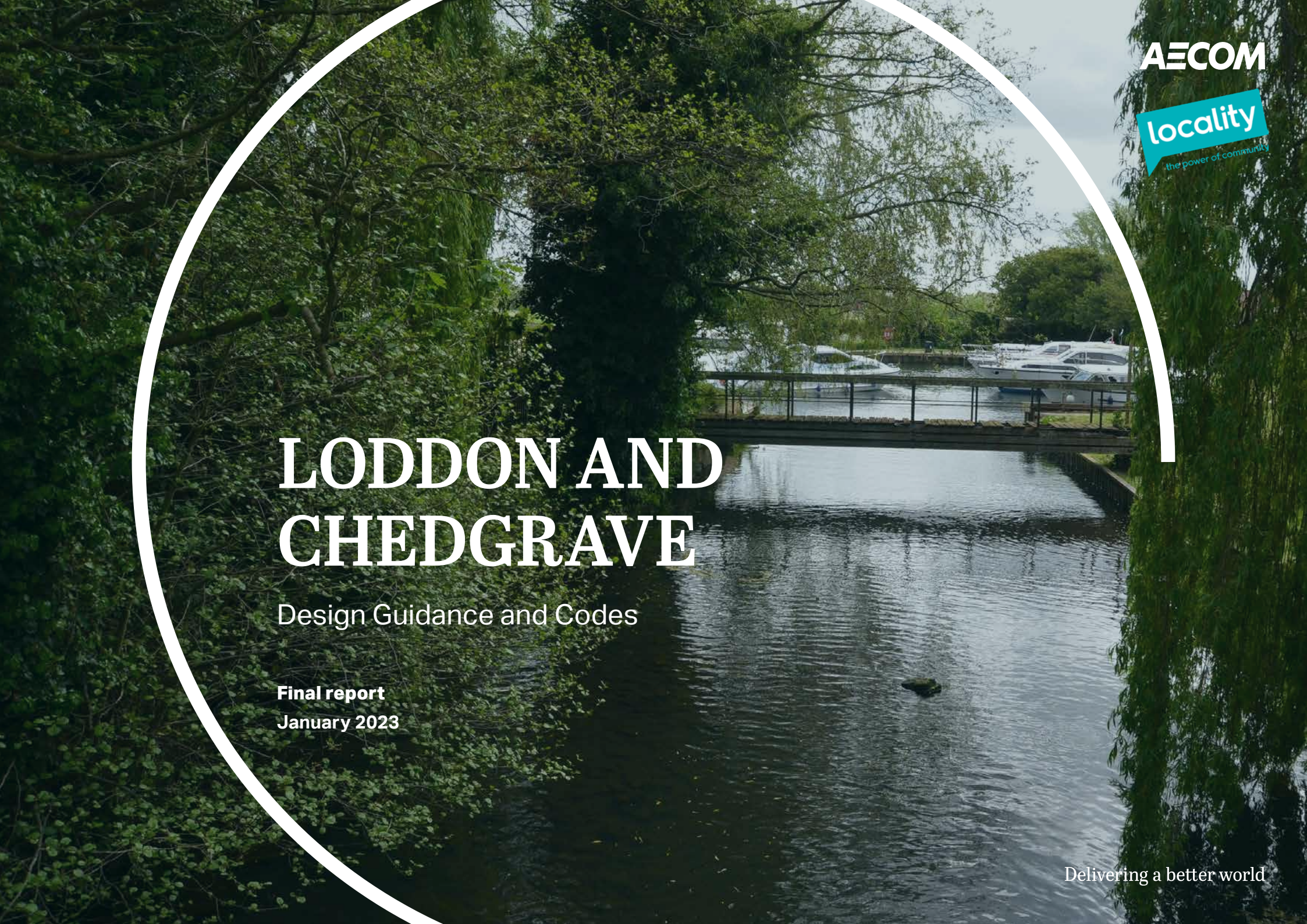

LODDON AND CHEDGRAVE

Design Guidance and Codes

Final report

January 2023

Delivering a better world

Quality information

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Revision History

Issue no.	Issue date	Details	Issued by	Position
2	17/01/2023	Final report	Ben Castell	Director, Buildings & Places
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Contents

Introduction

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1. Introduction

Through the Department for Levelling Up, Housing and Communities Neighbourhood Planning Programme led by Locality, AECOM was commissioned to provide design support to Loddon and Chedgrave Parish Councils. The support is intended to provide design guidance and codes based on the character and local qualities of the area to help influence residential developments.

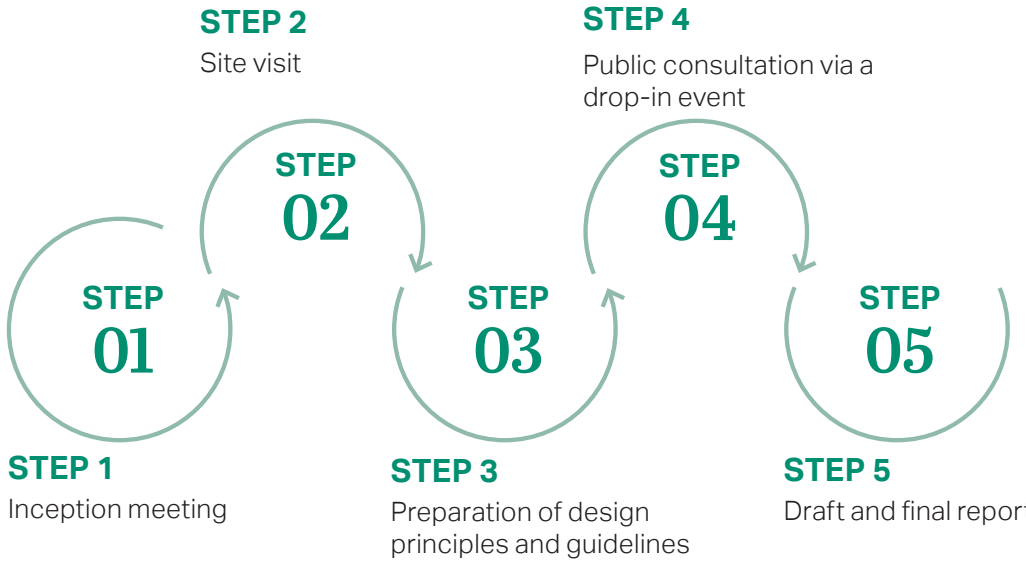
1.1 Objectives

The Neighbourhood Plan Steering Group has sought to develop a set of design codes guiding any future development in the village.

The National Planning Policy Framework (NPPF; 2021, paragraph 127) states that "Neighbourhood planning groups can play an important role in identifying the special qualities of each area and explaining how this should be reflected in development, both through their own plans and by engaging in the production of design policy, guidance and codes by local planning authorities and developers.".

1.2 Process

The following diagram outlines the steps undertaken to produce this document:



1.3 Area of study

The area of study for this report is the Chet Neighbourhood Area which includes the parishes of Loddon and Chedgrave, separated by the river Chet. Located approximately 12 miles south east of Norwich in the county of Norfolk, the neighbourhood area comprises a market town in Loddon, a village in Chedgrave to the north and several outlying hamlets. Both Loddon and Chedgrave have conservation areas with many of the major historical buildings in the area lying within them.

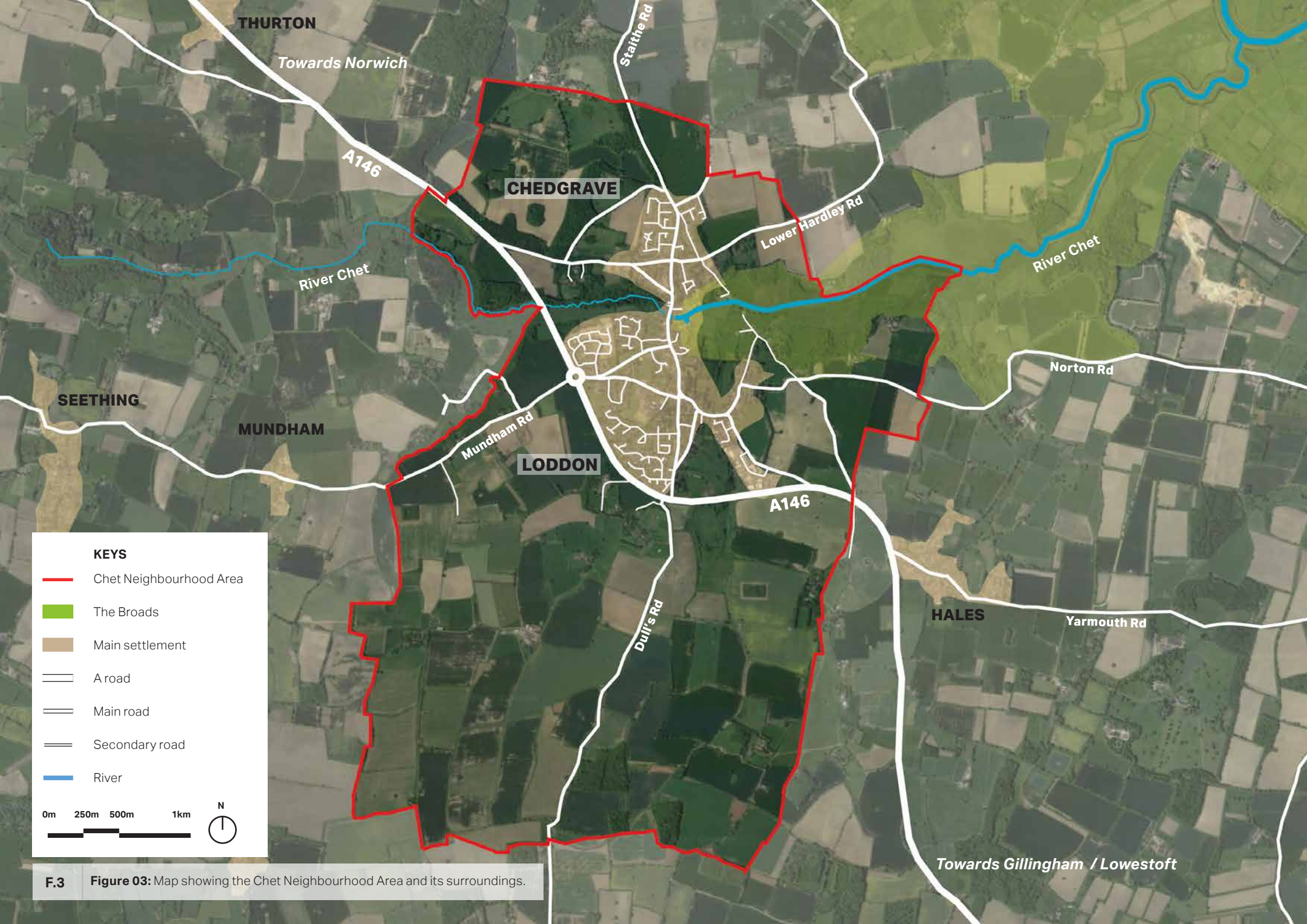
As a market town, Loddon contains central open space in the heart of the built up area, formerly a market square and now the Church Plain car park, next to the Holy Trinity Church, Loddon's medieval church. There is a main shopping street running north to south which also contains larger elegant town houses and public buildings. This passes over the River Chet and into Chedgrave.

Chedgrave is smaller settlement that now directly joins Loddon to form a larger built up area having been distinct from Loddon up until the 19th Century. Historically, Chedgrave's development formed around the All Saints Church which is in the heart of the Chedgrave Conservation Area. The village grew substantially in the 1960s and 1970s with the development of new housing estates.

The Chet Neighbourhood Area lies within the valley landscape of the river Chet with the Norfolk The Broads at its doorstep. The Broads Authority has statutory responsibility for the Broads and with Loddon and Chedgrave being separate parishes, the Neighbourhood Area encompasses three governing bodies working together to preserve and enhance the area's historic and natural character.

Figure 01: Photo showing Holy Trinity Church and its surrounding green space.

Figure 02: Photo showing Loddon's main shopping street running north to south and connecting to Chedgrave.



F.3 **Figure 03:** Map showing the Chet Neighbourhood Area and its surroundings.

1.4 Planning policy and guidance

As the National Planning Policy Framework (paragraph 126) notes, "good design is a key aspect of sustainable development, creates better places in which to live and work and helps make development acceptable to communities".

National and local policy documents can provide valuable guidance on bringing about good design and the benefits accompanying it. Some are there to ensure adequate planning regulations are in place to ensure development is both fit for purpose and able to build sustainable, thriving communities. Other documents are more technical and offer specific design guidance which can inform design codes and masterplanning activities.

Applicants should refer to these key documents when planning future development in the Chet Neighbourhood Area. The following documents at a national level have informed the design guidance within this report:

2021 National Model Design Code
DLUHC

This report provides detailed guidance on the production of design codes, guides and policies to promote successful design. It expands on 10 characteristics of good design set out in the National Design Guide. This guide should be used as reference for new development.

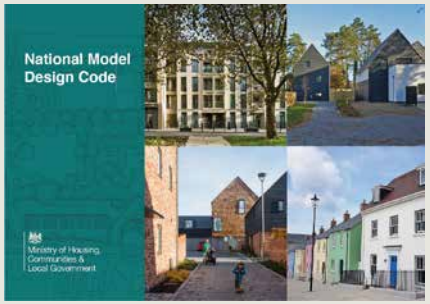
2020 - Building for a Healthy Life
Homes England

Building for a Healthy Life (BHL) is the new (2020) name for Building for Life, the government-endorsed industry standard for well-designed homes and neighbourhoods. The new name reflects the crucial role that the built environment has in promoting wellbeing.

The BHL toolkit sets out principles to help guide discussions on planning applications and to help local planning authorities to assess the quality of proposed (and completed) developments, but can also provide useful prompts and questions for planning applicants to consider during the different stages of the design process.

2021 - National Planning Policy Framework DLUHC

Development needs to consider national level planning policy guidance as set out in the National Planning Policy Framework (NPPF) and the National Planning Policy Guidance (NPPG). In particular, NPPF Chapter 12: Achieving well-designed places stresses the creation of high-quality buildings and places.

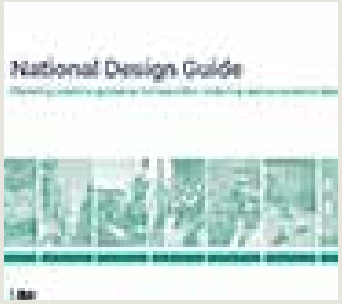


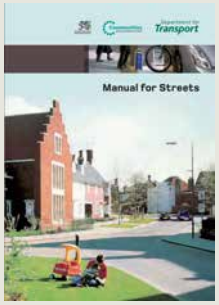
2019 - National Design Guide
DLUHC

The National Design Guide (Department for Levelling Up, Housing and Communities, 2019) illustrates how well-designed places that are beautiful, enduring and successful can be achieved in practice.

2007 - Manual for Streets
Department for Transport

Development is expected to respond positively to the Manual for Streets, the Government's guidance on how to design, construct, adopt and maintain new and existing residential streets. It promotes streets and wider development that avoid car dominated layouts and promote active travel.





1.4.1 Local planning policy context

Local planning policy can provide design guidance that is tailored to the context of the development and supported by analysis that is taken directly from the area. Therefore, it is vital local policy is considered when developing in the Chet Neighbourhood Area.

2019 - Local Plan for the Broads
The Broads Authority

The Local Plan for the Broads sets out key issues the Broads Authority faces, a vision for the future up to 2036 and strategic policies.

Broads Planning Guides

The Broads Authority also provides guides to ensure development within the area is appropriate. The following are relevant to Loddon and Chedgrave: Broads Design and Management Information, Towards a Dark Sky Standard, Biodiversity Enhancements Guide, Landscaping Strategy Guide; and Sustainability Guide.

2011 - Joint Core Strategy for Broadland, Norwich and South Norfolk
Greater Norwich Development Partnership

This document sets out the long-term vision and objectives for the wider region around the Chet Neighbourhood Area including strategic policies for steering and shaping development.

2008 - Loddon & Chedgrave Conservation Area Appraisal and Management Guidelines
South Norfolk Council

This conservation area appraisal provides a detailed analysis of the characteristics of the built environment within the Loddon and Chedgrave conservation areas.

2012 - South Norfolk Place Making Guide
South Norfolk Council

This Supplementary Planning Document provides useful background and guidance on designing in the local context, including a section dedicated to Loddon.

Neighbourhood Area Context Analysis

02

2. Neighbourhood Area Context Analysis

This section outlines the broad physical, historic and contextual characteristics of the Neighbourhood Plan Area

2.1 Surrounding context and key designations

Loddon and Chedgrave are situated in the valley landscape of the River Chet which passes in-between the two and joins onto the larger River Yare. The surrounding landscape is grazing marsh to the east and grassland and scattered wooded areas to the west. Nearby towns include Norwich to the north west and Great Yarmouth and Lowestoft to the east.

A significant asset in the surrounding area is the Broads Authority area which touches the heart of the Chet Neighbourhood Area (shown in Figure 6) either side of the River Chet and heads east to join the larger network of parkland that stretches along the Norfolk and Suffolk coastline with parts of the Broads reaching as far as Norwich inland.

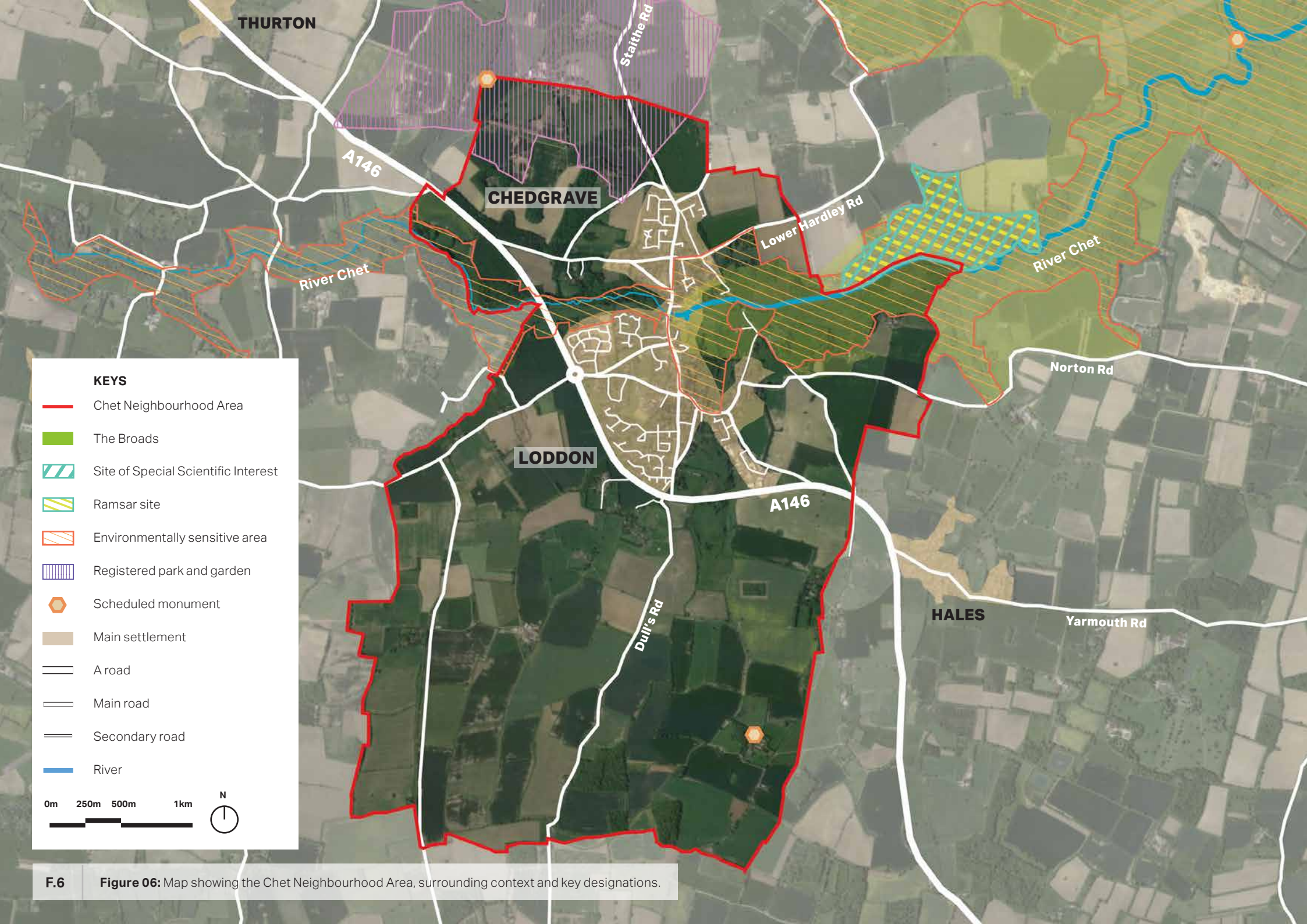
There are notable landscape designations in the surrounding area which includes Hardley Flood, shown in Figure 5, an area designated as both a Ramsar Site and Site of Special Scientific Interest. In addition, a stretch of land either side of the River Chet and passing into the Broads is designated an Environmentally Sensitive Area. These designations are shown in Figure 6 on the following page.

Within the neighbourhood area, Langley Park, to the north of Chedgrave, is a large Registered Park and Garden and includes a scheduled monument to the west of Langley School. A further scheduled monument can be found at Hales Hall in the south of the neighbourhood area.

There are 95 listed buildings within the Loddon Conservation Area and 3 within the Chedgrave Conservation Area. These are shown in Figure 11.

Figure 04: Photo showing the Staithe, the start of the Broads off Bridge Street.

Figure 05: Photo of Hardley Flood taken by Evelyn Simak.



F.6 **Figure 06:** Map showing the Chet Neighbourhood Area, surrounding context and key designations.

2.2 Green and blue infrastructure

The Chet Neighbourhood Area enjoys a variety of green open spaces and walking networks which from part of the area's local character. The two major assets in the area are Langley Park, the Registered Park and Garden, to the north and the The Broads to the east. These provide large areas of parkland and natural countryside within a short distance of the built up areas.

The Broads start at the heart of the area where the parishes of Loddon and Chedgrave meet the River Chet. Walking routes into the Broads are well established while walking to Langley Park requires walking along the road on the footways provided.

The open land to the east and south of the church has been recognised by a Planning Inspector as making a positive contribution to the rural character of the area.

There are plenty of open spaces within Loddon and several within Chedgrave. These are shown in Figure 11 on page 15.

They vary in scale, style and usage though all provide a space to enjoy the outdoors, usually with greenery and vegetation included. Notable examples include Farthing Green and the Staithe in Loddon and the open area in front of the White Horse public house and the rural setting around the church in Chedgrave.

The Jubilee Hall is situated within Loddon's largest open space which includes tennis courts, football field, a skate park and a play area. Other smaller parks are scattered throughout such as the Millennium Park just north of the River Chet on Bridge Street.

The Chet Valley B-Line, a 3km wide pollinator friendly corridor, runs along the River Chet from Poringland to the River Yare. This wildflower-rich pathway is an important feature in the area.

Blue infrastructure within the Chet Neighbourhood Area comprises the River Chet and Loddon Marina. Loddon Marina lies within the The Broads and acts as a gateway between the built and natural environment. There are also significant views overlooking the marina and further along the River Chet from Bridge Street.

Figure 07: Photo showing the Staithe.

Figure 08: Photo of The Millennium Green off Bridge Street in Chedgrave.

2.2.1 Key Views

A collection of key views has been determined in the Loddon and Chedgrave Conservation Area Character Appraisal and Management Guideline published in 2016 by South Norfolk Council. These views lie within the two conservation areas and are found where gaps in the street scene allow for views towards open spaces or key amenities such as Loddon Marina or simply towards landmark features or notable architecture. These views contribute to the Chet Neighbourhood Area's local character and should be preserved and enhanced moving forward. The views are mapped on page 35 of the Loddon and Chedgrave Conservation Area Appraisal.

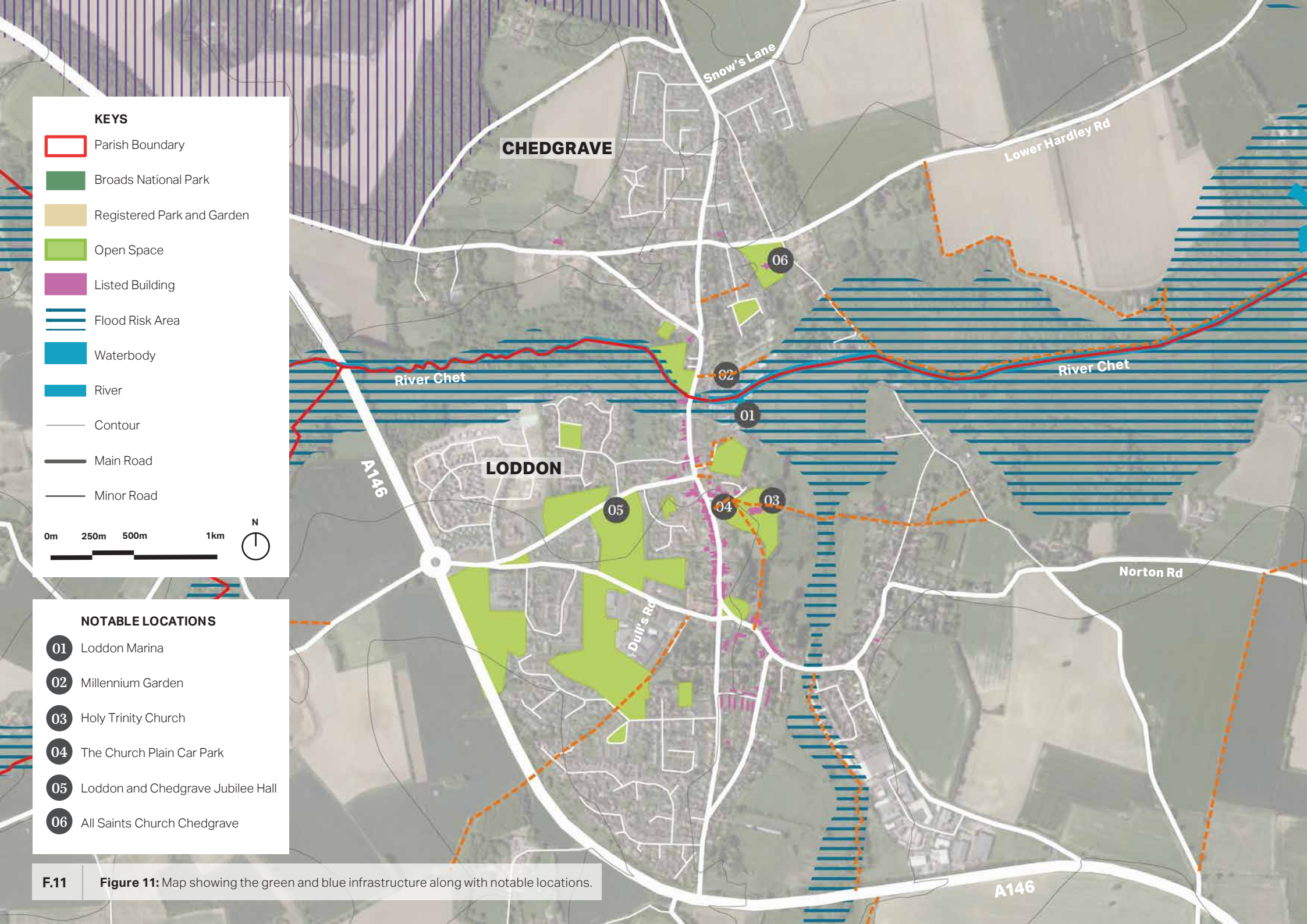
2.2.2 Topography and flood risk

Topography in the Chet Neighbourhood Area is dominated by the Chet river valley that passes in-between the two parishes of Loddon and Chedgrave. The built environment slopes down to the river on either side creating more views as you head away from the river. The incline is gentle in nature with no sharp changes in topography seen in the area. There is a further stretch of low lying land that follows the High Street in Loddon on the eastern side and joins up with the river valley to the north.

Flood risk is found in the River Chet Valley with its low-lying topography. Areas in the south east of Chedgrave contain more of a risk of flooding including the southern end of the Chedgrave Conservation Area. However there are instances of surface water flooding throughout the area as a results of storms and downpours. In recent years, these have resulted in property damage to some homes. Flood risk in the Chet Neighbourhood Area is illustrated in Figure 11.

Figure 09: Photo showing a key view over the Staithe and the River Chet.

Figure 10: Photo of a key view overlooking Farthing Green.



F.11 **Figure 11:** Map showing the green and blue infrastructure along with notable locations.

2.3 Movement

Loddon and Chedgrave have direct road connections to Norwich to the north west and Beccles to the south east via the A146. This is complemented by network of secondary roads which connect to the neighbourhood area to the surrounding towns and villages along with access to more distant parts of the Broads and coastline. The A146 passes to the south of Loddon far enough to not be a barrier to movement within the town.

The main High Street in the area passes through both Chedgrave and Loddon acting as a north-south route that connects the two parishes seamlessly. Away from the main roads are smaller tertiary roads which service the smaller residential areas seen throughout. These roads experience far less traffic and are predominantly residential streets with a mixture of parking features.

Public Rights of Way add to the existing footway network along the neighbourhood area's roads and combine to offer walking routes throughout the built environment and into the surrounding countryside. The Public Rights of Way network is not comprehensive though routes within the Broads are more established and form clear connections.

2.3.1 Street types and features

The principal streets within Loddon and Chedgrave are urban in character though there are features that provide insights into the area's rural past such as the number of open spaces in the area, especially within Loddon. The River Chet and the Broads arrive at the area's principal north south route further highlighting the rural character of the area.

Within principal streets in the area, carriageways are usually bordered by parking spaces and footways with no green verges. Quieter streets may include these green verges though with little consistency. In addition, new developments rarely include green verges and instead use front gardens as the street's 'greenery'.

Figure 12: Photo of Bridge Street in Chedgrave, part of the main north-south route between the two parishes.

Figure 13: Photo of a quiet residential street in a new development within Loddon.

2.3.2 Car Parking

The main car park in Loddon is the Church Plain Car Park in the centre of Loddon. This provides parking for visitors to the area and the church. Another car park of importance to Loddon is the Staithe Car Park further north next to the River Chet. There are also car parks in the south of Loddon which are used for commercial, industrial and employment purposes.

Residential parking in Loddon and Chedgrave is split between on-plot front and side parking, garage parking and on-street parking. Main streets in Loddon provide parking on both or either side of the carriageway. Tertiary streets tend to not provide marked parking spaces with the majority of cars being parking on-plot.

On-plot front and side parking is the most common form of parking in the neighbourhood area and while many dwellings have garages, they tend to be used for other purposes with cars parked in front of garages rather than within.

Figure 14: Photo of the Church Plain Car Park.

Figure 16: Photo on-street parking in Chedgrave.

Figure 15: Photo of on-plot side and garage parking in Loddon.

Figure 17: Photo of on-plot front parking in Loddon.

Figure 18: Photo of typical parallel parking on the High Street outside a residential dwelling.

Figure 19:
Photo of electric charging stations at the Church Plain Car Park.

Figure 20: Photo of Hardley Road, a main road connecting Chedgrave with the surrounding area, with no marked parking provision.

Character study

03

3. Character study

This section shows the character analysis of the Chet Neighbourhood Area divided into six distinct areas identified during a site visit.

These character areas are distinguished by their general style and period of development, as well as details such as layout, street types and architectural features.

This character study will help to ensure that development within these areas conforms to the local character. This chapter will inform the design codes in chapter 4.

3.1 Character area overview

Loddon and Chedgrave have grown to form a connected settlement with a lively centre with shops and other amenities lining the main shopping street. However, the area is rural in nature and both Loddon and Chedgrave share characteristics that express this more natural character. Recent developments have expanded the built-up area, though most have sought to utilise natural features such as street trees, verges and green spaces in order to provide a rural character.

The following section identifies key characteristics of six areas, four in Loddon and two in Chedgrave that offer a distinct general style to be studied. Two comprise the existing conservation areas in each parish, one involves the existing and proposed employment centre in Loddon, a further two are formed within Loddon owing to their age of development and the final area comprises other development in Chedgrave that lies outside the conservation area. This character area is the most varied with housing from different periods.

LODDON

1 Loddon Conservation Area

2 20th Century development

3 21st century development

4 Employment

CHEDGRAVE

5 Chedgrave Conservation Area

6 Other development

F.21 **Figure 21:** Map showing the green and blue infrastructure along with notable locations.

1

3.2 Loddon Conservation Area

Introduction

The Loddon Conservation Area was originally designated in 1975 and contains 95 listed buildings. It includes the historic core around Church Plain that provides rich architectural features and offer a glimpse into the parishes historic past.

Figure 22: Map showing location of the Loddon Conservation Area.

Figure 23: Example of a continuous frontage on Bridge Street.

Layout

Development within the Conservation Area has a linear format centred around the main north-south route that passes between the parishes. On this high street, a mix of retail and shops line either side of the street sometimes forming a continuous frontage though more commonly with gaps interspersed throughout. Historically, Loddon has been a market town with a market square at Church Plain and this forms the heart of the area.

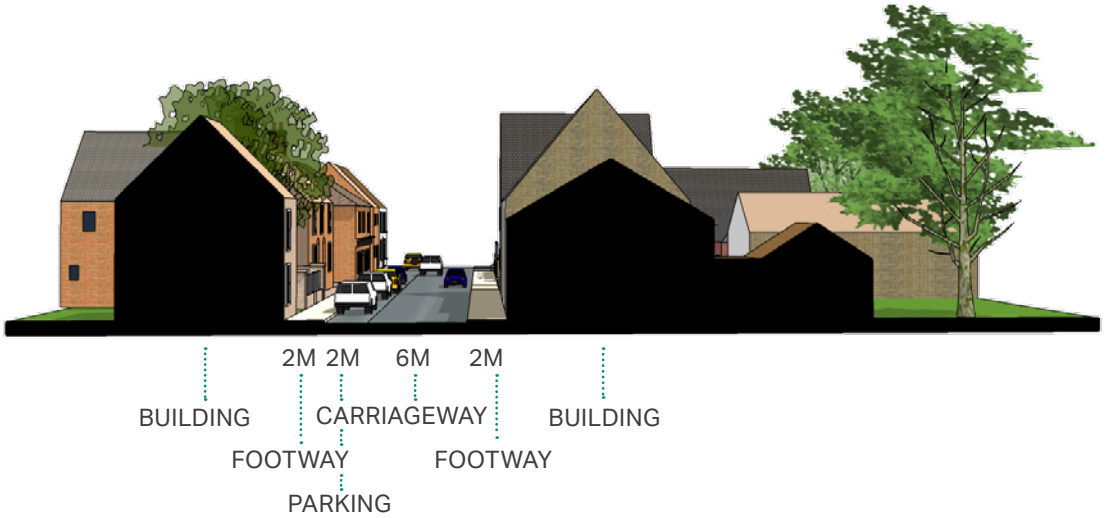
Heights

Heights in the area are predominantly two storey with some occasional attic storeys with dormer windows or third storey, with a higher density on the main shopping street and heights between one and two storeys in residential areas. Owing to the compact form seen on the high street, rooflines are largely consistent with quieter streets offering lower heights, less consistency and less density.

Figure 24: Example of a 2 storey building on the High Street forming part of a consistent roofline.

Streets

The main shopping street provides a lively atmosphere though the pressure of space can be felt where the street lacks suitable footways and parking is limited. The historic layout of the conservation area does not cater to the private vehicle with buildings sat close to the carriageway. Residential streets offer more space and a more rural character with street trees, vegetation and some verges offering a more natural setting.



F.25

Figure 25: Illustrated cross section showing a typical street scene on the High Street in Loddon.

Buildings

Buildings have impressive architectural features in this area owing to the parish's history. In addition to the style and materials used, features such as decorative gables, flint walls, Jacobean style detailing and Victorian Gothic style doors and windows. Features date back to a variety of periods though a significant portion of buildings are in a Victorian style. Where seating is placed on the street.

F.26

Figure 26: Photo of the Mill, now used for both residential and commercial purposes, with an off white rendered facade adjacent to white-washed weatherboarding.

F.27

Figure 27: Example of red brick buildings in Loddon, typical to the area.

2

3.3 20th Century development

Introduction

The 20th century development character area includes development built in the last century which has a mix of styles though similarities with regard to street layout and building types. The area is largely residential with development formed along tertiary streets. The character is less historical than the conservation area and many parts retain a rural feel.

Figure 28: Map showing the location of the 20th century character area.

Figure 29: Map highlighting a tertiary road network with cul-de-sacs.

Layout

This area is the result of the expansion of the town, building away from the historic core. As such, small tertiary streets and cul-de-sacs connect to larger main roads and these create quiet neighbourhoods with a dispersed form and low densities. The layout and style of development has been significantly influenced by Taylor and Green, award-winning architects, who have provided exemplary housing in Loddon and Chedgrave.

Heights

Heights in this area are predominantly 1-2 storeys with bungalows mixed in with 2 storey dwellings. As architectural styles varied greatly throughout the last century, streets have a varied roofline especially with the many extensions to dwellings considered.

Figure 30: Photo showing 2 storey dwellings in a 20th century housing development in Loddon.

Streets

Streets tend to gently meander in this area which provides visual interest when passing along the street. Generally, roads have a 5-6 metre carriageway with footways on either side of the road. This is either accompanied by a verge on one side or directly by front gardens. Plots have a mixture of open and closed boundary treatments depending on the period of development. Older dwellings tend to have closed property boundaries whilst more recent development favours open grass lawns.

Buildings

There is a collection of styles in this area though the scale and massing of buildings is largely consistent. Buildings are no larger than 2 storeys and many share the typical materials in the area which include clay pantile roofs and red brick or rendered facades. Architects Tayler and Green designed hundreds of homes in and around Loddon between 1945 and 1973, often in distinctive textured terraces of 2 storey houses and bungalows.

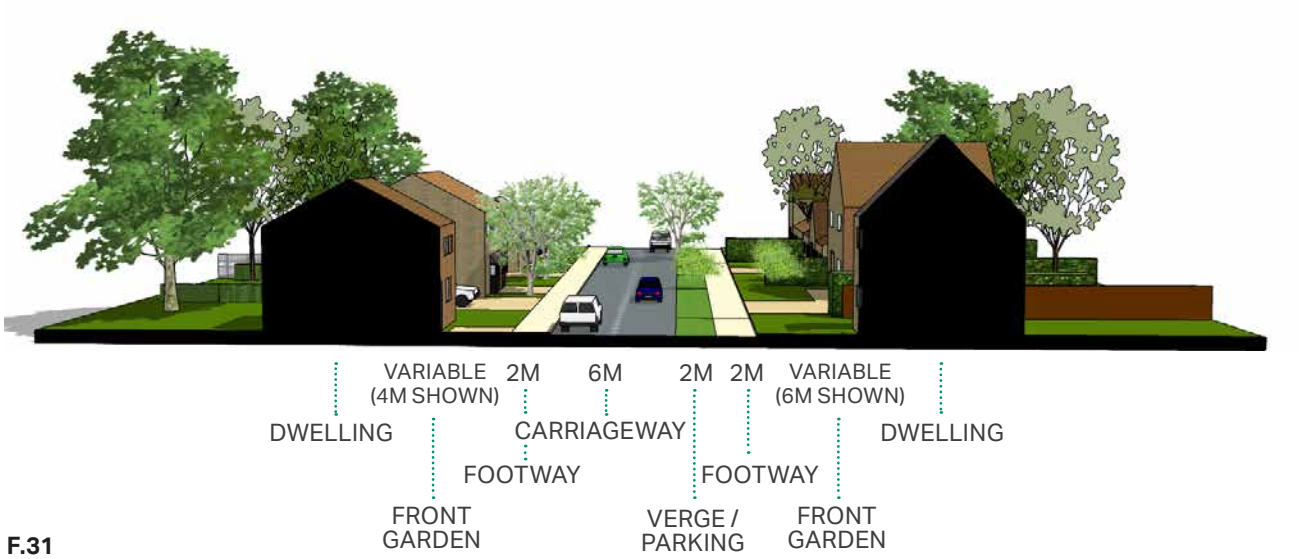


Figure 31: Example of a cross section on Canell Road with dwellings sat back behind front gardens. Parking is marked out but has an informal appearance.

Figure 32: 2 storey terraced housing designed by Tayler and Green.

Figure 33: Photo of a bungalow with an open front garden, pale red brick facade and black clay pantiles.

3

3.4 21st century development

Introduction

The 21st century development comprises recent housing developments which usually have a distinctive style such as the St George Estate. The area is residential in nature with dwellings formed on quiet streets. Similarities in layout are shared with the 20th century development though dwellings in some of the more recent developments are larger in scale.

Figure 34: Map showing the location of the 21st century character area.

Figure 35: Map illustrating the layout of St Georges Park development and the ability for cars to circle through the area.

Layout

Streets tend to be curved in this area though effort has been made to reduce the number of cul-de-sacs and provide more through roads than in the 20th century development. This allows for better traffic flow. There are more large open spaces in the previous character area, though pockets of greenery and open space are provided along the street scene in 21st century development.

Heights

Heights are between 1 and 2 storeys and are largely consistent within the different housing developments. Developments tend to maintain building heights and rooflines in this character area with less variation compared with other character area. This is due to the large-scale development resulting in the same construction methods and materials used.

Figure 36: Photo of a 2 storey dwelling in a more recent housing development.

Streets

Streets have 5-6m carriageways bordered by footways on either side. Some verges may appear, but the larger housing developments tend to not include verge and instead rely on the greenery of the open front gardens to provide a natural element. Recent developments provide a more spacious layout with a dispersed form. However, front gardens tend to be shallow which contrasts with the more rural parts of the Chet Neighbourhood Area.

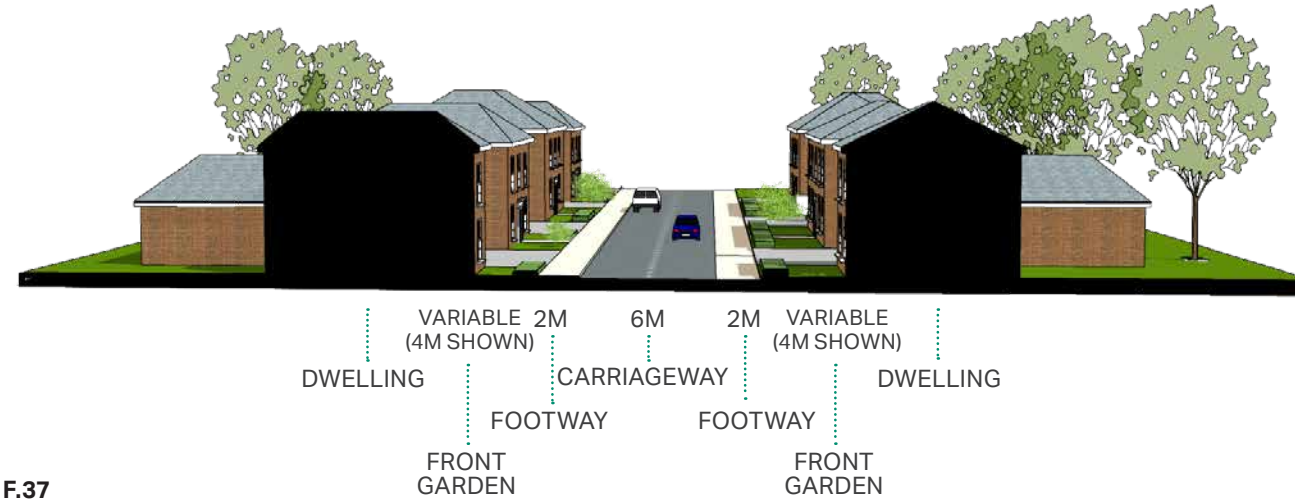


Figure 37: Illustrated example of a street section in St Georges Park with dwellings on both sides of the street.

Buildings

Buildings are designed with modern urban design principles and effort has been made to provide sizable plots with on-plot car parking and large back gardens. Buildings tend to be among the largest in the Chet Neighbourhood Area and streets contain dwellings with the same architectural style and colour palette. This can place less visual interest on the street scene though the uniformity of development can also bring its own charm.

Figure 38: Photo of an open space provided in the new St Georges Park development.

Figure 39: Photo of Kingfisher Walk, a successful cycle path connecting different streets within a new development.

4

3.5 Employment

Introduction

The employment character is located to the south of the Loddon and includes an area of established employment spaces with a variety of professions. It also includes the adjacent plots touted for future development with the same land use function. This area is more dispersed though with larger buildings plots and densities. The historic character of the conservation areas are not replicated here with the layout and style mostly functional.

Figure 40: Map showing the location of the employment character area.

Figure 41: Image showing the layout of the employment park in the south of Loddon.

Layout

The employment area is formed along Little Money Road that forms an arc off Beccles Road and rejoins further along. This allows for through traffic which is important for local business on this street. Plots are spacious with large warehouses needed in order for some businesses to function. Surrounding wooded areas provide a natural backdrop to parts of this area which alleviates some of the urban character the business park creates.

Heights

Although buildings are large and wide in this area, they tend to remain within 2 storeys. This is partly down to the need to work at ground level for some businesses especially garages working on automobiles. Roofs tend to be low-pitched gabled roofs and openings tend to be large to accommodate the trucks and lorries that service the businesses in the area.

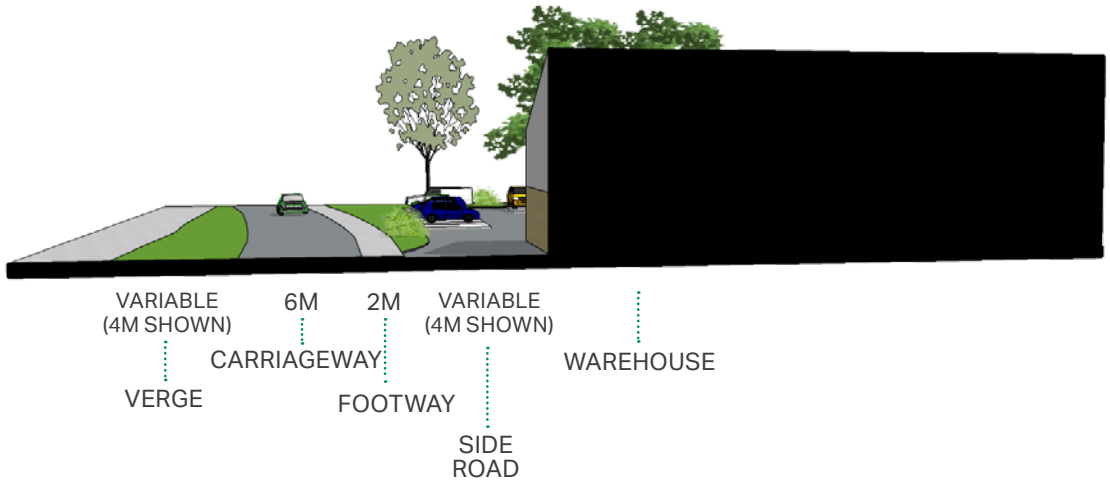
Figure 42: A 2 storey building in the employment character area.

Streets

Streets tend to have a 6 metre carriageway with a at least one footway on one side of the road. Green verges are a common feature and act to provide greenery in what is otherwise an urban setting. There are some street trees with distant trees in neighbouring areas a more common sight along the street scene. There is a lack of public green space with no provision of outdoor space for workers in the area. More green and open spaces should be encouraged to develop 'community', which may be good for sharing ideas, developing professional relationships, and to improve the environment.

Buildings

Buildings are large in scale though remain up to 2 storeys. A significant portion of buildings are made with red brick and sometimes accompanied by either white render or metal cladding. The red brick facades form the connection between this area and the architectural styles of other character areas.



F.43

Figure 43: Illustrated example of a street section in the employment character area.

F.44

Figure 44: Photo of a building with a red brick facade and metal cladding.

F.45

Figure 45: Photo of adjacent open space which highlights the employment area's natural setting.

5

3.6 Chedgrave Conservation Area

Introduction

The Chedgrave Conservation Area centres around the Church of All Saints and rural streets in the neighbouring area. The area has a distinct character with more open space and a natural setting. This is in contrast to the more urban areas in the rest of Chedgrave. The topography in this area provides views from the Church over a valley and marshland to the east.

Figure 46: Image showing the location of the Chedgrave Conservation Area.

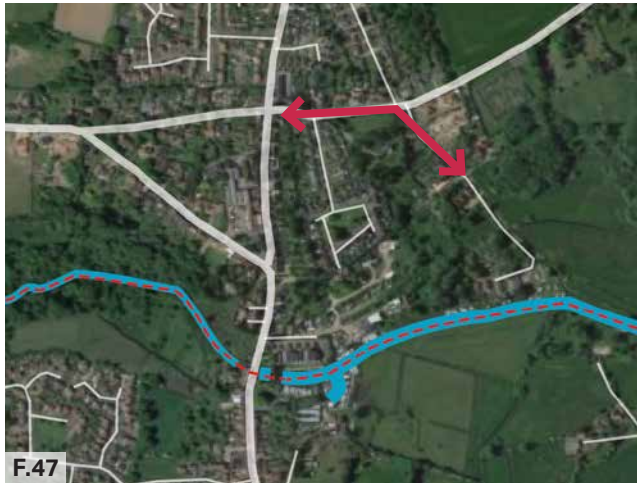


Figure 47: Map showing the street layout of the Chedgrave Conservation Area.

Layout

The conservation area comprises part of both Hardley Road and Pitts Lane. The streets have a gentle curve contrasting with the straight Church Close nearby. The area is among the most rural in the Chet Neighbourhood Area with plenty of open space and countryside lining sides of the streets. There is also a greater presence of trees further contributing the area's rural character.

Heights

Heights are predominantly 1 to 2 storeys with the exception of the Church of All Saints. Rooflines are not consistent owing to the dispersed plots and gaps along the streets. Single storey dwellings are prevalent in this area.

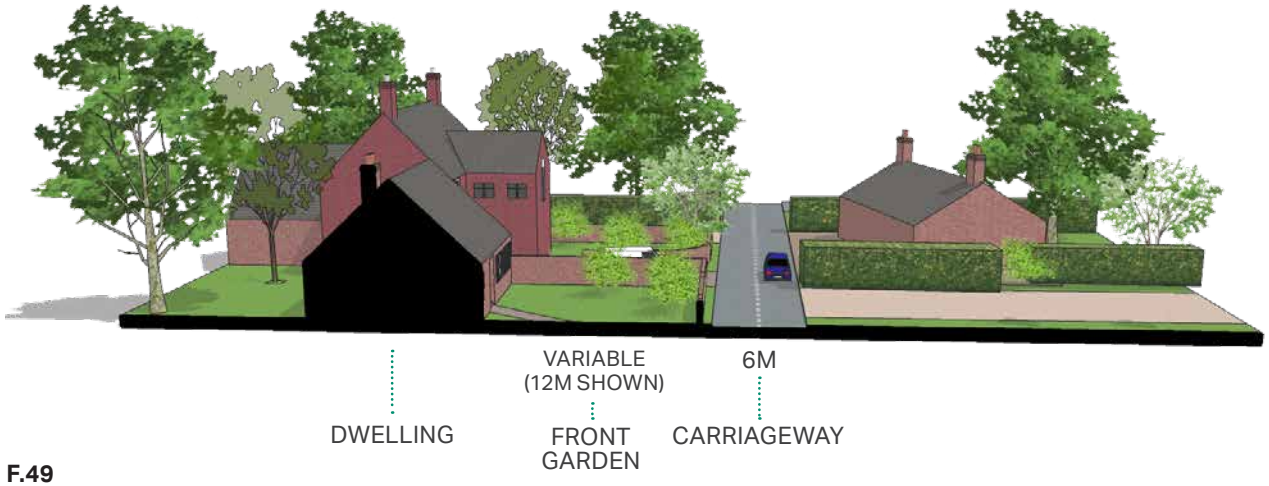
Figure 48: Photo of the All Saints Church in Chedgrave. Photo by Evelyn Simak sourced from Geograph.

Streets

Streets tend to not provide footpaths for residents with a single carriageway bordered by either green verges or straight into front gardens. The area is rural in nature and natural vegetation and trees form a major part of the rural aesthetic.

Buildings

Buildings have a strong character largely comprising red brick facades, clay pantile roofs and brown architectural detailing. In addition, the use of different building heights within a plot provide variation to dwellings and stronger visual interest. There is a mix of sizes with regards to front garden with some dwellings sat well back from the road behind 15 metres of front garden with others sat almost directly onto the street.



F.49

Figure 49: Illustrated street section depicting Pits Lane within the Chedgrave Conservation Area

F.50

Figure 50: Photo of a single storey dwelling with a red brick facade and clay pantile roof.

F.51

Figure 51: Photo of the surrounding countryside the Conservation Area overlooks to the east. Photo by Evelyn Simak sourced from Geograph.

6

3.7 Other development

Introduction

This character area includes all development in Chedgrave that falls outside the conservation area. There is a mix of styles though some materials such as red brick and clay pantile roofs are common features and ubiquitous in the Chet Neighbourhood Area. There are local amenities, including the employment area, though residents are still dependent on the High Street in Loddon.

Figure 52: Image showing the location of the other development character area in Chedgrave.

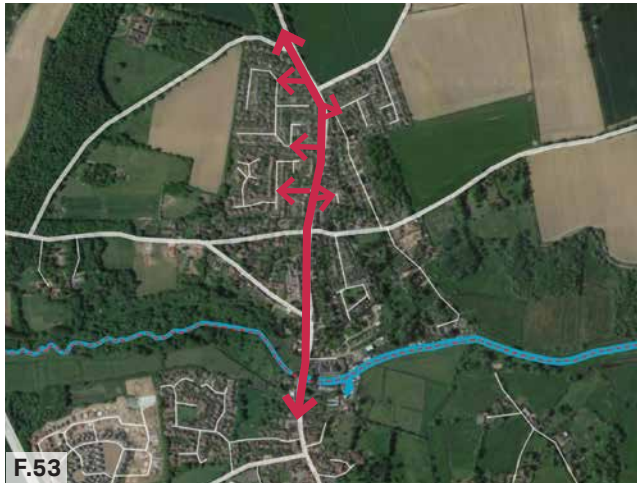


Figure 53: Map Highlighting Langley Road and its offshoots in Chedgrave.

Layout

The north-south route running over the River Chet and into Loddon forms the main road in the area with tertiary streets and cul-de-sacs branching off to form quiet residential streets. Norwich Road is an important traffic axis, running to the northwest. It takes traffic towards the A146, whereas the Langley Road serves more rural destinations. Some streets contain mostly bungalows while others provide a mix of building heights up to 2 storeys.

Heights

Buildings within this area comprise 1-2 storeys and generally form a consistent roofline. Some streets provide a mix of heights though it is more common for streets to share a dominant building height. Though part of Langley Road contains shop fronts, this road is still predominantly residential with the same heights and density as other quiet streets on the outskirts of the area. The employment area has buildings of 3 storeys.

Figure 54: Photo of a 2 storey dwelling in Chedgrave.

Streets

Streets are varied in this area owing to the collection of housing developments from different periods. Langley Road, the main north-south route, has raised green verges on one side which provide a rural character. Other more recent developments do not include verges though open front gardens act as the street's greenery.

Buildings

Building styles vary though red brick, pale brown brick, coloured render and brown weatherboarding are common facade materials. The vast majority of roofs are pantile in either red or black and the roofs can be either steep pitched or low pitched depending on the road. Older development in the area provides more generous front gardens with recent housing schemes opting to have dwellings sitting close to the carriageway.

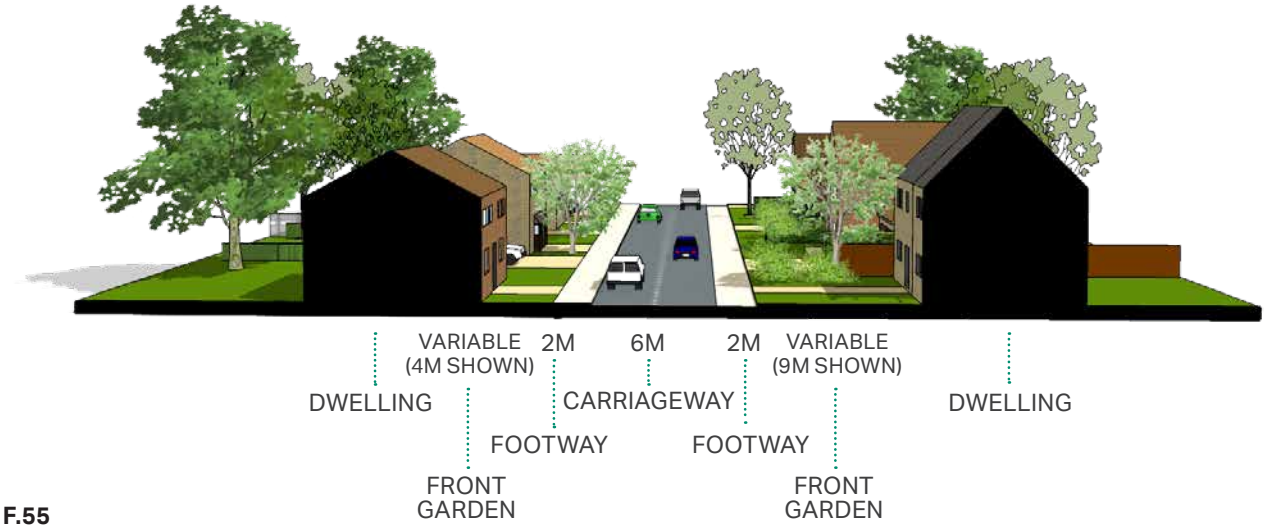


Figure 55: Illustration of a street section of Moor Park Drive within the Viking Estate.

Figure 56: Photo of a dwelling in Chedgrave with green and blue detailing and a stylish front garden.

Figure 57: Photo of private green space outside the White Horse Public House, opposite Cannells.

Design Guidelines

04

4. Design guidelines introduction

This section sets out the principles that will influence the design of potential new development and inform the retrofit of existing properties in the Chet Neighbourhood Area.

Where possible, local images are used to exemplify the design guidelines and codes. Where these images are not available, best practice examples from elsewhere are used.

4.1 Introduction

The following section describes a set of design codes that have been put together based on the existing context of Loddon and Chedgrave.

These codes will aim to guide any changes or development within the Neighbourhood Area to ensure the local character is respected whilst still allowing space for innovation within the built environment.

The design codes have been split into four categories. The first three sections are relevant to the whole Neighbourhood Area while the final section introduces design codes by character area and as such, codes in this section may not be applicable to the whole of Chet Neighbourhood Area. More detail about this structure is provided in section 4.1.3.

4.1.1 The importance of good design

As the NPPF (paragraph 126) notes, "good design is a key aspect of sustainable development, creates better places in which to live and work and helps make development acceptable to communities".

Research, such as for the Government's Commission for Architecture and the Built Environment (now part of the Design Council) has shown that good design of buildings and places can:

- Improve health and well-being
- Increase civic pride and cultural activity
- Reduce crime and anti-social behaviour
- Reduce pollution.

This document and the following design codes seek to harness an understanding of how good design can make future development as endearingly popular as the best of what has gone before.

4.1.2 Placemaking and design codes

These design codes are underpinned by a set of placemaking principles that should influence the design of future development areas, public realms, homes and green spaces, and the interfaces between them.

What designers and planners call 'placemaking' is about creating the physical conditions that residents and users find attractive and safe, with good levels of social interaction and layouts that are easily understood.

The placemaking principles set out in the following pages should be used to assess the design quality of future development or regeneration proposals. These key principles should be considered in all cases of future development as they reflect positive place-making and draw on the principles set out in many national urban design best practice documents including the National Design Guide, Building for a Healthy Life and the Urban Design Compendium.

The guidelines developed in this part focus on residential environments. However, new housing development should not be viewed in isolation, but considerations of design and layout must be informed by the wider context.

The local pattern of lanes and spaces, building traditions, materials and the natural environment should all help to determine the character and identity of a development.

It is important with any proposal that full account is taken of the local context and that the new design embodies the 'sense of place'.

Contemporary new design may be suitable but care should be taken that the designs are still considered contextually harmonious with the surrounding character of the area in terms of scale, form and materials.

4.1.3 Structure of the design codes

Based on the understanding gained in the previous chapters, this section will identify design codes for future development to adhere to. The following design codes have been created to apply to the whole Neighbourhood Area save for the last code which is split into the character areas analysed in chapter 3:

- **4.2:** Street typologies and car parking
- **4.3:** Built form general rules
- **4.4**: Energy and environment
- **4.5:** Character area codes

Within the six character areas, some codes may relate or mirror that of other areas though the policies are generally specific to the area to which they are assigned.

4.2 Street typologies and car parking

The following pages set out guidance to consider when developing both existing and new development within the Chet Neighbourhood Area. They are generic design codes that apply to all areas of the village and are not specific to one character area.

The following street typologies are general guidance for new development and should be read alongside appropriate regional and national guidance along with referring to more specific street codes set out in the character area codes later in the report.

The three street typologies include the main access street, the general street and the edge lane.

Main access street

The main access street within Loddon and Chedgrave is the north south High Street. The main traffic axis splits into two flows in Chedgrave – Langley Road (continues to north and rural settings) and Norwich Road (branched off to the west towards the A146 and Norwich. The recent provision of the roundabout near the St George's Estate is likely to have increased traffic flow along George Lane and perhaps Kittens Lane. This street provides the principal connection between most of the Chet Neighbourhood area whilst connecting to surrounding towns and highways.

A main access street should have a design that caters to different modes of transport and provide for the needs of the residents and businesses on the street. New development within Loddon and Chedgrave may seek to provide a main access street to link to the rest of the Chet Neighbourhood area and guidance is provided on the following page.

General Street

General streets are the secondary streets that connect the smaller neighbourhoods within the parishes together. It is noted that some general streets may become more like main access streets. They are mostly residential in nature with dwellings on both sides. Footways, verges, trees and landscaping are common on general streets though this is dependent on the age of the street and the style chosen. General guidance is provided in the following page with specific guidance for character areas given in section 4.5.

Edge Lane

Edge lanes are quiet residential roads that act as a transition between the built-up area and the surrounding countryside. Edges lanes tend to be more rural in nature and help to preserve Loddon and Chedgrave's rural character. Verges are an important feature within all streets in the Chet Neighbourhood Area and form a significant feature within edge lanes.

4.2.1 Main access street

This street type provides the main access for new development and connects it to the rest of the village. It will carry most of the access traffic, entering into Loddon and Chedgrave and connecting any new development with the existing built up area. The desired design features for this street type are:

- A low speed limit with signage informing drivers of speed restrictions.
- Provide front gardens and street planting to contribute to the 'rural' character of the area.
- Where possible, locate parking to the side of properties and consider using garages to mitigate the impact of cars on the streetscape.
- Green verges and street trees should be integrated in the design, where possible, to create attractive neighbourhoods and provide shade to pedestrians and cyclists.
- New developments should use verges to look 'green' and provide spaces that contribute to the area's biodiversity.
- Cycle lanes can be adapted by creating a combined and segregated pedestrian and cycle route and are strongly encouraged in new development.

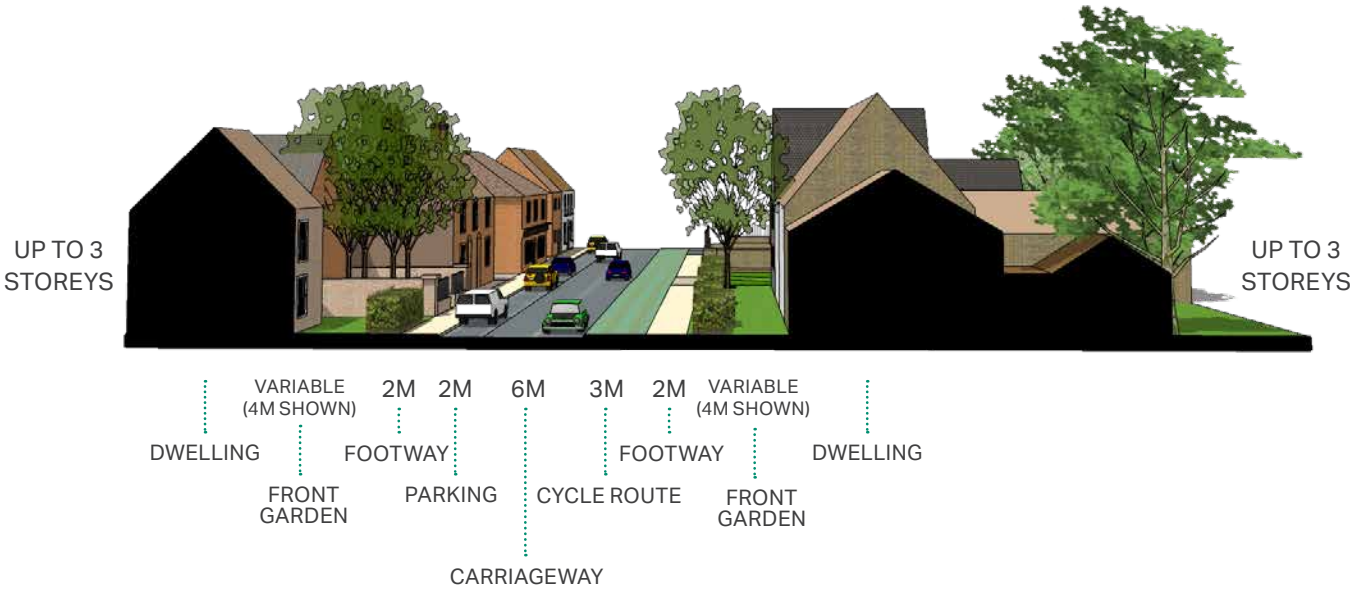


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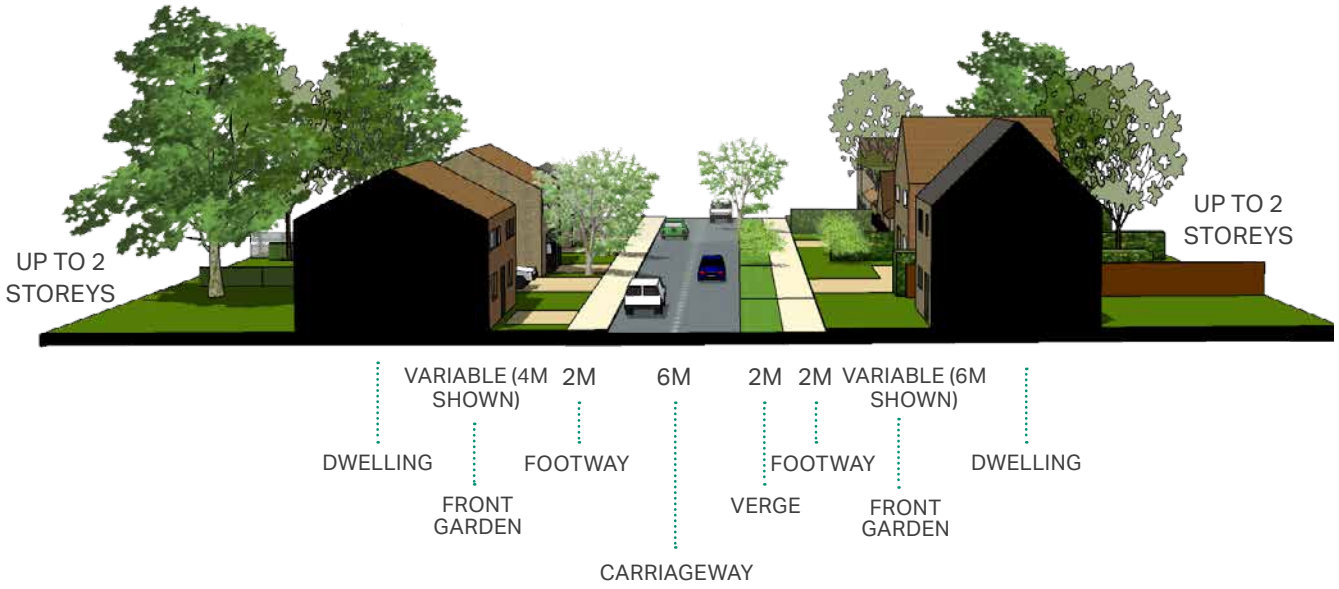
Figure 58: Diagram of a conceptual main access street with a footway and cycle route to promote active travel.

4.2.2 General street

The general street type is the prevalent street across new development. The desired design features for this street type are:

- Where applicable and practical, these streets should be designed to have low traffic volumes and low speed and include design elements for traffic calming e.g. minimising the corner kerb radius, raised tables, horizontal deflection, and the like.
- Carriageways should accommodate two-way traffic and parking bays should be designed for cyclists to mix safely with motor vehicles.
- Front gardens should be well planted to create an attractive environment.
- Preferably, locate parking to the side of the property to mitigate the impact of cars on the streetscape.
- If cars are parked at the front, part of the frontage should be landscaped and with a property boundary treatment.
- If terraced dwellings are used, front parking courts are acceptable as long as car groupings are broken up (max 6 cars), and there is a high quality material and landscape treatment.
- If street trees are not possible, front gardens should be deep enough to host trees.



F.59

Figure 59: Illustrated street section of a general street that can be considered in new development.

4.2.3 Edge lane

This street type is used at the edges of development, where the village meets the countryside or woodland areas and a positive transition is required. The desired design features for this street type are:

- Design speeds should be the lowest in the area, to create a quieter environment.
- These lanes can gently meander, softening the presence of the street, providing interest and evolving views whilst helping with orientation.
- Circulation is usually in the form of a shared lane between 6 and 8m hosting all modes of transport (i.e. pedestrian, cycling and motor vehicles) sometimes with no footways.
- Providing a planting buffer and landscaping between the edge of the carriageway and the countryside in order to: protect countryside areas, provide transition and control pedestrian accessibility where required. The use of hedgerows where edge lanes face onto agricultural land is particularly encouraged. Ideally, such hedgerows would be mixed and composed of old native species.
- Connect the edge lane to paths and other public rights of way and the general movement network.
- The lane width can vary to discourage speeding and introduce a more informal and intimate character. Variations in paving materials and textures are used instead of kerbs or road markings.
- Swales and rain gardens could also be added into the landscaping to address any flood issues.

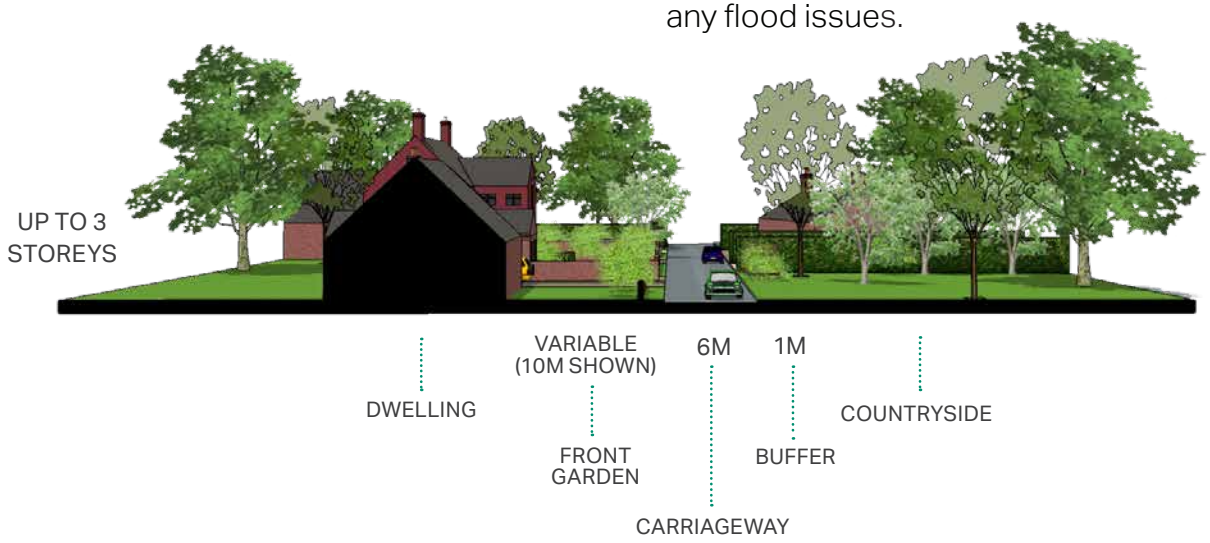


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Figure 60: Diagram of a suitable edge lane used at the edge of the built-up areas to act as a transition into the countryside.

4.2.4 Active travel

Increasing the number of residents walking and cycling around the Chet Neighbourhood Area is an important part of improving health and the quality of their experience. With the abundance of open spaces, large and small in the area, active travel should be encouraged.

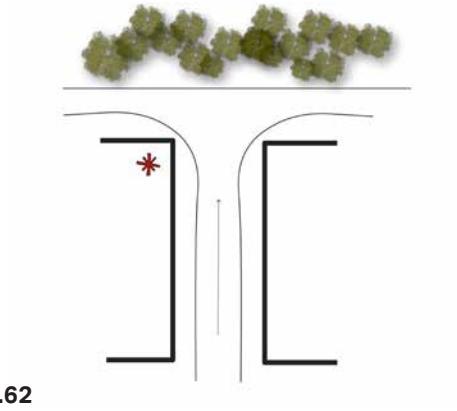
- Where there is a choice, new development in Loddon and Chedgrave should be selected where they would generate the least amount of car movements and be within a comfortable distance of local services. This will help to promote active travel, an important feature in 'livable' neighbourhoods.
- New development should ensure that pedestrian and cycle routes are incorporated into new designs ensuring that the option to travel on foot or by bike is incentivised.
- These routes should link to key services and other existing routes to form a network of walkable areas.
- Users of public and private space are varied and include disabled users, parents/carers with buggies and young children. It is important for these users to be catered for when designing new development.
- Walking routes along a roadway should provide safety from vehicles on the road. This requires a footway, grass verge or pavement that is wide enough to ensure pedestrians do not conflict with vehicles.
- In addition, walking routes should not pass through hazardous areas such as fields with large animals, dykes, ditches or areas of flooding.

Figure 61: Photo of a cyclist heading to a local supermarket in Loddon.

4.2.5 Legibility and wayfinding

A legible and well signposted neighbourhood area is easier for the public to understand as people can orientate themselves with visual landmarks and direct routes. Being able to navigate around a place makes people feel safer and creates a more pleasant living environment. While there are existing signposts and public maps to help with wayfinding, further measures can be incorporated:

- Use opportunities such as corners and junctions to incorporate landmark buildings, gateways and focal points so that each part of the development is visually distinct and recognisable;
- These gateways and nodes should incorporate distinctive and characterful architectural elements which nod to Loddon and Chedgrave's diversity of built heritage;
- New developments should closely consider their relationship with each of the designated character areas and foster a contiguous sense of place for each respective character area;
- Signs should avoid cluttering the public spaces and can be an opportunity for attractive and distinct features which complement the neighbouring properties rather than detract from the visual scene; and
- Street and development names should seek to reflect relevant local history.

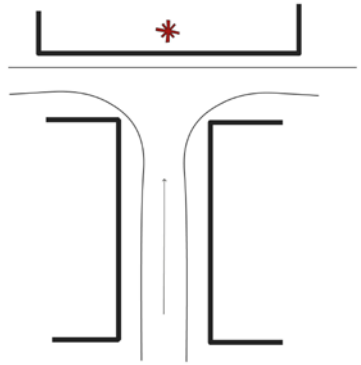


F.62

Figure 62: A view terminating at a wooded area with a landmark building located on the left

F.63

Figure 63: Photo of a sign in Loddon indicating walking times to nearby destinations.



F.64

Figure 64: A landmark building located at the termination of the view.

4.2.6 Sustainable drainage in streets

Sustainable urban drainage systems (SuDs) are key tools to manage both water quantity and quality within the Chet Neighbourhood Area while supporting biodiversity.

SuDs cover a range of approaches to managing surface water in a more sustainable way, reducing flood risk and improving water quality as well as providing additional amenity benefits.

Where reuse of water is not possible there are two alternative approaches to using SuDS.

The first is infiltration which allows water to percolate into the ground and eventually restore groundwater.

The second is attenuation and controlled release. This holds back the water and slowly releases it into the sewer network. The overall volume entering the sewer system is the same, however the peak flow is reduced which reduces the risk of the sewers overflowing. Attenuation and controlled release options are suitable when either infiltration is not possible or where infiltration could be polluting.

The most effective SuDS are site-specific and are integrated at the beginning of the design process. They are also well maintained ensuring that the system remains functional throughout the year. This has been an issue with standard drains in Loddon and Chedgrave where root growth has resulted in blockages. Maintenance can alleviate issues within the system.

Another issue in the area is heavy rainfall leading to surface water flooding. New developments should be constructed to minimise run-off and, ideally, collect and use rainwater.


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Figure 65: Example of sustainable drainage along footpath within parkland.


F.66

Figure 66: Example of SuDs incorporated into a back garden design.

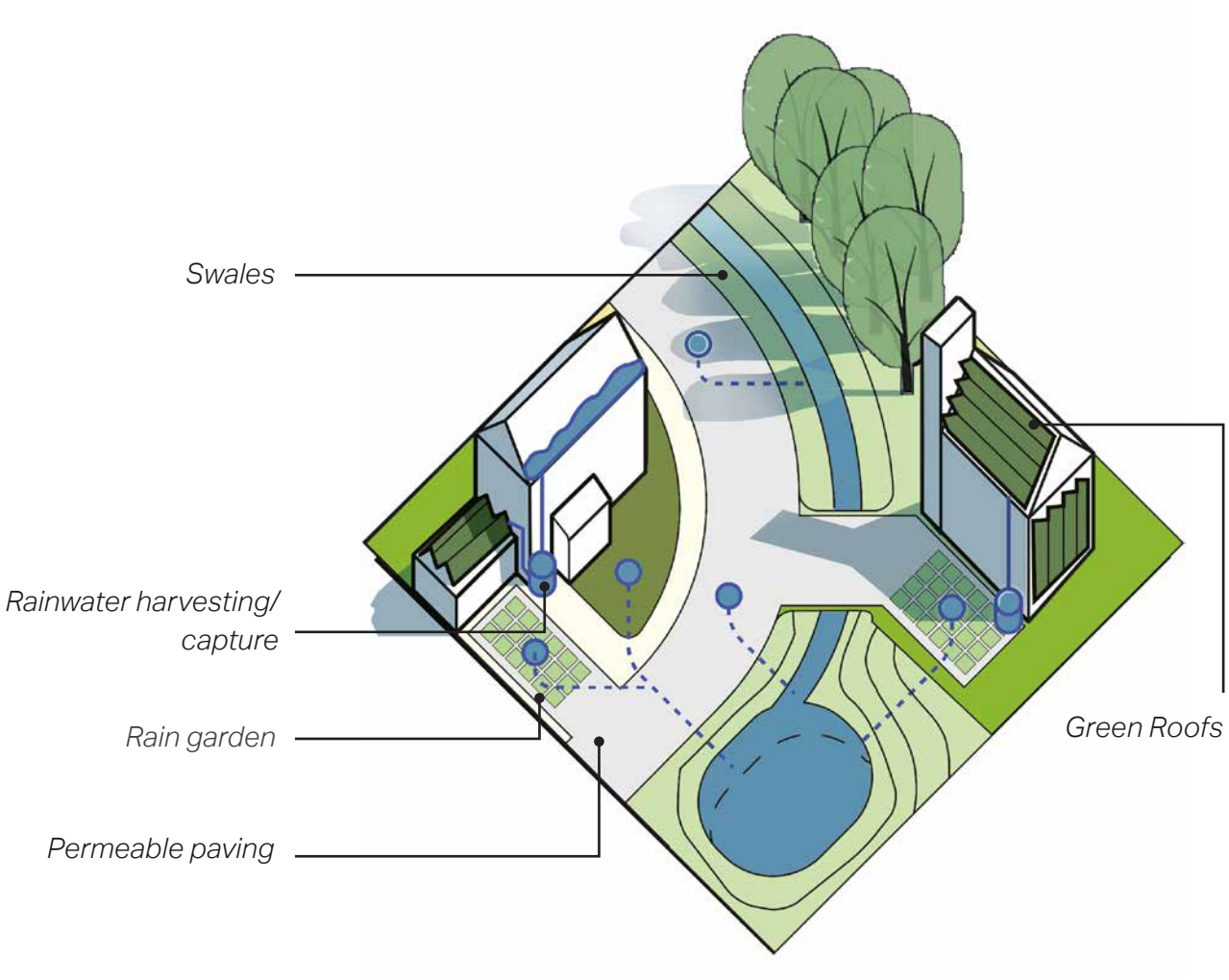

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Figure 67: Illustrative diagram of sustainable urban drainage systems in a residential neighbourhood.

F.68

Figure 68: Example of sustainable drainage incorporated into the street scene.

F.69

Figure 69: Example of sustainable drainage incorporated into a housing development.

4.2.7 Car parking

Car parking areas should make a positive contribution to the design and setting of Loddon and Chedgrave.

A good mix of parking typologies should be deployed, depending on, and influenced by; location, topography and market demand.

The main types to be considered are shown on this page and the next.

- For family homes, cars should be placed at the front or side of the property. For small pockets of housing a front or rear court is acceptable.
- Car parking design should be combined with landscaping to minimise the presence of vehicles.
- Parking areas and driveways should be designed to minimise impervious surfaces, for example through the use of permeable paving.
- When placing parking at the front, the area should be designed to minimise visual impact and to blend in with the existing streetscape and materials. The aim is to keep a sense of enclosure and to break the potential of a continuous area of car parking in front of the dwellings by means of walls, hedging, planting, and use of differentiated quality paving materials.
- Strips of end on frontage parking should be avoided.
- Parking should also be easily accessible to houses.

Figure 70: Examples of on-plot garage and side parking in Loddon.

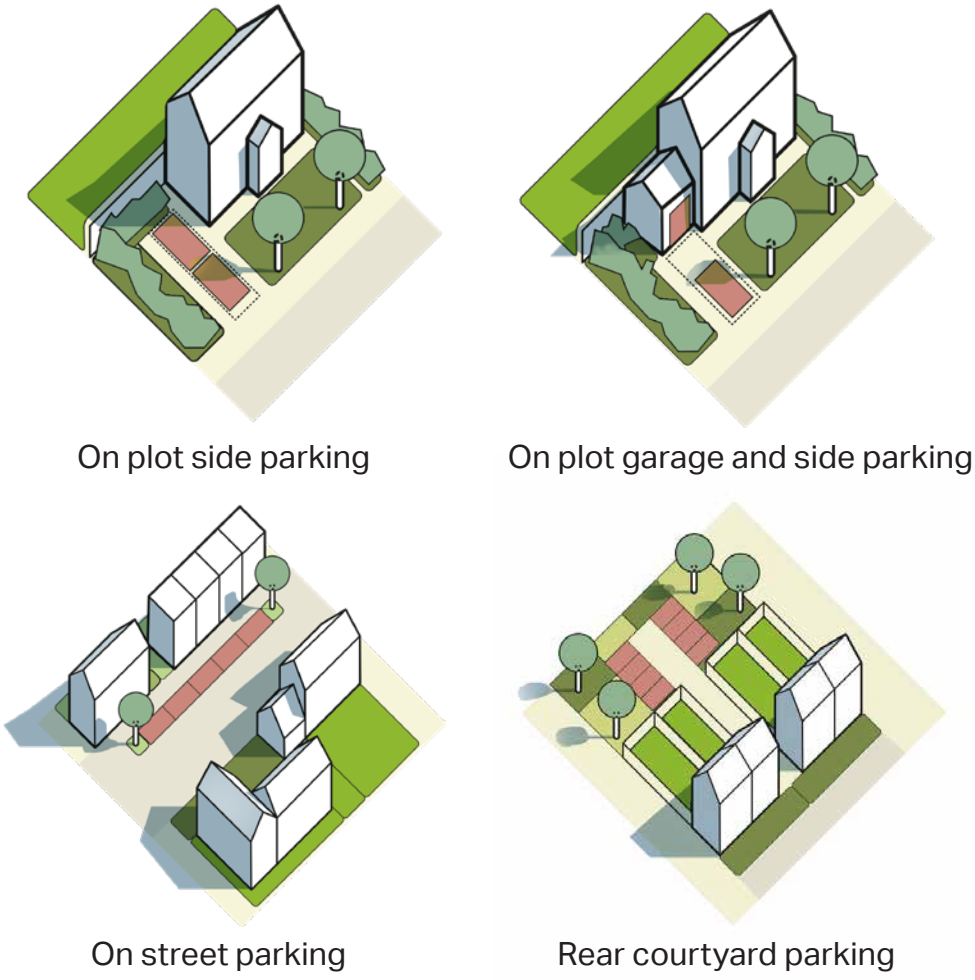
On plot side or front parking

On-plot parking can be visually attractive when it is combined with high quality and well designed soft landscaping. Front garden depth from the pavement should be sufficient for a large family car.

Boundary treatment is the key element to help avoid a car-dominated character. This can be achieved by using elements such as hedges, trees, flower beds, low walls, and high quality paving materials between the private and public space.

Driveways should be constructed from porous materials to minimise surface water run-off and flooding therefore on-plot parking should consist of permeable spaces.

Any rear parking courtyards should be small, overlooked and not be at the expense of rear gardens.



F.71
Figure 71: Illustrative diagrams showing parking typologies.

4.2.8 Electric vehicle charging points

In general, new development should cater for electric vehicles (EV) with on-road and off-road car parking spaces.

Within the Church Plain Car Park there are currently electric charging stations that provide parking space where electric vehicles can charge whilst parked. This can be replicated where new car parks are needed in the area.

Away from the centre of the neighbourhood area, most new EV charging points will be delivered in new and existing dwellings off-road and within private plots.

On-road car parking

Car charging points should be provided next to public open spaces.

Where charging points are located on the footpath, a clear footway width of 1.5m is required next to the charging point, for a wheelchair user and a pedestrian to pass side-by-side.

Charging points should be located in a way that are not blocked by petrol or diesel vehicles.

Off-road car parking

Mounted charging points and associated services should be integrated into the design of new developments

Cluttered elevations, especially main facades and front elevations, should be avoided.

Consideration should be given to how new EV charging points would impact the existing character of dwellings and effort be made to reduce this impact.

Figure 72: Photo of electric charging spaces at the Church Plain Car Park.

Figure 73: Example of off-road mounted car charging points.

4.3 Built form general rules

The following section outlines principles that should be considered by applicants when creating new development or infilling within the Chet Neighbourhood Area. Some of the following guidance is directed at development on existing plots such as extensions though many can be applied to both new and existing development.

Loddon and Chedgrave exhibit a low density with heights largely between 1 and 2 storeys and a reasonable space between dwellings. In general, future areas should be developed in a coherent form with modern best practice. That is, there should be a proportional relation between size of plot, dwelling and spaces between dwellings.

The structure of the following codes generally starts with policies on a larger scale and subsequently moves to codes related to specific built form details.

4.3.1 Provide meaningful connections

The Chet Neighbourhood Area has open spaces and neighbouring parkland though does not have an extensive walking network to maximise these assets.

Footways on streets and rural lanes provide links to the different parts of the area, however these connections can be improved by creating and enhancing the routes to encourage walking and cycling. Good practice favours a generally connected lane layout that makes it easier to travel by foot, cycle and public transport.

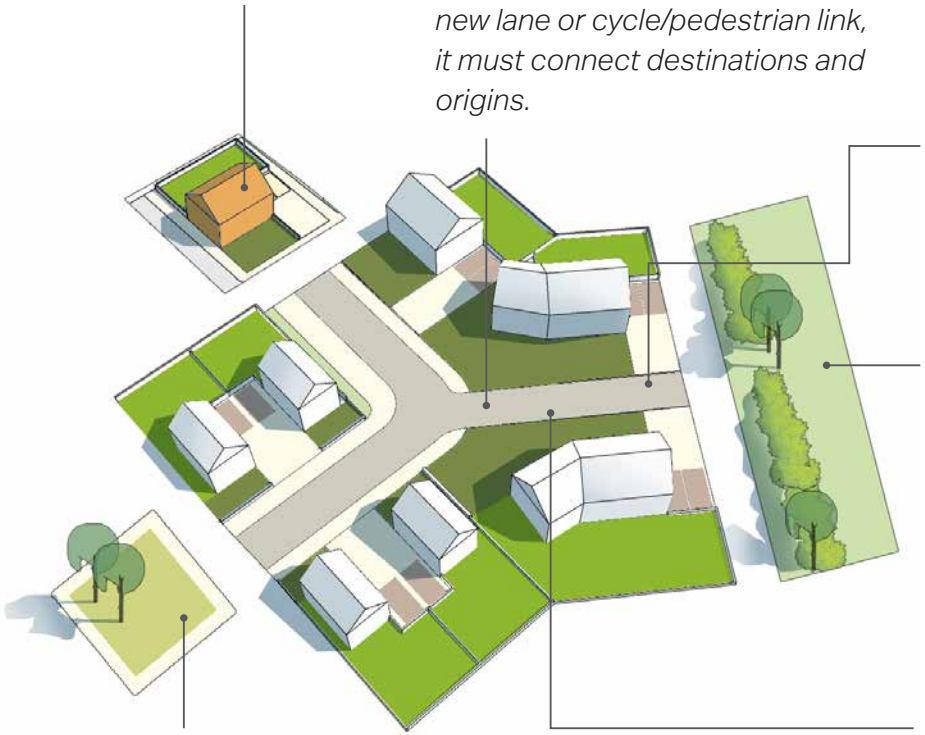
A more connected pattern creates a 'walkable neighbourhood' where routes link meaningful places together. New development in Loddon and Chedgrave should seek to connect to the existing settlements and create easy direct routes to existing services and amenities.

In addition, connections can also be visual and relationships between buildings, lanes and the natural environment should ensure these connections, such as key views, should be preserved and enhanced.

Connect to valuable assets and buildings within the village such as schools, churches or key amenities.

Proposing short and walkable distances which are usually defined to be within a 10 minute walk or a five mile trip by bike. If the design proposal calls for a new lane or cycle/pedestrian link, it must connect destinations and origins.

Proposing routes laid out in a permeable pattern, allowing for multiple connections and choice of routes, particularly on foot. Any cul-de-sacs should be relatively short and provide onward pedestrian links.



Connect to the surrounding countryside with controlled access to paths along fields to help maintain hedgerows.

Connect to local open and green spaces within the village.

Avoid designing features that hinder pedestrian and cycle movement such as gated developments, barriers and high walls or fences.

F.74 Figure 74: Illustrative diagrams showing meaningful connections with the area.

4.3.2 Buffer settlement edges

Whilst the Neighbourhood area has an urban core centred around the High Street, it has a historical rural past which can be felt when venturing around the outskirts of the area.

Settlement edges in these parts help with the transition between built areas and the countryside and help preserve this rural character. In addition, these edges are particularly important when new settlement is proposed. Desirable features are:

Make new buildings face outwards towards the countryside to create a positive outlook. When the edge is adjacent to open countryside houses should positively address the countryside by orientating the buildings to face out over it. Rear garden fences facing the countryside should be avoided as this creates a hard edge and a safety risk.

Create back to back development where new development meets existing buildings. The aim should be to complete blocks.

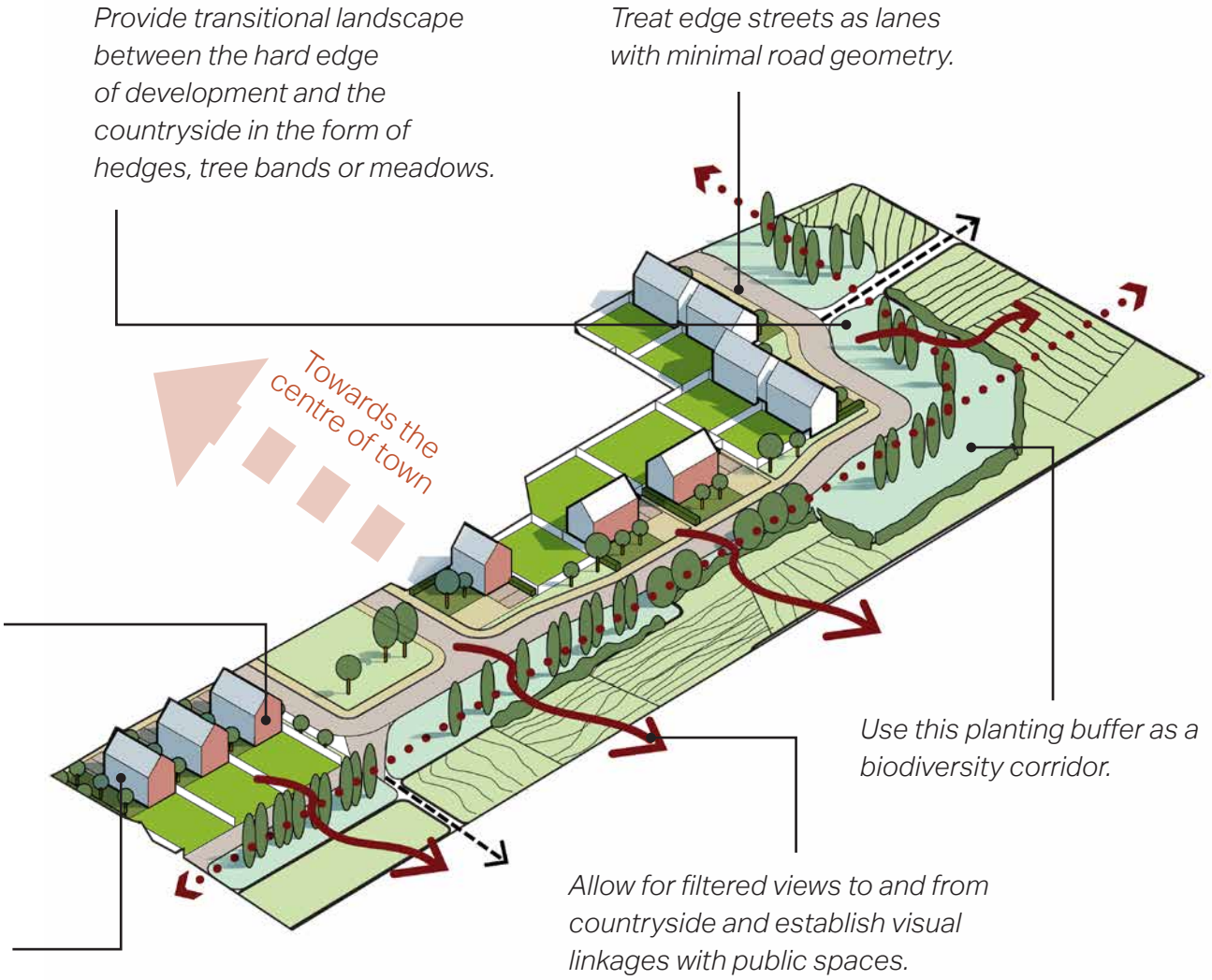


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Figure 75: Diagram illustrating settlement edges buffering.

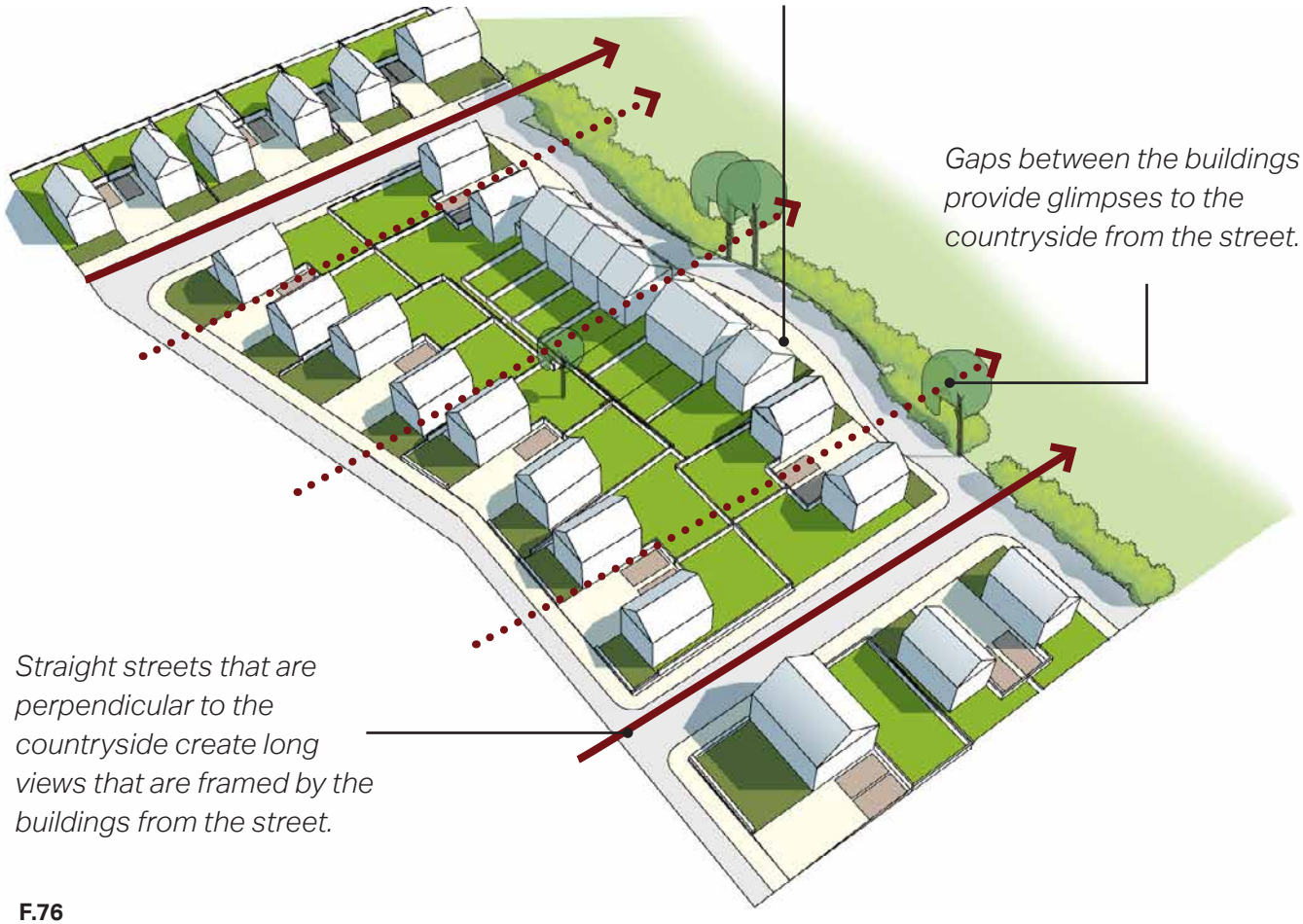
4.3.3 Gaps and views

Views are important as they provide framed moments within the built environment of either landmarks or the open countryside.

The Loddon and Chedgrave Conservation Area Appraisal published by South Norfolk Council provides a list of key views which are to be preserved and enhanced. New development should not affect these views with consideration to scale and style replicating the local context.

Generous gaps between buildings should be created to provide glimpses and filtered views to the countryside beyond. This will connect people with nature and contribute to the general feel of openness.

Streets should be orientated to make the most of key views and Natural landmarks. This allows everyone to enjoy the countryside views and enhances legibility by allowing people to orientate themselves in relation to the open space.

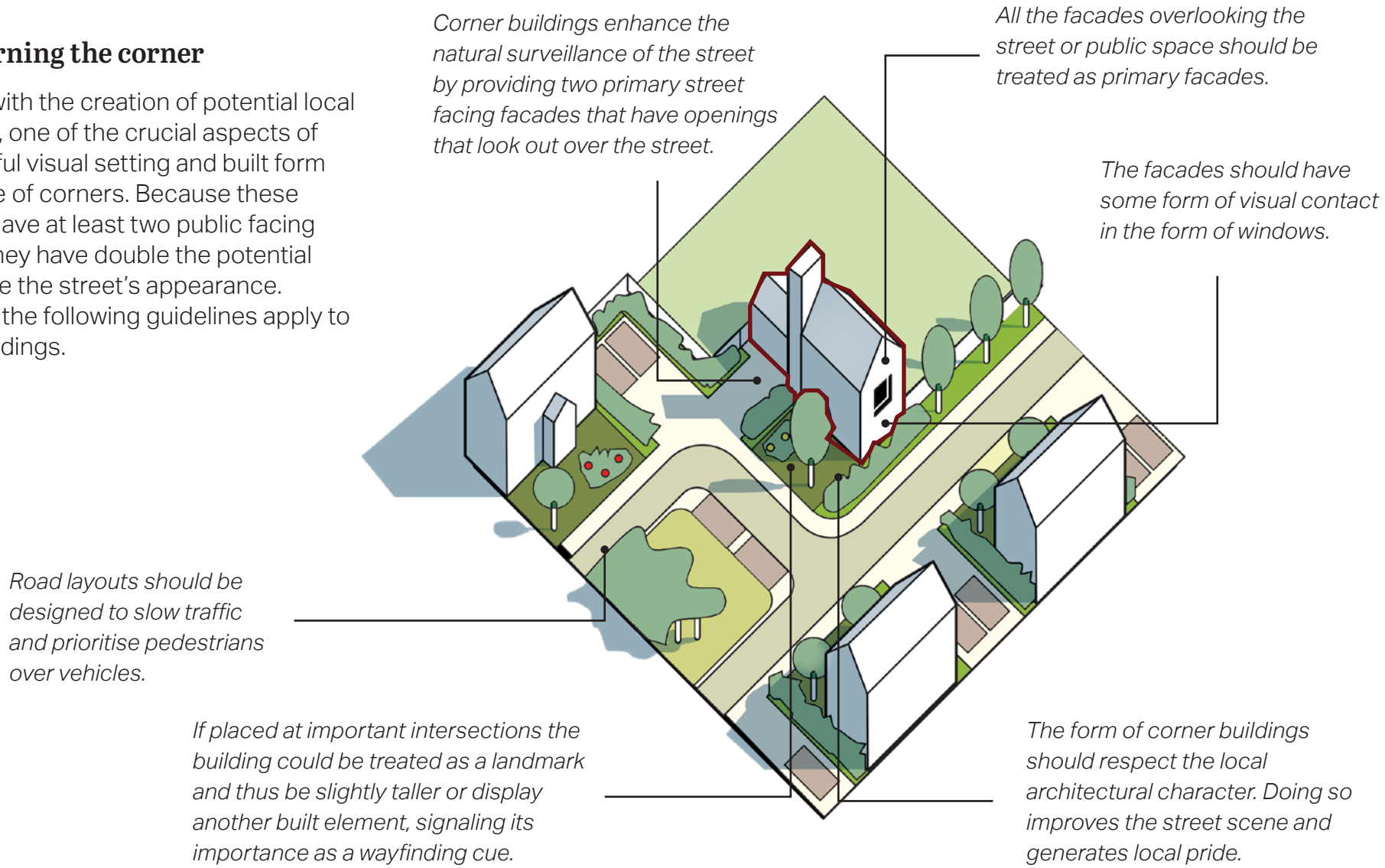


F.76

Figure 76: Illustrative diagram of the gaps and views in a residential area.

4.3.4 Turning the corner

Together with the creation of potential local landmarks, one of the crucial aspects of a successful visual setting and built form is the issue of corners. Because these buildings have at least two public facing facades, they have double the potential to influence the street's appearance. Therefore, the following guidelines apply to corner buildings.



F.77

Figure 77: Illustrative diagram of a corner building in a residential area.

4.3.5 Active frontages

Active frontages bring life and vitality to street and public gathering spaces. They allow for moments between people, interest and activity on the street and also surveillance onto the road. Providing more active frontages in Loddon and Chedgrave can help with safety and prevent crime.

Introducing regular doors, windows, front gardens and front and side parking, providing it does not dominate, can stimulate activity and social interactions. This was an important feature of the work of Taylor and Green and new development should seek to replicate these successful features.

Buildings should be positioned at varied setbacks to avoid monotonous frontages where there is a pattern of having deeper front gardens. It may not always be necessary to vary setbacks in the more historic localities where the existing built form supports building up to the pavement in some specific cases.

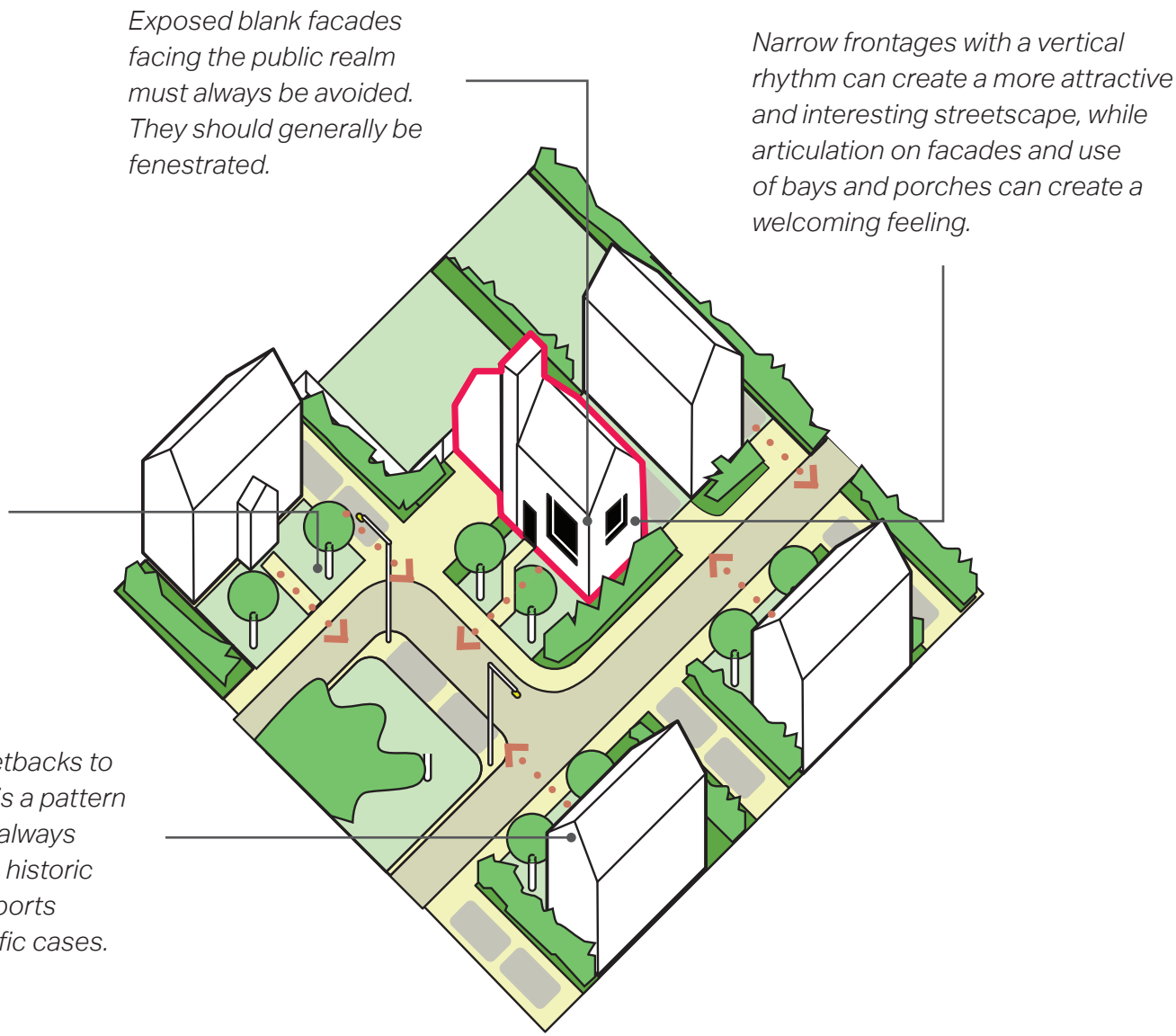


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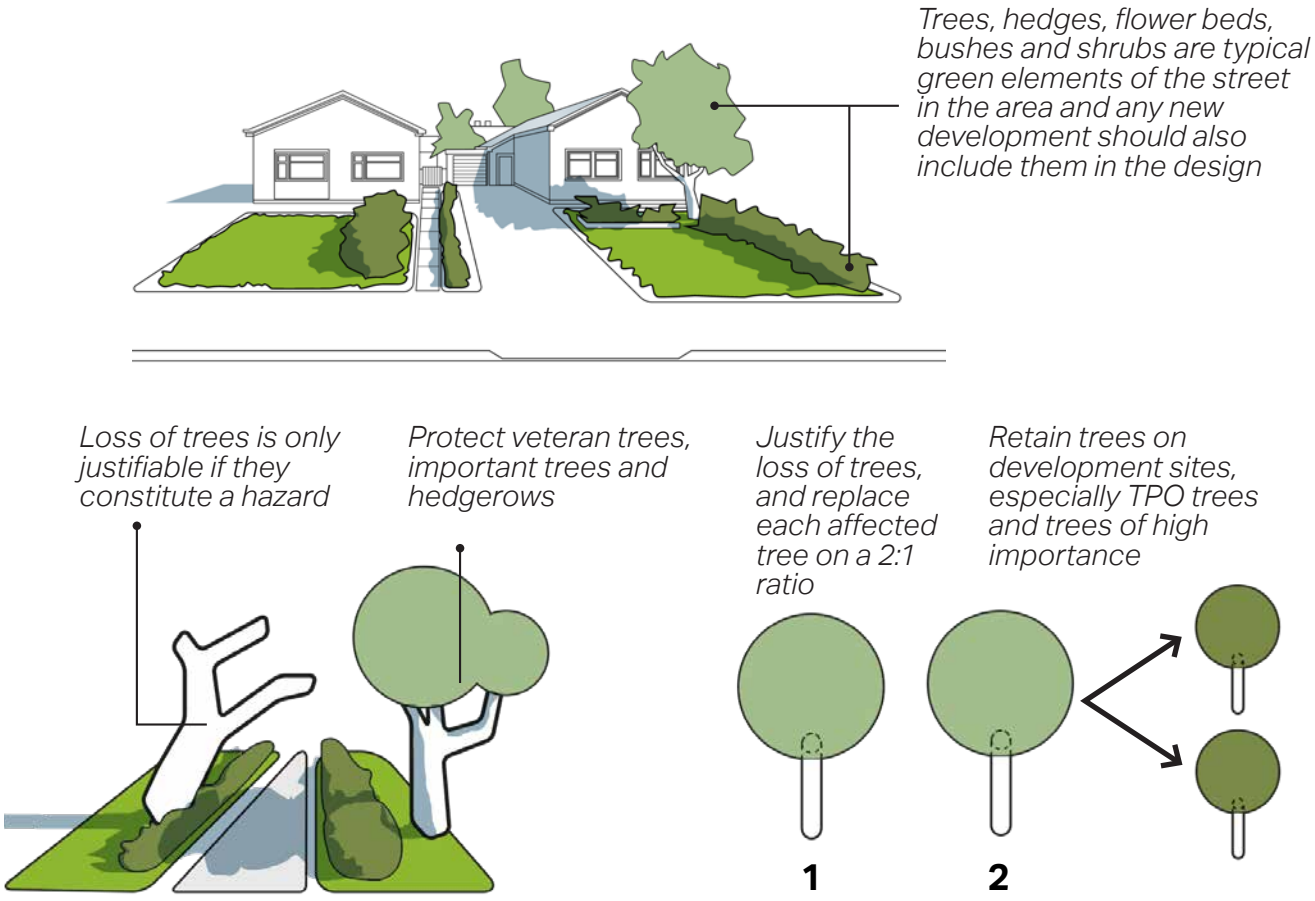
Figure 78: Illustrative example of active frontages in a residential area.

4.3.6 Landscaping and Trees

Trees are crucial to the integration of Loddon and Chedgrave into their physical context. New trees should ideally be native species and sympathetic to the adjacent natural environment. The neighbourhood area's rural character can be preserved or revived in places through the use of street trees and landscaping measures. New developments and any change in the physical environment should:

- Incorporate existing native trees and shrubs and avoid unnecessary loss of flora.
- Replace any tree or woodland lost to new development. Native trees and shrubs should be used to reinforce the more rural character of the area.
- Promote rich vegetation in front and rear gardens to improve the visual impact and mitigate air pollution. New and retained vegetation at the edges of new developments are particularly important for their successful integration into the wider landscape.



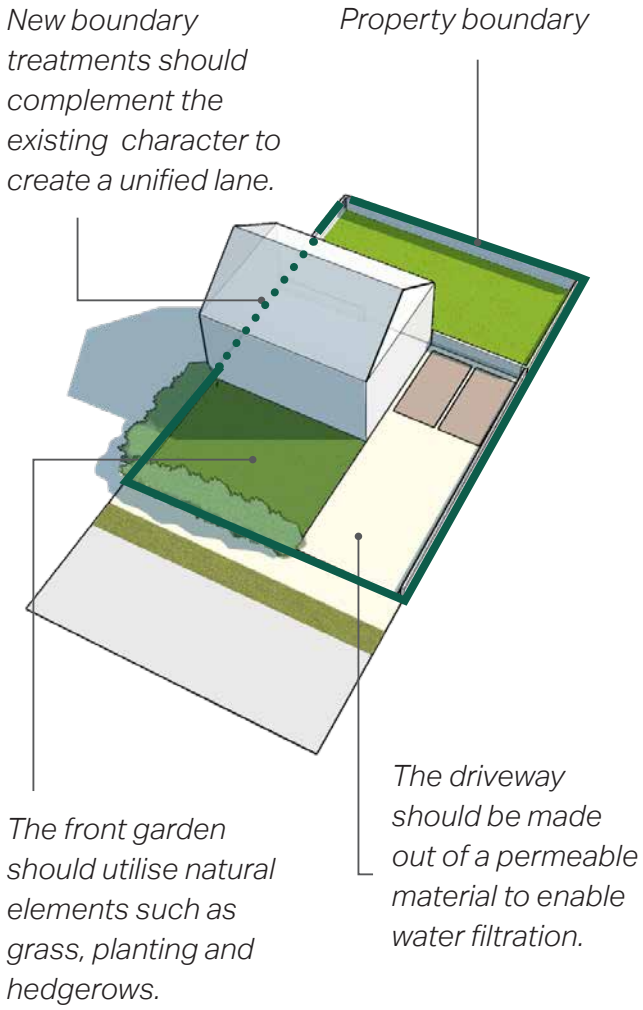
F.79

Figure 79: Diagram to highlight some guidelines related to tree preservation.

4.3.7 Boundary treatments

Boundary treatments should be used at the plot edge to provide a sense of continuity and cohesion along the lane as well as providing separation between the public and private domains.

- Using a range of high-quality materials such as brick, hedgerows, ironmongery, planting or a combination of these along the boundary edge, can bring cohesion to the lane and the village, whilst still providing visual interest.
- The heights of boundary treatments should not intrude on neighbouring views and lighting.
- Not having a form of boundary should be avoided where possible.
- Properties should also have a front garden or privacy strip to create the desired amount of enclosure along the lane.



F.80 **Figure 80:** Illustrative diagram of the boundary treatments of a typical plot.

F.81

Figure 81: Photo of a wooden fence with bushes and other vegetation as a property boundary with a rural 'feel'.

F.82

Figure 82: Photo of a low brick wall property boundary with a more urban feel that still contributes to the area's character..

4.3.8 Household extensions

There are multiple ways to create extra space within a building using different types of extensions. Extensions must be designed to an appropriate scale and be secondary to the original building. The pitch and form of a building's roof forms part of its character; therefore, extensions should respond by enhancing the existing character. Extensions should consider the materials, architectural features and proportions of the original building and designed to complement these existing elements.

Many household extensions are covered by permitted development rights, meaning that they do not need planning permission.

The latest guidance is here: https://www.planningportal.co.uk/info/200130/common_projects/17/extensions.

- The character of the existing building, along with its scale, form, materials and details should be taken into consideration when preparing proposals for alterations and/or extensions;
- External extensions should respect or enhance the visual appearance of the original buildings and the character of the wider street scene;
- Extensions should be subordinate in term of scale and form and shall not be visually dominant or taller than the existing building;
- Extensions should be recessed or in line with the existing building facade and shall use lower ridge and eaves levels to ensure that the length and width of the extension are less than the dimensions of the original building;
- Extensions should be designed using materials and details to match the existing building or, alternately, use contrasting materials and details with a contemporary design approach. However, in either case extensions should create a harmonious overall composition and a strong degree of unity with the original building.
- Extensions should safeguard the privacy and daylight amenity of neighbouring properties;
- Extensions should retain on-site parking capacity and a viable garden area to meet the needs of existing and future occupiers; and
- Extensions of existing buildings should help to reduce carbon emission by complying with high energy efficiency standards and utilising low energy design.

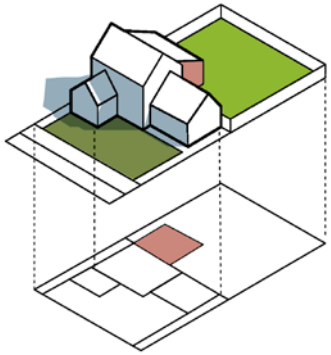
Front extensions

Front extensions are generally not acceptable. If proposed, in all cases front extensions should take the form of the existing building, mirroring the roof pitch, replicate or have lower cornice height and their ridge should be below the existing ridge height. The extension can project maximum 2 metres beyond the front facade and will not cover more than 50% of the front elevation.

Rear extensions

Single-storey rear extensions are, generally, the easiest way to extend a house and provide extra living space. The extension should be set below any first-floor windows and designed to minimise any effects on neighbouring properties, such as blocking day light. A flat roof is generally acceptable for a single storey rear extension.

Double-storey rear extensions are not common as they usually affect neighbours' access to light and privacy, however, sometimes the size and style of the property allows for a two-storey extension. In these cases, the roof form and pitch should reflect the original building and sit slightly lower than the main ridge of the building.



F.83

Figure 83: Drawing showing a rear extension

F.84

Figure 84: Photo of feature mimicking a front 'extension' (though part of the original dwelling, this is considered a good exemplar for new extensions).

F.85

Figure 85: Photo showing the old Loddon Mill, now converted into a wellbeing centre and housing.

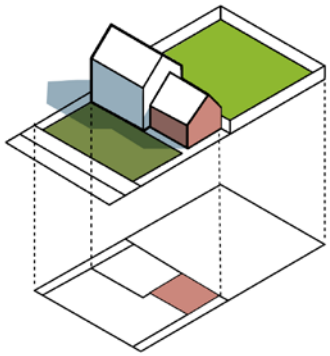
Side extensions

Side extensions are a popular way to extend a building to create extra living space. However, if poorly designed, they can negatively affect the appearance of the street scene, disrupting the rhythm of spaces between buildings. Single-storey and double-storey side extensions should be set back from the main building line to the front of the dwelling and complement the materials and detailing of the original building, particularly along the street elevation. The roof of the extension should harmonise with that of the original building. Side windows should also be avoided unless it can be demonstrated that they would not result in overlooking of neighbouring properties.

Outbuildings

Secondary outbuildings should be of a softer rustic/rural/agricultural character.

Pre-fabricated, pre cast concrete and plastic panels to be avoided.



F.86 **Figure 86:** Drawing showing side extension

F.87

Figure 87: Photo of Vine Cottage, Chedgrave. Extended in a way that is sympathetic to the original building.

4.3.9 Architectural details, materials and colour palette

Informed by the local vernacular, the following pages illustrate acceptable detailing for future housing developments in Loddon and Chedgrave.

There is large variety of architectural details within the Chet Neighbourhood Area especially within the two conservation areas. Some architectural styles include Victorian, Georgian and Jacobean with some dwellings featuring older styles such as timber stained banding onto white render.

Prominent facade materials found in all the character areas include different types brickwork including red and painted bricks, different types of render and weatherboarding. Loddon Conservation Area provides the most diversity with additional architectural features prominent on the many historical buildings.

Roofs are less varied with the majority being either red or black pantile though slate is

Figure 88: Photo of the Library at Church Plain with slate roofs and flint work façades.

Figure 89: Photo of the former Town Hall with Jacobean style detailing on the gable ends.

Figure 90: Photo of a typical Victorian style dwelling with a red brick facade and a black clay pantiled roof.

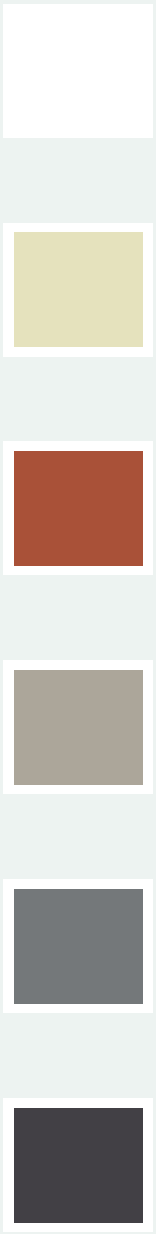
sometimes seen within the older parts of the neighbourhood area. Fenestration is also less varied save for a few distinct examples in the Loddon Conservation Area. Casement and sash windows are the most common windows regardless of period of development.

Architectural design in future developments must reflect these local design references in both the natural and built environment and must reflect and reinforce local distinctiveness.

Any future development proposals should demonstrate that the palette of materials has been selected based on an understanding of the surrounding built environment.

The use of traditional construction finishes should be specified for all new development and repair work. Material specification, quality for repair, replacement and modern developments should be maintained. The requirement for additional housing in the village should not trump architectural quality and character of the area.

Colour palette



Wall

Red brick

Flint work with stone

White render

Painted weatherboarding

Painted brick

Fenestration

Casement window

Sash window

Box window

Bay window

Dormer window

Hood moulded Gothic arched window

Roof

Red clay pantile

Black clay pantile

Red brick chimney

Slate

Consistent roofline

Decorative Dutch gable end

4.4 Energy and environment

4.4.1 Biodiversity

The Chet Neighbourhood Area has a rich and varied landscape character especially with the Broads within and on its doorstep. In addition, there are many natural features and assets, such as trees, woodlands, hedgerows, verges, front and back gardens. They all contribute to provide habitats for biodiversity to flourish.

- Development must protect and enhance woodlands, hedges, trees and road verges. Natural tree buffers should also be protected.
- Development must avoid abrupt edges to development with little vegetation or landscape on the edge of the settlement and, instead, aim for a comprehensive landscape buffering.
- Development should seek to achieve biodiversity net gain and provide new habitats and wildlife corridors. Notably, many small and large properties in both parishes support the Chet B-Line
- It is important to ensure existing habitats are buffered. Widths of buffer zones should be wide enough and based on specific ecological function.
- Development should create wildlife corridors in the surrounding countryside by proposing new green links and improving the existing ones. This will enable wildlife to travel to and from foraging areas and their dwelling areas such as hedgehog corridors.
- Development must protect mature and veteran trees, wide green verges and species-rich hedgerows as they are essential for biodiversity. Hedgerows are a particularly good habitat for fauna and also prevent soil erosion.
- Development should show that it has considered opportunities to incorporate nature friendly ideas such as bird boxes, bee bricks, bug-houses, swift bricks or ponds. To illustrate, swift populations are in decline in the UK as more development and a move towards air-tight buildings has resulted in a loss of habitat. To encourage swifts to live and breed in the area Swift bricks should be considered as they are easily installed, fitting within a multiple of standard UK brick sizes.

Figure 91: Example of a swift brick under an eave.

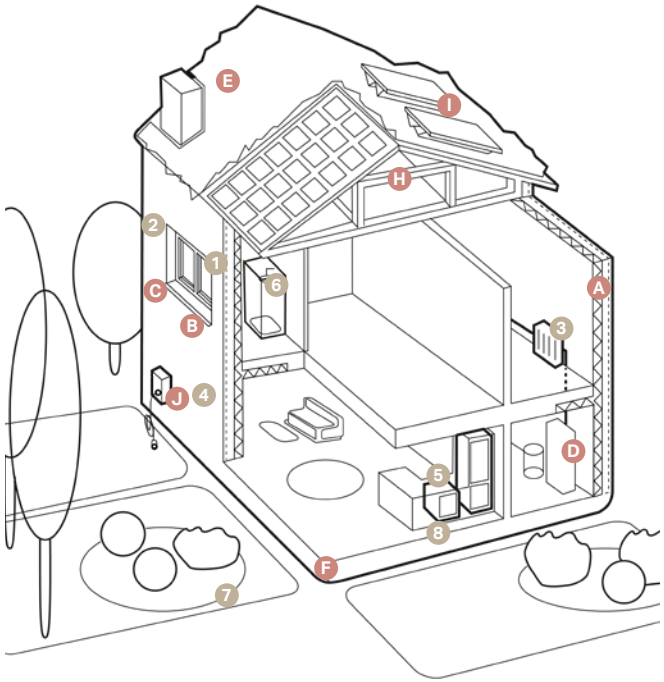
Figure 92: Example of a hedgehog corridor within in a garden fence.

4.4.2 Features in dwellings

The following section elaborates on energy efficient technologies that should be incorporated in buildings and at broader design scale as principles.

Use of such principles and design tools should be encouraged in order to contribute towards a more sustainable environment.

Energy efficient or eco design combines all around energy efficient appliances and lighting with commercially available renewable energy systems, such as solar electricity and/or solar/ water heating and electric charging points.



Existing homes

1. **Insulation** in lofts and walls (cavity and solid)
2. **Double or triple glazing with shading** (e.g. tinted window film, blinds, curtains and trees outside)
3. **Low- carbon heating** with heat pumps or connections to district heat network
4. **Draught proofing** of floors, windows and doors
5. **Highly energy-efficient appliances** (e.g. A++ and A+++ rating)
6. **Highly waste-efficient devices** with low-flow showers and taps, insulated tanks and hot water thermostats
7. **Green space (e.g. gardens and trees)** to help reduce the risks and impacts of flooding and overheating
8. **Flood resilience and resistance** with removable air back covers, relocated appliances (e.g. installing washing machines upstairs), treated wooden floors

New build homes

A. **High levels of airtightness**

B. **Triple glazed windows and external shading** especially on south and west faces

C. **Low-carbon heating** and no new homes on the gas grid by 2025 at the latest

D. **More fresh air** with mechanical ventilation and heat recovery, and passive cooling

E. **Water management and cooling** more ambitious water efficiency standards, green roofs and reflective walls

F. **Flood resilience and resistance** e.g. raised electrical, concrete floors and greening your garden

G. **Construction and site planning** timber frames, sustainable transport options (such as cycling)

H. **Solar panels**

Figure 93: Diagram outlining the location of sustainable features within dwellings.

4.4.3 Building fabric

Thermal mass

Thermal mass describes the ability of a material to absorb, store and release heat energy. Thermal mass can be used to even out variations in internal and external conditions, absorbing heat as temperatures rise and releasing it as they fall. Thermal mass can be used to store high thermal loads by absorbing heat introduced by external conditions, such as solar radiation, or by internal sources such as appliances and lighting, to be released when conditions are cooler. This can be beneficial both during the summer and the winter.

Thermal storage in construction elements can be provided, such as a trombe wall placed in front of a south facing window or concrete floor slabs that will absorb solar radiation and then slowly re-release it into the enclosed space. Mass can be combined with suitable ventilation strategies.

Insulation

Thermal insulation can be provided for any wall or roof on the exterior of a building to prevent heat loss. Particular attention should be paid to heat bridges around corners and openings at the design stage.

Provide acoustic insulation to prevent the transmission of sound between active (i.e. living room) and passive spaces (i.e. bedroom). Provide insulation and electrical insulation to prevent the passage of fire between spaces or components and to contain and separate electrical conductors.

Airtightness

Airtight constructions help reduce heat loss, improving comfort and protecting the building fabric. Airtightness is achieved by sealing a building to reduce infiltration- which is sometimes called uncontrolled ventilation. Simplicity is key for airtight design. The fewer junctions the simpler and more efficient the airtightness design will be.

An airtight layer should be formed in the floor, walls and roof. Doors, windows and roof lights to the adjacent walls or roof should be sealed. Interfaces between walls and floor and between walls and roof, including around the perimeter of any intermediate floor should be linked. Water pipes and soil pipes, ventilation ducts, incoming water, gas, oil, electricity, data and district heating, chimneys and flues, including air supplies to wood burning stoves, connections to external services, such as entry phones, outside lights, external taps and sockets, security cameras and satellite dishes should be considered.

The following diagram illustrates some of these key building fabric considerations:

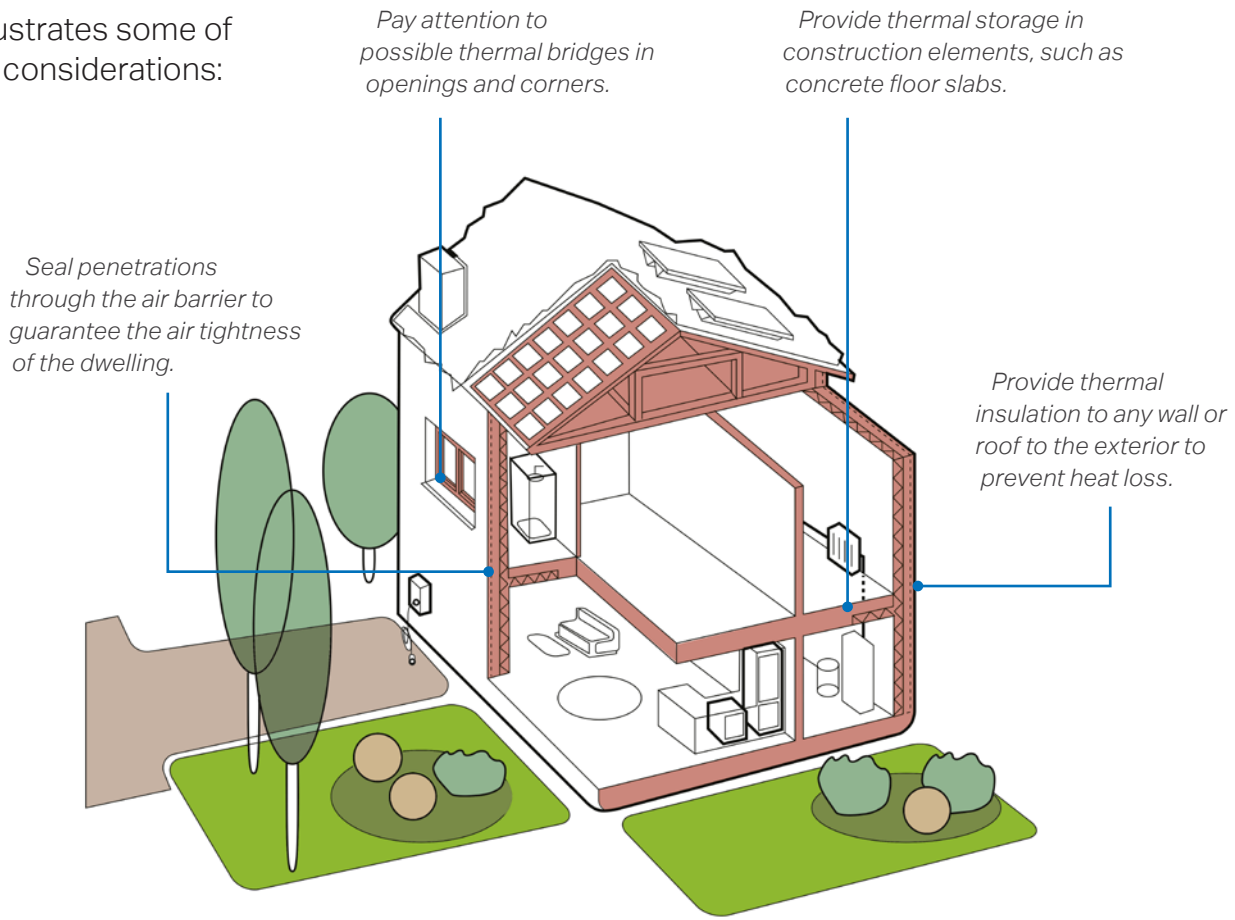


Figure 94: Diagram illustrating aspects of the building fabric to be considered

4.4.4 Adaptability

Houses should be designed to meet the differing and changing needs of households and people's physical abilities over their entire lifetime. This is an important aspect of making homes sustainable and durable.

One way to achieve this is to incorporate all the standards- M4(1), M4(2) and M4(3)- of the approved document M4 of the Building Regulations in the design of new homes and to assess whether they can be retrofitted in existing properties.

The diagram to the right illustrates the principles of inclusivity, accessibility, adaptability and sustainability in a dwelling.

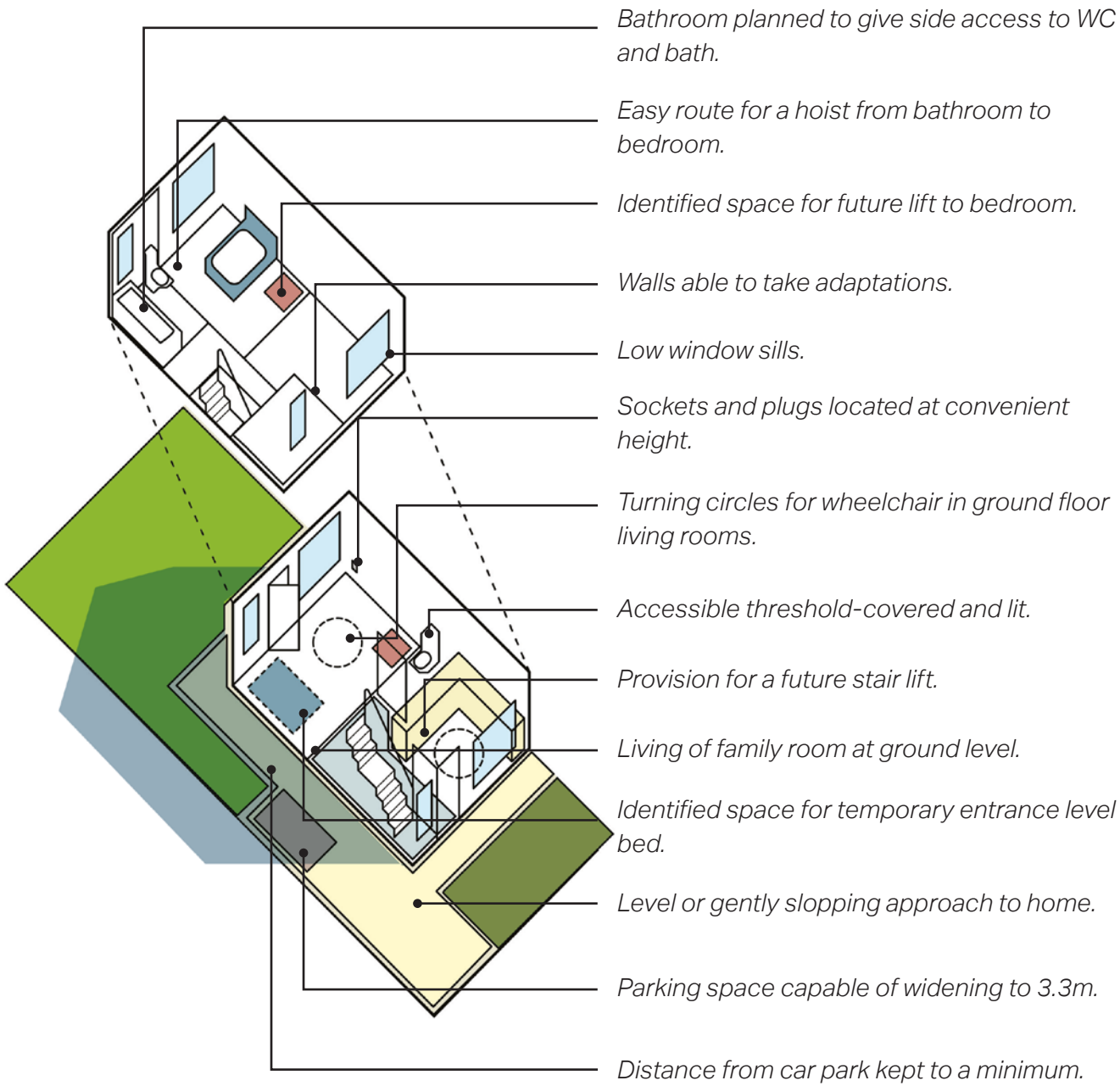


Figure 95: Diagram illustrating adaptability traits within a dwelling.

4.4.5 Rainwater harvesting

Rainwater harvesting refers to the systems allowing the capture and storage of rainwater, as well as those enabling the reuse in-site of grey water. Simple storage solutions, such as water butts, can help provide significant attenuation. To be able to continue to provide benefits, there has to be some headroom within the storage solution. If water is not reused, a slow release valve allows water from the storage to trickle out, recreating capacity for future rainfall events.

New digital technologies that predict rainfall events can enable stored water to be released when the sewer has greatest capacity to accept it.

These systems involve pipes and storage devices that could be unsightly, if added without an integral vision for design.

Therefore, some design recommendations would be to:

- Conceal tanks by cladding them in complementary materials;
- Use attractive materials or finishing for pipes;
- Combine landscape/planters with water capture systems;
- Underground tanks; and
- Utilise water bodies for storage.

Figure 96: Example of a rainwater harvesting tank in the shape of a bee hive

Figure 97: Example of a modular water tank

4.4.6 Renewable low carbon energy solutions

Solar panels

Solar panels should be designed to have a minimal visual impact on the roof of a building. New builds should incorporate solar panels from the beginning and form part of the design concept. Some attractive options are solar shingles, photo-voltaic slates or tiles. Solar panels can also be used as a roofing material in their own right.

When retrofitting existing buildings the proportions of the roof and building should be considered to identify the best location and sizing of the panels. Tiles or slates of different colours can be added to the roof to better integrate the solar panels.

Ground heating systems

District heat networks may play an important role in the transition to low carbon energy. Heat pumps involve using a system to capture heat from outside the home and move it inside. Electricity is used to do this though the quantity of heat generated is greater than the quantity of electricity used to power the system. As a heat pump captures heat that is already present in the environment, the system itself emits no carbon dioxide emissions.

Figure 99: Example of solar panels on a roof in a semi-detached dwelling.

Figure 98: Example of a ground source heating system.

4.4.7 Waste storage and servicing

With modern requirements for waste separation and recycling, the number of household bins that need to be stored has increased. It is important that these are accommodated in ways that allow convenient access, and without increasing street clutter or harming the appearance of new buildings.

- Servicing arrangements should have a specific and attractive enclosure of sufficient size for all the necessary bins, this avoids the blocking of pavements with bins and makes the public realm more attractive.
- The illustrations below show some successful design solutions for accommodating bins within the plot.

Figure 100: Examples of successful storage design solutions for accommodating bins and bicycles at the front of buildings.

4.4.8 Recycling materials and buildings

To meet the government's target of being carbon neutral by 2050, it is important to recycle and reuse materials and buildings. Some actions for new development are:

- Reusing buildings, parts of buildings or elements of buildings such as bricks, tiles, slates or large timbers all help achieve a more sustainable approach to design and construction;
- Recycling and reuse of materials can help to minimise the extraction of raw materials and the use of energy in the production and transportation of materials; and
- Development should also maximise the re-use of existing buildings (which often supports social, environmental and economic objectives as well.

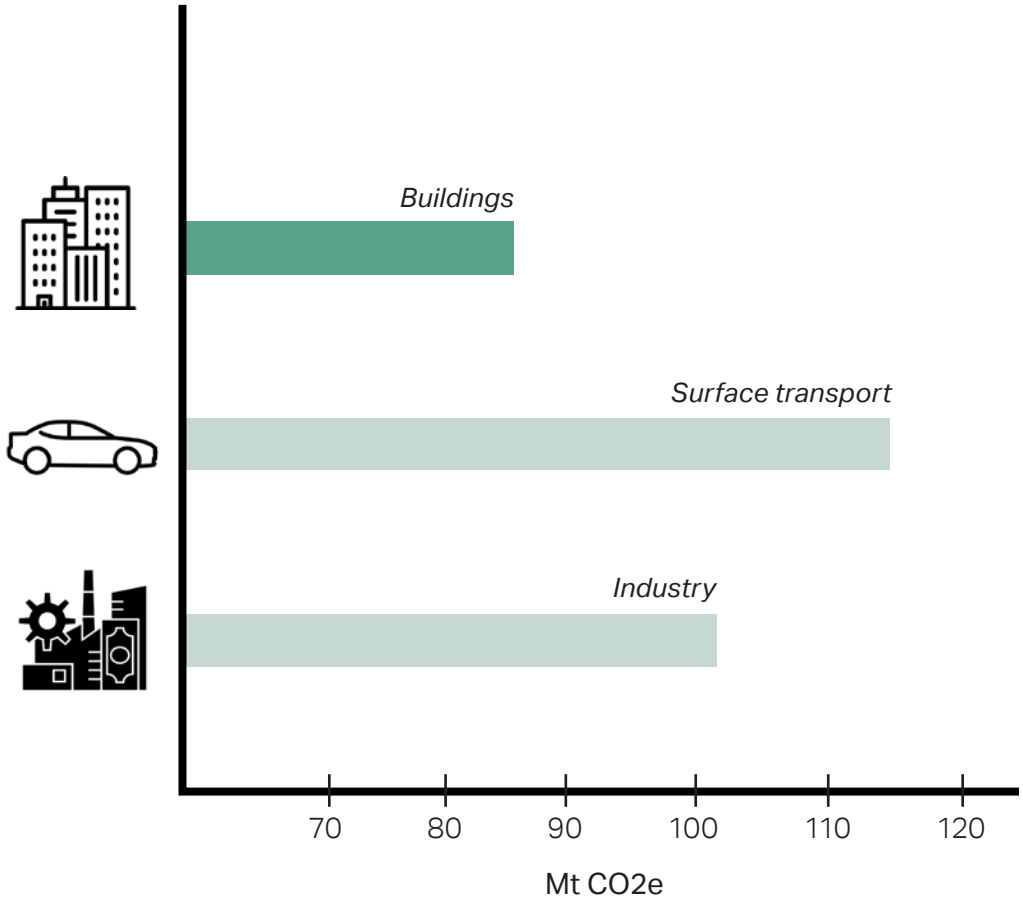


Figure 101: Diagram to illustrate that buildings are the UK's third biggest source of greenhouse gases (Source: Historic England. Link: https://historicengland.org.uk/whats-new/news/recycle-buildings-tackle-climate-change/).

4.4.9 Minimising construction waste

As part of environmental management, it is important that the waste generated during construction is minimised, reused within the site or recycled.

Developers should plan to re-use materials by detailing their intentions for waste minimisation and re-use in Site Waste Management Plans. The actions that this plan will include are:

- Before work commences, the waste volumes to be generated and the recycling and disposal of the materials will be described;
- On completion of the construction works, volumes of recycled content purchased, recycled and landfilled materials must be collated;
- Identify materials used in high volumes; and
- The workforce should be properly trained and competent to make sure storage and installation practices of the materials is done under high standards.

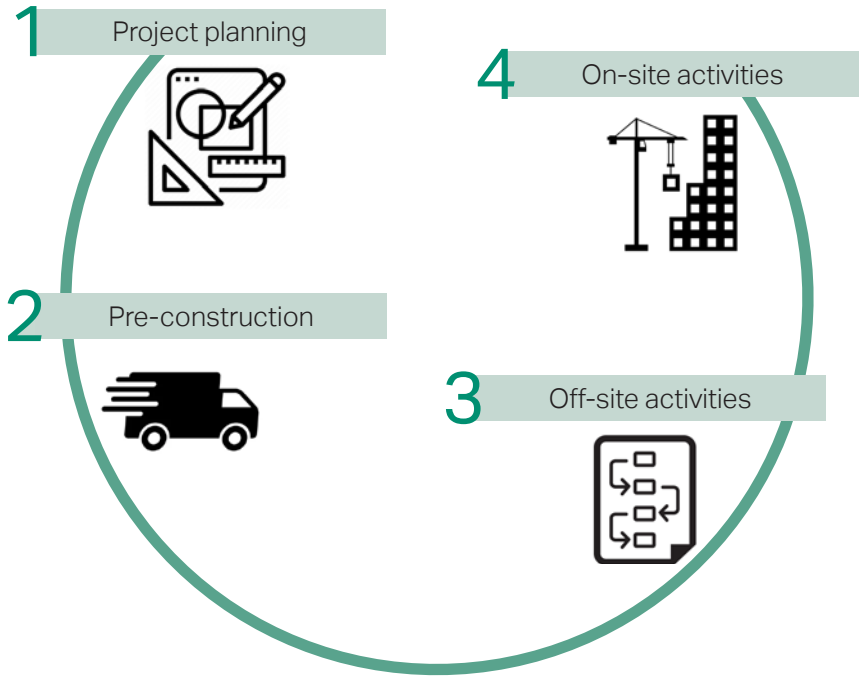


Figure 102: Diagram to illustrate the 4 main stages where waste management practices can be implemented.

4.5 Character area codes

4.5.1 Overview

The character area codes are designed to provide specific guidance to areas within Loddon and Chedgrave. These areas were set out in the character analysis undertaken in chapter 3. The specific guidance builds upon the general design codes outlined in the previous section and highlights guidelines that will both preserve and enhance the existing character of the area. These should be read jointly with the previous codes.

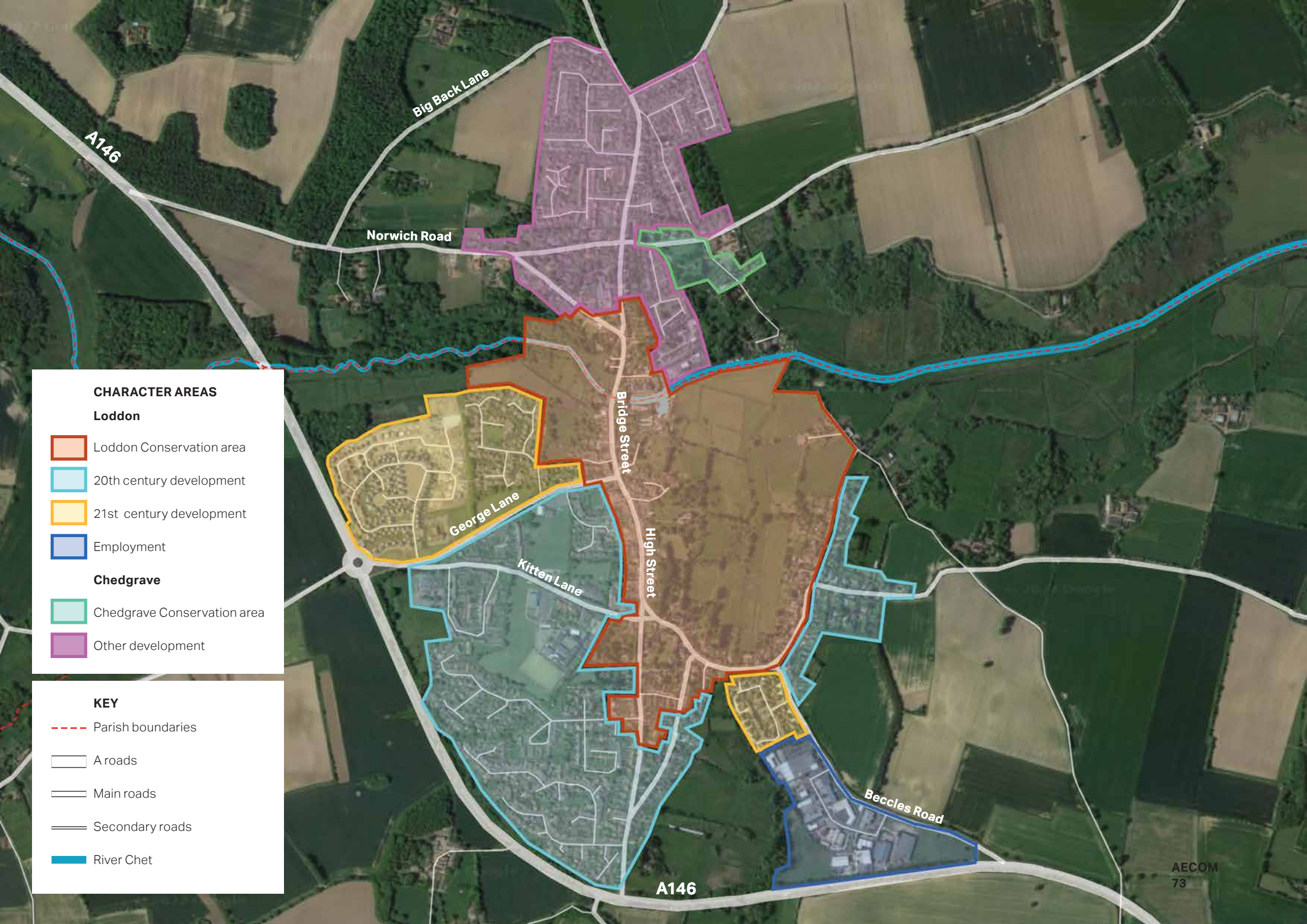
Applicants seeking to develop in these areas should refer to these sections when considering the street layout, placemaking and architectural features of new development.

LODDON

1	Loddon Conservation Area	
2	20th Century development	
3	21st century development	
4	Employment	

CHEDGRAVE

5	Chedgrave Conservation Area	
6	Other development	


A146
Big Back Lane
Norwich Road
Bridge Street
George Lane
Kitten Lane
High Street
Beccles Road
A146
CHARACTER AREAS
Loddon
Loddon Conservation area
20th century development
21st century development
Employment
Chedgrave
Chedgrave Conservation area
Other development
KEY
Parish boundaries
A roads
Main roads
Secondary roads
River Chet

LODDON

Loddon Conservation Area

Traditional features
Architectural features characteristic to the conservation area should be preserved.

Boundary treatment
Natural features such as hedges should be considered throughout the conservation area. Brick walls and iron railings are more common in more urban streets.

Gaps between buildings

Gaps between buildings should be maintained to preserve the sense of space.

Efficient use of space
The existing street should be de-cluttered of unused street furniture and redundant signage.

Car parking
On-street parking can be retained along the road.

Materials and colour palette
The materials and colours of the building should be in keeping with the surrounding buildings and the character of the conservation area.

LODDON

20th century development

Car parking
Parking should be within curtilage. On-plot front parking should be accompanied with landscaping.

Front gardens
Front gardens with grass and vegetation should be provided. Paving over existing front gardens should be avoided.

Connectivity
Pedestrian footways should connect to promote walking through the area.

Building line
Buildings should be aligned to form a consistent frontage along the street with some gaps interspersed throughout.

Green verges
Green verges should be enhanced or introduced where possible. Green verges do not necessarily have to be grass and could be wild flowers, for example. Attention should be paid to the mowing regime to preserve flowering plants.

Heights
Buildings heights should remain between one and two storeys.

LODDON

21st century development

Car parking
Space should be allocated for on-plot front or garage parking.

Building line
Buildings should be aligned to form a consistent frontage along the street with gaps interspersed throughout.

Heights
Buildings heights should be consistent with the predominant height in the area.

Energy efficiency
Buildings should be future-proofed with environmentally friendly designs.

Open spaces
Provision of open spaces to support both wildlife and wellbeing.

Materials and colour palette
The character of the area should be preserved through the use of the same materials and colour palette.

Boundary treatment
Green hedges and vegetation should be encouraged as boundary treatments.

Frontage treatment
Principal windows and access doors should be located at the front of the building.

LODDON

Employment

Building line
Buildings are not aligned in this area with the size and heights of buildings varied. However buildings should still front onto the street.

Outside circulation
If outer areas are utilised, a clear pedestrian pathway must be preserved.

Tree planting
Tree planting should be encouraged to create a more natural setting.

Green verges
Green verges should be enhanced or introduced where possible. Green verges do not necessarily have to be grass and could be wild flowers, for example. Attention should be paid to the mowing regime to preserve flowering plants.

Frontages
Where industrial buildings have a glazed area, such as offices, this should face onto the street.

Parking
Sufficient car parking should be provided for businesses and their employees. Parking should not be allowed on verges / green spaces or roads, and should be to the side or rear of buildings. Cycle routes and cycle parks should be included to support cycling to work.

Open space
Open, green space for employees to enjoy is important for their wellbeing and more spaces should be encouraged. Ideally, they would have a natural look, with trees and vegetation, as well as seating and tables (in sympathetic materials).

CHEDGRAVE

Chedgrave Conservation Area

Areas of transition
Retain areas of transition between the street and the surrounding countryside.

Boundary treatment
Green hedges and vegetation should be encouraged along with wooden fencing.

Front gardens
Front gardens with landscaping should be provided with buildings sat back from the carriageway.

Car parking
On-plot front or garage parking should be provided.

Materials and colour Palette
Materials and colour palette should reflect the traditional character of the conservation area.

Green spaces
Preserve informal green spaces along the street which add the rural character of the area.

CHEDGRAVE

Other development

Connectivity
Ensure a permeable street layout through enhancement of footways.

Architectural style
Architectural style is varied in Chedgrave and should not be restricted. However, materials and colour palette from more traditional parts of the area is more favourable.

Green verges
Green verges should be enhanced or introduced where possible. There is currently a mix of street with and without green verges.

Building line
Buildings should generally be aligned though some variation is acceptable.

Boundary treatment
Green hedges and vegetation should be encouraged as boundary treatments whilst use of fences and brick walls are acceptable.

Heights
Buildings heights should remain between one and two storeys and fit well within the surrounding context.

4.6 Checklist

Because the design guidelines and codes in this chapter cannot cover all design eventualities, this section provides a number of questions based on established good practice against which the design proposal should be evaluated. The aim is to assess all proposals by objectively answering the questions below. Not all the questions will apply to every development.

The relevant ones, however, should provide an assessment as to whether the design proposal has taken into account the context and provided an adequate design solution. As a first step, there are a number of ideas or principles that should be present in all proposals.

These are listed under 'General design guidelines for new development'. Following these ideas and principles, a number of questions are listed for more specific topics.

1

General design guidelines for new development:

- Integrate with existing paths, streets, circulation networks and patterns of activity;
- Reinforce or enhance the established settlement character of streets, greens, and other spaces;
- Harmonise and enhance existing settlement in terms of physical form, architecture and land use;
- Relate well to local topography and landscape features, including prominent ridge lines and long-distance views;
- Reflect, respect, and reinforce local architecture and historic distinctiveness;
- Retain and incorporate important existing features, including existing landscape, into the development;
- Respect surrounding buildings in terms of scale, height, form and massing;
- Adopt contextually appropriate materials and details;
- Provide adequate open space for the development in terms of both quantity and quality;
- Incorporate necessary services and drainage infrastructure without causing unacceptable harm to retained features;
- Ensure all components e.g. buildings, landscapes, access routes, parking and open space are well related to each other;
- Positively integrate energy efficient technologies;
- Make sufficient provision for sustainable waste management (including facilities for kerbside collection, waste separation, and minimisation where appropriate) without adverse impact on the street scene, the local landscape or the amenities of neighbours;
- Ensure that places are designed with management, maintenance and the upkeep of utilities in mind; and
- Seek to implement passive environmental design principles by, firstly, considering how the site layout can optimise beneficial solar gain and reduce energy demands (e.g. insulation), before specification of energy efficient building services and finally incorporate renewable energy sources.

2

Street grid and layout:

- Does it favour accessibility and connectivity? If not, why?
- Do the new points of access and street layout have regard for all users of the development; in particular pedestrians, cyclists and those with disabilities?
- What are the essential characteristics of the existing street pattern; are these reflected in the proposal?
- How will the new design or extension integrate with the existing street arrangement?
- Are the new points of access appropriate in terms of patterns of movement?
- Do the points of access conform to the statutory technical requirements?

3 (Continues)

Local green spaces, views & character:

- What are the particular characteristics of this area which have been taken into account in the design; i.e. what are the landscape qualities of the area?
- Does the proposal maintain or enhance any identified views or views in general?
- How does the proposal affect the trees on or adjacent to the site?
- Can trees be used to provide natural shading from unwanted solar gain? I.e. deciduous trees can limit solar gains in summer, while maximising them in winter.
- Has the proposal been considered within its wider physical context?
- Has the impact on the landscape quality of the area been taken into account?
- In rural locations, has the impact of the development on the tranquillity of the area been fully considered?
- How does the proposal impact on existing views which are important to the area and how are these views incorporated in the design?
- How does the proposal impact on existing views which are important to the area and how are these views incorporated in the design?
- Can any new views be created?
- Is there adequate amenity space for the development?
- Does the new development respect and enhance existing amenity space?

3

Local green spaces, views & character:

- Have opportunities for enhancing existing amenity spaces been explored?
- Will any communal amenity space be created? If so, how this will be used by the new owners and how will it be managed?
- What measures have been taken to enhance and increase local area biodiversity?
- Can green space be used for natural flood prevention e.g. permeable landscaping, swales etc.?
- Can water bodies be used to provide evaporative cooling?
- Is there space to consider a ground source heat pump array, either horizontal ground loop or borehole (if excavation is required)?

4

Gateway and access features:

- What is the arrival point, how is it designed?
- Does the proposal maintain or enhance the existing gaps between settlements?
- Does the proposal affect or change the setting of a listed building or listed landscape?
- Is the landscaping to be hard or soft?

5 (Continues)

Buildings layout and grouping:

- What are the typical groupings of buildings?
- How have the existing groupings been reflected in the proposal?
- Are proposed groups of buildings offering variety and texture to the townscape?
- What effect would the proposal have on the streetscape?
- Does the proposal maintain the character of dwelling clusters stemming from the main road?
- Does the proposal overlook any adjacent properties or gardens? How is this mitigated?

5

Buildings layout and grouping:

- Subject to topography and the clustering of existing buildings, are new buildings oriented to incorporate passive solar design principles, with, for example, one of the main glazed elevations within 30° due south, whilst also minimising overheating risk?
- Can buildings with complementary energy profiles be clustered together such that a communal low carbon energy source could be used to supply multiple buildings that might require energy at different times of day or night? This is to reduce peak loads. And/or can waste heat from one building be extracted to provide cooling to that building as well as heat to another building?

6

Building line and boundary treatment:

- What are the characteristics of the building line?
- How has the building line been respected in the proposals?
- Has the appropriateness of the boundary treatments been considered in the context of the site?

7

Building heights and roofline:

- What are the characteristics of the roofline?
- Have the proposals paid careful attention to height, form, massing and scale?
- If a higher than average building(s) is proposed, what would be the reason for making the development higher?
- Will the roof structure be capable of supporting a photovoltaic or solar thermal array either now, or in the future?
- Will the inclusion of roof mounted renewable technologies be an issue from a visual or planning perspective? If so, can they be screened from view, being careful not to cause over shading?

8

Household extensions:

- Does the proposed design respect the character of the area and the immediate neighbourhood, and does it have an adverse impact on neighbouring properties in relation to privacy, overbearing or overshadowing impact?
- Is the roof form of the extension appropriate to the original dwelling (considering angle of pitch)?
- Do the proposed materials match those of the existing dwelling?
- In case of side extensions, does it retain important gaps within the street scene and avoid a 'terracing effect'?
- Are there any proposed dormer roof extensions set within the roof slope?
- Does the proposed extension respond to the existing pattern of window and door openings?
- Is the side extension set back from the front of the house?
- Does the extension offer the opportunity to retrofit energy efficiency measures to the existing building?
- Can any materials be re-used in situ to reduce waste and embodied carbon?

9

Building materials & surface treatment:

- What are the prevailing materials in the area?
- Does the proposed material harmonise with the local materials?
- Does the proposal use high-quality materials?
- Have the details of the windows, doors, eaves and roof details been addressed in the context of the overall design?
- Does the new proposed materials respect or enhance the existing area or adversely change its character?
- Are recycled materials, or those with high recycled content proposed?

9

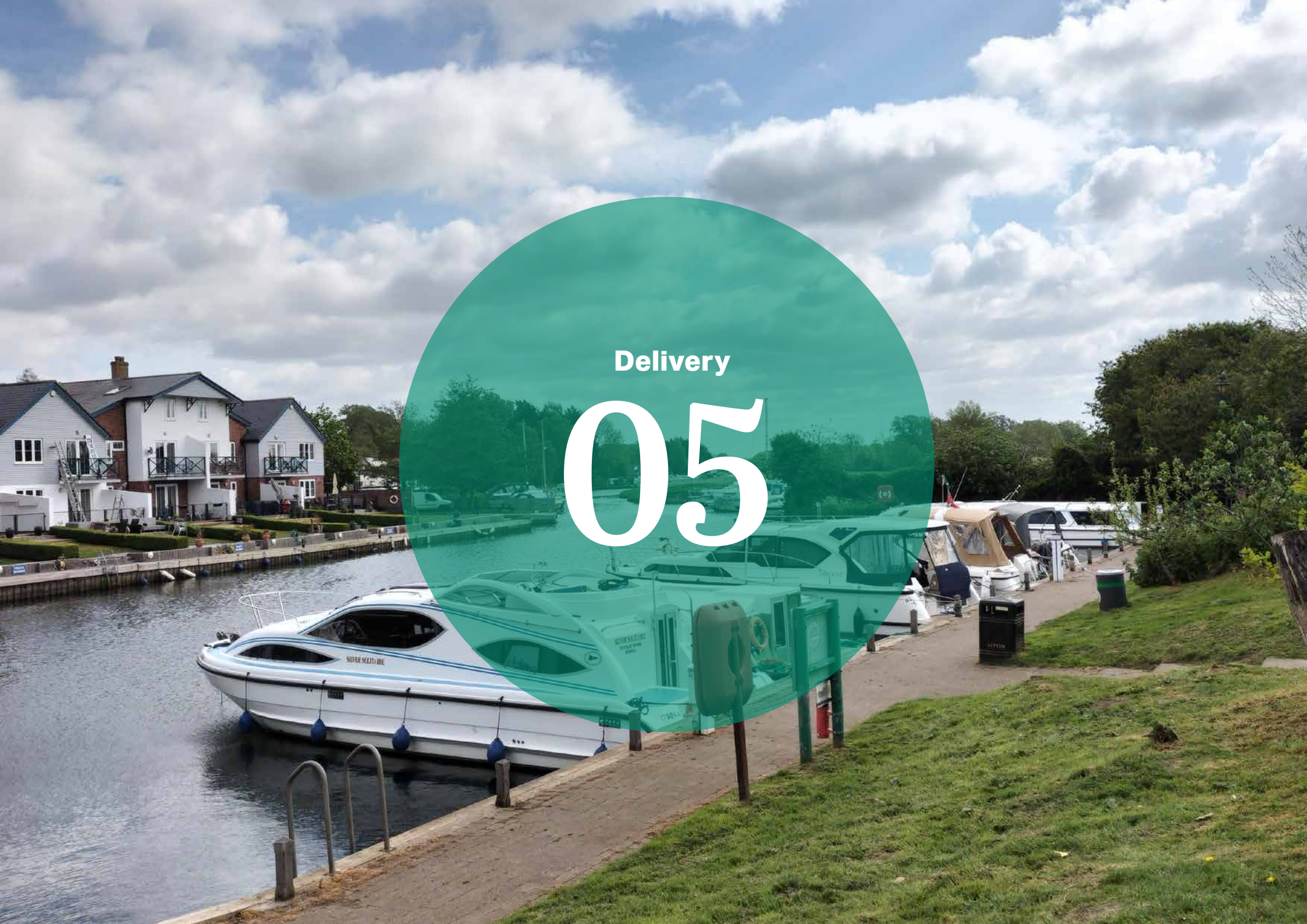
Building materials & surface treatment:

- Has the embodied carbon of the materials been considered and are there options which can reduce the embodied carbon of the design? For example, wood structures and concrete alternatives.
- Can the proposed materials be locally and/or responsibly sourced? E.g. FSC timber, or certified under BES 6001, ISO 14001 Environmental Management Systems?

10

Parking:

- What parking solutions have been considered?
- Are the car spaces located and arranged in a way that is not dominant or detrimental to the sense of place?
- Has planting been considered to soften the presence of cars?
- Does the proposed car parking compromise the amenity of adjoining properties?
- Have the needs of wheelchair users been considered?
- Can electric vehicle charging points be provided?
- Can secure cycle storage be provided at an individual building level or through a central/ communal facility where appropriate?
- If covered car ports or cycle storage is included, can it incorporate roof mounted photovoltaic panels or a biodiverse roof in its design?



Delivery

05

5. Delivery

5.1 How to use this guide

The Design Guidelines will be a valuable tool in securing context-driven, high quality development within the parish of Loddon and Chedgrave. They will be used in different ways by different actors in the planning and development process.

What follows is a list of actors and how they will use the design guidelines:

Actors	How they will use the design guidelines
Applicants, developers, & landowners	As a guide to community and Local Planning Authorities expectations on design, allowing a degree of certainty – they will be expected to follow the Guidelines as planning consent is sought.
Local Planning Authority	As a reference point, embedded in policy, against which to assess planning applications. The Design Guidelines should be discussed with applicants during any pre-application discussions.
Parish Council	As a guide when commenting on planning applications, ensuring that the Design Guidelines are complied with.
Community organisations	As a tool to promote community-backed development and to inform comments on planning applications.
Statutory consultees	As a reference point when commenting on planning applications.

Table 01: Delivery

About AECOM

AECOM is the world's trusted infrastructure consulting firm, delivering professional services throughout the project lifecycle — from planning, design and engineering to program and construction management. On projects spanning transportation, buildings, water, new energy and the environment, our public- and private-sector clients trust us to solve their most complex challenges. Our teams are driven by a common purpose to deliver a better world through our unrivaled technical expertise and innovation, a culture of equity, diversity and inclusion, and a commitment to environmental, social and governance priorities. AECOM is a *Fortune 500* firm and its Professional Services business had revenue of $13.2 billion in fiscal year 2020. See how we are delivering sustainable legacies for generations to come at aecom.com and @AECOM.

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