



CARLTON MASTERPLAN FRAMEWORK

MASTERPLAN FRAMEWORK AND DESIGN CODE

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Glossary of Acronyms

BMBC	Barnsley Metropolitan Borough Council
GI	Green Infrastructure
NEAP	Neighbourhood Equipped Area of Play
LEAP	Local Equipped Area of Play
EPA	Equipped Play Area
PRoW	Public Right of Way
SuDS	Sustainable Drainage Systems
NCN	National Cycle Network
TPT	Trans Pennine Trail
DPH	Dwellings per Hectare
SPD	Supplementary Planning Document
POS	Public Open Space
BNG	Biodiversity Net Gain
LVA	Landscape Visual Assessment
LCA	Landscape Character Area

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1. INTRODUCTION

1.1 Background

In the Barnsley Local Plan (adopted January 2019) a number of allocations require Masterplan Frameworks to inform any future planning applications. These frameworks are subject to public consultation and council approval prior to determination of any planning applications on the affected sites.

The Carlton Masterplan Framework has been commissioned by Barnsley Metropolitan Borough Council (BMBC). It will be responsible for setting the objectives for the development to ensure that it contributes towards BMBC's wider objectives and is aligned with the Local Plan. The framework will serve to coordinate sustainable development across a number of land parcels and ownerships and integrate with surrounding landscape and existing communities.

This report includes research and analysis compiled from Stage 1 (Evidence Base) and Stage 2 (Site and Context Analysis). It has been produced through a combination of document reviews, OS mapping data, input from public and stakeholder consultations, professional analysis and collaboration work with the multi-disciplinary consultancy team and BMBC.

This Masterplan Framework forms part of a wider programme of work to bring forward regeneration and economic growth across Barnsley, including Carlton. This includes improvements proposed through the Local Plan Spatial Strategy, Barnsley Transport Strategy and the Sheffield City Region Transport Strategy and associated Implementation Plans. Whilst this Masterplan Framework is focused on specific Local Plan site allocations, it is reflective of these wider initiatives which are being brought forward by the Council and its partners.

BMBC have commissioned Arup and Gillespies to develop a Masterplan Framework and Design Code for this proposed development. The process has involved the analysis of issues and opportunities, exploration of options, intensive engagement and consultation.

This report takes into account the particular instructions and requirements of our client. It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Fig. 1 shows the extent of allocated sites MU2 and MU3 (now referred to collectively as 'the site', unless stated otherwise) in Carlton, which form the study area of our analysis in this report.



Fig. 1: Site Location Map MU2 and MU3

1. INTRODUCTION

1.2 Overview

In the Local Plan, the MU2 and MU3 Carlton allocations have been designated to be a combined new mixed-use development for 1977 homes, a small local shop and education expansion. However, after working through the masterplanning process, this Masterplan Framework is providing circa 1500 homes. The designated site is located immediately to the east and south of Carlton, and within close proximity to Royston, Cudworth, Monk Bretton and Athersley. The development will include a new small local shop, expansion to Carlton Primary Academy, improved play and community facilities and will capitalise on the Wharncliffe Woodmoor green heart - all formed around three new neighbourhoods.

A new community garden will bring grow gardens, an orchard, informal woodland play and an active travel focal point to Carlton. The community garden will be focused towards neighbourhood activity and will not include a shop.

Wharncliffe Woodmoor will be retained and enhanced as an invaluable asset to the people of north Barnsley, while also contributing to the improvement of biodiversity in the area.

Multiple active travel routes and green/ wildlife corridors will be across the site, connecting key open spaces and surrounding towns, villages and nature reserves, including Carlton Marsh Nature Reserve, which is now part of a new Site of Special Scientific Interest (SSSI).

1.3 Use of this Document

The purpose of this document is to ensure coordinated, comprehensive and quality development is brought forward at Carlton. It will form material guidance in the determination of any planning applications on the site.

Applicants are required to present each planning application to the Design Panel at key stages throughout design development and demonstrate compliance with the Masterplan Framework and Design Code through a Masterplan Framework Compliance Statement. This shall form part of the validation requirements for submission of a planning application, including any of the land edged in red in Fig. 01. Where applicants judge that either the requirements cannot be complied with, or they wish to put forward alternative proposals that they believe will continue to meet the aims of the Masterplan Framework, these shall be clearly set out in the Masterplan Framework Compliance Statement with supporting evidence setting out the rationale for this, to permit consideration by the Local Planning Authority as part of the determination process.

It is recommended that any proposed departures from the Masterplan Framework are discussed with the Local Planning Authority as part of formal pre-application discussions and are included in pre-application public consultation.

The Masterplan Framework Compliance Statement shall set out:

- How the proposed application accords with the Masterplan Framework, by framework layer.
- How the proposed application accords with the Design Code, by Design Code principle.

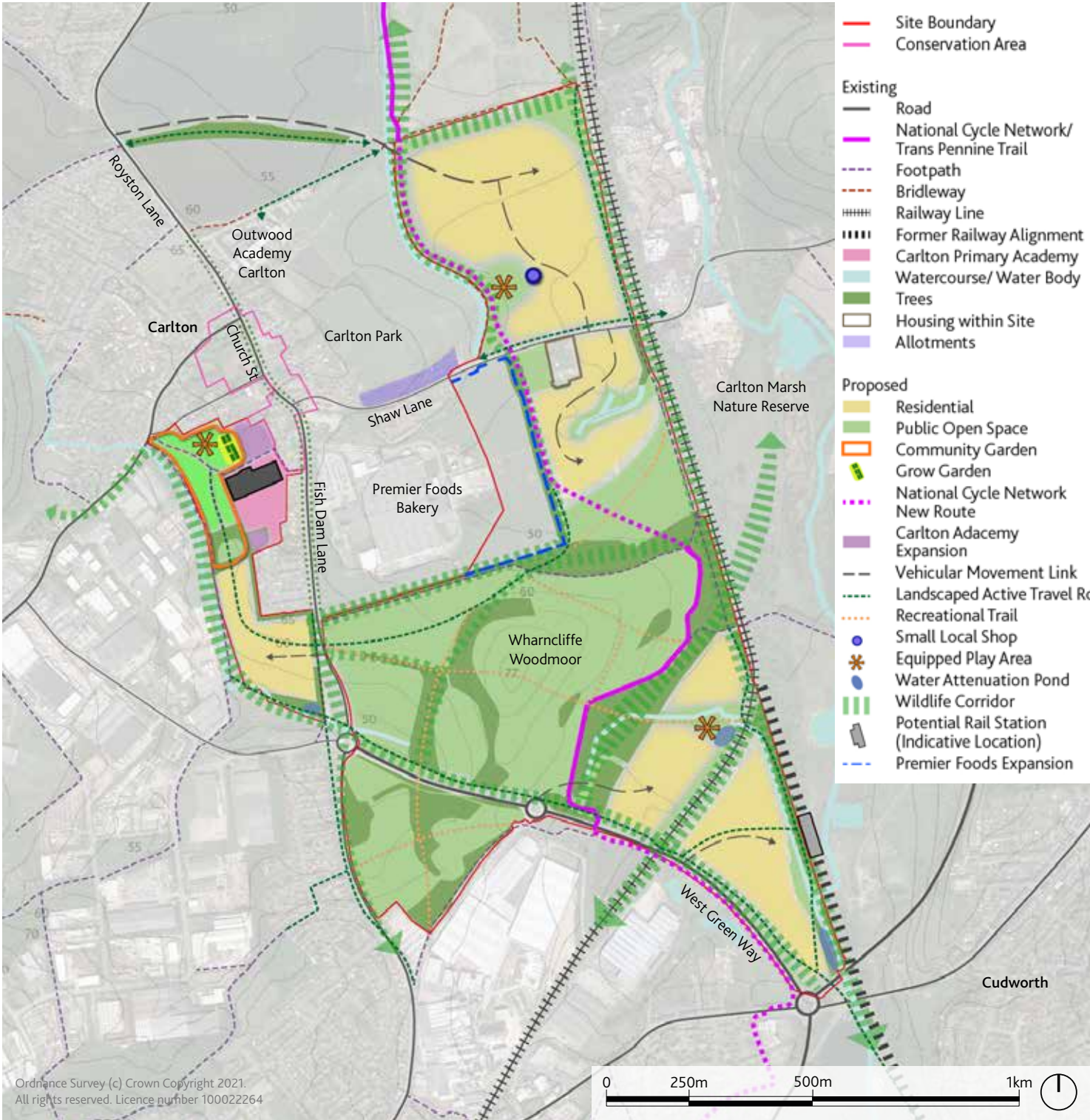


Fig. 2: Carlton Masterplan Framework Plan

2. PLACEMAKING PRINCIPLES

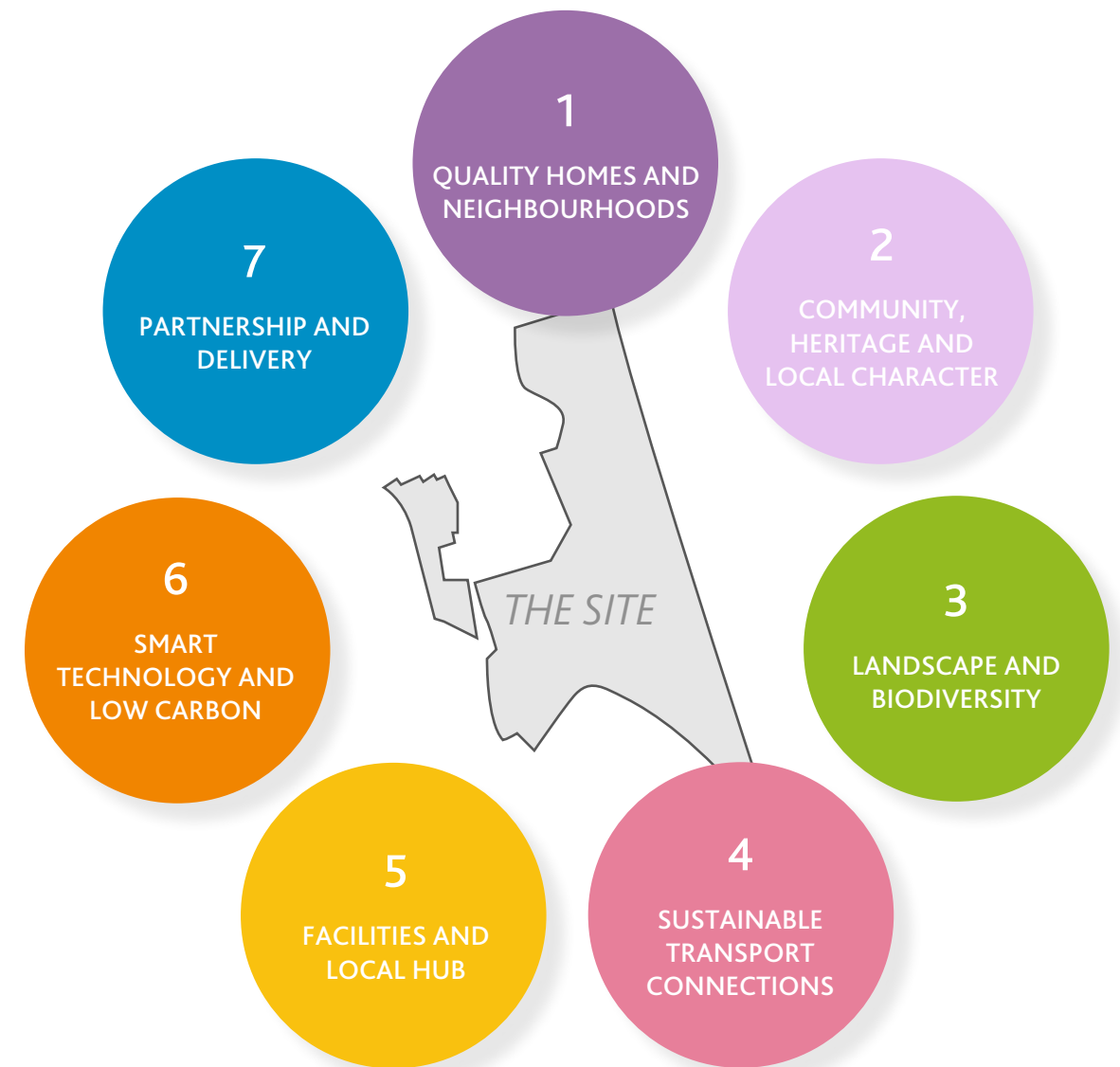
Vision

Carlton's new development will be a cluster of sustainable neighbourhoods focused around Wharncliffe Woodmoor as the key community greenspace. They will offer innovative housing and diverse neighbourhoods within a pedestrian and cyclist friendly environment, and a distinctive landscaped setting integrated into the fabric of existing green, blue and service assets such as Carlton Marsh Nature Reserve, Barnsley Canal, National Cycle Route and connections to local facilities including the nearby local centres of Royston and Cudworth.

The Masterplan Framework for Carlton is based around the seven placemaking principles. To ensure quality and sustainability, these principles will be embedded throughout the process of planning and delivering Carlton's new communities.

BMBC declared a climate emergency in 2019 and has a goal to become a net zero carbon borough by 2045. Therefore, sustainably reducing energy usage is a key consideration for the Masterplan. Elements being considered in the Masterplan Framework to make it more sustainable include:

- Promoting the use of sustainable transport, including walking, cycling, bus services, connections to railway stations and electric vehicle charging points in every home
- Provision of high-speed digital fibre connections to allow people to work from home
- Use historic mine workings around Barnsley as a heat source
- Smart technology such as energy efficient building fabric and efficient, low-energy heating systems to help drive down carbon emissions



2. PLACEMAKING PRINCIPLES

1 Quality Homes of Character and Diverse Neighbourhoods

Provide innovative, future proofed housing of character for the new neighbourhoods within a distinctive landscaped setting and offering a diverse range of types and tenures promoting intergenerational and healthy living having regard to the local character and townscape of Carlton including its conservation area.

2 Community Integration

To ensure the new development is a good neighbour, integrating well with surrounding neighbourhoods for mutual benefit.

3 Landscape and Biodiversity

Enhance and preserve Wharncliffe Woodmoor as the new neighbourhood greenspace. Establish green wildlife links as part of the distinctive neighbourhood landscaping connecting with Carlton Marsh and retaining and rejuvenating as many of the existing trees and habitats as possible across the site.

4 Sustainable Transport Promotion and Connections

Ensure provision of well promoted attractive active travel and public transport links within the new neighbourhoods and between the new and surrounding neighbourhoods to make these modes the first choice of travel mode. Improve the existing National Cycle Network/ Trans Pennine Trail to form a secure and well connected network through the site.

5 Facilities and Community Hub

Promote the primary and senior school expansion, community garden and neighbourhood park as facilities serving both new and existing neighbourhoods.

6 Smart Technology and Low Carbon

Promote clean alternative energy usage and minimum carbon consumption throughout the development together with ensuring the neighbourhoods are serviced by high quality broadband and digital technology.

7 Partnership and Delivery

Innovative engagement and partnership methods with community and other key stakeholders will be used to develop innovative exemplary ways of funding, implementing and managing the development and its associated services maximising social enterprise opportunities.



Wharncliffe Woodmoor



Carlton Marsh Nature Reserve

3. SITE CONSTRAINTS AND OPPORTUNITIES

3.1 CONTEXT

This site and contextual analysis report refers specifically to the site, which is also known as the MU2 (west) and MU3 (east) sites. MU2 is 11.8 ha and MU3 is 117.2 ha, combining to create a total of 129 ha in the local authority of Barnsley Metropolitan Borough. The site is currently designated as mixed-use under the BMBC Local Plan.

The site lies less than 0.5km south-east of the centre of Carlton and are approximately 4km to the north-east of Barnsley. They are accessible via the M1 (J38) and A61.

MU2 is bounded to the west by a green buffer to Carlton Industrial Estate, north and east by housing and Carlton Primary Academy, and south by travellers site TS1.

MU3 is bounded to the north by green belt, east by a railway line, north-west by the Barnsley Canal, west by Premier Foods Bakery, south-west by housing and south by Ardagh Glass Works. Shaw Lane bisects the northern quarter of the site, while West Green Way bisects the southern quarter of the site.

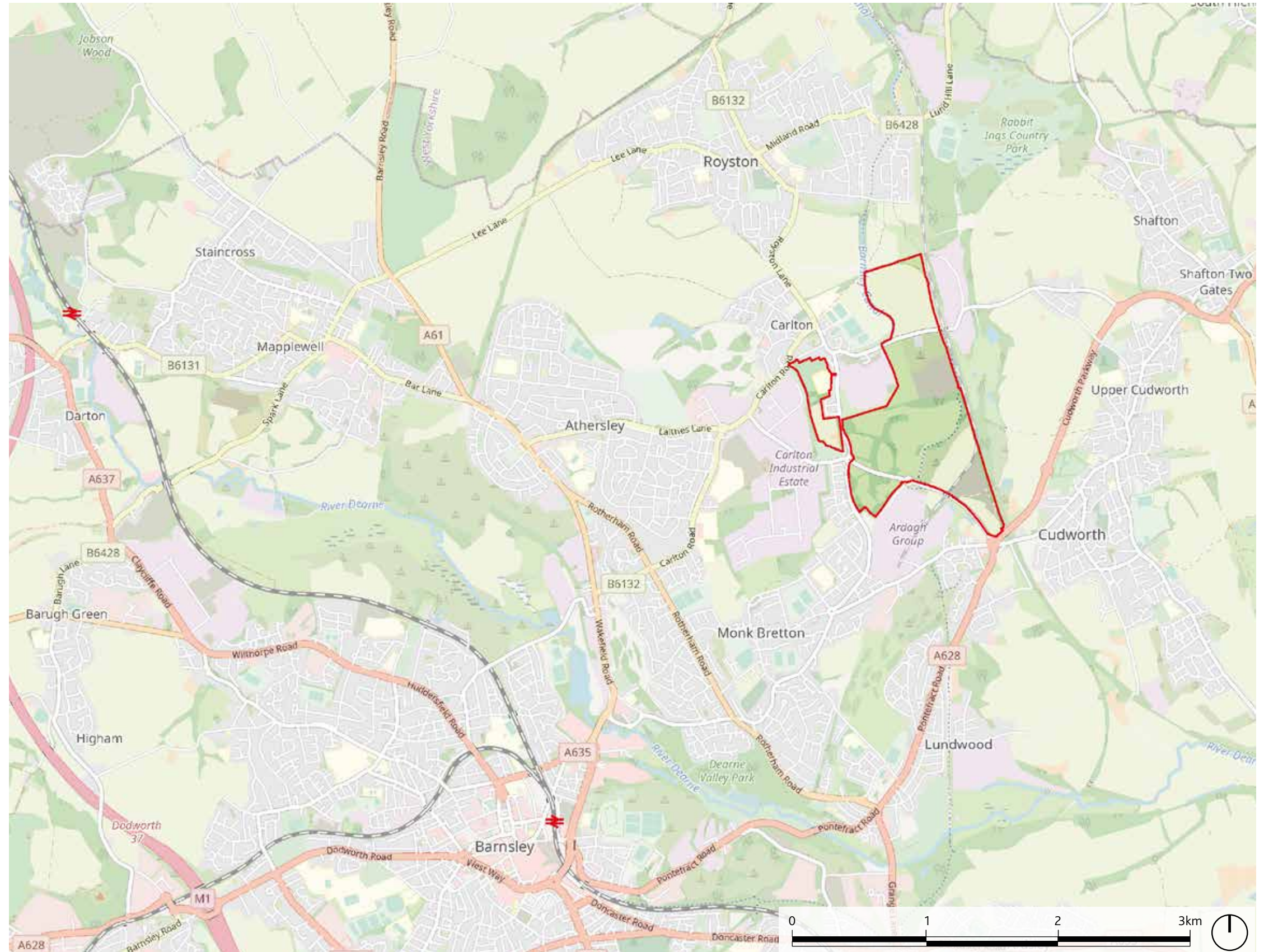


Fig. 3: Site Context Map

3. SITE CONSTRAINTS AND OPPORTUNITIES

3.2 TOPOGRAPHY

Site MU2 rises from a low point in the south towards the north-east with an overall level change of circa 15m.

Site MU3 rises from the lowest level along the eastern edge (particularly to the south east) towards the central south area where the summit is located and has a level change of over 35m.

The steepest region lies in the central and southern part of MU2, and within Wharncliffe Woodmoor area in MU3 around the high point and towards the railway lines. The rest of the site is located on a relatively flat area.

These topographical issues should be respected and addressed in the Masterplan.

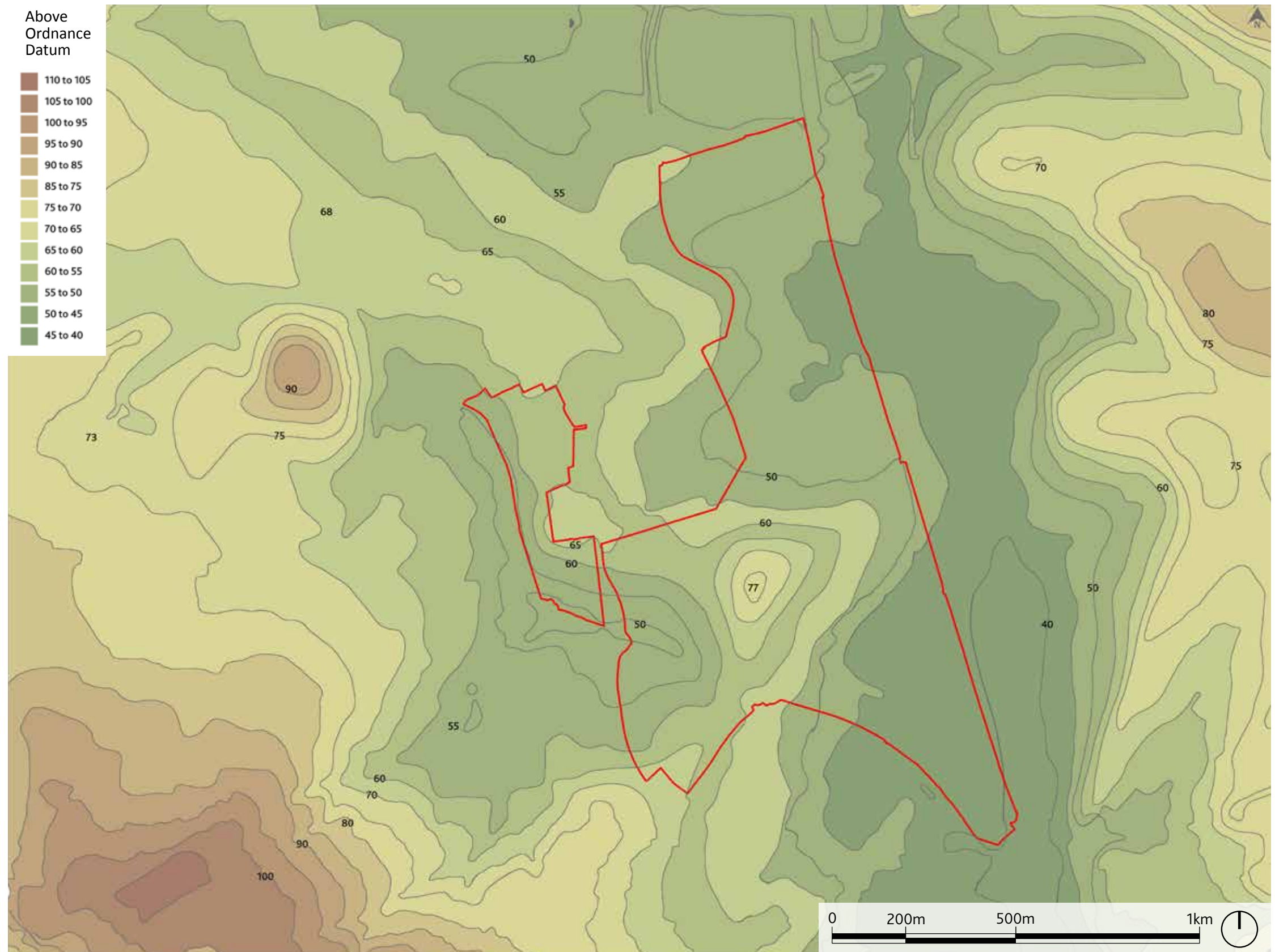


Fig. 4: Carlton Existing Topography

3. SITE CONSTRAINTS AND OPPORTUNITIES

3.3 KEY CONSTRAINTS

The site constraints plan summarises the various technical constraints that are found within and around the site.

Ground Condition:

There are a number of ground constraints across the site as detailed in the Evidence Base. For most of these, ground investigations will be required during the design phases. Some of the key constraints are illustrated in Fig. 5 and detailed below:

- Shallow mineworkings in the northern part of the MU2 allocation will require ground investigations to check for ground gas and if coal still exists. These may need to be extracted prior to development to prevent sterilisation in line with Barnsley Local Plan Policy MIN1.
- Ground investigations will be required to locate the mineshafts and mine adit on Site and to confirm the treatment. This can then lead to the determination of the exact development exclusion zone.
- There is a potential source of contamination in groundwater in the former landfill areas which will require a desk study and ground investigation in order to confirm the contents and extent of contamination and required remediation.
- Further investigation will be required with Coal Authority (including CON29M report) to obtain Information on mine gas and ground source heat potential of the deep mineworking areas.

Heritage and Archaeology

Most heritage assets of interest are outside of the site and an assessment of impacts on the setting of designated heritage assets is likely to be required to support planning applications made for the site.

For the heritage assets located within the site, proposals must be accompanied by an appropriate archaeological assessment. The canal for example should be reflected within the proposed landscape and others such as the ridge and furrow earthworks may need to be recorded prior to construction.

Flood Risk

Development should be avoided on areas within Flood Zone 2 and 3, as required by Local Plan Policy.

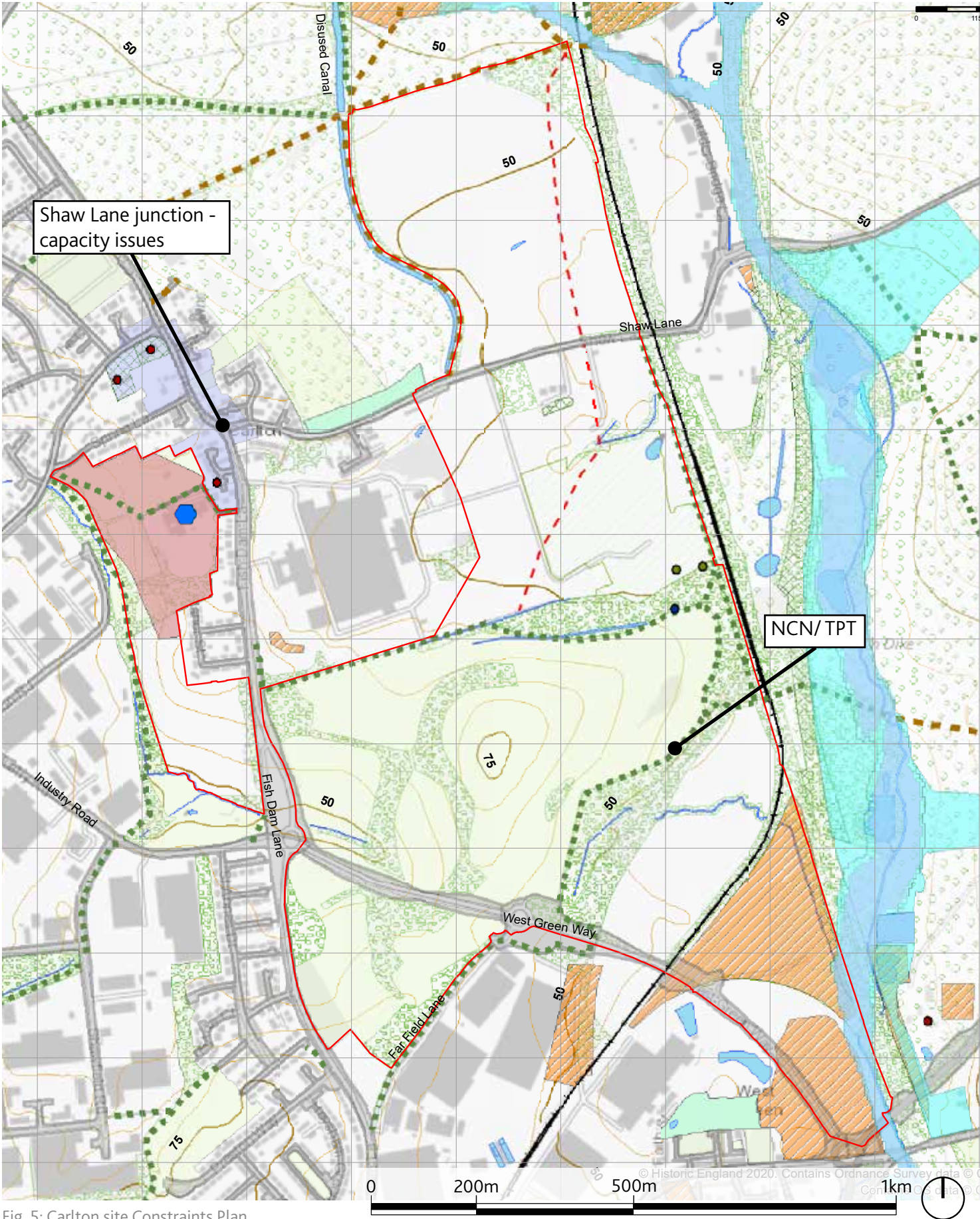
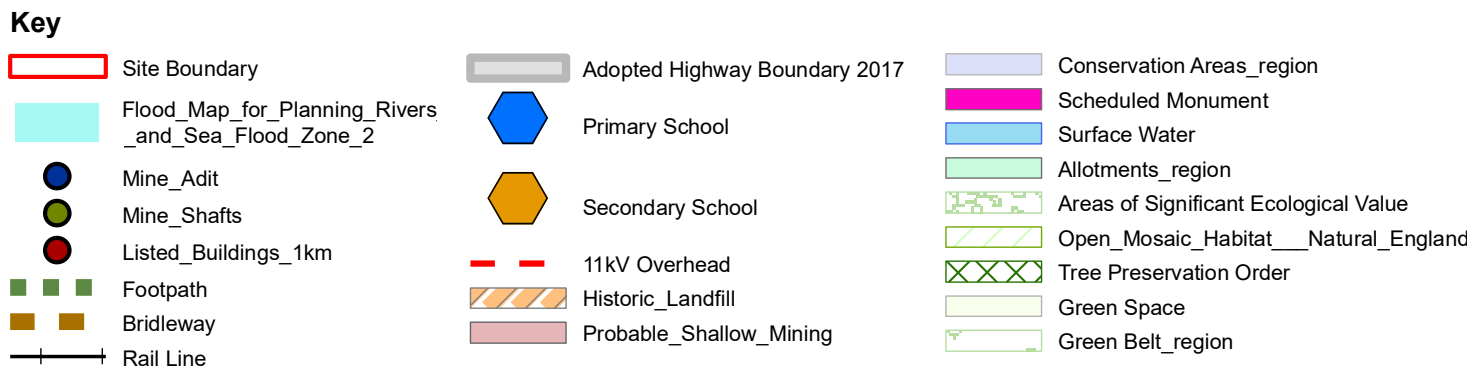


Fig. 5: Carlton site Constraints Plan

3. SITE CONSTRAINTS AND OPPORTUNITIES

3.4 SITE OWNERSHIP

Mapping to the right indicates that there are a number of different land parcels with different owners across the site. There are 17 different landowners with varying sizes of land parcels.

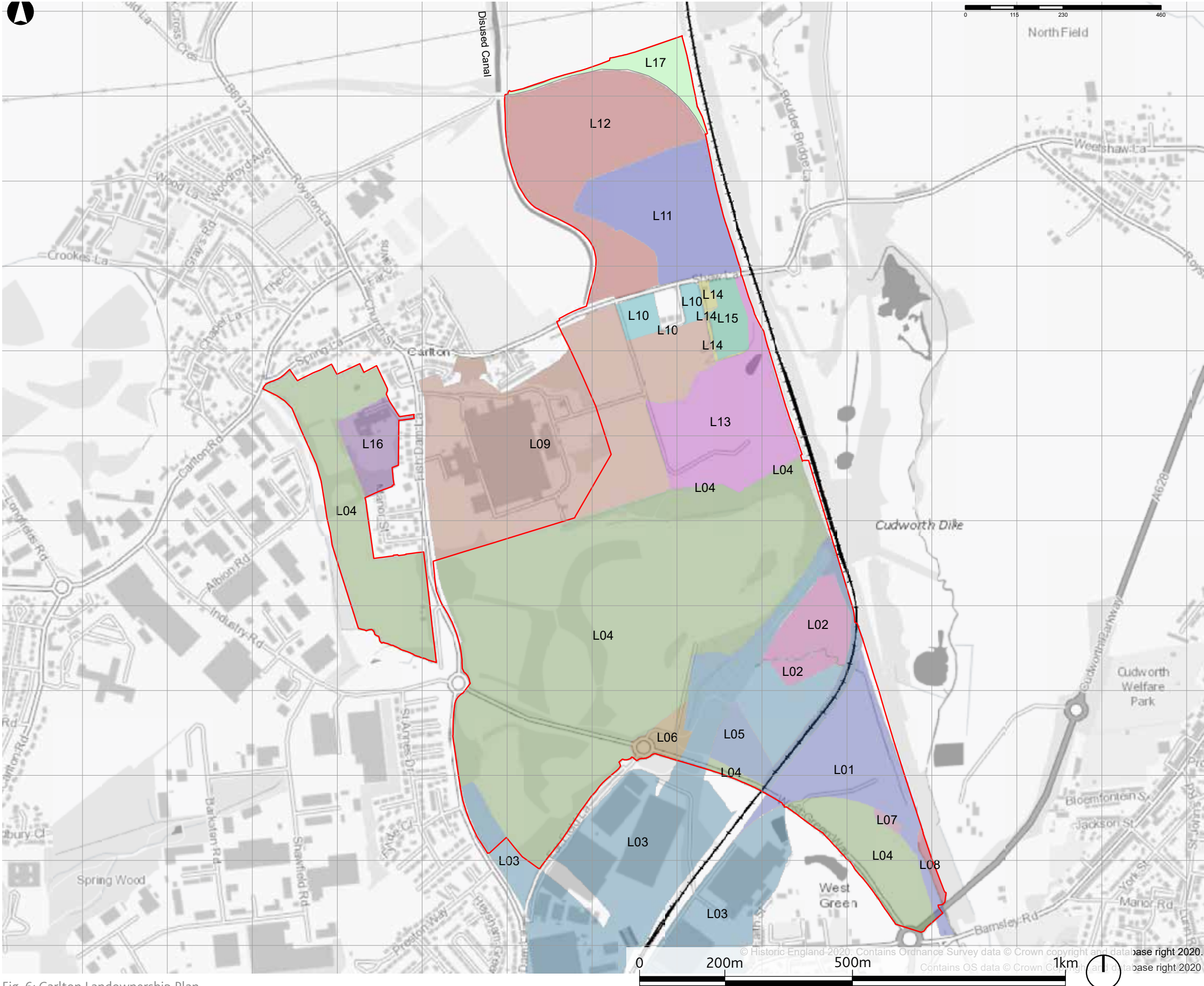


Fig. 6: Carlton Landownership Plan

3. SITE CONSTRAINTS AND OPPORTUNITIES

3.5 URBAN DESIGN ANALYSIS

The site and context urban design analysis plan to the right summarises the below key findings:

- Provide safe active travel and public transport links to Carlton Primary Academy, Outwood Academy Carlton, Carlton Park and Recreational Ground and to the local centres of Cudworth and Royston.
- Sensitive treatment and potential mitigation buffer required along existing industrial edges.
- Large areas of contaminated/ unsettled land within the site will require remediation to enable residential development to take place.
- Proposed development shall consider significantly steep topography.
- Safe pedestrian and cycle crossing points should be provided along existing roads and connect the site with surrounding Public Right of Way network.
- Mitigation required for noise and environmental pollution from national speed limit traffic along West Green Way.
- NCN/TPT of poor quality along eastern edge of site MU3 and along Shaw Lane to be either improved or relocated.

All applications must provide robust mitigation measures to mitigate against noise, odour and other potential impacts arising from the existing (and potentially expanding) industrial operations.

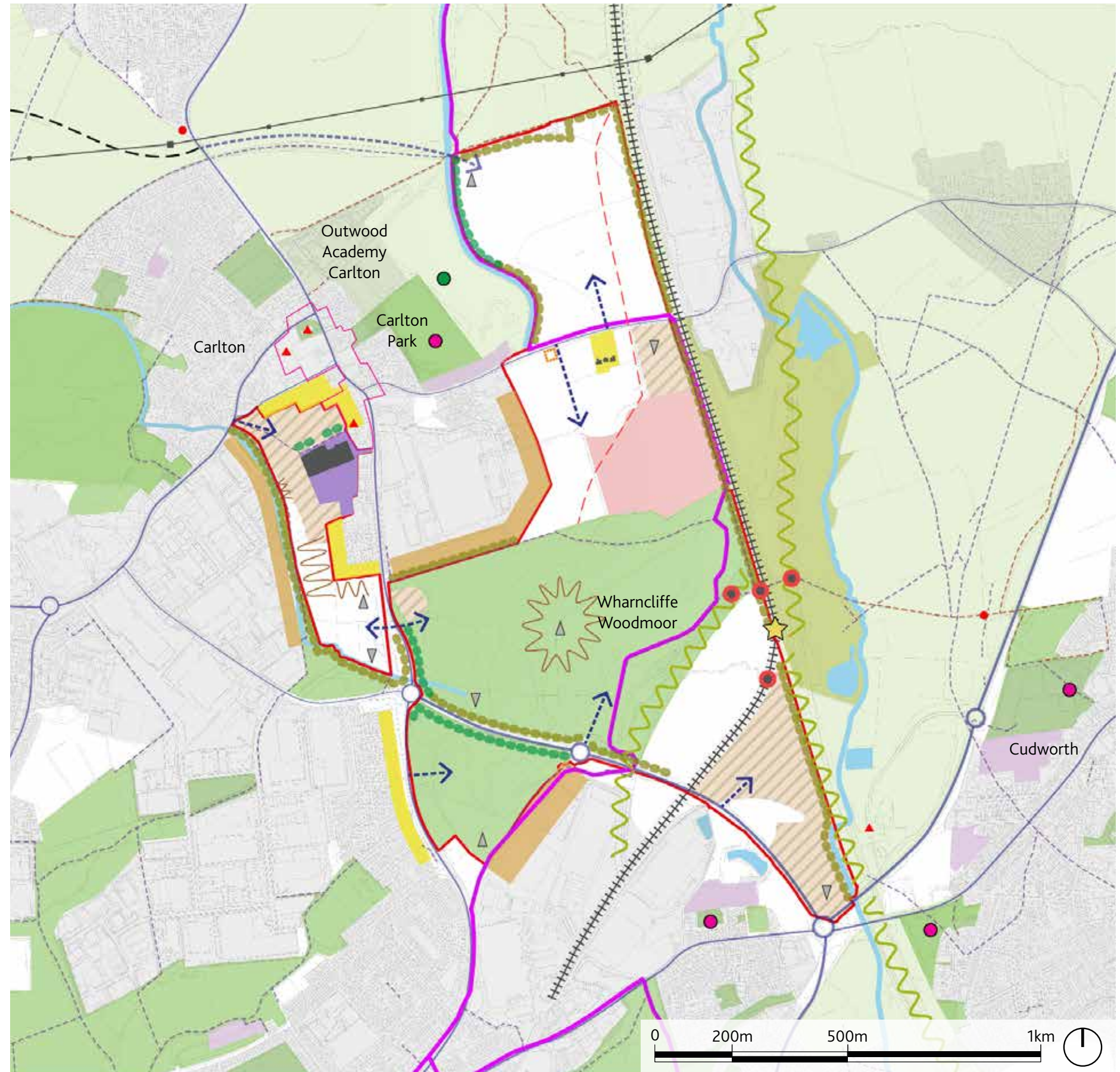


Fig. 7: Urban Design Analysis

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3. SITE CONSTRAINTS AND OPPORTUNITIES

3.5 URBAN DESIGN ANALYSIS

The site and its surrounding areas have distinctive characteristics that provide a platform for placemaking strategies in the new development:

1 HISTORIC CONSERVATION AREA

The historic centre of Carlton is centred at the junction of Church St and Carlton Road, consisting of a church, significant manor houses and former barns.

2 CARLTON GREEN

Likely the first extension of Carlton, an area of mid 20th century municipal housing following a loose grid layout with narrow streets.

3 MINER'S QUARTER

Terrace housing of former miners, in close proximity to former collieries and mine shafts, typically following an industrial grid layout or along key streets.

4 WOOD LANE ROUNDABOUT

Recent developer led edge of settlement extension following a disconnected grid form.

5 CARLTON EDGE

Area of mid-late 20th century developer housing following a perimeter block and cul-de-sac layout.

6 CARLTON CENTRE

Permeating away from the centre of the conservation area is distinctive and unique early 20th century housing, primarily along Spring Lane.

7 FARMSTEAD

New small developer housing on the site of former farms/ farmsteads - typically forming cul-de-sacs.

8 FISH DAM LANE EXTENSION

Seemingly random inter-war housing extension disconnected from Carlton, consisting of semi-detached housing following a perimeter block.

9 LITTLE LANCASHIRE

Post-war municipal housing following a Radburn/ Neu Frankfurt style of housing perpendicular to arterial streets, while street names take influence from Lancashire towns.

10 KLONDYKE EXTENSION

21st century mass housing development, with tall and narrow streetscapes and no ground floor active frontage, following a loose but connected street formation.

11 INDUSTRIAL CUDWORTH

Former miners terrace housing along the arterial road leading into Cudworth, housing is typically raised with a small front garden and dominated by on-street parking.

12 WEETSHAW

Individual and isolated detached and semi-detached housing between Carlton and Cudworth, forming mostly along primary streets.

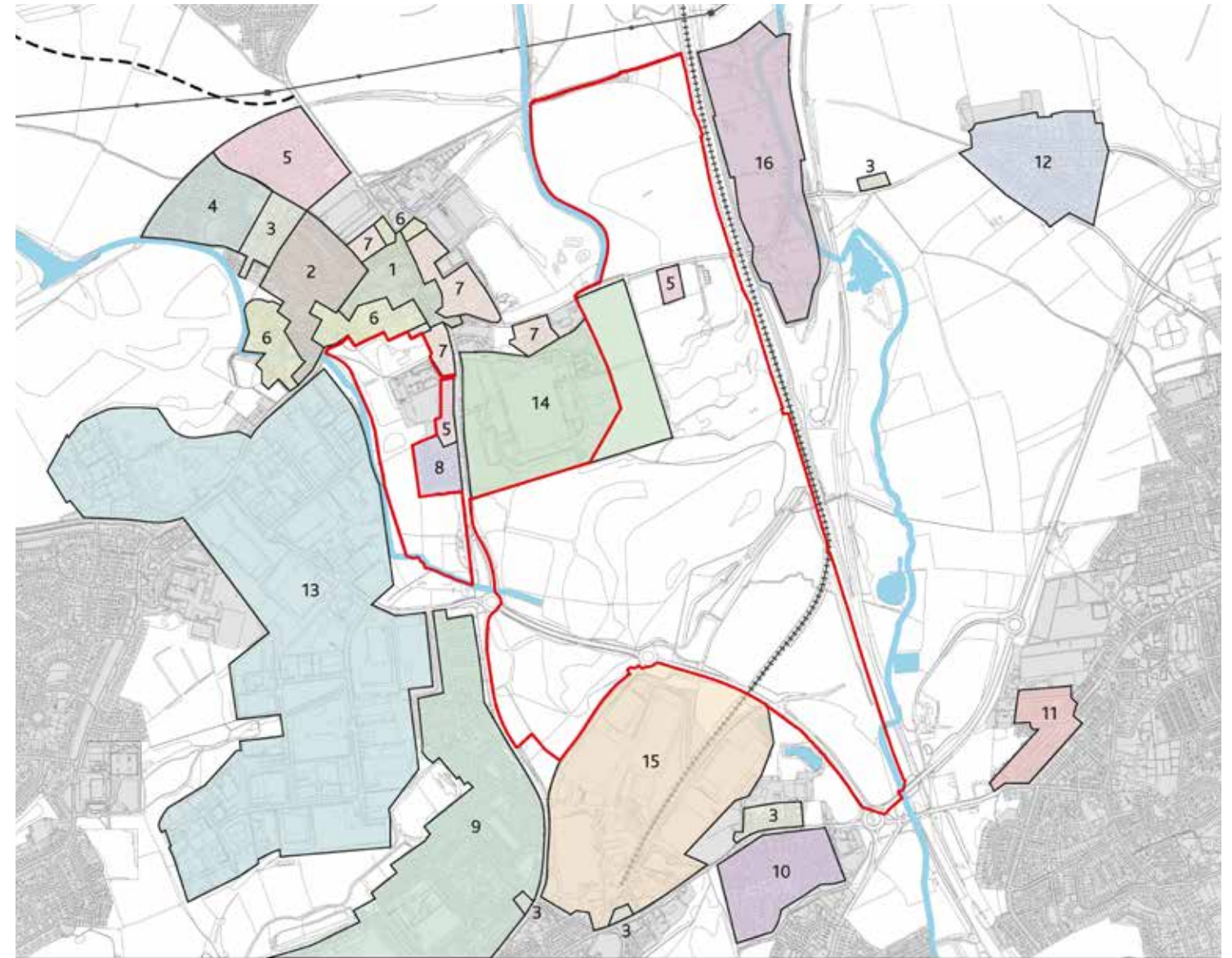


Fig. 8: Carlton Townscape Character Map

13 CARLTON INDUSTRIAL ESTATE

Significant post-war industrial estate divided from Carlton by a green buffer - consisting of low rise, medium-large footprint warehouses.

14 PREMIER FOODS BAKERY

Low-rise large footprint warehousing situated close to the centre of Carlton, partially screened by a sparse woodland boundary.

15 ARDAGH GLASS WORKS

Prominent piece of industry to the north of Monk Bretton, with tall warehouses and chimney stacks visible as a significant landmark seen from miles around.

16 BOULDER BRIDGE LANE

Elongated mostly low-rise area of industry specialising in scrap metal, typically away from public view, penned in by railway embankments.

3. SITE CONSTRAINTS AND OPPORTUNITIES

3.5 URBAN DESIGN ANALYSIS



3. SITE CONSTRAINTS AND OPPORTUNITIES

3.6 LANDSCAPE ANALYSIS

The site and context landscape analysis plan to the right summarises the below key findings:

- Retain and enhance areas in Wharncliffe Woodmoor as valuable public greenspace, with a focus around the peak of the Carlton South Spoil mound as this offers panoramic views out over the surrounding landscape.
- Create a thematic and well-connected active travel network across and beyond the site, teeing into surrounding Public Rights of Way and National Cycle Network/ Trans Pennine Trail.
- Existing trees and hedgerows within the site to be retained where possible.
- Create strong wildlife corridors across and beyond the site, ensure connections with Carlton Nature Reserve and surrounding priority habitats.
- Respect priority habitats and areas of significant ecological value within the site as rich environmental features, and tee into wildlife corridors where possible.
- Blue infrastructure strategy to be coordinated with existing topography across the site.

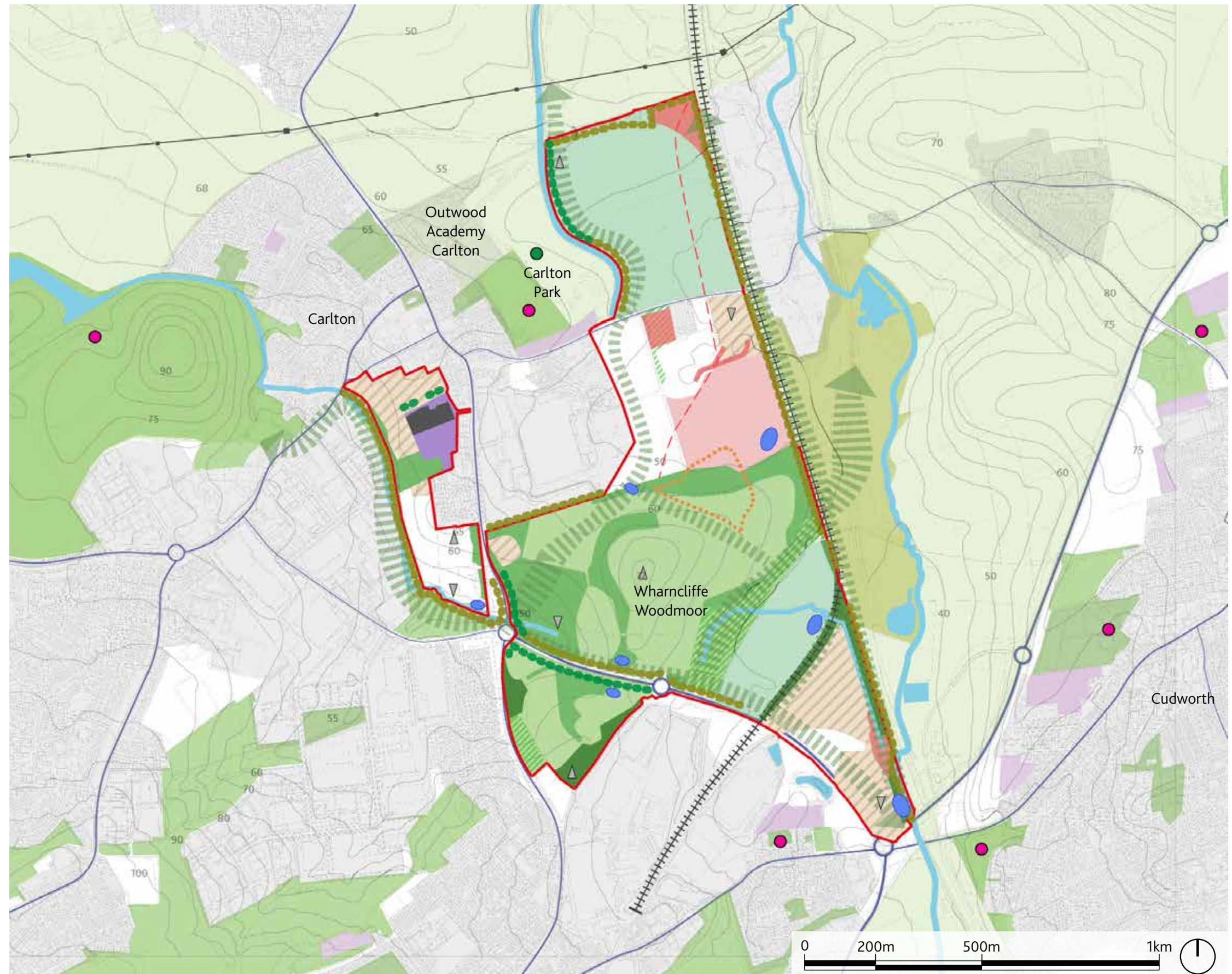


Fig. 9: Green Infrastructure Analysis

3. SITE CONSTRAINTS AND OPPORTUNITIES

3.7 BASELINE CONCLUSIONS

Summary Opportunities

- Extension to Carlton Primary Academy (210 places, circa. 0.87ha).
- Enhance active travel and public transport links to surrounding key assets, such as Carlton Park, Carlton Primary Academy and Outwood Academy, including the diversion and improvement of the NCN/ TPT.
- Connect and establish distinctive active travel network to link between the site and Cudworth and Royston local centres.
- Potential implementation of new railway station in MU3 connecting between Wakefield and Barnsley.
- Establish wildlife corridors to connect significant assets in the site with Carlton Nature Reserve and surrounding parks.
- Extensive heritage characteristics to be reflected in design.
- Propose Local Equipped Areas of Play in areas throughout the site that are not divided by arterial streets including MU2 and MU3 (north and south of Shaw Lane).

Summary Issues

- Further investigations will be required to assess the contaminated and unsettled land within the site.
- Problematic steep topography to be considered in the development layout.
- Capacity constraints at the existing Shaw Lane/ Church Street/ Fish Dam Lane junction.
- Site boundaries along industrial edges in site MU3 present aesthetic and acoustic issues.
- Land ownership to be respected with configuration of land use and potential phasing.
- National speed limit along West Green Way causes concern for noise pollution and movement barrier within MU3.
- NCN/TPT of poor quality along eastern edge of site MU3 and along Shaw Lane.

4. MASTERPLAN DEVELOPMENT

4.1 PRE AND POST CONSULTATION FRAMEWORK

In response to the feedback received during the consultation process, a range of amendments were made to the consultation masterplan based on a 'You said, we did' approach.

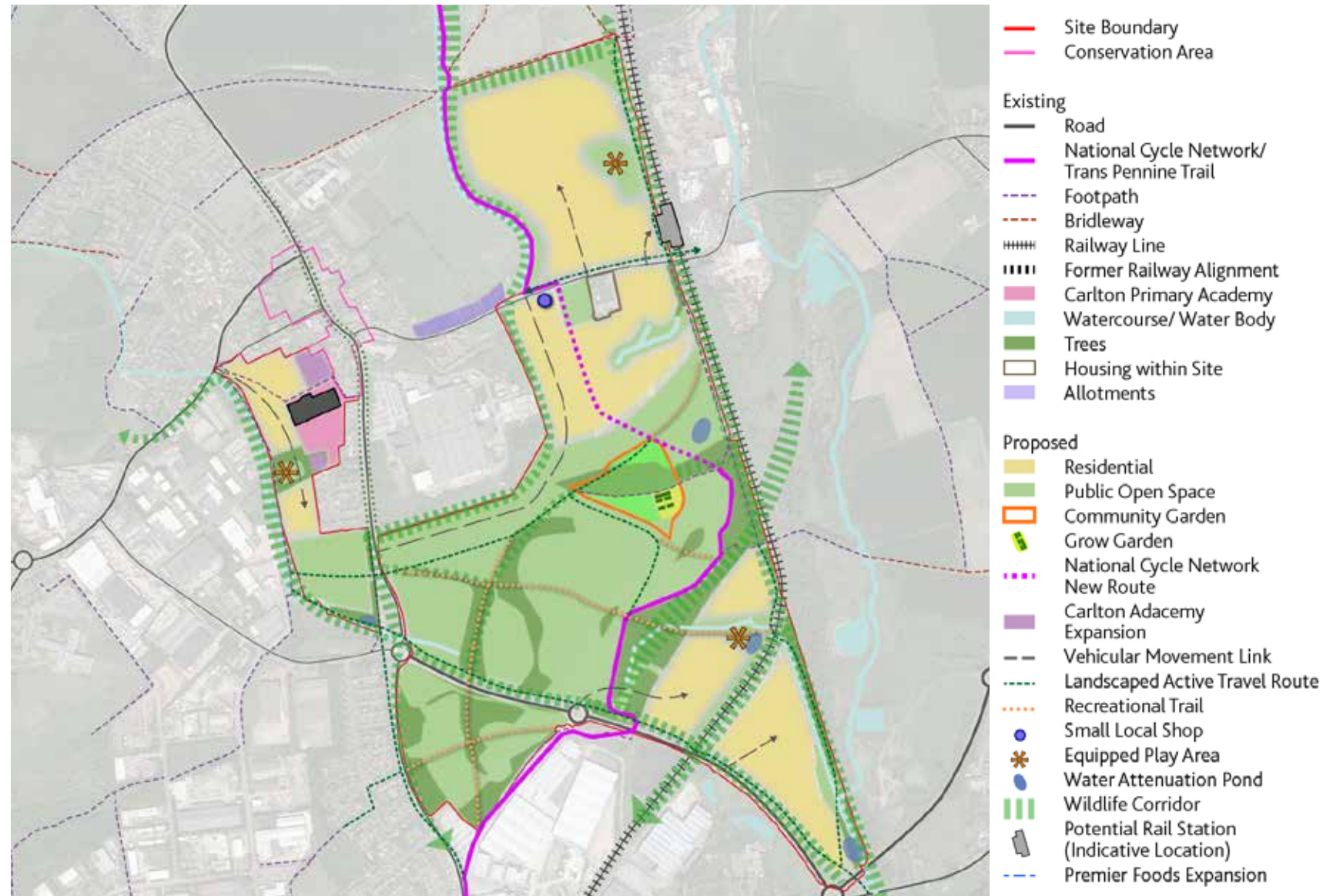


Fig. 10: Consultation Masterplan Framework Plan (Contains information from Esri)

Consultation Masterplan Framework

- Promote a new community garden where the former Carlton Colliery Allotment Garden was, including new grow garden and recreational field.
- Retain and enhance the majority of Wharncliffe Woodmoor as a neighbourhood greenspace.
- Enhance Royston Lane, Church Street and Fish Dam Lane as a central green spine.
- Propose vehicular link from Fish Dam Lane to the north of the site to reduce impact on Shaw Lane.
- Locate small local shop on Shaw Lane/ NCN/ TPT to maximise passing trade into the development.
- Enhance and divert sections of NCN/ TPT to integrate with the overall GI strategy.

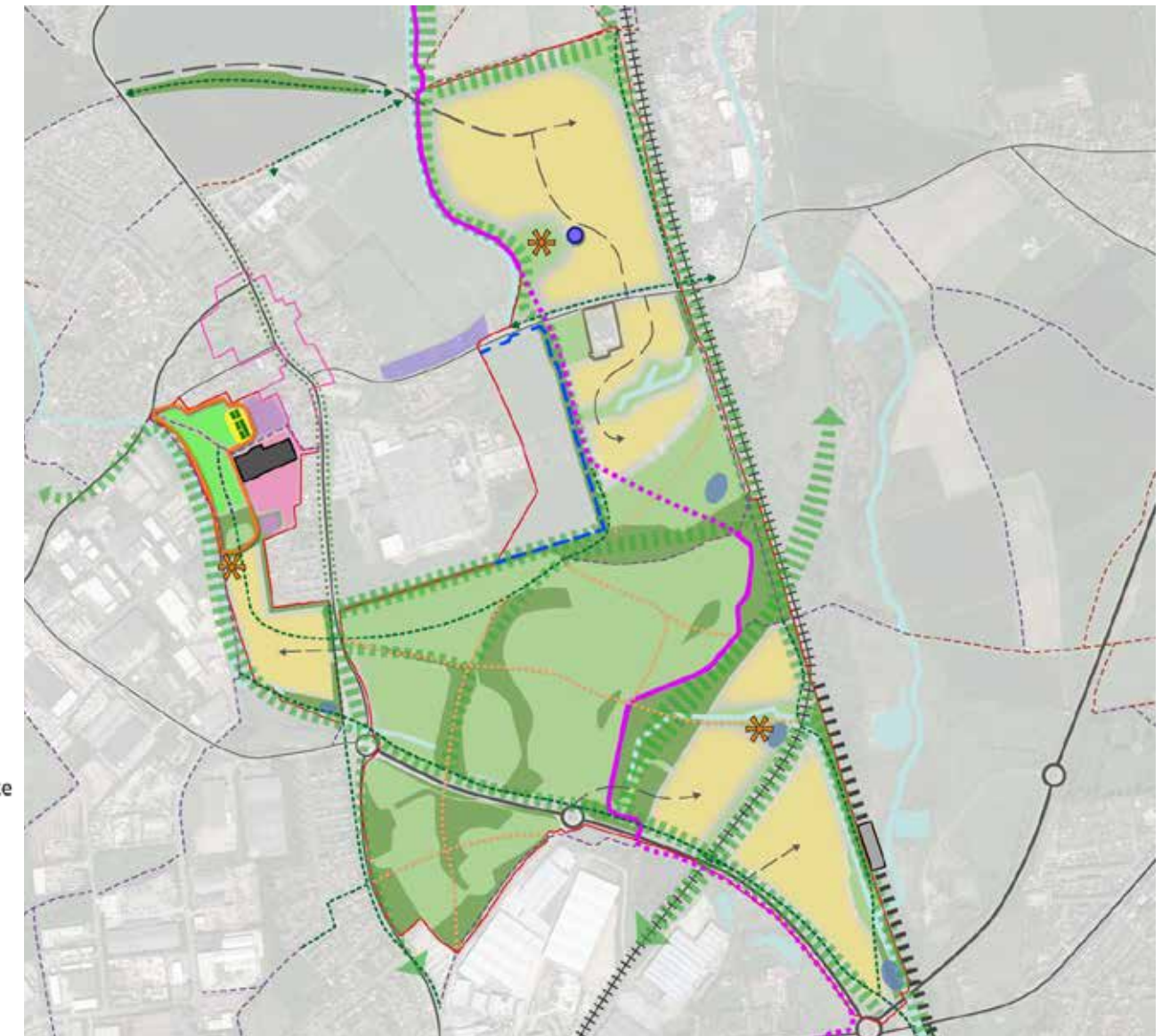


Fig. 11: Post-Consultation Masterplan Framework Plan (Contains information from Esri)

Post-Consultation Masterplan Framework

- Reduce residential area north of MU2 and around Wharncliffe Woodmoor in MU3 to preserve it.
- Preserve and enhance Wharncliffe Woodmoor in its entirety as a community greenspace.
- Community garden to the north of site MU2, bringing a grow garden and play facilities to new and existing residents of Carlton, while integrating with Carlton Primary Academy.
- Northern movement link from Royston Lane to site MU3 to help relieve existing Carlton transport pressure.
- Small local shop near the junction to the north of site MU3, integrating with a proposed neighbourhood park.
- Enhance and divert sections of the NCN/ TPT, including along West Green Way into Wharncliffe Woodmoor, along the boundary of Premier Foods Bakery and directly across to Barnsley Canal.
- Safeguarding of Premier Foods owned land for future employment uses.

5. MASTERPLAN FRAMEWORK

5.1 THE MASTERPLAN

By consolidating all the consultation feedback into the Masterplan Framework based on a 'You said, we did' approach, the final framework includes the following key design principles:

- Circa. 1,500 new homes over three individual residential neighbourhoods, a small local shop, 210 pupil expansion to Carlton Primary Academy and expansion of Premier Foods Bakery.
- Preserve and enhance Wharncliffe Woodmoor as a neighbourhood greenspace, as well as on site landscape designations and delivering 10 per cent Biodiversity Net Gain.
- New community garden to the north of site MU2, including a grow garden/ orchard and play facilities, while integrating with Carlton Primary Academy.
- Small local shop north of Shaw Lane integrating with the Canal Park, providing service to the majority of new residents and Carlton.
- Movement link from Royston Lane to site MU3, relieving congestion in Carlton and along Shaw Lane.
- Potential railway station to the south of site MU3, providing accessibility to Wharncliffe Woodmoor and surrounding residential and employment.

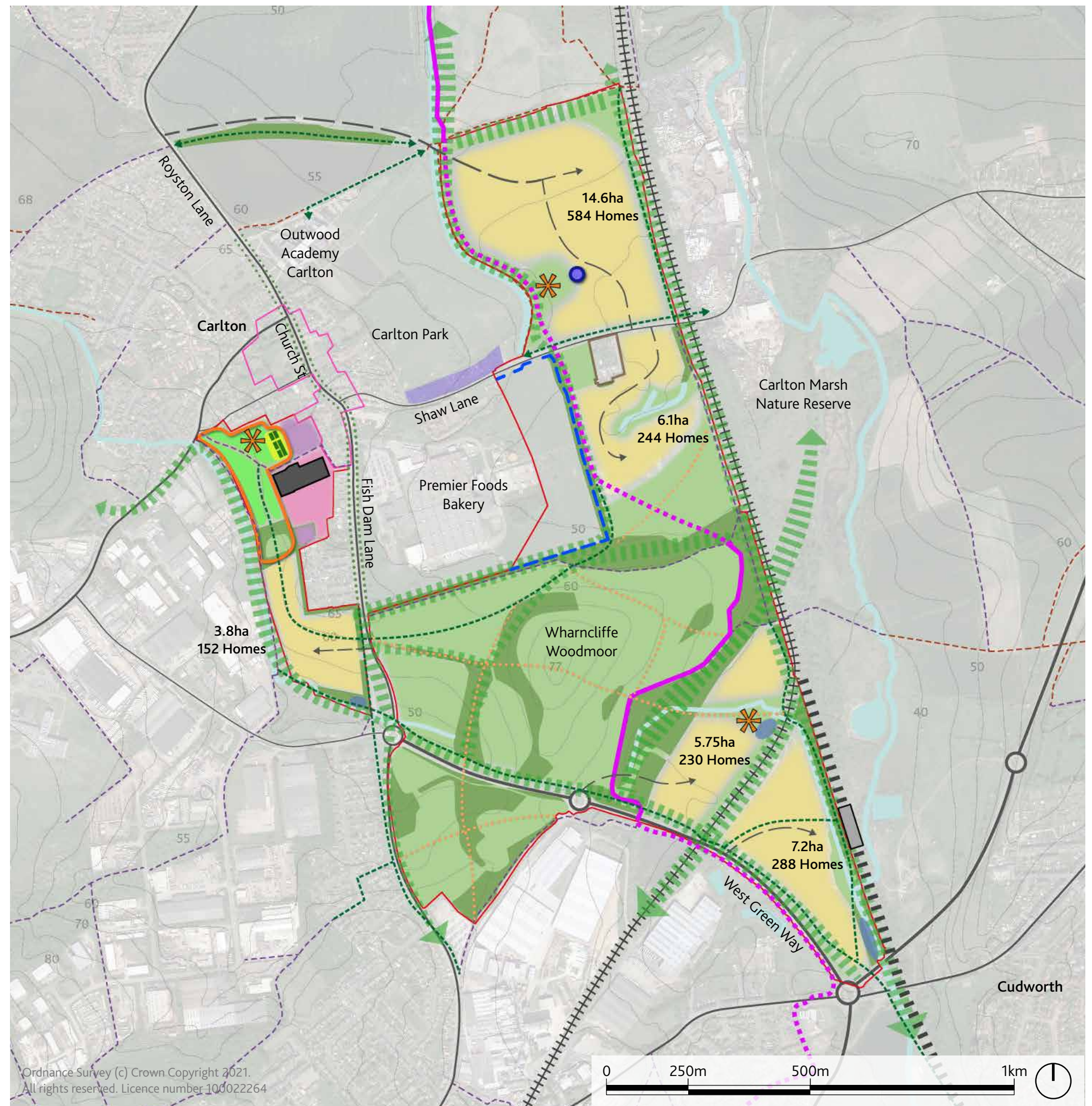


Fig. 12: Masterplan Framework Plan (Contains information from Esri)

5. MASTERPLAN FRAMEWORK

5.1 THE MASTERPLAN

Indicative development quantum are as follows:

Gross site area	MU2 - 11.8ha MU3 - 117.2 Total - 129ha
No. of Proposed Homes	MU2 - circa. 152 MU3 - circa. 1346 Total - circa. 1,500 Average residential density: 40 DPH per Local Plan
Local shop	Circa 0.1 ha
Education (or community use)	Circa. 1ha (210 pupil expansion at Carlton Primary Academy)
Open space	Circa 64ha (including existing area of Wharncliffe Woodmoor)
Attenuation	Circa 2.3-3.4ha (included in open space)

Residential land use within the allocation is divided into three density zones in order to achieve a diverse mix of housing types and tenures (Fig. 13):

- 1. High density zone 40-45 average DPH
- 2. Medium density zone 35-40 average DPH
- 3. Low density zone 30-35 average DPH

The higher densities are located in the most central places, typically close to key gateways and primary streets, while also relating to adjacent development. Lower densities are located in less central areas of the site - typically around the periphery and adjacent to POS, the green belt and sensitive habitats to limit impact.

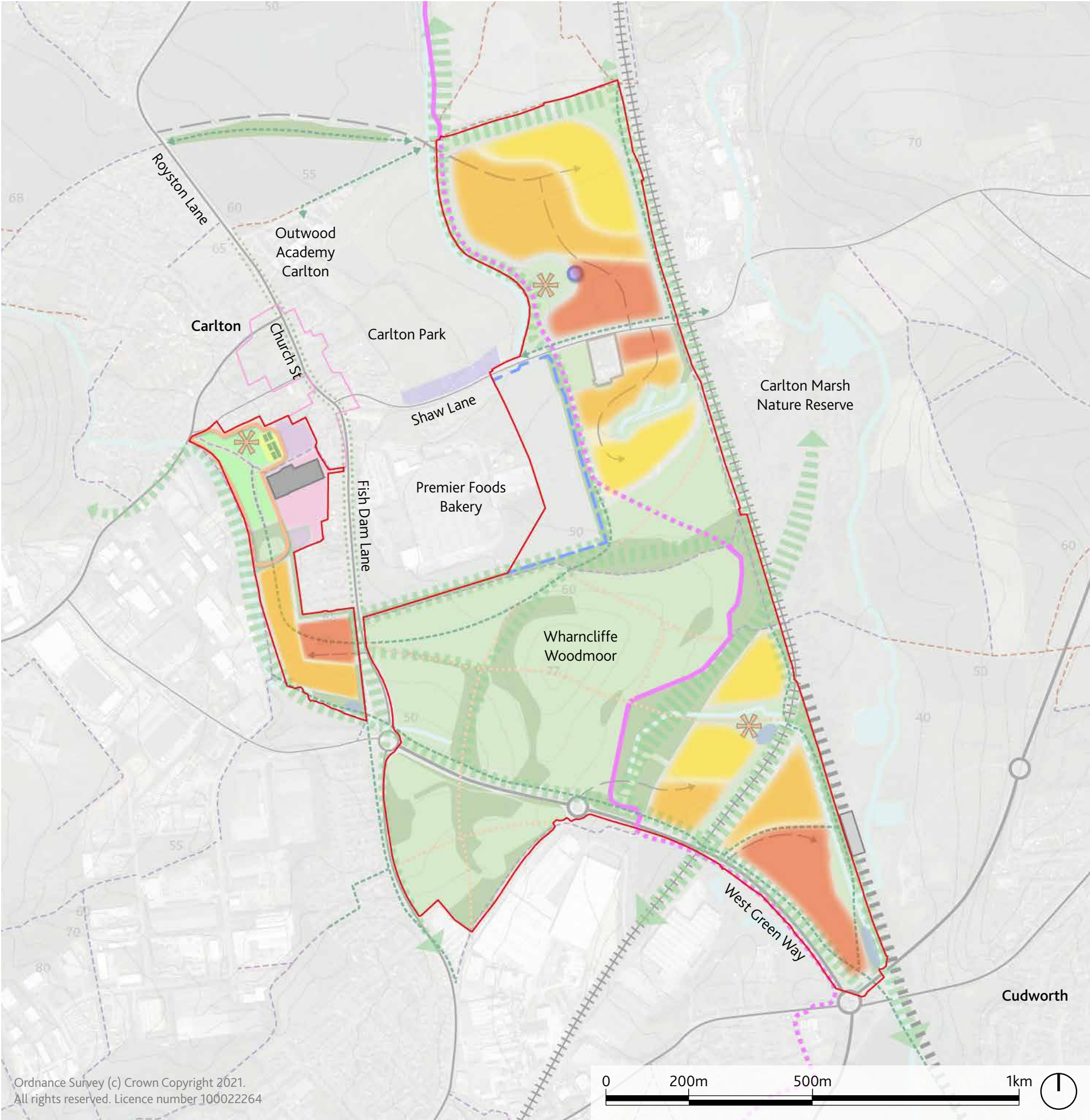


Fig.13 Residential Density Plan (Contains information from Esri)

5. MASTERPLAN FRAMEWORK

5.1 THE MASTERPLAN

Successful places are not just about the buildings, spaces and routes, they're also about diversity and distribution of uses that they facilitate. The Masterplan Framework plan of the site is based on a combination of seven placemaking principles to create a unique place (see Section 2).

These principles have been taken into consideration in designing the new framework. The proposals also meet the requirements of site specific policy MU2 and MU3 combined in the adopted Local Plan (2019), in that they deliver the necessary commercial, residential and community uses within the broad area for growth. The land uses allocated are as follows and are illustrated in Fig. 12.

Housing

The masterplan area will allow for the provision of up to 1,500 new homes at an average density of 40 DPH. New housing shall be delivered at various densities and scales to meet different accommodation needs. The provision of a mix of housing will include 10 per cent affordable housing as indicated in the Local Plan.

Education

With the introduction of new residential neighbourhoods to the area, Carlton Primary Academy will require a 210 pupil expansion as the school is almost at capacity. Policy I2 gives support to the provision of education facilities that are centrally located to the communities they serve.

Open Space

The masterplan area will provide sufficient high-quality accessible open space in response to the requirements set out in the Local Plan. This shall include the provision of parks and gardens, natural and semi-natural greenspace, neighbourhood greenspace, provision for children and young people, community gardens, etc. At the heart of site MU3 is Wharncliffe Woodmoor, a landscape treated colliery mound that has become a popular neighbourhood greenspace in the north of Barnsley. The site contains a number of landscape designated priority habitats and is adjacent to Carlton Marsh Local Nature Reserve. The open space shall create a GI network of connecting links between habitats to provide wildlife corridors and habitats in their own right. These links shall be utilised for active travel and, where topography allows, SuDS.

In accordance with the SPD Open Space Provision on New Housing Developments, this site is expected to provide a full range of greenspace required to meet the needs of the development. Informal open space and children's play will be provided on site in accordance with the masterplan principles. However, a financial contribution will be required towards the provision of formal recreation, which will improve facilities and access at the existing Carlton Park.

Local Shop

A new residential development will generate a need for a new local shop below 500 m². It shall be located centrally, connected to key active travel links and also accessible to vehicles. The shop shall tie in with other facilities to create a focal point in the site, in this case it is alongside Canal Park and the proposed play area.

Movement Strategy

The Movement Strategy is based on a hierarchy of routes through the site, connecting with existing routes, communities and amenities. The hierarchy prioritises walking, cycling and public transport over motor vehicles to encourage sustainable travel and reduce the impact of private vehicles. The scheme design considers access requirements for all users in the following order:

- Pedestrians
- Cyclists/equestrians
- Public transport
- Specialist service vehicles - emergency services, refuse and delivery vehicles
- Private vehicles



Green open spaces will promote places to gather, socialise and play



Proposed green active travel routes throughout the development



Grow garden as part of the Community Garden

5. MASTERPLAN FRAMEWORK

5.2 MOVEMENT FRAMEWORK - ACTIVE TRAVEL

Active travel is encouraged with a network of landscaped active travel and leisure routes as well as an improved National Cycle Network/ Trans Pennine Trail providing access for pedestrians, cyclists and equestrians. These provide generous, attractive and safe traffic free routes through the site, linking to local facilities and services. Existing Public Rights of Way through the site shall be retained and enhances. These new and existing routes will connect with existing external Public Rights of Way to connect the site to the surrounding areas.

Fig. 14 identifies the different active travel routes, including pedestrian links, cycle routes and the National Cycle Network/ Trans Pennine Trail.

- Existing
- National Cycle Network/
Trans Pennine Trail
- Footpath
- Bridleway
- Proposed
- Landscaped Active Travel Route
- National Cycle Network/
Trans Pennine Trail
New Route
- Former National Cycle
Network/ Trans Pennine Trail
- Recreational Trail

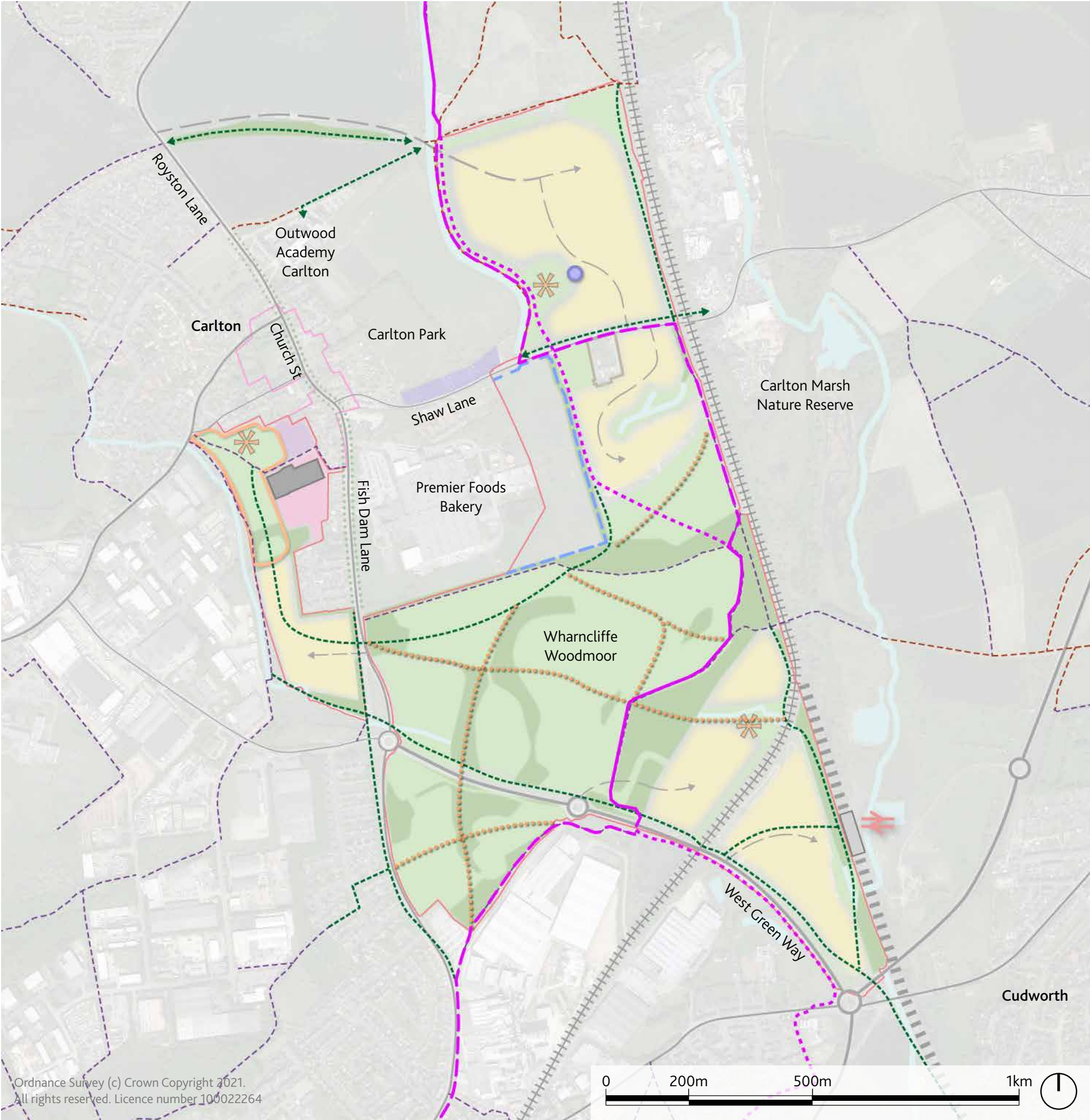


Fig. 14: Active Travel Links Strategy Plan (Contains information from Esri)

5. MASTERPLAN FRAMEWORK

5.2 MOVEMENT FRAMEWORK - ACTIVE TRAVEL

Landscaped Active Travel

A network of Landscaped Active Travel routes is proposed. These include east-west routes connecting Royston Lane and Outwood Academy to the northern parcel of the site, an east-west route along Shaw Lane, north-south routes adjacent to the rail line, a route through MU2 connecting to Shaw Lane through Wharncliffe Woodmoor to the south and east of the Premier Foods site and a route along the northern edge of West Green Way connecting with the southern parcel and proposed rail station in the south.

Routes shall be wide, include planting and provide segregation between pedestrians, cyclists and horses. Safety considerations include that routes are overlooked for passive surveillance and lighting is provided.

National Cycle Network/ Trans Pennine Trail

The National Cycle Network/ Trans Pennine Trail running in an approximate north-south direction through the site will be upgraded to provide improved facilities for pedestrians, cyclists and equestrians for connections between Wakefield and Barnsley. The central section will be diverted through the site.

Existing Footpaths

Existing footpaths through the site will be retained, including adjacent to the rail line and through Wharncliffe Woodmoor in MU3 and the western boundary of MU2. Footpaths will also be provided alongside new highways within the site.

Recreational Trails

In addition, Recreational Trails provide pedestrian routes

through Wharncliffe Woodmoor.

These proposals provide a network of routes available to provide direct connections and a choice of routes for pedestrians and cyclists. Desire lines include links to local communities and amenities in Carlton and leisure routes through the countryside to connect with Royston and Cudworth.

Cycle/ Pedestrian Routes

Cycle Route provision is made along the Landscaped Active Travel Routes and the National Cycle Network/ Trans Pennine Trail through the site. These will provide segregated facilities to provide legible, safe traffic-free routes for pedestrians and cyclists and will link to existing routes around the site. In addition, the vehicular streets through the site will be designed to keep vehicle speeds low and enable cyclists to cycle on-street.

New walking/ cycling routes will be fully accessible for all abilities and include suitable surfacing.

New walking/ cycling routes will be fully accessible for all abilities and include suitable surfacing. Equestrian access will be provided on all public bridleways.

New routes not forming part of the adopted vehicular highway will become designated Public Rights of Way where appropriate: to be determined.



National Cycle Network/ Trans Pennine Trail through Wharncliffe Woodmoor



Active travel link in natural landscape through historic arch

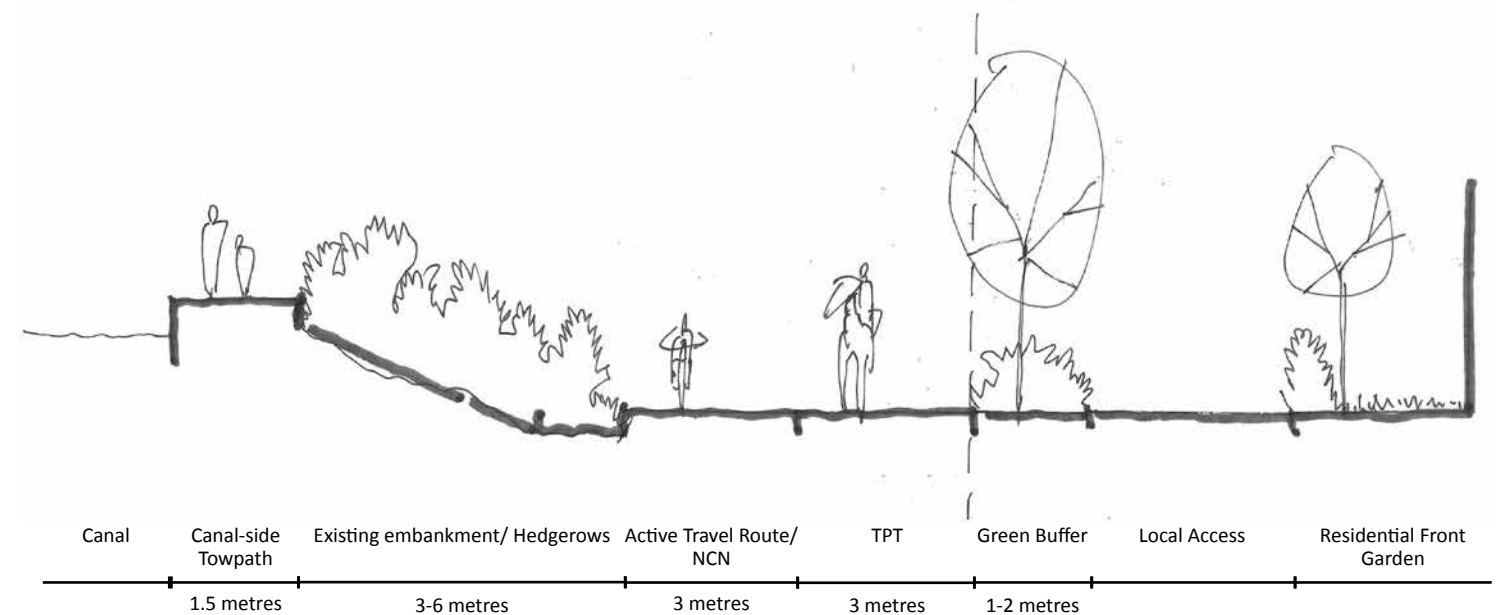


Fig. 15: Canal towpath, proposed rerouting of NCN and TPT Cross Section




5. Masterplan Framework

5.2 Movement framework - Public Transport

Bus routes through the site will be determined in consultation with BMBC, SYMCA and bus operators. Given the number of separate residential development parcels a number of bus routes may serve the site. This would include modifying existing services to provide additional buses and divert some of these in to the site via the northern primary access route and Shaw Lane. In addition, services on Fish Dam Lane will serve the MU2 parcel and new or diverted services will serve the MU3 southern parcels. It may be appropriate for some services to access the southern parcel to better serve the proposed rail station. Contributions to funding of additional bus services will be agreed with BMBC.

Bus stops to be provided at regular intervals with the aim of all dwellings being within 400m walking distance of a bus stop. Bus stops shall include shelters and real time displays.

There are aspirations for a new train station to serve this area being developed through a separate study to reopen the freight line to passenger services. A possible location for the rail station has been identified in the Masterplan. The station would serve new residents as well as existing residents in surrounding areas including Carlton, Cudworth, Lundwood and Monk Bretton. The railway station is being developed by BMBC separately and will need to consider the impact on the adjacent SSSI as part of its development.

- Existing
-  Bus Route (no. 57/ 59)
- Proposed
-  Indicative Bus Route
-  Indicative Railway Station

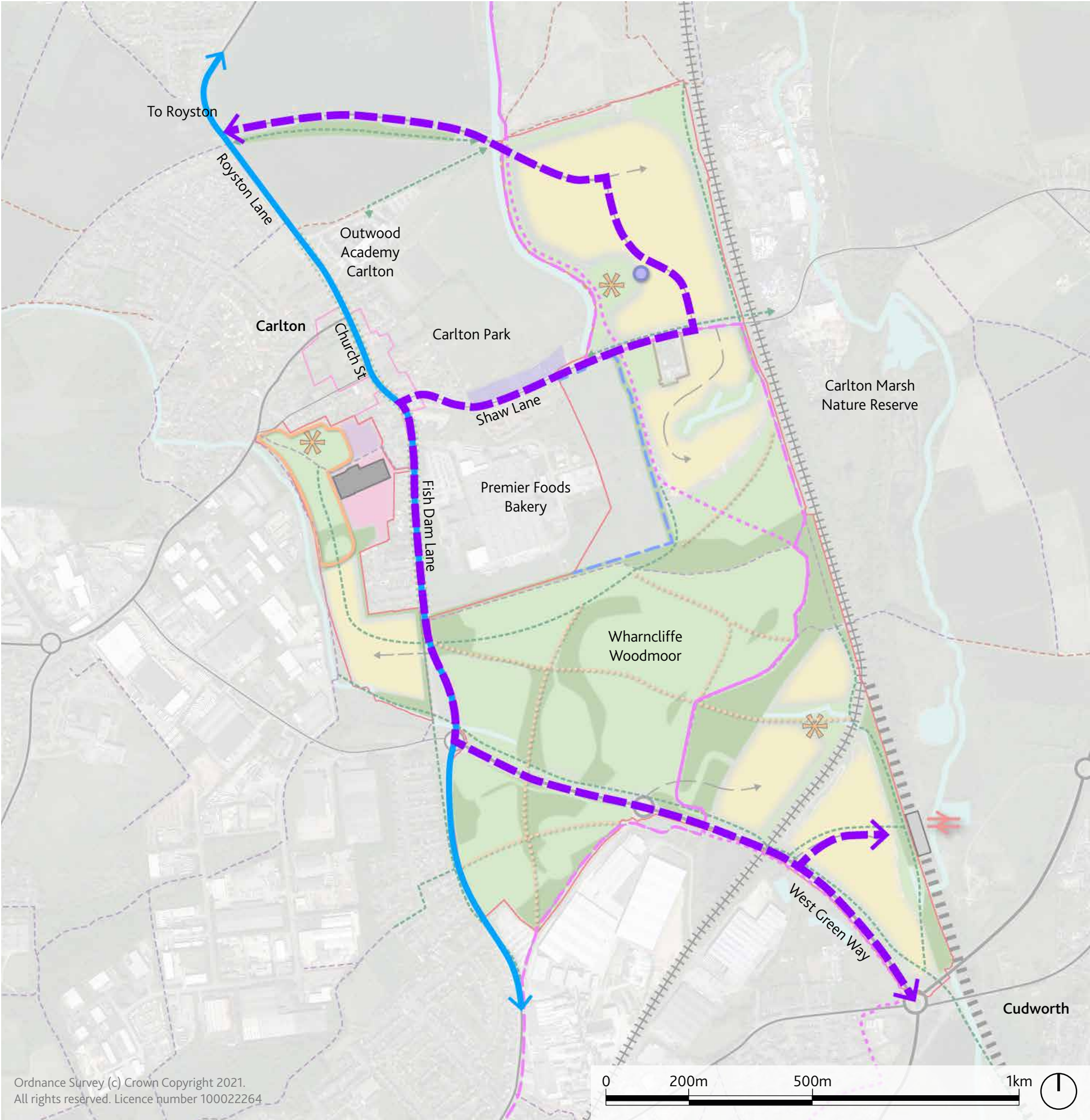


Fig. 16: Vehicular Movement Strategy Plan (Contains information from Esri)

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5. MASTERPLAN FRAMEWORK

5.2 MOVEMENT FRAMEWORK - HIGHWAYS

The indicative street network provides vehicular access through the site. Pedestrians and cyclists shall also be accommodated on these routes.

The Masterplan protects the existing Wharncliffe Woodmoor open space with a number of separate residential parcels. While connections between the parcels are made by active travel modes, separate highway access to each parcel is made from the existing highway network.

All highway and active travel infrastructure shall be developed in accordance with the LTN1-20 guidance.

- Existing
- Road
- Proposed
- Primary Street
- Secondary Street
- Local Street
- Royston Relief Road

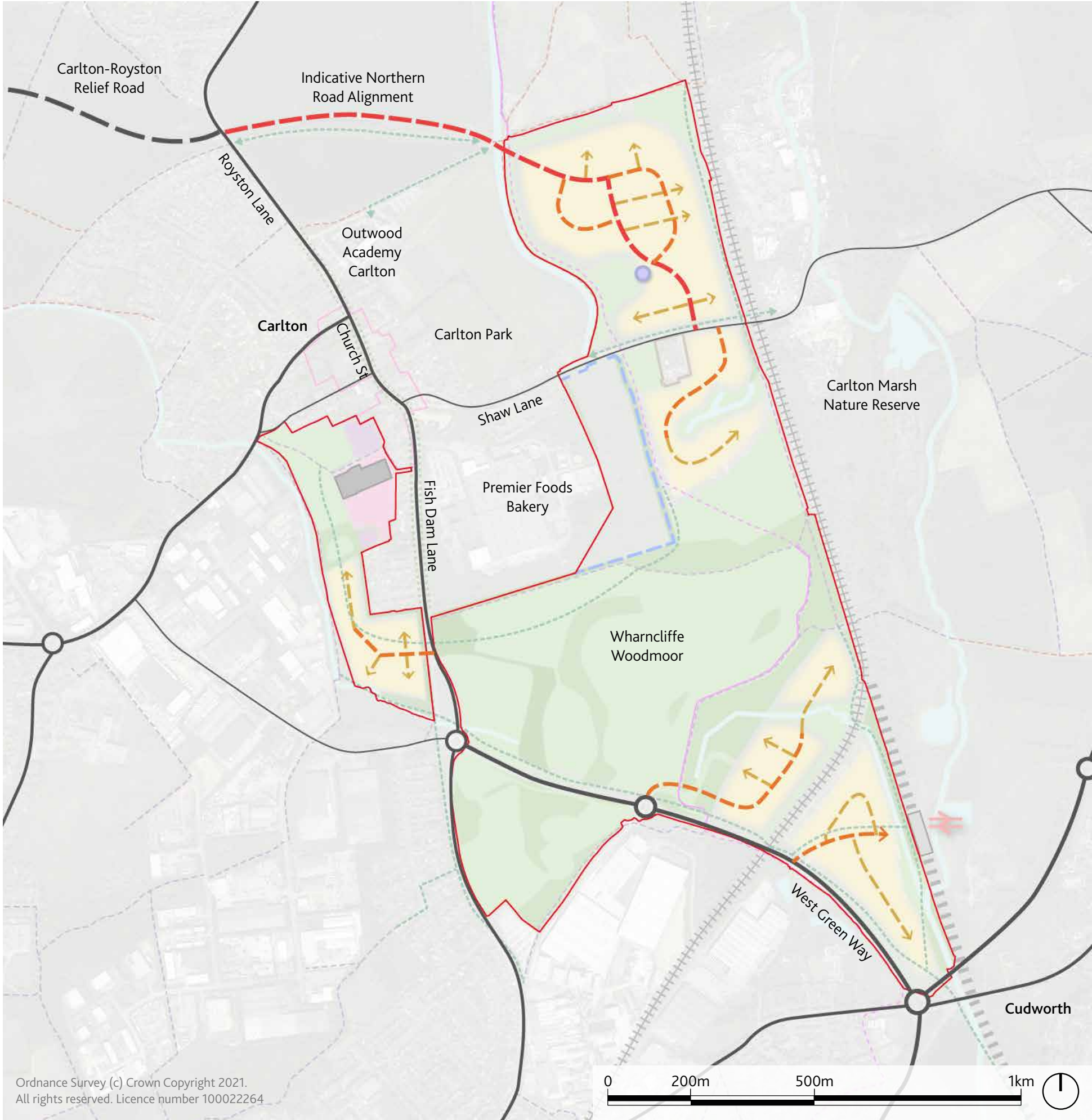


Fig. 17: Vehicular Movement Strategy Plan (Contains information from Esri)

5. MASTERPLAN FRAMEWORK

5.2 MOVEMENT FRAMEWORK - HIGHWAYS

Primary Routes

The highways proposals seek to relieve current congestion in Carlton with the provision of a new northern highway access route from Royston Lane into the northern parcel of site MU3. This will provide the primary access route to the largest residential parcel as well as new local shop. The new link to the north forms part of BMBC's strategic ambitions and would connect with the Carlton-Royston Relief Road when it comes forward. The alignment of this road is shown indicatively in the plans and will need to be developed in detail. The form of junction with Royston Lane will be determined through more detailed junction modelling. Access requirements for the Primary Route are for all vehicles - buses, emergency services, refuse / service vehicles and general traffic. A 30mph design speed is proposed for the northern access connection to Royston Lane and a 20mph design speed proposed within the built up site. Pedestrian footways are to be provided on both sides of the carriageway. A two-way segregated cycle path shall be provided on the primary route in accordance with LTN1-20 guidance based on predicted traffic flows. A Pegasus crossing for the Trans Pennine Trail will be provided. The Primary Route will be adopted by BMBC.

Secondary Streets

Secondary access streets provide access from the primary street in the northern parcel as well as also provide access from the existing local highway network in to the other residential parcels. New access junctions with Shaw Lane, Fish Dam Lane and West Green Way will provide access in to these parcels. These will likely be priority controlled junctions but their form will be determined through more detailed junction modelling.

Access requirements are for emergency services, refuse/ service vehicles and general traffic. Pedestrian footways are to be provided on both sides of the carriageway. Cycle provision is on-street.

Secondary Routes will be adopted by BMBC.

Tertiary Streets / Local Accesses

Tertiary routes / local access roads will provide access to individual residential streets and dwellings within each development parcel. These are not shown on the Masterplan but are considered as part of the Movement Framework. Access requirements are for emergency services, general traffic and refuse/ service vehicles. Pedestrian footways are to be provided on both sides of the carriageway. Cycle provision is on-street.

The adoption of tertiary routes and local accesses is to be determined.

Carlton Royston Relief Road

An indicative alignment of the Carlton Royston Relief Road is shown within the Movement Framework. Whilst this route does not form part of the Carlton site proposals, it is a strategic ambition for BMBC and will reduce the impact of development traffic on existing communities of Carlton and Royston. It is to be delivered by BMBC and forms an external highway connection.

Shaw Lane Improvements

Shaw Lane shall be improved to provide sufficiently wide footways on both sides of the carriageway and appropriate cycling provision in both directions. All improvements shall be in accordance with LTN120. Appropriate streetscape and a speed limit review shall take place to ensure it's a safe environment for all users.



Well designed local residential street with street trees and integrated landscape



Traffic calmed tree-lined secondary street



Tree lined segregated cycle way along primary street

5. MASTERPLAN FRAMEWORK

5.3 CHARACTER AREA FRAMEWORK

A number of character areas must be created that respond to the local context and distinctive site characteristics, as well as the land use for each area. The surrounding neighbourhoods and local landscape, along with site constraints, help to shape the various character areas.

The character areas identified, shown in Fig 18. are as follows:

- Canal Side
- Colliery Quarter
- Carlton Green
- Wharncliffe Woodmoor
- West Green Quarter

Character Area
Canal Side
Colliery Quarter
Carlton Green
Wharncliffe Woodmoor
West Green Quarter

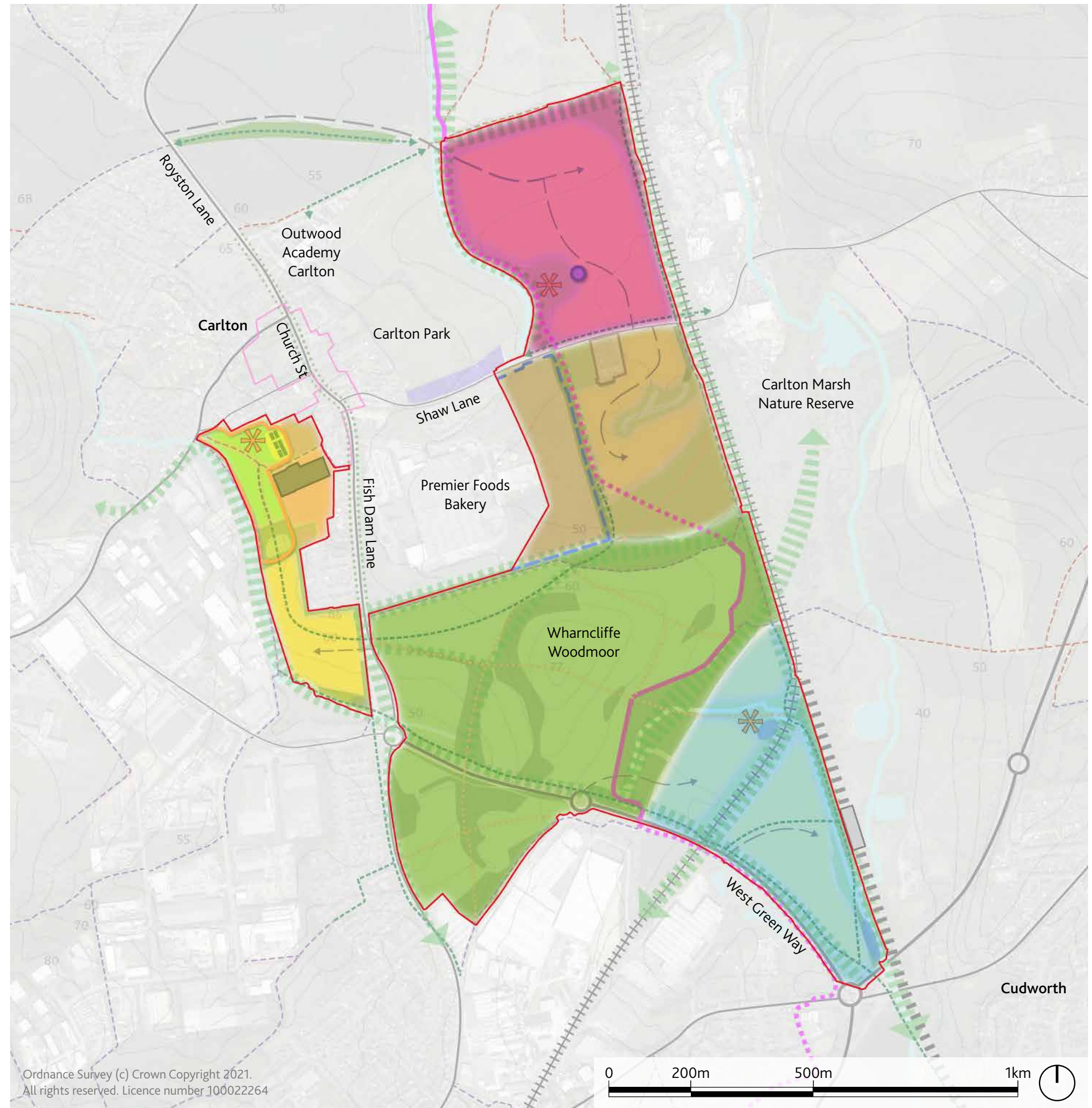


Fig. 18: Character Areas Plan (Contains information from Esri)

5. MASTERPLAN FRAMEWORK

5.3 CHARACTER AREA FRAMEWORK

1 Canal Side

To the north of Shaw Lane, the neighbourhood will sit along Barnsley Canal and surround Carlton Park. The area will be central in the new development and include important services including a local shop, Canal Park and play facilities. The neighbourhood will naturally be higher density towards Shaw Lane, creating an urban focal point of mostly terraces and townhouses. Medium density semi-detached housing will be along the canal and key streets creating a movement gateway to the north. Density will reduce and 'feather' out towards the surrounding rural fringe including some detached houses with larger front gardens. The nature of the key streets are indirect, but still allow permeability and passing through the site as to not create an isolated community. Canal Park maximises green connectivity with the canal and allows the NCN/ TPT to pass through directly and create a point of services in which people can gather.

2 Colliery Quarter

Located to the south of Shaw Lane, Colliery Quarter will sit on the grounds of former Carlton Colliery and nestle alongside the bakery. Higher density terraced housing along Shaw Lane will combine with Canal Side urban

gateway and naturally disperse into lower density housing with larger gardens overlooking Wharncliffe Woodmoor. Remnants of Carlton Colliery in the Open Mosaic Habitat adjacent will create a unique historic industrial aesthetic. Dense scrub to the north and a beck running through the neighbourhood will soften the otherwise rigid language. The houses will form around and front onto the natural beck to the heart of the neighbourhood. Materials and detailing of buildings should represent industrial aesthetic to characterise the historic and still present industry.

3 Carlton Green

Creating the character area for the whole of site MU2, Carlton Green is characterised by the slight extension to Carlton to the south and rich community garden to the north. Higher density built form will reflect the existing residential area at Woodmoor Street and Manor Street, seamlessly integrating into Carlton and orienting in such a way to complement the awkward topography. To achieve this, street layout and architectural features must represent that of the direct but spatially generous perimeter block of the original Garden City era. This will subtly 'feather' out toward the surrounding woodland and make sure not to merge with and respect Monk

Bretton. The community garden to the north will become an epicentre in Carlton, creating a place for all to gather, play and grow food. The grow garden will be integrated with the adjacent Carlton Primary Academy extension, bringing nature into the classroom.

This is highly visible to the surrounding area, so any residential planning application will require a Landscape and Visual Impact Assessment. Conventional red brick shall be used throughout to reflect the local housing.

4 Wharncliffe Woodmoor

This landscape treated colliery spoil is the green heart between Cudworth and Carlton. The topography creates a summit with views for walkers to surrounding towns, industry and in the distance, rolling countryside hills. The broadleaved woodland throughout, quality active travel infrastructure, recreation trails, historic railway arches and priority habitats will create a quality neighbourhood greenspace that's rich in character. The park is complemented by the sensitive edges of new development and connects well to surrounding landscape, such as connections to Carlton Marsh Nature Reserve.

Adjacent development shall front the neighbourhood greenspace and and prove a "soft feather edge", with lower densities and larger front gardens to increase landscape and tree planting with a more informal building line. This will transition any neighbourhoods into Wharncliffe Woodmoor.

5 West Green Quarter

West Green Quarter creates a pleasant addition to Lundwood and Cudworth, connecting through to Wharncliffe Woodmoor. With the potential location of the new railway station, this draws in new and surrounding residents to frequent the neighbourhood, creating a key movement gateway along West Green Way, which shall be determined by landmark corner dwellings in the gateway. The dissecting railway line creates a shift in character from formal streets and building set backs at a higher density in the central south, slightly contrasting to a softer and more relaxed language in the lower density north. Housing shall back onto the existing railway line, but front onto the proposed railway station and create a strong sense of arrival and vibrancy. The beck, equipped play area and attenuation pond will create a natural feature to the north.



Lower density neighbourhood periphery - Derwenthorpe, York



Contemporary terraced neighbourhood - Goldsmith Street, Norwich (Image Credit: Tim Crocker)



Local brick family housing responding to topography - Greenhills, Blackburn



Formal higher density neighbourhood - Great Kneighton, Cambridge

5. MASTERPLAN FRAMEWORK

5.4 PLACEMAKING/ URBAN DESIGN FRAMEWORK

The placemaking framework shall promote a distinct identity and strong sense of place for the site. It shall facilitate the creation of a cohesive community that sits comfortably within its context and is well integrated with the surrounding landscape and neighbourhoods.

- | | |
|---|--|
|  Residential |  Development Gateway |
|  Carlton Primary Academy |  Small Local Shop |
|  Academy Expansion |  Community Garden |
|  Public Open Space |  Grow Garden |
|  Active Travel Route |  Primary Housing Frontage |
|  National Cycle Network/ Trans Pennine Trail |  Historic Archway |
|  National Cycle Network/ Trans Pennine Trail New Route |  Landscape Folly |
|  Existing Footpath |  Key Vista/ Viewpoints |
|  Existing Bridleway |  Equipped Play Area |
|  Vehicular Movement Link |  Environmental Buffer/ Hedgerow |
| |  Industrial Edge |

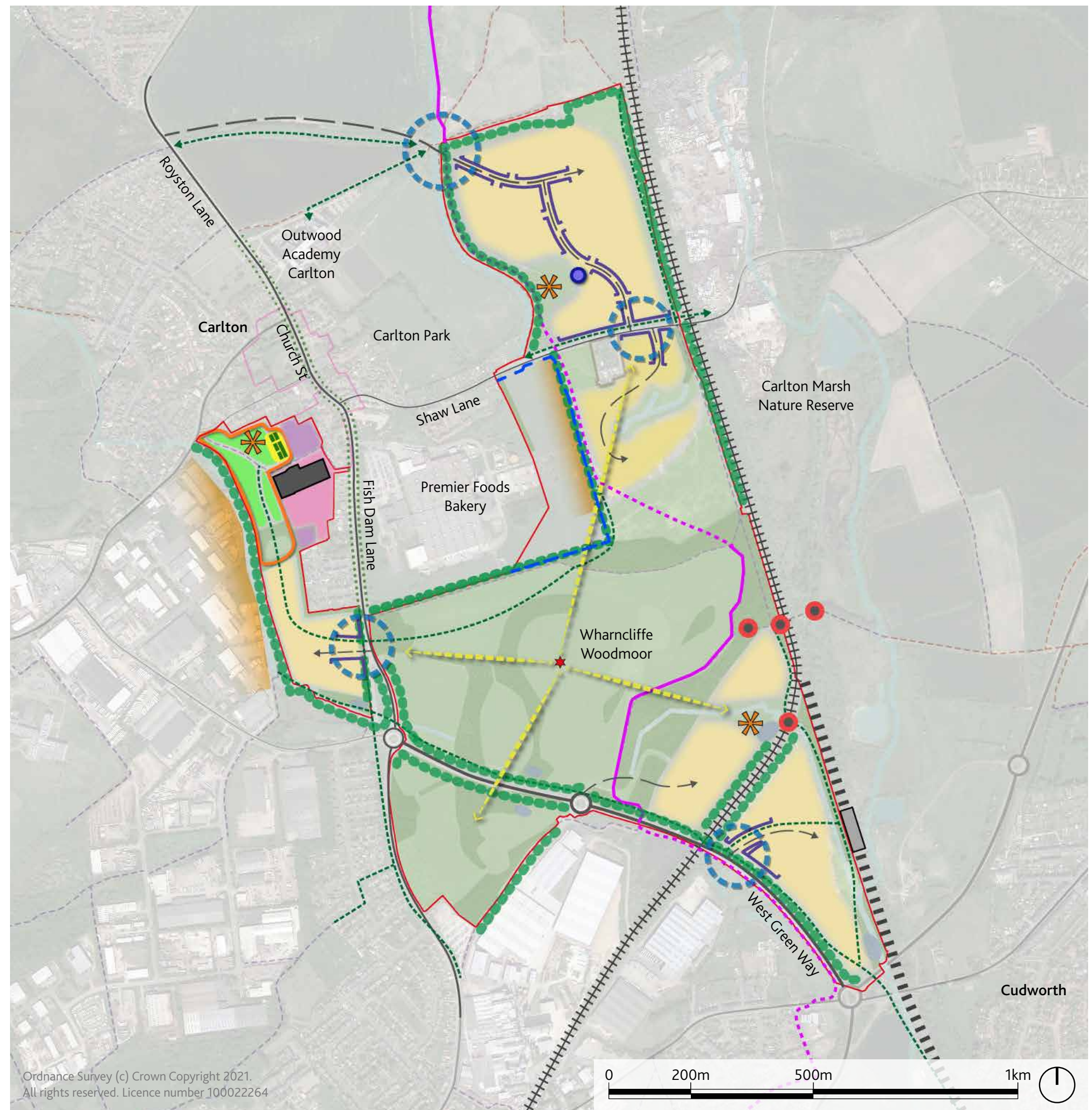


Fig. 19: PLacemaking/ Urban Design Framework (Contains information from Esri)

5. MASTERPLAN FRAMEWORK

5.4 PLACEMAKING/ URBAN DESIGN FRAMEWORK

A number of strategies have been identified that are essential to the placemaking and urban design framework to ensure a cohesive and legible neighbourhood.

Local Distinctiveness

A strong placemaking framework shall help ensure that the masterplan area embodies a strong sense of place whilst taking cues from local characteristics.

Legibility

Central to the placemaking approach is the notion that gateways and vistas across the masterplan area shall allow for coherent navigation and movement throughout.

Walkability and Connectivity

Quality networks of pedestrian and cycle infrastructure shall create a network of compact and walkable neighbourhoods that support sustainable transport.

Integrated neighbourhoods

Whilst the masterplan area shall be made up of different character areas, connections between them shall create an overarching identity to the development.

Desirable neighbourhoods

Areas that have a distinct character, provide a variety of community facilities and have integrated networks of public realm and greenspace that are attractive.

Public realm

A key placemaking principle for the masterplan area is concerned with the creation of a hierarchy of spaces that both connect people to community facilities as well as creating an integrated and walkable development.

Gateways and Vistas

Existing site conditions, particularly topography shall be used to create key vistas of the surrounding countryside, gateways and points of interest. Landmarks and gateways shall be adopted at prominent locations in order to make visual connections across the development and create a series of integrated neighbourhoods.

Edges and Frontages

There shall be a contextual use of edge treatments across the development. Some outer areas shall adopt a soft rural edge to integrate sensitively into the surrounding landscape, whilst other areas shall show urban frontage and interact with key routes throughout.

Community Garden

The community garden shall provide a central space for people to gather and interact. It will provide play facilities for children, community grow gardens for families and educate school pupils about nature.

Character Areas

As the masterplan integrates residential areas with existing respective communities, it is important that these neighbourhoods are distinguishable areas of character within their own rights (See Fig. 18).



Historic disused railway archway east of Wharncliffe Woodmoor



Landmark corner building to assist with legibility and wayfinding



Quality public realm and planting throughout the neighbourhood
(Image Credit: Tim Crocker)



View from Wharncliffe Woodmoor summit

5. MASTERPLAN FRAMEWORK

5.5 GREEN INFRASTRUCTURE FRAMEWORK

The site shall adopt a holistic approach to planning and design with integrated GI - including the provision of natural features and ecosystem services, delivering a resilient landscape.



Wharncliffe Woodmoor existing woodland adjacent Ardagh Glass



Opportunity for informal woodland play in existing quality woodland throughout

- Existing

 - Wharncliffe Woodmoor
 - Broadleaved Woodland Plantation
 - Broadleaved Woodland - Semi-Natural
 - Areas with Significant Ecological Value
 - Priority Open Mosaic Habitat
 - Watercourse/ Water Body (inc. Suitable Habitat Buffer)
 - National Cycle Network Trans Pennine Trail
 - Footpath
 - Bridleway
 - Hedgerow
- Proposed

 - Landscaped Active Travel Route
 - National Cycle Network New Route
 - Recreational Trail
 - Community Garden
 - Grow Garden
 - Equipped Play Area
 - Indicative Water Attenuation Pond
 - Carlton Academy Expansion
 - Native Trees/ Hedgerow
- Allotments

 - Carlton Primary Academy

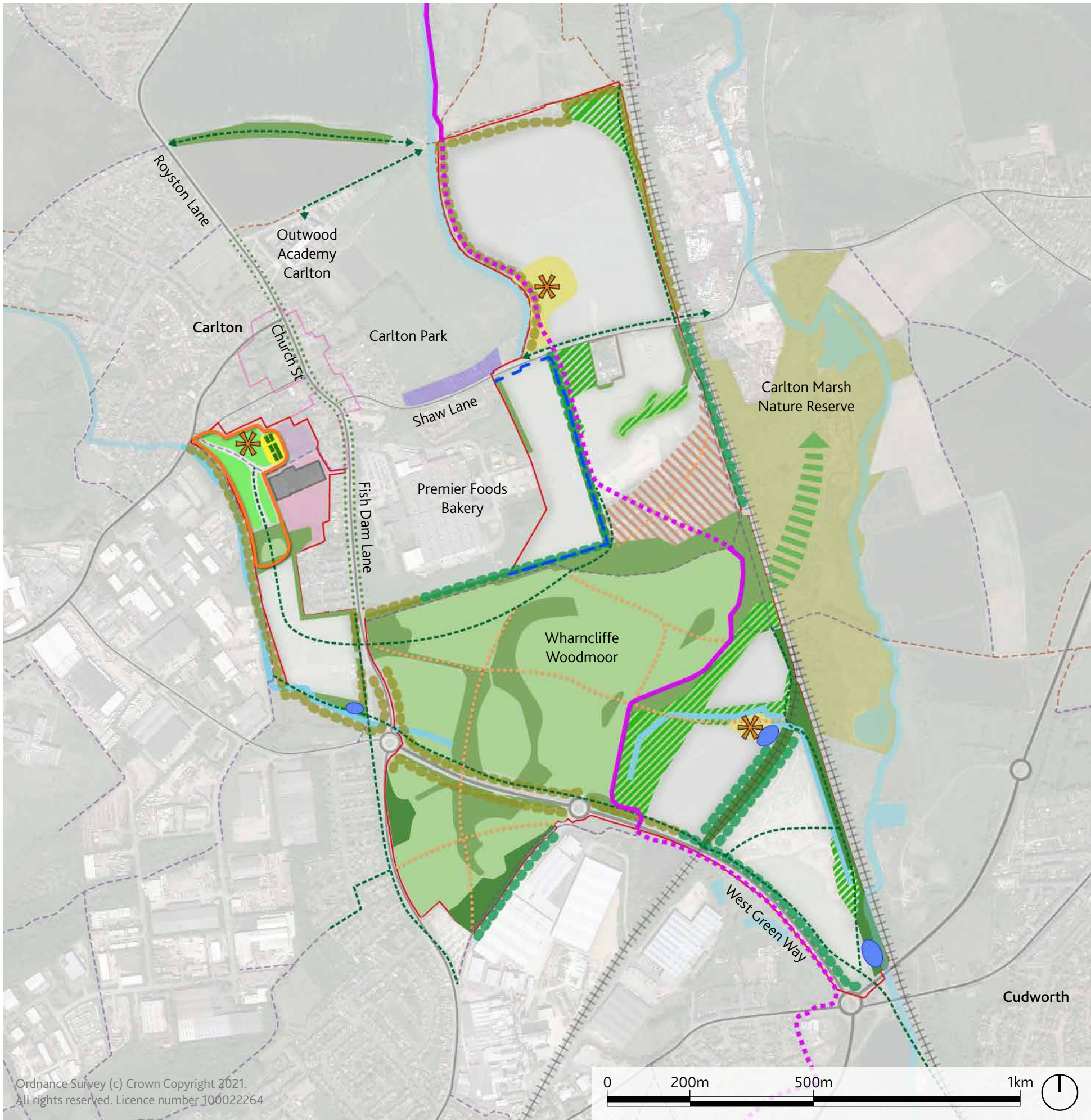


Fig. 20: Green Infrastructure Framework (Contains information from Esri)

5. MASTERPLAN FRAMEWORK

5.5 GREEN INFRASTRUCTURE FRAMEWORK

The GI and public realm framework of the site draws cues from the existing landscape and habitat features on site and surrounding landscape character. It shall retain and enhance existing hedgerows and trees and provide a minimum of 15 per cent open space in line with Local Plan policy. Development will also be expected to provide a minimum of 10 per cent Biodiversity Net Gain.

Key drivers of the GI strategy are as follows:

- Green Heart. Retain and enhance Wharncliffe Woodmoor as an invaluable social and environmental asset to the local area, creating a significant neighbourhood greenspace for people to gather, socialise and play.
- Climate change adaptation and mitigation. By delivering a well connected GI framework, people will be encouraged to travel more sustainably.
- Connected GI creates wildlife corridors which provides increased permeability through the landscape. Installation of attenuation features will reduce the risk of flooding and provide aquatic habitat to increase biodiversity.
- Recreation and Health. By providing recreational opportunities close to peoples homes, such as allotments and equipped areas for play, there will be a positive impact on local health and wellbeing.
- Education. With an expanding primary school, there is opportunity to provide areas of outdoor play and recreation to connect children with nature.
- Retention of habitat identified to have high biodiversity value.

Open Space Provision

The masterplan area will provide high-quality accessible open space in response to the requirements set out in the Local Plan. The open space network will respect and enhance the existing natural features and create new ones. They will manifest as a response to existing drainage, land form, ecology and recreation.

Green Corridors

Corridors of trees, greenspace and pedestrian and cycle ways will connect the masterplan area with the surrounding active travel network. These corridors reduce the impact of climate change, offer sustainable active transport routes and create wildlife corridors providing permeability through the landscape.

Green Heart

Retain and enhance Wharncliffe Woodmoor as an invaluable asset to the local area, providing increased biodiversity value through the site along with opportunities for active travel and nature play.

Play and Recreation

Informed by the Local Plan, equipped areas that provide a wide range of facilities, such as play equipment and casual play areas, must be created for children and young people. Within the wider open space, opportunities for naturalistic and informal play shall be encouraged. A community grow garden must also be facilitated to provide residents with the opportunity to grow food and flowers. Active travel links shall be implemented and enhanced between the development, Carlton Park and other surrounding formal recreation.

Neighbourhood Greenspace

The GI framework will accommodate a series of greenspace along the key green corridors. These will be managed and vary in scale and location across the masterplan area to ensure recreational opportunities to all residents.

Biodiversity Net Gain

Biodiversity Net Gain looks to leave biodiversity in a better state than before. One of the important principles to implement is the mitigation hierarchy starting with avoiding impact. The development shall achieve at least 10 per cent Biodiversity Net Gain.

Management and Stewardship

The management, governance and stewardship of the proposed green and blue infrastructure opportunities have only been considered in principle at this stage.

The likely option shall be for the new residents to enter into a service charge arrangement run by organisations such as the Land Trust and Yorkshire Wildlife Trust (YWT) who specialise in maintaining open space provision, detention basins and swales. When determining the management arrangement structure, consideration shall be given to the following:

- Ensure there are opportunities to secure Biodiversity Net Gain and any land assigned for Biodiversity Net Gain will be maintained for a minimum of 30 years;
- Community engagement shall deliver added social value;
- Include appropriate management of hard and soft landscaping;
- Purpose, power, responsibilities, financial

arrangements and internal procedures of the open space owner(s)/manager (management body/entity/organisation);

- Annual reporting to the council for a suitable number of years, in line with proposed habitat enhancement/ creation will need to be considered;
- Incorporation of information boards and signage to educate residents;
- Stewardship on par with those being implemented for garden communities.

This approach shall be subject to further work including assessing the scope and management required and the feasibility of management models, funding sources and legal structures.

Developers shall engage with the management and organisation at an early stage so that they can input into the design of green and blue infrastructure.

The vision for transferring green and blue infrastructure to a land management arrangement is based around core principles for residents and occupiers:

- They shall be instrumental in the major decisions that affect their new community;
- They shall have an ongoing role in 'co-producing' the planning, decision and commissioning of services;
- They shall make sure that the benefits of biodiversity enhancements are continued in perpetuity;
- They shall be the beneficiary of the initiatives funded by the management organisation and are therefore best placed to evaluate the impact of these initiatives.

5. MASTERPLAN FRAMEWORK

5.6 LANDSCAPE/ ECOLOGY FRAMEWORK

The site shall adopt a holistic approach to planning and design with integrated strategies on landscape and ecology.

- Existing

 - Wharncliffe Woodmoor
 - Broadleaved Woodland Plantation
 - Broadleaved Woodland - Semi-Natural
 - Areas with Significant Ecological Value
 - Priority Open Mosaic Habitat
 - Watercourse/ Water Body (inc. Suitable Habitat Buffer)
 - National Cycle Network/ Trans Pennine Trail
 - Footpath
 - Bridleway
 - Hedgerow
 - Allotments
- Proposed

 - Landscaped Active Travel
 - National Cycle Network Trans Pennine Trail New Route
 - Recreational Trail
 - Park
 - Community Garden
 - Grow Garden
 - Indicative Water Attenuation Pond
 - Native Trees/ Hedgerow

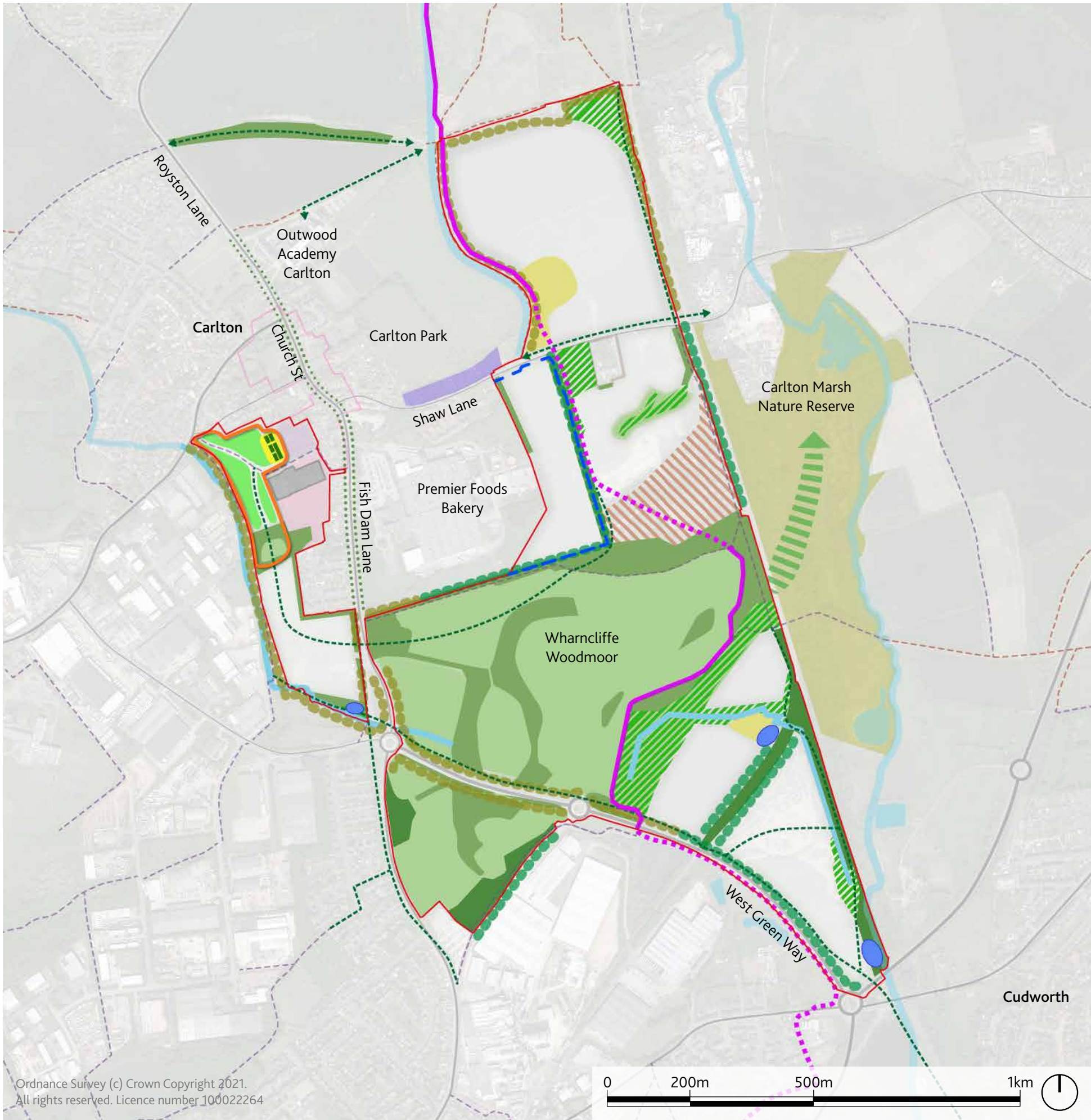


Fig. 21: Landscape Strategy Plan (Contains information from Esri)

5. MASTERPLAN FRAMEWORK

5.6 LANDSCAPE/ ECOLOGY FRAMEWORK

Key drivers for the proposed landscape and ecology strategy are as follows:

- Retention and enhancement of the majority of Wharncliffe Woodmoor;
- Retention of habitats within the site which have been identified to have high biodiversity value;
- Enhancement measures may include additional planting of native species to woodland areas or creation of native hedgerows and trees providing additional connectivity through the site;
- Consultation with YWT regarding suitable native species for planting that will provide additional foraging resource for species supported by Carlton Marsh Nature Reserve (which forms part of Dearne Valley Wetlands SSSI);
- Appropriate management of habitats retained, enhanced or created in order to achieve suitable condition;
- Suitable habitat buffers will be included adjacent to watercourses to protect existing watercourses;
- Enhancement of riparian zones of watercourses utilising appropriate native aquatic plants to increase biodiversity;
- Incorporation of bird and bat boxes on suitable trees and buildings, where appropriate to enhance the site;
- Explore the use of green and brown roofs on buildings where appropriate to increase biodiversity.



Opportunity to add strategic woodland to Wharncliffe Woodmoor



Ecologically rich open Mosaic Habitat formed by exposed slag pile



Dense scrub of significant ecological value to south-east of Wharncliffe Woodmoor



Opportunity to grow native species wild flowers in POS



Opportunity to maintain and connect green corridors to assist wildlife accessibility



Broad leaved woodland to south-west of Wharncliffe Woodmoor

5. MASTERPLAN FRAMEWORK

5.7 BLUE INFRASTRUCTURE FRAMEWORK

The site shall adopt a holistic approach to planning and design with integrated blue infrastructure strategies - including the provision of natural features and SuDS throughout and around the development.

The blue infrastructure shall provide amenity value to people and the designs shall also enhance biodiversity, including native aquatic and marginal planting.

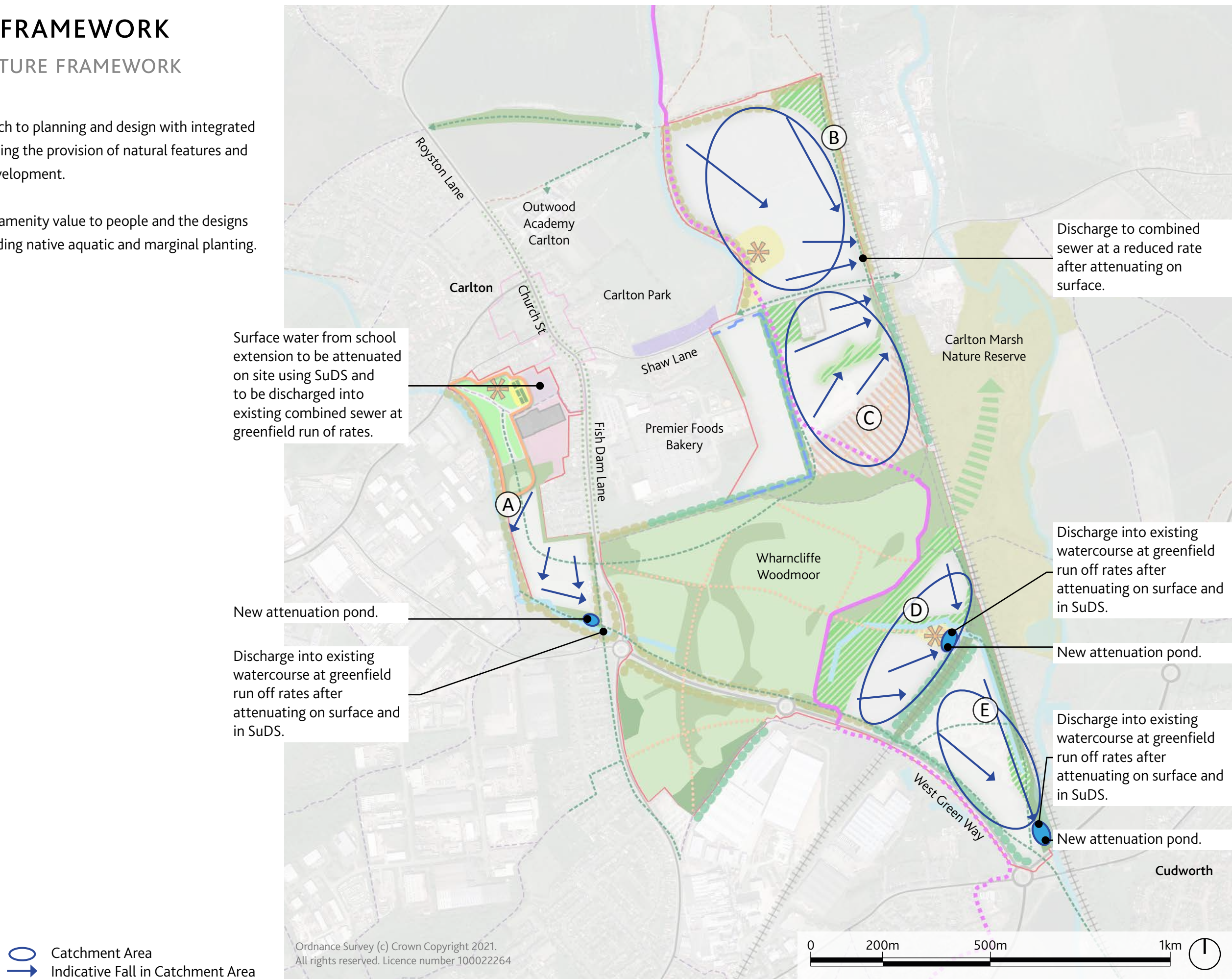


Fig. 22: Blue Infrastructure Strategy Plan (Contains information from Esri)

5. MASTERPLAN FRAMEWORK

5.7 BLUE INFRASTRUCTURE FRAMEWORK

Hierarchy for Discharging Surface Water
The developer shall use the following drainage hierarchy for discharging the site’s surface water:

A. Maximise the use of infiltration
Underlying bedrock is a mixture of sandstone and mudstone. Sandstone areas will generally have infiltration potential depending on the depth of sandstone, whereas areas with mudstone are unlikely to have infiltration potential. At this stage there is no evidence to suggest that this can be relied upon as a strategy and further investigation will be required to test the infiltration potential.

Areas with contaminated land, such as the south eastern corner of the MU3 allocation, will not be suitable for infiltration. Colliery spoil has been tipped on the east part of allocation MU3 (south of Shaw Lane), therefore despite it being sandstone, the area will need testing for contamination prior to determining the infiltration potential. The area north of Shaw Lane is a mix of mudstone and sandstone.

Allocation MU2 is mostly on mudstone except for the narrow area based on a mixture of sandstone and mudstone adjacent to the new Manor Street housing development.

B. Discharge into existing watercourses
If tests indicate that infiltration is not possible, drainage to the watercourses with flow controls is recommended. There are no main rivers within or near to the site, however smaller watercourses are identified on the plan.

A flow restriction would need to be imposed, requiring surface water attenuation on the site and upstream of

the flow restrictor to safeguard against downstream flooding. Potential attenuation areas have been indicated on the framework.

C. Discharge to Yorkshire Water Sewers
Where discharge via infiltration or to a watercourse is not possible, connection to sewers shall be investigated with Yorkshire Water (YW). There may be a requirement to pump into the Yorkshire Water sewers, depending on the invert levels.

High Level Drainage Strategy
In accordance with South Yorkshire Interim Local Guidance for SuDS, the high-level strategy for the site’s surface water is defined below. The incorporation of SuDS will provide amenity value to people and increase biodiversity on site. The approach based on available information for each plot is summarised in Table 1.

1. Maximise the use of source control features
Where infiltration is not possible, SuDS will be used. This will help to keep surface water on or as close to the surface as possible, prevent below ground drainage becoming too deep and reduce the need for large below ground attenuation tanks. It can include networks of shallow swales, rills, or rain gardens through the development.

Under Sewers for Adoption 8th Edition (now known as Design and Construction Guidance document (DCG)) these can be adopted by Yorkshire Water from April 2020, as long as it can be demonstrated that the majority of the surface water is coming from houses rather than the roads. Therefore, separate development and highway drainage systems shall used. Drainage within adopted highway boundaries, including SuDS,

will need to be adopted by the Highway Authority and an agreement will need to be reached with the Highway Authority if any SuDS are to be incorporated. SuDS within the new development will become part of the GI network, helping to achieve the targeted biodiversity net gain and offering amenity value, providing a positive impact to the health and wellbeing of residents and the local community.

- 2. Convey water to discharge locations through small open channels or underground pipes depending on the context
- 3. Use flow restrictors to limit the rate of discharge and safeguard against downstream flooding
- 4. Attenuate run-off prior to discharge - using a combination of surface features such as ponds if applicable and below ground attenuation tanks

Plot	Approach
A - MU2	Carlton Primary School to have a gravity system, discharging to the YW combined sewer. The rest of the site to have a gravity system to discharge to the existing watercourse.
B - North of Shaw Lane	Gravity system discharging to the YW combined sewer crossing Shaw Lane.
C - South of Shaw Lane	Gravity system discharging to the YW combined sewer crossing Shaw Lane.
D - West of Railway	Gravity system discharging to the existing watercourse.
E - East of Railway	Gravity system discharging to the existing watercourse.

Table 1: Drainage strategy for each plot, for all plots use source control, attenuation ponds, crates etc to attenuate run-off and discharge at a controlled rate as agreed with YW and the Lead Local Flood Authority.

5. MASTERPLAN FRAMEWORK

5.7 BLUE INFRASTRUCTURE FRAMEWORK

Estimated Attenuation Volumes

Table 2 sets out the total catchment areas, the greenfield run-off discharge rate for a 1 in 30-year storm, and the total attenuation required to meet the 1 in 30-year greenfield run-off rate. In order to calculate the attenuate storage volume, a conservative estimate of 80 per cent impermeable area was used for catchments B – E. For catchment A, because of the community garden area, it was assumed that 60 per cent would be impermeable. It is assumed that in reality there will be more permeable area. This attenuation volume would include any run-off attenuation and storage upstream in SuDS features.

In addition, the site would need to accommodate a 1 in 100-year storm event within the site boundary, without causing any negative off-site impacts. This will need to be demonstrated for each planning application and managed within the design of each drainage catchment and the design of the landscape. The drainage design will need to address the areas of localised surface water flooding issues on the site.

Future Planning Applications

As planning applications are developed, the applicant will need to carry out further surveys and testing to validate and further develop the strategy set out here, particularly to test the infiltration viability across the site. Engagement shall be undertaken with the Lead Local Flood Authority and Yorkshire Water.

Foul Water Drainage Strategy

The developers will need to confirm the capacity of the Yorkshire Water sewers adjacent to the site prior to developing the foul water drainage strategy for the site. It is anticipated that the strategy will be for gravity systems for the developments discharging into the Yorkshire Water sewer system. There are no recommendations from YW in the utility report.

However, there is a combined sewer along Fish Dam Lane, another to the west of the MU2 allocation and a number of sewers connecting to the pumping station at the disused Yorkshire Water sewage treatment works on Shaw Lane. It is likely that a pumped connection will be needed especially for the south east corner of the site due to the distance and the levels differences.

There is potential to explore black water recycling on the site due to the availability of land and the distance from existing combined sewers.

Plot	Total Area (ha)	Greenfield run-off discharge rate (1 in 30-year event)	Attenuation Volume (m3)
A - MU2	11.8	43.6	1,957 - 2,886
B - North of Shaw Lane	21.82	181.5	4,001 - 6,036
C - South of Shaw Lane	9.43	86	1,669 - 2,534
D - West of Railway	11.41	42.3	2,776 - 4,055

Table 2: Assumed attenuation for each plot



Existing pond formation as a result of the exposed slag pile/ open mosaic habitat



SuDS Swales integrated with GI and active travel routes provide green links across the site



SuDS Swales integrated between pavement and residential buildings

5. Masterplan Framework

5.8 Health and Wellbeing

The promotion of health and wellbeing principles are considered and embedded within the Masterplan Framework. The Masterplan Framework promotes sustainable development to support the creation of strong, vibrant and healthy communities. Planning for healthy and successful communities requires the provision of homes, jobs and services that people need whilst designing these places to facilitate healthy, active lifestyles alongside minimal environmental risk.

The Health Impact Assessment has identified the key health and wellbeing challenges that the Carlton site and wider area face. The following health and wellbeing priorities have been embedded into the Masterplan Framework addressing the key challenges identified:

- Housing design and quality – providing space, screening and buffers to reduce noise and encourage peacefulness. Promotion of sustainable development and net-zero carbon development. Providing a range of housing densities to promote a mix of tenure and housing types.
- Access to healthcare services and social infrastructure – clear access routes and links to the existing healthcare services and shops within Carlton and wider area.
- Provision of a small local shop - to cater for existing and new local residents in an easily accessible and central location.
- Access to open space and nature – opportunities for spaces to exercise, provision of recreational facilities for all users to have fun and decompress. Provision of green space allowing people to connect with nature and appreciate biodiversity, encouraging mindfulness.
- Air quality, noise, and neighbourhood amenity - improving air quality outdoors through encouraging use of sustainable transport and low emission vehicles through active travel routes and electric vehicle charging points, and indoors through use of modern building systems and green buffers around dwellings.
- Accessibility and active travel - encouraging people to move more with the mental and physical health benefits this brings. Access to wider Carlton to encourage a feeling of rootedness and belonging. Access opportunities to Wakefield and Barnsley providing access to key employment sites.
- Crime reduction and community safety – safe routes for school children that are legible and well lit. Design safe routes to key facilities within Carlton and enable passive surveillance for public open spaces.
- Access to healthy food – opportunities to link with the existing allotments and proposed community grow garden to encourage community food growing projects for all ages.
- Access to work and training – digital connections for people to work and learn at home, whilst also allowing them to connect with family and loved ones. Access to both local and regional employment opportunities – offering the potential for financial security, personal fulfilment and purposefulness.
- Social cohesion and lifetime neighbourhoods - defined hubs and focal points within the Masterplan Framework that will allow the community to come together, encouraging belonging and togetherness and helping those in need while connecting with the wider area.



Access to healthy food in the Community Garden



Safe routes to key facilities within Carlton



Digital connections for people to work and learn from home

5. Masterplan Framework

5.9 Sustainability and Energy Usage

Recognising the climate emergency declared by BMBC in 2019, and the goal to become a net zero carbon Borough by 2045, sustainability and energy usage have been intrinsically considered in the development of this Masterplan Framework.

Local policies specify that all developments will be expected to incorporate renewable or low carbon energy sources to reduce carbon dioxide emissions (**Policy CC1**). Sustainable design and construction techniques are also promoted to reduce greenhouse gas emissions and impact of climate change (**Policy RE1**).

Sustainable Travel

In 2019, the UK transport sector was responsible for 34per cent of overall greenhouse gas emissions, whilst 19per cent came from the residential energy use. A smaller proportion, estimated to be around 3.6per cent, came from construction. Therefore, the biggest gains are to be made in the way people travel, and in the energy demand and supply to buildings. Notwithstanding this, driving down “embodied carbon” in the construction sector also has a key role to play.

As set out elsewhere in this document, the use of sustainable transport is promoted, including walking, cycling, bus services, connections to railway stations and electric vehicle charging points and secure cycle parking provision for every home. This, alongside proactive travel planning on the part of developers, will reduce the carbon emissions associated with transport from residents and occupiers of the scheme.

Digital Communications Infrastructure

Furthermore, provision of high-speed digital fibre connections to the site will allow people the option of working from home, reducing the need to travel.

Advanced, high-quality and reliable digital communications infrastructure is essential for economic growth and social well-being (NPPF Paragraph 112). Local Plan policy I1 confirms that developments must be supported by appropriate infrastructure, including provision for broadband. The deployment of gigabit-capable full fibre digital infrastructure from a range of providers to new developments will support this approach.

Developers shall consider installing gigabit-capable full fibre infrastructure from two suppliers in order to provide choice and competition to consumers. A variety of infrastructure providers are keen to deploy gigabit-capable full-fibre infrastructure on employment and residential sites. Various incentives may be available such as payments made to the developer for the right to deploy, and deployment offered free of charge to the developer.

Developers shall engage with infrastructure suppliers at an early stage to confirm that gigabit-capable full-fibre broadband can be delivered to all new development in a timely manner. Developers shall consider the infrastructure requirements of the wider Masterplan Framework area in order to avoid prejudicing future infrastructure delivery and creating a need for retrospective works. Occupiers shall be able to access broadband (ideally from a choice of at least two providers) upon occupation of the premises.

Developers shall also consider their ability to upgrade infrastructure in the future in order to minimise disruption to occupiers/users. In developing detailed proposals, developers shall consider the following design principles:

- Minimise and/or mitigate against the visual presence of infrastructure on the façade of buildings;
- Minimise physical obstructions on footpaths and cycle ways;
- Maximise the use of recessed infrastructure;
- Carefully consider the location of cabinets to minimise visual clutter in the street scene.

Sustainable Construction

The reduction of embodied carbon is encouraged.

This is achievable by, for example, far more extensive use of timber from certified sustainable sources than traditionally seen in UK housebuilding; use of modular products that reduce wastage; and greater use of both natural and recyclable materials alongside adoption of circular economy principles. It is required that developers will utilise the RICS Whole Life Carbon Assessment for the Built Environment framework to reduce the embodied carbon of housing on this site and will transparently publish details of the outcome of this assessment as part of the marketing process.

Sustainable Drainage Systems

The blue infrastructure strategy for the site follows SuDS principles to manage surface water run-off from the site, by maximising the use of source control features, slowing the flow, attenuating run-off and discharging at a restricted rate (to be agreed with Yorkshire Water and the Lead Local Flood Authority).

Energy Strategy

An Energy Strategy will need to be carried out to better understand how the developments can help Barnsley in their transition to becoming a net zero carbon emissions borough, by 2045. Two main aspects are building fabric performance and energy supply and distribution.

Building Fabric Performance

As per the Future Homes Standard guidelines for new build homes, which was published in January 2021. Developers shall aim to reduce the carbon footprint of homes. This includes delivering zero carbon ready homes with low carbon heating and high level of energy efficiency in new homes.

High fabric performance of a dwelling is key to reducing the space heating demand and the associated carbon emissions. In order to assist BMBC in becoming a net zero carbon borough by 2045, developers shall meet the aspirational standards outlined below in Table 3. Whilst the aspirational targets may seem ambitious, as technology and construction techniques improve and costs decrease, these targets will become more readily achievable.

Energy Supply and Distribution

Further work will need to be done to identify appropriate energy supply and distribution pathways. Some options for individual buildings are:

- Electrically heating homes instead of using gas boilers and fossil fuel heating systems in all dwellings.
- Distributed air source heat pumps (ASHPs) in all dwellings.
- Solar thermal panels on roofs to preheat water for use in sinks, showers, underfloor heating and other hot water applications.
- Roof mounted photovoltaic (PV) panels with battery storage on dwellings with south-facing roofs, and grid backup.
- Roof mounted PV panels on the shop, and grid backup.
- Roof mounted PV panels on the school, and grid backup.
- Ground source heat pump (GSHP) in the school with electric boiler backup.
- Battery storage with grid back up.

Some community wide options are:

Connect up to district heating (heat networks) as per Barnsley Adopted Local Plan, page 264. The Council is currently considering the possibility of a 5th generation ultra low temperature heat network that could recover local industrial waste heat and use this to heat local existing homes and new developments via large heat pumps. This scheme might also include seasonal storage of heat.

Historic mine workings around Barnsley could allow for minewater heat for either an individual scheme or to be incorporated into a smart local energy scheme. Finally, it is unlikely that Developers will be able to avoid any emissions, therefore they will need to do this through investing in off-site renewables or rewilding and tree planting schemes.

Future Applications

Future applicants shall note that the council’s local validation checklist requires the submission of an Energy Statement for residential schemes over 10 dwellings and non-residential schemes of 1,000sqm plus. The Energy Statement shall clearly set out measures that will be included to deliver a net zero carbon development and the supporting evidence that underpins the proposed approach. If net zero carbon cannot be achieved, developers shall demonstrate why this has not been possible and explain what steps have been taken in the provision of infrastructure and the design of individual properties to permit net zero carbon through retrofit at a future point.

Further carbon reduction measures could include:

- Smart devices at home: Smart devices such as thermostats and lighting controls can implemented as part of smart homes. Smart devices have the potential to reduce the energy (heat and electricity) demand of dwellings and the associated emissions.
- EV home charging: Promoting the uptake of electric vehicles by providing in-built electric vehicle charging capabilities in the dwellings, could reduce transport emissions within Barnsley.

Fabric performance area	Performance value			
	Recommended minimum standard	Recommended minimum standard source	Recommended aspirational standard	Recommended aspirational standard source
Air permeability	≤ 5 m³/ (h.m²) @50Pa	Building Regulations Part L1A (2013)	≤ 1 m³/ (h.m²) @50Pa	LETI Design Guide
Roof U-value	≤ 0.15 W/m². K	Passivhaus standards	≤ 0.11 W/m². K	Part L 2020
Wall U-value	≤ 0.15 W/m². K	Part L 2020 LETI Design Guide Passivhaus standards	≤ 0.13 W/m². K	LETI Design Guide (lower boundary)
Floor U-value	≤ 0.15 W/m². K	LETI Design Guide Passivhaus standards	≤ 0.11 W/m². K	Part L 2020
Window U-value	≤ 1.2 W/m². K	Part L 2020	≤ 0.8 W/m². K	Part L 2020 LETI Design Guide Passivhaus standards

Table 3: Recommended fabric performance standards for dwellings

- Vehicle-to-Grid scheme: The vehicle-to-grid scheme is a smart charging system that also allows energy stored in batteries of electric vehicles to be injected back into the grid when required.
 - Microgrids: a localised energy grid for these developments would provide control capability, and can be powered by generators, batteries and renewable sources. It can operate autonomously or alongside the grid.
 - Demand side response (DSR): DSR refers to the process of managing energy more efficiently through modifying the energy requirements of consumers.
- The new developments could implement a DSR system to maximise the use of onsite energy generation. Consumers can switch to use the local energy source, the grid or local energy storage at different times.

 - LED streetlights and streetlighting controls: The energy required for street lighting can be reduced by installing LED streetlights with flexible controls.
 - Streetlighting controls allow lights to be switched only when required and offer inter seasonal flexibility.

6. PHASING AND DELIVERY

Development of the site shall come forward in phases. There is flexibility on how phases may come forward and Illustrative phasing is depicted in Fig. 23. It is noted that phases may not necessarily be delivered sequentially, however the delivery of certain phases could be dependent upon the availability of infrastructure networks (e.g. highways, drainage, utilities, etc.) to serve the respective parts of the site. The phasing strategy for the site has been developed as set out on the following page.

Further detail of the proposed approach to delivery is set out in the Delivery Strategy in Appendix B.

Extension to Carlton Primary Academy by the Academy Trust with S106 contributions from developers.

Improvements and enhancements to Wharncliffe Woodmoor to help deliver a minimum 10 per cent Biodiversity Net Gain, funded by developers to offset adverse impacts on development plots.

① Phase Number

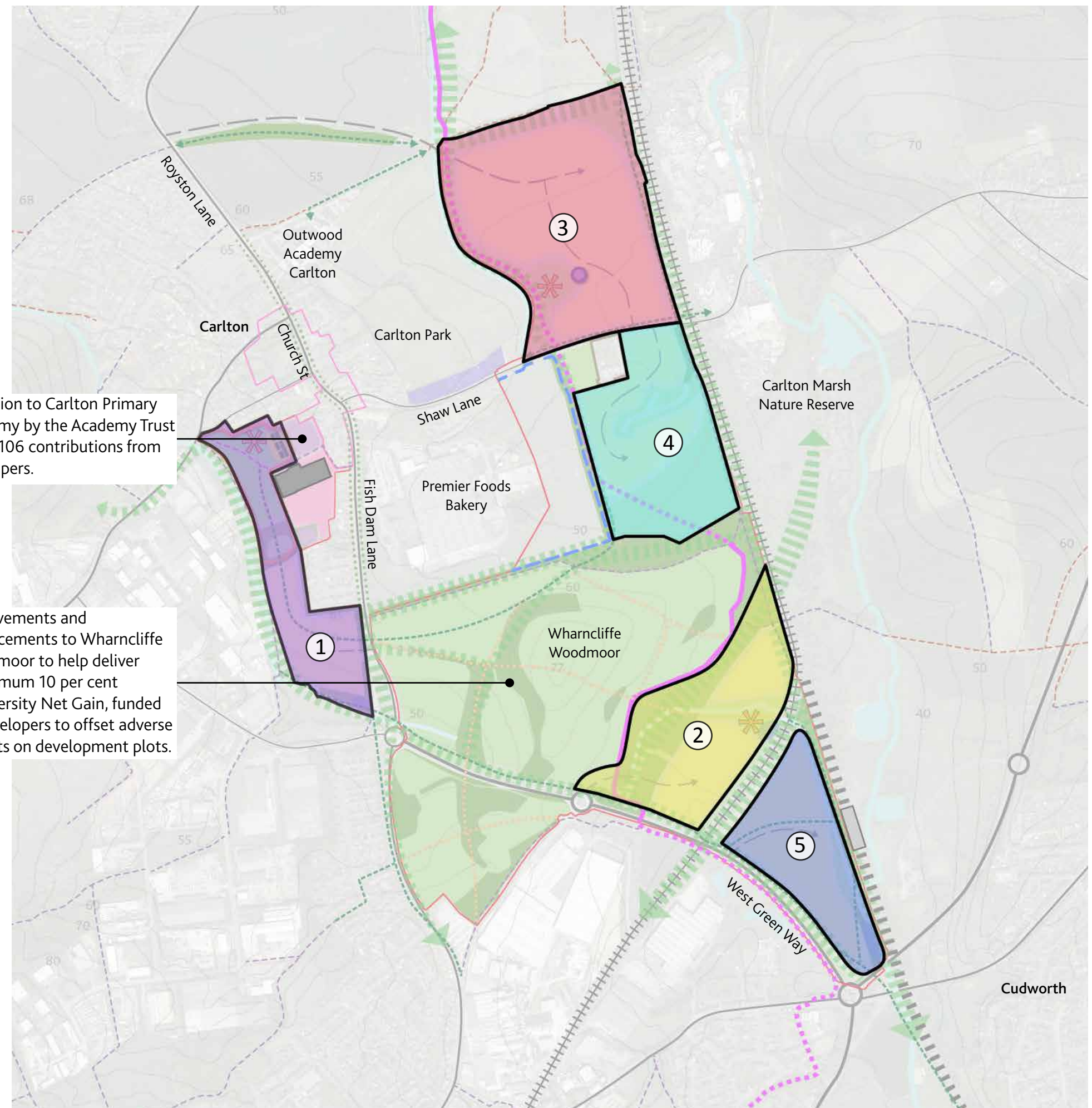


Fig. 23: Phasing Strategy Plan (Contains information from Esri)

6. PHASING AND DELIVERY

Phase 1

Phase 1 is the development of the MU2 land. It can be accessed off Fish Dam Lane and is adjacent to existing infrastructure and therefore assumed to come forwards first.



Phase 2

Phase 2 is the development of the plot off West Green Way, between Wharncliffe Woodmoor and the railway embankment due to ease of access.



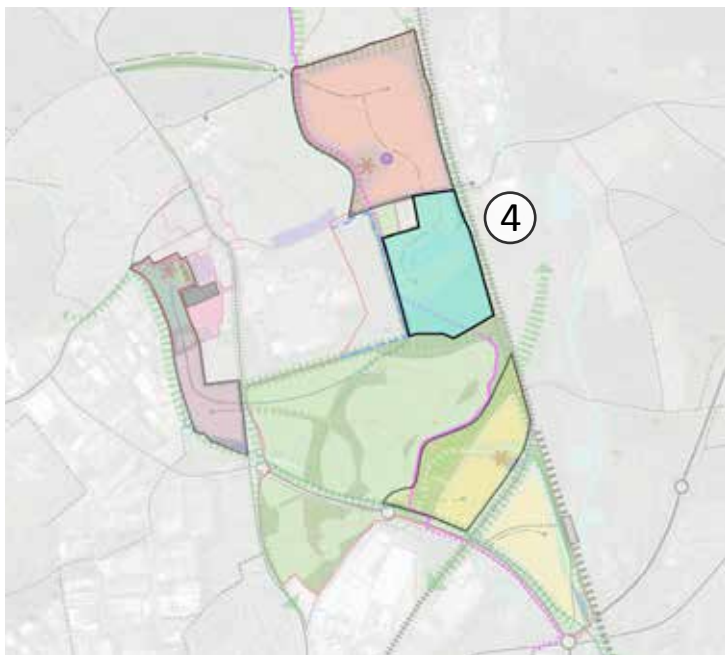
Phase 3

The delivery of Phase 3 is dependent on the delivery of the northerly access road, which will be delivered by BMBC using S106 contributions from developers in Phases 3 and 4. The indicative alignment of the northerly access road is shown on the Masterplan Framework.



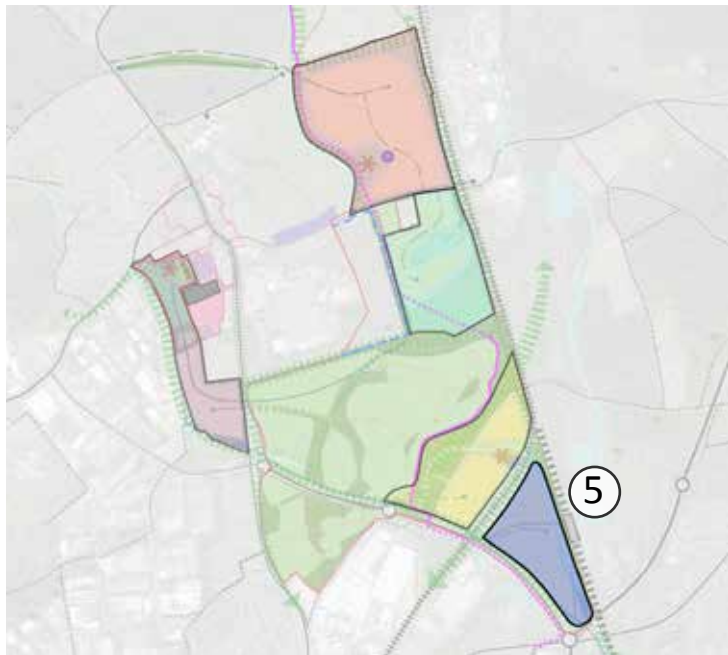
Phase 4

The plots south of Shaw Lane are dependent on the delivery of the northerly access road.



Phase 5

The final phase is slightly set apart from the rest of the site and can be delivered independently.



7. DESIGN CODE

7.0 INTRODUCTION

Purpose of the Design Code

This Design Code has been prepared by Gillespies and Arup to support the delivery of development of quality in Carlton (sites MU2 and MU3 as allocated in the Local Plan). The purpose of the Design Code is to set out a number of key principles that shall be applied across the site to create a distinctive and attractive place where people want to live, work and visit for generations to come.

The Design Code has been prepared in accordance with the Carlton Framework Masterplan, and shall be read and applied in conjunction with Local Plan policy and SPDs.

The Design Code seeks to provide the necessary guidance on how these placemaking principles can be developed and applied across the Carlton development to support the delivery of the overall vision. It does this by setting out the design principles that shall be applied in relation to key elements of the Masterplan Framework and by providing guidance on how the character of different parts of the proposed development shall be developed in order to create distinctive places defined by their landscape and built form.

This Design Code reflects the placemaking objectives set out in the Masterplan Framework (see Section 5 of this document) and draws on the principles set out in the National Model Design Code, as well as in Building for a Healthy Life.

The National Model Design Code

This recently published national guidance document on the production of design codes promotes quality and successful urban design. The document determines that codes shall be illustrative and easy to understand, while providing specific and detailed parameters where possible to tailor to the site.

The document sets out the structural skeleton of a design code and the coding process. The 'well designed place' wheel, as included below, considers character, community and climate as the three key criteria, while further addressing 10 sub-categories required for quality design and coding process. All these criteria will be carefully considered and weaved into this Design Code for the site.



Building for a Healthy Life

Building for a Healthy Life (BfHL) places emphasis on 'Putting Health into Place' by addressing the role the built environment has on people's health and wellbeing. This is achieved by responding to 12 spatial considerations over three headings - Integrated Neighbourhoods, Distinctive Places and Streets for All. To achieve this, BfHL recommends that new developments work with the site and its context, take advantage of existing natural and built features and respond to the scale of its surroundings. The principles included in this Design Code also focus on promoting health and wellbeing and placemaking characteristics observed in a range of attractive places within the district as well as around Carlton.

Using this Design Code

The Design Code is intended to ensure quality development across the site. Developers will be expected to comply with the Design Code or justify why they have not. Developers are encouraged to appoint a design team including: Architects, Urban Designers, Landscape Architects and Ecologists to ensure that the principles set out in the Masterplan Framework and the Design Code are met. The design principles that are considered to be fundamentally important to the development of Carlton are listed below:

1. Character
2. Urban Form
3. Homes
4. Facilities and Services
5. Connections
6. Streets
7. Landscape and Biodiversity
8. Parking and Accessibility



Distinctive homes that positively address open space and are integrated with the wider GI Framework



Community spaces that create a focal point and offer gathering and meeting spaces



Active travel routes that connect homes with services, facilities and the wider Public Right of Way network

7. DESIGN CODE

7.1 CHARACTER

This principle ensures the proposed development shall create a place with a locally inspired and distinctive character. A number of character areas shall be identified in the development that respond to the specifics of the immediate vicinity, in terms of form and materials.

1. Existing factors - Topography, buildings and existing GI

Carlton has a rich variety of existing factors both within and around the site that shall be used to create locally inspired identity.

1.1 Topography

Steep topography can be found to south of site MU2 and around the summit of Wharncliffe Woodmoor. These local high points provide opportunities for vista connections to originate from, at the same time development on these spots will be highly visible from the rest of the site and surrounding communities. To help mitigate visual impact of the proposed development on both the surrounding communities and wider landscape, Landscape and Visual Impact Assessments are expected to be undertaken alongside all future planning applications in the site.



Steep topography to the south of MU2, looking north-east

1.2 Buildings and Historical influences

Local character shall inform proposed development. Cues shall be taken from buildings of merit such as listed or locally listed buildings, local villages, towns and the landscape around Carlton, particularly Carlton Conservation Area.

Within Carlton Conservation Area, the dominant historic building materials are pale sandstone and stone slates, giving Carlton a typically rugged Yorkshire village character. Walls tend to be slightly offset square coursed sandstone which is often quite fine and typically varies from light sand to grey. More contemporary historic materials include red smooth faced brick - often the material used post-industrial revolution. Welsh blue slates are in evidence that sometimes replaced earlier stone roofs, with post-industrial structures occasionally using red tiles. Chimneys are common, often in stone but sometimes appear in red or buff brick depending on era. Invariably chimneys are topped with a terracotta or buff pot. Roofs are predominantly pitched or hipped and frequently include coping where the roof meets the gable end. Windows are often sash or sometimes casement and are set well back in the openings from the face of the wall. Sandstone quoining and detailed corbelling



Residential barn conversion in Carlton Conservation Area

are common in both stone and red brick structures with stone sills and lintels - it is common for these to have been painted white. Render is sparingly used throughout the conservation area. Boundary treatments are defined through the use of 3ft high sandstone or red brick walls with domed tops or established hedges. Farmsteads make up some of the built form in Carlton Conservation Area. Due to the effect these materials and methods have on the quality of views and the character they lend, they shall form majority of the materials pallet for the proposed development.

The setbacks of historic properties are related to their importance with the larger industry managers buildings set well back from the road. The workers' cottages and farmstead tend to be located close to the back of pavement with a very small or non existent front yard with small rear yards.

Distinctive historic arches along the railway line to the east of site MU3 are uniquely detailed with 4-course red brick arches with black brick tops and stone top pilasters. However, they are in poor condition and would require enhancement. The site of former Carlton Main Colliery in site MU3 is still evident in the form of untreated slag heaps. Currently these are ecologically valuable and further present the industrial character of Carlton.

1.3 GI and Landscape

Within the development, mature trees are expected to be retained and located within publicly accessible space to create focal points. Development shall promote the restoration and management of key hedgerows as described in the local plan and 'Trees and Hedgerows (May 2019)' SPD, and retain boundary walls, to better define roads and fields. Using trees and general planting helps define the boundaries of the proposed development

and adds depth to the landscape setting, helping the development to "settle" into the existing landscape and provide important, mature and distinctive features.

GI, both within the development boundary and around the site shall be used to influence the built character. Development shall actively front onto GI with a number of windows for habitable rooms and/or main entrances overlooking them to create safe, attractive and well used open space. The character of development fronting GI shall change depending on the character of the GI. Naturalistic settings such as Wharncliffe Woodmoor, Carlton Marsh Nature Reserve, greenbelt to the north of site MU3 and areas of significant ecological value shall have a "softer" surrounding built form character with larger front gardens - ideally deeper than 8 metres from the front boundary, more generous spacing between houses (garages or side parking) and a more informal appearance with a variety of natural materials and form. Development fronting more formal GI including green gateways and key active travel corridors shall create a strong sense of enclosure with defined building lines, similarity of materials and coherent boundary treatments.

2. Locally inspired identity and characters

By working with its existing context, the site has the opportunity to create a locally inspired identity that fits into the existing landscape.

Buildings shall be designed with large south facing windows to capitalise on the views, benefit from solar orientation and provide a distinctive character to the built form. The topography also offers opportunities in providing areas for SuDS that shall be incorporated within GI creating a rich landscape character within the development.

7.1 CHARACTER

3. Landscaping traditions and boundary treatments

Locally there are three main boundary treatments. Hedges make up the majority of field boundaries in rural locations, while dry stone walls and smooth faced red brick are predominantly used along road edges and urban areas. This principle shall be adapted and applied to the boundary treatments of the proposed development.

Walls (dry stone) shall be used as the front boundary treatment along primary and secondary streets as well as around the main gateways to the site and along existing roads. A mix of walls and hedges shall be used along tertiary streets. Frontages along the rural fringe and adjacent to habitat designations shall be hedges and include mixed native planting. Hedges dividing properties and located within development can be more formal and of single species.

4. Density, built form and appearance

The varying local conditions provide a structure to create different densities of development. Within site MU2 close to Carlton's existing built form, to either side of Shaw Lane and area close to Cudworth's centre, the proposed residential density shall be generally higher (between 40-45 DPH) due their adjacencies to their central locations. Built forms in these higher density areas shall be more formal with defined building lines and a clear confined palette of materials.

Towards Wharncliffe Woodmoor and the very north of site MU3, the density shall taper/ feather to a lower 30-35 DPH with a more informal built form and a more varied palette of natural materials.

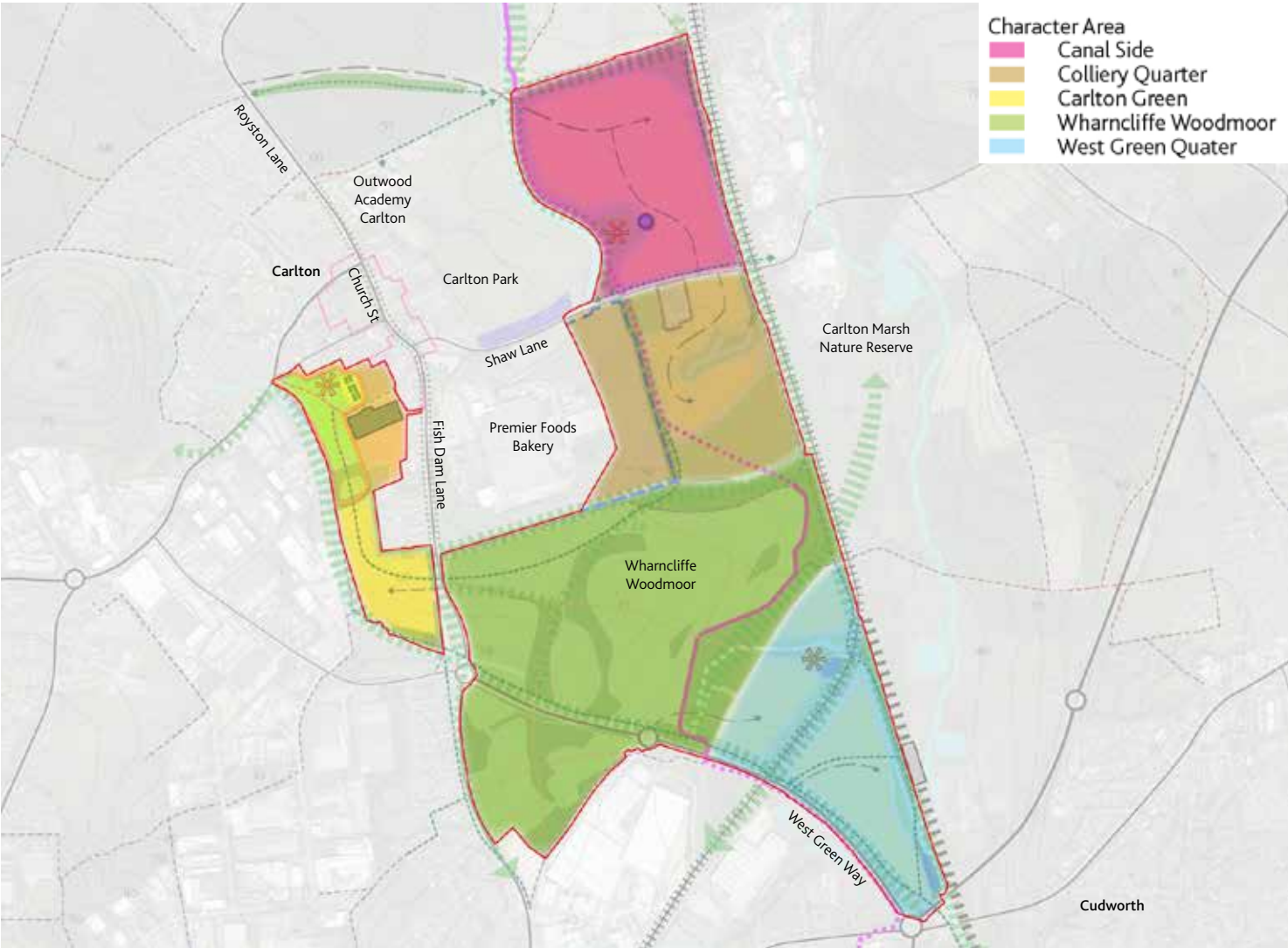


Fig. 24: Character Areas as established in the Carlton Masterplan Framework (Contains information from Esri)

For buildings crossing contour lines, plots shall be stepped in single or double units with a corresponding stepped roof scape that follows the topography. For character areas and densities identified across the site - see Section 5.3 (character area framework) of this document.



Boundary treatments that reflect local character

DESIGN CODE SUMMARY - CHARACTER

- High quality natural materials to be used for material palette.
- Locally vernacular materials to be used in key character areas - particularly site MU2 in close proximity to Carlton Conservation Area and along Shaw Lane.
- Retain existing mature trees and hedgerows as set out in the Local Plan. Improve hedges with a mix of native species where gaps occur.
- Buildings fronting sensitive landscape and naturalistic settings, including Carlton Marsh Nature Reserve, Wharncliffe Woodmoor, the green belt and existing vegetation of significant ecological value shall have building set backs of more than 8 metres from the front boundary.
- Buildings shall actively front open spaces with main entrances or habitable windows overlooking open space.
- Boundary treatments shall consist of stone walls fronting primary and secondary streets with a mix of hedge, stone walls and brick walls for tertiary streets. Open space shall be fronted with hedges.
- Native and local planting species shall be used adjacent to sensitive spaces (see above).
- Dwelling densities shall be varied across the site with higher densities (40-45 DPH) located more centrally, with lower densities (25-30 DPH) located adjacent to sensitive spaces (see above).
- Landscape and Visual Assessments (LVA) to be included in future planning applications.

7. DESIGN CODE

7.2 URBAN FORM

This design principle aims to influence the key aspects of the built environment of the site. These are reflected in the Masterplan Framework at a strategic level and future planning applications shall provide a further level of detail to demonstrate how these have been embedded in development proposals.

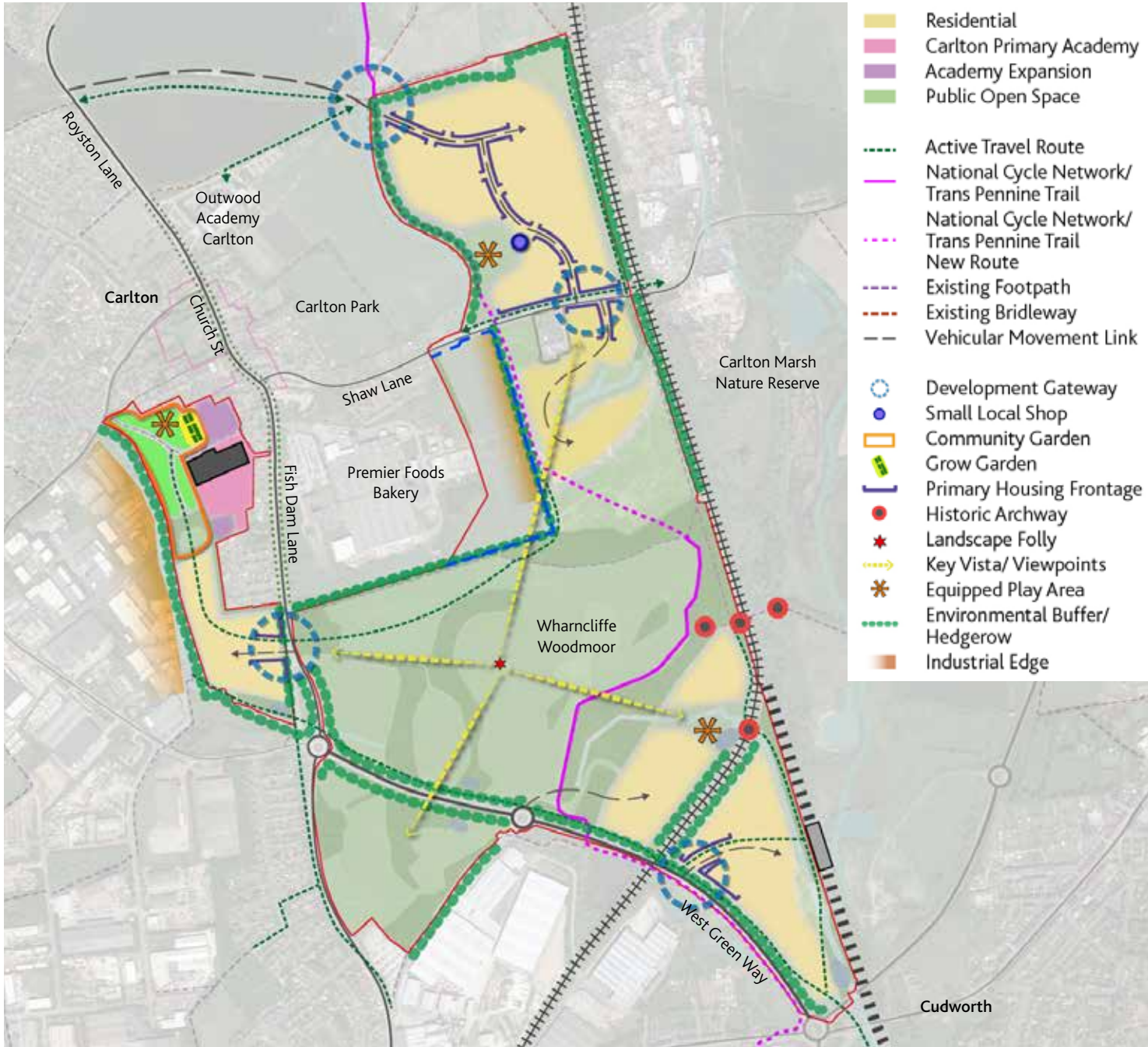


Fig. 25: Perimeter Blocks and Residential Frontages as established in the Carlton Placemaking/ Urban Design Strategy Plan (Contains information from Esri)

1. Development blocks

Development blocks can vary in shape and size according to the configuration of the Masterplan layout. A perimeter block structure provides clarity between the fronts and backs of buildings, between public and private spaces, and enables continuous overlooking of the street or open space. Creating variation in the shape and size of perimeter blocks helps to generate interesting and distinctive Character Areas.

The use of perimeter blocks must be consistent throughout the site. Their sizes and shapes shall respond to the use, existing landscape features, topography, character and density. Fig. 25 shows the different configurations of perimeter blocks and how they respond to the surrounding context and characters in Carlton , Cudworth, Royston and Athersley.



Urban fabric consists of perimeter blocks around Athersley, west of Carlton and the site

2. Fronts and backs

Designing development blocks with a clear distinction between residential fronts and backs is crucial in order to achieve best practice in placemaking, and to create secure and coherent streets and places.

In the site, a clear distinction shall be made between public fronts and private/semi-private backs. The primary access of the buildings shall align with the public spaces to create activity, while private or semi-private frontages – such as service areas and gardens – shall be located to the rear. Fronting the public space with blank walls/ gable ends, high fences and hedges which block the view of the public spaces must be avoided. Ambiguous spaces that are neither fully public nor fully private shall be avoided. Blocks that contain narrow lanes and pedestrian and cycle routes shall ensure that they are overlooked in order to create natural surveillance and a sense of security.



A clear distinction shall be made between public fronts and private backs

7.2 URBAN FORM

3. Edges

The interface of development edges to countryside, open space, green links or boundaries of the site has a critical role in defining the character and quality of the place.

At all the edges of the site, buildings shall positively address the public realm, and provide a natural surveillance. The building scale, mass and typologies shall respond to the topography, existing landscape and its context. Architectural and public realm material will be chosen sympathetically to the existing landscape character. Where buildings face sensitive edges and naturalistic settings such as Wharncliffe Woodmoor, Carlton Marsh Nature Reserve, Carlton Conservation Area, the green belt and vegetation of significant ecological value, a sensitive approach shall be followed with appropriate setbacks, building heights, roof typologies and the use of materials.

All dwellings bordering Premier Foods Bakery and other industrial buildings adjacent are to be provided with a minimum 20m green setback as environmental visual screening. To the west of MU2, adjacent to existing industrial units, existing trees and planting shall be enhanced to create visual screening. To the east of MU2, a green setback of 10m wide shall be introduced to buffer from the existing neighbourhood. Along the woodland edges and Carlton Marsh, ecologically sensitive lighting shall be used.

4. Building lines and setbacks

Building lines and setbacks are important to the overall character of the area and the sense of enclosure of the streets and public realm. Continuous building lines with a minimum gap creates a strong distinction between public and private spaces, and provides a sense of enclosure to the public areas. Where buildings step back from the building line, this shall be designed in order to create usable and attractive spaces.

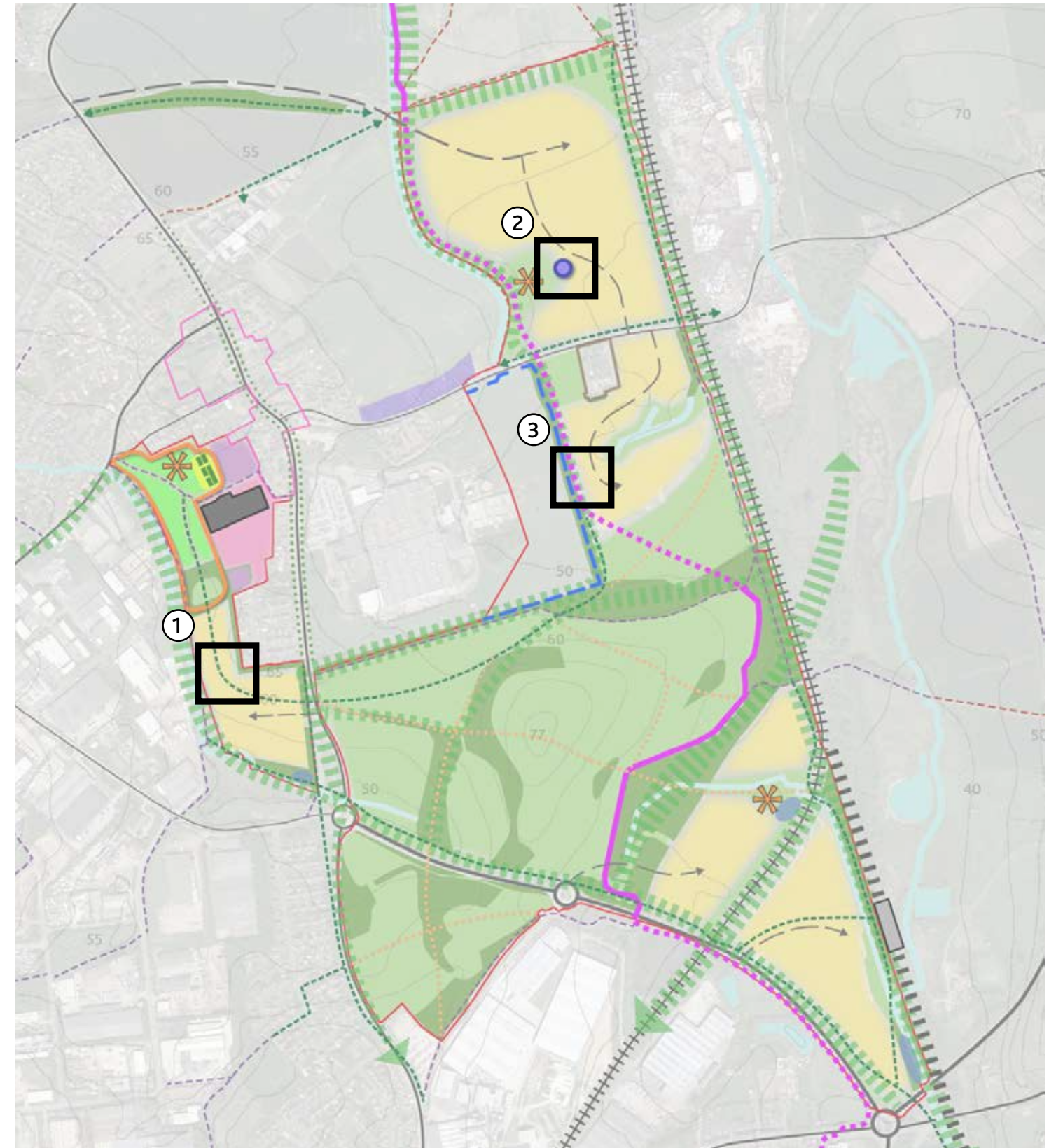


Fig. 26. Key plan for enlarged layout plans

7.2 URBAN FORM



Enlarged Plan 1 - South of MU2 adjacent to existing neighbourhood to the east, where a 10m wide green setback shall be included



Enlarged Plan 2 - North of MU3 where new local shop and neighbourhood greenspace is located



Enlarged Plan 3 - North of Wharnccliffe Woodmoor adjacent to the Premier Food site expansion and proposed 20m green setback

7.2 URBAN FORM

Around the higher density areas, building lines shall be continuous with consistent setbacks and a small private strip, to accommodate a small garden or area for plantation. At low to medium density residential areas, setbacks can vary in depth in order to accommodate larger front gardens or landscaped strips. This can also better respond to the character and the landscape context of the area. Front gardens can be much deeper along the peripheries of the development in order to create a softer transition between countryside, woodland, parks, Wharncliffe Woodmoor and built environment.

5. Well-defined public and private space

Buildings fronting the streets and open spaces give life to the public realm, therefore primary access and principal frontages shall always face onto public spaces. In the site, spacing between principal habitable rooms shall be sufficient to avoid them being intrusively overlooked and avoid the need for curtains and blinds

to be drawn. Setbacks from the street and front garden landscaping shall seek to balance privacy for front living rooms with the need for a view of the streets.

The minimum distance from the back of one dwelling to the back of another shall be 21 metres to provide the required level of privacy. Where this is not achievable, the layout shall be a back-to-side arrangement of no less than 12 metres, or use single-aspect buildings to avoid creating overlooking issues.

Appropriate boundary treatments including hedges, low walls and railings shall be incorporated into design layouts to clearly distinguish public and private space.

6. Corner treatment

It is an important design principle on urban form to appropriately address the corner of a development block. In the site, where corners of development plots are visually prominent, dual aspect buildings - buildings

with more than one entrance and two active frontages - shall be implemented with prominent entrances and windows.

In lower-density areas closer to the peripheries of the development, continuous built frontage shall address the corner by using a series of linked dwellings where possible. When a terraced, detached or semi-detached house faces out onto the corner, the buildings shall have the main entrance and habitable room windows facing both aspects to create activity, and shall provide natural surveillance by overlooking the street. This building can also be taller or have a distinctive architectural element, to ensure a greater presence than the neighbouring buildings to articulate the corner.

DESIGN CODE SUMMARY - URBAN FORM

- Perimeter blocks shall be used to ensure that there is a distinction between public and private space and to ensure that the public realm is overlooked.
- Buildings shall positively address public realm by being overlooked by windows from habitable rooms and/ or access doors.
- Building setbacks shall respond to the context. Dwellings fronting primary streets shall have limited setbacks of up to 6 metres and provide strong building lines. Buildings fronting Secondary and Tertiary streets can have a more varied building line with deeper setbacks. Buildings fronting habitat sensitive spaces including Wharncliffe Woodmoor, Carlton Marsh Nature Reserve, Carlton Conservation Area, the green belt and vegetations of significant ecological value to have a building setback of more than 8 metres.
- Buildings shall back onto Premier Food Bakery and other adjacent industrial buildings with a 20m wide green buffer and environmental visual screening between. To the east of MU2, a green setback of 10m wide shall be introduced to buffer from the existing neighbourhood. Environmental visual screening to be enhanced immediately west of site MU2.
- Buildings located on-street corners shall be designed to address both streets.



Precedent of well-designed tertiary street with minimal setback, small private strip - Abode, Great Kneighton



Precedent of residential frontages and appropriate setbacks from a tertiary street - Madeley Rd, Wakefield



Precedent of well-designed corner typology in residential plot - Derwenthorpe, York

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7. DESIGN CODE

7.3 HOMES

This design principle ensures the framework promotes a rich mix of housing types and tenures that suit local requirements, therefore building a diverse and balanced community.

1. A suitable housing mix

Below are housing policies from the Barnsley Local Plan 2019 that are relevant to this site:

- **Policy H6:** Housing mix and efficient use of land - This policy states that an average density of 40 DPH shall be expected in urban Barnsley and Principal Towns where the Carlton site is situated.
- **Policy H7:** Affordable housing - Housing developments of 15 or more dwellings shall be expected to provide affordable housing. In Carlton, 10 per cent affordable housing is expected.

In addition to the above policies, there are a number of adopted SPDs that relate to homes including:

- Design of Housing Developments - Adopted May 2019
- Affordable Housing - Adopted May 2019*

*Subject to update following publication of the Strategic Housing Market Assessment (SHMA)

The average residential density of the site shall be around 40 DPH, as proposed currently in the Masterplan Framework. Densities of individual residential parcels shall vary in line with the various character areas within the development. Parcels with higher densities (40-45 average DPH) comprising 2.5 - 3 storey dwellings, shall be located around Carlton centre in MU2 site, to the north and south of Shaw Lane and towards the south east corner of MU3 site adjacent to Cudworth. Parcels with lower density (30-35 average DPH) shall be found around the outskirts of neighbourhoods adjacent to green fields to the north and the peripheries

of Wharncliffe Woodmoor and Carlton Marsh Nature Reserve. This density gradient shall help to limit impact and create a "feather" edge to Wharncliffe Woodmoor and surrounding wildlife sites.

2. Type and tenure

To fit within the surrounding residential context of Carlton, the proposed dwellings within the development shall vary in size from 2-2.5 storey detached, semi-detached and terraced housing. The majority of the dwellings shall range from 2-4 bedrooms family houses to cater for a younger demographic. Some higher density 3 storey blocks may be located around the Carlton centre in MU2 and around Shaw Lane where the new local shop is located. These higher density parcels shall include smaller sized homes that can be suitable for young professionals or downsizing households.

The proposed dwellings shall provide a broad mix, offering a range of options such as First Homes, accessible and Lifetime Homes (LTH) and affordable homes for young people, families and the elderly. As per Policy H7 of the Barnsley Local Plan, 10 per cent affordable housing is expected in the Carlton development. The proposed Lifetime Homes shall be of a high quality and well maintained with possibilities for elderly and specialist accommodation.



Where houses are designed to comply with the requirements of Lifetime Homes - Derwenthorpe, York

3. Tenure-blind neighbourhood

As suggested, a mix of homes can help to provide a more diverse and balanced community. The proposed neighbourhoods within the site shall be tenure-blind and avoid differentiation of dwelling types. It is also recommended to avoid neighbourhoods that only provide homes for one market segment, large groupings of singular tenure types (e.g. affordable rent) will not be acceptable. Exterior features of dwellings, landscaped boundary treatment and parking provision shall not differ, to enable easy identification of various tenure types within the development.

4. House types

To increase the quality of development it is expected that developers use house types that are site and location specific and shall be designed to respond to the local character and specifics of the site and location. The quality of development shall strive to be better than the surrounding areas, and while standard house types may be used, they must be carefully selected to sit comfortably with local traditions, surrounding landscape and character areas. A number of site specific bespoke houses in key locations will be encouraged.



Abode, Great Kneighton - variety of terraced, semi and detached home types

DESIGN CODE SUMMARY - HOMES

- Principles of creating homes of meeting long term needs such as the incorporation of fabric first and net-zero technology, accessible and adaptable dwellings will be supported. Building for a Healthy Life standards shall be applied to development.
- Dwelling densities shall be varied across the sites. Higher densities (40-45 DPH) located closer to Carlton centre, along Shaw Lane and public transport routes. Medium to low densities (30-35 DPH) located adjacent to Wharncliffe Woodmoor, green belt and landscape designations such as Carlton Marsh Nature Reserve.
- Affordable housing provision of 10 per cent is expected. The type and ratios of affordable housing are stated in Barnsley Local Plan SPD Design of Housing Development (adopted May 2019) and Affordable Housing (adopted May 2019).
- Affordable housing shall be tenure blind and indistinguishable from other dwellings.
- Brown and green roofs to be considered on buildings where appropriate.
- Developers are expected to use house types that are location and site specific.

7. DESIGN CODE

7.4 FACILITIES AND SERVICES

Facilities and Services

This principle shall ensure necessary provision of facilities and services are provided, such as shops, schools, workplaces, parks, play areas, grow gardens etc. It is essential to ensure that the proposed development integrates into its surroundings by reinforcing existing connections and creating new ones, while also respecting existing buildings and land uses around the site.

The local centres of Carlton and Cudworth are within 1,200m of the site boundary and provide services and amenities within a 15 minute walk for most residents. In addition to this, the development shall provide an appropriate bus route linking Royston Lane and Church Street to Shaw Lane/ through the north of site MU3, to allow for improvements to the public transport network.

Small Local Shop

The development shall provide a small local shop of up to 500m2 of retail space for new and existing residents. To ensure that this meets local needs and is viable, it shall be located adjacent to the proposed primary street through the north of site MU3. High quality design for the shop frontage, façades and signage is essential to improve the appearance and reputation of the locality.

Community Garden

A community garden shall be located to the north of site MU2, in order to create a central community focus. This shall include allotment gardens, formal and informal recreational areas. This shall be run as a community asset and be managed and maintained by local residents.

The public realm around both the new local shop and community garden shall be high quality, with a mixture of quality hard surfacing and landscaping to create inviting

and pleasant spaces, where local residents would want to meet and socialise.

Carlton Primary Academy

Carlton Primary Academy shall be expanded both to the north and south to accommodate for an additional 210 students. This will include a building extension or additional structure, private play facilities and sport pitch provision.

Parking

Designated off-street parking areas for both vehicles and bicycles shall be provided at small local shop, community garden and Carlton Primary Academy, with an emphasis on quality cycle shelters to promote active travel within both the site and further afield.

Play

Three new play areas shall be provided among the neighbourhoods with alternative methods of play around the development:

1. Play Area 1 - Located within the proposed community garden in MU2 next to Carlton Primary Academy. This complements the lack of Local Equipped Area of Play in Carlton.
2. Play Area 2 - Located within the park north of Shaw Lane, creating a place alongside the small local shop. Naturalistic play equipment and informal play space shall be specified to sit in the greener neighbourhood.
3. Play Area 3 - Located at the existing beck and proposed water attenuation pond south of MU3.
4. Trim trails shall be provided around the perimeter of development and along the recreational routes to promote active lifestyles.
5. Opportunities for naturalistic and non designated play areas are encouraged throughout the open space network.



Open space provides opportunities for social gathering



Community allotments/ grow gardens



Example of small local shop (Image credit: RetailGazette)



Informal woodland play

DESIGN CODE SUMMARY - FACILITIES AND SERVICES

- Development is expected to provide a small local shop (up to 500 sqm of retail floorspace) as set out in the adopted Local Plan. There is a degree of flexibility as to the final location of the small local shop, which shall be determined on viability. The Masterplan Framework has shown it in a preferred location which is along the proposed primary street north of Shaw Lane.
- A community garden shall be created to the north of MU2 site adjacent to Carlton Primary Academy, inclusive of allotment gardens, formal and informal recreational areas.
- Carlton Primary Academy is to be expanded to the north and south to accommodate an additional 210 pupils.
- A minimum of three additional equipped play areas shall be provided at or close to the locations shown on the Masterplan Framework.

7. DESIGN CODE

7.5 CONNECTIONS

Connections

It is essential to ensure that the proposed development integrates into its surroundings by reinforcing existing connections and creating new ones, while also respecting existing buildings and land uses around the development site.

1 Ease of movement – permeability, walking, cycling, and accessibility with a clear hierarchy

A highly permeable active travel and street network is essential to encourage sustainable modes of transport across and beyond the site and connect with nearby facilities and services. Direct active travel routes shall be provided to local services and facilities within the site and connect to existing surrounding routes or Public Rights of Way. Active travel network off site connections are indicated by the black arrows in Fig. 27.

2. Well-designed green network - Improve safe movements and recreational opportunities.

The existing footpath and bridleway network shall be incorporated within the proposed GI across and beyond the site. The green network shall be well overlooked by residential frontages with natural surveillance, creating a safe and pleasant green network and connecting habitats, communities and facilities.

3. Improved connectivity to nearby centres and surrounding facilities

For this new community to integrate with the existing neighbourhoods, it is essential to ensure strong connections with existing centres and facilities as well as provide new facilities for existing residents. New vehicle access shall be provided off Royston Lane through to Shaw Lane, providing primary movement linkages across the site MU3. The existing footpath and bridleway

network shall be retained and improved to promote active travel within and around the site. The existing Public Right of Way to the east of site MU3 shall be enhanced to improve accessibility to the facilities and services of Cudworth. Shaw Lane, Fish Dam Lane and Church Street shall include active travel infrastructure connecting the development to Carlton Park, Carlton Allotment, Carlton Primary School and Outwood Academy. The bridleway at Outwood Academy shall be enhanced to serve as active travel to site MU3.

4. Landmarks, vistas and focal points

Well-designed open spaces, streets and public realm, together with built forms are crucial for placemaking. Landmarks, vistas and focal points are the tools to help residents and visitors to easily orientate themselves within this proposed development.

4.1 Focal points

It is important to create rhythm in the urban fabric with sequences of spaces in order to ensure well designed places. This can be achieved by creating a number of focal points and gateways with landmarks, public realm and other landscaping features, or simply by setting back the building line and increasing the greenspace. Residential areas shall also include a number of focal points in order to create attractive and distinctive places. Focal points shall be created at the gateways to the development off Shaw Lane, entering site MU3 from Royston Lane and also along Fish Dam Lane to spatially address the entry points into the development. The landscape folly in the Wharncliffe Woodmoor summit will also be a focal point for this enhanced neighbourhood greenspace. (see Fig. 28).

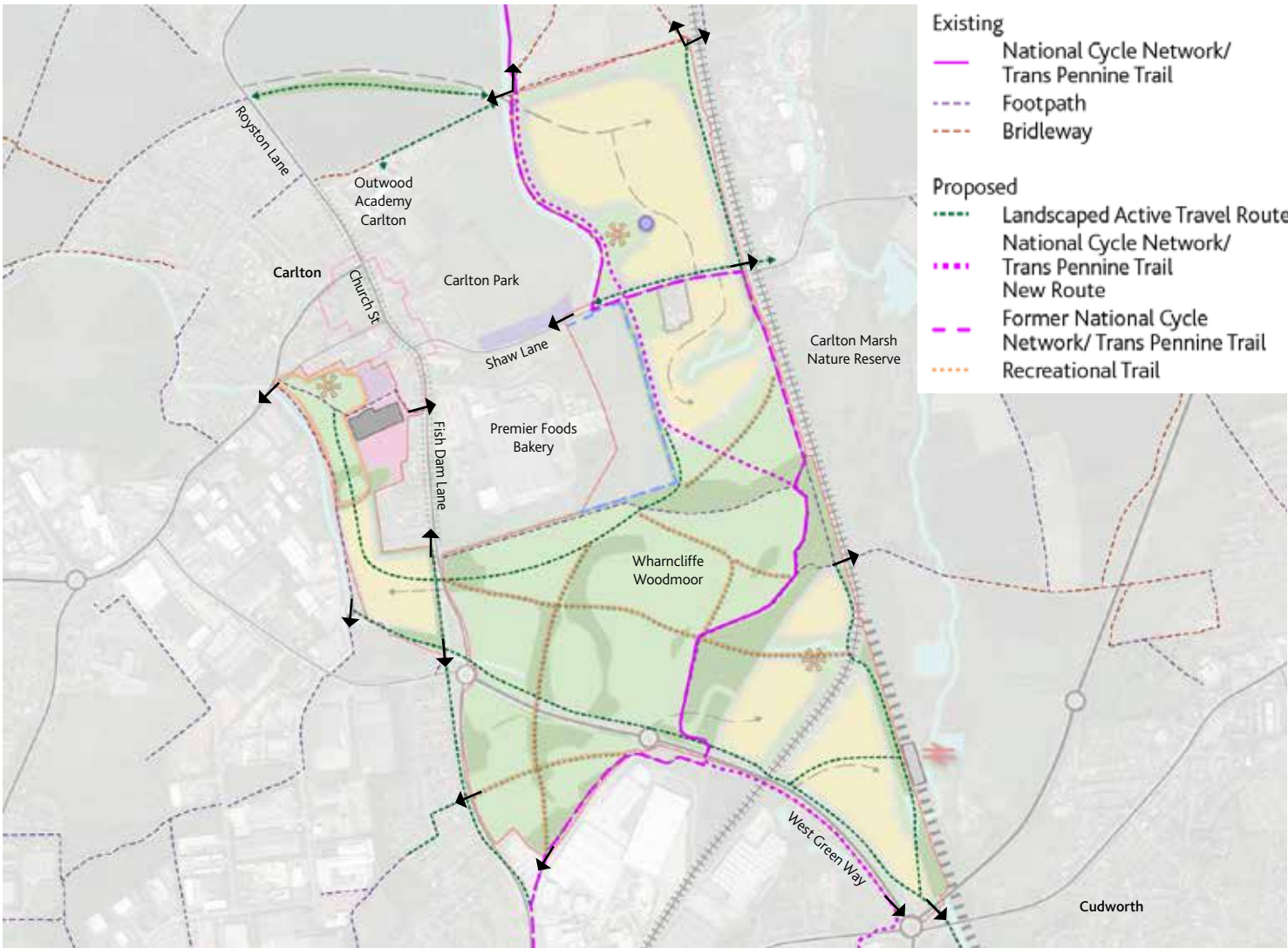


Fig. 27: Active travel links to surrounding facilities and services as established in the Carlton Active Travel Links Strategy Plan (Contains information from Esri)



Active travel routes provide opportunities for exercise, connections to services and integrating local features



Vistas between developments provide visual connections and aid way finding - The Avenue, Saffron Waden

7.5 CONNECTIONS

4.2 Landmarks

Landmarks are used to emphasise the hierarchy of a place and are often related to focal points to create a visual guide to help users navigate through places and reinforce the sense of identity. They are not limited to taller or large scale buildings. Public art, a tree with a distinctive quality, a strong landscape with quality materials and/or rich planting, an architectural element or an ornament on a building can be a landmark.

Within the development new landmarks shall respect the existing landscape setting. Landmarks shall be located at key positions throughout the site and will form part of the wayfinding strategy, particularly at gateways. A landscape folly will complement the summit at Wharncliffe Woodmoor, creating a prominent landmark that can be seen from the surrounding areas (see Fig. 28).

4.3 Vistas

Views and vistas shall be used effectively to reinforce the distinctiveness and the legibility of the place. This can often be achieved by using higher structures on buildings, atypical architectural materials, a large distinctive tree or a public art feature.

Creating short-distance views broken by buildings, trees or landmarks helps to create memorable routes. Creating views and vistas allows easily usable links between places. Vistas shall be aligned where possible along green corridors looking south to the open countryside and from the higher ground to the north.

Wharncliffe Woodmoor summit provides a viewing point with key vistas to surrounding gateways.

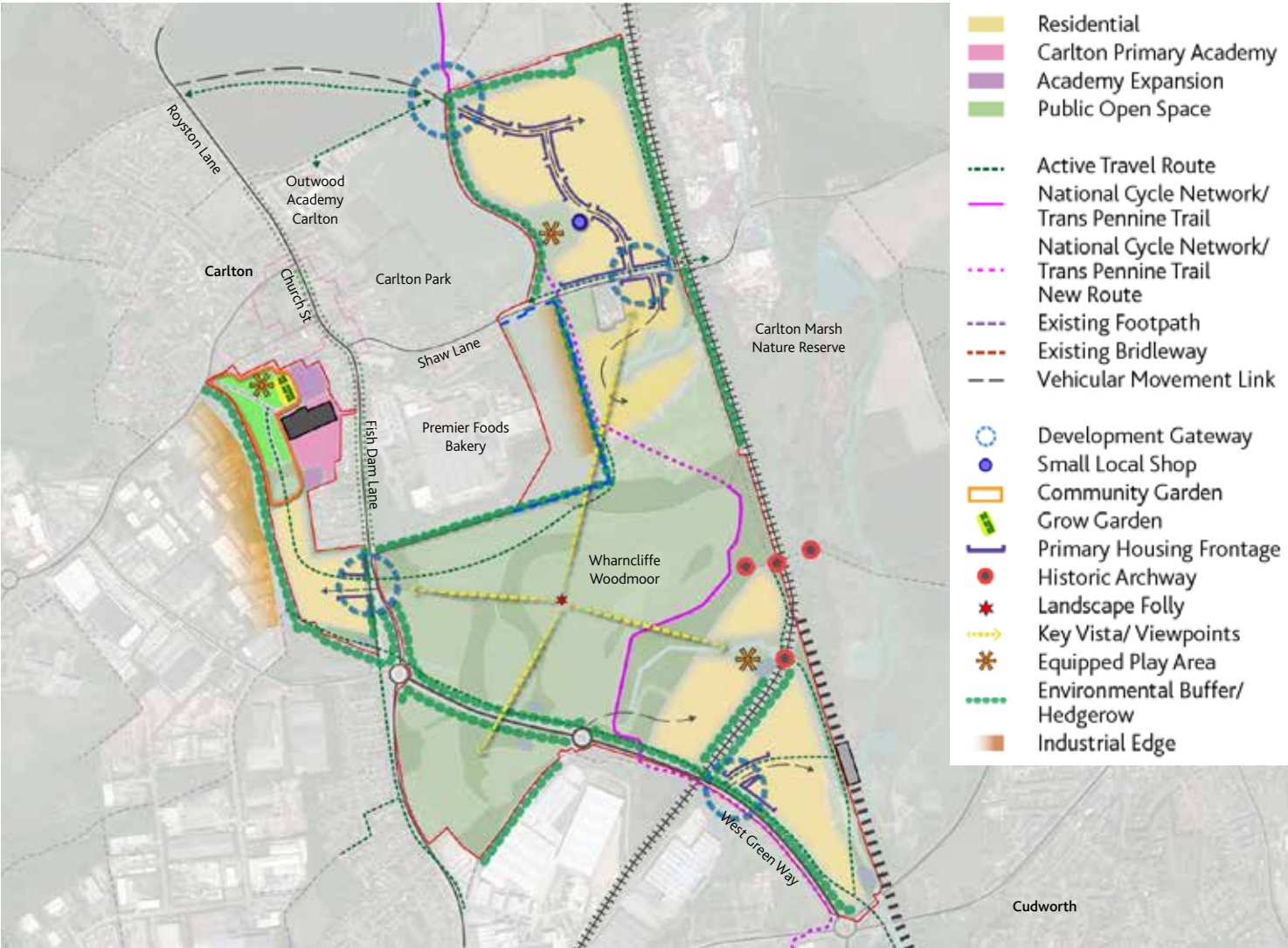


Fig. 28: Strategic landmarks, vistas and focal points/ gateways. Carlton Placemaking/ Urban Design Strategy Plan (Contains information from Esri)



Pocket parks integrated into the street create a focal point and allow social interaction - Accordia, Cambridge



Well overlooked footpaths provide natural surveillance and improved security - Derwenthorpe, York

DESIGN CODE SUMMARY - CONNECTIONS

- Existing footpaths shall be retained. Where required, minor diversions may be permitted to accommodate development.
- New Public Rights of Way shall be created that link into the existing network.
- A number of Public Rights of Way that are separate to the road network shall be provided / upgraded to provide a hard surface that is suitable for non powered wheeled vehicles, including cycles and pushchairs.
- If cul de sacs are proposed, they must be connected at both ends with foot and cycle paths to the wider foot and cycle network.
- Minimum widths for Public Right of Way*:
 - 2 metres for public footpaths
 - 3 metres for unenclosed bridleways
 - 4 metres for enclosed bridleways
 - Active travel routes shall have segregated cycle lanes of 3m in addition to the footpath

* Where constraints prevent minimum widths being achieved these may be reduced.

7. DESIGN CODE

7.6 STREETS

Streets

Within the proposed development, buildings shall be designed and positioned with landscaping to define and enhance streets and spaces. A well connected street formation with a clear and thematic street hierarchy is the fundamental structure of the Masterplan Framework.

1. Permeable and interconnected street network

New residential neighbourhoods must provide permeable layouts within the development site, as well as connecting to the wider area and to active travel networks beyond. In particular, they shall provide direct and secure connections between neighbourhoods and local facilities, such as the small local shop, schools, parks, Wharncliffe Woodmoor and public transport links for pedestrians and cyclists. This shall be through the provision of traffic free landscaped active travel corridors, as well as the street network. A permeable layout generates a higher level of pedestrian/cycle activity, which makes social interactions more likely and increases the level of security. Vehicular routes shall provide access to residential neighbourhoods and facilities within the site, but shall not be direct; a more circuitous route shall make driving less appealing and encourage the sustainable modes of travel.

The design of the street network shall establish a clear and legible layout with a strong structure, and avoid being formed around the technical demands of traffic. The layout shall respond to the topography, natural desire lines and access to the site. It shall avoid creating cul-de-sacs and indirect pedestrian and cycle routes, to ensure lower traffic levels on minor roads and to encourage the use of sustainable movement alternatives. Pedestrians and cyclists must be able to

move freely between all parts of the development and have easy access to the surrounding street networks and key destinations. Space shall be allocated within the highway corridor to create a functional balance between vehicles and pedestrians/ cyclists, avoiding vehicle domination of the streetscape.

2. Active frontages

Active frontages are important in terms of bringing life and activities to streets and public realm. Introducing regular doors, windows, front gardens and front parking can stimulate activity and social interactions. Narrow frontages with a vertical rhythm can create a more attractive and urban streetscape, while articulation on façades and use of bays and porches can create a more residential aesthetic.

In the development, exposing blank walls/ gable ends to the public realm and use of passive and blank façades must be avoided. Within higher density areas, a minimum of 15 doors and windows shall be accommodated every 100m, while in lower density areas there shall be a minimum 6 to 10 doors and windows every 100m to achieve a good level of activity within the public realm.



Fig. 29: Road Hierarchy and vehicle movement as established in the Carlton Vehicular Movement Strategy Plan (Contains information from Esri)

7.6 STREETS

3. Street Design

To be read in conjunction with section 5.2 Movement Framework in this document.

3.1 Primary Route

- Design requirement = min 6.75m, 20mph design speed (30mph to the access route north of site MU3).
- Two-way segregated cycleway - min 3m width.
- Pedestrian footways – min 2m width.
- Where on-street parking is proposed it shall be in designated parallel bays maximum 5 bays long. Where on-street parking is proposed, this shall be in combination with street trees at not more than 5 bays apart.
- The car parking provision will comprise a mix of curtilage and on-street parking to break up the linear nature of street design and reduce vehicle speeds.
- Generally, the street height to width ratio shall be 1:3 - 1:4. For illustrative section, see Fig. 30.
- Asphalt with aggregate chipping shall be applied in all primary street, bus route and cycleways within the site. Modular paving system (eg: concrete pavers or natural stone) shall be applied in all footways. It is also essential to consider the below criteria when selecting materials:
 - Embedded carbon, including associated build-ups;
 - Durability and robustness to minimise maintenance and the need for replacement;
 - Accessibility and the needs of those who are partially sighted to navigate the public realm;
 - Promote permeable paving system where applicable

3.2 Bus Route

Design requirement = preferred 6.75m min width for buses. Bus stops are to be provided at regular intervals to ensure all dwellings are within 400m walking distance, preferably 300m. Guidance indicates bus stops to be provided on-street, however SYPTE/operators have indicated a preference for laybys – this is to be confirmed as the Masterplan Framework is progressed. Pedestrian footways to be min. 3m at bus stops to cater for additional pedestrian movements.

- Shelters, CCTV and raised pavements shall be provided where required to improve accessibility and security. Infrastructure shall also be included at bus stops to allow for real time information.
- Where on-street parking is proposed, it shall be in designated parallel bays, maximum 5 bays long. Where on-street parking is proposed it shall be in combination with street trees no more than 5 bays apart.
- The car parking provision will comprise a mix of curtilage and on-street parking to break up the linear nature of street design and act to reduce vehicle speeds. Generally the street height to width ratio shall be 1:3 - 1:4. For illustrative section see Fig. 30.

Primary Route/ Bus Route

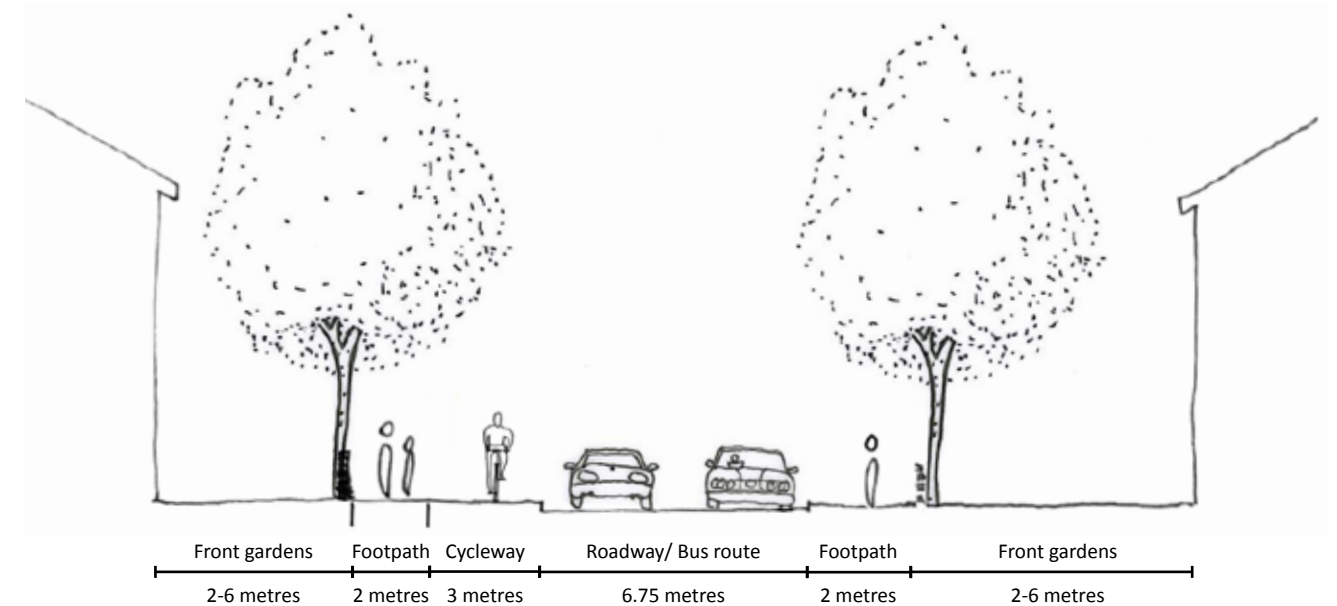


Fig. 30: Typical street section - Primary Route



Integrated parking and landscape help soften the street scene



Pedestrian prioritising primary route/ bus route

7. DESIGN CODE

7.6 STREETS

3.3 Secondary Route

- Design requirement = preferred minimum 5.5m, 20mph design speed.
- Pedestrian footways are to be provided on both sides – min 2m width.
- Trees shall be provided within front gardens.
- Generally the street height to width ratio shall be 1:2 - 1:3.
- For illustrative section, see Fig. 31.
- Asphalt with aggregate chipping or modular paving system (eg: concrete pavers) shall be applied in all secondary streets. Modular paving system (eg: concrete pavers or natural stone) shall be applied in all footways. It is also essential to consider the below criteria when selecting materials:
 - Embedded carbon, including associated build-ups;
 - Durability and robustness to minimise maintenance and the need for replacement;
 - Accessibility and the needs of those who are partially sighted to navigate the public realm;
 - Promote permeable paving system where applicable.

Secondary Route

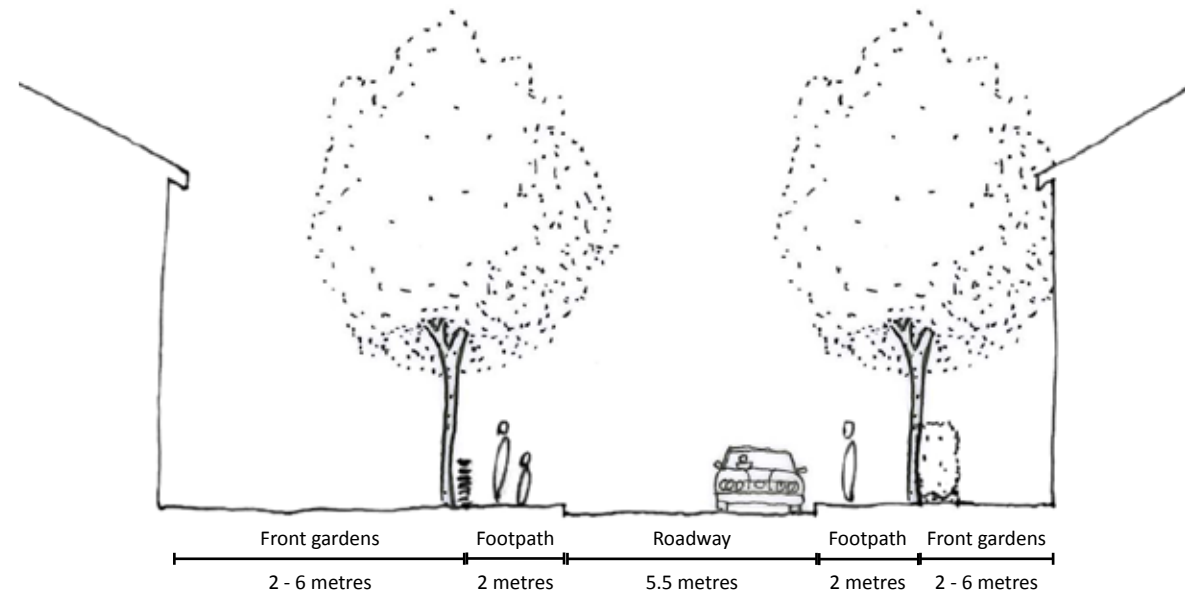


Fig. 31: Typical street section - Secondary Route

3.4 Tertiary Route / Local Access

- Design requirement = preferred min. 5.5m, 20mph design speed.
- Pedestrian footways are to be provided on both sides – min. 2m width.
- A 20m max. distance cul-de-sac can be provided without a turning head
- Access for up to 5 properties from a private drive – requirement for emergency vehicle access.
- Generally the height to width ratio shall be 1:2. For illustrative section, see Fig. 32.
- Modular paving system (eg: concrete pavers) shall be applied in all tertiary streets/ local access and associated footways. It is also essential to consider the below criteria when selecting materials:
 - Embedded carbon, including associated build-ups;
 - Durability and robustness to minimise maintenance and the need for replacement;
 - Accessibility and the needs of those who are partially sighted to navigate the public realm;
 - Promote permeable paving system where applicable.

Tertiary Route / Local Access

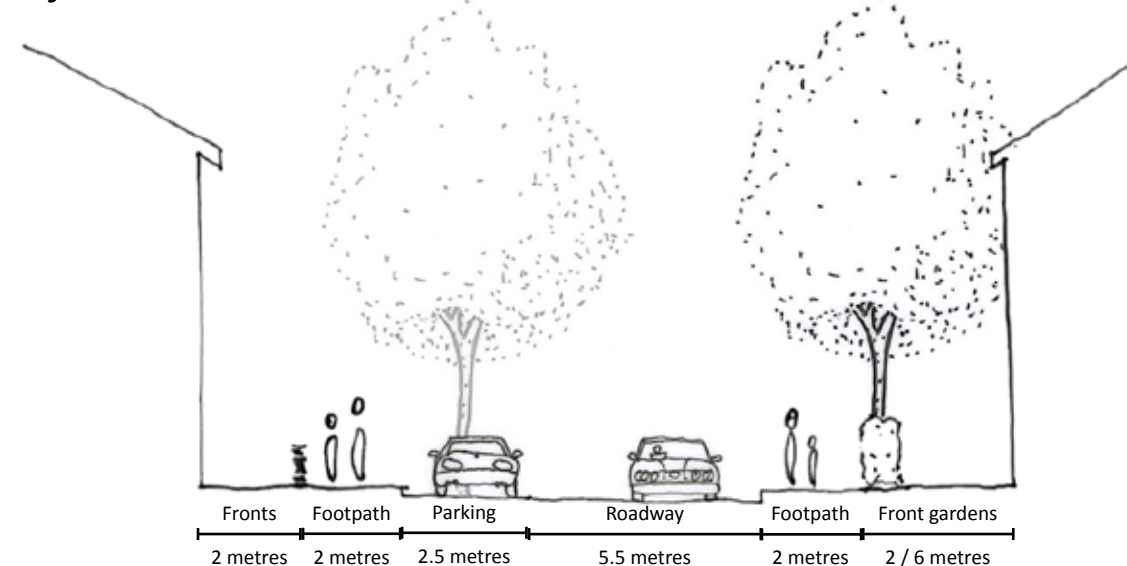


Fig. 32: Typical street section - Tertiary Route



Narrow local streets encourage low vehicle speeds



Green links and active travel routes separate from roads



Private drives as single sided development onto open space.

3.5 Single-Sided Development

- Design requirement = preferred min 5.5m, 15/20mph design speed.
- Pedestrian footways are to be provided on developed side – min 2m width.
- A 20m max distance cul-de-sac can be provided without a turning head.
- Access for up to 5 properties from a private drive – requirement for emergency vehicle access.
- Cul-de-sacs along open space shall be connected with active travel (pedestrian and cycle) links to improve permeability.
- For illustrative section, see Fig. 33.

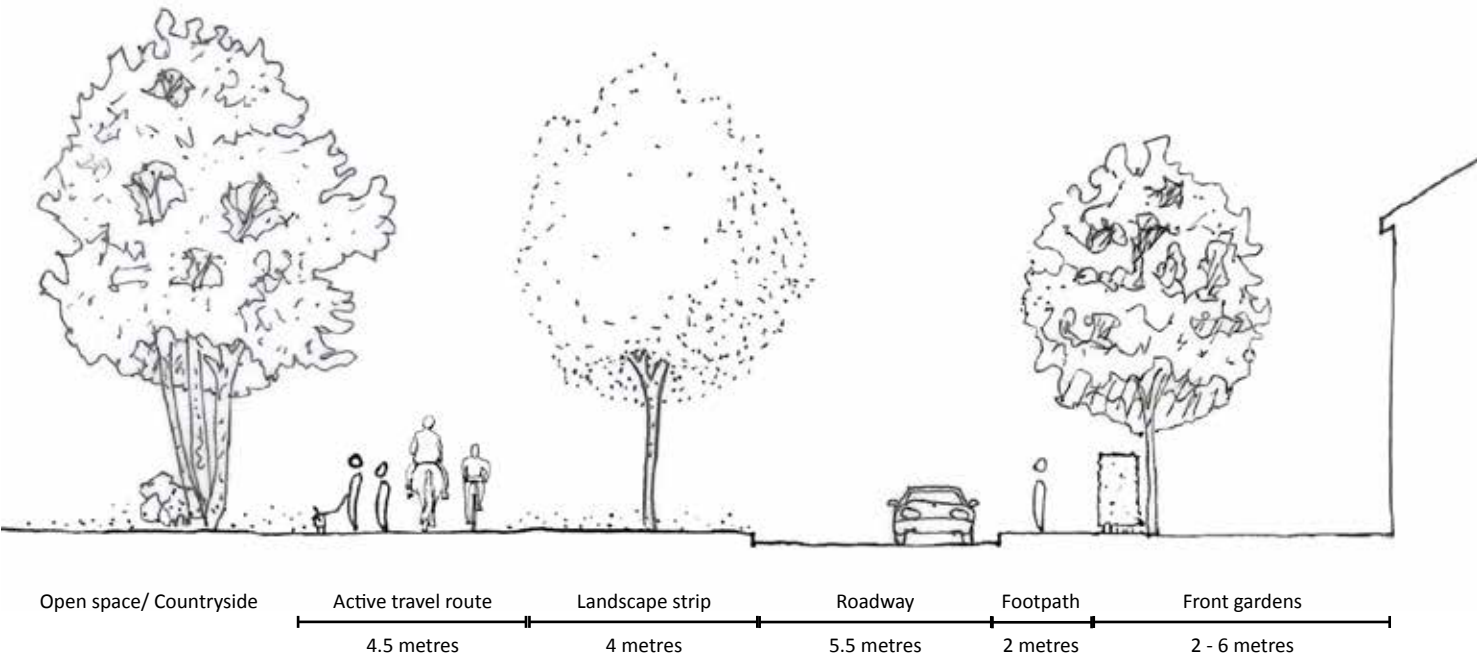


Fig. 33: Typical street section - Single Sided Development

DESIGN CODE SUMMARY - STREETS

- Across the development, a permeable network of streets shall be provided.
- The street network shall be designed to provide a hierarchy of streets to establish a clear and legible layout and aid way finding.
- The hierarchy of street design shall be split into 3 route types; Primary streets provide the main access into the site and create a link from Royston Lane to Shaw Lane. This link shall be designed to accommodate buses; Secondary streets shall link the neighbourhoods internally, while also access MU2 and parcels to the south of MU3; Tertiary streets provide access to dwellings.
- The widths indicated within this design code shall be used for the different street types, footpaths and cycleways.
- The designed speed limits within this design code shall be used for the different street types.
- Parking shall follow limits set out in this design code for the different street types.

7. DESIGN CODE

7.7 LANDSCAPE AND PUBLIC REALM

The site is set within a landscape of existing trees and shrubs of significant ecological value, open mosaic habitat, becks and watercourses, Wharncliffe Woodmoor and Carlton Marsh Nature Reserve (part of the Dearne Valley Wetlands (SSSI)). A GI network of well vegetated active travel routes and semi-natural greenspace are provided throughout the site, promoting health and wellbeing and a unique sense of place for any proposed development.

1. Strategic green / wildlife links

A network of strategic green links are proposed across the site. It connects streets, the local shop, parks, Wharncliffe Woodmoor, the community garden, Carlton Primary Academy and public transport routes with a series of active travel links extending out into the surrounding open spaces - particularly Carlton Marsh Nature Reserve (part of the Dearne Valley Wetlands (SSSI)). They shall include new and enhanced existing landscape features such as woodlands, hedgerows, trees and shrubs to create connections across the site, reducing habitat fragmentation, enhancing biodiversity and providing recreation opportunities.

The strategic green links connect directly into the existing extensive network of footpaths and bridleways beyond the site, encouraging new and existing residents to use the multifunctional active travel routes to access the wider countryside, key facilities and towns and villages around Carlton.

2. Sustainable urban drainage

SuDS are incorporated within the GI network to increase the multi-functionality and benefits of greenspace. SuDS components incorporated within the GI network across the site will include:

- Attenuation ponds
- Below ground water attenuation crates/ pipes
- Permeable paving
- Green roofs shall be applied onto flat roofed buildings where possible, such as the new primary school
- Shallow swales and rain gardens through parks and alongside roads
- Water butts

SuDS components shall be designed into the GI network and public realm - this can help create suitable conditions to increase biodiversity. In the site attenuation ponds are located strategically along the fringes of all neighbourhoods. Rain gardens and shallow swales shall be included alongside all green links and streets to collect surface run off. Permeable paving and below ground attenuation systems shall be located among development blocks and public realm, where hardscape materials are needed and ground conditions allow.

Management of SuDS is essential to ensure functionality and to maintain any associated habitat, particularly in rain gardens and attenuation ponds.

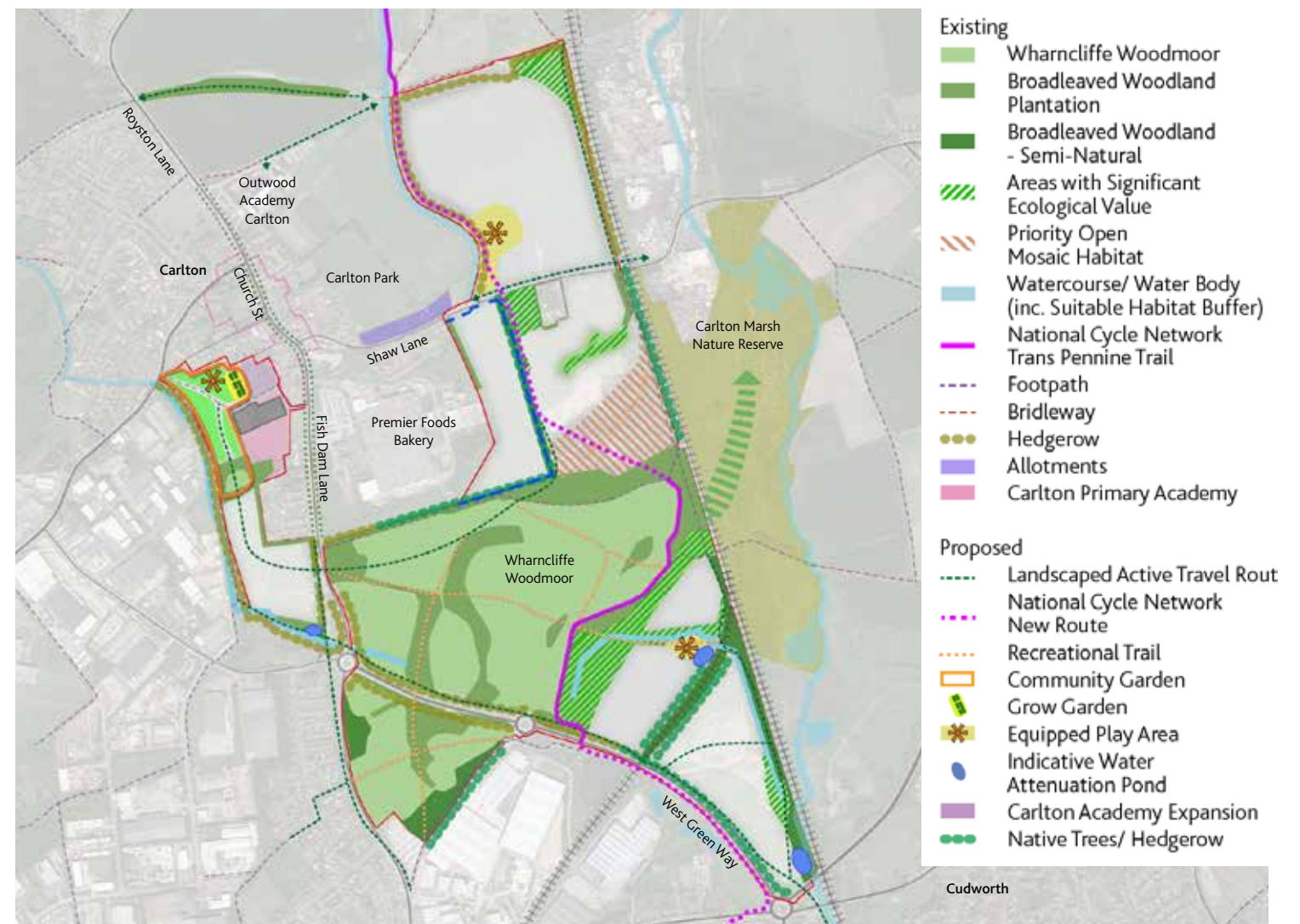


Fig. 34: Strategic green links, Wharncliffe Woodmoor, neighbourhood parks and NEAP locations. Carlton GI/ Public Realm Strategy Plan (Contains information from Esri)



Existing woodland/ wildlife corridor in Wharncliffe Woodmoor



Example of swale integrated with existing beck alongside active travel link

7.7 LANDSCAPE AND PUBLIC REALM

3. Wharncliffe Woodmoor

Wharncliffe Woodmoor is the key neighbourhood greenspace at the heart of the site, it is key to connect it with parcels within and around the site by strategic green links. This open space is an important asset to Carlton and the surrounding communities and will be wholly retained and strategically enhanced. This will be a new 'green heart' for the development and will provide a variety of ecosystem, community, play and recreational resources.

Among the greenspace, all trees and shrubs of significant ecological value and quality woodland and hedgerows shall be retained and enhanced with improved management. New trees, hedges, wildflower grassland and shrubs shall be planted to supplement existing vegetation. Where possible, species poor hedgerows shall be retained and diversified to improve biodiversity. Planting mixes shall be based on native species identified in the local area and are suited to the soil and habitat type, with a view to create habitat mosaics to support terrestrial invertebrates. Habitats shall be enhanced through appropriate management and habitat creation. Wildlife corridors will be continued through the spaces and linked to corridors outside the open spaces. SuDS features will be integrated into landscape and supplemented where appropriate with wetland planting.

The community garden will be to the north of site MU2, which will include informal play in the quality woodland, a Local Equipped Area of Play, formal planting and a community grow garden adjacent to Carlton Primary Academy, incorporating nature into education. There shall be supplementary and secure cycle parking for the community garden.

4. Neighbourhood parks

Three neighbourhood parks are proposed in central and accessible locations to each neighbourhood respectively, providing recreational uses and open spaces. Each of the parks shall have a distinct identity to reflect the character area where it is located. All shall include equipped play areas (EPAs) for the residents of each neighbourhood. All parks shall be highly accessible by all residents and located along active travel or recreational routes.

All parks shall retain and enhance the existing landscape of the site, integrating landscape features into the layouts, safeguarding existing habitats present and continuing wildlife corridors. The below design principles shall be applicable to all neighbourhood parks within the development:

- All existing good quality woodland, hedgerows, trees, shrubs and becks to be retained within the layout of the parks and enhanced with improved management.
- New trees, grassland and shrubs to be planted to supplement existing vegetation. Planting mixes to be based on the species identified for the character area.
- Wildlife corridors to be continued through the parks and green links and connected to corridors.
- SuDS features to be integrated into landscape and native aquatic and marginal planting in attenuation ponds to increase habitat diversity.
- Footpaths, benches, signs and other furniture including low level lighting to be installed to make accessible for all. Lighting shall be designed to consider sensitive adjacent habitats.
- Provide cycle parking in secure locations.

5. Play areas

Areas for play shall be provided throughout the site and consist of equipped play areas and informal play space located within the neighbourhoods and community garden. As identified in the Evidence Base Report, there is a shortage in Local Equipped Areas of Play to the south of both site MU2 and MU3. This development provides the opportunity to enhance play provision. Carlton Park is a NEAP within proximity to the site - the direct and well connected active travel network will connect all new residents to this facility. An informal woodland play facility will be included in the community garden. LAPs will be implemented strategically throughout the neighbourhood where required.

It is crucial to ensure all areas identified for play to be located are within easy reach of the strategic green links, and have good levels of natural surveillance from neighbouring areas. Shaded areas with seating and cycle parking space shall also be provided in all equipped play areas. In the site the proposed play areas are to be located within each of the three neighbourhood parks (see Fig. 34), where they are well connected to the green active travel network and will be in close proximity to surrounding residents.

NEAP (Neighbourhood Equipped Area of Play) – Design Principles:

- A NEAP is an unsupervised site, equipped mainly for older children.
- NEAP to be located within 15 minutes walking time from every home (1,000m walking distance).
- An activity area of a minimum of 1,000m² to be

provided.

- A 30m minimum buffer zone to be created between it and the boundary of the closest residential curtilage, to minimise any disturbance to nearby houses.
- A kick-about area and opportunities for wheeled play to be incorporated.

LEAP (Local Equipped Area of Play) – Design Principles:

- A LEAP is an unsupervised play area equipped for children of early school age (4-8 years old).
- LEAP to be located within 5 minutes walking time from every home (400m walking distance).
- An activity area of a minimum of 400m² to be provided.
- A 20m minimum buffer zone to be created between it and the closest residential curtilage. This buffer zone can include footpaths and planted areas.
- LEAP to be positioned in areas that enjoy a large degree of natural surveillance.

LAP (Local Area of Play) - Design Principles:

- A LAP is an unsupervised play area equipped for toddlers and children of early school age (<6 years old).
- LAP to be located within circa. 1 minute walking time from every home (circa. 100m walking distance).
- An activity area of a minimum of 100m² to be provided.
- A 5m minimum buffer zone to be created between it and the closest residential curtilage. This buffer zone can include footpaths and planted areas.
- LAP to be positioned in areas that enjoy a large degree of natural surveillance.

7. DESIGN CODE

7.7 LANDSCAPE AND PUBLIC REALM

6. Gardens and green roofs

All dwellings within the site shall include private/ communal outdoor spaces such as balconies, courtyards and gardens. Installation of green and brown roofs shall also be promoted throughout the site.

New trees, grassland and shrubs shall be planted where possible in private or communal gardens to supplement existing vegetation. SuDS features shall be integrated across the development including on-plot features such as permeable paving, water butts and green/ brown roofs. All these elements can help increase the biodiversity of the area and maintain continuous wildlife corridors.



Fig. 35: Strategic green links, Wharncliffe Woodmoor, neighbourhood parks and NEAP locations. Carlton GI/ Public Realm Strategy Plan (Contains information from Esri)



View A -Existing trails across Wharncliffe Woodmoor and to the summit



View B - Carlton Marsh Nature Reserve adjacent to site MU3



View C - Existing Barnsley Canal and NCN/ TPT



View D - Open mosaic habitat at former Carlton Main Colliery

7. Allotment gardens

Allotment gardens shall be provided as part of the community offer in the community garden. This is to encourage participation in food production and enhance a sense of wellbeing within this new community. Managed vehicular access and cycle parking/ storage area shall be provided in close proximity.

8. High quality public realm

A consistent approach for designing public realm within the streets and public spaces of the site shall be adopted. A robust and durable design language that draws on the characteristics of the character areas and local vernacular shall be promoted. Sustainability shall also be embedded where materials are sparingly used and recycled, durable and responsive to local conditions.

Design language of the public realm within the development shall be consistent, and it shall respond to key characteristics of the character areas within the development. It is also recommended to consider the whole life cost and embodied carbon in material choice to encourage sustainable use of natural resources, use of recycled materials and reducing quantity of materials and material waste.

Best practice guidance for inclusive design shall be followed including furniture configuration which promotes accessible use by all. Materials, street furniture and lighting shall require minimum maintenance to promote sustainability.

7.7 LANDSCAPE AND PUBLIC REALM

9. Lighting

The lighting strategy for the site shall promote the efficient and sustainable use of lighting in the public realm. Lighting design addresses the issues of security for vehicles and pedestrians, providing focused areas of illumination to highlight distinctive areas and features. Having lighting also enhances use of the public realm in the evenings, but shall be controlled to limit light pollution and impacts on local habitat.

It is important to consider view of the night-time sky to limit or omit any light spill into the sky with design. Wildlife and sensitive habitats shall be protected with directional lighting located and aimed to avoid disruption. Glare or light spill into private property shall also be avoided.



Sensitive housing and boundary treatment overlooking open space



Community allotments and orchards bring people together



Neighbourhood gardens located in the heart of residential blocks



SuDS and blue infrastructure well integrated into the GI

DESIGN CODE SUMMARY - LANDSCAPE AND PUBLIC REALM

- Strategic green links shall be provided to join habitats within and across the site. These shall include cover for wildlife and active travel routes.
- Wharncliffe Woodmoor shall be wholly retained, ecologically enhanced and expanded into the open mosaic habitat as a key green asset for existing and new residents.
- Neighbourhood parks shall be created within the development and provide formal recreation as well as opportunities for habitat creation and enhancement.
- SuDS shall be incorporated both on plot and in open space.
- Play areas shall be located and designed in accordance with the guidelines identified in this Design Code.
- Green and brown roofs are encouraged to assist with SuDS and provide habitats. To enable biodiversity net gain, green and brown roofs can be explored as an option for appropriate buildings, including the school expansion and local shop.
- A community garden shall be provided as outlined in 7.4 Facilities and Services section of this design code.
- A lighting strategy shall be provided that shall ensure that active travel routes, streets and parking areas, as well as key public realm is adequately lit. Special attention and wildlife friendly design shall be applied to sensitive areas to ensure that the lighting does not adversely affect wildlife.
- A Maintenance and Management plan shall be provided for the open space and SuDS.

7. DESIGN CODE

7.8 ECOLOGY AND BIODIVERSITY

Areas identified to have high biodiversity value have been retained within the masterplan framework. This includes broadleaved woodland plantation, poor semi-improved grassland, scrub and watercourses. Habitats outside these identified areas which provide additional biodiversity interest include similar broad habitat types. These habitat areas are likely to support bats, badgers, water voles, breeding birds, reptiles, amphibians and invertebrates as identified in the Evidence Base. The future development of the site shall ensure key habitats are retained, or if lost, recreated. The following actions are recommended to safeguard and enhance biodiversity. They will work in-combination to inform future design.

Preliminary Ecological Appraisal (PEA)
A PEA must be undertaken in preparing planning applications and will confirm the requirements for any further protected species surveys. This will inform design and appropriate mitigation as well as ensuring regulatory compliance and management of risk, in line with recommended guidelines, Policy BIO1 Biodiversity and Geodiversity, Policy GI1 Green Infrastructure and Policy GS1 Green Space, Site MU2 Land between Fish Dam Lane and Carlton Road and Site MU3 Land off Shaw Lane Carlton, Barnsley Local Plan.

Biodiversity Net Gain (BNG)
Biodiversity Net Gain is an approach to development that leaves biodiversity in a better state than before. Habitat retention, enhancement and creation will be required within the scheme landscaping strategy to ensure a gain in biodiversity units post-development. Consequently, the main areas of biodiversity interest, as identified by the PEA, will be a key focus and the results of the Biodiversity Net Gain assessment must feed into the design. The Biodiversity Net Gain metric must be undertaken with regard to the good practice principles for development.

A habitat management plan must be provided to ensure the success and efficacy of mitigation. This will include planting at appropriate times of year to ensure successful establishment and growth. Species selected for planting will be native and of local provenance, where suitable. Any non-native species utilised will, where possible, provide a nectar resource for invertebrates. Flowering plants will provide sequential foraging resources throughout the year. Consultation must be sought from a suitably qualified ecologist to support the integration of ecological mitigation within the site design.

In the first instance it is expected that applicants seek to achieve a minimum of 10 per cent Biodiversity Net Gain within the application boundary. Where that is not feasible applicants shall provide a Biodiversity Net Gain Assessment and Report setting out why this is the case. Contribution will then be required from applicants to off-site improvements beyond the application boundary. These may include improvements to biodiversity in Wharncliffe Woodmoor, which will be coordinated by BMBC and further details are provided in the Delivery Strategy at Appendix B.

DESIGN CODE SUMMARY - ECOLOGY AND BIODIVERSITY

- Development is expected to achieve a minimum 10 per cent Biodiversity Net Gain.
- Development shall ensure key habitats are retained, or if lost, recreated.
- Further protected species surveys, where required, will inform any mitigation required.
- Design and mitigation shall also comply with local policy.
- A habitat management plan must be provided for the open space.

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7. DESIGN CODE

7.9 ACCESSIBILITY AND PARKING

1. Legibility and Wayfinding

When places are legible and well signposted, they are easier for the public to comprehend and likely to both function well and be pleasant to live in or visit. It is easier for people to orientate themselves when the routes are direct. Visual articulations and landmarks can also emphasise the hierarchy of the place.

The site shall have a clear and straight forward urban layout, enabling residents and visitors to easily navigate. It shall contain memorable and recognisable landmark buildings, places and open spaces. Landmarks, gateways and focal points shall be clearly identified in order to create visual links, and a recognisable hierarchy shall be established between places. The street network and active travel routes shall be direct and easy to navigate.

Residential areas shall be designed around a series of nodal points, and variety in the types of articulations shall help them to be more memorable. Landmarks shall be created around gateways and centres by using taller buildings and distinctive architectural elements. The quality of signage at the centres on shops and other non-residential premises shall contribute to the identity and legibility of the areas.

Artwork can also be used throughout the site to help create distinctive character areas. Community buildings such as schools and community facilities shall emphasise the identity of the areas and create focus for community engagement.

A clear wayfinding system shall be established throughout the whole development, especially along the key multi-user active travel routes and linking with

existing Public Rights of Way around the site to promote security and legibility. A range of signposts and public realm elements, such as street furniture and lampposts shall be introduced.



Examples of well-designed signposts

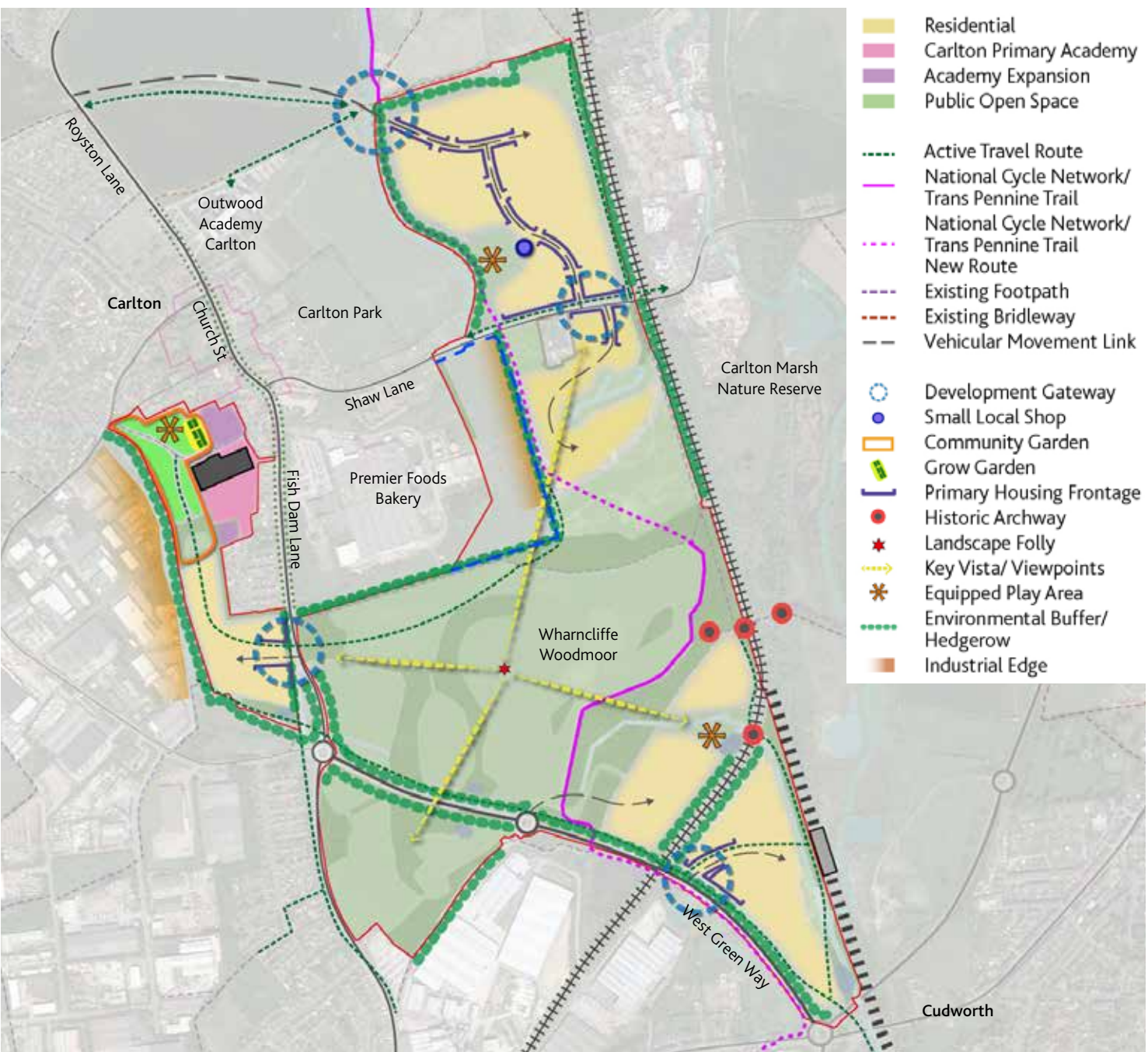


Fig. 36: Established gateways, landmark buildings and visual links, Carlton Placemaking/ Urban Design Strategy Plan (Contains information from Esri)

7.9 ACCESSIBILITY AND PARKING

This design principle ensures sufficient resident and visitor parking that are well integrated in the neighbourhoods, so that cars shall not dominate the streets and be developed in a manner that is easy to orientate.

2. Parking provision

2.1 Policy compliance

The Parking SPD (2019) provides guidance in relation to the level of car parking, including disabled parking, for development land uses. These maximum levels shall be adhered to. Disabled parking design standards are also specified. The level of car parking provision shall be agreed with BMBC through the planning process.

The Parking SPD sets out that for 20mph streets, parking can be longitudinal, echelon or at right angles. The car parking provision shall comprise a mix of curtilage and on-street parking to break up the linear nature of street design and act to reduce vehicle speeds.

2.2 On-street parking

On-street parking shall be incorporated in areas around the local shop or around mid-terrace dwellings within the development. Street trees and SuDS planting can prevent the streets from being dominated by cars. With tree planting and material changes, the proposed on-street parking can make for a better street scene. This type of parking also allows for larger distances between the dwelling and road margin, or the creation of tighter street frontage in certain areas.

2.3 On-plot parking

Parking to the side of plots is a practical way of creating front gardens and distance between plots, usually allowing space for up to two cars. It also allows the properties to be brought forward to create a formal street, potentially broken up by a boundary treatment or planting.

2.4 Integral parking

Proposed dwellings in neighbourhoods of lower density may include integral garages, in which the drive shall be running up to the house frontage. Although this house type does not follow examples in the area, it can intensify a residential parcel due to its width and therefore create a fuller street scene. Certain lower density areas within the development could respond well to this.

2.5 Electric Vehicle Charging

Electric Vehicle charging provision shall be made for all dwellings. The Sustainable Travel SPD sets out the minimum requirements for charging points, which shall be required and must be adhered to. Additional charging points for visitors shall be provided, at a level to be agreed with BMBC through the planning process.

2.6 Cycle Parking

Secure covered cycle parking shall be provided for all dwellings and for school students and staff. The Parking SPD sets out the minimum cycle parking requirements. In addition, short stay cycle parking provision shall be made within the community garden and local shop areas. The level of cycle parking across the site will be agreed with BMBC through the planning process.



Example of designated on-street parking area integrated with interval street trees



Example of on plot integrated parking



Modern home electric vehicle charging infrastructure (Image credit: Ed Harvey)

DESIGN CODE SUMMARY - ACCESSIBILITY AND PARKING

- A site wide strategy for wayfinding signage shall be produced and implemented by developers and in line with any planning conditions imposed by BMBC.
- Along active travel routes, key destinations and distances shall be signposted for both on-site facilities as well as to external amenities such as nearby local centres, Carlton Park and Carlton Marsh Nature Reserve.
- Public art can form part of the wayfinding strategy providing identifiable locations throughout the development.
- Parking provision across the development shall be compliant with the Parking SPD (2019).
- A range of parking provisions including on-street and on plot shall be considered across the development. Density and street scenes shall be considered when designing parking for residential blocks.
- Electric vehicle charging provision shall be made for all dwellings. Additional charging points for visitors to be agreed with BMBC.
- Secure covered cycle parking shall be provided for all dwellings and school students and staff. Short stay cycle parking shall be provided in the community hub and local shop areas.



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