



# ASTRAL GREEN

*Leighton Buzzard*

DESIGN & ACCESS STATEMENT

October 2022





# LEIGHTON BUZZARD



A flagship operational **NET ZERO CARBON** scheme south-east of Leighton Buzzard



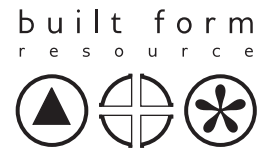
# Astral Green

## Leighton Buzzard

DESIGN & ACCESS STATEMENT  
October 2022



Prepared by:



For:



In consultation with:





# Preface

## ENERGISING THE LOCAL COMMUNITY

There are **challenges facing our nation that are undeniable**. Fossil fuel prices are at unprecedented levels, while the strangulation of global supply threatens domestic energy security. Local and national demand for well-placed housing far outpaces supply, while our human need for community runs deeper than ever since the pandemic.

Our natural world offers solutions for many of our problems, but **we must do our part in working for the betterment of the environment** as well as for the people who occupy it.

The solutions to the greatest challenges of our time do not have to be severe, overwhelming, or self-defeating; they can be elegant, considered and sensitively designed.

As our nation moves towards a more positive and receptive understanding of the reality of our need for housing and energy security, there is an associated **recognition of the fundamental role of renewable energy**.

While delivering much needed housing for Central Bedfordshire, **Astral Green's renewable Energy Park will generate such excesses of electricity** that the new scheme is not only **operationally Net Zero Carbon but can also comfortably supply many homes and businesses in the surrounding area**.

With housing comes community, and this is fundamental to Astral Green. The pandemic saw a seismic shift in our appreciation for human interaction and the support of community. Astral Green places people in the local community at its heart, with **land for a much-needed new Health Hub** for Leighton Buzzard, **a new Smart Park** with high-quality commercial space **to create jobs and support local businesses**. Dedicated green spaces, to support and enrich the lives of the residents of both Astral Green and Leighton Buzzard will surround the **energy-efficient new homes**.

The benefits of the natural world are undisputed. Access to nature is vital for both mental and physical wellbeing, to which the enforced limitations of the pandemic gave sharp relief. Intensive farming practices have depleted the natural resources of great swathes of the countryside, upsetting the delicate balance of interdependent habitats.

With deliberate, specialist and sensitive planning, the extensive open spaces provided by the development at Astral Green offer richly layered and diverse habitats for a **broad range of plant and wildlife species**. **With access open to all**, including both the new and existing local community, these open spaces people space as nature intended, to spend time at one with the environment, surrounded by flourishing plant and wildlife.

With **renewable energy at the heart of our scheme**, we are ambitious for our nation's future. Astral Green is a progressive, sympathetic, and holistic scheme that supports the long-term security, health, and wellbeing of both new and surrounding residents as well as the environment.



## ASTRAL GREEN

### ENERGY PARK

#### ESTIMATED ANNUAL ELECTRICITY PRODUCTION

1.5MW wind turbine = 4.160m kWh p.a.

2.09MW solar array = 2.278m kWh p.a.

**Total generation = 6.438m kWh p.a.**

Equivalent to the annual energy consumption of

**1,617**

average Bedfordshire households<sup>1</sup>

*Note 1: The average home in Bedfordshire consumes 3,981kWh of electricity per annum (BEIS, 2020)*



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1

### Introduction

An overall introduction to Astral Green, the Site and development proposals, including overarching objectives and Vision.

2

### Appraisal, Context & Local Resources

A detailed summary of all the site assessment work carried to ensure an informed approach to the design development of the Site.

3

### Proposals

A detailed constraints and opportunities plan, summarising all the findings of the site assessment work, and a concept plan for the Site.

4

### Conclusion

A summary of the key benefits of the proposal and its merit as the next logical location for new development at Leighton Buzzard.

Introduction

Context

Proposals

Conclusion



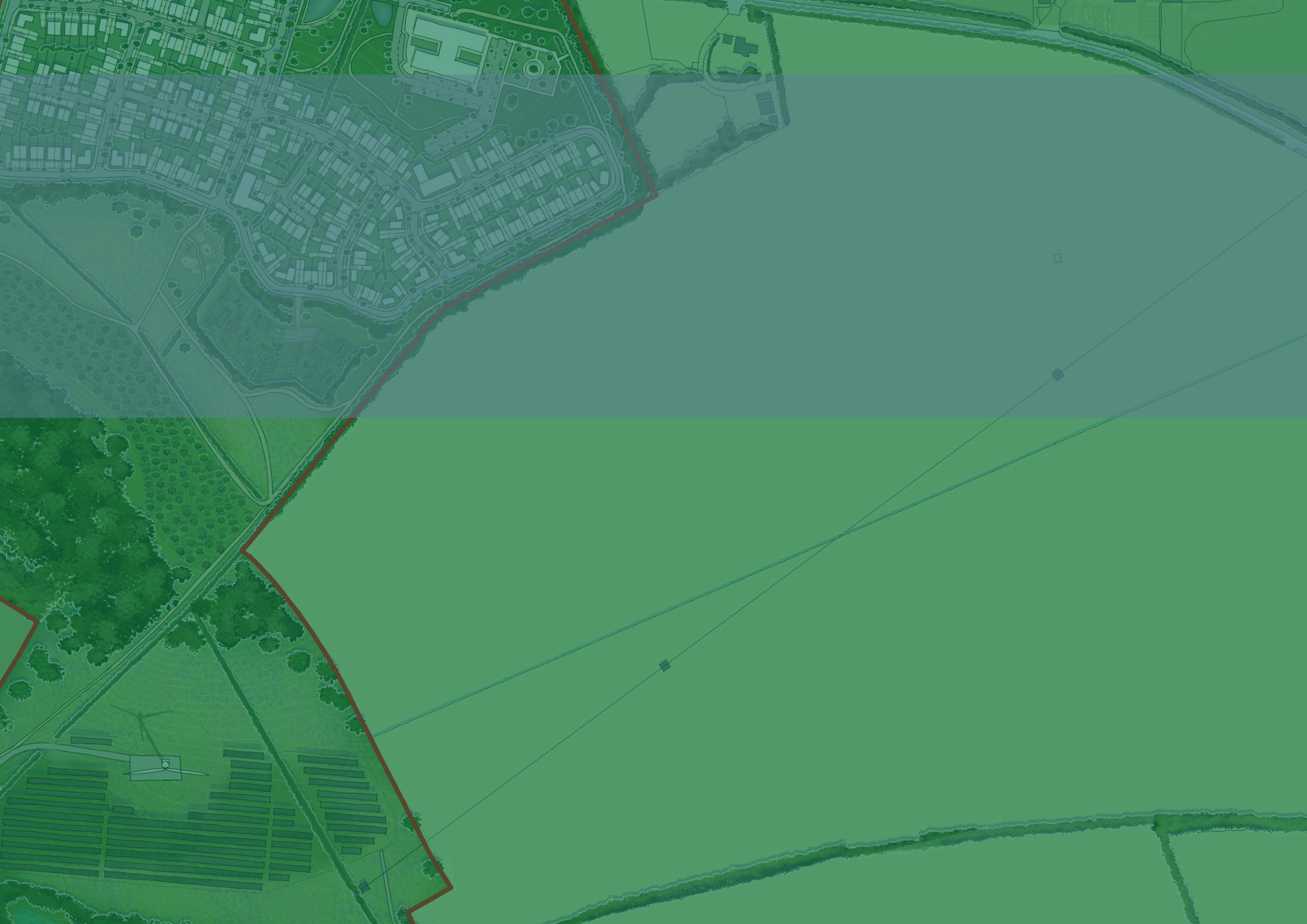
# 1

# Introduction

This section outlines:

- Summary of vision and proposals
- Structure & Content of the application
- Purpose & Structure of the DAS
- The Team







# 1 Introduction

In June 2019, the Government amended the Climate Change Act 2008, stating:

*'It is the duty of the Secretary of State to ensure that the net UK carbon account for the year 2050 is at least 100% lower than the 1990 baseline.'*

In doing so, the **UK became the first major economy to legislate for net zero carbon emissions**. Interim targets, in the form of a 68% reduction in carbon emissions by 2030, and a 78% reduction by 2035, provide milestones along the journey to 2050.

The net zero challenge should not be underestimated. The Climate Change Committee, who are charged with monitoring the progress and recommending the pathway to 2050, report that **2021 emissions are currently only 47% below 1990 levels** (Climate Change Committee, 2022). The pathway to net zero was set by the Climate change Committee in 2020 through the Sixth Carbon Budget, which was adopted into law on 24th June 2021.



The Sixth Carbon Budget can be met through four key steps:

## 1. Take up of low-carbon solutions.

By the early 2030s all new cars and vans and all boiler replacements in homes and other buildings are low-carbon, which means largely electric.

## 2. Expansion of low-carbon energy supplies.

UK electricity production is zero carbon by 2035. New, additional uses for clean electricity are found in transport, heating, and industry, pushing up electricity demand by a half to 2035 and doubling, or even trebling, by 2050.

## 3. Reducing demand for carbon-intensive activities.

As well as reductions in car miles, aviation, and high carbon goods (including meat and dairy), buildings lose less energy through a national programme to improve insulation across the UK.

## 4. Land and greenhouse gas removals.

By 2035, 460,000 hectares of new mixed woodland are planted to remove CO2 and deliver wider environmental benefits. 260,000 hectares of farmland shifts to producing energy crops. Woodland rises from 13% of UK land today to 15% by 2035 and 18% by 2050.

Within the 2022 progress report, the **Climate Change Committee** found good progress in electric car sales and renewable energy deployment. However, they **did not see the necessary tangible progress in many areas including the provision of electric vehicle charging infrastructure, low-carbon heat supply and heat-pumps, energy efficiency and new woodland.**

For development sites, the progress report notes that new homes are being built that do not meet minimum standards of efficiency and will require significant retrofitting, that the Future Homes Standard is awaited, and the planning system does not yet reflect Britain's legal obligations for climate mitigation.

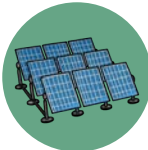
**Net zero is at the heart of Astral Green.** As described within this document, the proposals have been designed from first principles through a series of workshops, drawing upon the knowledge of leading consultancies to deliver a vision that combines AW Group's experience in the creation of new Energy Parks, Smart Parks, EV Charging Stations alongside new communities and natural habitats.

**Astral Green's vision is ground-breaking. It is a first for the UK. And critically, Astral Green contributes to all four key steps of the Sixth Carbon Budget.**

This is a hybrid application for the following:

Part A: **Full planning permission** for an **Energy Park development** comprising: a **wind turbine with access track, a solar array, land for a new connection from existing National Grid electrical infrastructure along with a battery energy storage system, an electric vehicle charging station; and associated infrastructure.**

Part B: **Outline planning permission** with all matters reserved (except for principal points of access) for a **mixed-use scheme** including **employment land for a 'Smart Park;'** land for a **Health Hub; up to 243 residential dwellings; a Mobility Hub; parking; new vehicular, cycle and pedestrian accesses; and green infrastructure including publicly accessible woodland, an orchard, community allotments, wildflower meadows, landscaping and open space.**



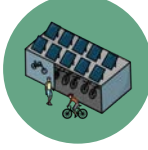
A renewable Energy Park including a wind turbine, solar PV array and a Battery Energy Storage System;



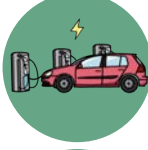
Land for a much-needed Health Hub for Leighton Buzzard;



A Smart Park of high-quality, flexible Net Zero Carbon business spaces, creating new jobs and growing existing and new businesses;



A Mobility Hub for green, active travel with EV charging for EV cars, e-bikes and e-scooters, with a car club and EV shuttle bus at peak periods;



An EV (Electric Vehicle) Charging Station to facilitate the uptake and use of electric vehicles;



Up to 243 energy-efficient homes with EV charging points in a good mix of sizes;



30% of the new homes will be affordable dwellings and will include 10 almshouses for those in need;



A network of walking and cycling routes including natural green pathways that connect to the town and wider area;



Extensive open space with food production, woodland and wildflower meadows for biodiversity net gain.







# DESIGN AND ACCESS STATEMENT

## Summary of vision and proposals

### The vision:

To create a pioneering operational Net Zero Carbon mixed-use community south-east of Leighton Buzzard. This flagship scheme will include a renewable Energy Park, a Smart Park for new jobs and business growth, land for a new Health Hub for Leighton Buzzard, an EV Charging Station and Mobility Hub, and 243 energy-efficient new homes – all set within extensive green spaces for all to enjoy.

### The Energy Park:

**Operational Net Zero Carbon will be achieved through the provision of an on-site Energy Park which will provide enough energy from the wind and sun - via a wind turbine and solar array - to supply 100% of the annual electricity needs of the entire site.**

The wind and solar installations will generate sufficient renewable energy to significantly exceed the predicted annual energy consumption of all the buildings forming part of the Astral Green scheme. As described within the Sustainability Statement (incorporating the Outline Energy Statement), the excess renewable energy produced that is not utilised by Astral Green will be exported to the National Grid.

**In addition, it is the applicant's intention to commit to, where appropriate, installing an ambient heat network.** The heat network would use ambient heat extracted from a borehole array which is then circulated around the scheme to **Ground Source Heat Pumps (GSHP) installed within each property** that step the ambient heat up to **provide their heat and domestic hot water.**

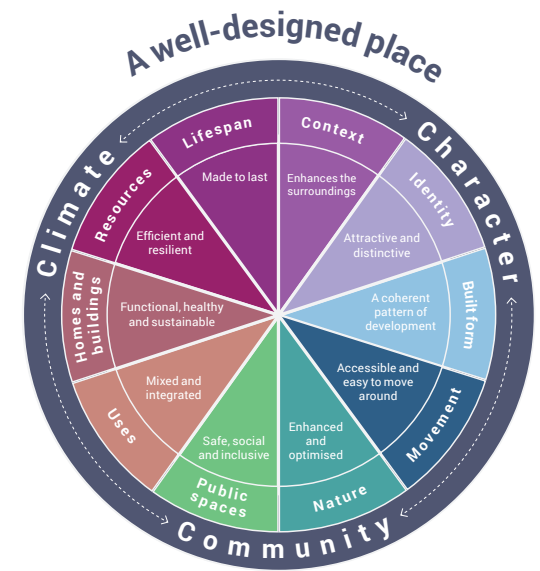
The Energy Park is further discussed in Section 3.

### Objectives:

To deliver the vision, the following objectives were set:

- A renewable Energy Park with a wind turbine and solar panels that generate and supply 100% of the equivalent of Astral Green's energy needs, plus substantial excess energy for the local surrounding area and beyond.

- A commitment to delivering renewable heating and hot water to Astral Green from ground source heat pumps via an on-site heating network, where appropriate.
- To provide land for a much-needed new Health Hub facility for the town that will help local residents get the access they need to high quality health care and help improve their wellbeing.
- To create a Smart Park of high-quality, flexible Net Zero Carbon business spaces. These will help create new local jobs and grow both existing and new businesses of all sizes. Key to the vision will be building prosperity for the local area by attracting diverse industries such as science and technology.
- To facilitate the uptake and use of electric vehicles by providing an EV (Electric Vehicle) Charging Station.
- To assist the shift to greener and more active travel a Mobility Hub will be provided with community EV charging facilities for EV cars, e-bikes and e-scooters, plus facilitation of an EV car club. All will be powered by the Energy Park's renewable energy, plus each new home will have an EV charging point.
- To create a network of walking and cycling routes including natural green pathways that help connect Astral Green to the town and wider area.
- To provide large new areas of biodiverse wildflower meadow and woodland along with a community orchard and allotments that improves biodiversity and the health and wellbeing of both new and surrounding residents.
- To provide the gradual, phased development of up to 243 sensitively designed, low-carbon, energy-efficient new homes. This will include homes for all needs, including affordable housing with 10 almshouses for those in need.
- To retain and work within the character and identity of the surrounding area.



The 10 characteristics of well-designed places (National Design Guide)

## Structure & Content of the application

This Design and Access Statement has been prepared by Built Form Resource and edgeUD on behalf of the Arnold White Group (the applicant). It has been submitted in support of a planning application for development on land south-east of Leighton Buzzard, referred to as Astral Green. The application is a hybrid application which seeks full planning permission for a renewable Energy Park and outline planning permission for a mixed-use development with all matters reserved except for access points, which are detailed.

To give a brief summary, the proposal for the renewable Energy Park includes:

- A single wind turbine
- Solar photovoltaic array
- A Battery Energy Storage System (BESS)
- Land for a new connection ('Exit Point') from National Grid power lines
- Commitment to ground source heating array

The proposals for the mixed-use development include:

- A new Smart Park with rooftop solar, offering flexible commercial workspaces in a range of sizes
- A Mobility Hub
- Land for a new Health Hub facility for the town
- Phased development of up to 243 sensitively designed, energy-efficient new homes
- Wildlife rich wildflower meadows and woodland, with a community orchard and allotments
- Walking and cycling routes connecting Astral Green to Leighton Buzzard and the wider area.

For the purposes of this document, all elements of the proposals will be covered together as a single scheme.

## Purpose & Structure of the DAS

According to the NPPG (Para 012 Reference ID: 26-012-20191001), the Design and Access Statement sets out the narrative for the design approach and design rationale for the scheme. It demonstrates how the local character of an area has been taken into account and how design principles will be applied to achieve a high-quality design. It sets out concisely how the proposal is a suitable response to the site and its setting, taking account of baseline information.

In line with National Planning Policy Guidance, this Design and Access Statement (DAS) is a concise report that sets out to 'explain how the proposed development is a suitable response to the site and its setting, and demonstrate that it can be adequately accessed by prospective users.'

As such, it 'explains the design principles and concepts that have been applied to the proposed development and demonstrates the steps taken to appraise the context of the proposed development, and how the design of the development takes that context into account.' It also explains the applicant's approach to access and how relevant Local Plan policies have been taken into account.'

To achieve that purpose, the DAS is divided into four main sections:

1. Introduction
2. Appraisal
3. Proposals
4. Conclusion

The appraisal and proposals sections are in turn divided thematically to cover the range of aspects appropriate to design as set out in the National Design Guide. The broad themes are:

- Context and local resources
- Land and landscape
- Town life and character

These relate to the headings in the National Design Guide as follows:

- Context and local resources
  - Context
  - Resources
  - Lifespan
- Land and landscape
  - Context
  - Nature
  - Identity
  - Public spaces
  - Built form
- Town life and character
  - Movement
  - Uses
  - Public spaces
  - Built form
  - Homes and buildings
  - Identity
  - Lifespan

## The team

This statement has been put together in collaboration with a range of co-consultants including:

- **edge Urban Design & Built Form Resource**, urban design consultants
- **Arrow Planning**, planning consultants
- **Engena**, specialist energy planning consultants
- **Stuart Michael Associates**, highway and civil engineers
- **David Jarvis Associates**, landscape architects
- **Aspect Ecology**, ecologists
- **Abrams Archaeology**, heritage consultants
- **Lichfields**, planning and environmental impact assessment consultants
- **Chess Engage**, public consultation consultants
- **Hayes McKenzie Partnership**, noise and acoustic consultants
- **Neo Environmental**, environmental consultants
- **Daniel Baird Soil Consultancy**, agricultural land and soils consultants





DESIGN  
AND  
ACCESS  
STATEMENT







# ASTRAL GREEN

A flagship operational **NET ZERO CARBON** scheme south-east of Leighton Buzzard

Artist's Impression of the development proposals



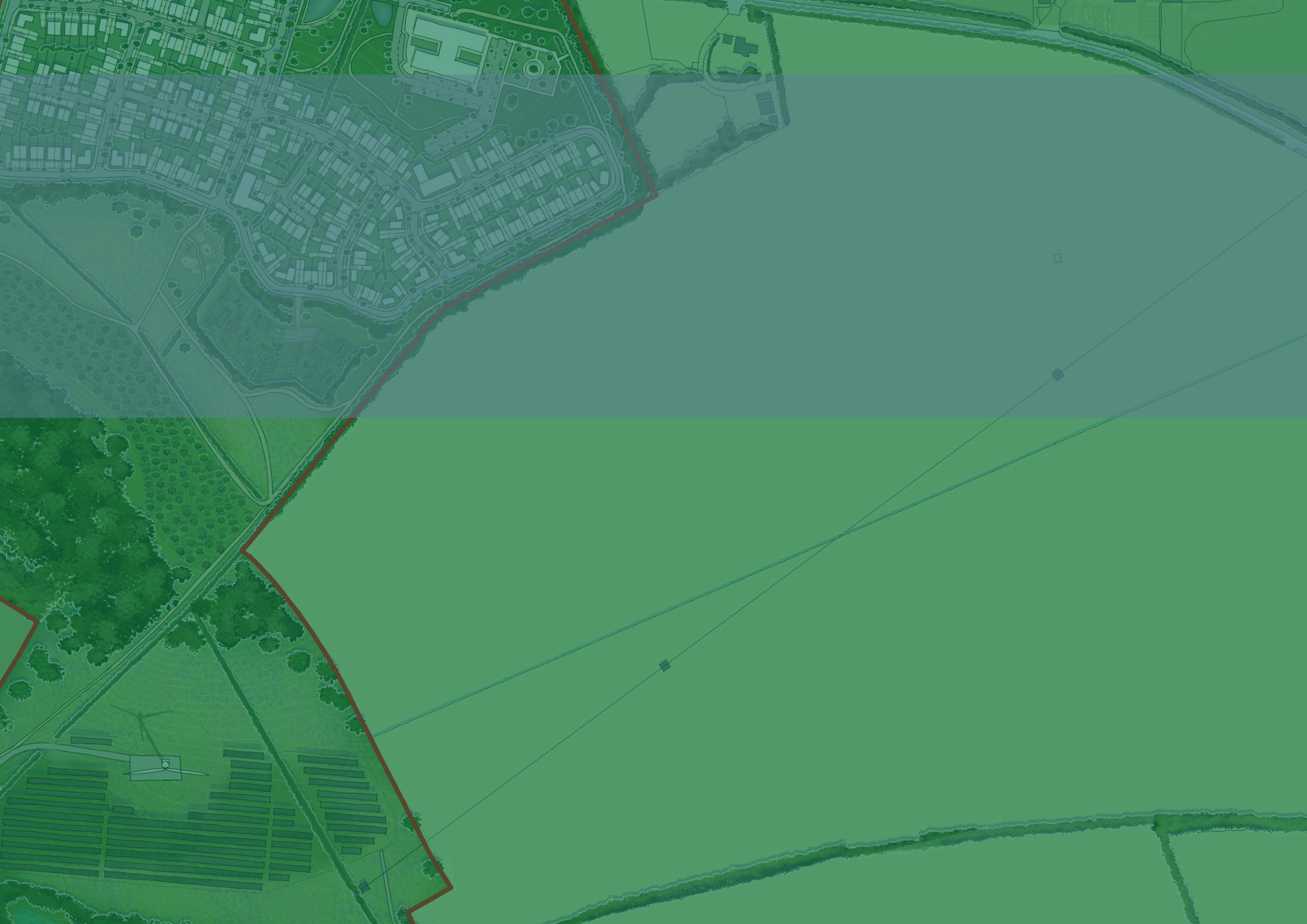
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# Appraisal

This section outlines:

- Context
- Climate Change & Resilience
- Land & Landscape
- Town Life & Character
- Summary







# 2 Appraisal

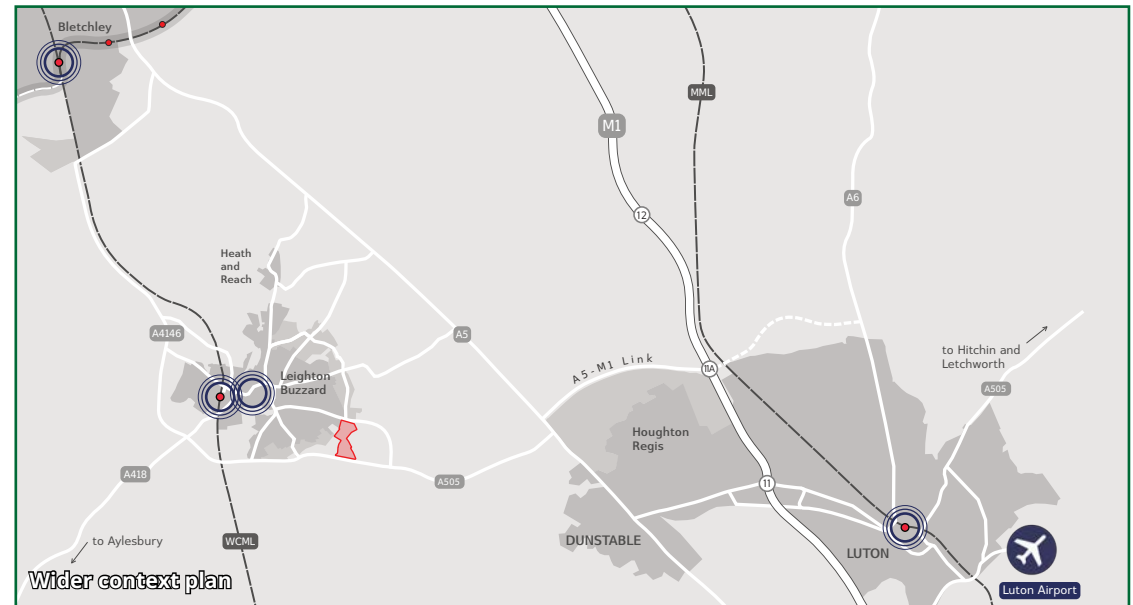
## Context

### Overall approach – the local resource model

The overarching principles and concepts applied in the design of Astral Green start with the idea that **development should be a positive response to, and expression of, the locality.** In this view, all development can be seen as an adaptive reuse that sustains the value of existing features while meeting new and changing needs.

### To establish a flourishing new community as part of a wider settlement, one needs to:

- **Understand and appreciate the place** in order to work in reciprocity with it
- Draw upon and sustain the place as a living system
- Extend the built environment by adaptive transformation
- **Optimise the use of local resources:** natural, built and social
- Maximise efficiency and add appropriate capacity
- **Maximise the shared use, reuse and recycling of energy, materials, processes and activities**
- Minimise external inputs and waste
- Make the development a beneficial, working part of the wider environment
- Endow it with a distinct identity



- Design it so the parts work together effectively as a whole
- Bring together and balance the logic of place, activities and built form.

The more detailed principles and concepts of urban design that have been applied in the scheme are set out in a range of documents, including the National Design Guide and Central Bedfordshire Council policy and guidance. Given the range and easy accessibility of the guidance, it would be unproductive to repeat it here.

- Site location
- ⊙ Railway station
- WCML — Railway line
- A5 — Key roads
- Settlements

## Site location and general context

The application site is 43 hectares and located to the south-east of Leighton Buzzard, Bedfordshire. It is bounded to the south by the A505, to the west by the combination of Astral Park Lake, Astral Park, Stanbridge Meadows and Liddell Way with the Leighton Road forming the northern boundary and agricultural fields and a residential property to the east.

Taking a wider view, the Site abuts the south-eastern built-up area of Leighton Buzzard, which includes a mix of employment, industrial and residential development. To the north and west across Leighton Road are the newly constructed Apex Park business park, DVSA test centre and the Commerce Way and Cherrycourt Way industrial estates further west. These areas are made up mainly of large sheds.

South of Leighton Road to the west of the Site is an area of mainly two-storey residential development including the relatively recent redevelopment of the old RAF Stanbridge station, now Liddell Way and the earlier redevelopment of the wider RAF site, accessed by Roundel Way and Nicholson Way. Associated with the residential development is Astral Park and Astral Park Lake. Further west is the residential development accessed by Johnson Drive and, over the Billington Road, the Chartmoor Road and Grovebury Road industrial estates.

The centre of Leighton Buzzard lies about 2km to the north-west of the Site and remains the social-commercial heart of the town. The railway station, with connections to London, Milton Keynes and the north, is a further 1km to the west.

The close proximity of the Site to significant areas of public open space as well as employment areas, the town centre and railway station provides an opportunity to reinforce and enhance the economy of the town and the wider area in a complementary way.

From a regional perspective, Leighton Buzzard sits just west of the A5 between Luton/Dunstable and Milton Keynes. Dunstable is about 8km away and Luton and Milton Keynes about 15km. Aylesbury is about the same distance to the south-west. Bedford, Hemel Hempstead and St. Albans are all within about 26km. This wider area has a vibrant and growing economy within which Astral Green could play a beneficial role.



Site location in the context of Leighton Buzzard





# DESIGN AND ACCESS STATEMENT

## Site description

The application site is currently in agricultural use as arable. In terms of land form, the Site straddles a low ridge running east-west that separates the Leighton Road and A505. The ground is relatively low lying either side of the ridge along the two roads, sloping gently up from the north and south.

The key elements within the Site are:

- Arable fields with hedgerow boundaries and hedgerow trees
- An access track from the A505
- A 400kV National Grid overhead electricity transmission line running east-west
- A 132kV UK Power Networks electricity distribution line running north-east – south-west, ducking under the 400kV transmission line



Image of existing pylons crossing the southern part of the Site







Aerial view of the site from the south



View from the ridge within the site looking east and south



## Climate Change & Resilience

### Renewable energy and utilities

The location of the Site and the nature of the surroundings, alongside the climatic framework, will determine the potential for making the best use of local solar and wind resources for energy generation – along with passive heating, cooling, and ventilation.

**For renewable energy generation, wind speeds are sufficient for a viable wind turbine** and there is suitable gently sloping, unshaded low grade terrain with the appropriate orientation and irradiance for a **solar photovoltaic installation**.

A further key local resource is access to the electricity transmission network. UK Power Networks (UKPN) 132kV overhead power lines route south west to north east across the Site. Also, National Grid 400kV overhead power lines and pylons route across the Site in an east to west direction within the southern fields. The project will be connected to the 400kV overhead lines, via a new grid substation, known as a National Grid Exit Point.

The topography of the land and the characteristics of the ground make the Site suitable for the installation

of the boreholes needed to provide the ambient heat for ground source heating – another local, renewable source of energy and one to which the applicant is committed.

Assessment of the climatic framework for passive heating, cooling and ventilation indicates that the priority issue is heating, followed by protection from prevailing winds.

This is used as a guide in the laying out of streets, orienting buildings, and locating planting to maximise solar gain, minimise heat loss and avoid excessively windy outdoor spaces. With regard to the last, some of the existing vegetation on the Site is an asset as a wind break.

For drinking water and sewerage, the Site is within the Anglian Water catchment. Regarding potable water, as there is insufficient capacity in the current network to supply the Site, off-site reinforcements will be needed, and several water mains will be updated and enlarged. Regarding foul water, Anglian Water has assessed the impact of a pumped conveyance from the Site to the public sewerage network and have confirmed that this connection is acceptable and adequate capacity is available within the public foul sewerage network for development at Astral Green. Ongoing discussions and modelling will determine the nature of any reinforcement works.



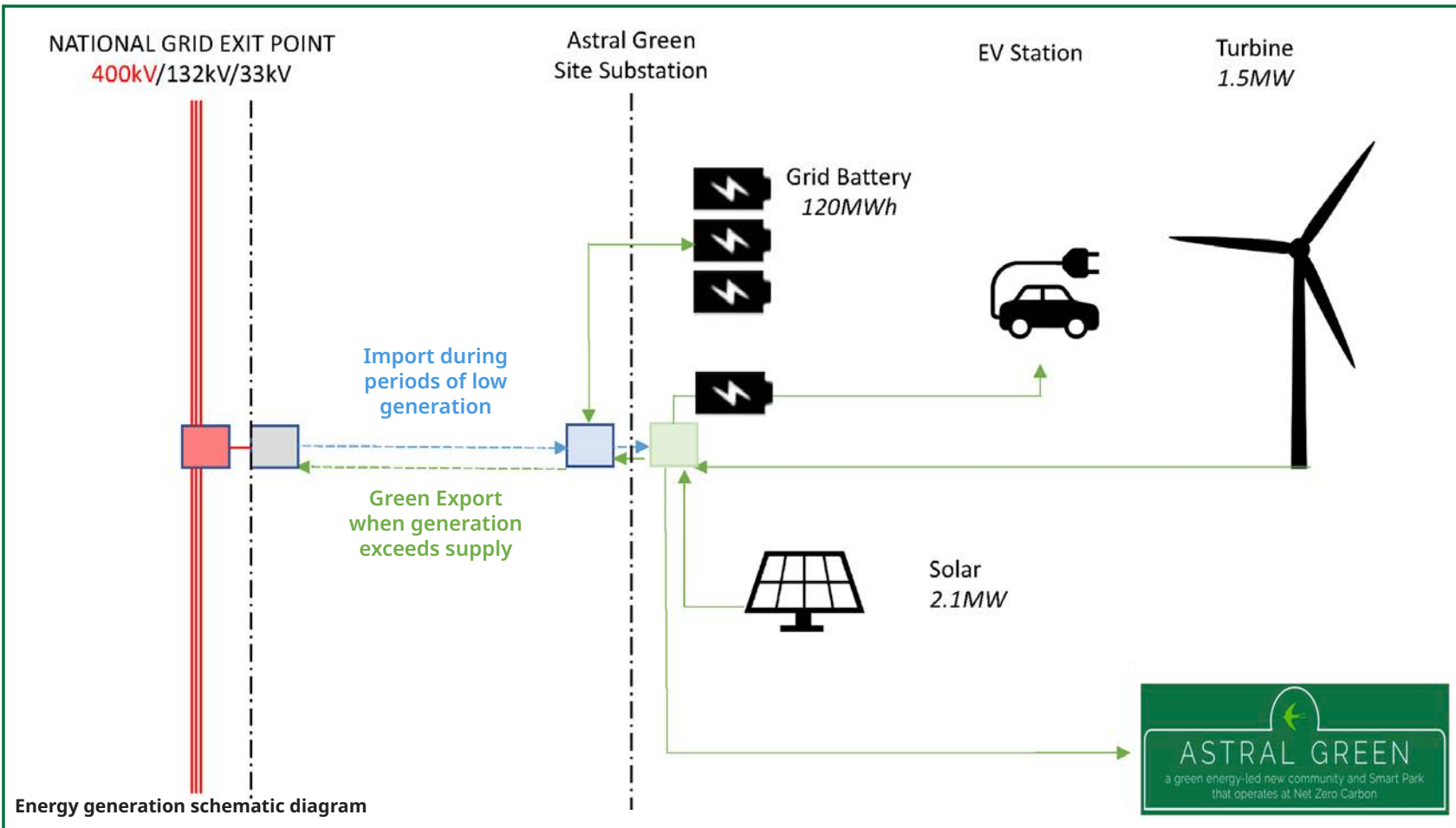
Example battery & substation



Example EV Charging Station



This nearby wind turbine at Double Arches, north-east of Leighton Buzzard, is owned and operated by the Applicant





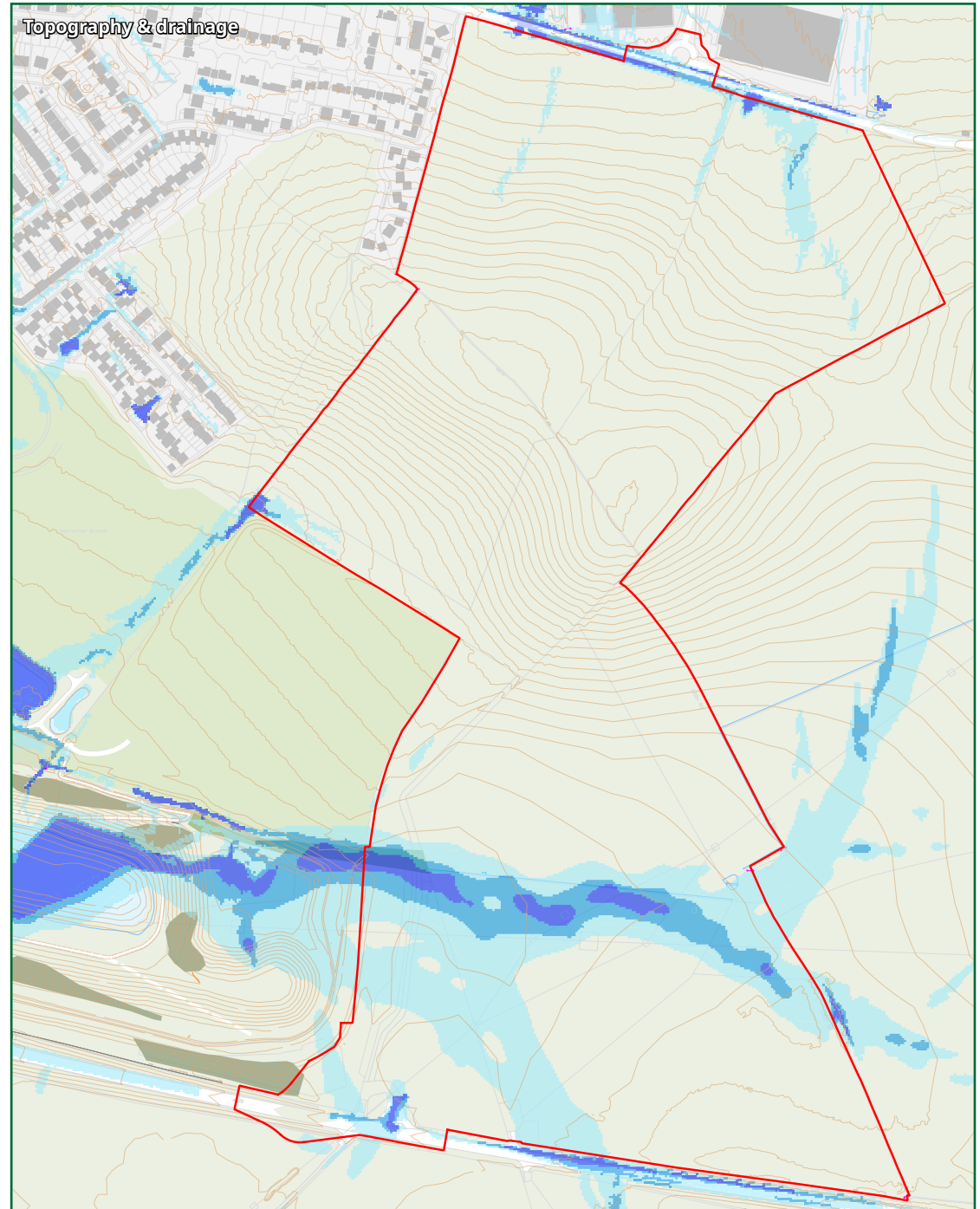


## Land & Landscape

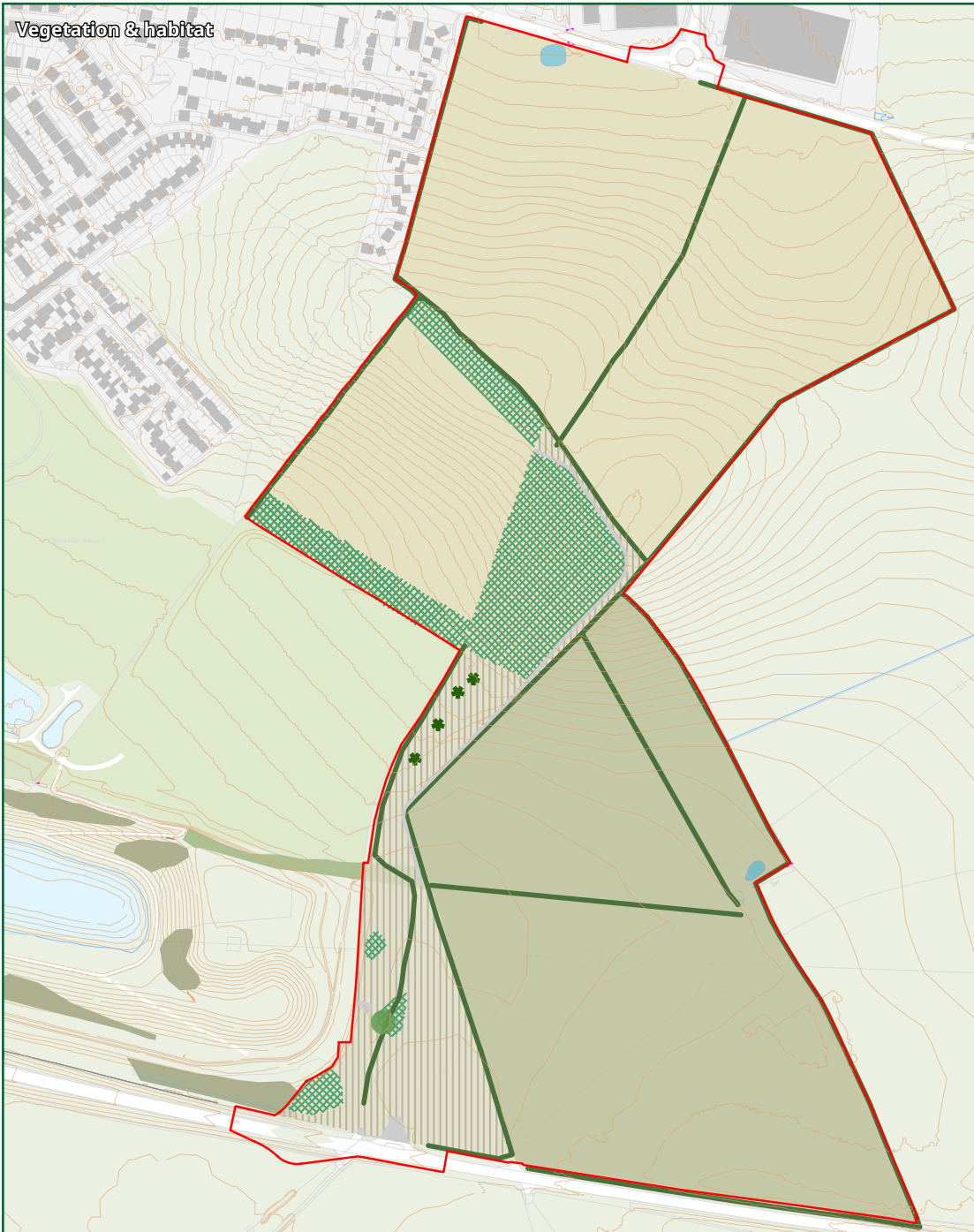
### Topography, drainage and flood risk

A key feature of the topography is the ridge running east-west midway through the Site, effectively splitting the Site in two with the north slope associated with the Leighton Road and south slope with the A505. The gradients of the Site ranges between about 1:8 (12%) and 1:80 (1.25%). The steeper slopes are mainly midway up the ridge and predominantly on the south facing slope. The shallower slopes are further south toward the A505, draining to the west toward the diverted stream around Astral Lake.

The entire Site is in Flood Zone 1, which has the lowest risk for fluvial flooding. The gradients provide very good surface water drainage, with the exception of the shallower slopes to the south, where there is some localised surface water flooding. The nature of the soil and underlying geology mean the Site is not appropriate for disposal of surface water by infiltration. In this regard, existing ditches to the north and south of the Site and the flat topography at the base of the slopes are both an asset and opportunity to enhance the capacity for surface water storage and attenuation as well as water quality management.



## Vegetation & habitat



## Soils, vegetation and biodiversity

The Agricultural Land Classification grade of the soil is 3b, with some Non-agricultural, both of which are below the 'best and most versatile' range of 1 to 3a. As noted in the site description, the land is currently in agricultural use containing both arable and improved grassland for pasture with areas of neutral grassland and scrub. The fields are bounded by native hedgerow with a very few hedgerow trees. The hedgerows and trees constitute an asset with regard to habitat value, character and visual amenity. The low grade of the soil and correspondingly low habitat value of the arable fields is an opportunity for improvement or alternative use.

There are no designated wildlife or ecological sites within the application site. Abutting the Site to the west is Stanbridge Meadows, designated a County Wildlife site for its species-rich grassland. The Meadows represent both a sensitivity and a potential opportunity to link with and extend the species-rich habitat.

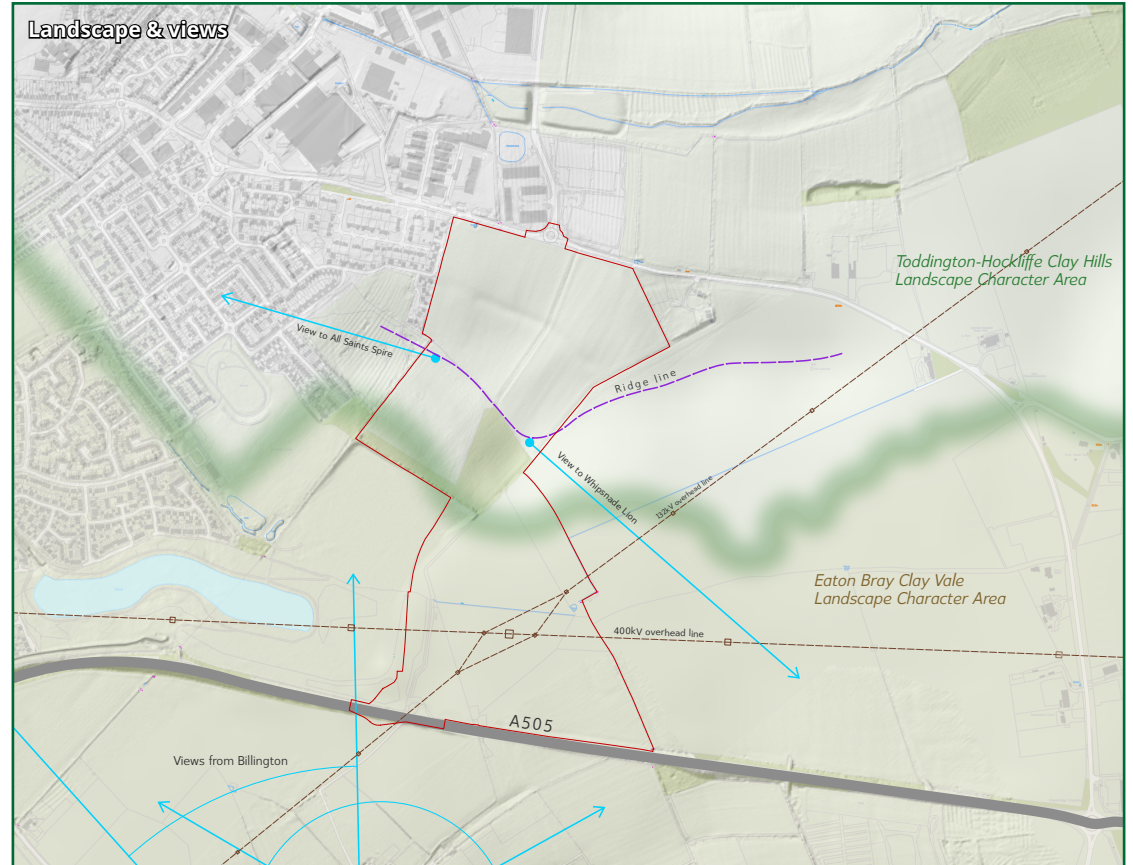
-  Arable
-  Improved grassland
-  Other neutral grassland
-  Mixed scrub
-  Pond
-  Hard standing
-  Hedgerows
-  Trees
-  Scattered scrub
-  Application boundary



## Landscape and views

The wider landscape context of the Site is characterised in the council's Landscape Character Assessment as a medium scale landscape defined by a series of connected (subtle) hills separating the low-lying clay vale to the south from the prominent Greensand Ridge to the north. The condition of the Site is typical of working farmland in the area with fields defined by well managed hedgerows. Condition and scenic quality within the wider area is highly variable ranging from well-managed rural landscapes, some with local designations, through to industrial and infrastructure uses including quarries and the A505. The edge and rural-urban fringe of Leighton Buzzard has seen significant expansion in recent years which is still ongoing.

There are no landscape designations or rare features within the Site. The Landscape and Visual Impact Assessment considers the surrounding landscape to have a medium to medium-low sensitivity to change in terms of character, condition, scenic quality and tranquillity. Key positive features of higher sensitivity are hedgerows and hedgerow trees. The visibility of the ridge running through the Site is a sensitivity to consider as are the key views to and from the Chiltern scarp and Chilterns AONB, from Astral Park and to the spire of All Saints Church in Leighton Buzzard.



View above the site looking west up Stanbridge Road with the RAF Stanbridge housing in the foreground and commercial area to the right middle ground

- Toddington-Hockliffe Clay Hills LCA
- Eaton Bray Clay Vale LCA
- Landscape Character Area boundary
- Ridge line
- Overhead power lines and pylons
- Views
- Site boundary





View from Leighton Road looking west to the northern part of the site



View from Leighton Road looking south to the northern part of the site



View from the former quarry entrance off the A505 looking north into the site



Distant view from south of the A505 looking north toward the site





## Town Life & Character

### Movement network and transport

As an historic market town, Leighton Buzzard has a characteristic radial pattern of main routes connecting the centre and surrounding villages. The northern boundary of the application site abuts one of those radials, which is the route to the village of Stanbridge (Leighton Road/Stanbridge Road). To the south, the Site abuts the A505, which acts as a high capacity bypass with connections to the A5 and M1, Luton and Dunstable to the east and the A421, Bletchley and Milton Keynes to the west/north. A further key route nearing completion is Fraserfields Way, which will connect northwards to Hockliffe Road and ultimately Vandyke Road and Heath Road (the Eastern Link Road). Both the A505 and Eastern Link Road function as 'pericentric' routes, connecting the main radials allowing movement around - and avoiding congestion in - the centre. The majority of the local, residential streets in the vicinity of the Site are 'loops' with only one or two connections to one of the main radials.

All three main routes - Leighton Road, the A505 and the Eastern Link Road - are assets for the application site, providing a range of ways in and out. The distinction between the roles of the three routes is also an opportunity and pointer to the likely role of different parts of the Site. For example, the 'super-strategic' role of the A505 with its longer distance connections is particularly suited to commercial uses.

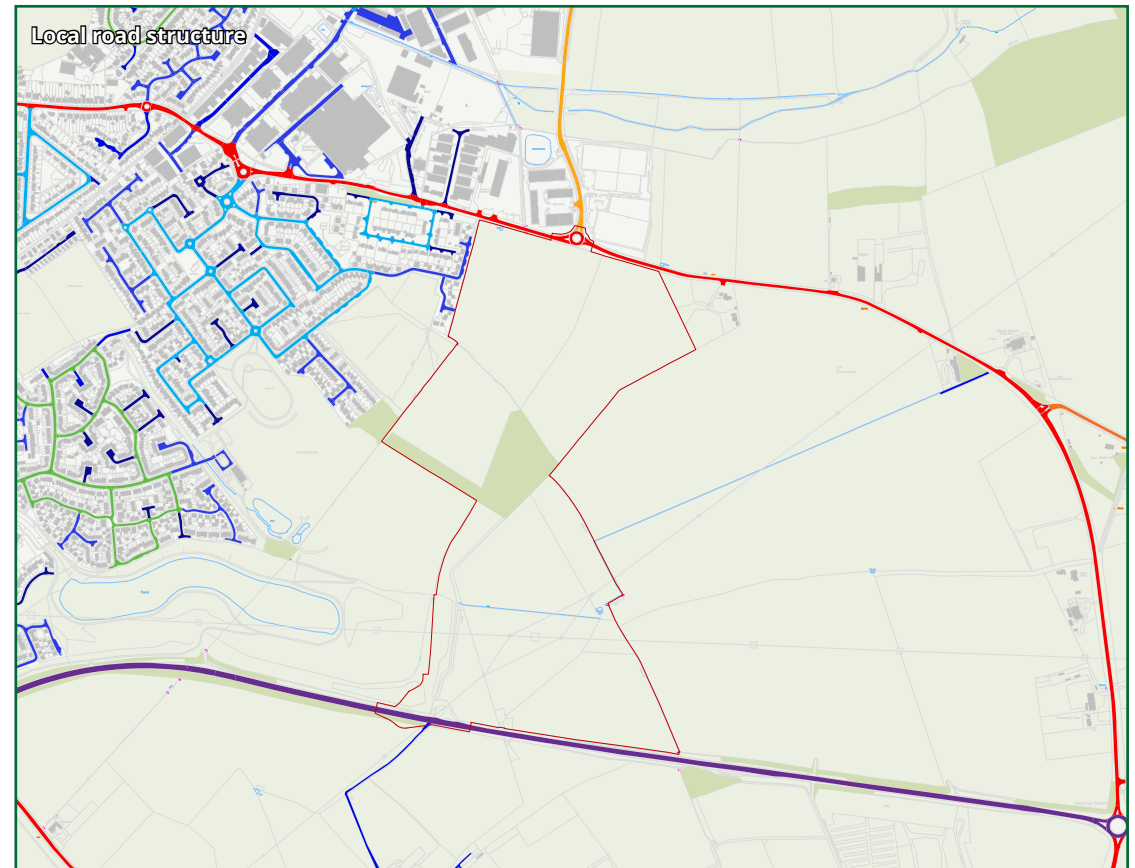
Leighton Buzzard is served by the West Coast Main Line with a station in Linslade, approximately three kilometres west of the Site. This station provides three trains per hour to London Euston and other regular services to Northampton, Milton Keynes Central and Birmingham New Street every hour.

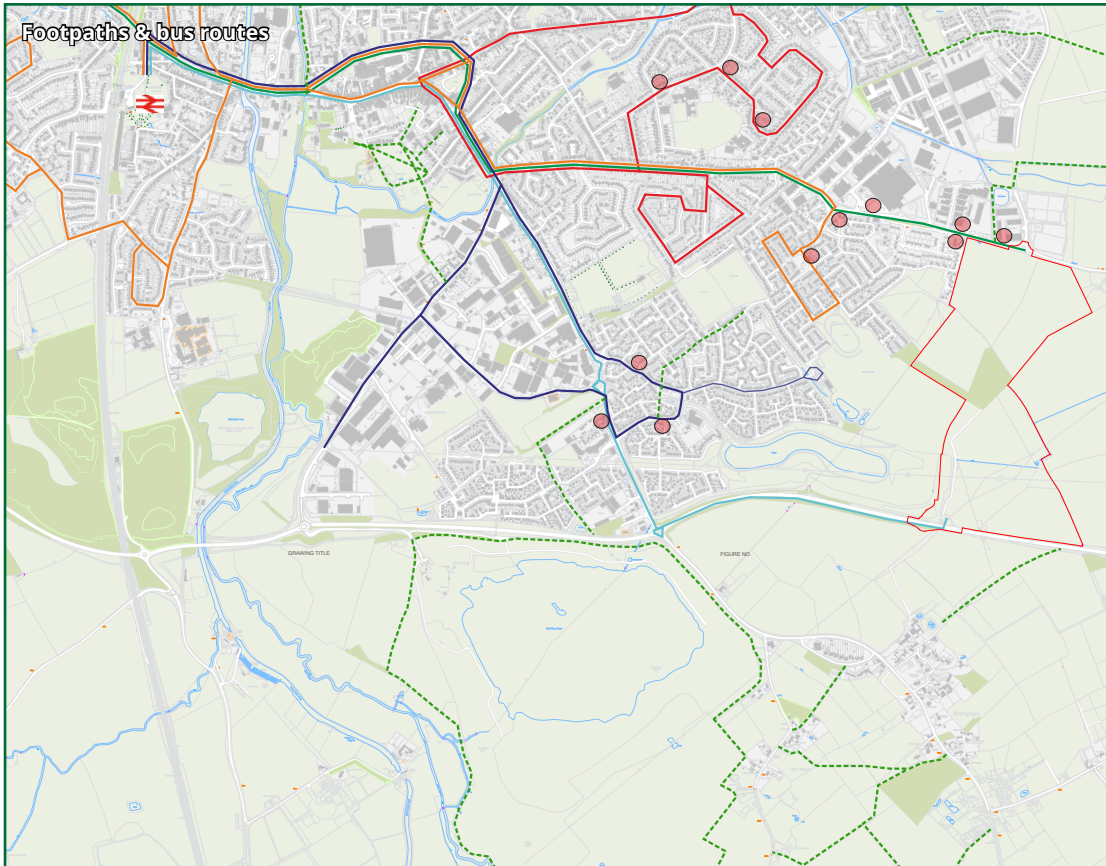
Several bus services currently run along the Leighton Road, specifically the F70 and F77, which operate between Central Milton Keynes and Luton via Leighton Buzzard High Street. Operated by Arriva, these services run high-frequency services, which combined provide a 30 minute frequency along Leighton Road, with higher frequency during peak periods. The closest bus stops to the Site are situated on Leighton Road, which provide services in both directions. The bus stops are located within acceptable walking distance of the Site.

In addition to the F70/F77 routes, the number 36C service is also accessible via Roundel Drive, approximately 900m from the centre of the Site. Operated by Grant Palmer, this service provides connections to the centre of Leighton Buzzard, the Railway Station and Linslade.

There are currently no public rights of way through the Site. Footpath FP64/FP1, just north of the Site does provide a link to the village of Eggington. The lack of public rights of way is both an issue but also an opportunity to provide more links, in particular to the large areas of public open space at Astral Park and Astral Lake Park.

- Primary route
- Secondary route
- Thoroughfare connector
- Through loop
- End loop
- Cul-de-sac tree
- Cul-de-sac
- Buildings
- Leighton Buzzard
- Application boundary





- F70/F77
- 32/33
- D1
- 36C
- Proposed shuttle bus
- - - Footpaths
- Bus stops
- ★ Leighton Buzzard Train Station
- Application boundary



Aerial view of Leighton Road looking east



Bus stop on the Leighton Road just west of the site



Aerial view of the A505 south of Astral Lake



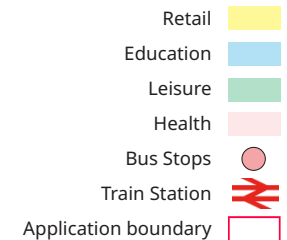
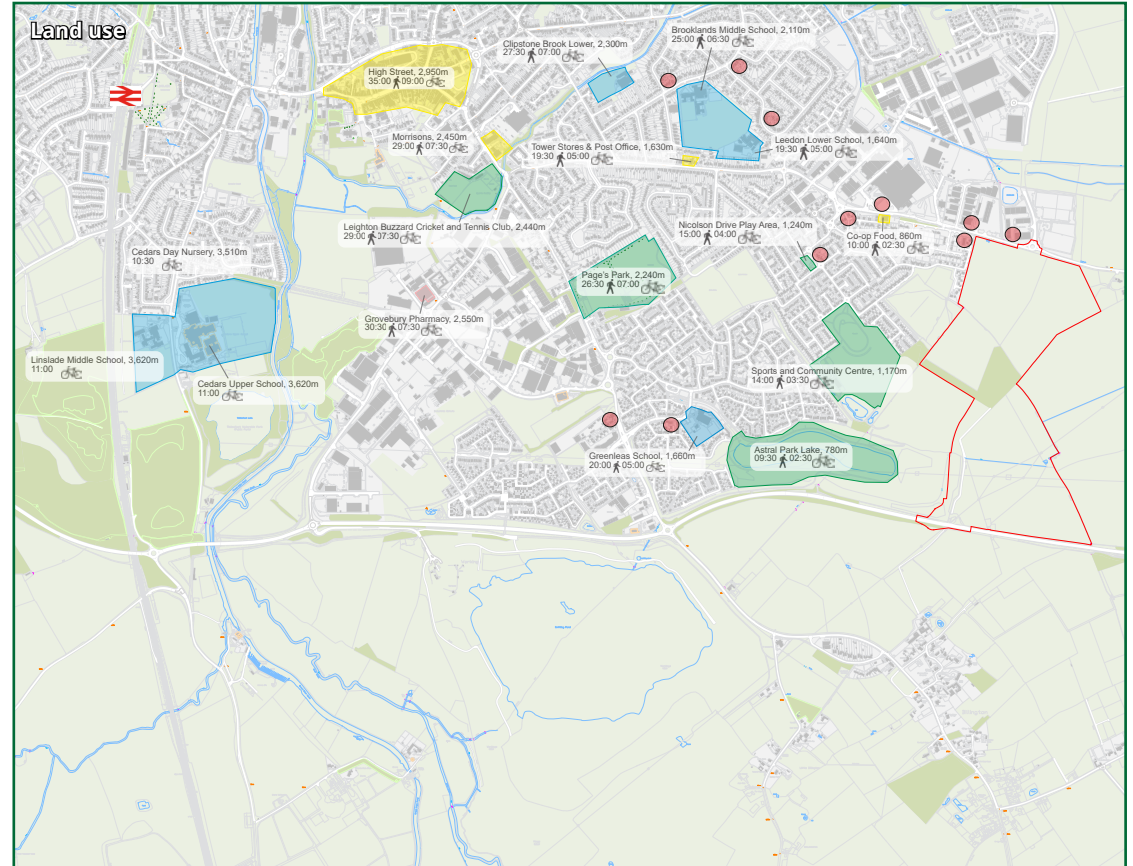
## Land use and community facilities

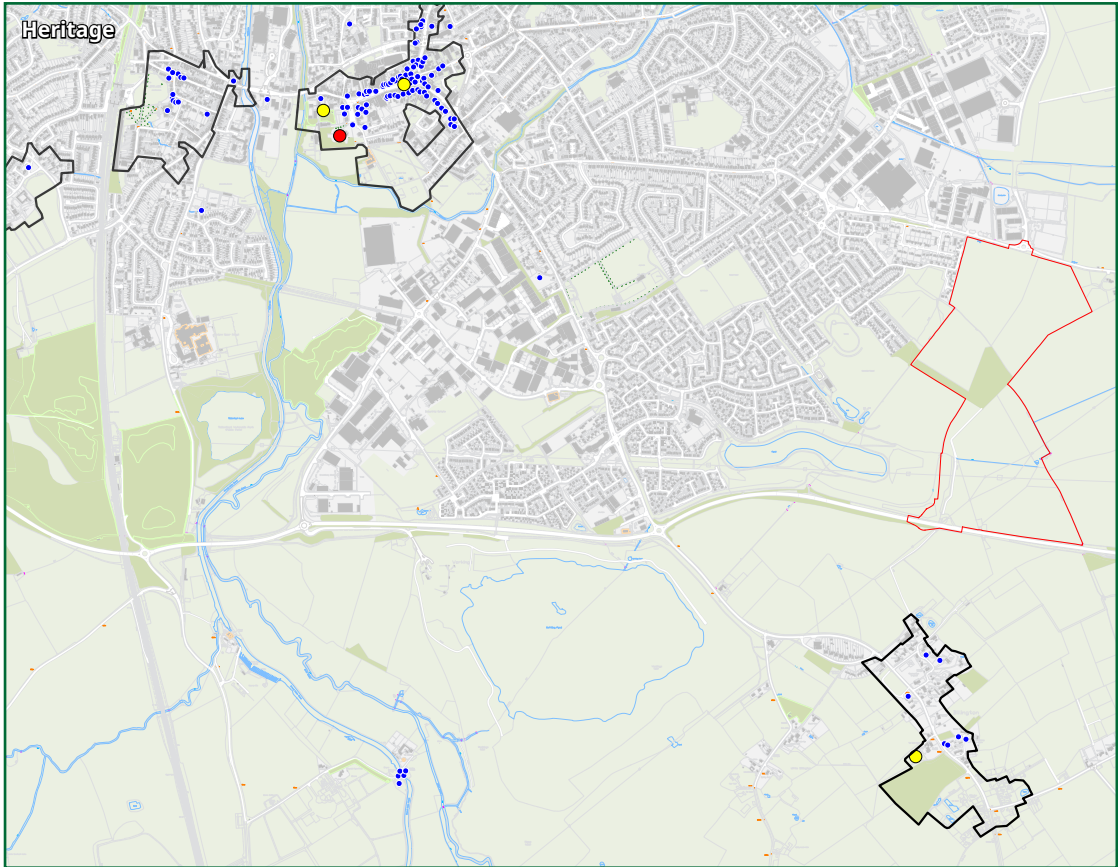
Leighton Buzzard, with Linslade, is one of the largest towns in Central Bedfordshire. It provides an extensive range of shops, services, facilities and leisure uses focused on the medieval High Street. The town is also host to a significant number of businesses, located relatively close to the Site. The application site is about two kilometres from the High Street, one and half kilometres from the Grovebury employment area and immediately south of the Leighton Road employment areas. Assessments through commercial property agents highlight, however, an issue with regard to employment space in Leighton Buzzard, which is the relative lack of smaller, high-tech units that are increasingly in demand. The position of the Site and the low-lying ground to the south of the Site adjacent to the A505 presents an opportunity to provide such units.

Schools located near the application site include Greenleas Lower School off Kestrel Way and Leedon Lower School and Brooklands Middle School north of Stanbridge Road. Other facilities along the Leighton/Stanbridge Road include the Co-Operative food store, Tower Stores and Post Office, and Harlequin School of Gymnastics

Immediately to the west of the application site are the significant public open spaces of Astral Park and Astral Lake Park. Within Astral Park are an oval track with hard surfacing, green gym, children's play equipment and a number of football pitches as well as Astral Park Sports and Community Centre which has a fully equipped function hall with changing facilities for sports

All the existing uses and facilities are assets that would support and be supported by the proposed development. That said, a long-standing issue in Leighton Linslade is the lack of consolidated health care facilities. Central Bedfordshire Council and Bedfordshire Clinical Commissioning Group have for a number of years been seeking to identify a site for, and deliver, a Health Hub. The land available within the application site and its accessibility to the centre of town therefore represents such an opportunity.





- Grade II listed buildings
- Grade II\* listed buildings
- Grade I listed buildings
- Conservation Area
- Application boundary

### Heritage and archaeology

There are no designated heritage assets within the Site nor is the Site in the setting of any heritage assets. The nearest Listed Building is Stonehill, located on Ash Grange off the Billington Road, 1.6 kilometres away. The main clusters of Listed Buildings are located along the High Street, to the west, and Egginton and Clipstone to the east, all between 1.5 and 2.5 kilometres away with no significant visual or functional connection with the Site.

Archaeological investigations, including a desk-based assessment and geophysical surveys show that the Site contains some surface or sub-surface features mainly of negligible or low value. There are also some Late prehistoric/Roman remains of enclosures and pitting located on high ground in the northern part of the Site. These remains tend to be associated with farmsteads and are considered to be of medium value and no more than of regional significance. Consideration will need to be given as to how best to deal with the remains.



Leighton Buzzard Narrow Gauge Railway Station in Pages Park



Leighton Buzzard town centre





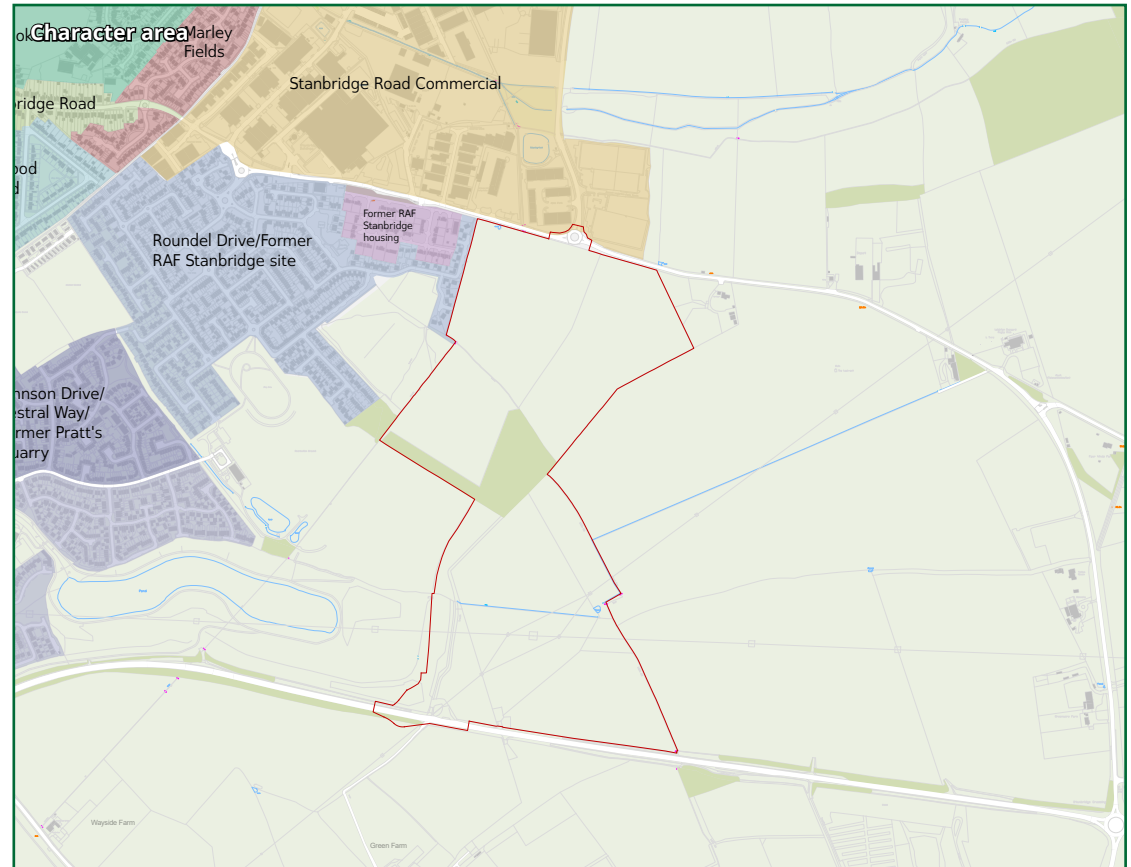
## Character and identity

To a large extent, the character and identity of a place is the combined effect of all the foregoing aspects. We perceive as a composite the landform, vegetation, views, patterns of movement, the paths we take and the variety of activities that take place in their particular locations and historic structures. More immediately, character and identity are formed by the way that buildings are arranged and define public and private spaces and the nature of the individual buildings.

Looking at Leighton Buzzard as a whole, there is a variety of different specific arrangements, each with a different character, based on the street pattern, building type, materials and details, typical of the period in which it was built. Like all settlements that have grown up over time, this gives the town a characteristic mosaic of areas that is essential to its identity. In Leighton Buzzard, those areas include the Medieval High Street, mainly eighteenth and nineteenth century extensions along the main radials and the many infill developments between the radials, mainly in the second half of the twentieth century.

The character areas in the locality of the Site include the small area of remaining RAF Stanbridge housing, residential redevelopment of the wider RAF Stanbridge site begun in the late 1990s and the commercial industrial areas to the north built out in the 1970s and 1980s,

Despite the variety of areas, there is a common general arrangement within Leighton Buzzard at the level of the street, which is houses fronting and defining public streets on both sides. There are also some 'single-sided' streets with houses facing open spaces across the street. At the same time, there is a common range of house types, including terraced, semi-detached and detached. The predominant style of ordinary houses varies from simple Classically-based, house-builder vernacular to some with Modernist influences from the mid-twentieth century. The predominant building materials are red brick with some buff and painted brick, render and tile hanging and clay tile roofs with some slate.

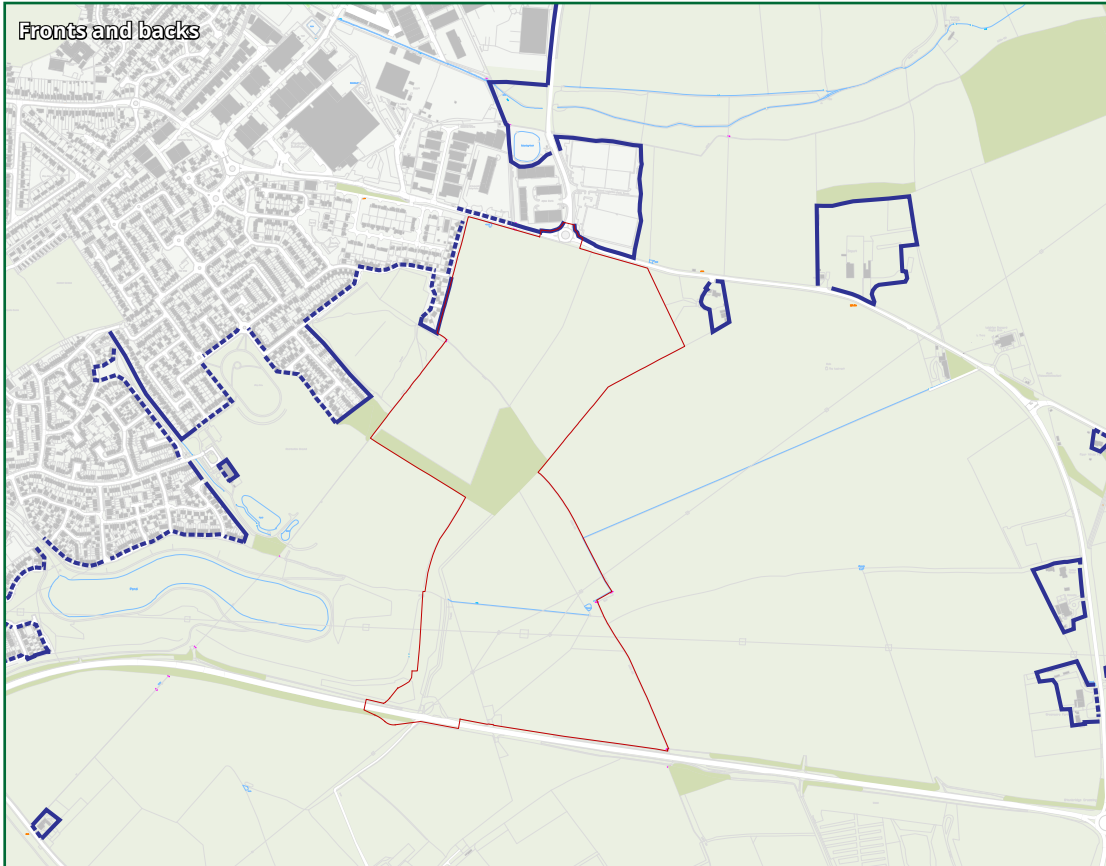


Houses typical of former RAF Stanbridge site redevelopment



Houses typical of recent development in Leighton Buzzard

Fronts and backs



- ■ ■ ■ Active front
- Backs
- Application boundary



Mid-20th century housing in Leighton Buzzard



Mid-late 20th century housing in Leighton Buzzard



Single sided street overlooking Astral Park



Single sided street overlooking Astral Lake (adjoins the Site) These houses are typical of recent development





## Summary

The following summarises the results of the appraisal in terms of assets, opportunities, design resources, sensitivities and issues.

### Assets

- Wind, irradiance, ground source heat
- Existing topography and land drainage network
- Hedgerows, hedgerow trees
- Position of the Site between the A505, the Leighton Road and Eastern Link Road with access from all three
- Proximity of Astral Park Lake, Astral Park Sports and Community Centre,
- Proximity of town centre, local schools and facilities along Stanbridge/Leighton Road

### Opportunities

- Low ALC grade of soil
- Relatively low habitat value
- National Grid and UKPN overhead electricity transmission lines
- Proximity of Stanbridge Meadow
- Low lying land with access from A505 suited to commercial employment use
- Suitable location and land for an integrated health facility
- Potential to provide footpath links through to Astral Park and Astral Lake Park

### Design resources

- Street types, house types, materials

### Sensitivities

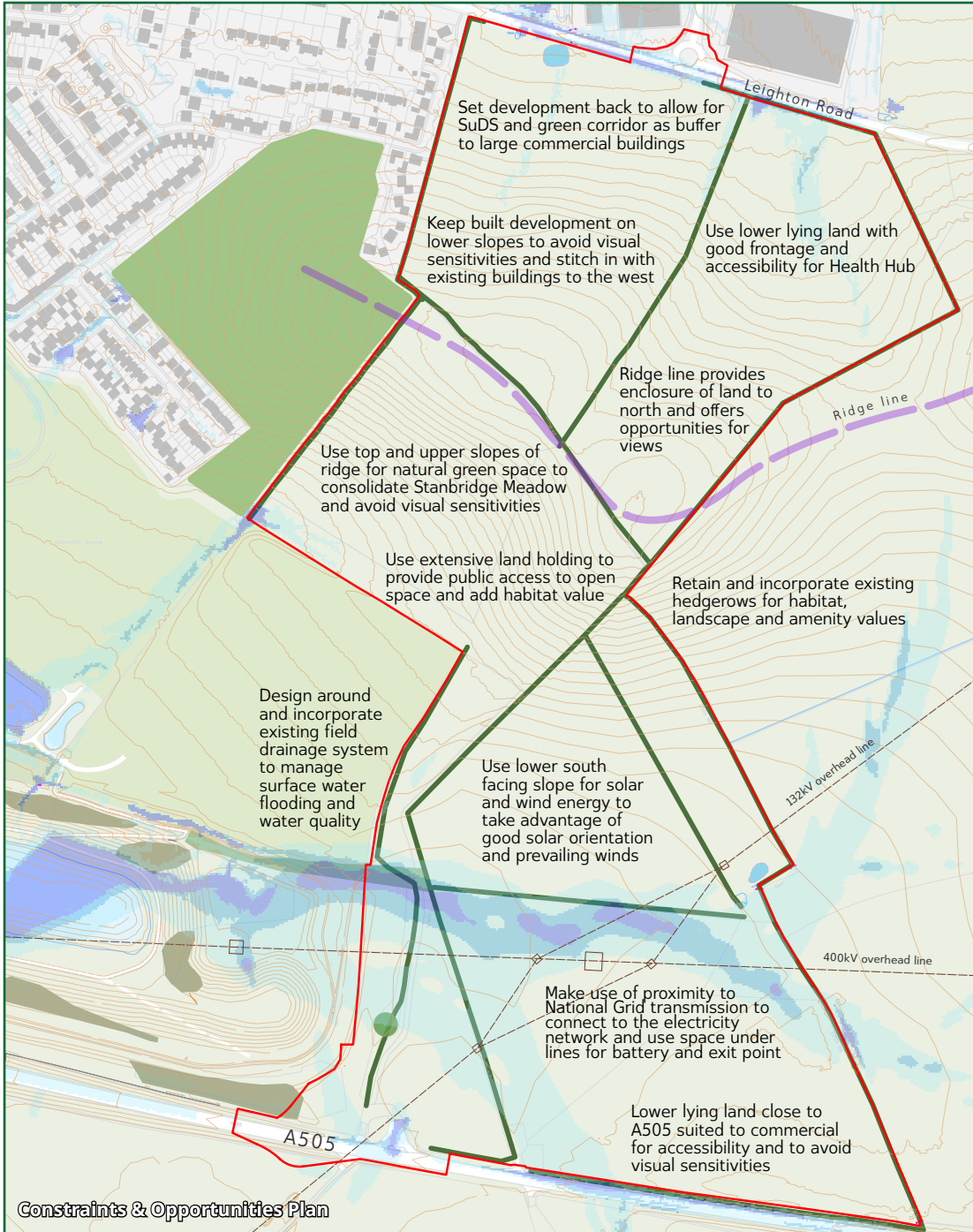
- Views from the Chiltern scarp and AONB
- Proximity of Stanbridge Meadow

### Issues & Constraints

- National Grid and UKPN overhead electricity transmission lines
- Reinforcement works to water supply and sewerage
- Surface water flooding
- Lack of integrated health care facilities in the town
- Lack of high-tech employment space



View of Astral Park across the former RAF Stanbridge running track





# 3

# Proposals

This section outlines:

- Design Evolution
- Design Rationale
- Renewable energy and utilities
- Town life and facilities
- Access and movement
- Land, landscape and biodiversity
- Built form, character and identity







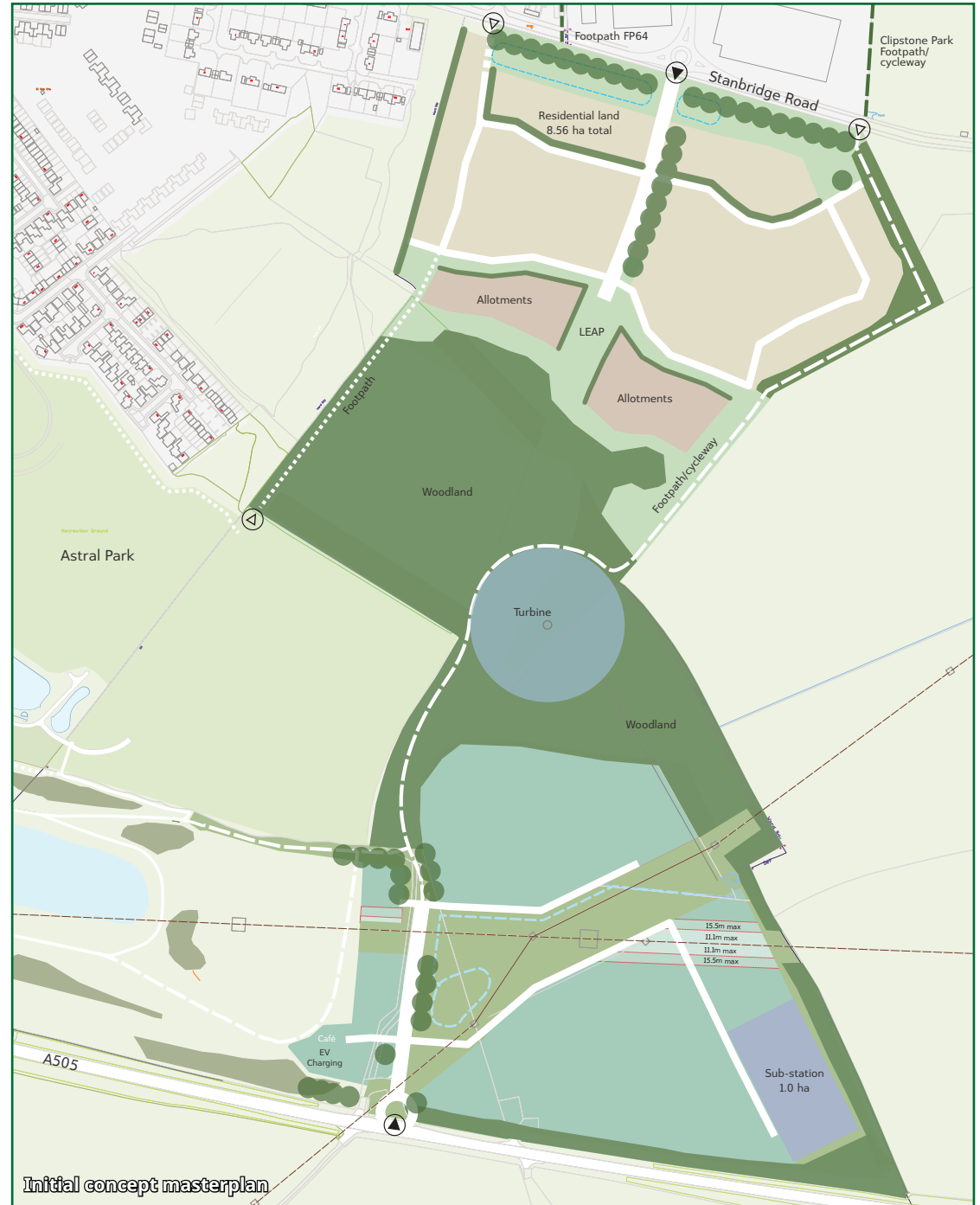
# 3 Proposals

## Design Evolution

The design of the proposed development has been the result of an extended, iterative process. It has involved undertaking progressively more detailed assessments of a wide range of issues and adjusting and revising the design to respond to and accommodate the results of those assessments. The issues assessed and considered in the process include both technical topics such as highways, drainage and landscape as well as the response of stakeholders and members of the community to the initial and emerging proposals. The details of the wider consultation process are set out in the separate Statement of Community Involvement.

### Key elements of the initial scheme:

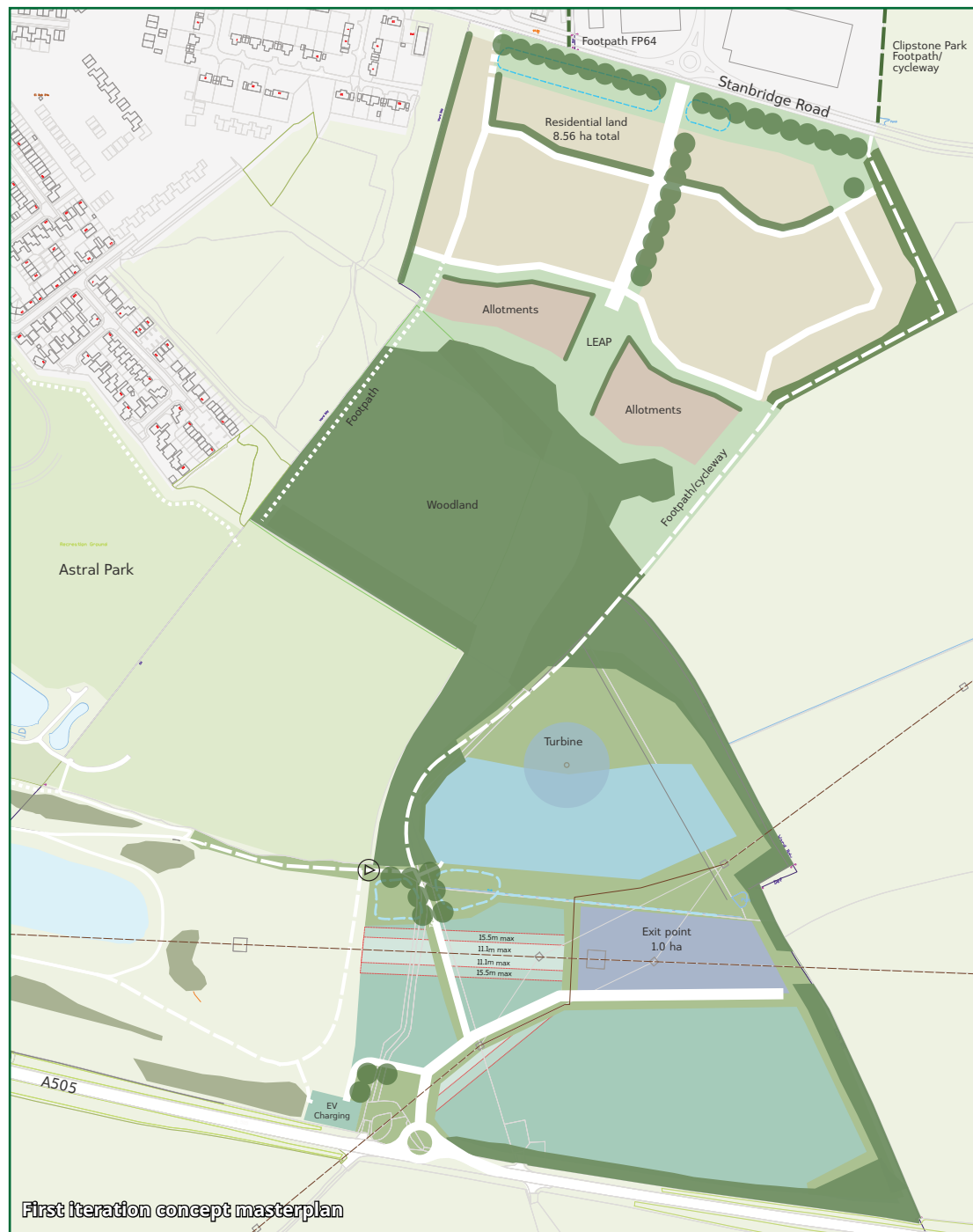
- Single wind turbine
- Sub-station/Exit Point
- EV Charging Station with coffee outlet
- Large shed commercial
- Residential
- Allotments
- Woodland
- New footpath and footpath/cycleway



Initial concept masterplan

### Key revisions in first iteration:

- Reduce the size of the wind turbine and reposition lower down slope to minimise visual intrusion
- Reduce the area of woodland for more efficient running of the wind turbine
- Add solar array to create energy park
- Propose undergrounding of 132kV overhead line at crossover with 400kV line to allow for effective uses of land
- Rearrange the layout to make use of existing land drainage system
- Rationalise access roads and align with existing services
- Reposition Exit Point under the 400kV overhead line
- Reduce the amount of land for commercial



First iteration concept masterplan





**Key revisions in second iteration:**

- Add Battery Energy Storage System under 400kV overhead line
- Reposition access point in response to feedback from Highway Officers
- Reduce the amount of land for commercial
- Reduce the amount of woodland further for efficient running of turbine
- Include orchard
- Include land for Health Hub
- Add footpaths across top of ridge



**Key revisions in third iteration (final proposal presented in the following pages):**

- Increase size of detention basins along Leighton Road and add bio-retention features to residential area on the basis of detailed drainage design
- Revise street pattern of residential area to front onto existing hedgerow boundaries to keep them in the public realm and allow views out onto countryside
- Fully integrate existing hedgerows into layout
- Refine and adjust disposition of residential and Health Hub on the basis of the detailed proving layout
- Add location of pumping stations
- Refine layout of commercial areas on the basis of detailed proving layouts and reduce heights of commercial units to avoid visual intrusion
- Reposition EV Charging Station closer to Astral Lake Park
- Refine layout of solar array to fully accommodate hedgerow
- Add access track to eastern part of solar array
- Rearrange and add further footpath/cycleway in response to lack of viable connection to Clipstone Park path







## Design Rationale

The overall vision and objectives for the proposals are set out in Section 1. The following provides a more detailed description of the proposals and an explanation of how the proposed scheme responds to the Site and its setting and achieves a high-quality design.

First and foremost, the masterplan seeks to respond positively to its site and surroundings and integrate the core elements of the Energy Park, Woodland/Meadowland and the built development to create a positive sense of connection. At the same time, the aim is to integrate the elements with the town and landscape so each element plays a positive part in that larger whole.

The overarching concept can be described as cross connections:

- The Ridge top green space plays a pivotal role creating multiple connections. A primary link is the continuity of natural green space from Stanbridge Meadow to the west, through the site and out to the open fields to the east. This is reinforced within the site by the footpath running along the ridge and connecting open spaces with viewpoints. Those viewpoints in turn make the connection back to the town with views to All Saints spire, and into the landscape with views to the Chiltern scarp.
- The primary cross-connection is north-south, with the Ridge top green space forming the common, binding element. Footpath and cycle links lead up from both the north and south

to the fully publicly accessible space. The connection carries through to the north along Fraserfields Way and up the Eastern Link Road (ELR) to Shenley Hill and to the south into Astral Park down to Astral Lake.

- The main secondary connections are to the Leighton Road and A505. To the north, the position of the Health Hub makes that link a clear, visual and functional one, taking advantage of the east-west and north-south movement. The cross connection is then the continuity with built development to the west, matching the topographic position on the slope as well as with the wide, green frontage along the Leighton Road.
- The Smart Park, EV Charging Station and Mobility Hub create the connection with the A505, making the most of the longer distance links and enhancing its role in the town. In parallel, the Energy Park aligns with and connects to the National Grid 400kV transmission line. The cross connections are made by links to Astral Park to the west with the Mobility Hub and coffee outlet of the EV Charging Station form a key binding element.
- Within the built areas, a principal aim is to establish visual links with the surroundings. To the north, built development faces outward at the edges in all directions, with all streets ending in vistas out to green space. Within the Smart Park, the fronts of the units face onto common green space and there a numerous cross link west to Astral Park. A further aim in the layout is to follows the lines of the existing topography, which also achieves the best orientation of streets for passive solar heating.



Overall masterplan concept

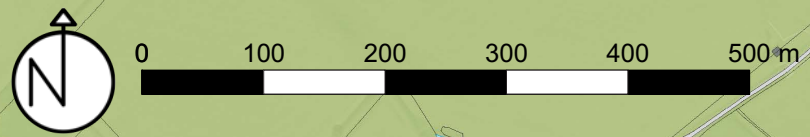


# Illustrative Masterplan



- Site boundary
- 1 Principal vehicular access to new homes and Health Hub
- 2 Primary tree lined street
- 3 Vehicular access to Smart Park, Mobility Hub and EV charging station
- 4 Energy Park access road
- 5 Pedestrian/cycle access
- 6 Wind turbine
- 7 Solar PV array
- 8 Battery energy storage system
- 9 Exit Point
- 10 Health hub
- 11 Smart Park commercial units
- 12 EV charging station and Mobility Hub
- 13 Allotments
- 14 Orchards
- 15 Wildflower meadow
- 16 Woodland/tree plantation
- 17 Play space
- 18 SuDS basins
- 19 Existing playing fields

Proposals







Detailed list of the proposals:

- Energy Park
  - A single wind turbine
  - Solar photovoltaic array
  - A Battery Energy Storage System (BESS)
  - Land for a new connection ('Exit Point') from National Grid power lines
  - Electric vehicle charging station with 6 charging points and a coffee outlet
  - Commitment to ground source heating array
- Access routes from the Leighton Road and A505
- Extension of existing footways along Leighton Road
- Walking and cycling routes connecting Astral Green to Leighton Buzzard and the wider area
- Mobility Hub
  - e-bike, e-scooter/cycle hire and parking
  - EV charging bays
  - EV car club and parking
  - Wayfinding displays to assist with journey planning
- A new Smart Park with rooftop solar, offering flexible commercial workspaces in a range of sizes (Use Class E)
- Land for a new Health Hub facility for the town (Use Class E)
- Phased development of up to 243 sensitively designed, energy-efficient new homes (Use Class C3)
- Play area (1 LEAP)
- Allotments
- Orchard
- Woodland
- Wildlife rich wildflower meadows
- Surface water drainage system
- Bio-retention areas
- Detention basins
- Sewerage system with pumping station

## Renewable energy and utilities

At the core of the vision and overall approach for Astral Green is the principle of **building the development around a local source of renewable energy, to deliver an operationally Net Zero Carbon scheme**. An assessment of the Site and its locality established that the principal areas with potential for local generation are **wind and solar for electricity, and ground source for heating and cooling**.

The use of different, but complementary, renewable technologies was an important design consideration. In general terms, **peak solar generation occurs during the summer months, whilst peak wind generation occurs during the winter months**.

### Wind

Taking into account local topography, the assessment of wind speeds and wind direction showed that **there is viable wind for the generation of electricity using a wind turbine**. Wind speeds are greater at height than at ground level, and larger swept areas are able to capture more energy from the wind than smaller swept areas. Whilst the greatest potential for generation is achieved with a taller turbine equipped with long blades, the size of the selected wind turbine has also been informed by potential constraints to its installation.

Key considerations in locating and selecting the wind turbine include; appropriate offsets from existing residential dwellings to ensure that the turbine could not be considered a noise nuisance or visually overwhelming/overbearing; appropriate offsets to electricity infrastructure, and roads; offsets from existing vegetation and habitat; and good access from the A-road network.



Example wind turbine

In addition, the developer considered aviation issues (radar visibility), and delivery issues (ensuring that large components can be delivered to site).

### Solar

The open nature of the Site means there are **few constraints on the location of solar panels**. The principal consideration in positioning the solar arrays has been to maintain proximity with the wind turbine and the shared infrastructure of electricity transformers, the battery, cabling and the grid connection point. At the more detailed level, the solar panels have been located to the south of the turbine to avoid the tower shading the solar array. In addition, they have been situated to fit within the existing pattern of hedgerows to minimise visibility.

The angle, height and spacing of the panels has been optimised to reduce the potential for inter-row shading, and to maximise energy capture.

Together, the generous spacing between the rows, and panel height allow for maintaining the fields as pasture during operation.



Example solar panels

### Battery Energy Storage System and Exit Point to National Grid

The Sixth Carbon Budget requires 70% of electricity generation to be provided by variable renewables (wind and solar) by 2035 and 80% by 2050. To achieve this, a flexible electricity system is required to balance out the variability in renewable generation. As such, the budget sets a requirement for 18GW of battery storage by 2035.

With an increasing share of variable renewables, storage facilities can capture surplus energy when demand is low and provide back-up 'generation' when demand is particularly high. Energy storage systems therefore play a key role in enabling the decarbonisation of the UK power system while

maintaining security of supply.

**Battery Energy Storage Systems (BESS) need to be located near to major grid infrastructure with sufficient import and export capacity.** The BESS at Astral Green is located beneath and adjacent to the National Grid overhead line and next to the Point of Connection of the Energy Park. Positioned at the intersection between generation, demand and transmission, Astral Green is therefore an ideal location for an energy storage project.

The BESS comprises 32 battery skids. Twelve self-contained battery modules are mounted onto each skid. Each pair of skids is accompanied by a transformer and two Power Conversion System (PCS) units. The battery skids, and their associated equipment, are arranged into U-Shapes which are spaced approximately 4.5m apart to allow for maintenance access. The battery compound is also serviced by a dedicated substation area.

As stated above, the Point of Connection (PoC) for Astral Green will be to the existing National Grid 400kV overhead lines that bisect the Site from east to west. To achieve this PoC, a new substation will be constructed by National Grid beneath this line. As a new point of supply from National Grid, it is known as an 'Exit Point'. The Exit Point will provide import (for times of low wind or sun) and export capacity. As a new connection to National Grid, it will also provide more grid connection capacity to the south side of Leighton Buzzard.

The Exit Point will be comprised of up to three 'super-transformers', accompanied by high voltage switchgear as well as disconnect and isolation equipment.



Example battery & substation

### Ground source heating and cooling

**The light construction of the solar array also means the ground between the rows can be utilised for an array of boreholes to feed a ground source heating network**, providing ambient heat to

the Astral Green scheme. Other open areas within the Site may also be appropriate. An assessment of the physical ground conditions and any potential archaeology indicates there are no other constraints on this installation.

### Electricity infrastructure and 'local first' use of electricity

**All energy generated from the on-site PV solar array and wind turbine will be routed to the on-site substation. The power is then distributed to the development and EV Charging Station.** The on-site substation is also connected, via the Exit Point, to the electricity transmission network, operated by National Grid. This allows for Astral Green to export energy (when the Energy Park generates more energy than is consumed by Astral Green) or import energy during times of low generation. Alternatively, power can be routed to charge the battery.

When the Energy Park is generating, the **power it produces will be consumed by the various uses proposed for Astral Green**, with the **excess exported to National Grid**.

During times of low generation (for example periods of low wind speeds at night), it will be necessary to import electricity from the Exit Point, or battery. However, when taken on an annual basis, the energy required by the development will be more than met by the on-site energy generation which will produce almost one and a half times more electricity than the development consumes on an annual basis.

### EV Charging Station

**The EV Charging Station will provide ultra-rapid charging facilities at Astral Green and to users of the A505.** The charging station will be supplied by the onsite wind turbine and solar array. In addition, a battery will be used to provide a constant power supply to the chargers, minimising the need to import energy.

The ultra-rapid chargers will dispense power according to the requirements of each EV vehicle, the state of the battery, and the charging station demand. This will ensure that each user is charged efficiently and quickly.

A coffee outlet located next to the forecourt will provide a rest area for drivers whilst their vehicle is charging.





DESIGN  
AND  
ACCESS  
STATEMENT



- 1 Smart Park
- 2 Wind turbine
- 3 Solar PV array
- 4 Battery Energy Storage System
- 5 Mobility Hub and EV charging station
- 6 Health Hub
- 7 SuDS basins
- 8 Allotments
- 9 Orchards
- 10 Wildflower meadow
- 11 Woodland/tree plantation
- 12 Play space
- 13 Existing playing fields





# ASTRAL GREEN

A flagship operational **NET ZERO CARBON** scheme south-east of Leighton Buzzard

Artist's Impression of the development proposals





## Town life and facilities

In seeking to achieve the vision of creating a pioneering operational Net Zero Carbon mixed-use scheme south-east of Leighton Buzzard complementing the life of the town, the appraisal provides a number of cues for the design. The first is the differentiation of the Site into the two distinct parts by the central east-west ridge and the difference in character of the associated roads – the Leighton Road and A505. The north slope and Leighton Road are more closely tied to the town and lend themselves to more domestic uses while the south slope and A505, looking away from the town, are more suited to the energy and commercial uses.

Placing the residential land and Health Hub on the north slope along the Leighton Road puts them in

close proximity to the bus routes and the facilities along the Leighton Road such as the Co-op food store. Similarly, locating the Health Hub toward the northern edge makes it as accessible as possible with proximity to both the Leighton Road and Eastern Link Road.

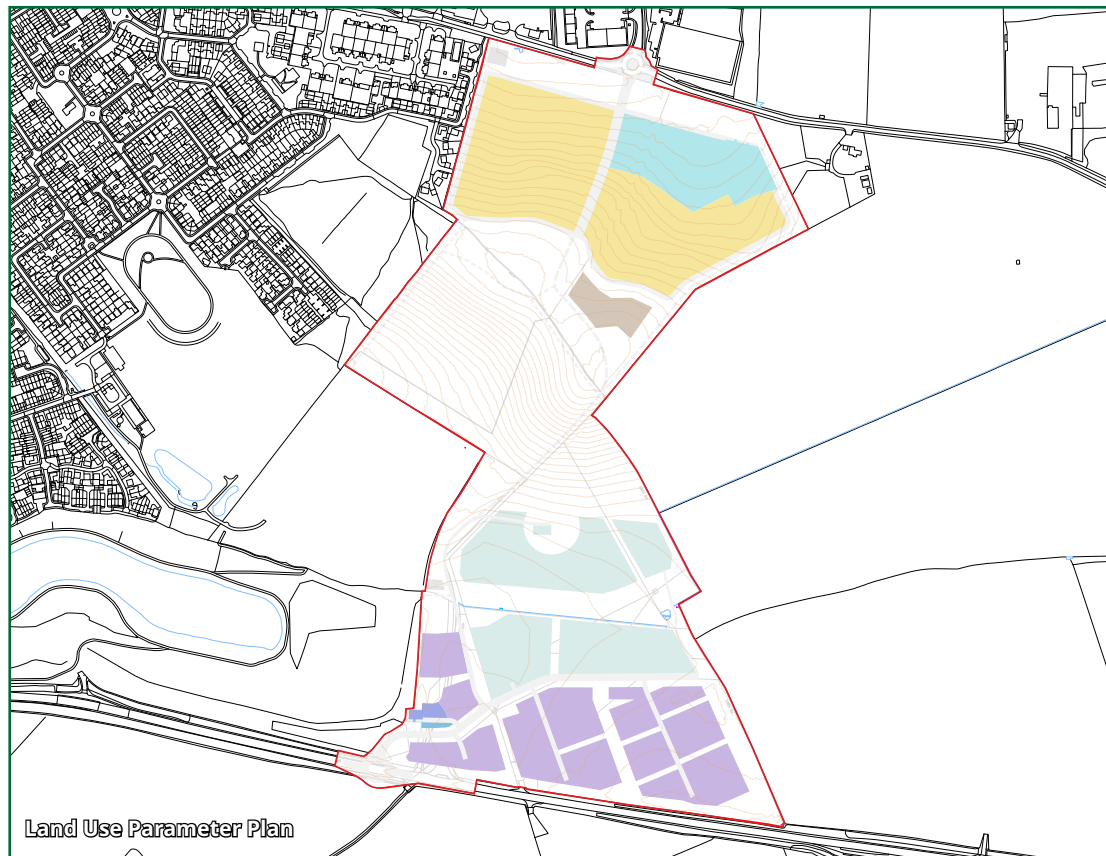
Clustering the proposed community greenspaces such as the play area, allotments, orchard, woodland and wildflower meadows at the top of the ridge puts them immediately adjacent to the existing Stanbridge Meadows, Astral Park and Playing fields, creating an extension to the existing green open spaces. The location also takes advantage of the views out from the ridgetop and keeps the ridgetop free of built development.

On the south slope, the logic of the design is as follows: to use the south facing lower slope for the

solar array and wind turbine, taking advantage of the positive solar orientation and prevailing south-westerly winds. To use the area under the 400kV overhead line for the electrical infrastructure to minimise distances for the physical connections and visual intrusion. To use the southern, flatter land for the commercial development to take advantage of the close connection to the A505 and help minimise visibility of the buildings.

The EV Charging Station and Mobility Hub are located just off the A505 and immediately adjacent to Astral Lake Park, making them as accessible as possible for people working within the commercial area, driving along the A505 or visiting the Park.

This flagship scheme will include a renewable Energy Park, a Smart Park for new jobs and business growth, land for a new Health Hub for Leighton Buzzard, an EV Charging Station and Mobility Hub, and 243 energy-efficient new homes – all set within extensive green spaces for all to enjoy.



- Employment
- Energy infrastructure
- EV Charging Station
- Mobility Hub
- Health
- Residential
- Allotments
- Application boundary



Proposed facilities plan & precedents

- Site boundary ———
- PRoW ———
- Recreational routes ●●●●●
- Energy Infrastructure ■■■■■
- Residential area ■■■■■
- Health hub ■■■■■
- EV charging & Mobility Hub ■■■■■
- Employment area ■■■■■



Proposals





DESIGN  
AND  
ACCESS  
STATEMENT

LAND USE	Area (ha)	Area (acres)	Percentage of TOTAL
<b>Green Infrastructure</b>			
Wildflower Meadows / Parkland	6.76	16.71	50%
Woodland	7.09	17.53	
Community Orchard	1.59	3.94	
Landscape and informal open space / drainage	5.43	13.41	
LEAP	0.06	0.15	
Structural landscape	0.38	0.94	
<b>TOTAL</b>	<b>21.32</b>	<b>52.68</b>	
<b>Infrastructure</b>			
Wind turbine	0.05	0.12	11%
Solar	2.39	5.91	
Battery Energy Storage System	1.04	2.56	
Land for National Grid Exit Point connection	1.28	3.17	
<b>TOTAL</b>	<b>4.76</b>	<b>11.76</b>	
<b>Employment/other</b>			
Smart Park	6.61	16.34	16%
EV charging station & cafe (185sqm.)	0.16	0.40	
Mobility Hub	0.03	0.07	
<b>TOTAL</b>	<b>6.81</b>	<b>16.82</b>	
<b>Community</b>			
Health Hub (3,000sqm.)	2.00	4.94	6%
Community Allotments	0.51	1.25	
<b>TOTAL</b>	<b>2.51</b>	<b>6.21</b>	
<b>Residential</b>			
Residential	7.60	18.78	18%
<i>Average density dw/ha</i>		32	
<i>Total number of dwellings</i>		243	
<i>Average household size</i>		2.4	
<i>Total population</i>		584	
<b>TOTAL</b>	<b>7.60</b>	<b>18.78</b>	
<b>TOTAL SITE</b>	<b>43.00</b>	<b>106.25</b>	<b>100%</b>

SMART PARK ASSUMPTIONS	Area (ha)	Area (acres)	Percentage of TOTAL
Gross Area	6.61	16.34	23%
Parking / open storage	5.16	12.76	
<b>Metres</b>			
Internal clear height	7.50		
External right height	9.50		
<b>SQM SQFT Coverage</b>			
Building footprint	15,123	162,784	29%



## Housing Strategy

This is an outline application and therefore the detailed design of the houses will be reserved for future applications. It is the intention that the dwellings will be designed to reflect the character and aesthetic qualities of the wider Leighton Buzzard area and mirror design features of the settlement. High quality, vernacular materials for homes will aid the integration of this development within the wider local area.

The illustrative masterplan proposes a variety of different house types, providing a range of sizes catering for the needs of different people. The internal layouts will all be designed to meet the National Minimum Standards and will consider market preference and modern ways of living.

The proposals take into account standards set out in the District Design Guide, including minimum separation distances within the block structure. Houses will be designed to allow for flexibility and adaptation in order to encourage residents to stay for longer depending on life circumstances, for example first time buyers, young families, growing families and downsizers. The scheme will ensure there is a wide range of choice.

The proposed housing mix would be broadly in line with the recommendations of the Local Planning Authority, unless local circumstances at the time of any reserved matters application justify a different mix. The proposals shown in the illustrative Masterplan consist of a mix of apartments, terraced, semi-detached and detached properties.

## Affordable Housing Strategy

Local Plan Policy H4 requires at least 30% affordable housing to be provided. The application proposes 30% affordable housing including 10 almshouses, meeting the requirement set out in the policy. The development proposes that affordable dwellings are distributed evenly across the Site and that they will be tenure blind to create an integrated community.

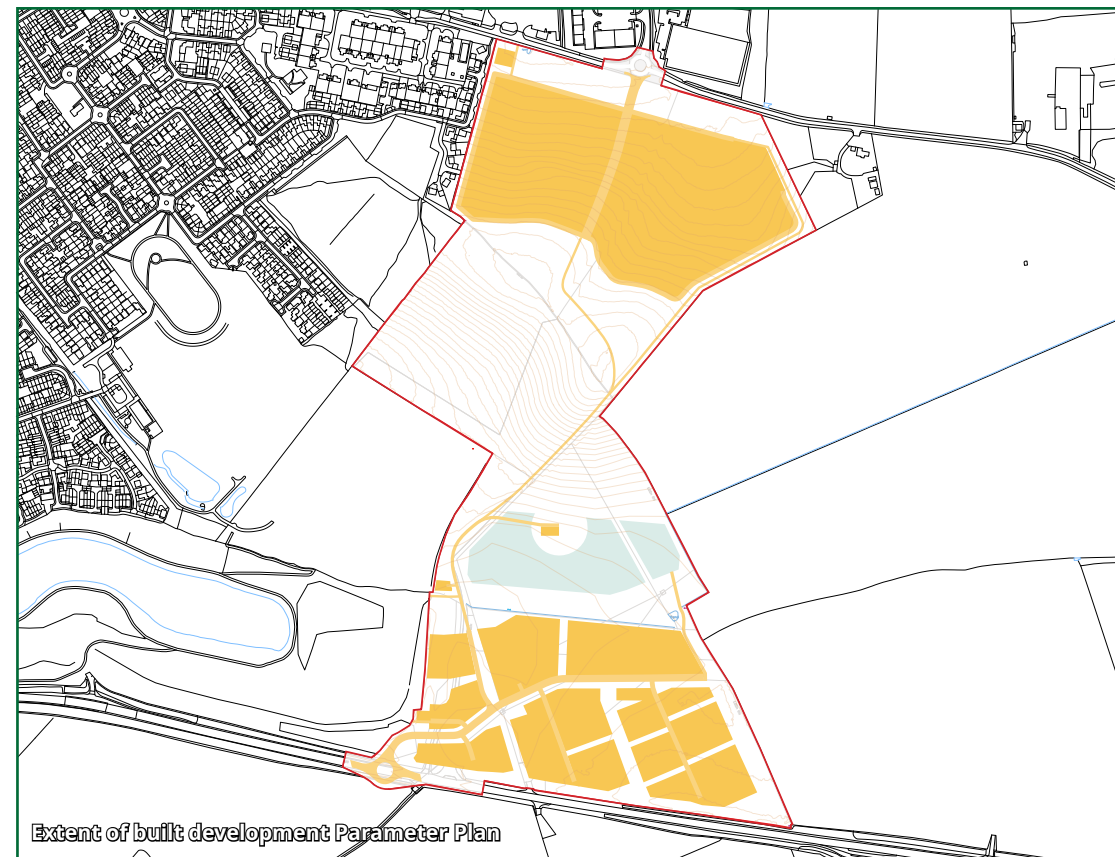
## Parking Strategy

Parking provision (including allocated and unallocated spaces) will be provided in compliance with policy requirements. The majority of parking spaces will be provided on plot - either in garages and car ports or driveway spaces will be provided to accommodate cars. In some instances, it may be necessary to provide some on street allocated parking spaces. This will be in close proximity to dwellings for ease of access.

Visitor spaces, predominantly unallocated along streets, will also be provided. These will be evenly distributed throughout the development. Overall parking provision will be in accordance with the Local Planning Authority guidance. Adequate provision for cycle storage will be made for all properties to encourage the use of alternative modes of transport to the car.

## Refuse Strategy

Adequate provision for refuse storage will be made in either garages or back gardens of all properties. This will ensure that bins are not left on the streets. All roads will be designed to adequate widths and turning areas to accommodate refuse collection vehicles. Most streets are looped to assist service vehicle movements, designing out turning heads. Homes will be designed with adequate storage space to encourage recycling and composting to minimise overall waste. Where required, waste collection points will be integrated into street scenes in a positive way.



- Extent of built development and infrastructure
- Extent of solar energy infrastructure
- Application boundary





## Health Hub

The proposals include land for a Health Hub, providing integrated, high-quality care close to where people live and helping to meet the need identified in Bedfordshire. A sensory garden, pond and pavilion, wildflower meadow and trim trail located with the health hub facility provide access to nature and green space, helping to promote health and wellbeing.

- 1 Health hub building
- 2 Sensory garden
- 3 Pond and pavilion
- 4 Pond
- 5 Wildflower meadow
- 6 Trim trail



## Smart Park, Mobility Hub and EV charging station

A new Smart Park, Mobility Hub and EV charging station is proposed towards the south of the Site, accessed from the A505. This will provide facilities and employment opportunities for new and existing residents. The EV charging station will also cater for users of the A505, with a small cafe outlet further enhancing the area. Retained hedgerows combined with new tree and hedgerow planting will provide biodiversity benefits and create a green environment for all.

- 1 Mobility hub area incl. EV charging for EV cars, e-bikes and e-scooters, with a car club and EV shuttle bus at peak periods
- 2 EV (Electric Vehicle) Charging Station to facilitate the uptake and use of electric vehicles
- 3 Shop and cafe outlet / coffee station
- 4 Commercial buildings
- 5 Footpath link and recreational route







## Access and movement

The Leighton Road and A505 and the bus services running along the Leighton Road are the key assets for establishing access into the Site and connections to the town. The proximity of existing facilities within a fifteen minute walk of the Site is similarly an asset as well as an opportunity to accentuate and reinforce the potential of the facilities.

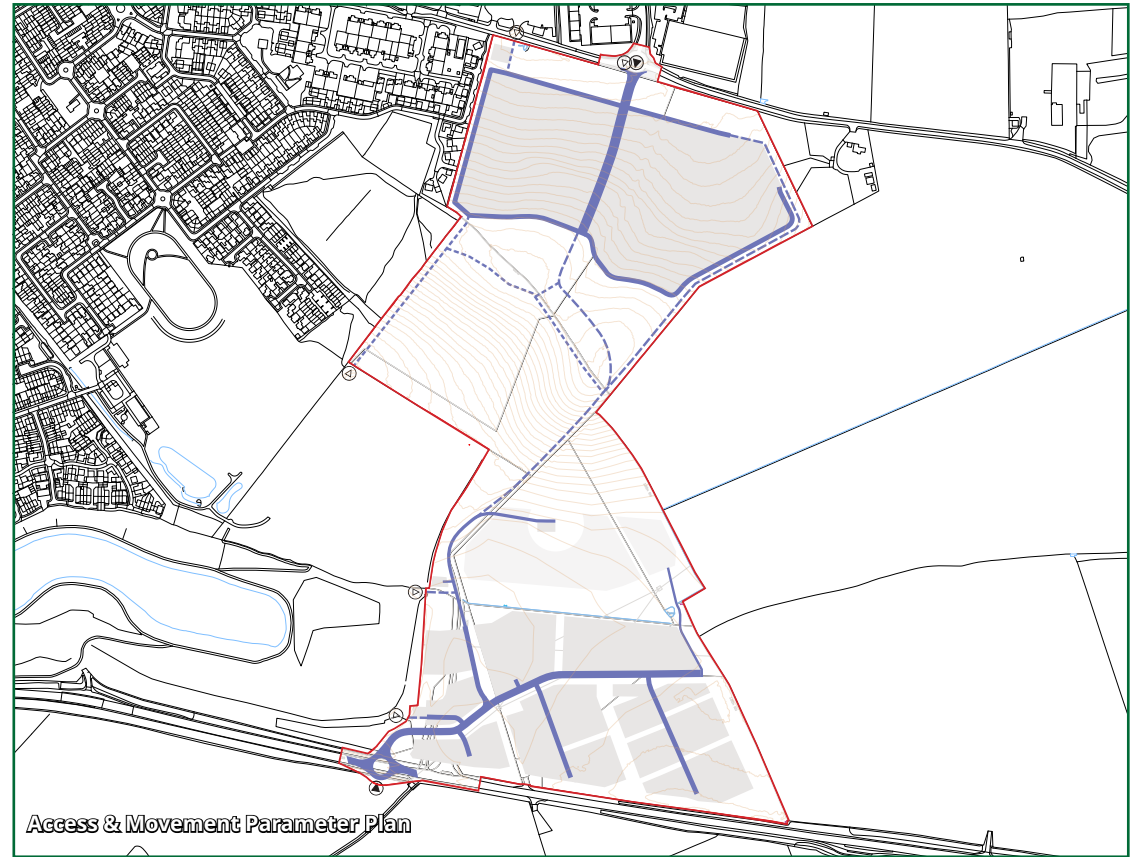
The proposed access strategy seeks to make the most of these assets and opportunities in order to provide a range of ways to get into and out of the Site to a range of locations.

A core part of the strategy is to address the lack of public rights of way in this part of town and provide new pedestrian and cycle links combined with the Mobility Hub to increase and extend accessibility by modes other than the private car. The Mobility Hub is located to foster use from both the Smart Park and Astral Park and will include:

- e-bike, e-scooter/cycle hire and parking
- EV charging bays
- EV car club with parking
- Wayfinding displays to assist with journey planning

The footpath and cycle links include: a pedestrian/cycle access in the north-west corner closest to the facilities on the Stanbridge Road; a central footpath/cycleway from the main access off Leighton Road (continuous with the Eastern Link Road) to the Smart Park, Astral Park, Astral Lake Park and the Mobility Hub; a footpath/cycleway along the eastern edge of the Site that connects up with the central route. There are also footpath links along the western edge of the Site and along the east-west line of the ridge. The footpaths provide access to the orchard and more tranquil green spaces. The design intention is to facilitate pedestrian and cycle access to and from - and between - the Smart Park employment area, Astral Lake Park and Astral Park and the proposed residential area with its green spaces as well as connections into town via the Stanbridge Road and Johnson Drive.

For vehicular access, the aim of the strategy is to keep



Access & Movement Parameter Plan

the access points as simple and minimal as possible, taking advantage of the topographic split in the Site to separate residential and commercial traffic. The position of the access from the Leighton Road is deliberately aligned with the Eastern Link Road/ Fraserfields Way roundabout to minimise junctions and connect directly to both routes and facilitate choice of route to minimise congestion.

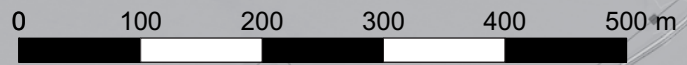
- Proposed vehicular access
- Proposed pedestrian/cycle access
- Proposed access roads
- Proposed footpath/cycleway
- Proposed footpath/link
- Existing footpath
- Application boundary



# Movement strategy plan & precedents



- Site boundary ———
- PRoW ———
- Recreational routes ·····
- Primary street ———
- Secondary street ———
- Tertiary street ———
- Edge street ———
- Cul-de-sac ———
- Employment route ———



Proposals



## Streets

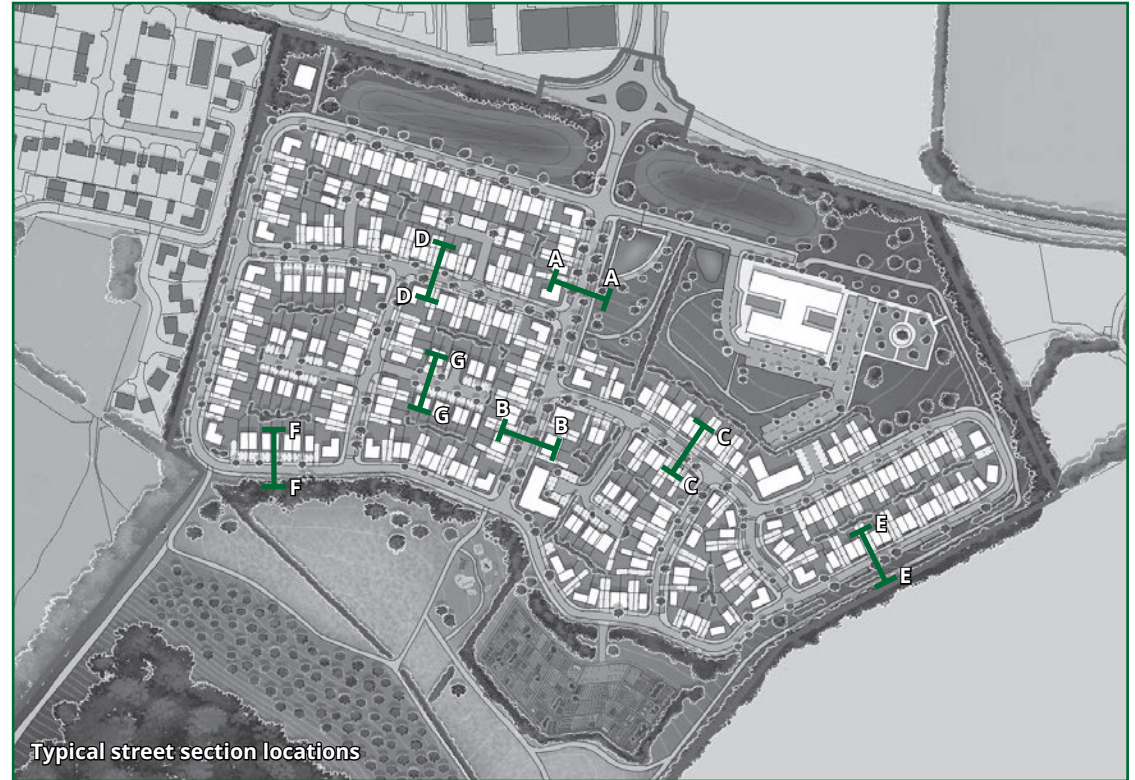
The street layout within the Site seeks to balance a number of objectives. These include:

- Retaining existing drainage features, hedgerows and vegetation;
- Creating direct walking and cycling routes between the various parcels within the site, along with key links to the surrounding area;
- Orienting buildings in accordance with the environmental design grid to maximise solar gain, minimise heat loss and avoid excessively windy outdoor spaces.

A further aim of the street layout is to ensure it is easily navigable and memorable. That aim is achieved in part through the creation of clear associations between routes, spaces and landmarks and in part by creating a hierarchy of routes with a clear logic in terms of connection. Higher order routes lead to mid-level routes then on to lower order routes. The hierarchy is made legible both by the sequence and by the design of the streets in terms of width and the range of elements within the street. The range of proposed street types are illustrated in the section drawings. The design of the proposals has taken into consideration Council policies on parking as well as Council parking standards.

The following street sections provide an indication of the different characters that the various streets throughout the development will deliver.

This character is determined by the distance between buildings either side of the street, building heights, pavements, on-street parking, front gardens and landscaping. The layout and orientation of streets promotes permeability and legibility aided by wayfinding through the development.



Typical street section locations



Artist's Impression of the Primary Street

## Primary Street

The primary street is the main access route the new dwellings and connects the entrance into the heart of the development. It features tree planting located on both sides of the street, creating a distinct character and integrating traffic calming.

Parking is located on both sides of the street, alternating with tree planting to soften the streetscape.

Changes in surfacing also helping to slow vehicular speeds through the development. A swale/bio-retention strip is introduced becoming a natural buffer between the shared footway and the carriageway. The street terminates with a vista towards the play space and the open space beyond, leading up to the woodland running along the ridge.



### PRIMARY STREET - GENERAL PRINCIPLES

Carriageway Width	Min. 6m
Footway	Min. 2m (east); shared foot/cycleway min. 3m (west)
Verge/Tree Planting	Tree planting in verge both sides (min. 2.4m)
Swale/Bio-Retention	Min. 3m (east)
Cycleway	Shared foot and cycle on western side
Traffic Calming Options	Change in surface, build outs with planting
Access to Properties	Direct access
Landscape Design	Fastigate trees, regular spacing

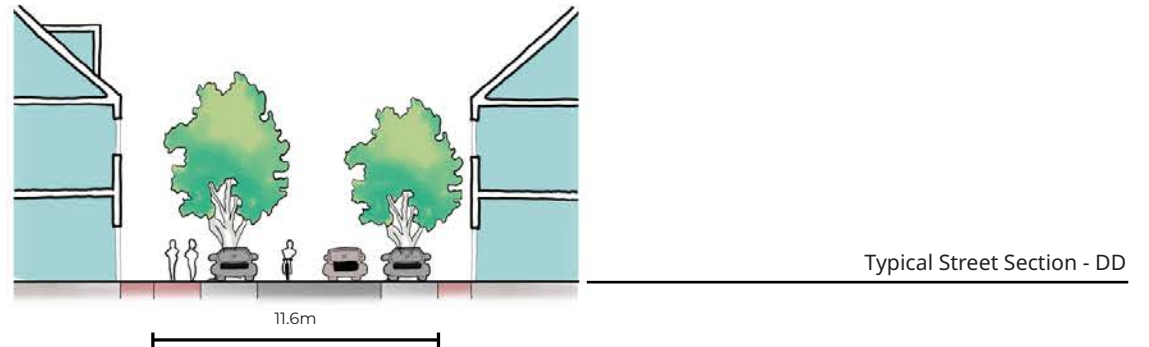
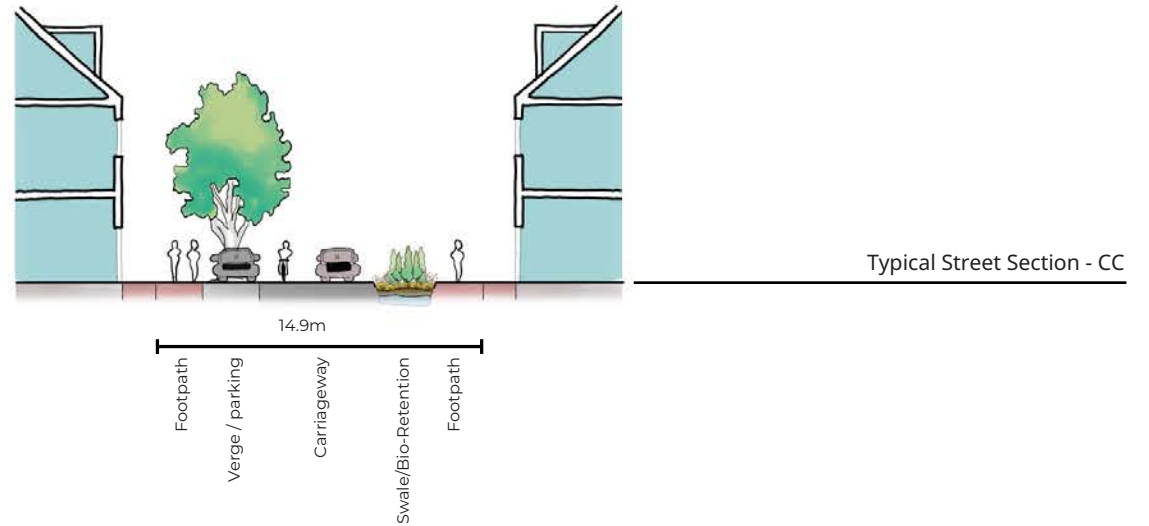


### Secondary Street

The secondary streets have a similar character to the primary street, although less formal. They are connected to the primary streets, through the neighbourhood areas towards the development edge.

Generally footways are located on one side of the street. Tree planting in the verges is alternated with car parking lending a greener landscape as well as softening the streetscape.

Along the eastern secondary road, similar to the primary street, a swale/bio-retention strip is introduced, becoming a natural buffer between the carriageway and dwellings to the north. Cycling is integrated into the carriageway.



#### SECONDARY STREET - GENERAL PRINCIPLES

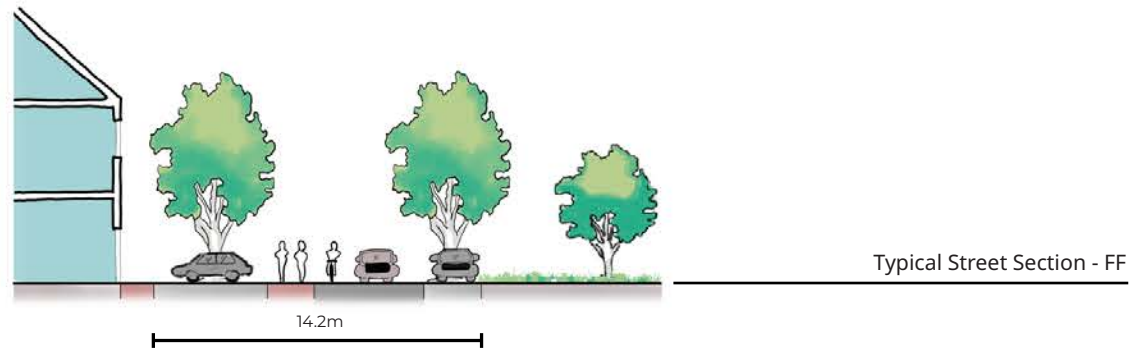
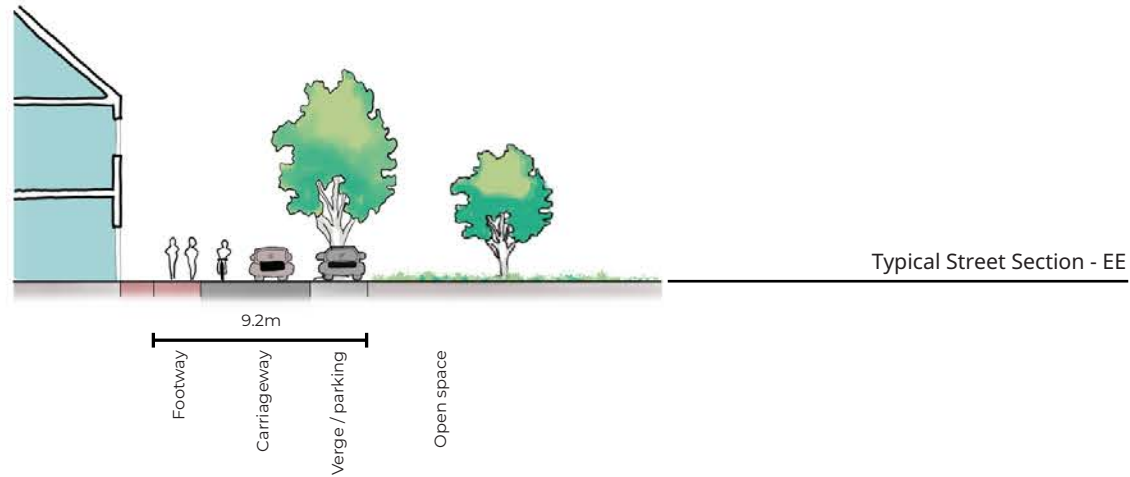
Carriageway Width	Min. 4.8-5.5m
Footway	Min. 2m
Verge/Tree Planting	Tree planting in verge
Swale/Bio-Retention	Min. 3m (north)
Cycleway	In carriageway
Traffic Calming Options	Change in surface
Access to Properties	Direct access
Landscape Design	Fastigate trees, irregular spacing

## Edge Street

Edge streets are located towards the edges of the development. The streets are mostly located along the open space.

The streets prioritise pedestrian and cycle connectivity, whilst providing access for vehicular movement. Parking is predominantly tucked between buildings, with some located in front of the building frontages interspersed with tree planting lending a softer character to the streetscape.

A footway located on the built edge of the street, with street parking interspersed with trees on the edge Site. This provides for a gradual transition to the open space beyond.



### LANE - GENERAL PRINCIPLES

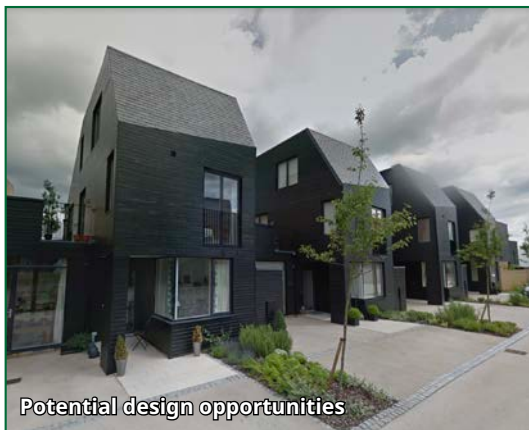
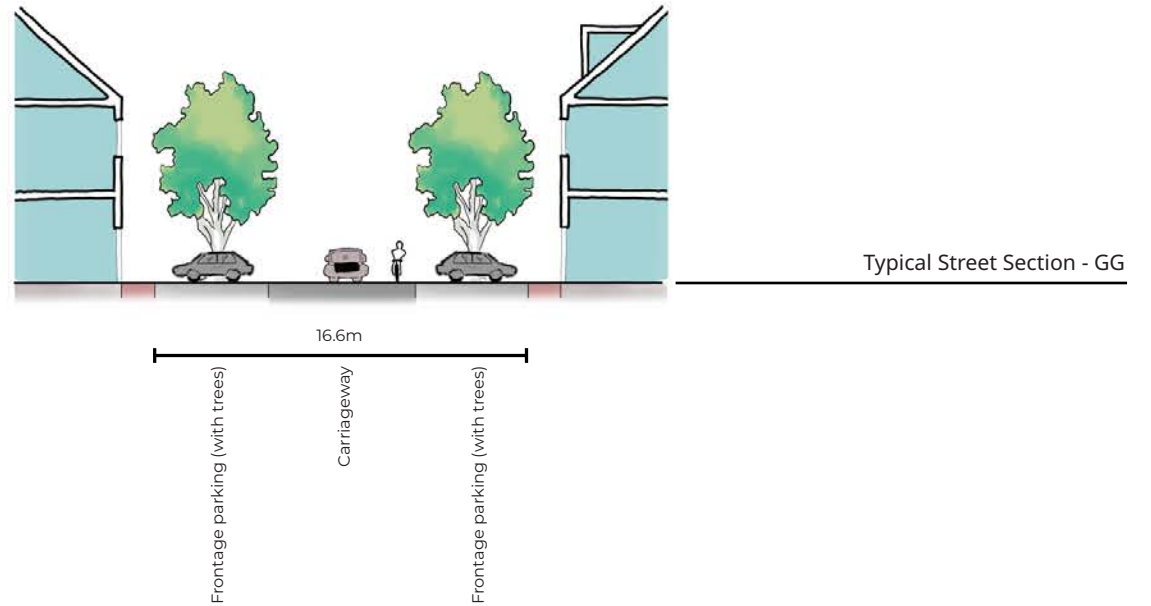
Carriageway Width	Min. 4.8m
Footway	Min. 2m (on built edge side)
Verge/Tree Planting	Tree planting in verge
Swale/Bio-Retention	-
Cycleway	In carriageway
Traffic Calming Options	Change in surface, build outs with planting
Access to Properties	Direct access
Landscape Design	Fastigate trees, irregular spacing



**Cul-de-sac**

The street is located in between the blocks of the development imitating a courtyard street typology. Shared surfaces and sinuous edges encourage slower vehicle speeds, prioritising pedestrian and cyclist movement.

Continuing with the green character of all the other street types, the street also feature soft landscaping and tree planting with an informal layout. Parking is located in front of the buildings.



**EDGE STREET - GENERAL PRINCIPLES**

Carriageway Width	Min. 6.6m
Footway	-
Verge/Tree Planting	Tree planting in frontage parking
Swale/Bio-Retention	-
Cycleway	In carriageway
Traffic Calming Options	Change in surface
Access to Properties	Direct access
Landscape Design	Fastigate trees, irregular spacing

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## Land, landscape and biodiversity

A core objective of the proposals as stated at the outset is to connect residents and visitors to large open areas of wildlife-rich meadow and extensive woodland, available to enjoy all year round. To that end, the scheme includes 6.8 hectares of wildflower meadows, 7.1 hectares of woodland and 1.6 hectares of community orchard. Together with the other proposed open spaces and planting, green infrastructure accounts for over 54% of the total site area.

These significant areas of open space present a major opportunity to enhance the biodiversity of the area relative to its current state as arable and make appropriate use of the low grade soil. The planting scheme will include a wide range of habitats including woodland, woodland edge, orchard and wildflower meadows - each with a range of appropriate species.

A key component of the green infrastructure is the surface water drainage system, which uses a range of open, green elements to deal with the identified issue of surface water flooding. The starting point for the system has been to retain the asset of the existing field drainage system and augment it with additional features to increase its capacity. At the top of the system are bio-retention channels to slow down and clean the water which then feed into the basins, which in turn feed the existing ditches or outfalls.

In retaining the existing drainage system, the design also retains virtually all of the significant trees and hedgerows on the Site. The ditches, lined with hedgerows, are set in wide corridors and in the Smart

Park, the drainage system is extended to provide a green framework for the development.

With the exception of the access points, the bulk of the boundary hedges are also retained. By keeping the existing vegetation and supplementing it with other planting and street trees, the proposal sustains the value of the vegetation as habitat, as a key part of the identity of the Site, as a visual amenity and its function in helping to moderate the microclimate such as protecting public spaces from excessive wind.

Another core design principle in response to the topography of the Site and the adjacent areas of green space is to retain and enhance the ridgetop as green infrastructure. The aim is to maintain continuity of green space along the ridgetop from Stanbridge Meadow to the west and the open fields to the east as well as the playing fields, Astral Park and Astral Lake Park to the south. The proposals extend the existing network of accessible green spaces with a range of new areas and facilities for play and informal recreation. The disposition of the green spaces also take advantage of the ridgetop location to allow views to the Chiltern Scarp as well as to the spire of All Saints church in Leighton Buzzard.

The extended network of green spaces with the retained and augmented vegetation also serves to address the sensitivity of views to the ridgetop by maintaining it as an important green feature. The proposed wind turbine, while obviously more visible, has been located in a position down the southern slope to avoid it dominating the ridge. Similarly, the solar array has been located on the shallower foot of the slope to reduce its visibility.





# Landscape strategy & precedents

- Site boundary 
- Proposed woodland / tree plantation 
- Existing / reinforced hedgerows 
- Orchard planting 
- Proposed open green space 
- Proposed meadow land 
- Proposed open green space & grassland 
- Proposed play areas 
- Proposed allotments 
- Proposed tree lined street 
- PRoW 
- Proposed recreational routes 
- Proposed swale 
- Proposed attenuation basin 
- Proposed pond 
- Proposed hedgerow 



Proposals







## Landscape Strategy

The landscape strategy is to provide a development that integrates well into the surrounding landscape and the edge of the town, and creates an attractive environment for residents.

Early visibility testing demonstrated that the turbine would be visible from the south. It would be largely screened in views from the north as a result of the ridge and Residential-Led development during the operational life of the Energy Park.

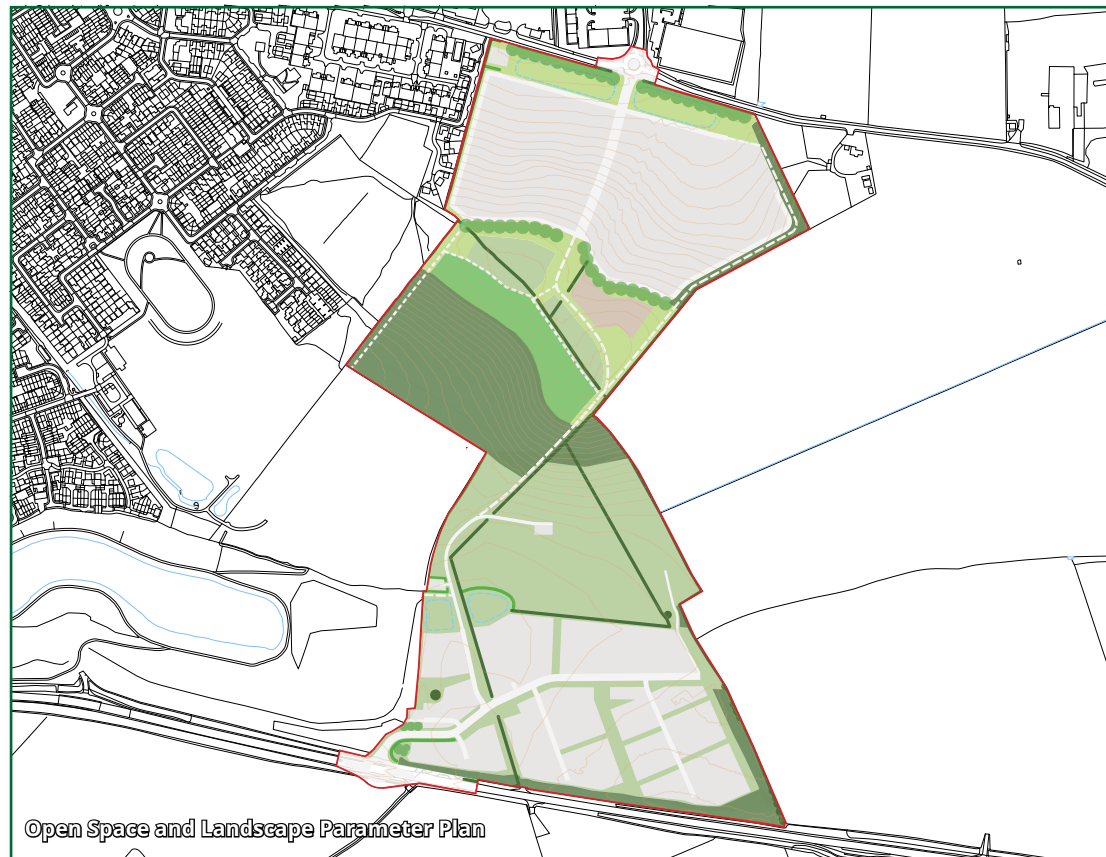
The form of the residential development has been kept compact, focussed in the northern part of the site to form a continuation of the housing along Leighton Road and to minimise land take. The Smart Park is placed at the lower levels of the site to minimise visual impact associated with the larger buildings.

To aid in the integration of the site into the local landscape, the majority of the trees and hedges on site would be retained and enhanced with additional areas of planting and significant woodland. The woodland in the centre of the site helps to minimise views of the residential development from the south, whilst providing a valuable habitat and recreational resource.

Residential building heights have been kept relatively low to reflect the range of built form in the area and to minimise visual impacts. Taller buildings are proposed around the main routes and at the entrances, in the south of the residential area, with lower more dispersed development on the residential development edges.

The landscape plays a key role in tying the site together, and forging connections with the existing town. It will:

- Have defined character areas;
- Have a strong identity;
- Be multifunctional, inclusive and sustainable;
- Encourage community involvement;
- Have year-round interest;
- Be as attractive to people as it is to wildlife; and
- Promote community integration, informal play and health and well-being.



- Woodland / tree plantation
- Orchard
- Grassland
- SuDS feature
- Wildflower meadow
- Allotments
- Retained hedgerow
- Retained trees
- Proposed hedgerow
- Proposed trees
- Application boundary

### Key areas

The parkland on the ridge through the centre of the site will provide extensive areas of new woodland and grassland meadows. These will be linked by walking and cycling routes, providing the opportunity for circular walks within the site and beyond.

The north-eastern open space at the entrance includes gently profiled SuDS basins and tree planting. A more formal entrance space is proposed at the east of the main street and forms the gateway into Astral Green. This area will contain an amenity pond and pavilion, with grassland meadows and tree belts.

The central parkland is the green heart of the site, with the main routes and allotments converging around a generous multi-functional space. A Local Equipped Area for Play (LEAP) is proposed in this area to complement the Local Green Spaces. Existing trees and hedges are retained giving structure to the space. Allotments are proposed to the east with cycle parking, easy vehicle access for deliveries, a variety of plot sizes including raised beds, and a secure boundary.

Edible landscapes will encourage foraging across the site. Edible fruit bearing species will be present in the choice of parkland trees, woodland thickets, hedge mixes, shrubs and planting areas.

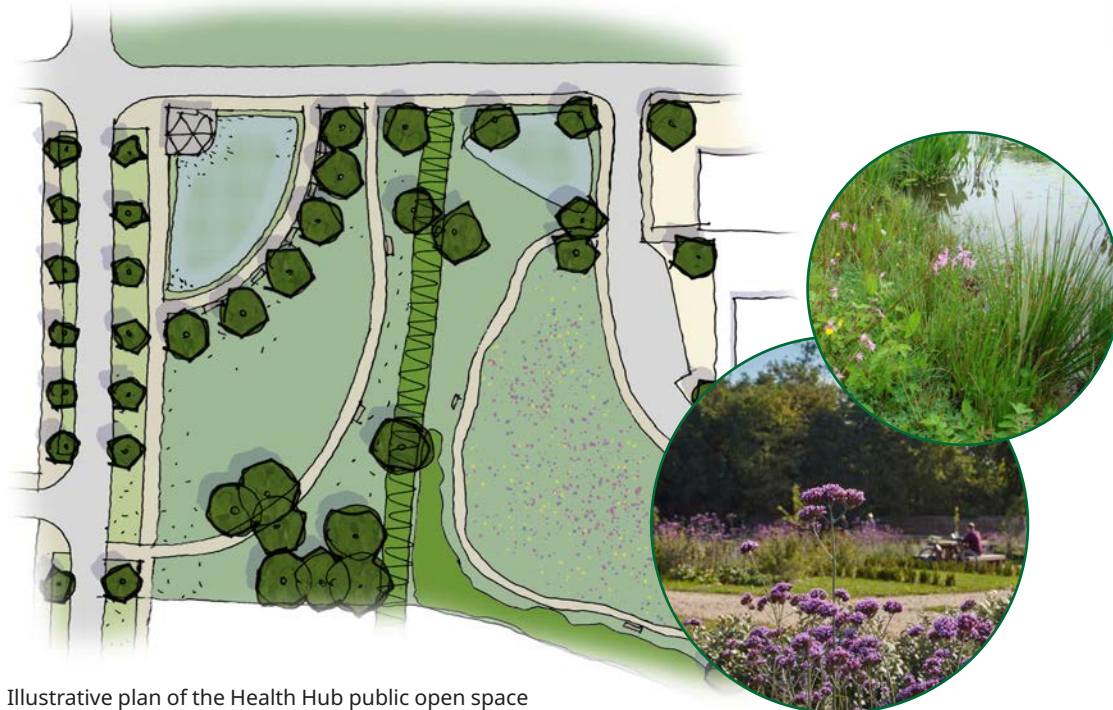
### Landscape routes

The proposed landscape routes between Astral Green and the wider countryside are formed to connect to existing Public Rights of Way or as connections between areas of particular importance in the landscape.

### Public rights of way

There are no existing public rights of way (PROW) within the site. Internal routes have been devised to connect to those PROW around the boundary of the Site and to link to the open spaces in Astral Park to the east.

Illustrative plan of the Local Equipped Area for Play (LEAP) and allotments



Illustrative plan of the Health Hub public open space



## Built form, character and identity

While the illustration of built form submitted in this statement is indicative, it is based on a detailed proving layout undertaken to assess whether the scheme achieves compliance with council policy and guidance. The key guidance and policies that affect the layout include: housing mix, highway standards, parking standards and minimum space standards. Taken together, these have a very strong influence on the density and character of compliant proposals. The scheme as proposed is broadly compliant with the standards and policies and so is an expression of them.

Within the limits of the standards and the remit of an outline application, there are a number of ways

to achieve a key objective of the proposal as set out in the introduction, which is to retain and work within the character and identity of the place. As noted in the appraisal in Section 2, the character and identity of a place is the combined effect of landform, vegetation, views, patterns of movement and the variety of activities that take place in their particular locations amongst many other things.

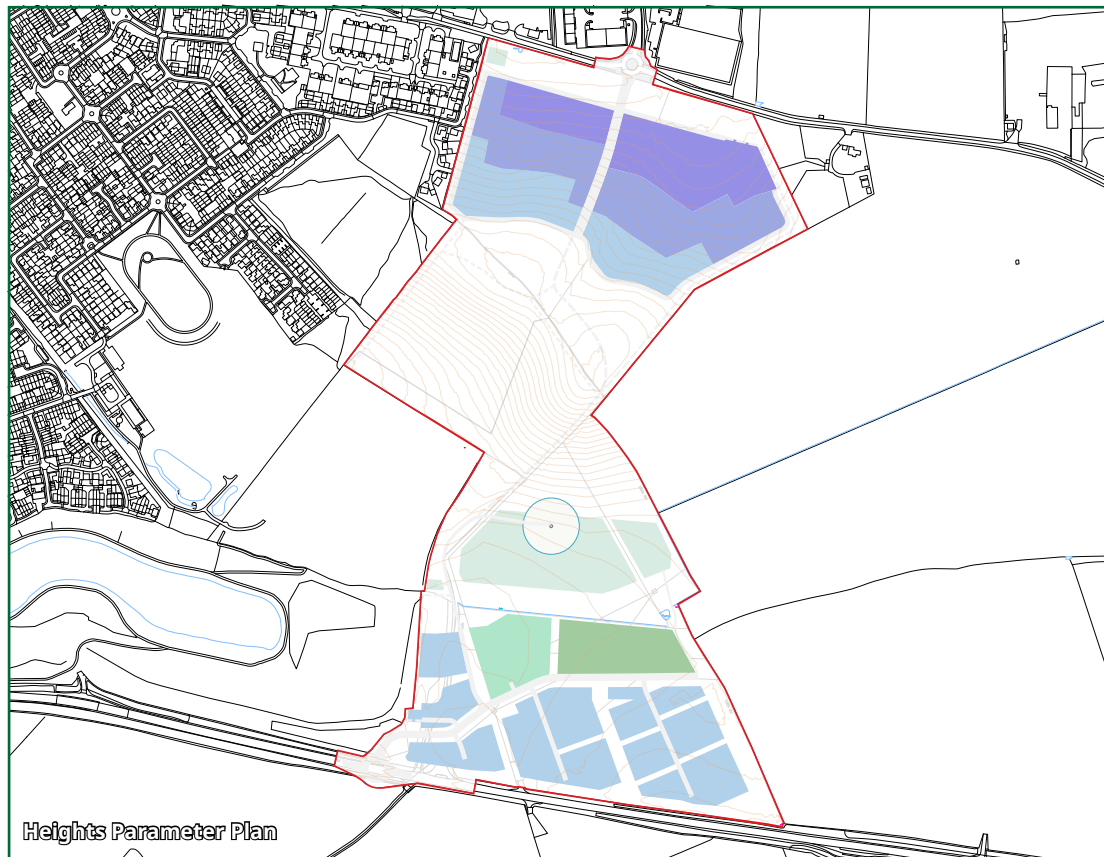
The foregoing sections detail the wide range of ways the proposal uses these aspects to respond positively to the Site and surroundings the maintain and create a strong, local identity. As also noted in the appraisal, places can offer design resources that help retain local identity in the form of characteristic types, including the way that buildings are arranged to form streets and the nature of the individual buildings on their plots.

A principal type characteristic of the town that has been used as a design resource in the scheme is the street, with plots and buildings fronting onto the public highway on both sides and, on edge locations, with plots and buildings fronting onto key open spaces. The 'single sided' streets are of particular importance working in combination with the network of open spaces to define and accentuate them as key elements in the townscape. In particular, the single sided street is used where the development abuts existing hedgerows in order to keep the hedgerow in the public realm and allow views out over the surrounding countryside and open spaces.

A further deliberate design decision in association with the single sided streets is two-fold. On the one hand the aim has been to keep the residential area compact in order to maximise the area and continuity of the surrounding green space. On the other hand, the layout makes use of the principle of 'borrowed landscape', which is to incorporate views outward into the scheme. This is achieved by using a simple pattern of mainly straight streets with views along the streets directed out toward the green surroundings.












Another set of types characteristic of the town are the building types: terraced, semi-detached and detached. These are used within the scheme to differentiate character areas by the characteristic mix of types within an area, combined with the specific location of the area and its open spaces.

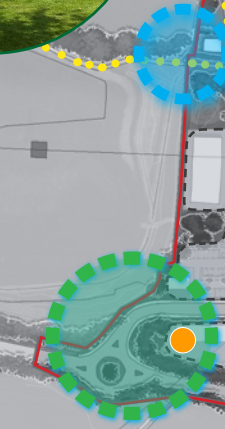
The further design resource that can play a crucial role in maintaining character is the local palette of materials. To that end, the proposed materials should work to blend and harmonise with the palette, creating a sense of family resemblance while also giving Astral Green a sense of its own identity.





# Townscape Plan & precedents

- Site boundary ———
- Gateway 
- Pedestrian gateway 
- Landmark/marker buildings 
- Key buildings 
- Nodes 
- Key facades 
- PRoW 
- Recreational routes 
- Residential development 
- Health Hub 
- Smart Park 



Proposals



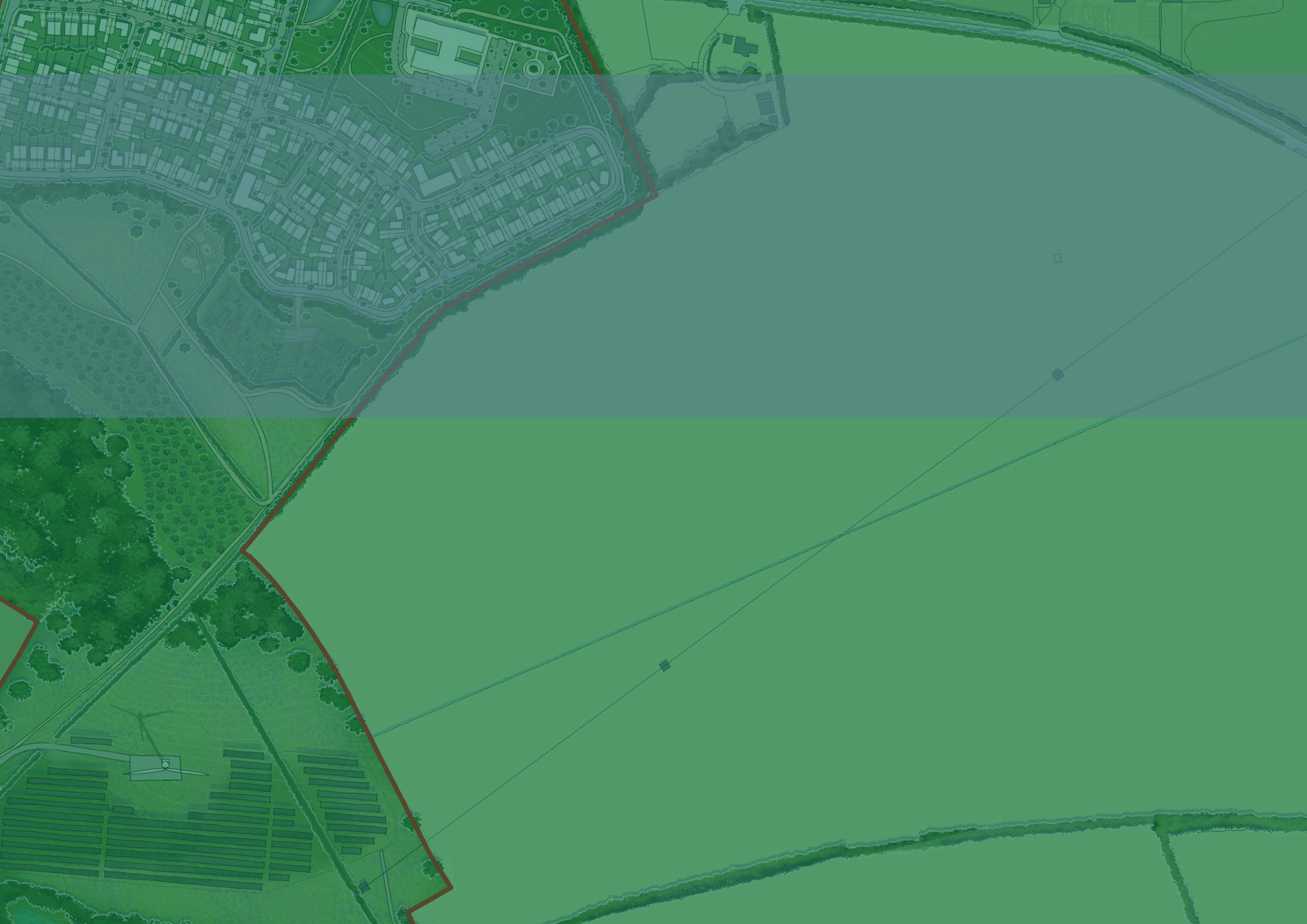
# 4

# Conclusion

This section outlines:

- Benefits of the proposal







# 4 Conclusion

## Benefits of the proposal

The benefits of the proposed development at Astral Green are diverse. They respond to the undisputed and urgent need to reduce carbon emissions whilst providing, at its heart, a new, integral part of Leighton Buzzard, powered by locally harvested, renewable energy. Homes for all needs will be thoughtfully positioned within rich, natural habitats and extensive open green spaces. The scheme is sensitive and respectful of the landscape, to fully realise its potential in the following areas:

### Energy

Our nation's dependence on energy has never been greater, yet supply has never been more fragile. To achieve a position of true, long-term security, with stable pricing and independent domestic production, we must act now. The proposed plans for Astral Green represent a pioneering approach to development, which not only offer substantial contribution to the nation's net zero carbon commitments, but clearly demonstrate the potential for locally harvested, renewable, secure energy for new residents and a large number of homes and businesses in the wider community.

### Return to nature

Intensive farming practices leach land of its natural biodiversity. By carefully and expertly bringing large areas of open space back to nature, the Astral Green development re-establishes the delicate layers of flora and fauna that have been lost for generations, providing a true net biodiversity gain. With habitats restored and protected, these areas would become open, accessible spaces for all local people to enjoy, without restriction. Whether for activity or leisure, the

human health and wellbeing benefits of time spent in the undepleted natural world are recognised and well documented, and it is this that Astral Green enables.

### Community

Community is fundamental to Astral Green. Individuals, families, friends, and neighbours are at the heart of the scheme, with careful thought given to the day-to-day lives of all residents. People of all ages will be encouraged to come together, to find a place in the community and to be sheltered from the threat of isolation. The Health Hub, almshouses, allotments and open spaces are designed to offer a vibrant, active space, warm, familiar, and welcoming to all.

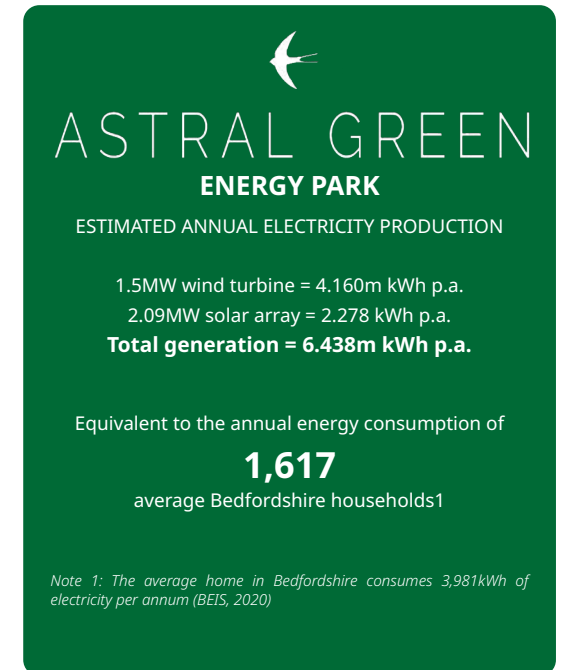
### The benefits of mobility


Astral Green gives residents the freedom to make their own transport choices. By facilitating the use of e-bikes and e-scooters through a dedicated Mobility Hub, the scheme makes active travel achievable for the whole community. Alongside encouraging healthier self-transport, the development further demonstrates its commitment to the national net zero carbon pledge by providing multiple forms of Electric Vehicle charging, enabling residents and the wider community to access convenient and practical facilities, making their personal transition to or continuation of low emission travel easier.

### Housing, business, and the local economy

The local and national housing need is undeniable. The Astral Green scheme provides essential homes of many kinds, including affordable housing, and brings with it a wealth of benefits to local businesses and the wider economy. Similarly, the Smart Park provides in-demand, high-tech employment space within a green setting, taking advantage of the adjacent Mobility Hub and open spaces. A large number of construction

jobs will be created as a result of the development, which will, in turn, benefit local service providers, shops and cafes. Latterly, the proposed Health Hub will provide much needed integrated health facilities as well as employment and trade for the long-term. Astral Green will become a desirable place to live and work, reflecting positively on Leighton Buzzard and supporting a buoyant and resilient local economy.



  
**ASTRAL GREEN**  
**ENERGY PARK**

ESTIMATED ANNUAL ELECTRICITY PRODUCTION

1.5MW wind turbine = 4.160m kWh p.a.  
2.09MW solar array = 2.278 kWh p.a.  
**Total generation = 6.438m kWh p.a.**

Equivalent to the annual energy consumption of  
**1,617**  
average Bedfordshire households<sup>1</sup>

Note 1: The average home in Bedfordshire consumes 3,981kWh of electricity per annum (BEIS, 2020)





# ASTRAL GREEN

A flagship operational **NET ZERO CARBON** scheme south-east of Leighton Buzzard

LEIGHTON BUZZARD

Leighton Road

Fraserfields Way

A505



Conclusion



