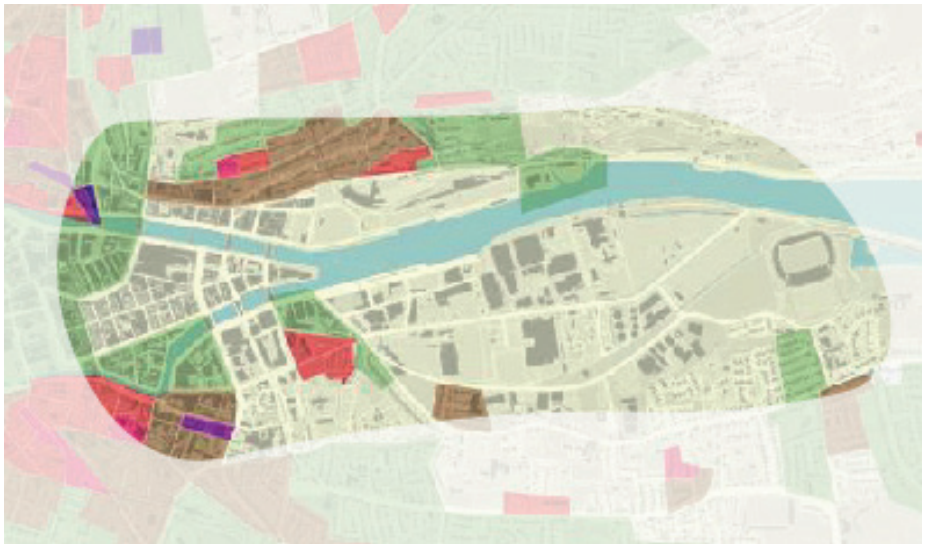
RELEVANT CASE STUDIES

1	Alto Vetro, Dublin	***867 dph***
2	Keybridge, London	***500 dph***
3	Bosco Verticale, Milan	***450 dph***
4	Nordhavn, Copenhagen	***200 dph***
5	19 Dzielnica, Warsaw	***274 dph***



PREVAILING CHARACTERISTICS

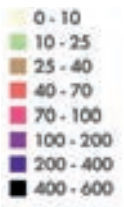
The plans set out below provide an overview of some of the key layers of urban analysis which underpin the suitability and sensitivity analysis. These layers of analysis play an important role in determining the appropriate density and building height levels in the strategy for the city.

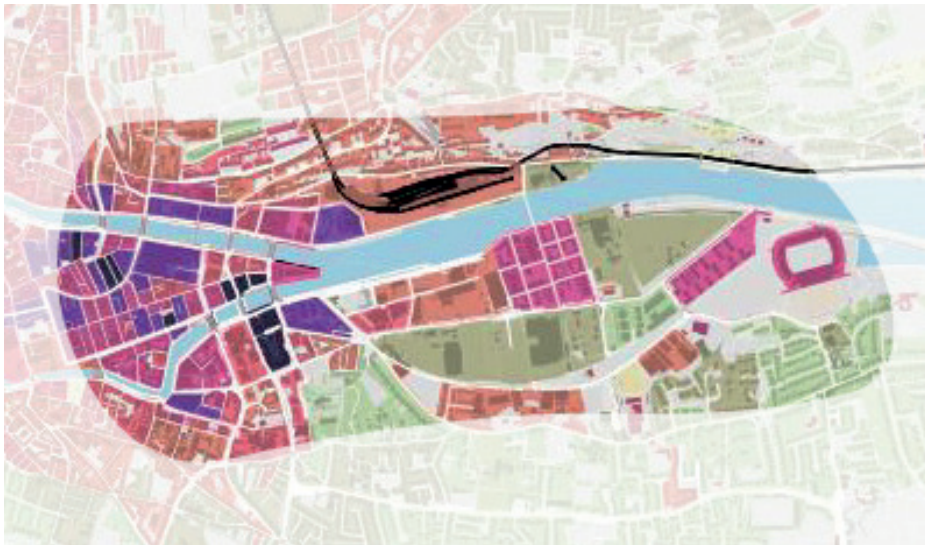


DENSITY

DPH

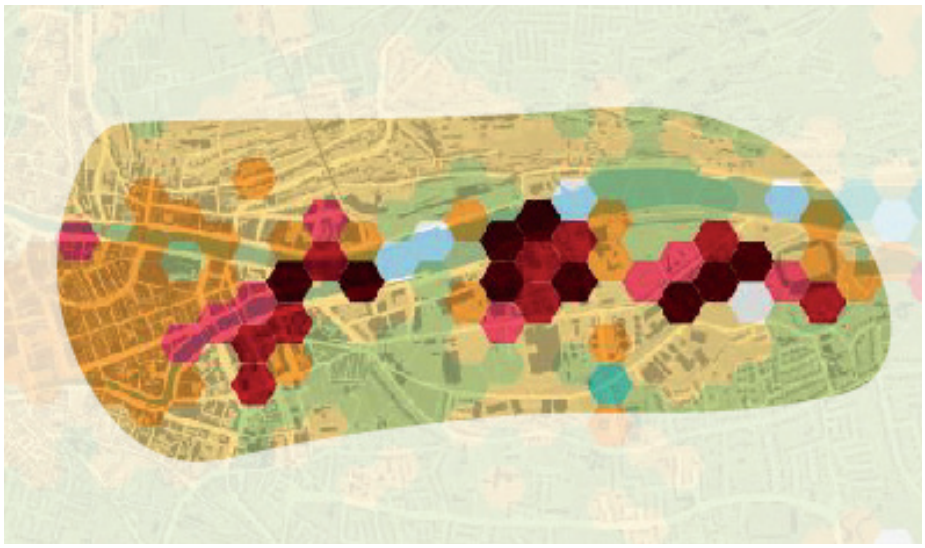
This is the city's highest density zone. However, given its mixed and commercial character, this is only evident in assessing density through FAR rather than population density or dwellings per hectare (dph). Indeed, an assessment of prevailing dph is distinctly low and considerably lower than surrounding, less central, areas.





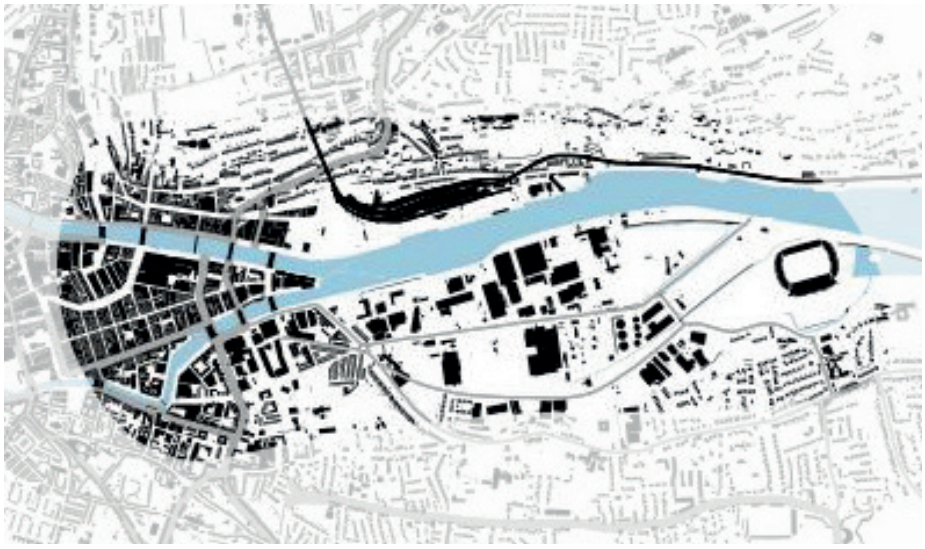
FAR

FAR levels are typically at least 2.5 across the City Centre Island area within the zone, with particular nodes of extremely high density in locations of recent major regeneration schemes. The South Docks area has a relatively high FAR level despite its industrial character despite having a very low population / dwellings density.



BUILDING HEIGHTS

Prevailing building heights, when presented on a neighbourhood basis, are modest with the city centre shown to have a prevailing height of 4 storeys which falls to 3 and 2 storeys on the north and south banks of the River Lee respectively. However, a pattern of rising building heights towards the City Centre Island is evidence with the recent major regeneration schemes on the south side of the River – the Elysian and One Albert Quay – emerging as the cluster of the city's tallest buildings.



URBAN MORPHOLOGY

The core city centre area is characterised by a regular gridded street pattern with largely fully developed out urban blocks. This dense and urban form of development continues on the north and south banks of the River Lee for one or two street blocks. On the north side of the River Lee the grain responds directly to the rising terrain with streets running along the side of the slope. On the south side of the River Lee, and particularly in the South Docks area, the largely industrial character of the area is expressed in a course urban grain with some very large buildings.

SENSITIVITY

This zone is the most suitable area for high density development. However, parts of the zones are also some of the most sensitive in the city in terms their heritage assets

Please note that building heights are shown in metres not number of storeys. Building heights are based on GIS data provided by the Council. Note that storey heights can vary in buildings of different ages and uses. A range of potentially likely storey heights is included in the key as a guide to take account of the range of conditions that can be found across Cork. Please note these storey heights are therefore included as an estimated assessment not an accurate record.

DENSITY AND BUILDING HEIGHT GUIDANCE

DENSITY

There is considerable opportunity to increase development densities within the central area through conversions and mid-rise redevelopments which respect local character. Where residential-led schemes come forward and notwithstanding the need to deliver a mix of dwelling types including larger family sized homes, high levels (100+ dph) of housing density should be delivered in this most suitable and appropriate location.

BUILDING HEIGHTS

This city and central area is the most suitable for high density, including taller, developments given all the infrastructure and services supporting this location. However, parts of the area, in particular the historic city centre, are also the most sensitive in the city in light of the impact high density development might have on the special and historic character of the area and the setting of its historic buildings. Appropriate building heights will therefore need to be justified on a case by case basis and cannot be justified simply by the guide and target numbers in this strategy table.

Historic city areas

Prevailing building heights in the historic core of the city are typically between 2 and 5 storeys. More recent major developments have tended to rise to 6 and 7 storeys with some taller exceptions. In view of the heritage assets and potential harm new development could have on local character, infill and redevelopment opportunities should continue to make the best use of land, with new development expected to generally range from 4 to 6 storeys.

The historic waterfront of the River Lee plays a profound role in defining the character of Cork. Building heights in these areas typically have building heights of 3-4 storeys. Special attention should be paid to ensuring waterfront developments respect the city's iconic waterfront image and contribute positively to creating lively, high quality, publicly accessible riverside environments which are connected to the wider city. The form of new development on riverside sites should seek to minimise overshadowing of existing or new public riverside environments. Development directly on the riverfront should generally step down to ensure new development respects this key open space and the image of the city. See plan for further guidance.

	DENSITY				
	FAR		Dwellings per hectare		
	Prevailing	Target	Prevailing	Target*	
				Lower	Upper
CITY	**2.5 - 7**	**4+**	**10 - 25**	**100**	**N/A**
City Centre	2.5 - 7	4+	10 - 25	100	N/A
North docks	0.5 - 1	3+	0 - 40	100	N/A
South docks	0.5 - 1.5	4+	0 - 10	100	N/A

* Assuming resi-led scheme

** Potentially suitable for exceptional tall building(s)

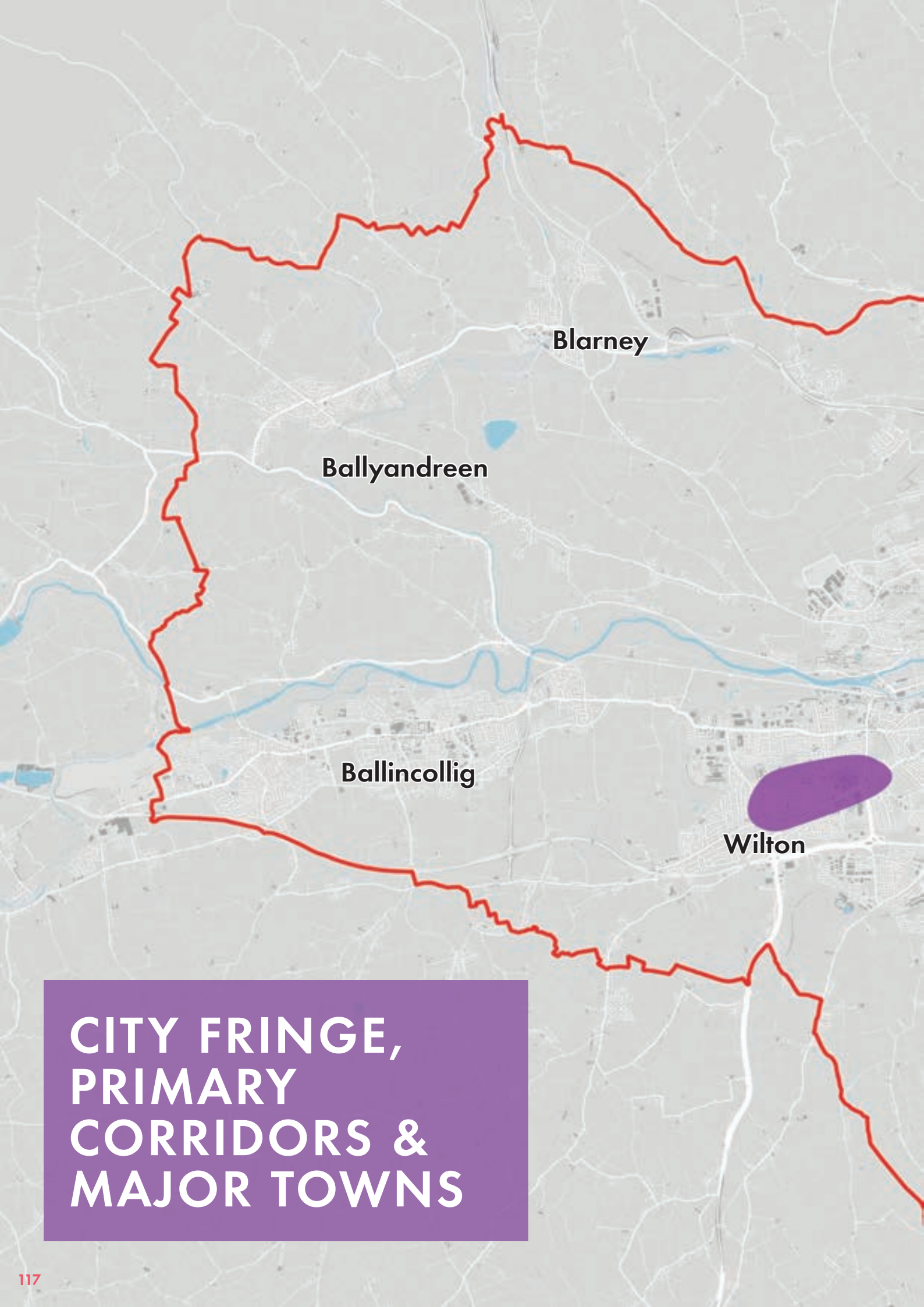
North Docks

The character of the North Docks is changing rapidly with new development attracting significant levels of new investment to the area. Whilst the railway yards and docks have historically been low-rise environments, recent new developments, such as Horgan's Quay, have risen to 8 storeys in place. As further development takes place, building heights should typically be in the range of between 4 and 7 storeys. Along the banks of the River Lee, special attention is required. Buildings on the riverfront should generally not exceed 5 storeys.

South Docks

The South Docks presents a massive long-term regeneration opportunity. The phased redevelopment of this industrial area will generate a new character in what will be a radical transformation. The area is therefore significantly less sensitive to change and is correspondingly the most appropriate location for taller and tall buildings in the city. The majority of new buildings should range generally in height from 6 to 10 storeys with exceptional opportunities for tall buildings at appropriate locations within the area. As with North Docks and the City Centre, riverside development should step down, to a maximum height of 6 storeys.

HEIGHTS			
No. of storeys			
Prevailing		Target	
Lower	Upper	Lower	Upper
2	**5**	**4**	**8****
2	5	4	6
2	3	4	7
2	4	5	10**



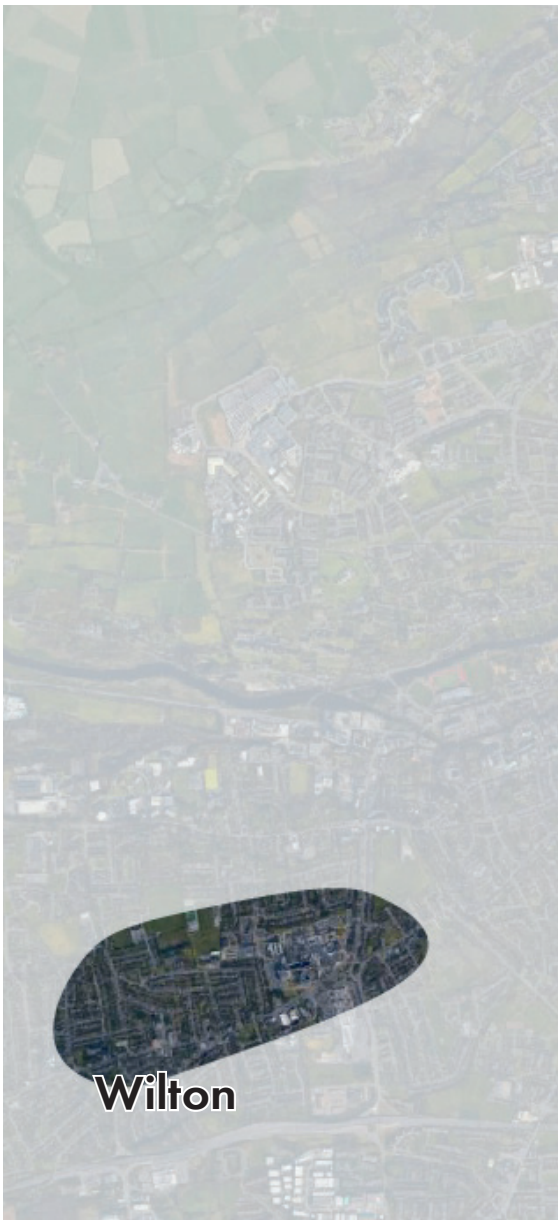
CITY FRINGE, PRIMARY CORRIDORS & MAJOR TOWNS


White's Cross
Blackpool
Glanmire
Tivoli
City Centre
Little Island
Mahon
Carrs Hill
Cork Airport

CITY FRINGE, PRIMARY CORRIDORS & MAJOR TOWNS

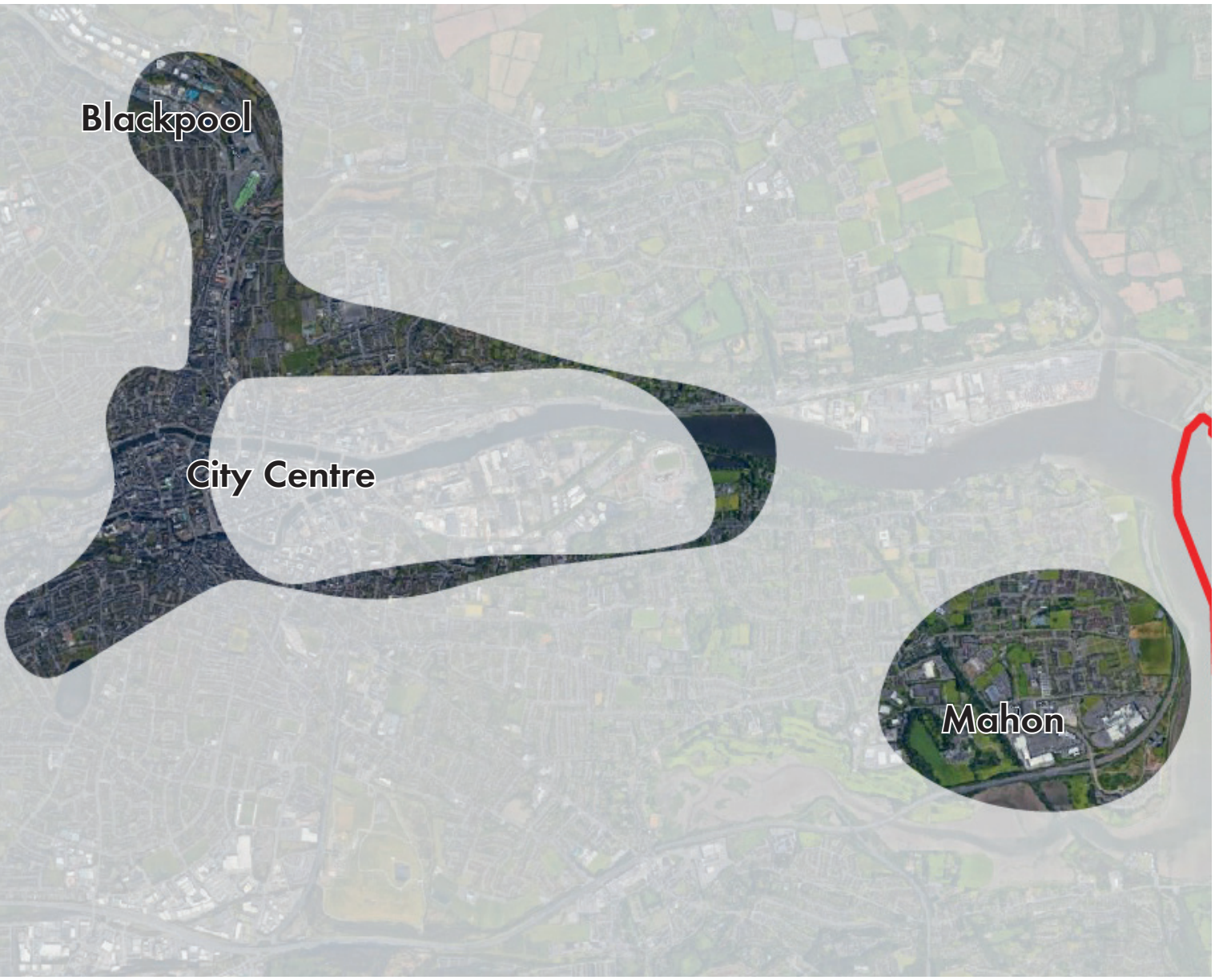
This area covers the principal urban areas and primary city corridors beyond the core city area. The centres of Mahon to the east of the city, Blackpool to the north and Wilton to the west are all included together with some areas immediately adjacent to the city and central area.

A significant area to the west of the city centre is also included in the zone, primarily the western part of City Centre Island and also extends along the primary road corridors to the centres of Blackpool (the R846 Shandon Street and the N20 Leitrim Street corridor) and Wilton (the R608 Bandon Road corridor).



RELEVANT CASE STUDIES

4	Nordhavn, Copenhagen	*200*
5	19 Dzielnica, Warsaw	*274*
6	Liffey Trust, Dublin	*336*
7	Timber Yard, Dublin	*174*
8	Clancy Quay, Dublin	*112*
9	Hollainhof, Ghent	*86*
10	Eddington, Cambridge	*65*
11	Killesberghöhe, Stuttgart	*50*

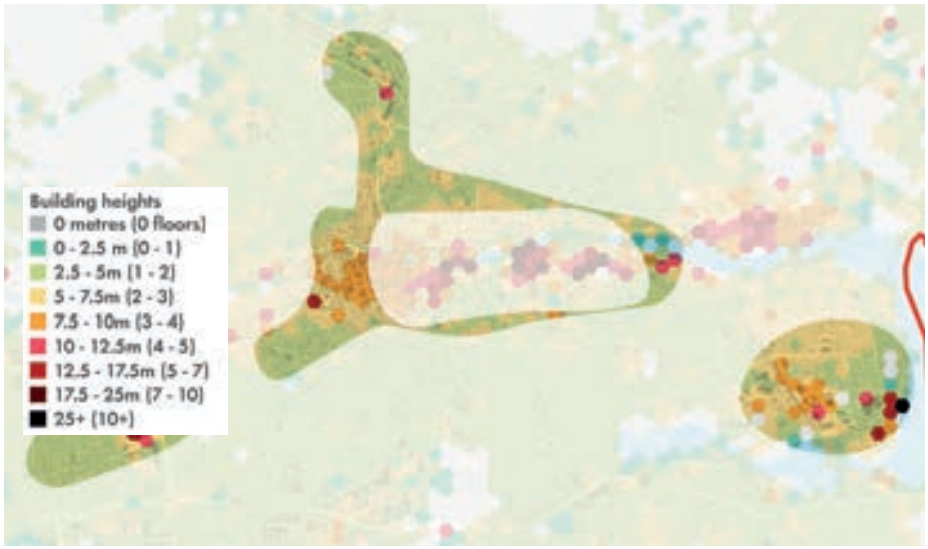

Blackpool
City Centre
Mahon

PREVAILING CHARACTERISTICS

The plans set out below provide an overview of some of the key layers of urban analysis which underpin the suitability and sensitivity analysis. These layers of analysis play an important role in determining the appropriate density and building height levels in the strategy for the city.

DENSITY

The density range in the major centres beyond the city centre contrasts with those associated with the city fringe. Given the nature of the suburban centres and the discrete character of Mahon and Blackpool in particular, the density in the central areas of the centres is markedly higher than that of the immediately surrounding neighbourhood. This accounts for the quite wide range of densities exhibited in these identified 'suitable' areas of between 0.5 and 3.5 FAR. In the city fringe area densities are generally higher given the more urban character of these locations. Existing densities rise to around the 100 dph level in the city fringe locations.

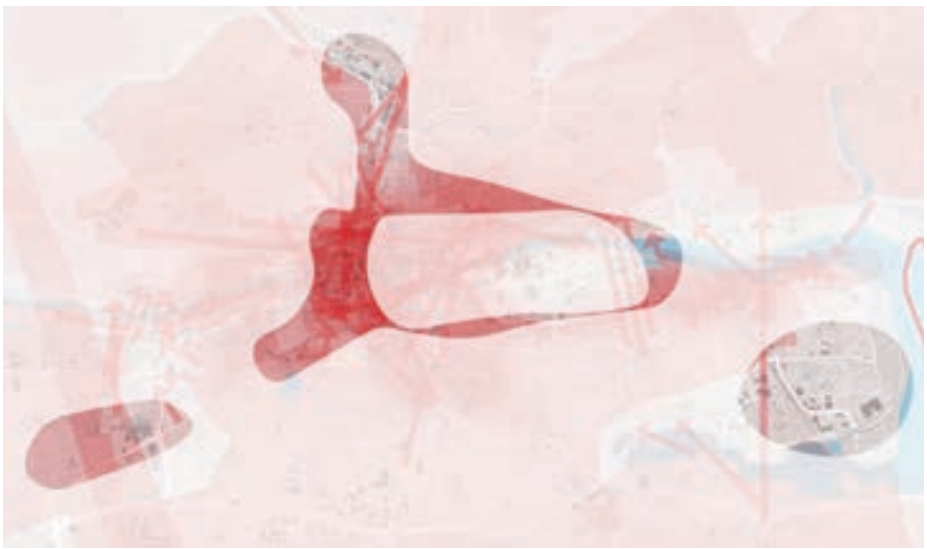


BUILDING HEIGHTS

Similar to housing density, building heights in the discrete centres of Mahon and Blackpool contrast between the mixed-use (and generally regenerated) centres, with heights around 5 storeys, and the residential hinterland where heights are typified by two storey houses. This contrast is less pronounced across the more urban city fringe and urban corridor areas with the majority of buildings being around four storeys, with some larger buildings rising to five and six storeys.

URBAN MORPHOLOGY

The morphology of the city fringe and urban corridors shows a more organic urban evolution. Integrated streets and a tight pattern of development are the prevailing characteristics. This is also evident across the Wilton area although the shopping centre is a precinct format rather than a more traditional high street model. In the urban centres of Mahon and Blackpool the character is different with wide roads and larger, courser, urban blocks dominating the grain.



SENSITIVITY

Analysis of sensitivity to taller buildings reveals a clear pattern. The more peripheral and discrete centres of Blackpool and Mahon have low levels of sensitivity given the relatively modest levels of heritage assets and constraints in these locations. As one moves towards the historic city centre, the more integrated area of Wilton is shown to be sensitive and the city fringe is potentially highly sensitive to the townscape impacts of tall buildings.

Please note that building heights are shown in metres not number of storeys. Building heights are based on GIS data provided by the Council. Note that storey heights can vary in buildings of different ages and uses. A range of potentially likely storey heights is included in the key as a guide to take account of the range of conditions that can be found across Cork. Please note these storey heights are therefore included as an estimated assessment not an accurate record.

DENSITY AND BUILDING HEIGHT GUIDANCE

DENSITY

Existing FAR for these city fringe, corridor and town centre locations tends to range from between 0.5 and 3.5 – although with this zone capturing a number of discrete locations, the range in densities is quite varied across the zone as a whole. The case studies relevant to this location demonstrate how high housing densities and the best use of urban land can be achieved through high quality designs. The densities in those case studies range from 50 dph to over 300 dph although many were taken from sites in larger cities than Cork. New development should typically deliver densities of between 50 and 150 dph across this varied zone.

Whilst sensitivity to tall buildings is particularly high on the western city fringe, this is also the most densely developed part of the zone with existing neighbourhoods rising to 100 dph and above. The city centre forms part of the immediate context to the city fringe which also makes this area more appropriate to dense forms of development.

Beyond the city centre, the town centres of Mahon, Blackpool and Wilton are also within this zone. Mahon and Blackpool are precinct-based centres built around new road infrastructure. Wilton, whilst centred around a large shopping precinct, is a more integrated centre. With existing more suburban residential neighbourhoods immediately adjoining these town centres, new development should typically range from 50 – 120 dph.

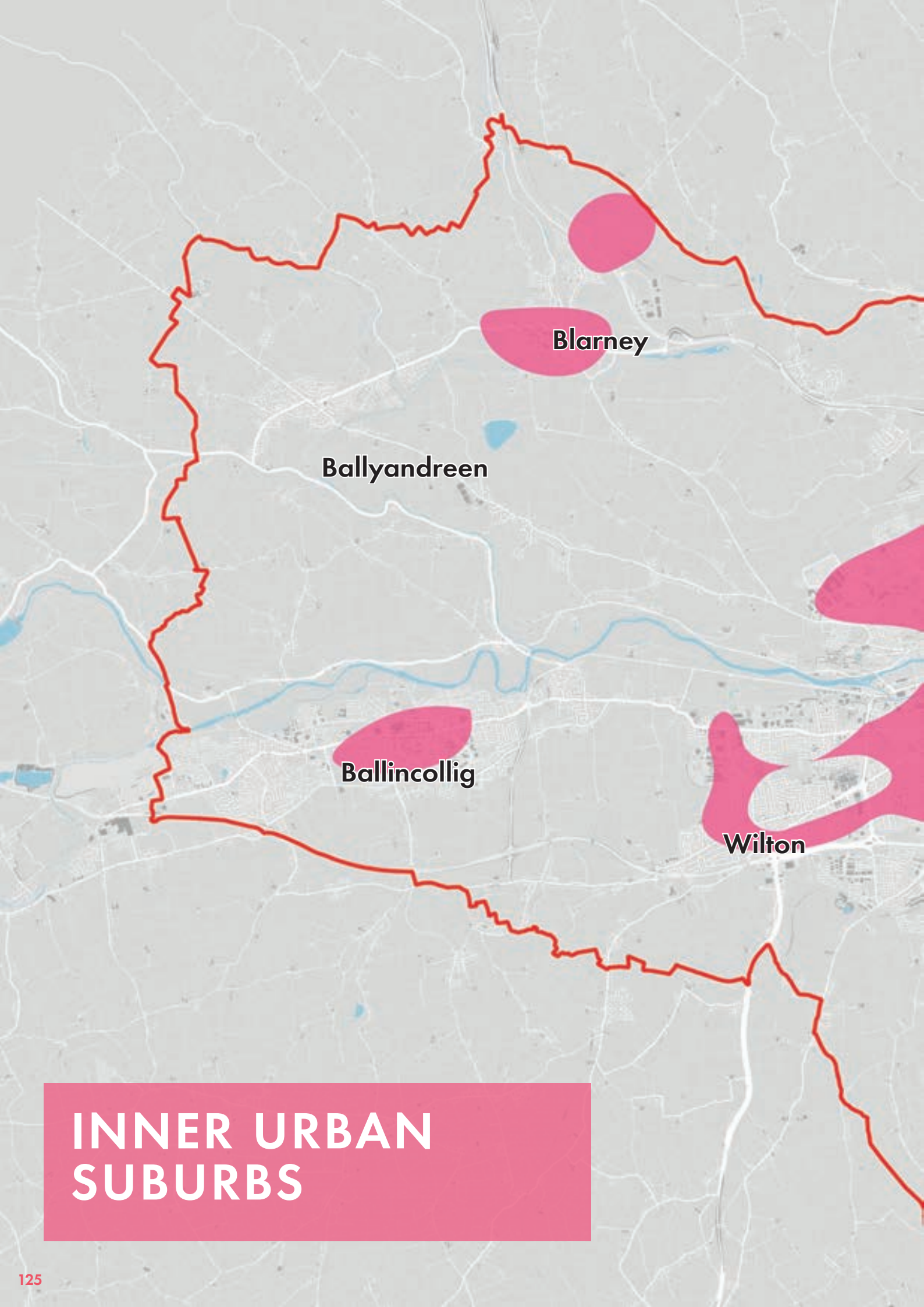
BUILDING HEIGHTS

Existing building height typically ranges from 2 – 6 storeys in the city fringe and principal urban corridors, 2 – 5 in Mahon and Blackpool and 2 – 4 in Wilton. To seek to ensure the best use of land is achieved in whilst responding to local context, new development should range from 5 – 7 storeys in the city fringe and principal corridors, 4 – 6 storeys in Mahon and Blackpool and 3 – 5 storeys in the Wilton area. These range reflect the fact that the zones cover the core town centres but also their immediately adjoining areas.

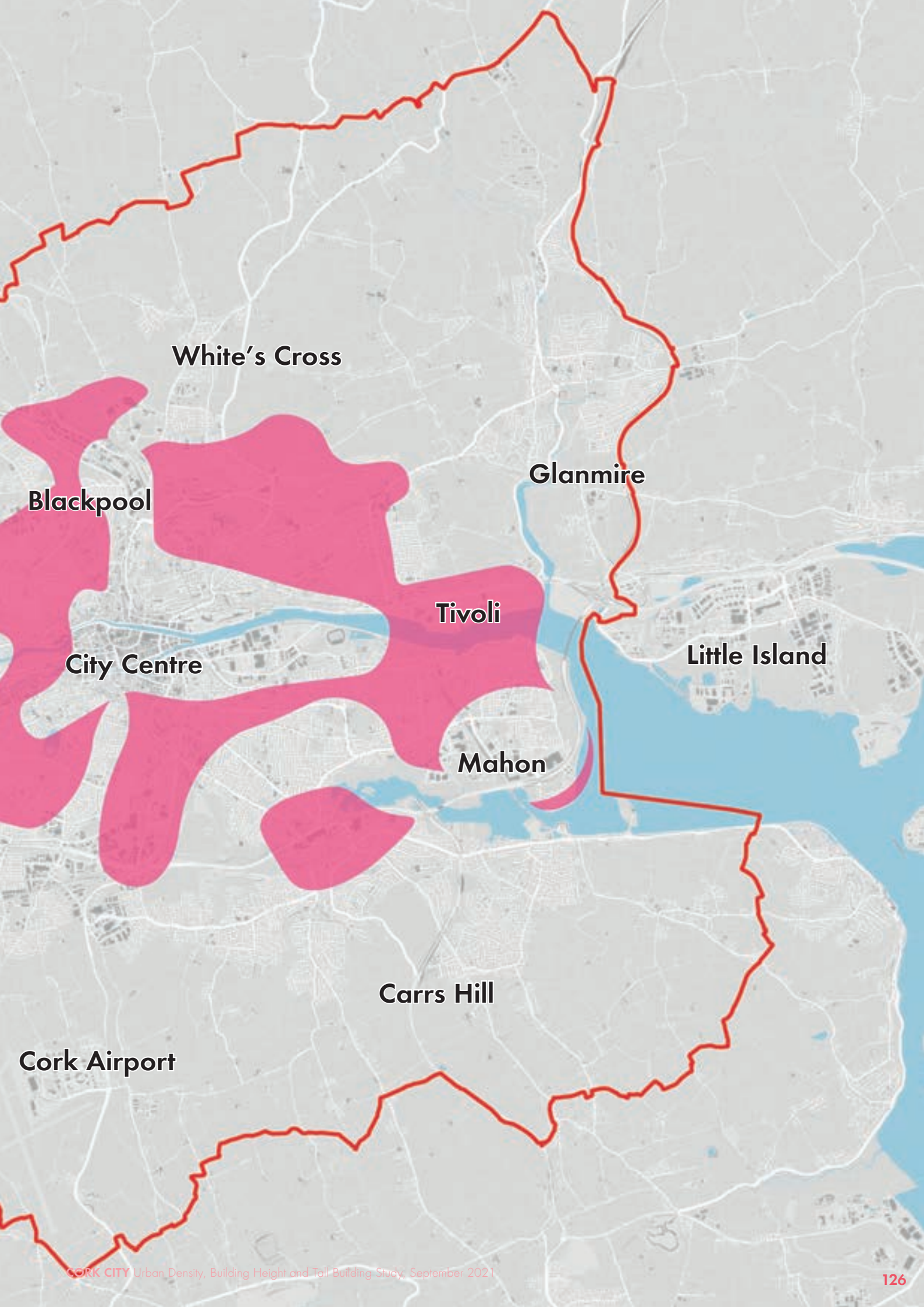
	DENSITY				
	FAR		Dwellings per hectare		
	Prevailing	Target	Prevailing	Target*	
				Lower	Upper
FRINGE/CORRIDOR/CENTRE	**1.0 - 3.5**	**2.5 - 4+**	**25 - 100+**	**50**	**150**
City fringe / corridor	1.5 - 3.5	2.5 - 4.5	25 - 100	50	150
Mahon	0.5 - 3.5	1 - 4	10 - 40	50	120
Blackpool	0.5 - 3.0	1 - 4	0 - 40	50	120
Wilton	0.5 - 3.5	1 - 4	10 - 25	50	120

* Assuming resi-led scheme

HEIGHTS			
No. of storeys			
Prevailing		Target	
Lower	Upper	Lower	Upper
2	**6**	**4**	**7**
3	6	5	7
2	5	4	6
2	5	4	6
2	4	3	5



INNER URBAN SUBURBS


White's Cross
Glanmire
Blackpool
Tivoli
City Centre
Little Island
Mahon
Carrs Hill
Cork Airport

INNER URBAN SUBURBS

The patter of centres and corridors which characterised the Primary Urban Corridors and Principal Towns zone is also evident in this more extensive Inner/Urban Suburbs zone. There are a number of discernible zones of the city and outlying areas which fall within this Inner/Urban Suburbs category as follows:

1. The urban north – encompassing The Glen, Dillons Cross, Ballyvolane and Mayfield areas and the hinterland of the R635 North Ring Road which loosely follows the axis of The Glen River. This is a relatively disadvantaged area served by a series of local, neighbourhood and district centres.

2. Tivoli – a major industrial estate and docklands area situated approximately 2.5 km east of the city with good connections to it via the N8 Lower Glanmire Road.

3. Ballintemple and Blackrock – the attractive and relatively affluent eastern suburban area of the city which will be served by the planned Cork Light Rail scheme.

4. Douglas – a larger southern suburb district centre of Cork at the mouth of the River Douglas. The relatively affluent local community are served by two large shopping centres with good public transport links into the City via the R610 Douglas Road.

5. South Link Road corridor – which includes the large Turners Cross community south of the city. The South Link Road is the principal spine road connection between the city centre and Cork Airport. The road and its intersection with the South Ring Road N40 also services large industrial estates at Blackash.

6. South west corridor – an expansive area which arcs out of the central area and encompasses the University College Cork campus round to Tohger. As it extends further west, around Wilton, it follows the radial routes of Glasheen Road and Magazine Road towards Bishopstown. The area includes the expansive Cork University Hospital estate. At the far western edge, the area arcs northwards along the Melbourn Road corridor.

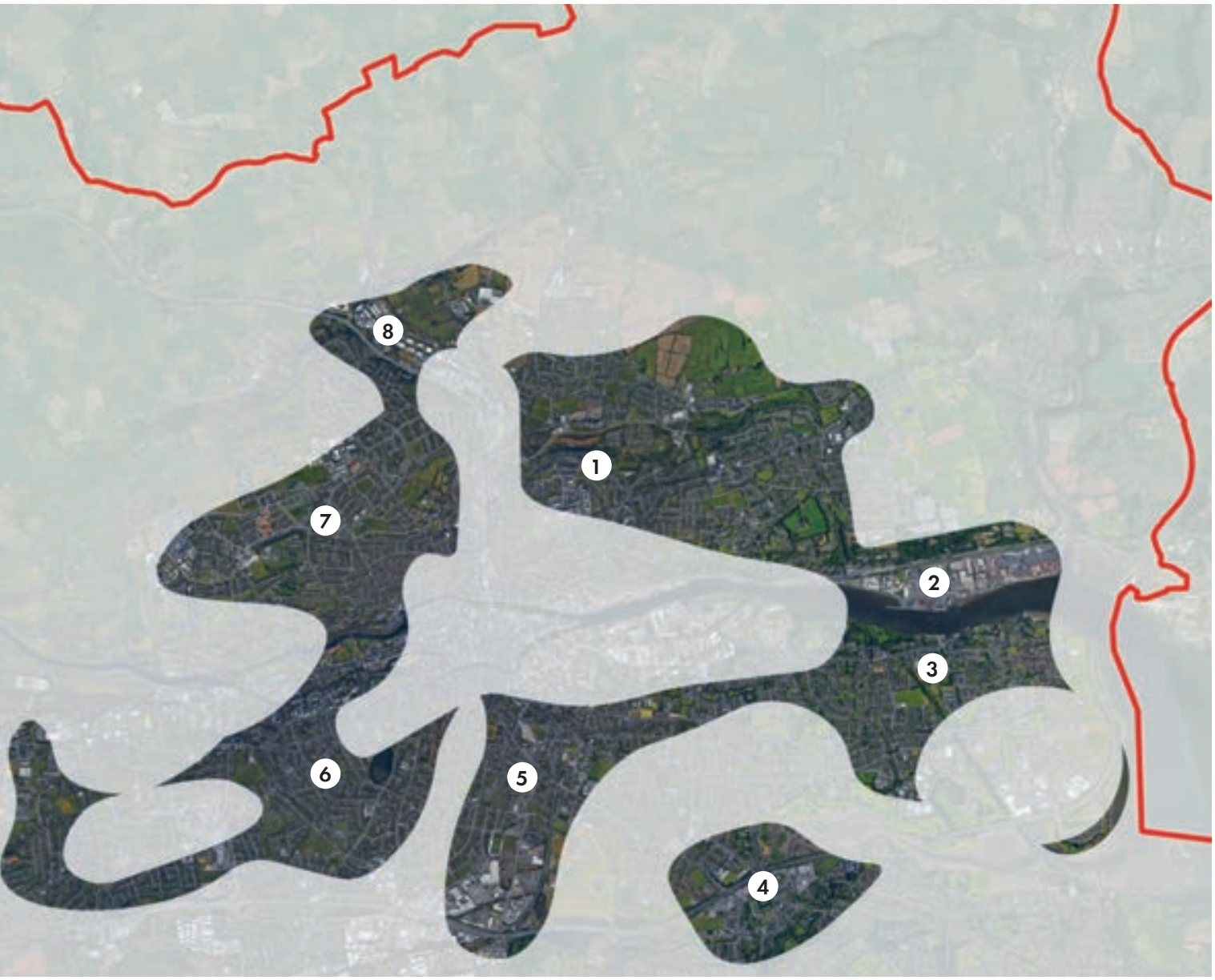
7. North west – extending from Fairhill to Hollyhill this socio-economically disadvantaged area has been the focus of a number of regeneration initiatives.

8. North Blackpool – the northern extension of the N20 corridor beyond Blackpool encompassing the industrial area north of the centre and the residential areas on the western side of the N20.

9. Central Ballincollig – a large district centre west of the city and will benefit from radically improved public transport connectivity with the Cork Light Rail project set to provide frequent services to the City and Mahon beyond.

10. Blarney – an historic village will a good range of community services and served by multiple bus routes.

11. Stoneview – this is an already identified regeneration area earmarked for new railway stations with direct links to Kent Station.



RELEVANT CASE STUDIES

5	19 Dzielnica, Warsaw	274
8	Clancy Quay, Dublin	112
9	Hollainhof, Ghent	86
10	Eddington, Cambridge	65
11	Killesberghöhe, Stuttgart	50
12	Dunluce Apartments, Dublin	61
13	Goldsmith Street, Norwich	84
14	Elderwood Park, Cork	68
15	Lucky Lane, Dublin	67
16	Dunville Close, Dublin	40
17	Morehampton Lane, Dublin	25
18	New Hall Be, Harlow	64
19	Domville Woods, Dublin	63
20	Vathorst District, Amersfoort	60
21	Breevaarthoek, Gouda	52






PREVAILING CHARACTERISTICS

DENSITY

Inevitably, overall levels of urban density reduce quite significantly as one moves away from the city's urban core. FAR level typically ranges between 0.2 and 1.5 although there are isolated pockets of exceptions such as Douglass and Central Ballincollig. Prevailing housing densities range from 10-40 dph in the more integrated urban areas to somewhere in the 0-25 dph in the more isolated areas such as Blarney.

The potential regeneration of Tivoli Docks is shown in this analysis. is a nationally significant regeneration opportunity that will have a bespoke character based upon key inputs, including the Tivoli Docks Urban Density and Buildings Heights Strategy (Tivoli UDBHS, 2021).

Please note that building heights are shown in metres not number of storeys. Building heights are based on GIS data provided by the Council. Note that storey heights can vary in buildings of different ages and uses. A range of potentially likely storey heights is included in the key as a guide to take account of the range of conditions that can be found across Cork. Please note these storey heights are therefore included as an estimated assessment not an accurate record.

BUILDING HEIGHTS

As one moves away from the more urban centres and city areas, building heights are generally more consistent even though the geographical areas covered by this category is extensive. Heights generally range between 2 and 4 storeys in most of the inner / suburban neighbourhoods. In some of the more historic villages such as Blarney clusters of bungalows are evident.

URBAN MORPHOLOGY

A close look at the figure ground plan for this category reveals a number of urban conditions. The pattern of integrated urban neighbourhoods in the southern, flatter, part of the city with residential streets intersected by main roads contrasts with streets traversing steeper gradients north of the city with patterns of development hugging the slopes. The urban grid also reveals the pattern of industrial uses on the city's outer fringes including the Blackash estates, the industrial uses of Harbour View Road and Kilmore Heights in the north-west of the city, the Cork Institute of Technology out on the western edge of the city and the industrial uses north of Blackpool.

SENSITIVITY TO BUILDING HEIGHT

As a general rule, the pattern of sensitivities increases on the approaches to the city and decreases as one moves away from the city. The industrial areas are certainly not sensitive to contrasting development forms. There are exceptions however such as Blackrock which is an historic suburb with an attractive townscape and, further afield, Blarney which has an ancient street pattern and some important heritage assets.

DENSITY AND BUILDING HEIGHT GUIDANCE

DENSITY

The relevant case studies for this inner suburban zone, ignoring the more extreme exceptions, generally range from 50 to 85 dph. It should also be recognised that a very wide range of environments and characters is covered by this expansive zone. FAR and density ranges are put forward in the strategy for the general locations identified and described above. In seeking to make best use of urban land, appropriate densities for new development across this zone should typically be within the range of 45 – 100 dph. The sensitivities associated with areas with heritage assets may result in lower densities being achieved.

In the historic and more isolated villages such as Blarney and Glanmire where prevailing densities are lower, a lower typical density range is outlined.

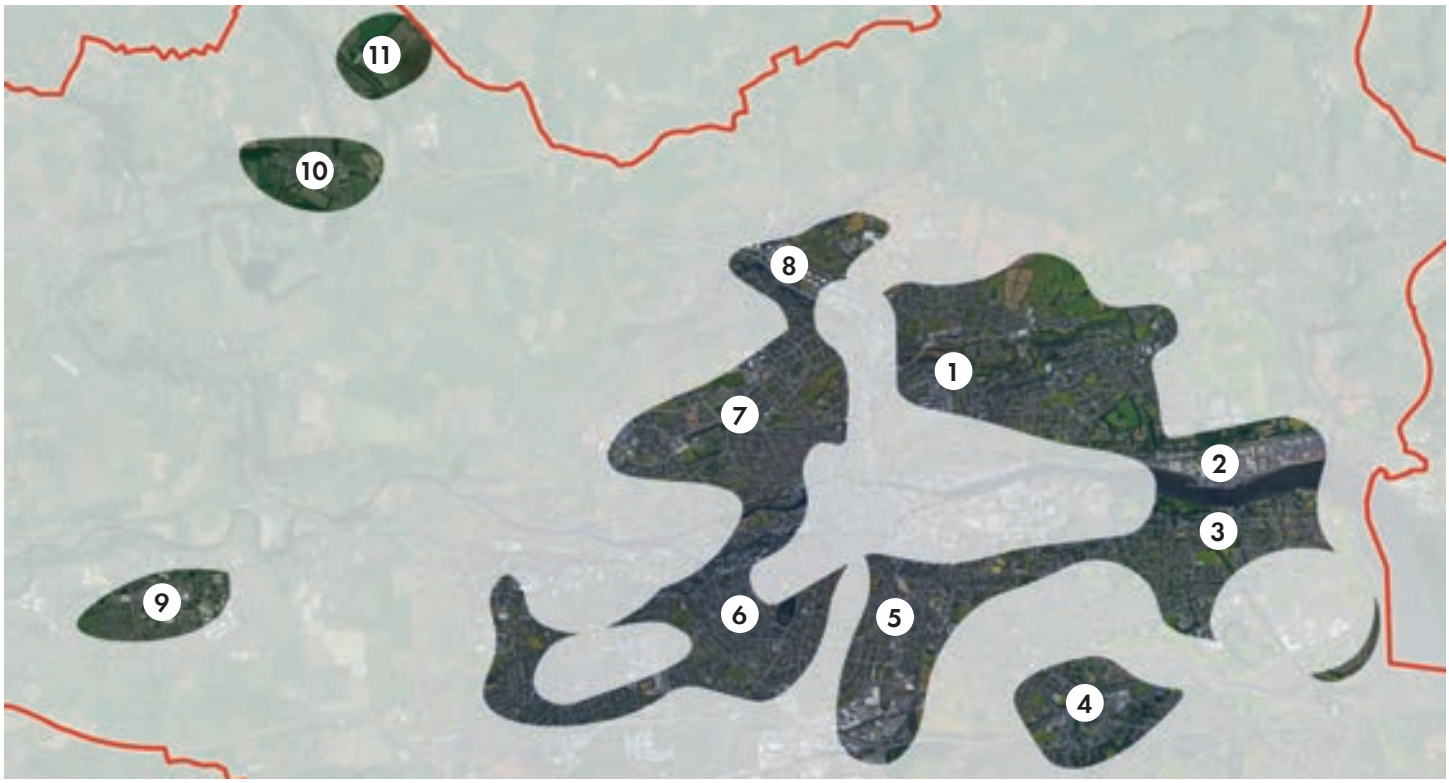
BUILDING HEIGHTS

Prevailing building heights across this expansive zone are typically between 2 and 4 storeys. New development will need to respect local character whilst making the very best use of land.

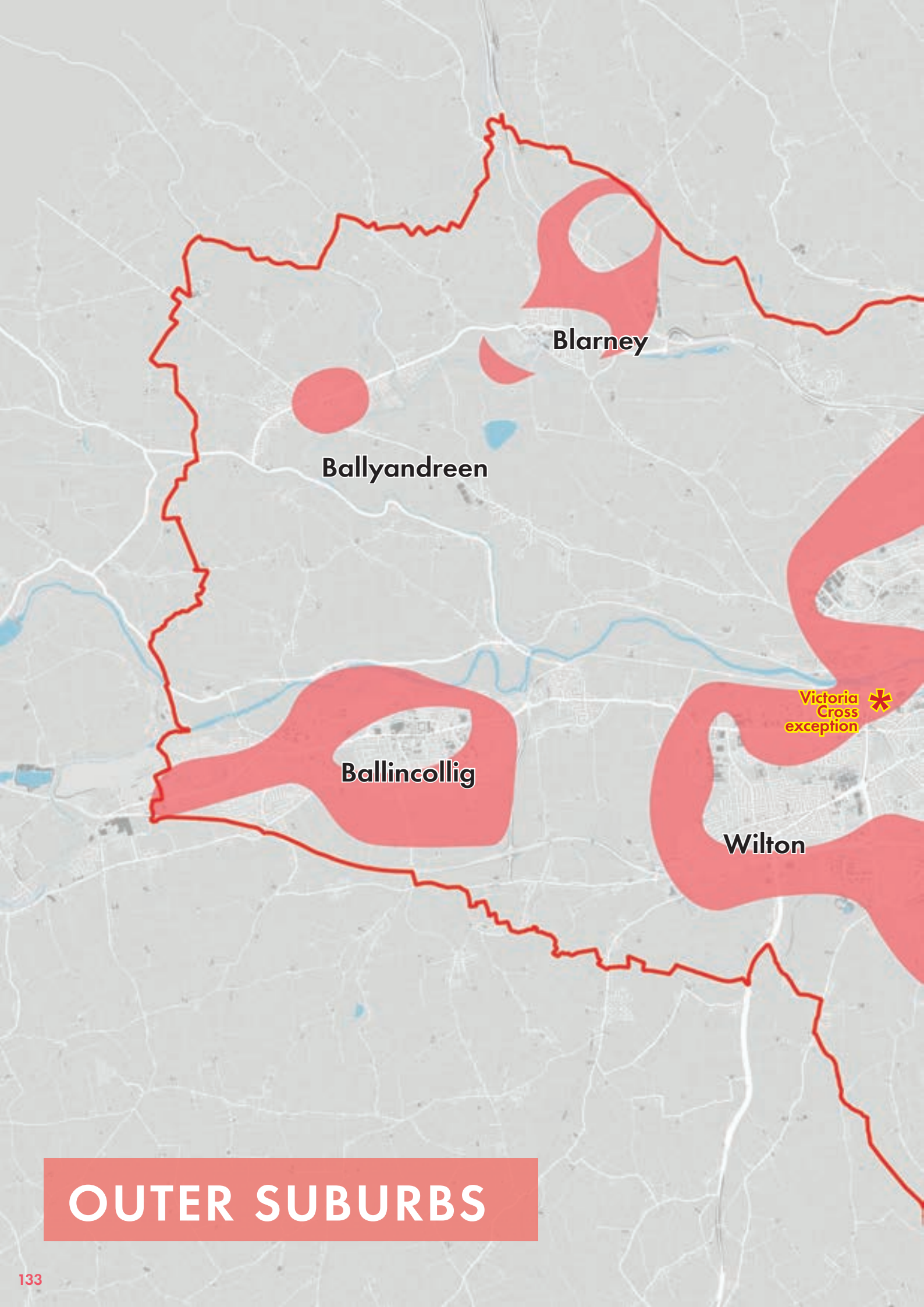
Generally, the target building height range outlined in the strategy seeks to allow buildings one storey taller than prevailing heights across the range of environments in the zone. This is to encourage the best use of land whilst respecting local character.

DENSITY					
	FAR		Dwellings per hectare		
	Prevailing	Target	Prevailing	Target*	
				Lower	Upper
INNER URBAN SUBURBS	**0.2 - 1.5**	**0.5 - 2.5**	**10 - 40**	**45**	**100**
1 The urban north	0.2 - 0.7	0.5 - 1.5	10 - 25	50	100
2 Tivoli	0.2 - 0.7	0.5 - 3.5	0 - 10	50	100
3 Ballintemple & Blackrock	0.2 - 1.5	0.5 - 1.5	10 - 25	40	80
4 Douglas	0.2 - 2.5	0.5 - 3.5	5 - 20	50	100
5 South Link Road corridor	0.2 - 1.5	0.5 - 2.5	15 - 40	50	100
6 South west corridor	0.2 - 1.5	0.5 - 2.5	20 - 40	50	100
7 North west	0.2 - 1.5	0.5 - 1.5	10 - 25	40	80
8 North Blackpool	0.2 - 1.5	0.5 - 1.5	0 - 25	40	100
9 Central Ballincollig	0.5 - 3.0	0.7 - 3.5	10 - 25	50	100
10 Blarney	0.2 - 1.5	0.5 - 1.5	0 - 25	25	50
11 Stoneview	0.2 - 0.7	0.5 - 1.5	0 - 25	40	80

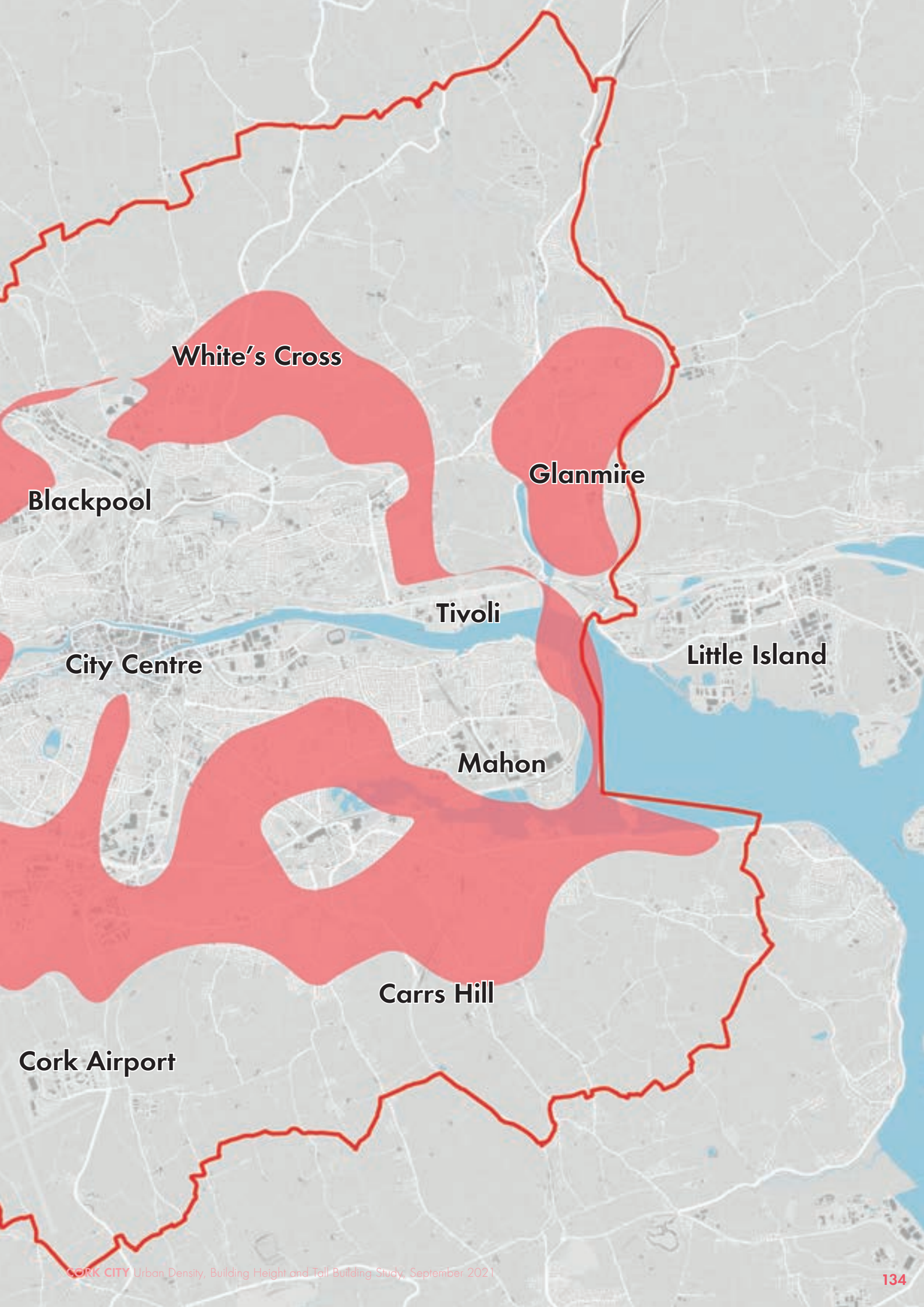
* Assuming resi-led scheme



HEIGHTS			
No. of storeys			
Prevailing		Target	
Lower	Upper	Lower	Upper
2	**4**	**3**	**5**
2	3	3	4
2	4	3	5
2	4	3	5
2	3	3	4
2	3	3	4
2	3	3	4
2	2.5	2	4
2	4	3	5
2	4	3	5
1	2	2	3
1	2	2	3



OUTER SUBURBS


White's Cross
Glanmire
Blackpool
Tivoli
City Centre
Little Island
Mahon
Carrs Hill
Cork Airport

OUTER SUBURBS

The majority of the outer suburban area is comprised of the majority of the remaining urban area of Cork and its outlying towns and villages.

The Victoria Cross area is however considered an excepetion relating to student housing development. See below.

RELEVANT CASE STUDIES

9	Hollainhof, Ghent	*86*
10	Eddington, Cambridge	*65*
11	Killesberghöhe, Stuttgart	*50*
12	Dunluce Apartments, Dublin	*61*
18	New Hall Be, Harlow	*64*
19	Domville Woods, Dublin	*63*
20	Vathorst District, Amersfoort	*60*
21	Breevaarthoek, Gouda	*52*
22	Sliabh Bán, Galway	*44*

PREVAILING CHARACTERISTICS

The plans set out below provide an overview of some of the key layers of urban analysis which underpin the suitability and sensitivity analysis. These layers of analysis play an important role in determining the appropriate density and building height levels in the strategy for the city.

DENSITY

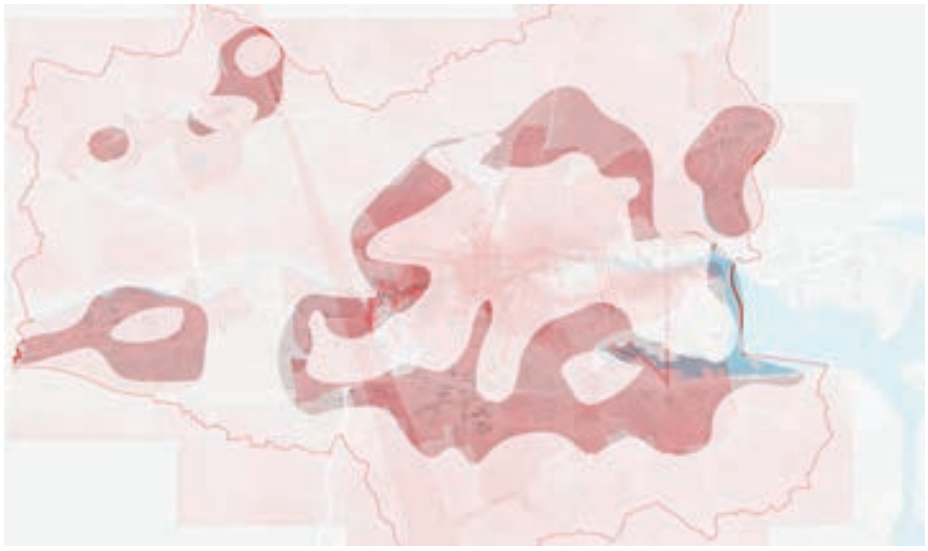
The prevailing characteristics of such a disparate area are hard to categorise given the diverse range of environments included within this zone. However, inevitably, densities are generally lower, rarely rising above 25 dph with FAR levels typically below 1.0.

BUILDING HEIGHTS

Building heights typically hover around the 2-storey mark although there are some exceptions in areas within this category closest to the city centre.

URBAN MORPHOLOGY

The morphology of these largely residential areas – some traditional streets of housing in the outer city suburbs, others more recent housing estates such as those around Ballincollig – is fairly traditional in nature. It is notable that the majority of this zone falls south of the River Lee.



SENSITIVITY TO BUILDING HEIGHT

Generally speaking, these areas are not identified as particularly sensitive in townscape terms. That said, there are some areas which exhibit sensitivities which will need to be taken into account as schemes come forward.

Please note that building heights are shown in metres not number of storeys. Building heights are based on GIS data provided by the Council. Note that storey heights can vary in buildings of different ages and uses. A range of potentially likely storey heights is included in the key as a guide to take account of the range of conditions that can be found across Cork. Please note these storey heights are therefore included as an estimated assessment not an accurate record.

DENSITY AND BUILDING HEIGHT GUIDANCE

DENSITY

The outer suburbs zone is varied in character. Prevailing density across the zone is generally up to 25 dph. To help encourage the best use of land in developed / urban areas benefiting from some supporting infrastructure, the strategy encourages moderately higher levels of housing density than prevailing levels, with a target minimum of 35 dph.

BUILDING HEIGHTS

Prevailing heights across the zone are generally between 2 and 3 storeys. The target building height range for new development should respect this, with the strategy having scope for the height of new development being slightly higher.

VICTORIA CROSS EXCEPTION

The northern part of Victoria Cross in the west of the city is considered something of an exception given its particular circumstances.

Whilst this part of Victoria Cross falls within this 'outer suburbs' category in terms of the density and building height strategy, it has emerged as a focus for high density student accommodation given its proximity to the University College Cork campus.

Therefore, given high density student accommodation in this location would support sustainable lifestyles and, most particularly, active travel, this northern part of Victoria Cross is considered a specific exception. High density student housing developments at densities appropriate in the highest two categories of this strategy would be considered appropriate here.

The principles of good quality design and all other relevant planning policy and guidance will remain relevant to any such development proposals.

	DENSITY				
	FAR		Dwellings per hectare		
	Prevailing	Target	Prevailing	Target*	
				Lower	Upper
OUTER SUBURBS	0 - 1.5	0.2 - 1.5	0 - 25	35	60

* Assuming resi-led scheme

HEIGHTS			
No. of storeys			
Prevailing		Target	
Lower	Upper	Lower	Upper
2	3	2	4

TALL BUILDINGS STRATEGY

Tall buildings are exceptional, and they should be treated as such. This density, building height and tall building study seeks to outline a strategy to help ensure the very best use is made of land in the most sustainable and appropriate locations right across the city. We identify locations most suitable for high density development. Tall buildings are one such form of high-density development.

In this Tall Buildings Strategy section of the report, we build on the preceding density and building height strategies and outline guidance on the potential development of new tall buildings in Cork.

The suitability analysis which identified locations most suitable for high density development is directly relevant here. In addition, the sensitivity analysis outlined in the building heights analysis section is particularly relevant as that analysis, whilst informing the density and building heights strategy, relates most specifically to the sensitivies and visual impacts associated with new buildings.

This tall building strategy chapter is structured as follows:

1. Areas potentially suitable for tall buildings
2. What does 'tall' mean in Cork?
3. Locations appropriate for tall buildings
4. Tall buildings: Considering context
5. Tall buildings: High quality design
6. Tall buildings: Broader issues
7. Design Review: What it is?
8. Design Review: How does it work?

6

1. Areas potentially suitable for tall buildings

AREA OF SEARCH

Tall buildings are a very particular form of high-density development, capable of delivering exceptionally high development densities. Tall buildings can be very prominent and can therefore impact on the character of an area. They may be visible from far away and impact on the skyline and silhouette of a city or urban area.

In seeking to establish a strategy which outlines an approach towards tall buildings in Cork – where they may be appropriate, defining tall in Cork, protecting high design standards – the first step is to limit the area of search for locations that might be potentially appropriate.

The suitability analysis was used to define the part of the city considered most suitable for the highest forms of development density. The zone of the city which includes City Island to the west and the North and South Docks to the east has already been identified as the area most appropriate for the highest forms of high-density development.

To ensure existing and planned future infrastructure, amenities and accessibility levels are provided to support tall buildings and their occupants, the most suitable location identified above in the density and building heights strategy is considered to be the initial basis for identifying locations that might be appropriate.

This does not however mean that tall buildings cannot be justified in other locations across the city. Indeed Chapter 4 above concluded with confirmation that Mahon and potentially Ballincolig might be considered appropriate locations for tall buildings, but it is clear from the analysis underpinning this strategy that this central zone is the most suitable and appropriate area for the highest levels of density in new development. It is therefore within this zone that the area of search for locations appropriate for tall buildings should be contained.

SENSITIVITIES ASSOCIATED WITH TALL BUILDINGS

The Building Heights strategy outlined in Chapter 4 above presents an analysis of the factors which would make any location visually sensitive to the effects of tall buildings. These sensitivities have been layered to determine where the cumulative effect of sensitivity would make areas more or less sensitive to tall buildings.

The adjacent (lower) plan combines sensitivities within the area of search for locations potentially appropriate for tall buildings. This helps to inform the identification of locations which are both suitable for the highest levels of density in new development and which are less sensitive to the potential visual impact of such forms of development.

A significant element of this sensitivity analysis is comprised of the Cork View Management Framework. Many of the views within this framework are associated with key city centre landmark buildings. However, as noted in Chapter 4 above where the View Management Framework is introduced as a sensitivity, Cork City Council has recently reviewed and revised the Cork View Management Framework and its associated policy. This new policy and Framework will present a revised pattern of sensitivities which is not reflected here but will be an important consideration when preparing and determining planning applications.

The zone of the City considered most suitable for high density development

The mapped levels of sensitivity to new tall buildings within the zone identified as being most suitable for high density development

2. What does 'tall' mean in Cork?

As outlined above, a contextual definition of 'tall' is required to better reflect the diversity of local character found in different parts of the city. A building can only be considered tall relative to its surroundings and if it is significantly taller than prevailing building heights around it.

Individual planning applications will need to be considered on their own merits, with analysis supporting them centred on the application site in question. But as a starting point, the following formula should be used to help determine the local definition of tall.

$t \geq 1.5p$

t = tall building; p = prevailing height

Effectively the equation confirms that a building might be considered tall if it is more than 50% taller than those around it - ie, 50% taller than prevailing heights.

However, with some locations across the city characterised by low-rise buildings no higher than 2 storeys, this equation would suggest that any building higher than 3 storeys could be considered tall in a local context. This would be unhelpful and could serve to undermine the development management process which seeks to ensure the best use is made of land.

In light of this, only buildings above 6 storeys or 18m should be considered tall, and only then when they are significantly (50%) higher than those around them. The advantages of this approach to defining tall buildings include:

- **Responsiveness**: the definition is linked to the prevailing height of an area.
- **Longevity**: such a definition of tall will not expire because as the prevailing heights change, so will the definition of tall.
- **Flexibility**: a single formula may be applied to several different contexts.
- **Adaptability**: equally the individual variables within a formula may be adapted depending on the context.
- **Simplicity**: the formula is easy to understand and may also be expressed qualitatively.
- **Objectivity**: the formula will generate a clear and measurable threshold for height.

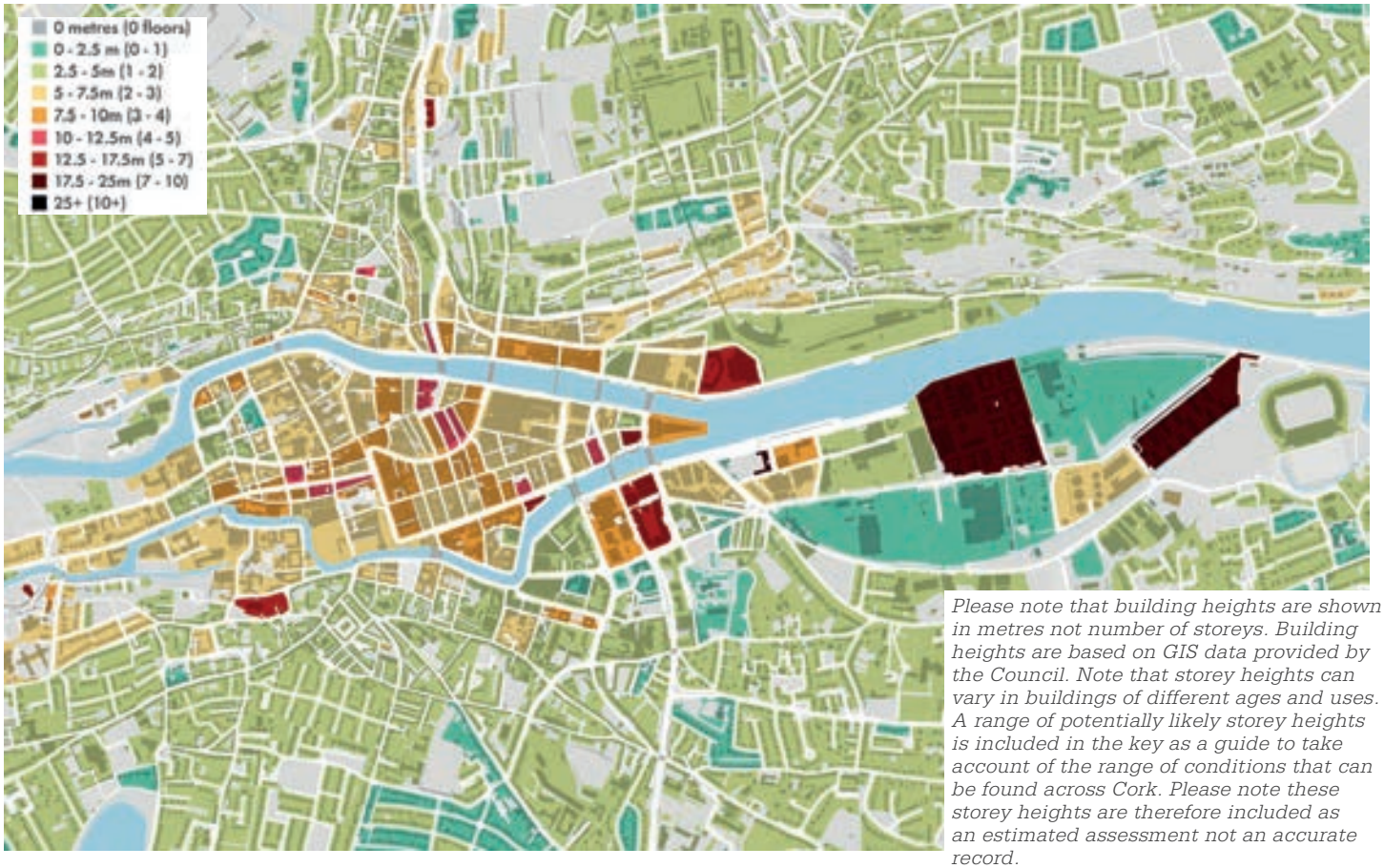
To apply the equation and help to determine the local definition of tall requires an assessment of existing prevailing building heights in any given location. Analysis of prevailing building heights was undertaken as part of the sensitivity analysis to help determine areas characterised by consistent building heights. That analysis is repeated in the adjacent (lower) plan which reports on the prevailing heights.

A note of caution

It should be noted the application of the equation to determine what might be considered tall in different locations across the Cork City Council area should not be considered a central or major component of the tall building strategy. It is considered a useful guide to what might be considered tall in different locations and it was useful when determining appropriate building height ranges in the density and building height strategy set out in Chapter 5.

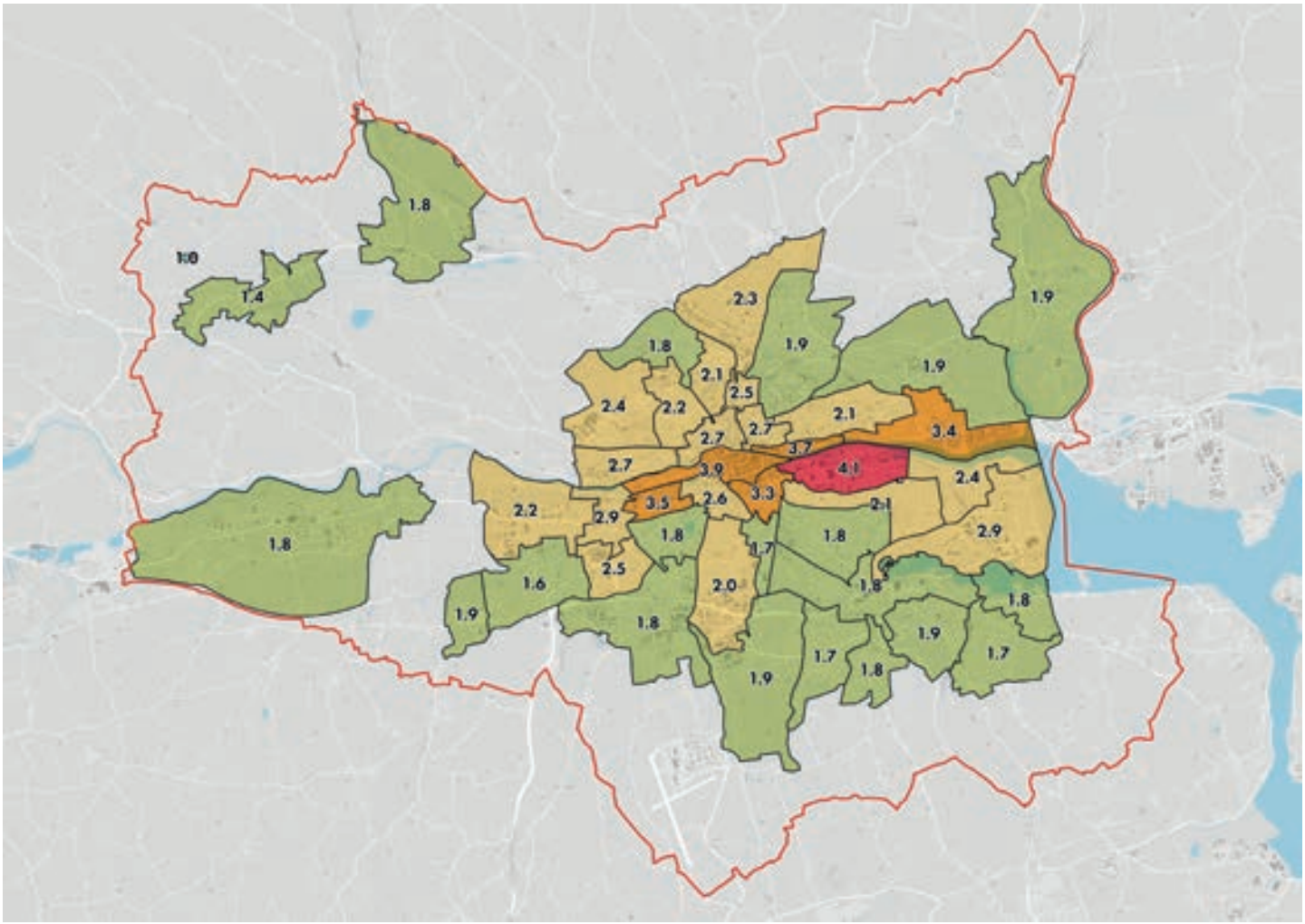
More detail on the assessment of prevailing building heights in different parts of the city is outlined in Chapter 4 above which forms the evidential base for determining local definitions of tall.

Please note that building heights are shown in metres not number of storeys. Building heights are based on GIS data provided by the Council. Note that storey heights can vary in buildings of different ages and uses. A range of potentially likely storey heights is included in the key as a guide to take account of the range of conditions that can be found across Cork. Please note these storey heights are therefore included as an estimated assessment not an accurate record.



Please note that building heights are shown in metres not number of storeys. Building heights are based on GIS data provided by the Council. Note that storey heights can vary in buildings of different ages and uses. A range of potentially likely storey heights is included in the key as a guide to take account of the range of conditions that can be found across Cork. Please note these storey heights are therefore included as an estimated assessment not an accurate record.

Existing building (incl planning commitments) heights in the Cork City area by block (median)



Prevailing buildings heights (calculated by an assessment of the land covered by buildings of any given height as a proportion of total building coverage)

3. Locations appropriate for tall buildings

Existing tall buildings in Cork

An additional criterion relevant to the process of identifying locations potentially appropriate for tall buildings is the location of existing tall buildings. The adjacent plan shows the location of existing buildings of up to 7 storeys, up to 8 storeys and over 8 storeys in height. With existing prevailing heights typically rising to around 5 storeys in this central and most suitable zone in the strategy, it is buildings which are over eight storeys in height that could be said to be tall in the context of Cork city.

Emerging 'district'

This zone reflects the emergence of existing tall building proposals at Custom House Quay, Atlantic Quarter, Marina Commercial Park and others. These high density and mixed use proposals established the basis for a coherent 'district' of taller buildings.

Locations considered appropriate for tall buildings - City Docks

Within the strategy's zone identified as most appropriate for the highest density development, taking account of the townscape sensitivities associated with the visual impacts of new tall buildings and also the distribution of existing tall buildings within this zone, it is possible to identify a zone which is considered potentially appropriate for new tall buildings in Cork.

The zone covers the area around Kent Station in the North Docks, already the focus of major and high-density mixed-use regeneration proposals. The area also touches on the eastern nose of Cork City Island which, whilst more sensitive than other parts of this 'appropriate' zone, includes the Custom House site, location of a recent planning permission for a very tall building and an iconic and highly prominent location in the city. On the south side of the River Lee, the area includes the western part of South Docks, already the location of some existing tall buildings. This expansive regeneration zone is generally less sensitive having fewer heritage assets than the city island site.

It should also be noted, as flagged in the density and building height strategy in Chapter 5 above, notwithstanding the identification of this potentially appropriate zone for new tall buildings heights should step down on river frontage sites.

Rationale for City Docks tall buildings zone

The area considered most appropriate in Cork for new tall buildings is defined in the bottom plan on the facing page.

The outer pale yellow zone defines the general area considered appropriate for tall buildings to be open for consideration in principle and broadly covers the North and South Docks areas of the City and Central Areas, including:

- Kent Station and the Horgan's Quay development area including the Penrose Quay complex;
- Custom House Quay and Albert Quay (East); and
- South Docks north of Centre Park Road, including the Warehouse Quarter, Ford-Dunlop Quarter (including the Former Ford Factory ACA), Wharf Quarter and Marina Quarter.

The zone extends southwards to the tall buildings within the Elysian development and the related cluster benefitting from planning commitments.

The deep yellow zone indicates areas within this wider zone where more focussed clusters or districts of tall buildings would be considered more favourably. The rationale for these zones is as follows:

- The easternmost zone takes account of the Atlantic Quarter regeneration vision for this part of the city;
- The central zone reflects the Marina Commercial Park masterplan proposals and this significant location which marks the threshold entry point into the city of Cork.
- The largest city zone traverses the river channels and connects the Kent Station, Horgan's Quay, Penrose Quay area on the North Docks, the Custom House Quay site on the City Centre Island tip and the South Docks area of Kennedy Quay, Albert Quay and the Elysian site. This is an area with a proposed cluster of tall buildings in the city.

- This horseshoe-shaped central zone extends eastwards into the North Docks to the location of the proposed Kent Station Bridge, which will be a key link between the two waterfronts and could accommodate a proposed LRT route (subject to confirmation).

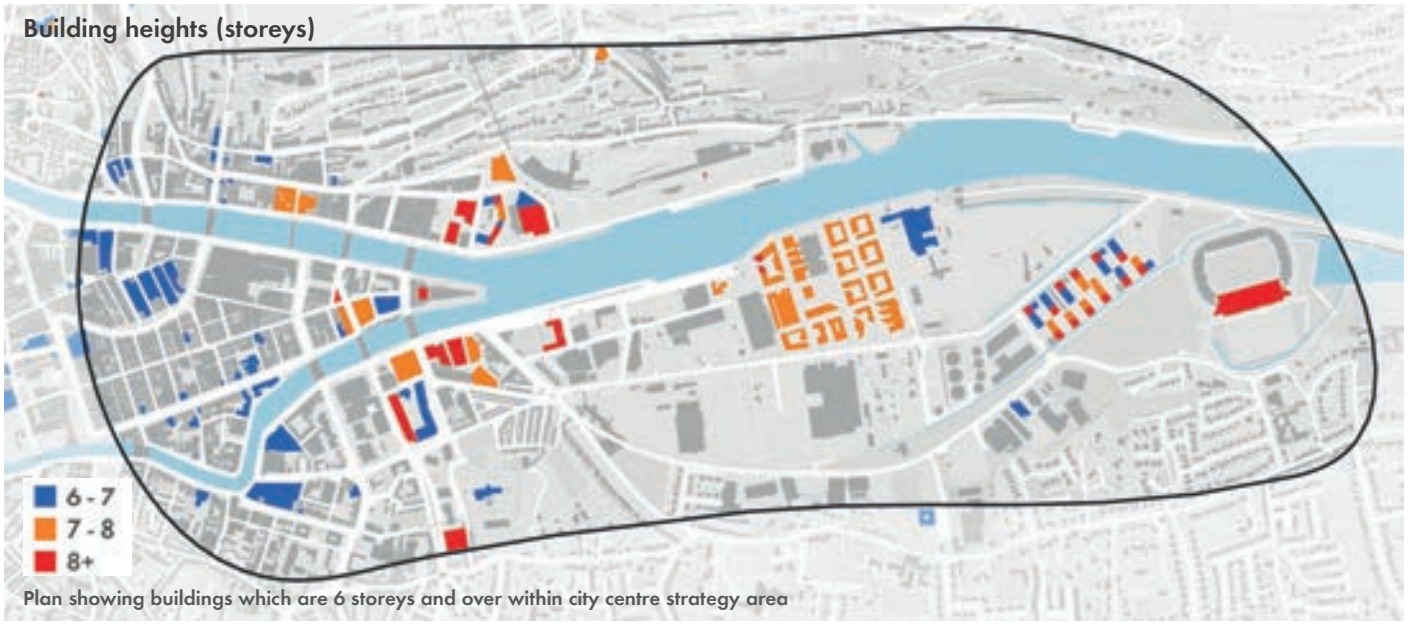
Whilst the City Docks area is identified as the City's most appropriate location for tall buildings, there remain some significant sensitivities within the zone which will need to be taken into account as development proposals are prepared and considered. These include ensuring the layout responds positively to the assets in the area, ensuring that the form and massing of new development respects the historic waterfront of the River Lee which plays a profound role in defining the character of the city. It will also be a key north-facing public amenity space. In view of this, heights of new buildings right on the waterfront will be expected to have tall buildings at key locations only and be to the general building height apart from exceptional circumstances.

Tall buildings in other locations

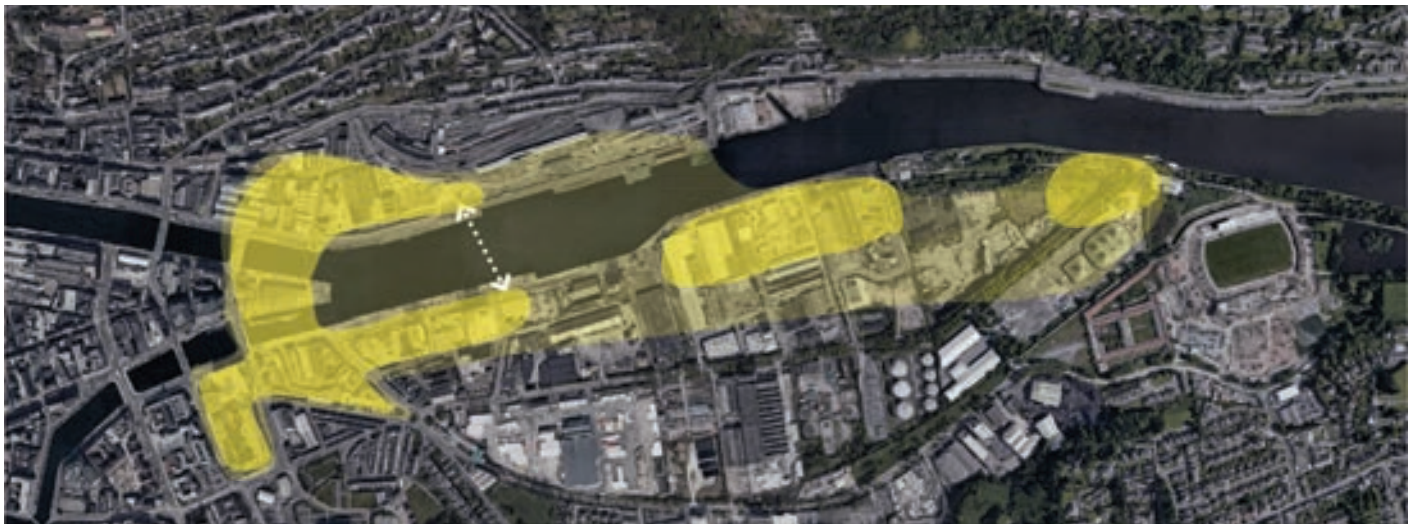
The adopted Cork City Development Plan 2015-2021 identifies a number of locations considered suitable for new tall buildings. Whilst the majority of these fall within or adjacent to the City Docks zone, the location in Mahon is not reflected in this study. The suitability analysis does not identify the Mahon area as being a suitable location for the highest density forms of development.

Tall building proposals might come forward for any location and will need to be considered on their merits, but this strategy, and its assessment of relative suitability and sensitivity, will be an important consideration when determining how appropriate any given location might be.

Locations such as the larger retail centres of central Mahon, Blackpool and Wilton are identified in the second category in terms of suitability for high density development. Tall building proposals in these locations will be considered on their merits taking account of prevailing building heights and other associated sensitivities.



Plan showing buildings which are 6 storeys and over within city centre strategy area


Zone where tall buildings are considered most appropriate in the City of Cork

4. Tall buildings: Considering context

Having established appropriate locations for tall and taller buildings based on the analysis of suitability and sensitivity, applications for sites within these areas are encouraged to demonstrate how alternative options for equally dense yet lower or medium-rise forms of development were considered as part of the design process before arriving at proposals for tall buildings.

Prospective tall building applications would typically either relate to small yet highly constrained city centre sites or otherwise they would form part of larger dockland sites where the wider benefits of development or regeneration would be significant and can be demonstrated. All proposals for tall buildings in Cork must:

- Present a clear townscape merit and justification for their height which ought to be proportional to their role and function in the immediate and broader context.
- Integrate taller elements within larger blocks with varied massing which can mediate between the scale of proposed developments and existing buildings.
- Seek to retain or improve the cross-sectional profile and character of existing streets.
- Reinforce the spatial hierarchy of the city centre and wider context by aiding legibility and way finding, particularly in relation to the riverside and arrival to the city by rail or water.

If proposals comprise clusters of tall buildings (i.e. three or more tall buildings within close proximity) then it is encouraged that these be designed with varied heights to provide visual intricacy across the existing skyline. In such instances, it is advantageous to position the apex of proposed building heights closer to the centre and lower building heights towards the periphery of the cluster.

Proposals for tall buildings should evidence how they respond sensitively to the local character through visual impact testing of linear views of landmarks; panoramic views; river prospects; townscape and landscape features; and approach road views. This can be achieved through Zones of Theoretical Visibility Testing (ZTV), Accurate Visual Representations (AVR) and Verified Views Analyses (VVA).

These visualisation techniques can be used to ensure that tall building proposals have taken local heritage assets and historical settings into account and that no harm is done to the local character of the built environment. Such testing is particularly important within Architectural Conservation Areas and near Protected Structure or buildings included within The National Inventory of Architectural Heritage. In such areas, the choice of construction method and careful selection of materials, colours and outward appearance is key to ensuring that tall buildings reinforce and enrich their historic settings.

When considering the natural environment, proposals for tall buildings should:

- Aim to work with the site topography and limit excavation.
- Assess whether a site is liable to flooding and ensure that the flood risk may be properly managed and mitigated if it is not prohibitively high.
- Seek to protect and enhance the open quality and amenity of the public open spaces including parks and the river front.
- Consider existing ecosystems and demonstrate how the proximity of tall buildings to biodiverse areas supporting animal species would not negatively impact upon their habitats and migration patterns.

Due to the fact that tall buildings will have the greatest impact on the evolving skyline of Cork, it is advised that such proposals should undergo design review by an independent panel (see guidance on the establishment of a Design Review Panel below). The character of existing tall buildings in

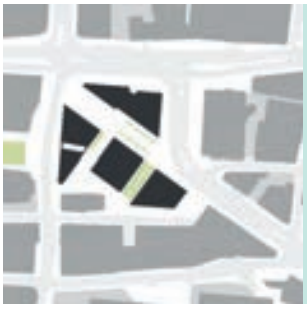
Cork is heterogeneous, ranging from historical churches and industrial facilities to modern perimeter blocks and towers which adopt a more international style of architecture typified by the extensive use of glass, metal and deep (usually office) floorplates. While this diversity adds to Cork's charm, there are a number of aspirational principles which can be adopted to guide the quality and character of future tall buildings in the city.

Tread lightly

- By ensuring that the footprint of the building does not occupy the entire site but instead introduces new spaces and passages at ground floor offering connections to and through the site.

Use mediating buildings

- Such as shoulder blocks which given visual hierarchy and modulate the overall composition of the massing to provide a transition between the new, taller elements and the scale of existing buildings.



Tailor to Cork and the site

- Contextually sensitive tall buildings reflect the material character of their surroundings as well as the particular geometries and the three-dimensional constraints that are present on site.

Ensure it is well crafted

- Through a high quality of design, construction and detailing which together enhance the outward character and the internal amenity of the new development.

Offer visual intricacy

- Through the picturesque arrangement of built form and roofscape to provide interesting and delightful views from street level and visual connections to nearby buildings - that is, adopt urban design scale thinking.

Be multi-layered

- Through a careful approach to massing and aesthetic variation of materials - colours and textures. A sense of depth can also be achieved by windows recesses in deep reveals and projecting balconies.

Serve the locality well

- Providing characterful buildings at high density with shared amenities and active frontages framing attractive streets with pockets of carefully conceived green open spaces and play areas.

Accommodate internal diversity

- Cater for residents by providing a blend of private and affordable housing tenures and a mix of housing sizes for singles, couples, families, young and old - in tandem with non-residential uses.

5. Tall buildings: High quality design

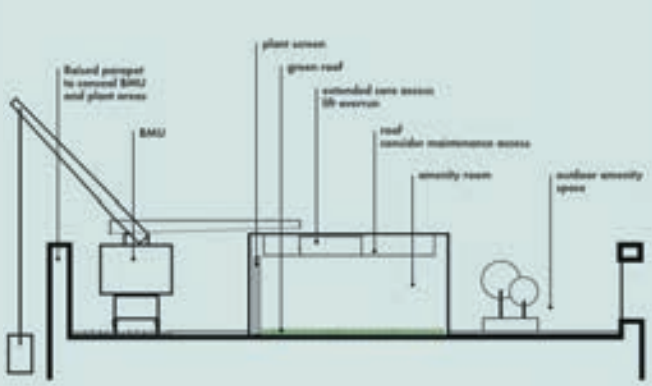
Successful tall buildings are those which are integrated well within neighbourhoods, balancing the interests of occupants and providing a good living/working (use dependant) environment while strengthening the sense of local community. To establish a positive relationship with their surroundings, proposals for tall buildings should:

- Analyse the nearby urban morphology and, where possible, adopt a finer grain of building footprints, ideally through a masterplanning-led approach.
- Provide new or extend existing linkages to roads, pavements and crossings encouraging active travel.
- Improve permeability through the site and assert pedestrian priority where possible.
- Ensure that the width of foot ways are proportional to their role in the overall movement network.
- Create new, publicly accessible landscaped open spaces that are well-designed and enhance the outdoor amenity.
- Avoid ill-defined areas that have no clear function.
- Introduce soft-landscaping, tree-planting, sustainable urban drainage and other measures which enhance the natural character of the site whilst providing essential urban greening.
- Ensure that the quality and amenity of adjacent buildings and outdoor spaces are not diminished with regards to privacy, overlooking and overshadowing.
- Offer a mix of uses, particularly at ground level, to animate the street and to encourage wider social and economic interactions.
- Embrace opportunities for contextually informed design innovation.

The top...

Provides opportunities for new inflection points in Cork's skyline. The extent to which it is iconic or sympathetic to the local character should depend on the role of the tall building in relation to its position and wider context.

- It is preferable that the uppermost floors (which also form part of the top) should be articulated and distinct in material and form to the middle.
- Roof-top telecoms and mechanical equipment (such as plants, BMUs and lift overruns) ought to be integrated and concealed by parapets.
- While publicly accessible viewing platforms are encouraged, outdoor amenity spaces must ensure safety for persons at height and street level.

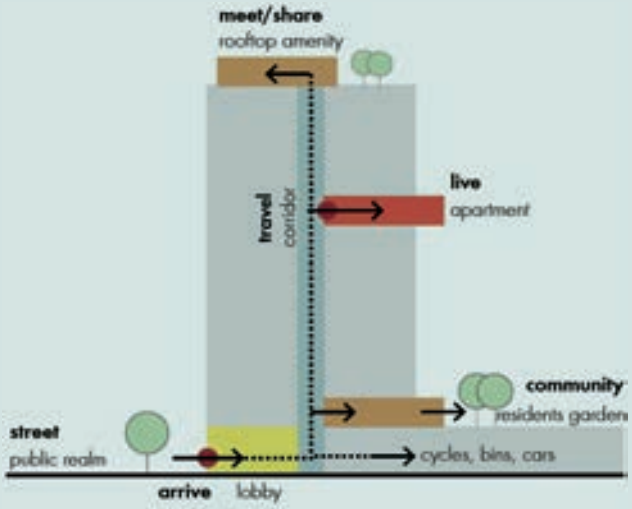


Roof section indicative of the variety of components and uses

The middle...

Comprises the main building volume. Its three-dimensional form will affect the micro-climate directly so the design should consider the impact on wind flow, ambient heat, privacy, light and overshadowing. The building envelope should balance the internal programmatic requirements with outward elegance and appearance to and from surrounding buildings, streets and spaces.

- A direct relationship between the typical floor plate(s) and facade composition is desirable.
- A harmonious modulation of elements such as balconies, recesses, and fenestration is desirable.
- The selection of materials and lighting ought to reinforce or enhance the townscape, particularly at night-time.



Cross-section diagram of the tiered functions in a tall building

The base...

Creates a sense of belonging to one's home which is important for the sustained care and longevity of the built fabric. Base design comprises the:

- Building approach: the public realm and entrance should provide a welcoming arrival experience.
- Front of house areas: entrance lobby, circulation and shared spaces should be safe and well lit.
- Communal spaces should be easy to access, inclusive and animate the surrounding streets.
- Back of house areas should be well organised and sufficiently large to accommodate essential functions such as bike storage, bin storage, car parking and refuse collection.

Welcoming, attractive and clearly defined entrances which relate positively to the surrounding street

6. Tall buildings: Broader issues

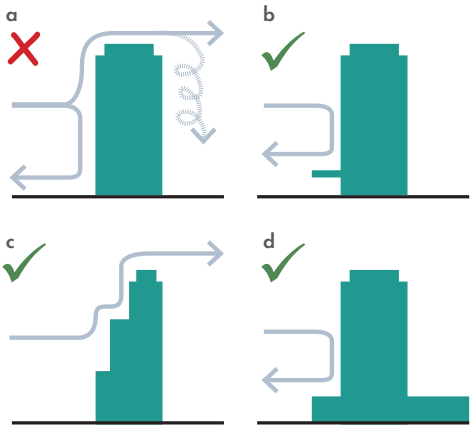
Safety and management

Tall buildings benefit from a clear delineation of what is public and private space. Defensible spaces and active, street-facing frontages at ground floor can provide a sense of enclosure and safety. The security and management regime of communal areas should be set out clearly to ensure the design of an operational use of the building follows policy and best practice guidance. Well-defined prevention, evacuation and response strategies will minimise the threats from fire, flooding, terrorism, and other situational hazards. If terror protection is considered relevant, the use of bollards, planters or low walls along the perimeter are preferable to taller fences.

Sustainability

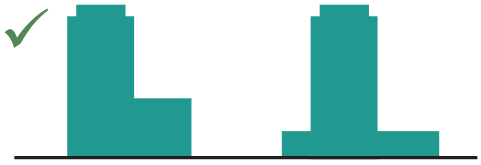
Tall buildings should be held to a much greater level of design scrutiny than any other building type. At the same time, owing to their cost, scale, complexity and potential impact, tall buildings are required to make considerable and positive social, economic and environmental contributions to their localities. Managing these diverse requirements is challenging yet the benefits of truly sustainable tall buildings are significant. Proposals that integrate early and sustainable design strategies will benefit from significant economies of scale which tall buildings present. Factors to consider include:

- **Longevity**: Many tall buildings only last as long as the facade system they employ. In the case of curtain wall cladding this is limited to 35-50 years, yet the design life of the structure is hundreds of years. The durability of building components (and the ability to replace some elements without compromising others) should be prioritised alongside the potential to recycle components as part of a wider circular economy.
- **Embodied Carbon**: Emissions associated the superstructure of tall buildings may rise with height due to the wind loading requirements.
- **Equipment**: Energy associated with mechanical apparatus such as lifts increases with height. Tall buildings should seek to limit energy demand with vertical transportation systems.
- **Glazing ratio**: Large amounts of glazing can lead to increasing levels of heat loss and solar heat gain - both of which result in additional energy consumption (and the latter in overheating in residential properties). Glazing levels should seek to satisfy space heating demand, ensuring good daylight levels and limit peak solar gain.
- **Amenity space**: Post-pandemic research indicates that levels of occupant discomfort in mid and high-rise properties mostly stems from the lack of private amenity space. Balconies may become unfeasible (and unused) at greater heights. Winter gardens offer one solution to this issue by providing a 'buffer' space between internal and outside conditions. Greater provision of communal amenity spaces is extremely desirable. Natural building ventilation is desirable, particularly for residential amenity.
- **Externalities**: Tall buildings also risk negatively impacting neighbouring properties, so care should be taken to properly evaluate and mitigate these risks during early design stages. Examples include solar access for daylight and renewable energy systems and build up of pollution.
- **Micro-climate**: Greater exposure to atmospheric conditions in taller buildings (sunlight, lower temperature, wind speeds) can lead to increases in energy demand. As such, the design impacts of tall buildings on environmental indicators is more acute and requires careful consideration.
- **Light pollution:** Care will need to be taken lighting tall buildings, balancing tall building lighting strategies to highlight the building in the cityscape and add visual interest to the streetscape with the need to avoid light pollution.



Canopies (b), setbacks (c) and podia (d) can mitigate wake and downwash effects of excessive wind (a)

Canyons may result in the urban heat island effect



Setbacks and wider street can mitigate the excessive heat

Micro-climate

It is essential to understand the local, climatic context within which a proposed tall building will be situated. A 'micro-climate' is shaped by the interaction between the climate and the built environment. It influences the way tall buildings perform and how end-users experience the urban environment through variations in temperature, humidity, rainfall, wind and other factors.

Examples of severe micro-climatic variations which relate directly to tall building development include:

- Extreme wind turbulence: caused by the height and three-dimensional form of a building and its orientation to the prevailing wind direction.
- The urban heat island effect: whereby canyon-like developments with large surface areas absorb and reflect sunlight increasing the rate at which urban streets and spaces are heated.

Analyses of the macro and micro-scale climatic conditions for a site should be carried out at the earliest possible stage of the design process to ensure that a scheme can anticipate opportunities and mitigate risks in the way that the local climate interacts with the site.

Taking such early initiative will also ensure that effective passive design solutions can be implemented from the outset. This can lead to significant downstream efficiencies in energy demands such as heating and cooling as well as improvements to occupational comfort.

It is advised that the following factors be considered when carrying out a comprehensive micro-climate analysis:

- **Solar radiation**: evaluate annual levels of direct and indirect solar radiation in comparison to cloud cover. Can frequency of solar during winter months facilitate an effective passive-solar design to aid heating demand? Or does cloud cover prevent this? Assess the seasonal daylight available to outdoor amenity spaces and sunlight penetration into the building and its effect on occupant comfort and thermal performance.
- **Temperature**: review annual peak high/low and average temperature by month. Consider the annual variation in temperature and any notable stress points from extreme high/low events.
- **Wind**: assess the direction and speed of prevailing winds and model its impact in relation to private amenities and public realm areas surrounding the building.
- **Noise**: consider the potential noise levels created by air movement, building use or operational machinery to maximise the enjoyment of internal and open spaces around the building.
- **Air movement**: model the building envelope and its effect on air movement. Consider massing options which encourage the effective dispersion of pollutants, but avoid adversely affecting street-level conditions.
- **Climate change**: develop adaptation strategies based on the Environmental Protection Agency's Regional Climate Model Predictions for Ireland, which provides the most up-to-date analysis of future Irish climate conditions for 2021–2060. Climate mitigation measures should be identified and designed into the building as integral features from the outset to avoid retrofitting.

7. Design Review: What is is?

Design review is a process where a specially convened panel of impartial professionals with expertise in the most relevant disciplines, are asked to independently review development proposals, usually as part of the development management process.

Why consider design review?

The intention of design review is to support the local planning authority providing planning officers and the authority as a whole with valuable expert and independent advice on the merits of a proposal before any formal decisions are made. It provides impartial and expert opinion on important development proposals which can make a very important contribution to the process of making planning decisions.

In short, it both improves the quality of design in new development and in turn improves the quality of decisions made by planning authorities.

Principles of Design Review

One of the advantages of the design review process is that it enables the bringing together of people from across key disciplines and ensures they are included in one review process. This helps to ensure balance in the issues addressed and explored. In light of this important multi-disciplinary aspect of the design review process, the UK's Design Council CABE, Landscape Institute, RTPI and RIBA came together to produce a useful guide, Design Review: Principles and Practice which was published in 2013 and updated in 2019.

Ten principles of design review are outlined, as follows:

- **Independent**: It is conducted by people who are unconnected with the scheme's promoters and decision makers, and it ensures that conflicts of interest do not arise.
- **Expert**: It is carried out by suitably trained people who are experienced in design and know how to criticise constructively. Review is usually most respected where it is carried out by professional peers of the project designers, because their standing and expertise will be acknowledged.
- **Multidisciplinary**: It combines the different perspectives of architects, urban designers, urban and rural planners, landscape architects, engineers and other specialist experts to provide a complete, rounded assessment.
- **Accountable**: The Review Panel and its advice must be clearly seen to work for the benefit of the public. This should be ingrained within the panel's terms of reference.
- **Transparent**: The panel's remit, membership, governance processes and funding should always be in the public domain.
- **Proportionate**: It is used on projects whose significance, either at local or national level, warrants the investment needed to provide the service.
- **Timely**: It takes place as early as possible in the design process, because this can avoid a great deal of wasted time. It also costs less to make changes at an early stage.
- **Advisory**: A design review panel does not make decisions, but it offers impartial advice for the people who do.
- **Objective**: It appraises schemes according to reasoned, objective criteria rather than the stylistic tastes of individual panel members.
- **Accessible**: Its findings and advice are clearly expressed in terms that design teams, decision makers and clients can all understand and make use of.

8. Design Review: How does it work?

Who administers them?

A design review panel could operate nationally, regionally, locally, or specifically for particular major regeneration schemes. There are examples of all of these types of panel across the United Kingdom.

National - Design Council administer a national design review process having convened an extensive panel of Built Environment Experts (BEEs). Their remit tends to focus on major developments of more than local significance.

Regional – There is a network of design review bodies affiliated with regional RIBA offices across the UK. For example, Places Matter is the regional Design Review body for the north west.

Local – Individual local authorities often procure their own design review panels and use them to help improve the quality of decision making. They may also make use of regional or national panels where appropriate.

Bespoke – Some major regeneration schemes have dedicated design review panels put in place to ensure design and investment decisions are made in a coordinated manner. For example, a quality review panel has been established to help coordinate new development in the Queen Elizabeth Park which is administered by the London Legacy Development Corporation.

Design Review - Principles and Practice

How are they used?

Design review panels can be used in a number of ways. They can initiated by the local planning authority because they feel the scheme is of particular significance or controversial in some way – taking the view that an expert and independent view from a panel of qualified practitioners will assist in the decision making process.

There is normally a cost for the service which would typically be covered by the developer or applicant. A developer can also initiate a review session themselves.

The Local Planning Authority may seek to include reference to the benefits of design reviews in their development plan policies. This is a way of securing their position in the development management process.

How are review panels established?

The quality of the panel members is fundamental to the quality of the process of design review. Typically, adverts are posted in industry press or similar by the host agency declaring their intention to compose a design/quality review panel. Applicants should be asked to apply by providing statements which demonstrate their professional experience. The questions asked of applicants should also seek to ensure the applicant can demonstrate their merit, their independence as well as covering issues such as equal opportunities, probity, openness and transparency, and proportionality. It is important to recruit experts from a range of relevant disciplines. Those composing the panel and making decisions on the appointment of panel members should themselves be from a range of disciplines with at least one being from outside of the organisation, nominated by the panel's commissioning body or steering group. When created, all panels should also recruit a panel chair who is highly regarded within their profession.

DENSITY DONE WELL

Reviewing case studies of recent development and major regeneration schemes has played an important part of the evolution of the density and building heights strategy. Whilst each case will have a unique set of circumstances, important lessons can be learnt on the approaches taken to making the best use of land and responding positively to constraints and context.

For each case study we set out the character and scale of the new development, the type of location of the site, the general type of development and the year the development was completed. Aspects of the development are also recorded including storey heights, the approximate total number of dwellings in the development, the approximate total site area and an assessment of the housing density (dph).

A wide range of case studies are presented in this section. Their relevance to the different strands of the density and height strategy varies in light of the form of development and the context of the site. However, each case has been attributed to the different strands of the strategy and this is summarised in the adjacent table.

Designing new buildings and neighbourhoods at densities that might be higher than their surroundings often presents challenges. Ensuring new buildings are designed to be contextual and 'of the place' in terms of their layout is important. Care will need to be taken with the routes and connections they create, their public realm strategies, their scale and massing and matters of architectural strategy, detailed design and materials.

1 Alto Vetro, Dublin

2 Keybridge, London

3 Bosco Verticale, Milan

4 Nordhavn, Copenhagen

5 19 Dzielnica, Warsaw

6 Liffey Trust, Dublin

7 Timber Yard, Dublin

8 Clancy Quay, Dublin

9 Hollainhof, Ghent

10 Eddington, Cambridge

11 Killesberghöhe, Stuttgart

12 Dunluce Apartments, Dublin

13 Goldsmith Street, Norwich

14 Elderwood Park, Cork

15 Lucky Lane, Dublin

16 Dunville Close, Dublin

17 Morehampton Lane, Dublin

18 New Hall Be, Harlow

19 Domville Woods, Dublin

20 Vathorst District, Amersfoort

21 Breevaarthoek, Gouda

22 Sliabh Bán, Galway

City & central area *dph*	City fringe, primary corridors & major towns *dph*	Inner / urban suburbs *dph*	Outer suburbs *dph*
867			
500			
450			
200	*200*		
274	*274*	*274*	
	336		
	174		
	112	*112*	
	86	*86*	*86*
	65	*65*	*65*
	50	*50*	*50*
		61	*61*
		84	
		68	
		67	
		40	
		25	
		64	*64*
		63	*63*
		60	*60*
		52	*52*
			44

Alto Vetro, Dublin

1

A high density glazed residential tower marking the gateway to the town centre

City & central areas

Primary urban corridors & principal towns

Inner / suburban areas

Outer suburbs

Character	High density, high rise	**Storeys**	16
Location	City centre	**Dwellings**	26
Project type	Apartment building	**Site area**	0.03 Ha
Completed	2008	**Density**	867 dph

- Situated at the junction of Grand Canal Quay and Pearse Street.
- Location of tower marks a particular moment on the approach into the city from the east by bridge.
- Provides a visual termination to a new sequence which will start at Spencer Dock, traverse the Liffey by a new pedestrian bridge then move along Forbes Street towards Grand Canal Square .
- There is active ground floor use with a retail / commercial unit on either side of the apartment foyer at ground level.
- Apartments are triple aspect and provide panoramic views in three directions.
- The building form is that of a pristine glazed rectangular free standing object. Floors are expressed by a thin stone band at each level.
- The architectural language of the scheme is consciously neutral in the interest of a singular architectural expression and presence.
- Behind the glazed outer skin sliding timber screens can be arranged at will to modify the sense of enclosure within the various spaces.

Keybridge, London

2

A small urban site delivering high density within a range of typologies whilst drawing on the local character to create a new vernacular for Vauxhall

City & central areas

Primary urban corridors & principal towns

Inner / suburban areas

Outer suburbs

Character	High density redevelopment	**Storeys**	4 - 37 storeys
Location	City centre	**Dwellings**	595
Project type	Residential led development with flats and duplexes	**Site area**	1.19 Ha
Completed	2020	**Density**	500 dph

- Residential-led mixed-use development delivering three towers, two mansion blocks, maisonettes, shops and cafés, small business units, green space and a school, as well as a new setting for the existing Vauxhall Griffin pub and St Anne and All Saints Church.
- Retail and restaurants occupy and activate the ground floor spaces of the buildings fronting South Lambeth Road and a mews for small business use faces the railway viaduct at the back of the site.
- The redevelopment breaks down the massing of the existing building, introducing permeability through the site and improving connections, reinforcing and activating street frontages.
- The public realm plays a key role in the success of the scheme providing a set of public spaces that open up the site.
- Characterful buildings at high density with pockets of carefully conceived green space.
- Responds to the heterogeneous character of the area to deliver an appropriately rich mix of buildings with a more appropriate architectural language for replacement buildings in the area.
- Establishes an identity that sets it apart from the extensive new development going on in the area.

Bosco Verticale, Milan

3

Two towers delivering high density within a vertical forest in an urban setting

Photo by Thomas Ledl, CC-by-sa 4.0

City & central areas

Primary urban corridors & principal towns

Inner / suburban areas

Outer suburbs

Character	High density, high rise	**Storeys**	Two towers, 18 and 26
Location	City centre	**Dwellings**	400
Project type	Apartments, ecologically-led regeneration	**Site area**	0.9 Ha
		Density	450 dph
Completed	2014		

- Prototype building for a new format of architectural biodiversity which focuses not only on human beings but also on the relationship between humans and other living species.
- Consists of two towers of 80m and 112m, and provides an amount of vegetation equivalent to 30,000 square metres of woodland and undergrowth, concentrated on 3,000 square metres of urban surface.
- The project also limits urban sprawl with each tower being the equivalent to about 50,000 square metres of single-family houses.
- Unlike "mineral" façades in glass or stone, the plant-based shield does not reflect or magnify the sun's rays but filters them thereby creating a welcoming internal micro-climate without harmful effects on the environment. At the same time, the green curtain "regulates" humidity, produces oxygen and absorbs CO2and micro-particles.
- The towers are mainly characterized by large, staggered and overhanging balconies, designed to accommodate large external tubs for vegetation and to allow the growth of larger trees without hindrance.
- The string courses of the balconies and some modules on the front of the windowsills introduces a syncopated rhythm in the composition which breaks up and "dematerializes" the visual compactness of the architectural bodies and amplifies the presence of the plants even more.
- A few years after its construction, the Vertical Forest has given birth to a habitat colonized by numerous animal species (including about 1,600 specimens of birds and butterflies), establishing an outpost of spontaneous flora and fauna recolonization in the city.

Nordhavn, Copenhagen

4

Masterplan for new city district in former industrial harbour area, including new public spaces, streets and promenades, landscaping, bicycle infrastructure and metro stations

City & central areas

Primary urban corridors & principal towns

Inner / suburban areas

Outer suburbs

Character	Diverse high density	**Storeys**	Predominantly 3 - 6 but ranges 2 - 16
Location	Docklands, city fringe	**Dwellings**	40,000 over 40 years
Project type	Dockland regeneration	**Site area**	200 Ha
Start year	2012	**Density**	Mixed but up to 200 dph

- Conceived as an urban archipelago or a series of dense neighbourhoods on the water.
- Nordhavn will become a vibrant waterfront city, providing homes for 40,000 inhabitants and workspaces for another 40,000.
- The site is divided into islets that create distinct identities and neighbourhoods and facilitate robust and flexible planning.
- The green Metro and bicycle loop connects the islets and makes for an integrated city. Every corner of the island is envisioned to have less than a five-minute walk to public transportation.
- Strips of green spaces run from east to west, varying from "urban green" in the south to "natural green" in the north.
- The intelligent grid form allows for multiple mixed functions within a given area. The grid can adapt to changes over time and gives the plan controlled flexibility, creating a diverse city.
- The masterplan layout respects and interprets Nordhavn's past, in which reclaimed land areas created an easily recognizable, rational structure.
- Large public spaces will create reference points, pocket parks will offer recreational hideouts, and narrow green edge zones along the buildings will enrich the urban environment.
- Nordhavn will be a neighbourhood that offers the best aspects of the open city and the dense city, with towers as well as small-scale family housing, shops, offices and room for culture and sports.
- The first phase of the development divides the buildings into small units, creating intimate urban spaces and proximity to the water from all building plots.
- Streets and urban spaces have been designed and constructed as intimate and pedestrian-friendly environments.

19 Dzielnica, Warsaw

5

High density perimeter block development forming two public squares on the site of a large post-industrial area of Warsaw

City & central areas

Primary urban corridors & principal towns

Inner / suburban areas

Outer suburbs

Character	Medium - High density urban regeneration
Location	City fringe
Project type	Apartments and duplexes
Completion	2009

Storeys	6 - 10
Dwellings	1700
Site area	6.2 Ha
Density	274 dph

- The 19th District is the first such large post-industrial area to be restored to the city of Warsaw.
- The regulation plan guidelines are based on the traditional town building principles: perimeter-block development with a distinct division of space into the open, public space of streets and squares, and the semi-private space of internal courtyards.
- The basic axis of the scheme is formed by two public squares situated on two main streets, linked by a pedestrian way.
- The building height is varied with the tallest elements along the main streets, lowering towards an internal walkway.
- Except for the internal courtyards, all areas are open to the public.
- Commercial units have been incorporated at ground level creating a mix of uses and delivering an active frontage.
- The project will deliver 1700 apartments in 6 stages of development, creating an architecturally coherent whole.
- A new subway station creates connectivity to the rest of the city.
- The development has its own set of streets, squares with fountains, green, semi-private patios and commercial and service facilities.

Liffey Trust, Dublin

6

A high density residential urban development which incorporates enterprise units, start-up office units and a performing Arts School

City & central areas

Primary urban corridors & principal towns

Inner / suburban areas

Outer suburbs

Character	High density urban regeneration	**Storeys**	8
Location	City fringe	**Dwellings**	94
Project type	Apartments with a mix of uses at ground floor	**Site area**	0.28 Ha
Completion	2009	**Density**	336 dph

- An eight storey over basement purpose built building which incorporates enterprise units and start-up office units for the Liffey Trust, a designated Performing Arts School and residential accommodation.
- All of the public spaces occupy an extensively glazed two storey podium which will provide a strong visual presence on the adjoining streets. Three courtyards are cut into this podium affording light, ventilation and private open space to the enterprise centre.
- The development comprises a mix of dwelling types including 67 Apartments, 27 Enterprise units and 27 Duplexes.
- The residential units are arranged in two linear six storey wings each side of a landscaped podium garden.

Timberyard, Dublin

7

Regeneration of a backland site to create a new high density scheme which delivers a new street frontage to heal the wounds caused by significant road infrastructure

City & central areas

Primary urban corridors & principal towns

Inner / suburban areas

Outer suburbs

Character	Mid - high density urban infill	**Storeys**	3 and 4
Location	Inner suburb	**Dwellings**	47
Project type	City Council regen infill	**Site area**	0.27 Ha
Completed	2009	**Density**	174 dph

- The project repairs the local landscape by providing a new collective space, built around a former timber yard, making a residential enclave with a sense of place.
- The design provides scale, identity and a piece of living city, connecting new development in the area to the historic character of the Liberties.
- The scheme mediates between the six-storey scale proposed in general along the new Cork Street corridor and the smaller scale of the existing houses behind the site.
- Brick and timber are the main materials used, echoing the existing housing and industrial buildings in the area and the former use of the site as a timber yard.
- The walls are modulated with recessed porches and terraces and projecting bay windows to give a depth and complexity to the building's edge and an interface between the private world of the house and the neighbourhood. The building cranks along the street line with landscaped planters and steps at ground level to allow some privacy to those units accessed from the street.
- A triangular courtyard provides the main social/ play space of the scheme in a secure space via the passive surveillance from the adjacent apartments, further animated by window seats at ground level, recessed balconies and projecting winter gardens above.
- The scheme opens up two new pedestrian routes through the main courtyard and the Grotto at the east end of the building which knit into the surrounding urban fabric, re-making connections through the urban fabric which were extinguished by the Coombe Bypass road engineering scheme.

Clancy Quay, Dublin

8

A high density development comprised of a mix of housing types on the site of a former barracks, which takes advantage of the site's natural assets through views and vistas

City & central areas

Primary urban corridors & principal towns

Inner / suburban areas

Outer suburbs

Character	Med-high density regeneration	**Storeys**	3 - 7
Location	Inner suburb	**Dwellings**	615
Project type	Flats and houses	**Site area**	5.5 Ha
Completed	2013	**Density**	112 dph

- Clancy Quay is an exemplary residential development located within the former 19th century Clancy Barracks complex.
- The development comprises a mix of housing typologies including two apartment buildings and contemporary terraced housing, along with the conservation and refurbishment of nine existing protected structures, formerly barracks buildings, to residential use.
- A new public open space, Cambridge Square, is created at the centre of the development.
- Communal private open space in the form of landscaped gardens are located between existing buildings in the east side of the site.
- Permeable and visual links across the site, on an east/west axis from South Circular Road and north/south axis towards Phase 1 of the development and the River Liffey, are also created, forming connections to adjacent communities.
- The site offers impressive views of the River Liffey and Island Bridge.
- Consideration was given to 12 existing listed buildings on the site, which were retained and sensitively refurbished.
- Also of great importance to the project were the views between Phoenix Park and the Museum of Modern Art, both of which are located on elevated positions on either side of the site.

Hollainhof, Ghent

9

A high quality social housing project which takes influence from the local venacular to provide an attractive living environment with a series of public and private spaces

City & central areas

Primary urban corridors & principal towns

Inner / suburban areas

Outer suburbs

Character	Mid density, low rise	**Storeys**	4
Location	City fringe	**Dwellings**	129
Project type	Redevelopment of barracks	**Site area**	1.1 Ha
Completed	1998	**Density**	Approximately 86 dph

- Social housing project located in the centre of Ghent by Neutelings Riedijk Architecten.
- The project comprises 120 houses and a day-care centre, and replaces the Hollainkazerne, a military complex.
- The design was influenced by the typology of the nearby beguinage (an architectural complex which was created to house beguines: lay religious women who lived in the community without taking vows).
- The project creates an attractive habitat by combining the quality and density of the urban surroundings with privacy and peacefulness.
- The design is an update of the traditional residential type resulting in a complex that fluctuates from public to private, open to closed, large- to small-scale.
- The dwellings are grouped in two strips, one of them following the street and the other facing the river. The strips are composed of fifteen blocks with ten to eight dwellings each.
- There is a large open-air garden between the strips.
- A large underground passage connects the street to the garden that gives access to the houses, which have their own private garden.
- Overall, the project generates a great variety of dwellings in a series of sculptural blocks, each one with its own identity.
- One of the pavilions inside the garden hosts a nursery and there is an underground garage beneath the block facing the river.
- Some of the dwellings facing the street are accessed through a loggia on the first floor. This elevation emphasizes the complex's scale and character.

Eddington, Cambridge

10

A new sustainable and ambitious mixed-use neighbourhood development designed to support a healthy, active and environmentally conscious community

City & central areas

Primary urban corridors & principal towns

Inner / suburban areas

Outer suburbs

Character	New development	**Storeys**	3 - 5
Location	Outer fringe	**Dwellings**	240
Project type	Apartments, duplexes, houses	**Site area**	3.69 Ha
Start year	2018	**Density**	65 dph

- Mole Architects in partnership with Wilkinson Eyre have designed and delivered three linked buildings, including a health centre, estates offices and postgraduate apartments, for The University of Cambridge.
- The scheme forms part of the first phases of Eddington, a new city district in the North West of Cambridge.
- The buildings were designed as part of a mixed use urban block, and include a range of uses to serve this new city district.
- The buildings wrap around the larger volumes of the food store service yard and energy centre, allowing the more functional areas in the middle of the block to be integrated.
- Varied residential block typologies and active street frontages creates a positive architectural identity and streetscape character.
- Light-filled and tightly planned, the duplex apartments feel more spacious than the relatively modest footprint, and incorporate best practice guidance from the London Housing Design Guide, Code for Sustainable Homes Level 5 and Lifetime Homes.
- The sustainable design criteria included high daylight and fabric energy efficiency standards (FEES), with each junction detailed to achieve the required thermal bridging performance, and each window analysed for daylighting and over-heating performance.
- The dwellings are all naturally ventilated, served by a central combined heat and power energy centre.

Killesberghöhe, Stuttgart

A new residential-led multifunctional city quarter with a car-free public realm

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City & central areas

Primary urban corridors & principal towns

Inner / suburban areas

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Character	Mid density, low rise	**Storeys**	Predominantly 3 - 5
Location	Inner suburb	**Dwellings**	120
Project type	Redevelopment; district centre	**Site area**	2.4 Ha
Completed	2013	**Density**	Approximately 50 dph

- Killesberghöhe is the vision for a new city quarter on the hill of Killesberg in Stuttgart, close to the famous Weissenhofsiedlung.
- The project comprises a mixed of uses including 50,000m2 of housing, offices, restaurants, retail, day-care, a city hall and the community centre Forum K.
- Four internationally renowned architects developed their individual architectural concepts based on a masterplan by Ackermann & Raff und Projekt GmbH.
- Multifunctional city quarter with a daycare centre, public areas and a district centre with doctor's offices, fitness centre and public parking spaces.
- The scheme has an underground station on the site and its own bus terminal, making the city and airport easily accessible.
- The development incorporates a central square with shops creating an active route.
- The quarter is car-free inside with an underground car park with 438 spaces.
- The buildings are varied in size and appearance providing individualisation and identity.
- There is a diversity of public circulation spaces, semi public resting areas and private spaces.
- Terraces and gardens form a smooth transition between inside and outside spaces.
- Buildings are arranged to provide attractive views and vistas throughout the development.

Dunluce Apartments, Dublin

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Low density infill scheme set within an attractive landscape in an inner suburban village

City & central areas

Primary urban corridors & principal towns

Inner / suburban areas

Outer suburbs

Character	Infill	**Storeys**	3 - 6
Location	Inner suburb	**Dwellings**	25
Project type	Flats	**Site area**	0.41 Ha
Completed	2017	**Density**	61 dph

- To maximise views, four buildings ranging from 3 to 6 floors in height have been created and arranged around a central garden linked together by raised walkways.
- The walkways and corner balconies provide residents with views of the surrounding landscape.
- This low rise, low density development overlooks Merrion Cricket Club on one side and the playing fields and parklands of Herbert Park on the other.
- There are two apartments per floor, each L shaped and wrapped around a central lobby. This allows them to be dual aspect, with large windows providing a lot of natural light.
- Highly energy efficient, achieving an A3 BER rating.

Goldsmith Street, Norwich

13

High density, urban social housing in Norwich and the largest Passivhaus scheme in the UK

photo by Evelyn Simak, CC BY-SA 2.0

City & central areas

Primary urban corridors & principal towns

Inner / suburban areas

Outer suburbs

Character	Contemporary terraces	**Storeys**	2 - 3
Location	Inner suburb	**Dwellings**	105
Project type	Estate regeneration	**Site area**	1.2 Ha
Completed	2016	**Density**	84 dph

- City Council developed the site itself after it had been on hold since the financial crash.
- The development provides 100 new homes, with about 50 individual houses, and 50 flats, representing a significant new departure for the City.
- The design seeks to re-introduce streets and houses in an area of the city which is otherwise dominated by 20th century blocks of flats.
- Existing green links are reinforced with a landscape scheme which extends beyond the boundaries of the site to include local roads and a park.
- Street widths are intentionally narrow at 14m, emulating the 19th Century model.
- Parking is on street and a 20mph speed limit is to be applied.
- A shared 'alley' encouraging small children's play and communal gathering is accessible from back gardens – a secure place which only residents can access.
- The scheme is dense and low rise providing more houses than other schemes, which were mainly flats, gaining better values from the site.
- Future maintenance has been minimised by designing flats whereby every flat has a front door onto the street, with its own staircase and lobby at street level – designing out all internal common parts.
- Mostly two storeys, houses are given the occasional dormer to provide a third bedroom. Most of the principle rooms, face south. Generous kitchen / dining rooms form the heart of each house.
- It is a Low Carbon scheme, where all houses are on target to achieve full 'Passivhaus' Certification.
- The design seeks to provide sunny, light filled homes with very low fuel bills of approximately £150 per year.

Elderwood Park, Cork

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Public sector-led surburban housing infil development in south-east Cork including mixed housing and a nursery facility on the main street corner

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Primary urban corridors & principal towns

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Outer suburbs

Character	Suburban infill	**Storeys**	3 and 4
Location	Inner suburb	**Dwellings**	149
Project type	Mixed family housing	**Site area**	2.2 Ha
Start year	2005	**Density**	68 dph

Lucky Lane, Dublin

15

Urban densification through the creaton of mews housing in the back gardens of existing terraced housing leading to the establishment of a new street

City & central areas

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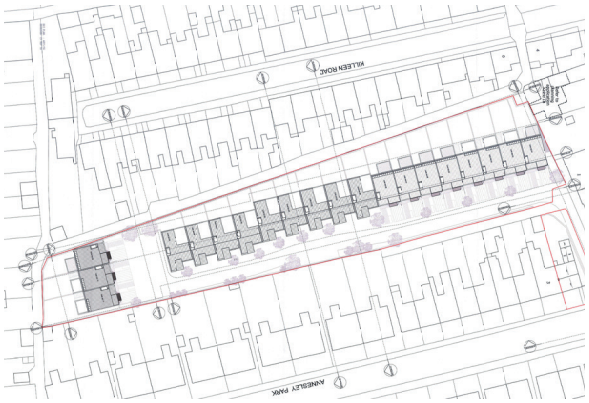
Character	Suburban infill	**Storeys**	2
Location	Inner subrub	**Dwellings**	4
Project type	Family mews housing and new street created on lane and in the rear gardens of a Victorian terrace	**Site area**	0.06 Ha
		Density	67 dph
Completed	2009		

- Two storey terraced mews houses built in the back gardens of existing terraced housing create a new street on an existing lane in a dense inner city area of Stoneybatter, Dublin.
- A 'double return' mews typology is developed by employing a return to both the front and rear of the new mews houses.
- The house is fuelled using an air-to-water heat pump which takes the temperature of the outside air, and compresses it, backed up by a heat pump and mechanical heat recovery.
- New terraced housing typology for mews lanes. The idea is to create a new street on an existing underused lane and the rear gardens of a Victorian terrace on Aughrim Street. The houses have 2 single storey returns forming 2 courtyards and 2 terraces front and back. Private development of 2 houses with Peter Carroll of A2 Architects. A total of 11 sites have planning permission with 4 houses completed.

Dunville Close, Dublin

16

High quality terraced housing developed on a sensitive backland site



City & central areas

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Character	Residential terraced housing	**Storeys**	3
Location	Inner suburb	**Dwellings**	20
Project type	Houses	**Site area**	0.5 Ha
Completed	2020	**Density**	40 dph

- Metropolitan Workshop was commissioned to carry out feasibility work and subsequent planning application for this former light industrial site in Ranelagh, Dublin.
- Set within a sensitive back land site surrounded by protected residential structures. The constraints of the site and grain of the surrounding streets has informed a linear proposal of houses along a single sided shared surface street.
- Developed to overcome sensitivities such as overlooking and visual impact while at the same time providing generous, modern houses with ample outdoor amenity space.
- The elevational treatment takes its cue from the surrounding period terraces with a red brick multi with natural variations forms the primary facade materials on the main terrace.
- Various panels of patterned brickwork including stack bonded soldier course and fluted elements are arranged on the facade reflecting the existing decorative brick patterns found on Annesley Park, Killeen Road, and Ormond Road.
- Delivers on the government's aspiration to build 40% of new homes within the built-up footprint of existing settlements by increasing the density of this suburban area which is situated close to existing services and transport links.

Morehampton Lane, Dublin

17

Creation of mews-style housing on a tight lane, densifying an existing inner surbanan area

City & central areas

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Character	Infill	**Storeys**	3
Location	Inner suburb	**Dwellings**	4
Project type	Houses	**Site area**	0.16 Ha
Completed	2018	**Density**	25 dph

- Four mews houses situated on a tight lane-way.
- Intelligent layout comprised of interlocking floor plates.
- The exterior expression of the development responds to its immediate context in which the front elevation is well proportioned using a juxtaposition of solid, timber screens and recessed entrances.
- Large roof lights bring light inside. Full height glazed sliding doors create a direct connection between the open plan interior to the rear private garden.
- The upper floor bedrooms have full height glazing that overlooks a planted roof.

Newhall Be, Harlow

A new future-proof neighbourhood

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Primary urban corridors & principal towns

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Character	New development	**Storeys**	3
Location	Outer fringe	**Dwellings**	84
Project type	Apartments and houses	**Site area**	1.62 Ha
Completed	2012	**Density**	64 dph

- Newhall Be is an 84-unit scheme for Linden Homes which completes Phase 1 of Newhall development in Harlow, Essex.
- The scheme will comprise over 2,500 homes and two school sites, employment space and a district centre.
- Newhall Be is effective in integrating a mix of house typologies including apartments, terraced homes and courtyard homes.
- Buildings have been inspired by the traditional materials of Essex rural buildings and paired with modern architectural form creating striking black-timbered structures that align to the traditional Essex barns across the landscape.
- Through a highly efficient masterplan the development delivers a layout which maximizes living space and flexibility for individual homes as well as bringing light into potentially dark terraced courtyards. The use of roof terraces ensures residents are able to access outdoor space.
- The development is highly sustainable with consideration given to long-term energy use and incorporating measures to reduce energy use in properties.
- All dwellings are built to Lifetime Homes Standards (now Building Regulations Part M4 Category 2).
- Responding to changing work patterns, villas and courtyard houses include an office.
- The scheme uses a consistent block structure, making a legible street pattern with the use of shared spaces away from the main route further enhancing the permeability.
- Access to green space has been considered through the provision of terraces and linkages to the surrounding parkland.

Domville Woods, Dublin

19

Low rise housing regeneration development on the northern outskirts of Dublin

City & central areas

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Character	Regeneration	**Storeys**	3 - 4
Location	Outer fringe	**Dwellings**	75
Project type	Duplexes and houses	**Site area**	1.2 Ha
Completed	2010	**Density**	63 dph

- Located on a gently sloping 6,500m2 site on Santry Avenue, the development is made up of 75 social housing apartments grouped into three buildings around a central landscaped space.
- Designed for family living, most of the apartments, which have two or three bedrooms, have their own front door and private terraces or gardens.
- High quality design, winning the RIAI Silver Medal, the highest award for housing.
- Shared internal access spaces have been minimised.
- The façades are a combination of clay brick and render, with aluminium windows and recessed porches clad in hardwood boarding.
- Fabric insulation, mechanical ventilation heat recovery units and high-efficiency condensing boilers were installed to ensure high levels of energy efficiency.
- Existing mature trees on the site were worked into the design.

De Laak, Vathorst District, Amersfoort

20

A high density housing area designed as a homage to the tradition of old Dutch canal cities, with a waterways system connected to the nearby IJsselmeer lake

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Character	High density, mixed height	**Storeys**	Predominantly 3 - 4, but ranges 2 - 17
Location	Outer fringe	**Dwellings**	700
Project type	Greenfield; eco-district	**Site area**	3 Ha
Start year	2002	**Density**	Typically 60 dph, but up to 250 dph

- Designed and delivered by West 8 as part of a masterplan of the former Vinex site in Amersfoort, The Netherlands by West 8 and Kuiper Compagnons.
- References traditional Dutch canal cities.
- Comprised of 4000 dwellings.
- High density housing.
- Diverse range of housing typologies.
- Mix of uses introduced with active ground floor uses such as restaurants, small businesses and nurseries.
- Parking is removed from public areas to create play areas for children.
- Parking is instead provided in the backyards of properties, amongst tree planting or inside carports or garages.
- The streetscape has a clearly defined human scale enriched with tree-lined streets and wide canals.
- Each building has a vibrant facade with a clearly identifiable entrance.

Breevaarthoek, Gouda

21

A neighbourhood with a mix of dwelling types which provides a successful transition from city to countryside

City & central areas

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Character	Mid density, low rise	**Storeys**	Predominantly 3 - 4, rising to 7
Location	Inner suburb	**Dwellings**	52
Project type	Infill	**Site area**	1 Ha
Completed	2001	**Density**	Approximately 52 dph

- 23 apartments and two penthouses, 28 'drive-in' homes, with some commercial space.
- Located in an urbanised area, but overlooks a landscape of peat moors.
- Enclosed by two roads and a waterway. The complex thus forms a border between city and nature, and between water and land. This edge condition has been used as a point of departure.
- The project incorporates references to the urban surroundings as well as to the landscape and the water's edge.
- The triangular site naturally divided into three sections, each with its own dwelling type. To the South, the short edge of the triangle faces the road with an apartment building that functions as a noise barrier. The other two sides of the triangle consist of low-rise drive-in dwellings, intimately connected to the water's edge.
- The project is robust in form and the materials used.
- Despite the range of dwelling types and forms, the project as a whole forms a unified ensemble owing to the choice of materials. The same type of light-coloured rough brick has been used throughout. The windows are all wood-framed, and no colours have been added beyond the natural colours of the materials themselves, allowing the project to settle naturally in its surroundings.

Sliabh Bán, Galway

22

A new outer suburban neighbourhood providing a mix of dwelling types in a pedestrian friendly environment

City & central areas

Primary urban corridors & principal towns

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Character	New development	**Storeys**	2 - 3
Location	Outer fringe	**Dwellings**	53
Project type	Apartments and houses	**Site area**	1.2 Ha
Completed	2008	**Density**	44 dph

- 54 unit local authority estate.
- Street-based layout which exploits level changes acros the site.
- The development accommodates a range of housing types - all with private amentiy spce.
- Care is taken to accommodate car parking within the street design - but in a way that ensures that cars do not dominate the street.
- Sustainable drainage features are incorporated into the scheme design.
- Care also taken to accommodate bin stores and cycle parking to help maintain a good street environment.

All plans and figures are illustrative.

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