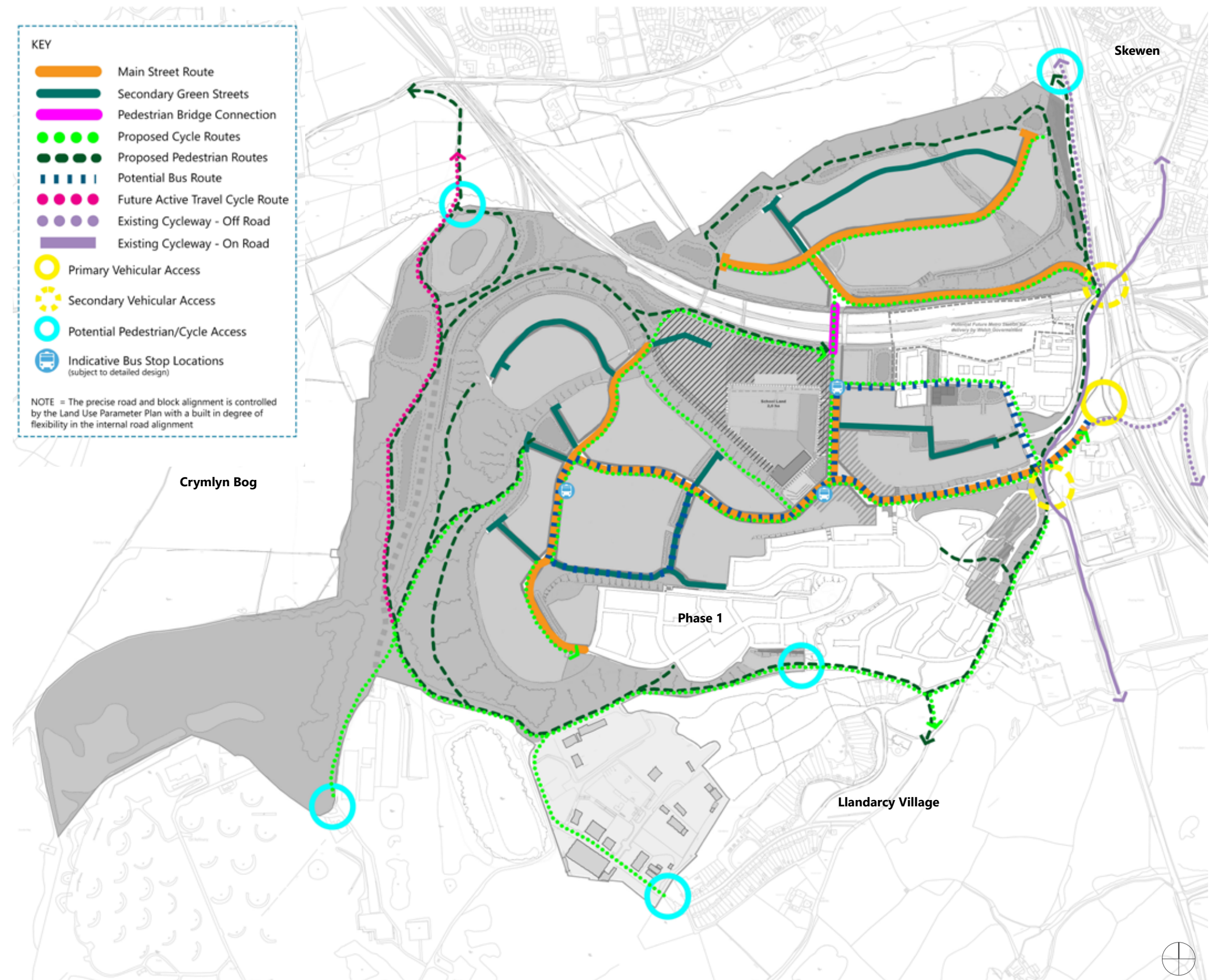


6.3 Street Hierarchy

A clear and legible street hierarchy is critical in developing a sustainable walkable neighbourhood with good connectivity for both active travel and leisure.

The key characteristics of the streetscape will also support distinctiveness legibility and underpin the character of the different parts of the neighbourhood. Each street type is considered in terms the following key design parameters:

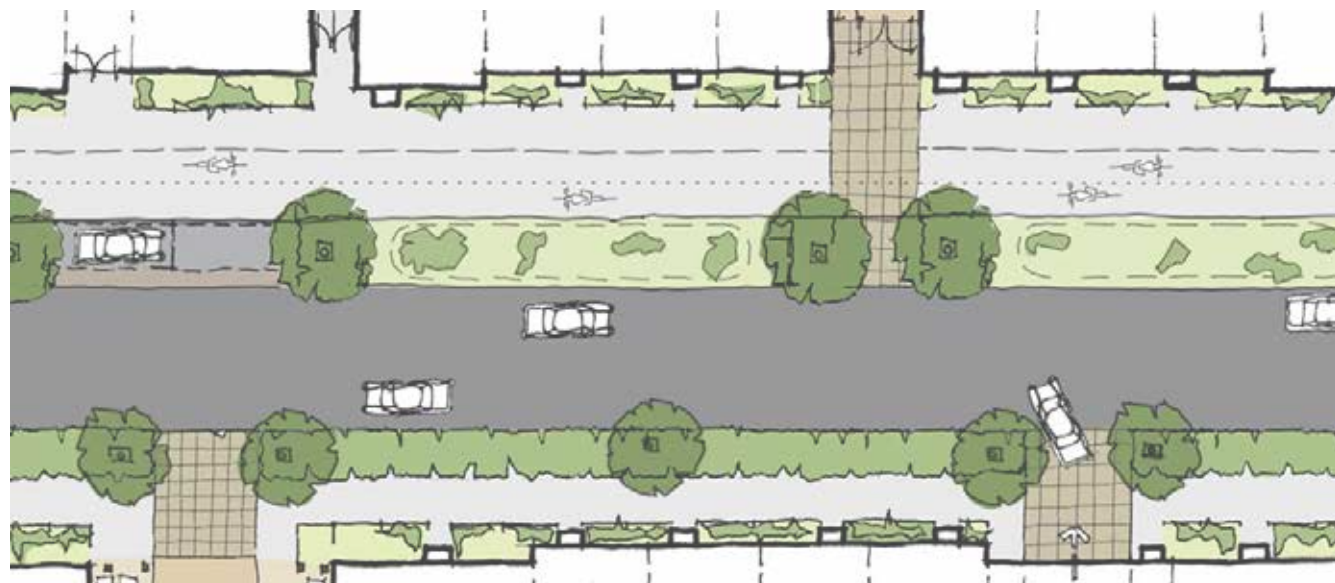
- The width and finish of the movement corridor
- Number and location of street trees
- The formality of building line
- Grouping of buildings to create Architectural Rhythm
- Response to topography
- Relationship to the landscaped character at the edges of the site
- Parking typologies
- Frontage boundary treatments
- Architectural language and materials



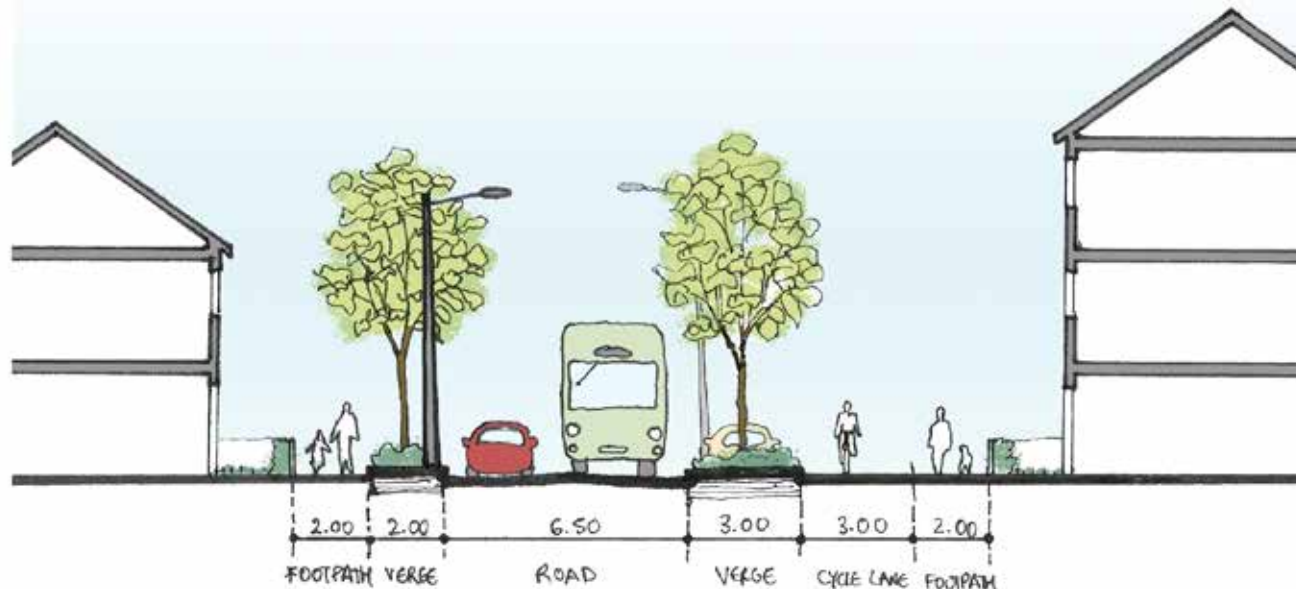
MAIN STREET

- Potential for increased scale development in accordance with the parameters plans.
- Carriageway width of 6.5m to accommodate bus route with minimum 2m footways on both sides and 2-3m footway /cycleway to one side where applicable.
- Potential to reduce carriageway to 5.5m where bus not required.
- Defined landscaped verge to at least 1 side where not adjacent to retained landscape feature or area or area of public open space.
- Formal boundary treatments including low walls, railings and timber post and rail
- Parking for dwellings to be on plot, visitor parking only on street

Illustrative Plan



Section



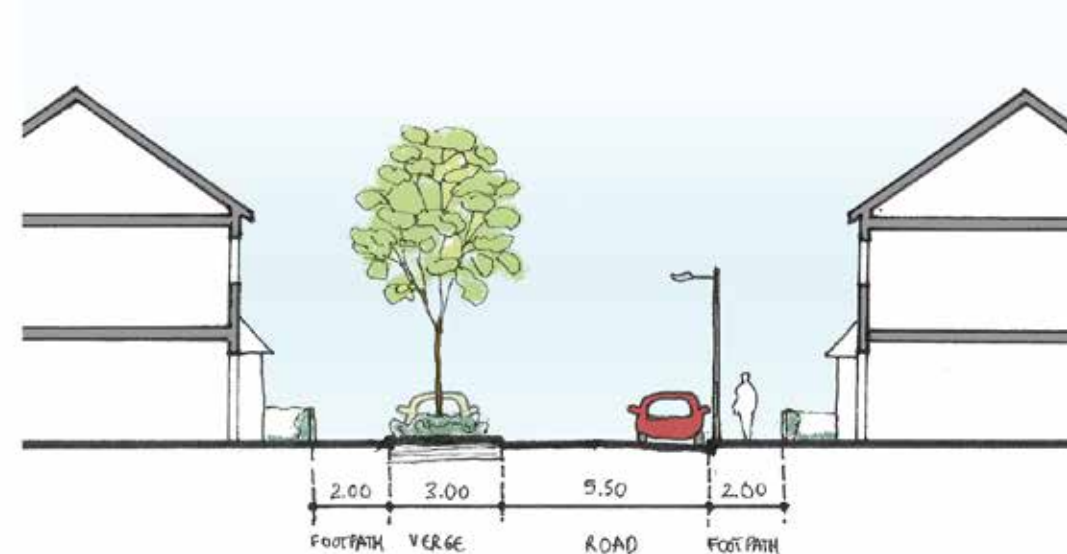
SECONDARY GREEN STREET

- Varied scale development depending on character area and in accordance with the parameters plans
- General carriageway width of 4.8m -5.5 with 1- 2m safe zone to either side
- Increased carriageway width of 6.5 with 1- 2m safe zone to either side to accommodate Bus Route where applicable.
- Shared surface street principles, with priority to pedestrians
- Defined landscaped verge to at least 1 side where not adjacent to retained landscape feature or area or area of public open space.
- Integration of landscape into the street to help define place and movement
- A combination of on plot and on street Parking
- Formal boundary treatments formed either by landscaping or low post and rail boundaries.

Illustrative Plan



Section



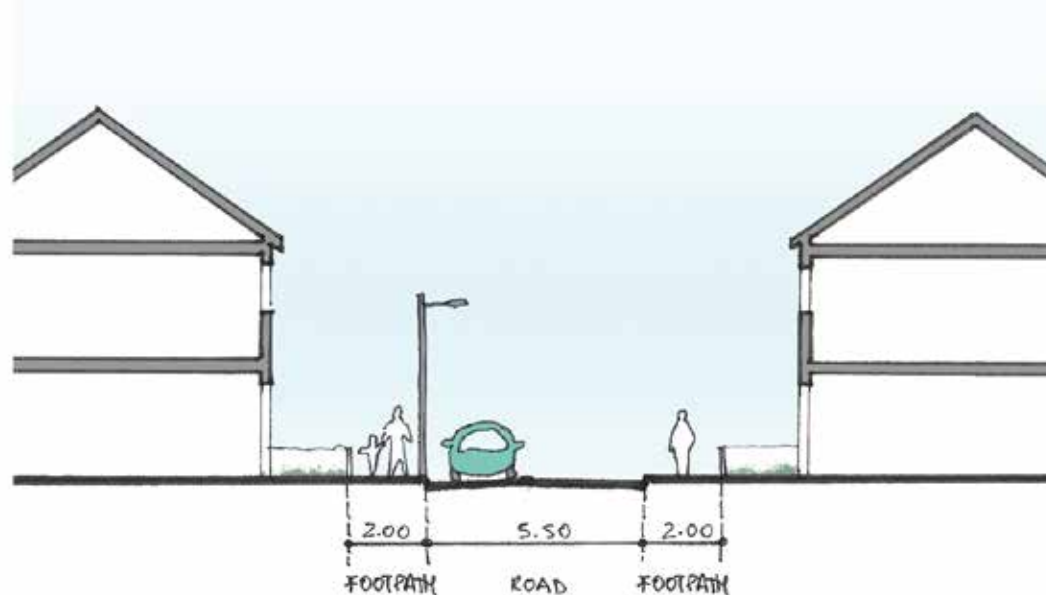
SECONDARY URBAN STREET

- Varied scale development depending on character area and in accordance with the parameters plans
- Carriageway width of 4.8m -5.5 with 1- 2m safe zone to either side
- Shared surface street principles, with priority to pedestrians
- Integration of landscape into the street to help define place and movement
- A combination of on plot and on street Parking
- Formal boundary treatments formed either by landscaping or low post and rail boundaries

Illustrative Plan



Section



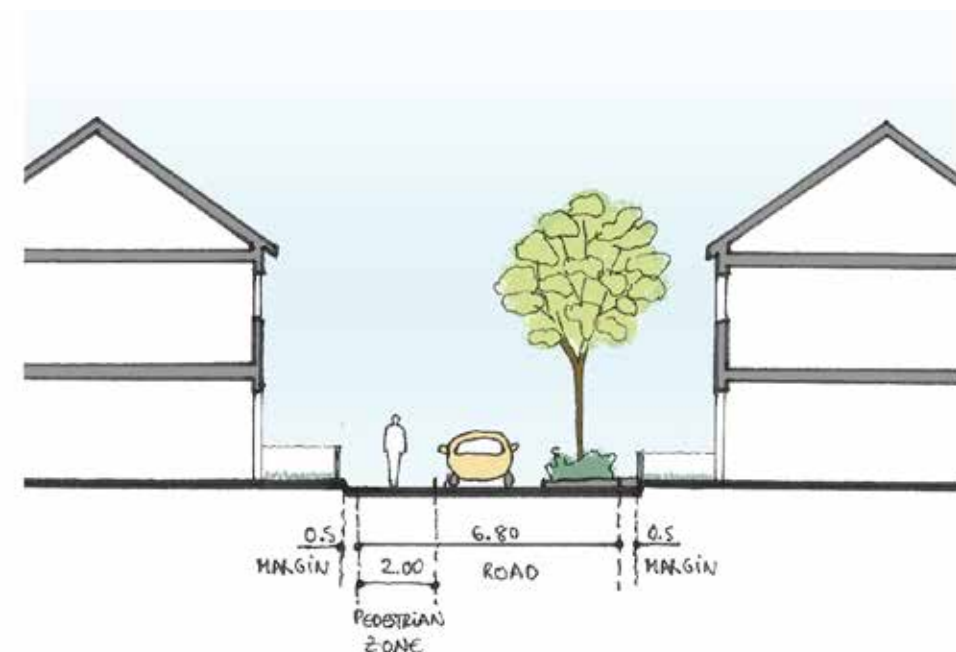
MEWS LANE

- Varied scale development depending on character area and in accordance with the parameters plans
- Carriageway width of up to 4.8m with 2m safe zone to Mews
- localised narrowing widening as necessary to vary road alignment and allow landscaped areas.
- Shared surface street principles, with priority to pedestrians
- Integration of landscape into the street to help define place and movement
- A combination of on plot and on street Parking
- Informal boundary treatments formed either by landscaping or low post and rail boundaries.

Illustrative Plan



Section



6.4 Development Character

The main site is characterised by 4 principle character areas. These are broadly traditional in terms of their architectural language, material palette and detailing, informed by the wider vernacular of the surrounding towns and villages:

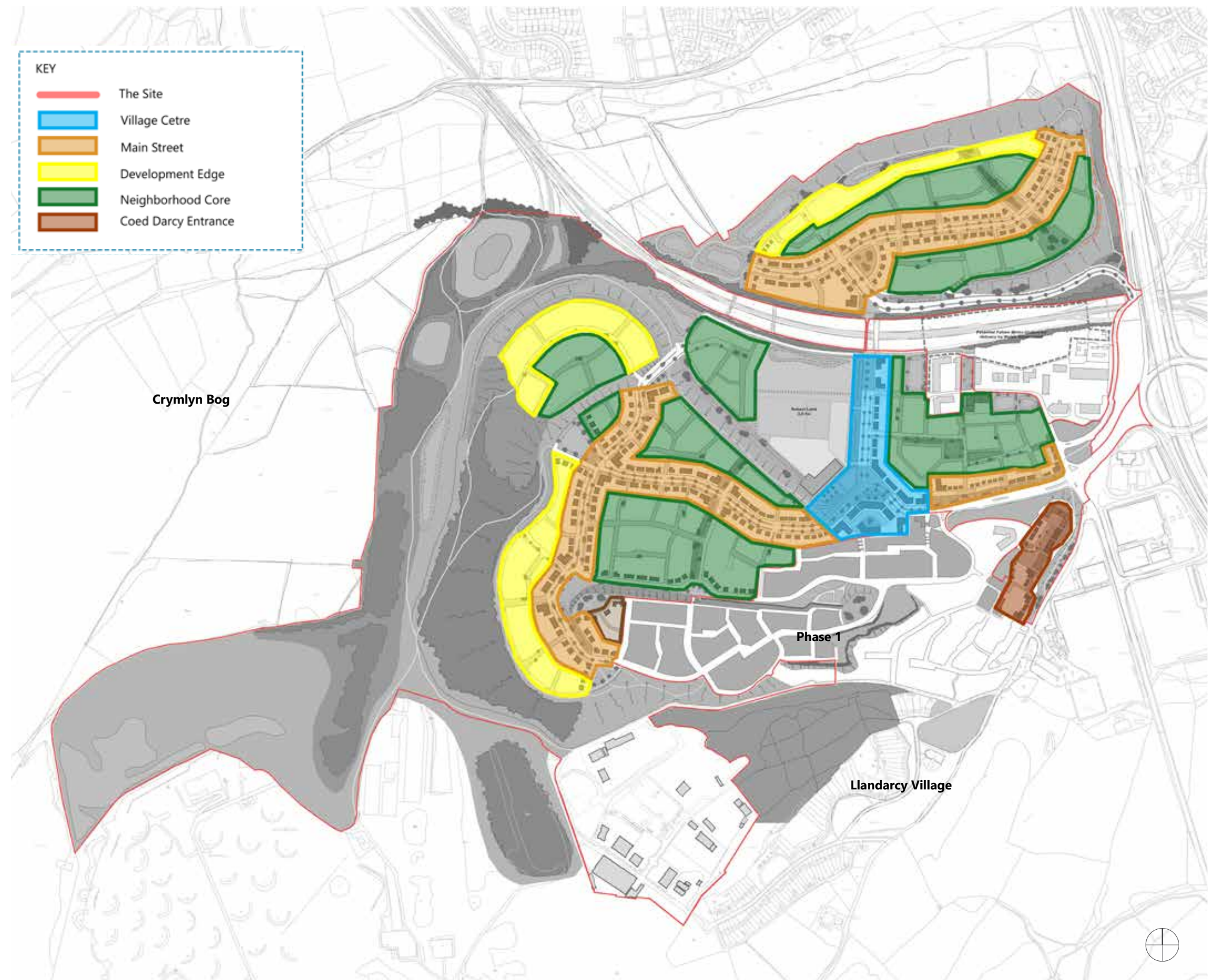
1. Village Centre
2. Main Street
3. Neighbourhood Core
4. Development Edge

Each character area is further defined through the street hierarchy with the opportunity for additional refinements in architectural language and detailing:

- a. Secondary Green Street
- b. Secondary Urban Street
- c. Mews Street
- d. Private drive

A fifth character area is defined opposite. The Coed Darcy Entrance character is slightly detached from the main site, however forms an important frontage to the entrance to the site. Located within this is the locally listed William Knox house, which will define the architectural appearance and materials.

The following pages set out the key principles in terms of built form and urban grain for each area. Details of material palette and Architectural language will be set out in a second part of the DAS which is to be developed and informed by a series of community engagement events with residents from Phase 1 as well as the Local Authority planning department.



6.5 Site Character

As set out in section 5.3, the site benefits from a range of existing characters. The following section demonstrates how these areas have influenced and been retained within the masterplan and informed the proposed character of the site.

It is these existing characters, layered with the Development Character zones which will give the site its overall character. Each Development character will look and feel different in the various Site Character areas, as they will be defined by their setting incorporating the different topographical and landscape opportunities.

Both Character plans should be read in conjunction with the GI parameter plan, which has been developed to enhance the site Characteristics where appropriate, adding a further layer of detail and variation.

The Response to the existing site character areas is as follows:

1. Gateway

A largely unaltered highways dominated gateway to the site.

2. Existing Llandarcy Development

Character dominated by principally existing development form and its relationship with William Knox House.

3. Urban Centre

Character dominated by the open generally flat nature of the site and northern and southern existing development. An opportunity to implement a new internally focus development form with a series of small green POS as development focal points and development forms to respond to highways access, school and village core adjacent character areas.

4A. Central Education Site

The creation of a new educational site central to the develop with playing field and open space capitalise on open views to hillsides to the north and west. Good pedestrian and cycle link opportunities to the northern, western, southern and eastern development parcels. A green cycle corridor to the south would link to the wider Green Recreational routes.

4B. Central Village Core

A pivotal character area as a central 'village centre' linking access, school and existing southern residential area, capitalising on existing site level change with local views focused on the village square and school site as a social focus of the community.

4C. Central Residential Site

The existing derelict site provides the opportunity to create a new character dominated by the development form and green street structure linking to adjacent development areas and with a focus on the cliff and rock faces to the south, with interpretive opportunities to explain the history and ecology of the site. A one sided green street will enhance this focus and provide a recreational corridor link to the wider Green Infrastructure asset of the site.

4D. North Central Residential Site

A distinct small parcel of development bounded by green cycle corridor to the south, school site to the east, railway to the north and links to the wider GI recreational asset to the west. A more contained and intimate development parcel

5. Western Enclave

A district parcel of development capitalising on the sense of contained enclosure with a close relationship to the woodland to the south and slopes which visually detach the area from the Central site. A new landscape structure to the east and north west will improve the spatial containment of this area with recreational green space focused on the southern links developed to the wider site and new access routes through the wooded scarp.

6. High Southern Views

A lower density development area responding to the unique highpoint character of the site, pivoting between rock faces and the end of the cliff face green corridor, the containment of the wooded scarp and with distant south and south western views toward Swansea Bay and Swansea City, dominating the character. Expanded Public Open Space allows recreational access to enjoy the panoramic views and links to wider green recreational assets.

7. Wooded Scarp

A dense wooded scarp with improved management of habitat benefit and improved recreational access by formal and informal path linking adjacent character areas.

8. Landscape Edge

The south western lower lying semi-vegetated southern derelict site providing the main focus of ecological mitigation and enhancement and improved recreational access to this major open space resource.

9. Existing Industrial

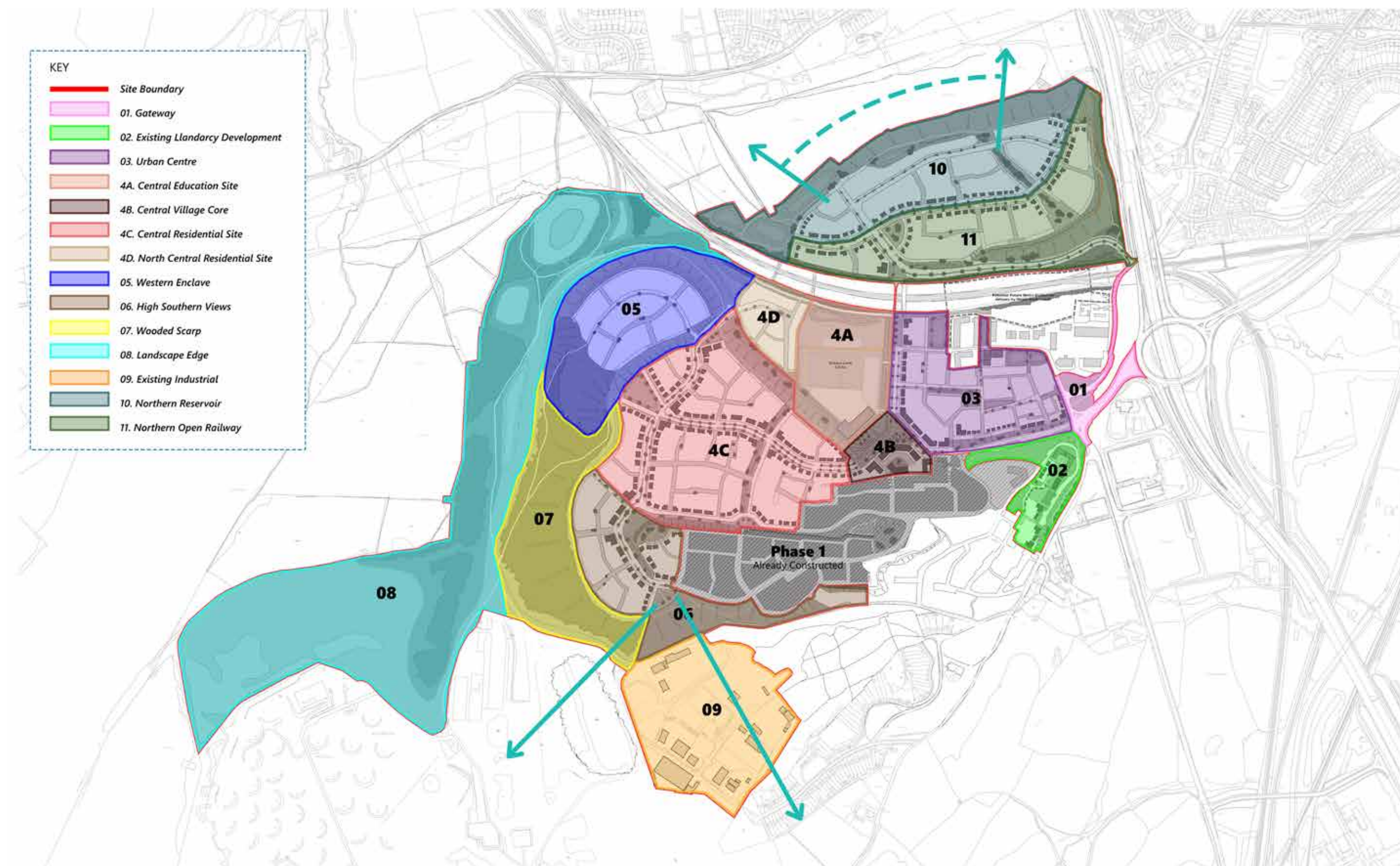
Existing low grade Industrial unit area. A longer term strategy of improvement and enhancement as available redevelopment opportunities allow. The location close to the residential development provides the opportunity for more sustainable access from home to work.

10. Northern Reservoir

The development structure responds to the topography with central green street proving some unity between the northern and southern slopes character area, with side street form capitalising on northern views and access to the northern green public Open space as a key characteristic of this area. The rolling topography from western to northern aspect with views towards the mix of residential and vegetated hillside beyond will remain a strong topographic character to development and open space.

11. Northern Open Railway

Southern facing with rolling topography from southern to eastern views capitalised along the southern development edge, with local streets and green recreational routes linking to the northern Reservoir character area and green open space.



6.6 Character Areas

Village Centre

KEY VISION PRINCIPLES:

- Creation of a main square at the heart of the site, framed by the new school and navigating the level change formed by the existing embankment
- Creation of an interesting piece of open space
- Potential for a mix of uses including a shops and a cafe/restaurant supporting the principles of the “15 minute neighbourhood”.
- Integrate and enhance the existing Phase 1
- Integrate health and wellbeing into the built environment through meeting places, increased connectivity and biophilic principles.
- Consider carefully the relationship between topography and pedestrian/cycle movement across the site
- Create different character areas and Neighbourhoods that still feel part of a coherent whole.

Illustrative Plan - Village Centre



Design Principles

Applicable Street Types	Main Street Bus route
Mix of Uses	Residential Commerical A3 & Leisure Primary School
Building Typology	2.5- 5 storey
Building Frontage	Strong consistent building line Active uses to ground floor Built form contains square
Landscape Character	Urban High quality hard landscaping Structural planting and large street trees
Topography	Level change across Main Square Interface with level change to existing phase 1
Public Open Space provision	Main Square, principal civic space Community pitches with school site
Heritage	Integrates and retains level change from refinery works into the design of the Main Square



Main Street

KEY VISION PRINCIPLES:

- Creation of a network or urban 'greenways' that connect the main square out to formal open space areas framing key long views and connecting the site to the natural greenway.
- Using the existing 'Site Character Areas' to integrate the existing landscape, biodiversity and historic features.
- Integrate and enhance the existing Phase 1
- Integrate health and wellbeing into the built environment through meeting places, increased connectivity and biophilic principles.
- Consider carefully the relationship between topography and pedestrian/cycle movement across the site
- Create different character areas and Neighbourhoods that still feel part of a coherent whole.
- Use the topography to create distinctive places and landmarks
- Establish a well-connected place that is inclusive & accessible to all

Illustrative Plan - Main Street



Design Principles

Applicable Street Types	Main Street Bus route subject to location Off Road Cycle Route
Mix of Uses	Residential
Building Typology	2- 4 storey Short runs of terraces and semi detached townhouses 4 storey at key locations around open spaces
Building Frontage	Strong consistent building line within building groupings Slightly undulating road alignment Max 3m front gardens
Landscape Character	Green Urban Roadside Swales and landscaped verges Large street trees at regular intervals Hedgerows to front gardens
Topography	Dependant on location. Generally level running East West Rising North to South Limit use of terraces across rising levels
Public Open Space provision	LAPS/LEAPS subject to location
Heritage	N/A



Neighbourhood Core

KEY VISION PRINCIPLES:

- Developing a series of buildings connected by public streets with consideration of the topography across the site
- Using the existing ‘Site Character Areas’ to integrate the existing landscape, biodiversity and historic features.
- Integrate health and wellbeing into the built environment through meeting places, increased connectivity and biophilic principles.
- Create different character areas and Neighbourhoods that still feel part of a coherent whole.
- Establish a place that is distinctive & authentic
- Create clear and attractive pedestrian and cycling routes
- Create streets designed as places for people more than for cars
- Provide different types of public spaces that work for all ages

Illustrative Plan - Neighbourhood Core



Design Principles

Applicable Street Types	Secondary Green Street Secondary Urban Street Bus route subject to location Greenway pedestrian/ cycleway routes
Mix of Uses	Residential
Building Typology	2- 3 storey Short runs of terraces semi detached and det-ached
Building Frontage	Building line more varied progressing down street hierarchy Variable road alignment Variable front garden depth
Landscape Character	Green suburban Roadside Swales and landscaped verges subject to street type street trees at irregular intervals mix of boundary conditions
Topography	Dependant on location. Generally level running East West, significant level changes North to south with stepped access routes
Public Open Space provision	LAPS/LEAPS subject to location
Heritage	N/A



Development Edge

KEY VISION PRINCIPLES:

- Maximising access to and management of the sites varied landscape features, both those natural - woodlands, rock escarpments and man-made as a result of the refinery works - terraced retention features and reservoirs
- Using the existing 'Site Character Areas' to integrate the existing landscape, biodiversity and historic features.
- Integrate health and wellbeing into the built environment through meeting places, increased connectivity and biophilic principles.
- Create different character areas and Neighbourhoods that still feel part of a coherent whole.
- Establish a place that is distinctive & authentic
- Create clear and attractive pedestrian and cycling routes
- Create streets designed as places for people more than for cars

Illustrative Plan - Development Edge



Design Principles

Applicable Street Types	Secondary Green Street Mews Lane Greenway pedestrian/ cycleway routes
Mix of Uses	Residential
Building Typology	2- 2.5 storey Semi detached and detached
Building Frontage	Building line more varied Variable road alignment Variable front garden depth
Landscape Character	Rural edge - varied boundary condition Fronting woodland, rock escarpments and wildflower meadows Swales and landscaped verges with street trees at irregular intervals mix of boundary conditions
Topography	Dependant on location. adjacent to steep embankments with far reaching views
Public Open Space provision	LAPS/LEAPS Provides access to natural greenway routes at perimeter
Heritage	N/A

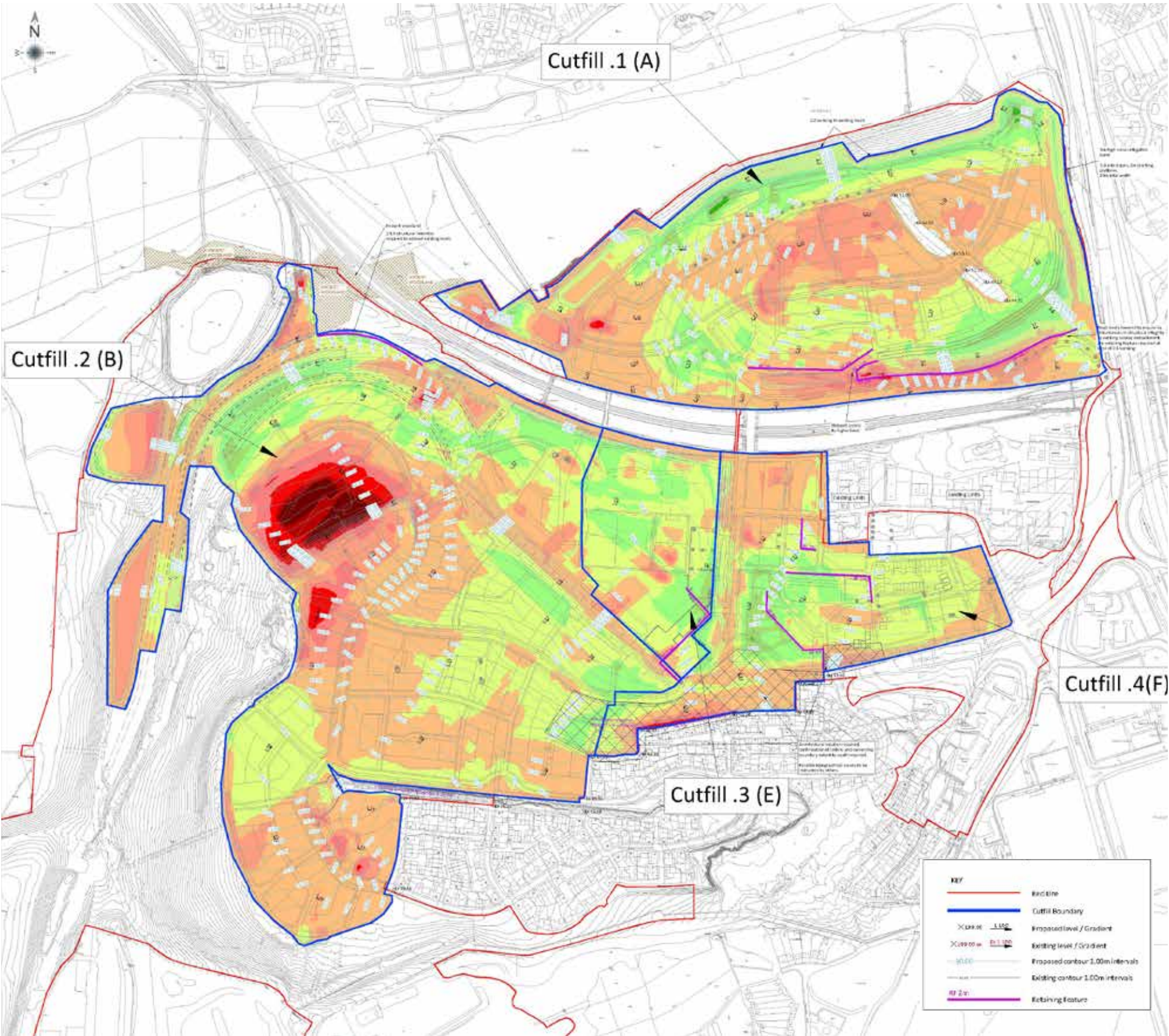


6.7 Indicative Levels / Strategic Land Form

Significant consideration has been given to the approach to the topography at Coed Darcy and what the strategic land form needs to become to enable development and support the masterplan vision. Key considerations include:

- 1. Interface with the existing phase 1 development, including stepped connecting pedestrian routes
- 2. The existing exposed Rock escarpment and retaining structures
- 3. The extent of cut and fill that could provide additional development area, particularly in areas where rock is close to the surface in the Western part of the site
- 4. The retention of key tree groups and other ecology considerations
- 5. The retention of the embankment and level change in the area adjacent to the school and the proposed main square which is formed as a result of the historic use of the site.
- 6. The need to provide pedestrian and cycle routes that support active travel aspirations at an acceptable gradient including for those residents with mobility issues.
- 7. The drainage strategy for SAB

Cut and Fill Table			
Band	Depth From	Depth To	Colour
1	-15.80	-10.00	Dark Red
2	-10.00	-8.00	Red
3	-8.00	-6.00	Red-Orange
4	-6.00	-4.00	Orange
5	-4.00	-2.00	Light Orange
6	-2.00	0.00	Yellow-Orange
7	0.00	2.00	Yellow
8	2.00	4.00	Light Green
9	4.00	6.00	Green
10	6.00	8.00	Dark Green



6.8 Sustainability

The new homes at Coed Darcy will follow a fabric first approach to sustainable construction, demonstrating that improvements in insulation specification, a reduction in thermal bridging and unwanted air leakage paths, together with further passive design measures will ensure that energy demand and consequent CO2 emissions are minimised. A range of potentially appropriate low carbon energy technologies are being assessed for feasibility in delivering a reduction in energy demand in line with planning policy requirements. In compliance with planning policy, the site has taken into consideration a number of wider sustainability issues, including mitigation of climate change, biodiversity, sustainable urban drainage and sustainable travel as well as providing a mix of uses on site to allow existing and new residents to live in a community based around the principles of the “15 minute neighbourhood”

Mitigating the Effects of Climate Change

The impacts of construction materials range from the depletion of natural resources to the greenhouse gas emissions and water use associated with their manufacture and installation. Within the development choices will be made in order to reduce the consumption of primary resources and use materials with fewer negative impacts on the environment, including but not limited to the following:

- Use fewer resources and less energy through designing buildings more efficiently,
- Specify and select materials and products that strike a responsible balance between social, economic and environmental factors.
- Improve environmental, economic and social sustainability of construction products by recognising and encouraging the selection of products with responsible sourcing certification.
- Wherever possible materials will be diverted from landfill through re-use, recycling, return to supplier or recycling.
- In addition to promoting the use of public transport, cycling is being encouraged through improvements to active travel and leisure cycle routes

Energy Strategy

Arup has undertaken an energy strategy using the energy hierarchy for Coed Darcy. Once the demands for the development had been determined and the team considered the improvements that could be made to building fabric, we took a two stage approach, firstly considering the technologies for relevance to the development, and then undertaking optimisation modelling using Arup's suite of whole systems energy modelling tools to determine the energy strategy.

The optimisation modelling assessed which of the shortlisted technologies gave the lowest carbon, lowest cost solution for two scenarios:

- 2025 – excluded hydrogen-based technologies, included photovoltaics (PV), air source heat pumps (ASHPs), ground source heat pumps (GSHPs), hydrogen ready gas boilers, batteries, grid connected electricity and gas, resistance heating.
- 2050 – included all technologies and a reduced grid carbon intensity to reflect a 2050 decarbonisation prediction.

As a result the energy strategy recommend for Coed Darcy is:

1. Set targets on building carbon emissions and energy demands – Set the development aspirations for energy demand and carbon emissions for each building typology. This should include carbon targets for 2025 and 2050 which align to Welsh Government and local council policy.
2. Maximise passive design measures – Maximise the impact of passive design measures such as building layout and orientation, as detailed in Appendix B.
3. Take a fabric first approach - The development should have high performing building fabric and align to 2025 standards as detailed in Table 5.
4. Maximise GSHPs – Incorporate the use of GSHPs wherever feasible, using ASHPs where this is not possible.
5. Maximise roof mounted PV – Incorporate PV on viable south facing roofs.
6. Encourage use of EVs - consider in home battery storage.

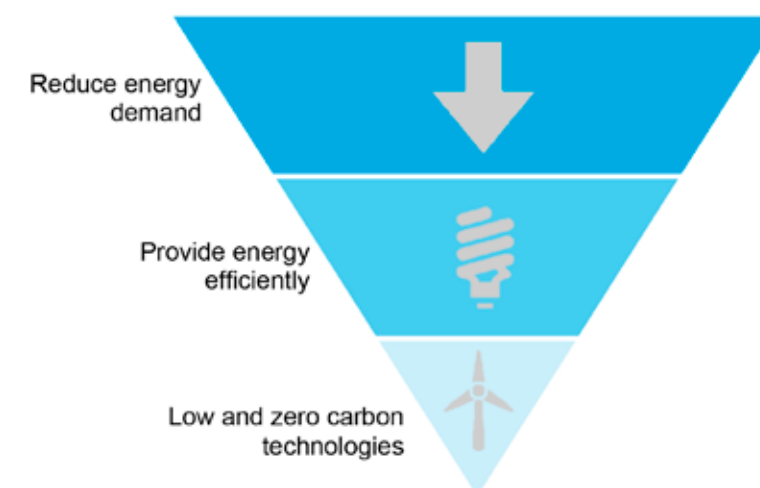


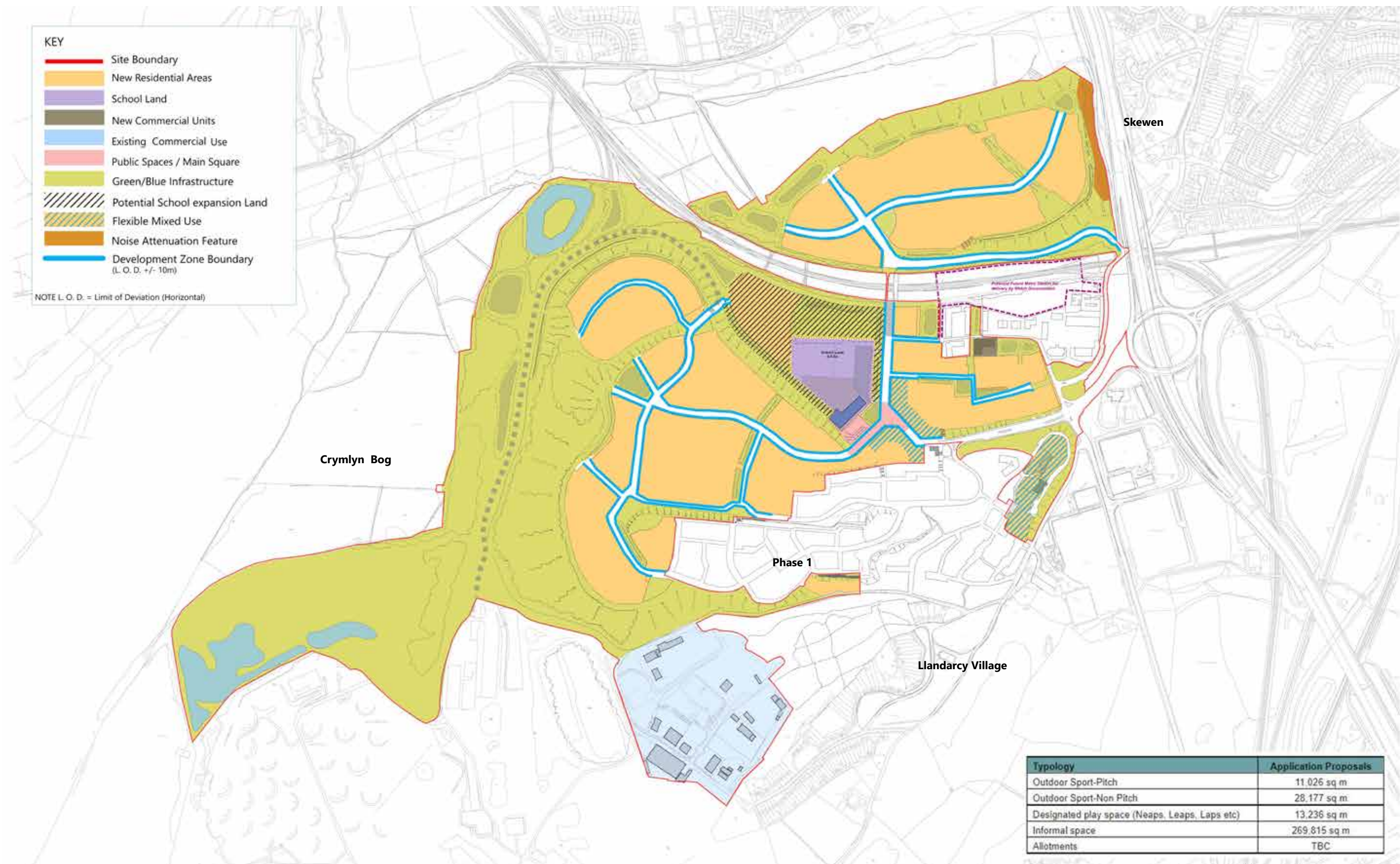
Figure 1 - Energy hierarchy
The basis of Coed Darcy's energy strategy



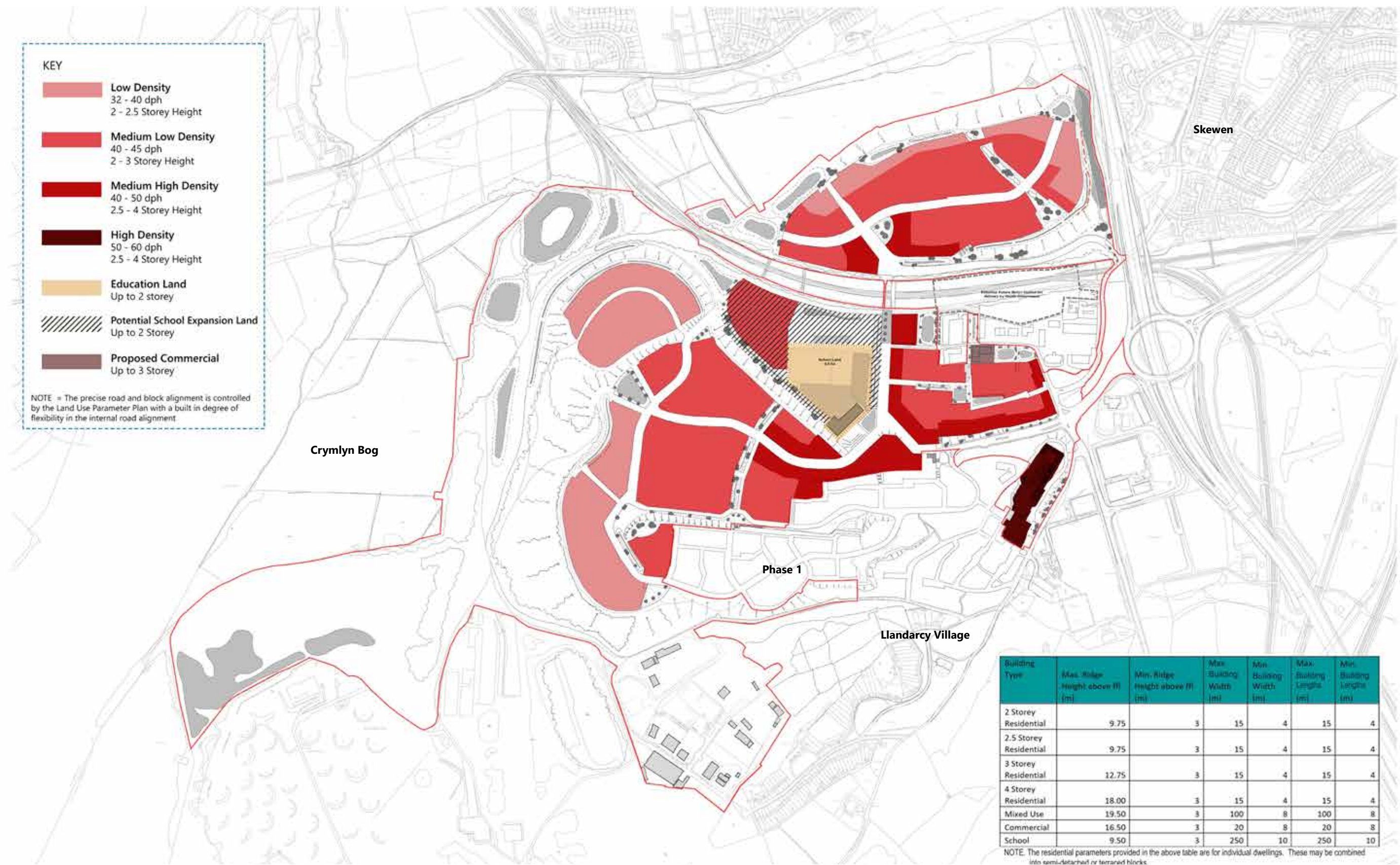


Parameter Plans

7.1 Land Use



7.2 Scale



7.3 Movement

