

Design Code PART 2 SITE-WIDE

September 2020



Contents

| | | | |
|--|---|-----------------------------|--------------------------|
| PART 1 | PART 2 | PART 3 | PART 4 |
| CONTEXT | SITE-WIDE | CHARACTER AREAS | SUMMARY |
| 1.0 INTRODUCTION | 3.0 DESIGN STRATEGIES | 7.0 CHARACTER AREAS | 8.0 DESIGN CODE SCHEDULE |
| 1.1 Design Documentation | 3.1 Environment and Views | 7.1 Character Area Strategy | |
| 1.1 Design Code Structure | 3.2 Nature Corridors | 7.2 Lakeside Crescent | |
| 2.0 MASTERPLAN | 3.3 Movement and Streets | 7.3 Limestone Terrace | |
| 2.1 Vision | 3.4 Frontage Hierarchy | 7.4 Garden by the Sea | |
| 2.2 Mission and Values | 3.5 Activation and Uses | 7.5 Marconi's Vistas | |
| 2.3 Well-being of Future Generations Act | 3.6 Community Safety | | |
| 2.4 Concept | 3.7 Sustainable Drainage | | |
| 2.5 Indicative Masterplan | 3.8 Net Zero Carbon Development | | |
| 2.6 Development Phases | 4.0 KEY SPACES AND GATEWAYS | | |
| | 4.1 Over-arching Principles and Narrative | | |
| | 4.2 Limestone Square | | |
| | 4.3 Marconi's Crossing | | |
| | 4.4 Western Gateway | | |
| | 4.5 Eastern Gateway | | |
| | 4.6 Northern Gateway | | |
| | 4.7 Southern Gateway | | |
| | 5.0 STREET TYPOLOGIES | | |
| | 5.1 Overview | | |
| | 5.2 01 Main Boulevard/Primary Road | | |
| | 5.3 02 Secondary Street | | |
| | 5.4 03 Parking Street | | |
| | 5.5 04 Home Zone Street | | |
| | 5.6 05 Home Zone Courtyard | | |
| | 5.7 06 Play Street | | |
| | 5.8 07 Active Travel Corridor | | |
| | 5.9 08 Pedestrian Path | | |
| | 5.10 09 Hedgerow Connection | | |
| | 6.0 ARCHITECTURAL CHARACTER | | |
| | 6.1 Context | | |
| | 6.2 Principles | | |

3.0 DESIGN STRATEGIES

3.1 Environment and Views

The layout of the development is arranged to reflect the topography of three distinct plateaus, as well as responding to environmental conditions such as solar path and prevailing wind direction. The layout synthesises placemaking, solar energy capture, natural surveillance and the maximisation of views, whether out to the sea, Penarth, the Lakes, the retained green corridors or the new park areas.

The layout of the development optimises homes with views over the greenery of the preserved and enhanced woodland and hedgerow areas as well as the newly created parks. A defining character of the development is the enhancement and further creation of a parkland setting, reinforcing the positive relationship between built environment and nature.

Primary long distance views out



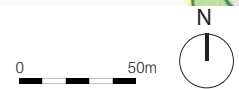
Internalised views onto landscape corridors and new parkland



Sun Path



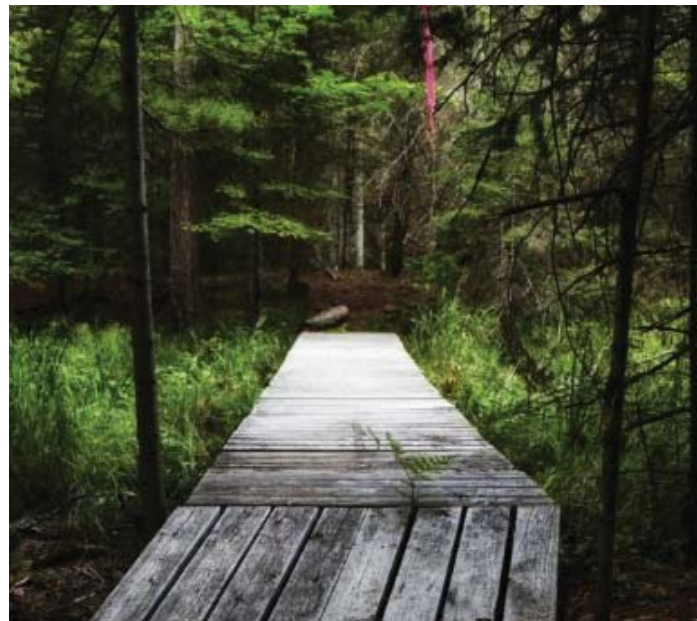
Elevated viewpoints



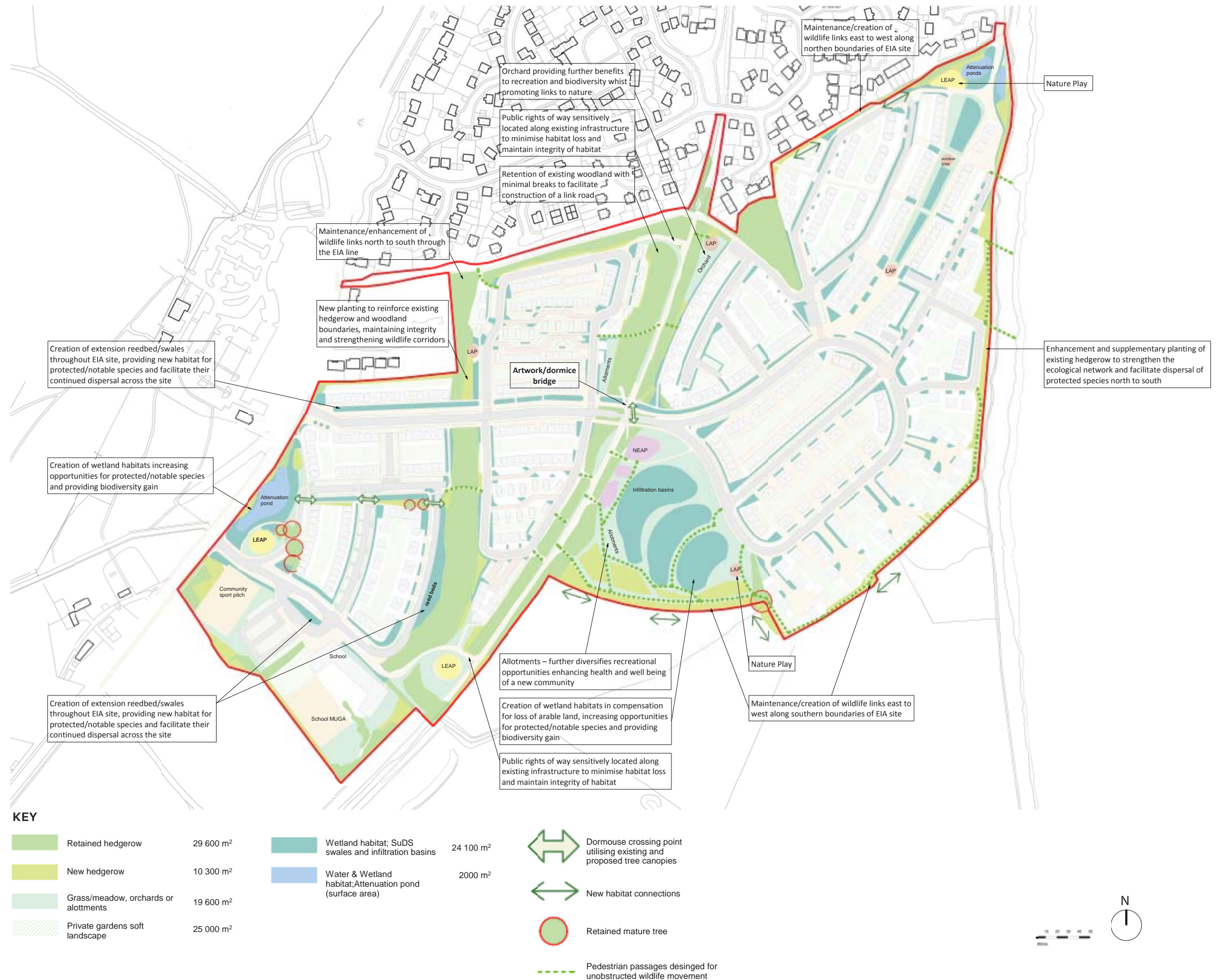
3.2 Nature Corridors

Located between the Severn Estuary European Marine Site and Cosmeston Lakes Site of Special Scientific Interest (SSSI) the Site provides opportunities for a range of protected and notable species including bats, dormouse, amphibians and reptiles, contributing to the wider biodiversity of Penarth. The layout proposes areas where existing hedgerows can be enhanced, where new areas of hedgerow can be replaced, as well as secondary green corridors to help improve wildlife connectivity between the existing north to south corridors and the overall biodiversity of the site.

By retaining as much of the existing hedgerow and wildlife habitat as possible the new housing will have a much closer relationship to nature. The creation of new public green space and playground facilities within a rich environment will contribute to community well-being reaping the benefits of the micro-climate and the sounds of nature.



Pedestrian light timber bridges for unobstructed wildlife movement could be used in lieu of traditional hard surfacing to provide permeability through the landscape corridors.





















3.3 Movement and Streets

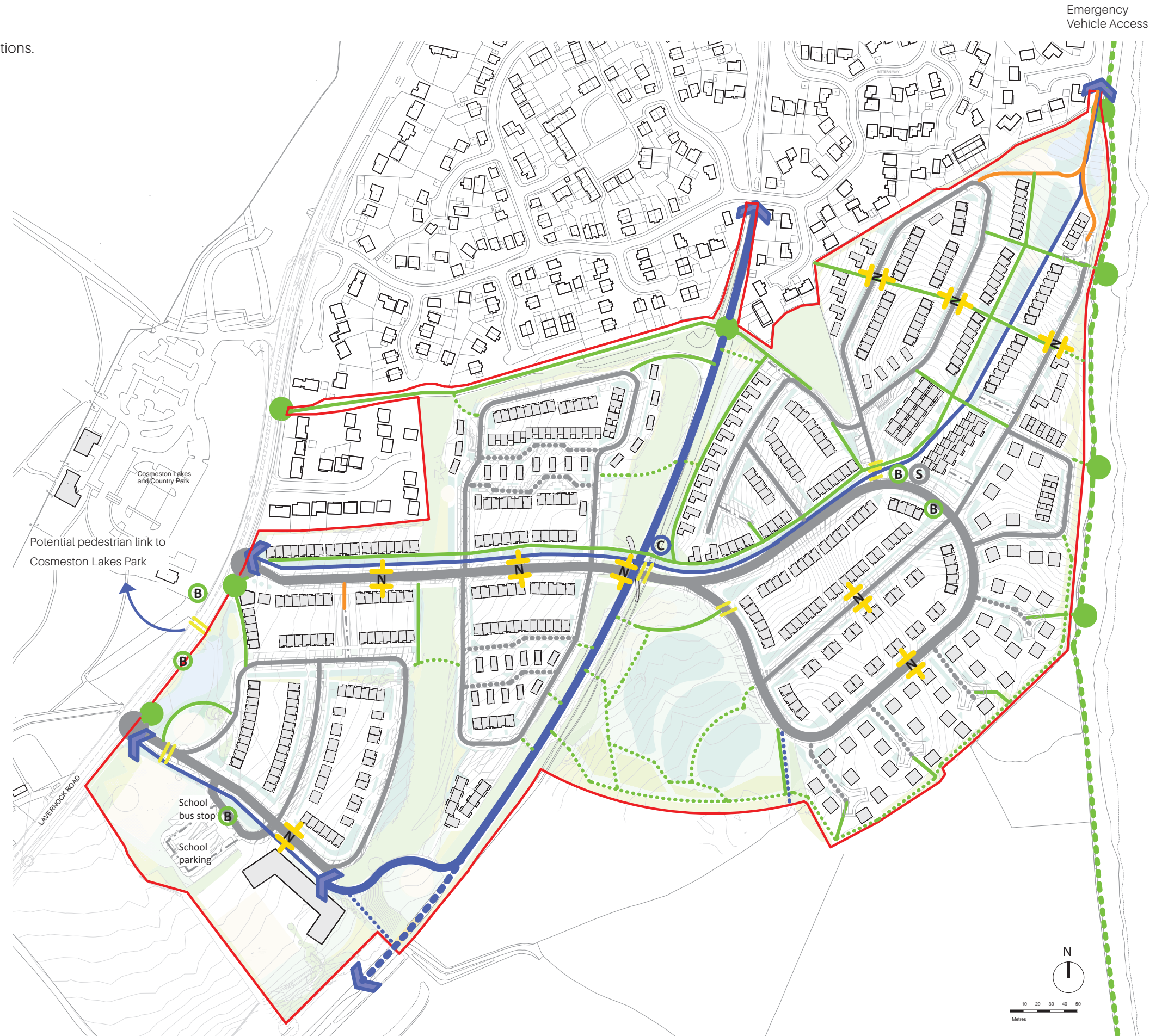
This diagramme includes fixed requirements and illustrative connections.

Fixed requirements are:

- 2 x vehicular access points
- 2 x primary vehicular routes
- Extension and enhancement of NCN88 along former railway
- Creation of new Active Travel Corridors East/West
- Pedestrian Crossing on Lavernock Road
- New Bus Stops on Lavernock Road
- Emergency Vehicle Access
- Pedestrian/Cycle Permeability onto Coast Path
- Electric vehicle charging ready infrastructure

KEY

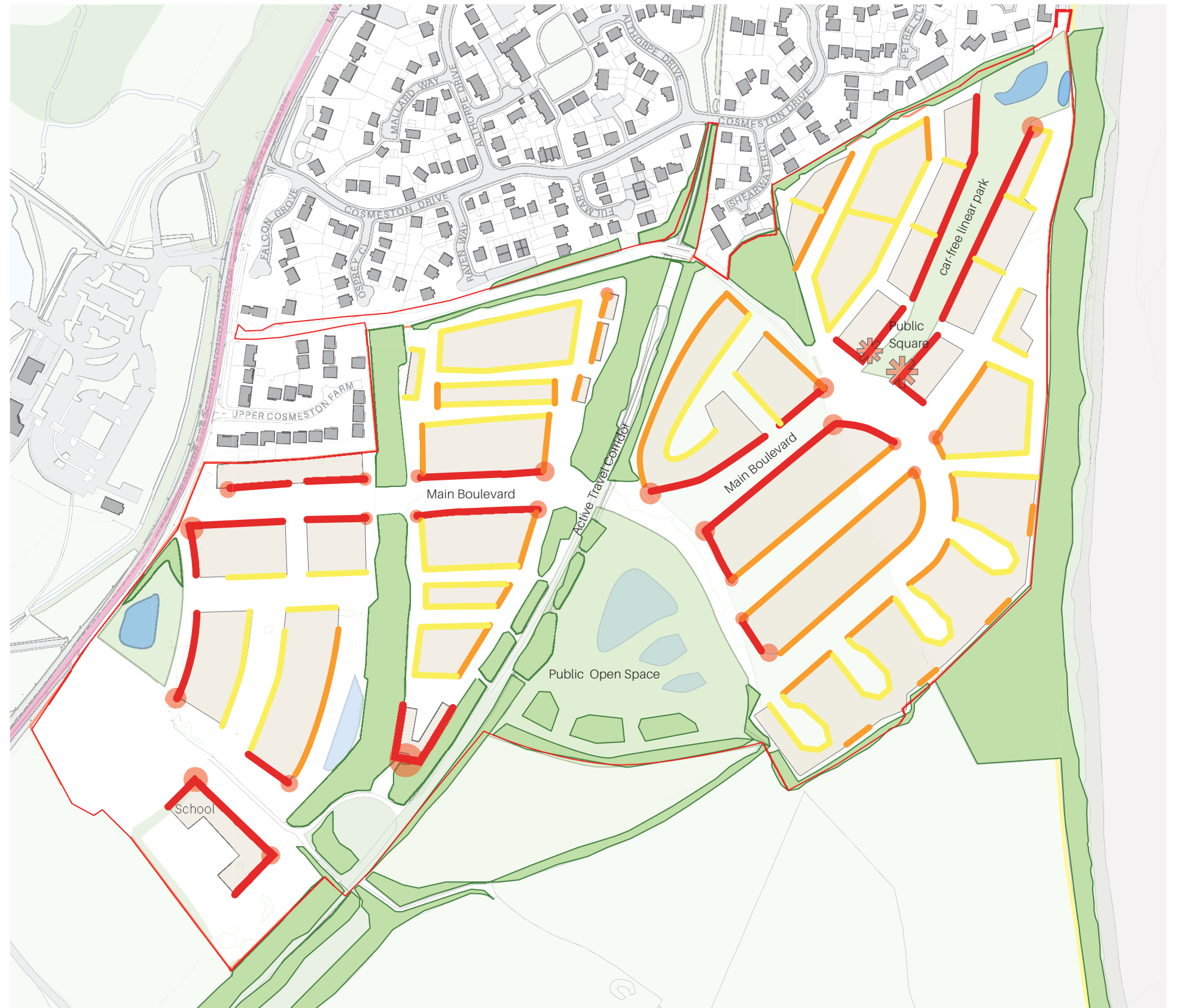
-  Extension of NCN88 Cycle Route
-  Future Extended Connection Cycle Routes
-  Cycle Route
-  4m wide Emergency Vehicle Access Pedestrian Route
-  Pedestrian Route
-  Pedestrian passages desinged for unobstructed wildlife movement
-  Cliff Top Coastal Path
-  Pedestrian Gateway
-  Pedestrian crossing
-  Vehicular Site Access
-  Primary Vehicular Route - Future proofed for potential Bus route
-  Secondary Vehicular Route
-  Home Zone Route - Pedestrian Priority
-  Parking Access only
-  Traffic Calming Narrowing
-  BUS Stop
-  Bicycle Hire
-  Dedicated Street Car Rental Spaces



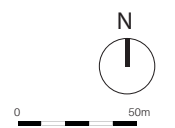
3.4 Frontage Hierarchy

The underpinning concept of creating a pedestrian/cycle link from the Coastal Path to the Lakes is reinforced by Primary Frontage either side. Here, the space is of significant width and also characterised by wide sustainable drainage swales. The primary on-site road has a 'lasso' layout to enable bus services to navigate the development. Whilst acting as a primary access road, the extended NCN88 cycle route takes priority where the two cross.

Play-friendly Home Zones should be created within the heart of the development areas, away from the primary streets. These will be smaller in scale with more intimate character. Homes along the perimeter of the development areas will provide passive supervision over the retained nature corridors and take advantage of views out of the site from elevated plateau edge locations.



- ▬ Primary street frontage
- ▬ Secondary street frontage
- ▬ Tertiary street frontage
- Accentuated corner
- ✱ Feature building



3.5 Activation and Uses

The masterplan addresses the needs of the community by creating a mix of well designed public and private housing of mixed tenure and by including the following mix of uses:

- The provision of a new two form entry primary school
- The promotion of home working through good housing designs
- Commercial and community facilities will be concentrated at the key spaces, with a primary focus located at the highest point of the site, creating a public square and destination point. This opens up the potential for a home working “hub” or meeting space that would allow people to meet up, work in a communal environment or use a bookable meeting room / office space
- Educational and recreational trails following the new public links through the site to tell the history of the community e.g. the Royal Ordinance Command Post, Marconi’s nearby experimentation, the quarry, the railway line and the orchards, through the use of interpretation boards
- Public green spaces, potential allotments and playgrounds set within the green corridors and wedges throughout the site

-  co-working, community and commercial spaces
-  Bus stop
-  Bicycle rental station
-  Community allotments and orchards
-  Playground
-  Home Zone Areas for Play and Socialising
-  Outdoor Gym
-  Nature trail
-  Community Sports Ground



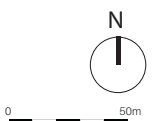
3.6 Community Safety

A key strategy of the masterplan layout is the provision of passive supervision to external public open spaces and retained nature corridors and to purposefully prohibit the placement of back gardens on the perimeter of the development areas to face landscape corridors or plateau edges. The layout promotes houses that face these areas to create higher quality public places which feel safe and maximise the enjoyment of the natural landscape.

The masterplan aims to create a cohesive community with a sense of place that will make people feel safe, incorporating a well observed, new community park. The inclusion of community and commercial facilities will also create a cohesive community and promote activity at different times of the day.



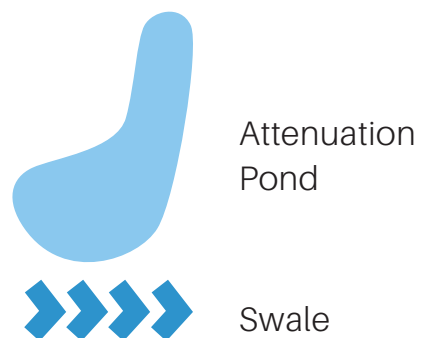
→ passive supervision from properties to public open spaces, playgrounds and hedgerow areas



3.7 Sustainable Drainage

Sustainable Drainage Approval Bodies have been introduced under new legislation relating to Schedule 3 of the Flood and Water management Act 2010. The aim of the new legislation is to ensure a natural approach to managing rainwater.

The drainage strategy incorporates site-wide swales and attenuation ponds. They are embedded within the scheme and are used to help define the character of the development. In particular the drainage strategy creates welcoming 'gateway' features to the east and west, through attenuation ponds.



3.8 Net Zero Carbon Development

To deliver a development with a light impact upon the environment requires consideration of a wide range of issues including materials use, building fabric performance, the type of heating to be used, the energy performance of the buildings, the impact of climate change, sustainable drainage, the local environment and habitat, active travel and a whole host of other potential impacts. Many of these subjects are covered in other sections within the Design Code. This section will focus upon building fabric performance and energy use.

Within Part L of the Building Regulations in Wales there are targets for building fabric performance and energy efficiency. While these are the minimum acceptable performance standards for new buildings they do not extend as far as our targets. To meet these targets requires that any new buildings are as energy efficient as possible and that any operational energy required for these buildings is provided from renewable energy sources.

In developing this design code we have calculated the likely energy performance of the dwellings which will be built to meet a low energy performance standard. Using solar modelling to predict how much energy is available on the footprint of the site we have shown that it is possible for this development to deliver net zero operational energy. Operational energy is defined as the amount of energy needed over the life of a building to operate the heating, lighting, ventilation and to power electrical appliances. This figure is used in life cycle assessments of a building to give a whole life understanding of the total energy used.

This design code does not set out specific building fabric performance or energy standards but does require that the development achieves net zero operational energy performance. Evidence to prove that this requirement is met will include Building Energy Modelling for each dwelling type, confirmation of the overall energy demand for the site and energy modelling to show how this demand is being met using renewable energy sources on site.

Figures calculated using the current SAP energy software used for proving building regulations compliance are not suitable for demonstrating dwellings compliance with this energy standard because this software does not provide an accurate model of in-use building performance. Figures calculated using other industry standard energy modelling software, such as IES or PHPP, is acceptable evidence. These energy models are required to be stress tested using 2050 and 2080 climate datasets to show that the dwellings will not overheat in future years.

Large scale energy generating systems could include:

- A solar energy farm either adjacent to the site or using all dwelling roofs;
- Ground sourced heat pumps;
- Air sourced heat pumps;
- Water sourced heat pumps using sea; or
- Any other suitable heat pump technology.

Small domestic scale energy systems could include:

- Solar energy and heating panels per dwelling;
- Air sourced heat pumps;

- Ground sourced heat pumps with the supply network contained within the garden of the dwelling; or
- Mechanical Ventilation with Heat Recovery (MVHR).

Research by the Office for National Statistics showed that in 2019 just under 5% of the workforce worked full time from home and 18% worked from home on two or more days. During Covid 19 epidemic this steady upward trajectory sharply increased to nearly half of people in employment working from home. Remote working has many economic, personal well-being and environmental benefits including significant reduction of car usage. The design of the new homes should make provisions for working from home both in terms of space and access to fast reliable broadband. In addition co-working spaces including reprographics facilities and bookable meeting rooms could be provided at key locations in the development.

There should be electric vehicle ready infrastructure throughout the development including capacity for each private off street parking space and on-street publicly accessible charging.

Potential for bicycle hire station on or in close proximity to NCN route 88 should be explored. There should be public bicycle parking provision at key locations such as the proposed public square, parks, playgrounds and the school. All homes should have access to secure bicycle storage. To further encourage reduction of car ownership a potential for dedicated street car rental spaces should be explored.

3.8 Net Zero Carbon Development



fast and reliable broadband



electric vehicle charging infrastructure

4.0 KEY SPACES AND GATEWAYS

4.1 Over-arching Principles and Narrative

The key strategy of the masterplan is to create a new link between two of Penarth's highly valued amenity spaces; the Coastal Path and Cosmeston Country Park Lakes. The new link intersects with the extended National Cycling Network (NCN) route 88 which is the Active Travel artery of the new development.

Connecting the coast and lakes with an inviting pedestrian and cycle friendly routes creates a loop of accessible open space for the local community and visitors. Establishing this new route through the heart of the site embeds the proposed development within the wider community and creates a sense of place. It promotes a cohesive community by being integrated with its surroundings, providing permeability and stitching together a network of open green spaces; interconnected Gardens by the Sea.

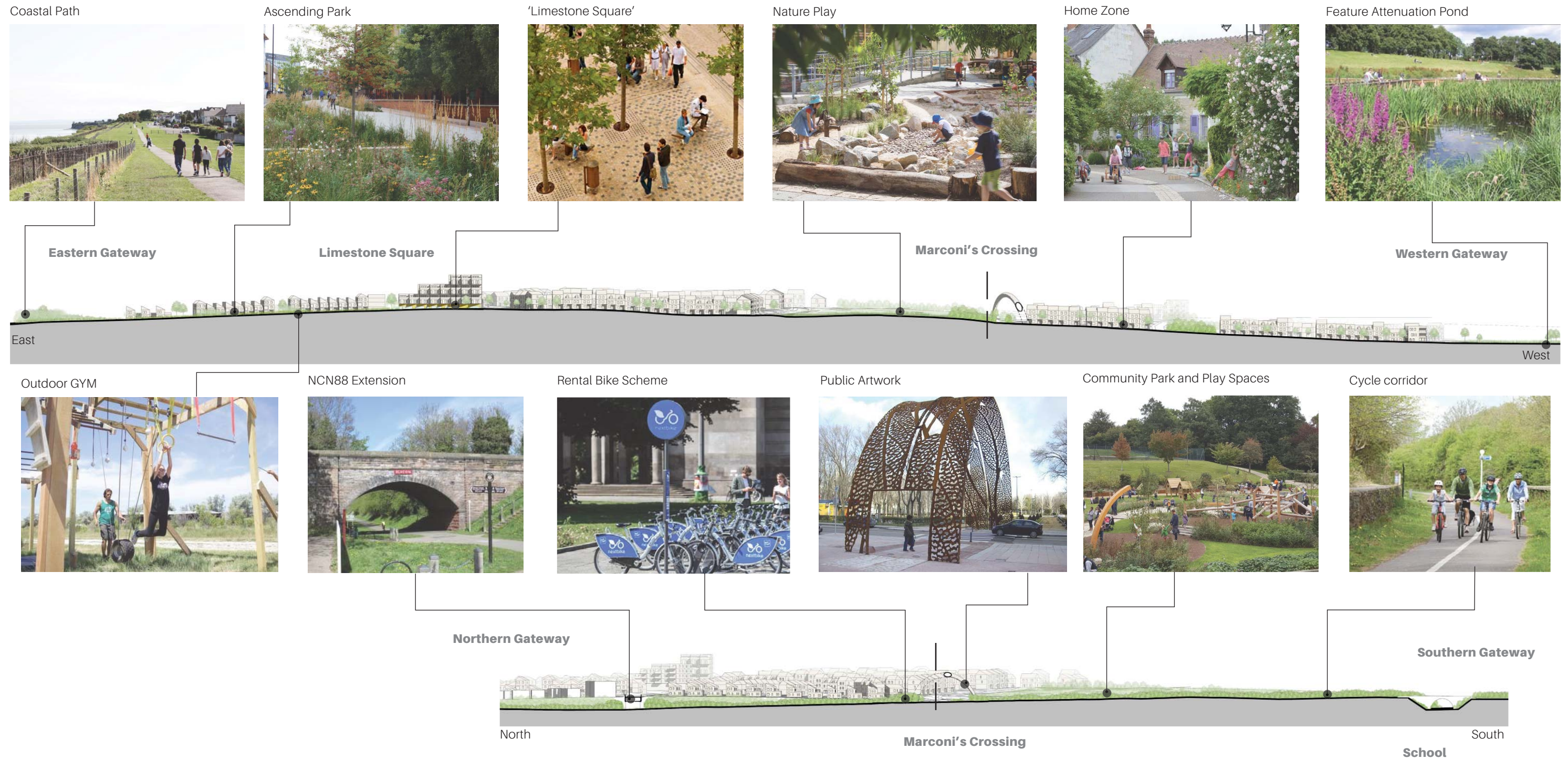
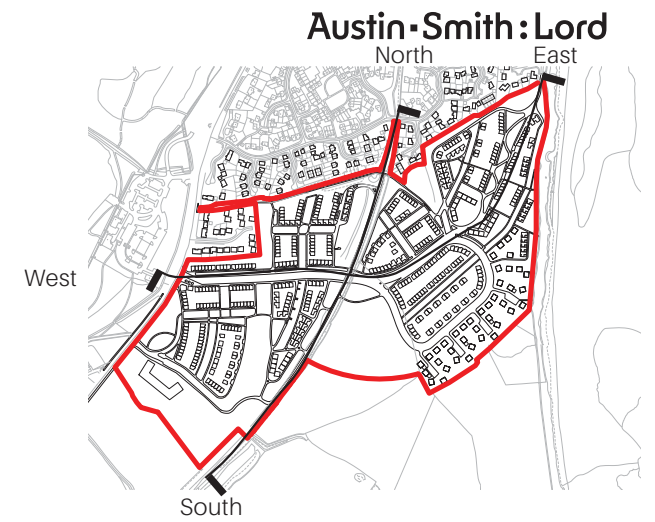
The network of spaces includes parks, public realm, open swales and ponds, play areas, community allotments and nature trails.

The two principal routes through the site are marked by four Gateways at their points of entrance. Two further Key Spaces have been created to mark and celebrate the crossing point of the two principal routes and also the natural high point of the site.



4.0 KEY SPACES AND GATEWAYS

Sections along the two principal pedestrian /cycle routes



4.2 Limestone Square

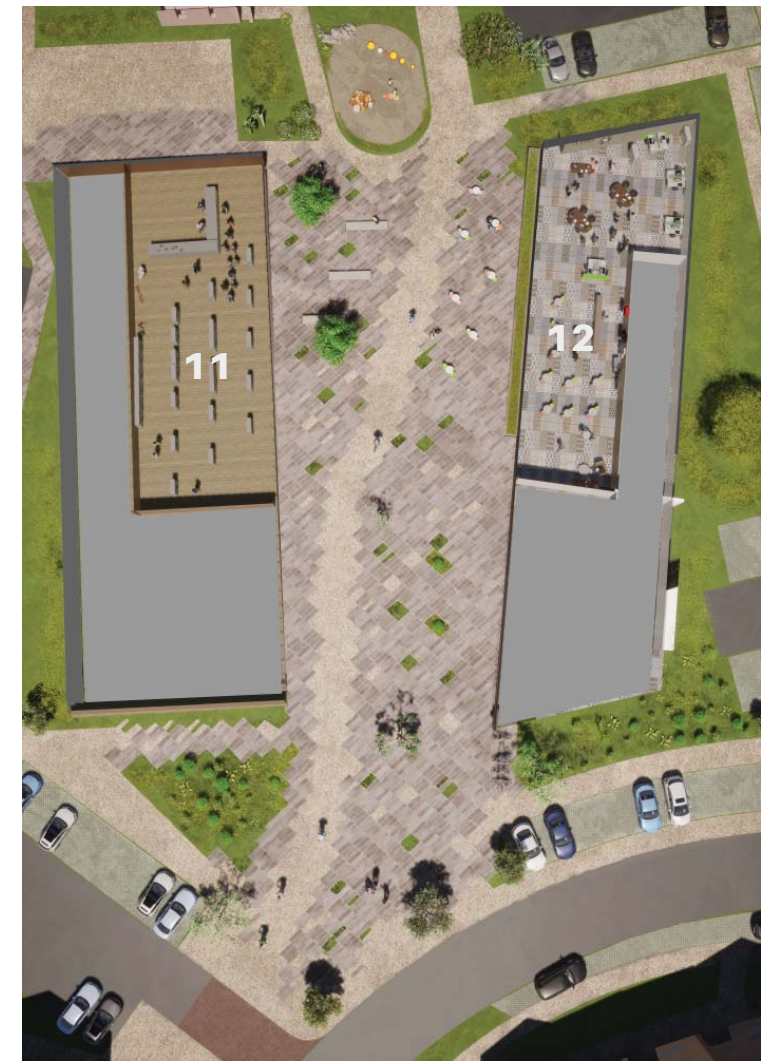


KEY

1. Limestone Square - flexible space with hard and soft landscape
2. LAP (Local Area for Play)
3. Permeable surface parking
4. Primary access road
5. Cycle Lane
6. Views to Bristol Channel
7. Views to the rolling hills of the Vale
8. Bus Stop
9. Bicycle parking
10. Rainwater Garden
11. Convenience Store
12. Coworking space/cafe



This image is illustrative of how the required elements could be arranged



Illustrative Ground Floor arrangement

4.2 Limestone Square



View from Limestone Square

4.3 Marconi's Crossing



KEY

1. Priority to NCN88 at crossing point, marked with public artwork/potential dormice bridge
2. National Cycling network Route 88
3. Primary Access
4. Bicycle lane
5. Bicycle rental station
6. NEAP (Neighbourhood Equipped Area of Play) designed as series of play spaces
7. Infiltration basins
8. Swales
9. Community allotments



This image is illustrative of how the required elements could be arranged

4.3 Marconi's Crossing



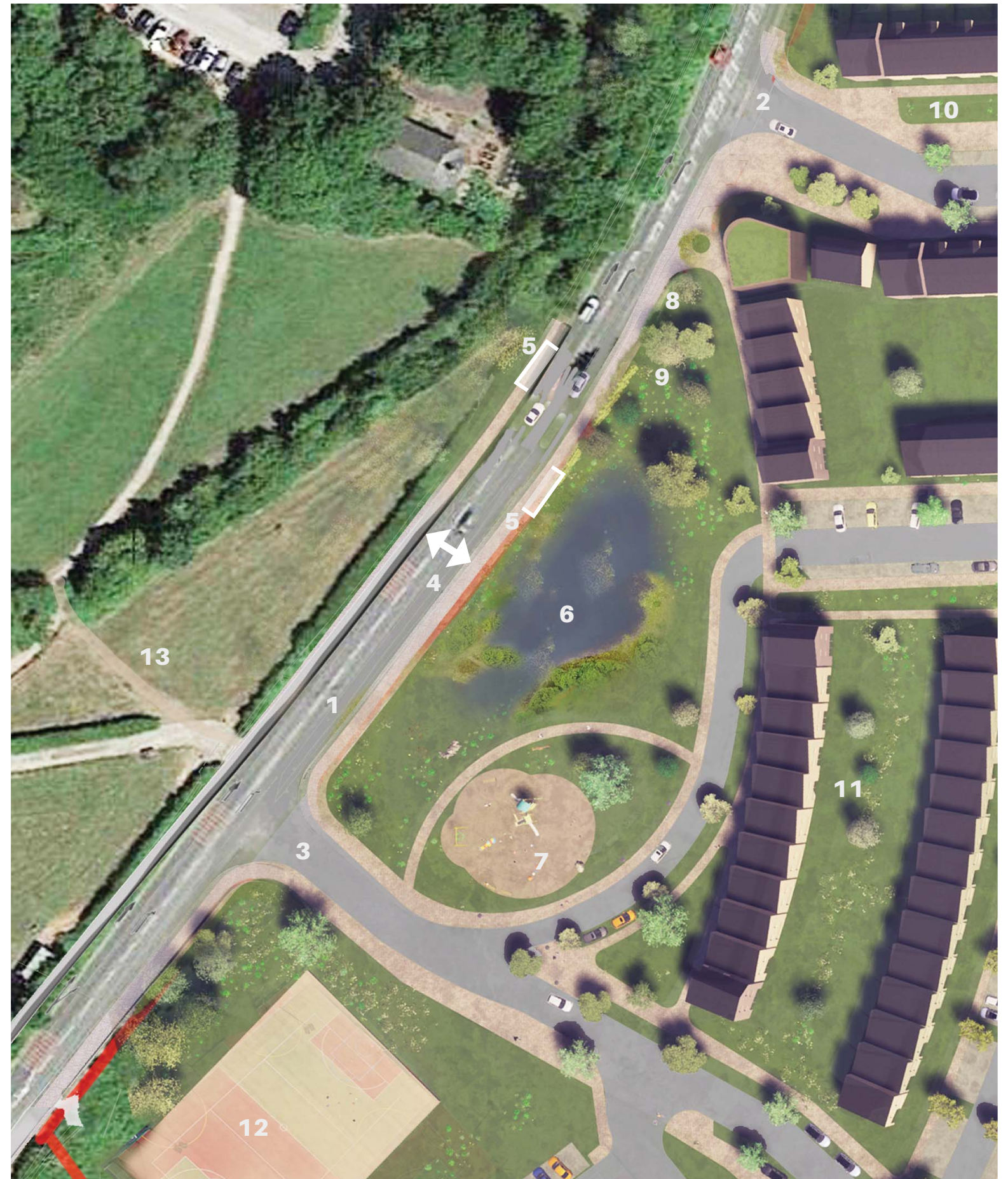
View from NCN Route 88 of Marconi Crossing

4.4 Western Gateway



KEY

1. Lavernock road
2. Northern vehicular access points
3. Southern vehicular access points
4. Pedestrian Crossing
5. Bus Stop
6. Attenuation ponds
7. LEAP (Local Equipped Area of Play)
8. Retained hedgerow
9. Enhanced and new hedgerow
10. Swales
11. Private Gardens
12. Community Sport Pitch
13. Pedestrian connection to Cosmeston Lakes Country Park



This image is illustrative of how the required elements could be arranged

4.4 Western Gateway



View of Western Gateway LEPA

4.5 Eastern Gateway



KEY

1. Pedestrian/cycle access only from existing street network. This should also allow emergency vehicle access onto the new street network within the development.
2. Maintain open views back to Penarth from new park space.
3. Coastal Path
4. Attenuation Ponds
5. LEAP (Local Equipped Area for Play)
6. Enhanced and new hedgerow
7. Seating
8. Meadow
9. Swales
10. Views to Bristol Channel



This image is illustrative of how the required elements could be arranged

4.5 Eastern Gateway



View from Eastern Gateway to Bristol Channel

4.6 Northern Gateway



KEY

1. Former railway line extended into site as NCN 88.
2. Existing track crosses NCN 88 at high level.
3. Former railway bridge.
4. Gateway space provides 'orientation' point. Space to dwell. Interpretation boards and information.
5. Steps up existing embankment.
6. Existing/enhanced landscape
7. LAP (Local Area for Play)
8. Orchard



This image is illustrative of how the required elements could be arranged

4.6 Northern Gateway



View from Existing former railway bridge to extended NCN88