



Openings	<ul style="list-style-type: none"> • Asymmetrical arrangements of windows with expressed lintels; • No projecting balconies; • Flat roof-lights; and • Irregular opening size allowed to create variation.
Openings Accent	<ul style="list-style-type: none"> • Side shutters; and • Expressed lintels.
Doors / Entrances	<ul style="list-style-type: none"> • Mono pitch or flat front porch with minimal projection.
Massing	<ul style="list-style-type: none"> • Expressed chimneys at front (terraced) or side (detached or semi-detached); • High pitch roof (45 degrees) spanning the narrower dimension; • Roof and wall material matching. Horizontal split in materials at first floor; and
Massing Accent	<ul style="list-style-type: none"> • To first level and roof.
Services	<ul style="list-style-type: none"> • Chimneys to accommodate services and ventilation elements; • Expressed gutters and down pipes; • Bin & cycle store integrated as part of the main building form or incorporated as part of garages; • Sitting of meter boxes, vents, extractors, rainwater goods to be away from main elevation; • All new homes need to have solar PV installed in order to achieve the Net Zero Carbon; • The SuDS and surface water strategy assumes that each dwelling will be served by a private soakway and driveways will be formed from permeable paving, which can also connected to the same private soakway.
Biodiversity Mitigation	<ul style="list-style-type: none"> • Erect bird, bat and bee bricks; and • Erect bat and bird boxes in some instances.



Fig.227: Settlement Edge Grain house type elements precedent images

Building Form - Village Grain

Housing typologies within the village grain transition between the rural and urban elements. The buildings will emphasise horizontality subtly incorporating panels of different materials and/or textures. Proportions of windows tend to be more regular and vertical. Roof and facade are distinctively different elements. Bolder colours and textures are introduced.

Roof pitches are generally to be at 40 degrees maximum with variation in roof design to reiterate less rural character.

1. Windows tied together horizontally using side panels of bricks patterns or accent panels;
2. Full height windows with recessed side panels.
3. Preferably juliette balconies, unless on key corners and markers;
4. Integrated chimneys to house services;
5. Dormer windows tie with proportions of the windows on first and second floor;
6. Solar panels to follow the roof angle (southern side);
7. Bin & cycle store either integrated as part of the boundary treatment; and
8. For terraces dropping with the contours the exposed wall above must be a low maintenance finish which will minimise discolouring.



Fig.228: Village Grain house type example



Openings	<ul style="list-style-type: none"> • More symmetrical arrangements • Transoms can be incorporated; • Juliette or recessed balconies; • Full height windows with recessed side panels and brise soleil in southern orientations; • Dormers.
Openings Accent	<ul style="list-style-type: none"> • Accent materials to recessed side panels, expressed sills or wide frame around openings.
Doors / Entrances	<ul style="list-style-type: none"> • Front porch gabled or hipped roof.
Massing	<ul style="list-style-type: none"> • Expressed chimney incorporated as part of the volume of the building; • Low duo-pitch (40 degrees), asymmetric or sawtooth gables; and • Textured brickwork areas to tie opening together emphasising horizontally.
Massing Accent	<ul style="list-style-type: none"> • Smaller, horizontal elements particularly on key corners and at the end of main views at the end of streets.
Services	<ul style="list-style-type: none"> • Mix of expressed and concealed gutters and down pipes; • Bin & cycle store integrated as part of the boundary treatment; • All new homes need to have solar PV installed in order to achieve the Net Zero Carbon; • Sitting of meter boxes, vents, extractors, rainwater goods to be away from main elevation; • The SuDS and surface water strategy assumes that each dwelling will be served by a private soakway and driveways will be formed from permeable paving, which can also connected to the same private soakway.
Biodiversity Mitigation	<ul style="list-style-type: none"> • Erect bird, bat and bee bricks; and • Erect bat and bird boxes in some instances.



Fig.229: Village Grain house type elements precedent images

Building Form - Urban Grain

Housing typologies in the urban grain should emphasise vertical elements to suit taller apartment buildings and townhouses. With higher proportion of opening to wall and variation of facade volumes. Formally arranged openings will create a urban feel.

1. Emphasis of vertical elements;
2. Stepped volumes pushing in and out to create interest along terraces;
3. Oversized reveals with stepped edges;
4. Full height windows with recessed side panels and vertical mullions;
5. Projecting balconies,
6. Oriel windows creating variation on key corners;
7. Solar panels to follow pitch of the roof (southern side);
8. Bin & cycle store as part of the boundary treatment;
9. For terraces dropping with the contours the exposed wall above must be a low maintenance finish which will minimise discolouring.



Fig.230: Urban Grain house type example



Openings	<ul style="list-style-type: none"> • Formal arrangements and repetition of elements • Mullions emphasizing verticality; • Projected balconies and bay windows; and • Dormers integrated within elevation.
Openings Accent	<ul style="list-style-type: none"> • Deep reveals with accent materials; and • Protruding oriel windows and wrap around corner windows at key locations.
Doors / Entrances	<ul style="list-style-type: none"> • Brise soleil or flat roofs; and • Recessed entrances.
Massing	<ul style="list-style-type: none"> • Pre-cast flues; • Higher degree of variation of height and roofscape; • Parapeted flat roofs, sawtooth, mono-pitch, intersecting angles with vertical dormers; • Vertical split of materials and panels; and • Textured brickwork areas to emphasise vertically.
Massing Accent	<ul style="list-style-type: none"> • Prominent corners at significant junctions and at the end of key views and streets; • Tones and textures to create interesting focal points, especially on corner buildings. • Oriel windows; and • Chamfered ground floor corners on apartment buildings located in local centres predominant corners.
Services	<ul style="list-style-type: none"> • Concealed gutters and down pipes; • Bin & cycle store integrated as part of the boundary treatment; • Sitting of meter boxes, vents, extractors, rainwater goods to be away from main elevation; • All new homes need to have solar PV installed in order to achieve the Net Zero Carbon; • The SuDS and surface water strategy assumes that each dwelling will be served by a private soakway and driveways will be formed from permeable paving, which can also connected to the same private soakway.
Biodiversity Mitigation	<ul style="list-style-type: none"> • Erect bird, bat and bee bricks; and • Erect bat and bird boxes in some instances.

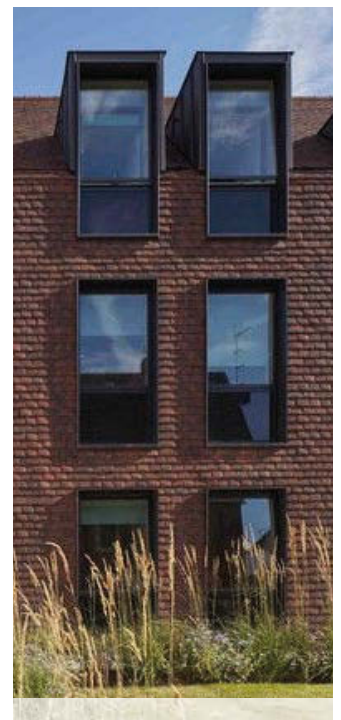


Fig.231: Urban Grain house type elements precedent images

10.08 Waste and Recycling Storage

Waste Storage

All new homes must have a designed external structure with sufficient space to store a wheeled bin and a range of recycling (this can be a garage). These must be within a property's boundary and be able to accommodate:

- 1 x 180 litre wheeled refuse bin;
- 1 x set of dry recycling containment including: 2 x 60 litre bags, 1 x 34 litre bag and 1 x 55 litre black box;
- 1 x 32 litre external food waste caddy; and
- 1 x 240 litre garden waste wheeled bin per dwelling with a private garden to enable residents to utilise Cornwall Council's garden waste service if they wish to do so.

The space should be flexible enough to cope with future changes in waste and recycling equipment.

The space / cupboard to store bins has to be integrated with the building or as part of the boundary of the plot.

Where storage for refuse and recycling is designed as part of a garage, there should also be sufficient space to park a standard sized family car.

Communal Storage

Flats and apartments must have their own containment, as detailed above. To enable this residents must have dedicated refuse and recycling areas (this can be communal), which are conveniently accessible from all dwellings. Residents should have to walk no more than 30 metres from their front doors carrying their waste to a communal location. The storage areas have to provide sufficient space for the bins/containers as detailed above for each property. Larger bins can be used (bulk bins) but they must be of the following:

- Refuse must be stored in a bulk bin no bigger than 1,100 litres per bin; and
- Dry recycling must have individual bulk bins for individual waste streams (one for paper, one for card etc.) and each bin must be no greater than 360 litres. Collection crews will provide a large sack to fit inside the bin for easy emptying.

Communal and recycling facilities are fit for purpose. The space must allow head height for access and be step free with appropriate screening, surfacing, lighting, ventilation and wash down facilities.

Carry Distances

Requirements for the storage of waste are set out in Building Regulations Part H and in BS 5906:2005 Waste management in buildings — Code of practice. In brief, these set out that:

- Containers should be within 25m of the waste collection point specified by the local authority;
- For waste containers up to 250 litters, steps should be avoided between the container store and collection location and should not exceed 3 in number;
- Unless unavoidable, slopes should not exceed 1/12. Any slopes steeper than this should be minimised in length;
- Steps should be avoided for any containers larger than 250 litres; and
- The Health and Safety Executive recommends that refuse collectors should not normally have to transport two-wheeled containers more than 15m, and 10m for four-wheeled containers.

Sufficient space is allowed for a waste truck to get close enough to collect the waste. Drop kerbs should be provided to allow ease of access and movement of bulk bins for loading onto the waste vehicles by waste collection crews.

Paths approaching waste collection areas should be a minimum of 2m wide and be smoothly surfaced. Drop kerbs should be provided close to collection points to allow easy transfer of wheeled containers.



Fig.232: Integration of refuse store space example



10.09 Active Lifestyle Storage

To enable people to live active lives, it is important that there is sufficient external storage for them to store leisure equipment; this could include bikes, fishing gear, kayaks, surf boards, golf clubs and camping equipment for example.

There is easily accessible, secure storage for bikes, scooters and other leisure items for all housing developments; including flats and apartments. This can include communal (e.g. bike shelter, communal storage room) and individual storage (e.g. garage, shed). Large space bicycle storage buildings that do not benefit from good natural surveillance should be avoided.

Where there is no garage, there must be additional internal or external storage for lifestyle items (this could include shared storage spaces).

Where the only storage for such leisure items is in a rear garden, there is external access to that garden so that equipment does not need to be carried through the house.

Where storage is in a garage, there must be both sufficient space to park a standard sized family car and have a reasonable amount of leisure storage.

Apartment buildings have to integrate cycle storage provision within the communal ground floor extents of the building form. Locating the provision in the ground floor will offer a secure and dry storage space to encourage use, and will avoid cluttering the surrounding streets with small cycle storage structures.

- Sufficient storage of waste and recycling must be provided within a properties boundary. It must be easy and convenient for people living and working at Langarth Garden Village to recycle as much as possible;
- Space requirements have to be met as per Cornwall Council Refuse and recycling policies;
- Space for compost bins is recommended to buildings with gardens to help support growing area use;
- The space / cupboard to store bins has to be integrated as part of the building or as part of the plot boundary;
- External containers or structures must be finished with materials that suit the material palette of the neighbourhood within which they are located;
- Every dwelling in the development will have facility to securely store bicycles within the curtilage of the dwelling or apartment building;
- A minimum of 1,5 cycling spaces for 1 and 2 bedroom units and 2 spaces for 3 and 4 bedroom units to be provided;
- Each cycle store should be adaptable so as to allow the installation of an electric bike charging point(s), without compromising use for storage; and
- Where possible cycle and recycling / waste stores should be combined within the same structure to avoid clutter, and promote tidy and clutter free streets.



Fig.233: Integration of refuse / cycling store space example



Fig.234: Space saving cycling storage system



10.10 Building Adaptability

Buildings at Langarth Garden Village have to reflect and accommodate a modern lifestyle and way families interact.

It is difficult to predict the future but it is now a reality that the way we used to live work is changing and will evolve further in coming years. It is important that designers and builders keep these things in mind to provide the right type of products.

Adaptability and extensions of buildings should be encourage and embraced, they also create an opportunity for more variation and uniqueness throughout the masterplan and could assist reading the evolution of the place.

A good work-life balance highly contributes to a healthy lifestyle. It is, therefore important, that buildings contribute in achieving a good work-life balance for future residents at Langarth.

Opportunities for local development orders could be explored to facilitate future adaptability of homes.

The list below indicates some of the key points that should be considered before progressing further design:

- Extensions and outbuildings,
- Building over the garage;
- Home workspace;
- Loft conversions;
- Ground floor change of use;
- Accessibility and lifetime adaptation; and
- Communal parking conversion.

- Buildings must be designed to adapt to changes in lifestyle and the needs of different people. Internal layouts should be easy to change, with the scope for rooms and spaces to perform multiple functions, allow adaptation to different working methods, allow the installation of wheelchair access features, and to allow the ability to convert or extend;
- All extensions and conversions must incorporate materials and building elements as received in Part C of this Design Code;
- Garages must be designed and built to allow easy conversion to a workspace, storage or extra room;
- The minimum 35 degree pitch of roofs throughout the development should help enable the conversion of loft spaces into liveable floor space;
- Where buildings and dwellings are located in local centres, the ground floor should be designed to allow the adaptation into small commercial premises;
- The storey height of the street level floorplate should be a minimum of 3.5m (to the next floorplate above) to allow multiple varied uses to be accommodated in areas where mixed use can be allocated in the future; and
- Communal parking areas should be designed and built be easily converted into community growing areas, take community buildings or intensification plots in the future.



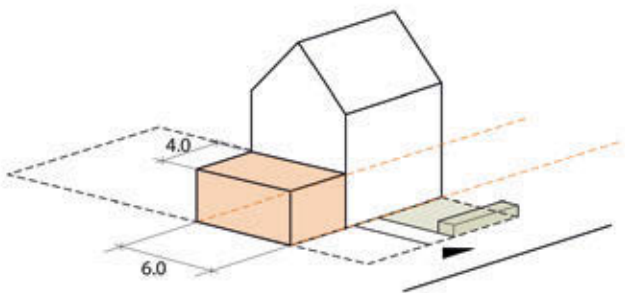
Fig.235: Home office space



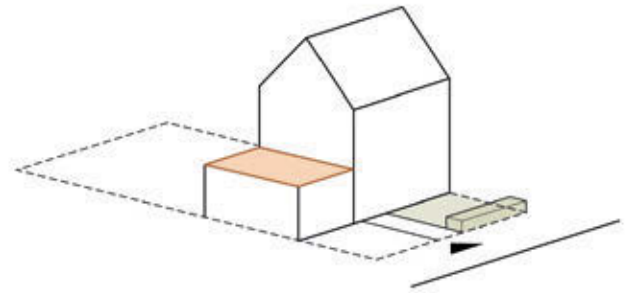
Fig.236: Communal car parking area conversion

Garages

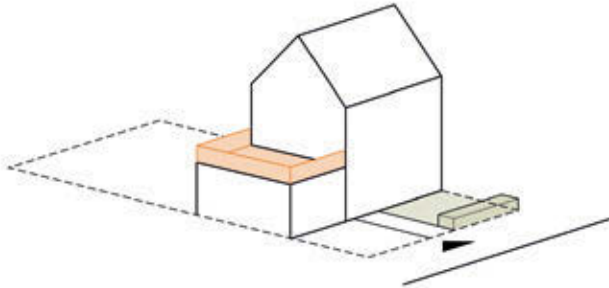
Garage alignment



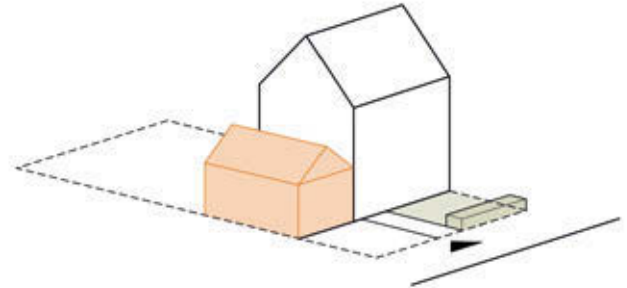
Garage with green roof



Garage with balcony / terrace

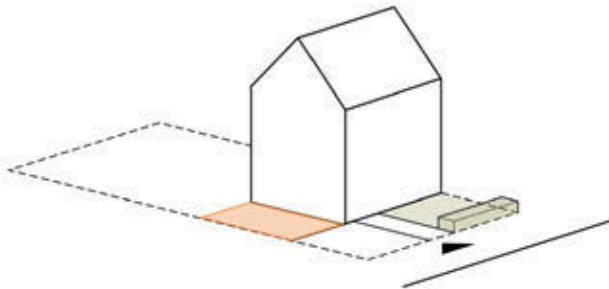


Garage adapted as an extra living space

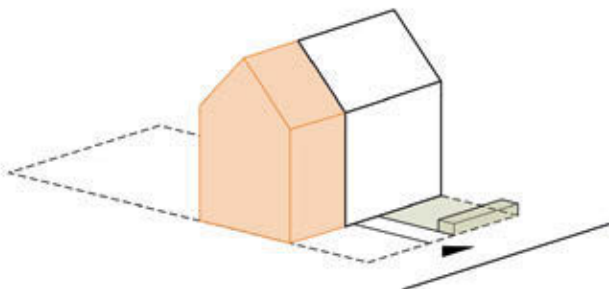


Future Adaptability for Garages

Additional garden space



Household extension



- Additional flexible room is encouraged, which could be converted into a garage where appropriate;
- Additional flexible room to be aligned with either front or back of the building;
- Dimensions of the additional flexible room to be at least 4x6m in order to provide enough space, should the room be used as a garage or additional living space;
- Alignment of garages must not exceed 2 garages placed next to each other;
- Garages should be utilised as green roofs / balconies where appropriate;
- Garden space can be extended by demolition of the garage and utilising the space provided; and
- Additional household extension can be provided by utilising the garage footprint.



10.11 Housing Aspirations and Space Standards

It was affirmed that if homes were delivered for the future, people may have more disposable income (less spent on cars and energy). Noted that the younger generation nationally are not as focused on buying cars as previous generations.

In line with Cornwall Council's policy a 25% of the residential units will comply with the "Technical Housing Standards - Nationally Described Space Standard".

- All buildings should allow easy adaptation to suit different and changing occupant accessibility requirements;
- It is recognised that site topography presents challenges to accessibility but solutions to address easy access to buildings should be sought throughout;
- As a minimum, the Lifetime Home Standard should be applied to all apartments and to other dwellings where topography challenges can be practically addressed;
- Sufficient internal space in housing for everyday activities and to enable flexibility and adaptability by meeting nationally described space standards for all affordable housing;
- Public open space on-site, in proportion to the scale of the development and providing for different types of open space based on local need. Where there is access to alternative facilities that would meet the needs of the new development, contributions to the ongoing maintenance and management of these alternative facilities may be required as part of a reduced requirement on site;
- An appropriate level of off street parking and cycle parking taking into account the accessibility of the location in terms of public transport and proximity to facilities and services;
- Sufficient and convenient space for storage for waste, recycling and compostables;
- Avoidance of adverse impacts, either individually or cumulatively, resulting from noise, dust, odour, vibration, vermin, waste, pollution and visual effects. Such adverse impacts should be avoided or mitigated during the construction, operation or restoration stage of development;
- Utilising opportunities for natural lighting, ventilation and heating by design, layout and orientation in accordance with Building with Nature Accreditation Scheme; and
- Where feasible and viable, connection to an existing or planned heat network. In the absence of an existing or planning heat network development will be expected.

Modern Living Aspirations

During the Langarth Ambition Session it has been suggested that adaptable planning approval for homes and entrepreneurial business to which everyone agreed should be sought. The Design Team does not design house types for the masterplan but intends to provide some level of quality and design codes indicated within the masterplan.

Self-Built

Self-build is the practice of creating an individual home for oneself through a variety of different methods. The self-builder's input into this process varies from doing the actual building work to contracting out all the work to an architect or building package company.

During Langarth Ambitions Session it has been stated that there will be designated plots within CC land for self-build which is interspersed within the development with possible clusters of 1-2, 5-10 and 20-30 units. This will be delivered through reserved matters at 5% of the total developed units.

Custom Built

A custom home is a one-of-a-kind house that is designed for a specific client and for a particular location. The custom home builder may use plans created by an architect or by a professional home designer. Custom homes afford consumers the opportunity to control layout, lot size, and accessibility.

In most cases, custom home builders construct on land the home buyer already owns. Some developers sell fully serviced lots specifically for the construction of custom homes. This makes it easy to build a custom home since the lot is construction-ready and builders can focus purely on the design of the home.

Modular Construction

Off-site construction involves the process of planning, designing, fabricating, transporting and assembling building elements for rapid site assembly to a greater degree of finish than in traditional on-site construction. This method of construction can offer a fast flexible and cost effective solution to help meet UK housing needs, both in the private and rented sector. Modular buildings are of very high quality, exceeding the quality of buildings built on site.

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Healthy lifestyle

Some initiatives have been identified as future opportunities to improve quality of life for future residents:

- Apply developer contribution to resident training as part of a 'whole house' approach (e.g., the incorporation of resident training and physical improvements to the property with improved heating and ventilation) systems such as the "green public housing" or "healthy homes" initiatives) which consider resident behaviours and the dwelling and have led to demonstrated improved health and well-being outcomes;
- All properties should be built with good ventilation to ensure good indoor air quality – climate change will worsen indoor air quality. Within all houses there should be adequate provision to control humidity levels, heating, and ventilation to prevent build-up of indoor air contaminants such as ozones, ETS, lead and radon, and manage air pressure relationships, moisture control and colonisation by pests;
- Management of resident 'healthy home' training to influence resident behaviour on how to best use the home will require resource funded by developer. Funds could be combined with active travel community officer role.

These should be explored as opportunities as part of future reserved matters applications.



PUBLIC SPACE

11.01 Communal Parking

The Sustainable Transport Strategy sets out the measures which aim to reduce car reliance, and reduce levels of second car ownership. The Parking Strategy works with this to ensure that the parking need is met across Langarth Garden Village, by adopting flexible, unallocated parking typologies, while also ensuring that parking does not visually dominate the neighbourhood.

Communal car parking will be provided around higher density areas. The valley topography lends itself well to podium parking typologies, meaning entrances can be designed sensitively and be visually open, providing improved natural surveillance, legibility and access.

Courtyard parking will be provided to supplement on-street parking. These will primarily be located to the sides of buildings, opening onto the street. Trees and low level planting around entrances will soften their appearance, while maintaining a good level of visibility. Car parking spaces will be unallocated, for use by both residents and visitors.

Surfaces for communal parking areas will be permeable, this may be a permeably jointed, unitised paving system or a Shottenrasen, a stabilised gravel surface which is permeable. Parking courts are present on the street in a number of locations, they afford opportunities for growing, communal recycling, cycle parking. They also offer opportunities for greening and in future, as car use reduces, bringing woodland and hedge character right into the street, close to homes.

- Trees and low level planting around entrances to soften their appearance, while maintaining a good level of visibility;
- Car parking spaces will be unallocated, for use by both residents and visitors. Spaces will be limited to 10 spaces per courtyard;
- Communal parking should be designed and located so that future adaptation is possible;
- Permeable paving to be used for parking spaces located in the landscape; and
- Appropriate care must be given to pavement selection, in order to contribute to a pleasant street scene and intuitive perception of the different functions in place. (In accordance with each specific Neighbourhood Area tonal palette).

P2.1 In landscape



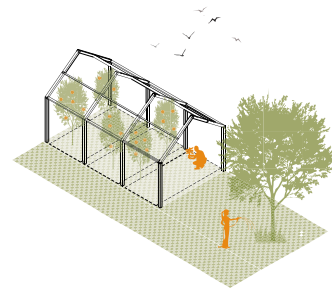
P2.2 Courtyards



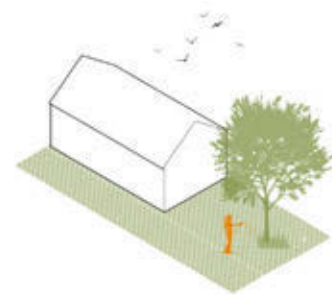
Fig.237: Communal car parking

Although the parking standards for Langarth recognise the current need for additional parking spaces in certain locations, it also identifies how some of these spaces could be adapted in the future in line with predictions on reduction of car ownership, working from home opportunities, increased accessibility to public transport and potentially automated transportation methods.

P2.3 Future adaptability



Green House



Redensification

Green House



Redensification



11.02 Car and Cycle Parking

Car Parking

Limiting car parking at trip origins is a key tool in reducing car ownership and use. In addition, parking should not dominate the street scene. The masterplan is designed to reduce the need for car ownership, by ensuring walkable neighbourhoods and providing excellent public transport and cycle facilities.

The emphasis is on creating a sustainable development. Parking will therefore be provided at levels below the maximums generally permitted elsewhere in Cornwall. The following table sets out the current Cornwall Council Parking Standards and the reductions that would apply at the development site. These must be reviewed if and when the Council Parking Standards are updated:

It is however anticipated that there would be some complementary parking between residential and non-residential uses (e.g. retail-related parking being used overnight by residents). In addition, a limited amount of visitor parking spaces (maximum 1 space per 5 dwellings across site) can be provided on-street, but these should be located some minutes' walk from residential areas to discourage on-going use by residents. The amount of visitor parking should be increased in areas within 640m (10 minutes' walk) of the school, as these areas are more likely to be used for school drop offs (see Regulatory Plan for locations). Careful design is required to limit unauthorised and ad-hoc parking opportunities (including pavement parking).

Covenants should be in place to prevent the conversion of front gardens to parking.

Location and Parking Layouts

Parking will be provided in a mix of on-plot, courtyard and on-street areas. On-street parking within adopted areas must not be allocated to particular dwellings. All on-street parking is to be within clearly defined bays to limit ad-hoc parking. Parking bays should not be provided directly adjacent to cycle routes due to the danger of dooring incidents occurring.

In order to limit visual impact, parking in, or visible from the public realm should be limited to small groups of no more than 3 bays (parallel parking or 5 bays (perpendicular parking)), separated by kerb buildouts, planting or street furniture. Parking bays should drain towards the street.

The following bay dimension should be observed:

- Parallel parking bays - 2.1m min wide x 6.0m min long;
- Perpendicular parking bays - 2.5m min wide x 5.0m min long;
- A 6.0m clear area will be required to allow vehicles to reverse into and out of these bays; and
- Echelon parking – dimensions and reversing areas to be determined via swept path analysis. Drivers should be encouraged to reverse into the bays as this is safer than reversing out.

The requirements for the layout of disabled bays are set out in the Inclusive Design Section 11.06.

Motorcycle parking areas must be provided with convenient locking opportunities. Whilst it will not be necessary to mark individual bays, a minimum allowance of 2.0m x 0.8m should be made for each motorcycle.

One enclosed parking space per dwelling for cycle parking must be provided.



Fig.238: Car Parking

Parking Controls

The potential need for controlled parking within the development should be discussed with Cornwall Council as part of any planning application. It is important that the parking regime on the site is compatible with existing parking controls within Truro. In order to reduce street clutter, any on-street parking or waiting restrictions should be in the form of Controlled Parking Zones, with signage on entry to the zone. In such zones, parking would only be permitted in identified bays.

If residents' parking controls are introduced, there may be a cost to residents associated with this in order to cover management and enforcement

In order to discourage indiscriminate parking, all on-street parking must be in discrete parking bays. These should be indicated with features such as indented bays, planting and changes in surface finish, etc.. that fit in well with the general streetscape rather than being identified by conventional street markings.

White van parking should be provided within designated parking bays and within Park & Ride Extension to minimise the impact on the streetscape.



Fig.239: Sherford Boundary Treatment and Designated Parking Zones



Fig.240: Raised Kerbs preventing ad-hoc parking

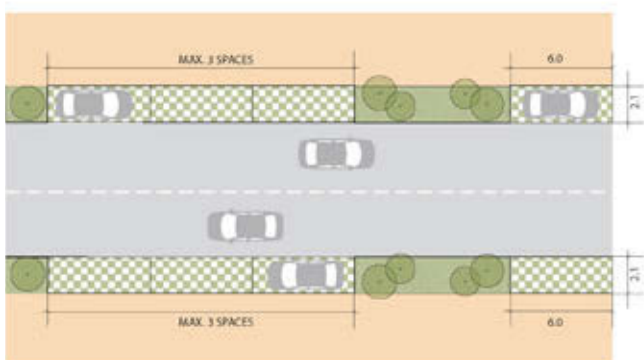
Land Use	Cornwall Council Max. Parking ratio	Langarth GV Max. Parking Provision
Food Retail	1 ps / 14 sqm GFA	1sp / 16sqm GFA (10% reduction)
Non Food Retail	1 ps / 25 sqm GFA	1 ps / 28 sqm GFA (10% reduction)
Leisure	1 ps / 25 sqm GFA	1 ps / 28 sqm GFA (10% reduction)
Employment (Including offices)	1 ps / 35 sqm GFA	1 ps / 39 sqm GFA (10% reduction)
Health Uses	1 / 4 staff + 1 per 3 consultation rooms	1 / 4 staff + 1 per 3 consultation rooms
All other schools	1 ps / 2 staff	1 ps / 2 staff
Community uses	1 ps / 5sqm public GFA	1 ps / 4 sqm public GFA (20% reduction)
Food and drink	1 ps / 5sqm public GFA	1 ps / 4 sqm public GFA (20% reduction)
Care Homes	1 ps / 6 residents + 1 ps / 2 staff	1 ps / 6 residents + 1 ps / 2 staff
Motorcycle / moped Provision	2% minimum of all non-residential uses (Additional to above levels)	2% minimum of all non-residential uses (Additional to above levels)
Disabled Parking Provision	5% minimum of all non-residential uses (Additional to above levels)	5% minimum of all non-residential uses (Additional to above levels)

Fig.241: Parking Controls Extract

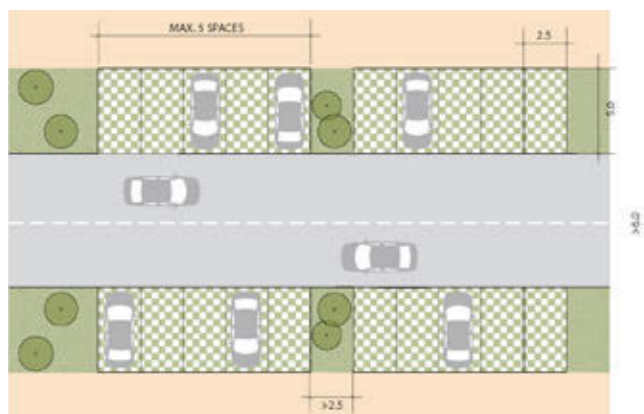


On-Street Parking

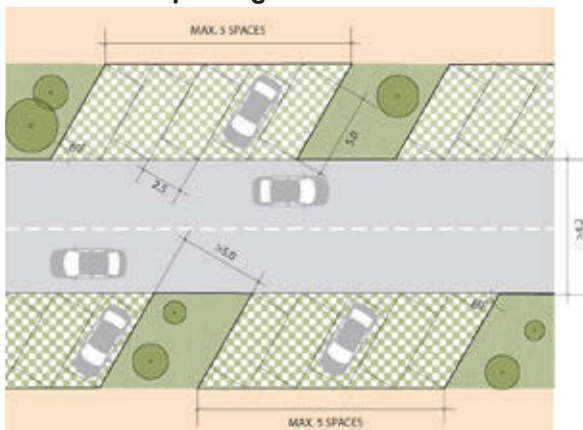
P1.1 Parallel parking



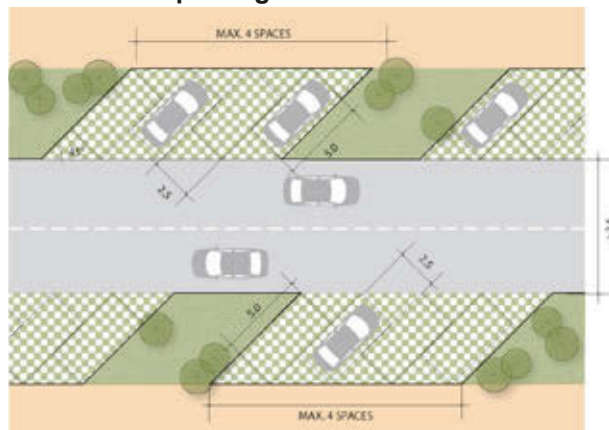
P1.2 Perpendicular parking



P1.3 Echelon parking 60°



P1.4 Echelon parking 45°



- Parking and street dimensions must follow national standards, with reference to 'The Manual for Streets' from the Department for Transport;
- On parallel parking, a maximum of 3 parking spaces, and on perpendicular parking a maximum of 5 parking spaces, must be combined with landscape pockets and street lined trees whenever possible;
- On perpendicular parking, a street width minimum of 6.0m is required to allow for enough reversing space;
- On echelon parking at 60°, a maximum of 5 parking spaces and on echelon parking at 45° a maximum of 4 car parking spaces, must be combined with landscape pockets and street lined trees whenever possible;
- On echelon parking at 60°, a minimum street width of 4.2m is required to allow for enough reversing space;
- On echelon parking at 45°, a minimum street width of 3.6m is required to allow for enough reversing space



Electric Vehicle Infrastructure and Parking

Electric vehicle charging infrastructure must form an integral part of the utility strategy and planned / integrated into the new development.



Fig.242: Electrical Vehicle Charging Point



Fig.243: Charging station precedent image



Fig.244: Electrical Vehicle Charging Point

- All dwellings must have the facility for electric car and bicycle car charging points to allow adoption of a low carbon transport strategy throughout the development;
- Every allocated residential parking space must allow for electric vehicle charging;
- Charging points need to be provided for 50% of unallocated on-street parking. Ducting and cabling should be installed for the remaining 50%;
- For apartment blocks a communal hook up point must be installed, the supply for which must be metered independently to any of the dwellings. For non-residential uses, any building with 10 or more spaces must have at least one charging bay. Additionally, ducting and cabling should be installed for 1 in 5 spaces overall;
- All chargepoints must have a minimum power rating output of 7kW, be at least Mode 3 (or equivalent) and be fitted with a universal socket that can charge all types of electric vehicle currently on the market and meet relevant safety and accessibility requirements; and
- Key neighbourhood centres and transport hubs are to be provided with commercial chargepoints. The chargepoints to be provided are to be Superfast – 43/50 kW (AC/DC) points to allow 'rapid charge'. Cornwall Council is working with the ChargePoint Services' Genie Point network within the County. The chargepoints may form part of Mobility Hubs that include space for car clubs and electric bike stations. Locations of Mobility Hubs are set out within Movement and Access Parameter Plan

Cycle Parking

Cycle parking should be at least, if not more convenient than car parking.

The location, design and type of cycle parking is important to:

- Encourage all people to choose cycling as a mode of transport and supporting active travel;
- Provide convenient, safe and secure facilities to lock and store bikes ;
- Reduce cycle theft; and
- Reduce obstruction and other nuisance caused by ad-hoc parking.

Cycle parking within the site will be a mix of private and public facilities. Publicly available cycle parking should be provided at the following locations:

- Neighbourhood centres;
- Health Centres;
- Community facilities and services e.g. libraries, pre-school and day-care facilities, open spaces and play areas;
- Schools / Colleges;
- Workplaces;
- Residential areas;
- Key public transport stops / mobility hubs; and
- Leisure venues.

Within the public realm, cycle parking is to be designed as an integral part of street design, in a prominent accessible location and connected with cycle routes. The areas of cycle parking are to be designed as secure as possible and are to benefit from natural surveillance in the public realm. Those locations are denoted as Neighbourhood Centres as per Regulatory Plan.

The type of cycle parking to be provided will depend on the demand, trip purpose and length of stay. The provision will be fall into two categories:

1. Short Stay Parking
2. Long Stay Parking

Short Stay Cycle Parking

Short staying parking will have a high daily turnover and cycles will be parked for a short duration, for example for a neighbourhood shopping centre. The use of simple tubular cycle stands (Sheffield stands) provide a simple, robust and cost-effective cycle parking solution. There are different types of tubular stands available and the selected cycle stands should be consistent with the adjacent street furniture.

Cycle stands located on-street should be highly visible, well-lit and clear of pedestrian and vehicle sight lines. The placement of cycle stands should not result in a reduction in width of the pedestrian footway. The visual impact of cycle stands can be reduced if they are placed between other items of street furniture, especially tree planting within an organised street furniture zone on-footway. Typical layouts on street arrangements for on street cycle stands are shown below.

Typical On-street Cycle Stand Layout (ref: TfL).



Fig.245: Cycle Stands

Long Stay Cycle Parking

Long-stay cycle parking would be located at key transport hubs, residential accommodation or at workplaces. The facilities are to be located in a safe, secure, convenient and well-lit location. Different options for long stay cycle parking can be considered, such as:

- Cycle lockers; and
- Secure shelters and compounds and cages.

Cycle lockers would be appropriate solution for transport hubs. Secure shelters and compounds and cages can be used to provide additional security for long stay cycle parking at locations such as public transport interchange points, workplaces or residential developments. For secure shelter and compounds, the design considerations are:

- Security, for example access by fob or swipe cards for a registered user;
- Type of cycle parking racks, allowing all types of cycles to be secured within the compound;
- Personal security of those accessing the compound, including lighting, CCTV, visibility; and
- Future Management and maintenance of secure compound.

The following locations are acceptable for long stay residential cycle parking:

- within garages;
- within the house or apartment block;
- within the rear garden area, or
- within courtyard.

Although not an absolute requirement, long-stay cycle parking will generally be within the private realm and shorty stay cycle parking will generally be in the public realm.



- In all cases, sufficient space must provided that cycles can be conveniently stored and moved into and out of storage;
- For dedicated covered parking, a storage area will need to be a minimum of 1m x 2m (sufficient for 2 cycles if wall fixings are used); and
- Where visible from the public realm, the long-stay parking facilities should be designed to coordinate with street furniture in the local area.



Land Use	Long Stay Cycle Parking	Short Stay Cycle Parking
Food Retail	1 ps / 175sqm GFA for all units above 100sqm GFA	From a threshold of 100 sqm: first 750 sqm: 1 space per 40 sqm.
Non Food Retail	From a threshold of 100 sqm: first 1000sqm: 1 space per 250sqm	From a threshold of 100 sqm: first 1000sqm: 1 space per 125sqm
Leisure	1 space per 8 staff	1 space per 100 sqm
Employment	1 space per 150 sqm	1 space per 1000 sqm
All other schools	1 space per 8 staff + 1 space per 8 students	1 space per 100 students
Community uses	1 space per 8 staff	1 space per 100 sqm
Food and drink	From a threshold of 100 sqm: 1 space per 175 sqm	From a threshold of 100 sqm: 1 space per 40 sqm
Care Homes	1 space per 5 staff	1 space per 20 bedrooms

Fig.246: Non-Residential Parking Provision

11.03 Street Design

Good street design is fundamental to creating a sense of place within Langarth Garden Village. It is important that holistic design approach is taken, putting an emphasis on the needs of pedestrians and cyclists.

The Street Hierarchy section 2.19 explains how streets have to be designed and implemented throughout the development and it identifies types of street sections.

It is important that the same principles are applied throughout Langarth Garden Village to create a cohesive place with its own distinctive character, which also enables a modal shift as part of the Building with Nature Accreditation Scheme.



Fig.247: Non motorised route example

Key Principles

The following key principles should be applied within Langarth Garden Village:

- Streets should be designed to maintain a maximum speed limit – 20mph;
- Reflect and support pedestrian and cycle desire lines;
- Minimising street clutter, including signs and markings (including centre line markings);
- Where possible, mounting signage and lighting on buildings or combined lighting / signage columns (appropriate easements will be required for maintenance purposes);
- Aim to create walkable and permeable neighbourhoods (range of facilities within around 800m);
- Away from the Northern Access Road, all junctions must be priority junctions (no traffic signals or roundabouts);
- Minimising junction radii to limit vehicle speeds and respect pedestrian desire lines;
- Construction details to be compatible with Cornwall Council Highway Construction Details, with vulnerable footway areas (e.g. junction radii) being constructed to highway standards to avoid vehicle damage;
- Maximising opportunities to enhance biodiversity;
- Maximise opportunities for social interaction and recreation; and
- Use of vertical traffic calming features should be minimised in favour of an emphasis on controlling speeds through design and layout.

Following a user hierarchy:

- Pedestrians;
- Cyclists;
- Public transport users;
- Other non-motorised users;
- Specialist vehicles (refuse, fire, deliveries); and
- Other motorised users.

The following table sets out some standard elements and expectations of the key functions of the various street types within the development.



	Primary Street	Secondary Street	Tertiary Street	Quiet Lane / Green Lane	NMU Path (Off Street)
Function	NAR, and key connections from NAR to A390	Connect from NAR into development areas	Serve smaller development areas	Enhance the permeability of development for pedestrians and cyclists	Enhance the permeability of development for pedestrians and cyclists
Non motorised users	Provide safe and welcoming environment for pedestrians and cyclists, with segregated cycling lanes	Provide safe and welcoming environment for pedestrians and cyclists	Provide safe and welcoming environment where pedestrians and cyclists and informal play and social opportunities	Create wildlife corridors and enhance biodiversity	Provide safe and welcoming environment for pedestrians encouraging both leisure and utility walking
Traffic and Speed	Encourage low traffic speeds through design 20mph	Encourage low traffic speeds through design 20mph	Encourage low traffic speeds through design 12mph	Encourage slower speed cycling in shared areas. Vehicular access restricted to maintenance 12mph	Provide direct and attractive links between key destinations 12mph
Movement / Placemaking	Movement function marginally more important than place function	Movement function equally important as place function	Movement function equally important as place function	Create wildlife corridors and enhance biodiversity	Provide direct, legible and attractive links between key destinations
Landscape	Provide linear planting and landscaping opportunities	Provide linear planting and landscaping opportunities defining neighbourhoods	Informal arrangements of landscaping to break up parking areas	Planted with Cornish hedges and native species	Planted with Cornish hedges or native species
Parking	Parallel on-street with allocated delivery, taxi and disabled spaces	Parallel on-street with allocated disabled spaces	Parallel and perpendicular on-street with allocated disabled spaces	Not allowed	Not allowed
Utilities	Included under pavement	Included under pavement	Included under pavement	Not allowed unless already existing	Not allowed
Future Adaptability	Allow for potential future use for public transport vehicles	Allow for potential future use for public transport vehicles	Should feature changes of widths for short sections on one-way working, parking etc.	NA	NA
Max. Properties Served	Not restricted	Not restricted	Circa 150	Circa 50	NA
Nominal overall Street width (mfs p53)	23.5m	11.2m	>8.8m	7m	
Nominal Carriageway Width	6m	5.5m	4.8m	3m	Varies
Junction Radii	4m	4m	4m	2m	NA
Traffic Calming	Feature at least every 70m	Feature at least every 70m	Speeds controlled by street width	NA	NA
Vehicle Swept Path Accommodated	Double-decker bus, refuse vehicle and / or fire tender to pass car	Refuse vehicle and / or fire tender to pass car	Refuse vehicle and / or fire tender to pass car	Refuse vehicle and / or fire tender	NA
Junction Visibility Splays	2.4 x 33m	2.4 x 33m	2.4 x 33m	2.4 x 33m	2.4 x 33m
Street Markings	Minimal	Minimal	No	No	No
Pedestrian Crossings	Stainless steel tactile studs inserted into paving/tactile paving	Stainless steel tactile studs inserted into paving/tactile paving	Stainless steel tactile studs inserted into paving/tactile paving	Stainless steel tactile studs inserted into paving/tactile paving	Not required
Driveways Permitted	No	Yes	Yes	No	NA
Street Markings Required	Minimal – 50mm where required	No	No	No	NA

Fig.248: Street Types Key Outcomes and Design Features

Street Trees

The use of trees in the public realm is important in establishing the character of streets and the landscape framework for Langarth Garden Village. Tree species vary according to location and function. Recommended street trees have been defined accordingly and are identified in the schedule below.

Street Materials

The appropriate selection of surface materials and street lighting helps develop the desired character of streets and public space. Recommended street materials have been specified accordingly and are identified in the schedule opposite.

In addition to that materials used must be in accordance with the tonal palette for each Neighbourhood Area as set out in Section 11.07 Public Realm - Tonal. Special attention should be given to paving and should avoid blanket over concreted solutions. Transition spaces, such as edges of the Neighbourhood Areas, must follow the principle set out in Section 9.00 Neighbourhood Transitions.



	Characteristics	Example Species Selection	Frequency	Constraints	Distance from Building Frontage
Primary Street (Urban Grain)	Avenues of traditional street trees with clear stems	Acer campetre 'Streetwise'	10-14m subject to other requirements	Tree stem needs to be minimum 600mm from front face of kerb	Tree stem up to 4-6 metres from building frontage
Secondary Street (Urban Grain)	Avenues of traditional street trees with clear stems	Tilia cordata 'Greenspire' (Ornamental Lime) Tilia x euchlora	7-15m subject to other requirements	Tree stem needs to be minimum 600mm from front face of kerb	Tree stem up to 4-6 metres from building frontage
Tertiary Street (Urban Grain)	Avenue street trees with clear stems & seasonal interest	Pyrus calleryana 'Chanticleer' (Ornamental Pear)	7-15m subject to other requirements	Tree stem needs to be minimum 600mm from front face of kerb	Tree stem up to 4-6 metres from building frontage
Primary Street (Village Grain)	Medium scale 'avenue' street trees with clear stems	Acer Pseudoplatanus	7-15m subject to other requirements	Tree stem needs to be minimum 600mm from front face of kerb	Tree stem up to 4-6 metres from building frontage
Secondary Street (Village Grain)	Medium scale 'avenue' street trees with clear stems	Prunus 'Sunset Boulevard' (Ornamental Cherry)	7-15m subject to other requirements	Tree stem needs to be minimum 600mm from front face of kerb	Tree stem up to 4-6 metres from building frontage
Tertiary Street (Village Grain)	Smaller scale street trees with clear stems; Seasonal interest, including spring flowering & autumn colour	Malus trilobata (Apple)	7-15m subject to other requirements	Tree stem needs to be minimum 600mm from front face of kerb	Tree stem up to 4-6 metres from building frontage
Secondary Street (Settlement Edge Grain)	Medium scale street trees Responding to the locality	Alnus cordata (Alder)	7-15m subject to other requirements	Tree stem needs to be minimum 600mm from front face of kerb	Tree stem up to 4-6 metres from building frontage
Tertiary Street (Settlement Edge Grain)	Smaller scale street trees Seasonal interest, including spring flowering & autumn colour	Prunus schmittii Prunus sargentii 'Rancho'	7-15m subject to other requirements	Tree stem needs to be minimum 600mm from front face of kerb	Tree stem up to 4-6 metres from building frontage

Fig.249: Street Planting Table



	Primary Street	Secondary Street	Tertiary Street	Quiet Lane / Green Lane	NMU Path (Off Street)
Footway Surfacing	25mm AC6 dense surface 100/150 (PD 6691 Annex B) or 60-65mm concrete block of clay pavers.	25mm AC6 dense surface 100/150 (PD 6691 Annex B) or 60-65mm concrete block of clay pavers.	25mm AC6 dense surface 100/150 (PD 6691 Annex B) or 60-65mm concrete block of clay pavers.	25mm AC6 dense surface 100/150 (PD 6691 Annex B) or 60-65mm concrete block of clay pavers.	25mm AC6 dense surface 100/150 (PD 6691 Annex B) or 60-65mm concrete block of clay pavers.
Parking Areas Surfacing	35mm thick 10mm SMA (SMA10 Surf 100/150 to BSEN13108 Pt5 (2006) and OD6691 (2007) Annex D or 40mm thick 10mm HRA (HRA55/10 F Surf 40/60 Des) to BSEN 10108 Pt4 (2007) and PD6691 (2006) Annex C or concrete paving blocks to BSEN 1338: 2003 and BSEN7533 2001 Pt 2 or Clay Paving Blocks to BSEN 1344:2002 and BSEN7533: 2001 Pt 2 a	35mm thick 10mm SMA (SMA10 Surf 100/150 to BSEN13108 Pt5 (2006) and OD6691 (2007) Annex D or 40mm thick 10mm HRA (HRA55/10 F Surf 40/60 Des) to BSEN 10108 Pt4 (2007) and PD6691 (2006) Annex C or concrete paving blocks to BSEN 1338: 2003 and BSEN7533 2001 Pt 2 or Clay Paving Blocks to BSEN 1344:2002 and BSEN7533: 2001 Pt 2 a	35mm thick 10mm SMA (SMA10 Surf 100/150 to BSEN13108 Pt5 (2006) and OD6691 (2007) Annex D or 40mm thick 10mm HRA (HRA55/10 F Surf 40/60 Des) to BSEN 10108 Pt4 (2007) and PD6691 (2006) Annex C or concrete paving blocks to BSEN 1338: 2003 and BSEN7533 2001 Pt 2 or Clay Paving Blocks to BSEN 1344:2002 and BSEN7533: 2001 Pt 2 a	Concrete paving blocks to BSEN 1338: 2003 and BSEN7533 2001 Pt 2 or clay Paving Blocks to BSEN 1344:2002 and BSEN7533: 2001 Pt 2 a	NA
Kerbing	125mm high conservation kerbs	125mm high conservation kerbs	40mm high conservation kerbs	40mm high conservation kerbs	NA
Carriageway Surfacing	35mm thick 10mm SMA (SMA10 Surf 100/150 to BSEN13108 Pt5 (2006) and OD6691 (2007) Annex D or 40mm thick 10mm HRA (HRA55/10 F Surf 40/60 Des) to BSEN 10108 Pt4 (2007) and PD6691 (2006) Annex C	35mm thick 10mm SMA (SMA10 Surf 100/150 to BSEN13108 Pt5 (2006) and OD6691 (2007) Annex D or 40mm thick 10mm HRA (HRA55/10 F Surf 40/60 Des) to BSEN 10108 Pt4 (2007) and PD6691 (2006) Annex C	35mm thick 10mm SMA (SMA10 Surf 100/150 to BSEN13108 Pt5 (2006) and OD6691 (2007) Annex D or 40mm thick 10mm HRA (HRA55/10 F Surf 40/60 Des to BSEN 10108 Pt4 (2007) and PD6691 (2006) Annex C or 200 x 100 concrete paving blocks to BSEN 1338: 2003 and BSEN7533 2001 Pt 2 or 200 x 100 Clay Paving Blocks to BSEN 1344:2002 and BSEN7533: 2001 Pt 2 a		
Column Height	8m (mounted on buildings where possible)	8m (mounted on buildings where possible)	6m (mounted on buildings where possible)	Various – low level bollard lighting acceptable	Various – low level bollard lighting acceptable
Column Material (if required)	Tubular steel, single reduction, hot dip galvanised. Designed to BD26/94 and BS EN 12767:2007	Tubular steel, single reduction, hot dip galvanised. Designed to BD26/94 and BS EN 12767:2007	Tubular steel, single reduction, hot dip galvanised. Designed to BD26/94 and BS EN 12767:2007	Tubular steel, single reduction, hot dip galvanised. Designed to BD26/94 and BS EN 12767:2007	NA
Light Colour	3000k	3000k	3000k or lower	3000k or lower	3000k or lower
Luminance	LED (minimum 8 LEDs series configuration)	LED (minimum 8 LEDs series configuration)	LED (minimum 8 LEDs series configuration)	LED (minimum 8 LEDs series configuration)	LED (minimum 8 LEDs series configuration)

Fig.250: Street Materiality Table

11.04 Street Planting

Planting By Grain

The strategy for tree planting in the street scene and communal spaces is to respond to the respective settlement edge, village and urban palettes. The selection of trees species is of vital importance to convey sense of place while responding to wider constraints. The table opposite indicates the design intention for each situation.

Planting by street

Below is some guidance on how planting should be approached along streets.

Street trees - Primary street S1

Street tree planting is to create an 'avenue' effect with planting at regular spacings to create a sense of enclosure and soften the street scene. Native species are preferred for the settlement edge palette, a mix of native species and cultivars for the village palette and ornamental species for the urban palette.

Street trees - Secondary street S2

Medium scale street tree planting is to create a sense of enclosure and continuity to the street scene. 'Accent' species are preferred at street corners. Cultivars are preferred for the settlement edge palette, with ornamental species preferred for the village and urban palette.

Street trees - Tertiary street S3

Medium and smaller scale street tree planting is to create a sense of enclosure and continuity to the street scene. 'Accent' species are preferred at street corners. Cultivars are preferred for the settlement edge palette, with ornamental species preferred for the village and urban palette.

Communal street trees

Medium and smaller scale trees are to help articulate space and create a sense of enclosure. Tree selection is to include clear stem and multi-stem. Native species are preferred for the settlement edge palette, a mix of cultivars and ornamental species are preferred for the village palette and urban palette.



SETTLEMENT EDGE



Fig.251: Prunus Avium

Palette including:

- Alnus glutinosa
- Betula pendula
- Fagus sylvatica
- Prunus avium
- Quercus robur



Fig.252: Acer Campestre

Palette including:

- Alnus cordata
- Acer campestre 'Streetwise'
- Acer pseudoplatanus 'Negenia'



Fig.253: Prunus Schmittii

Palette including:

- Prunus schmittii
- Prunus sargentii 'Rancho'



Fig.254: Sorbus Aucuparia

Palette including:

- Prunus avium
- Betula pendula
- Sorbus aucuparia
- Amelanchier lamarckii
- Sorbus aria
- Malus sylvestris



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Fig.255: Acer Pseudoplatanus

Palette including:

- Acer pseudoplatanus
- Fagus sylvatica
- Pinus sylvestris
- Prunus avium
- Quercus petraea
- Tilia cordata



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Fig.259: Tilia Cordata

Palette including:

- Acer campestre
- Carpinus betulus
- Pyrus calleryana 'Chanticleer'
- Quercus robur
- Tilia cordata



Fig.256: Carpinus Betulus

Palette including:

- Prunus 'Sunset Boulevard'
- Carpinus betulus 'Fastigiata'



Fig.260: Tilia x Euchlora

Palette including:

- Tilia cordata 'Greenspire'
- Tilia x euchlora



Fig.257: Malus Tschonoskii

Palette including:

- Malus trilobata
- Malus tschonoskii



Fig.261: Pyrus Calleryana

Palette including:

- Pyrus calleryana 'Chanticleer'
- Acer campestre 'Streetwise'



Fig.258: Betula Nigra

Palette including:

- Alnus incana 'Aurea'
- Betula nigra
- Crataegus prunifolia



Fig.262: Carpinus Betulus

Palette including:

- Carpinus betulus
- Fraxinus ornus
- Prunus avium 'Plena'

11.05 Street Furniture

The selection of street furniture must be considered in a comprehensive manner to ensure that a common language of elements is maintained across the public realm. The use and placement of street furniture should reflect the following principles:

- Ensure it is kept to a necessary minimum;
- Ensure it is robust, high quality, durable and with hidden/recessed anti-vandal fixings;
- The location of street furniture elements should give special consideration to the direction of pedestrian movement especially in maintaining clear unimpeded access for the elderly, and the visually and mobility impaired;
- Signage should be fixed to existing poles/posts such as lighting columns. Litter bins can be similarly attached. Overall, signage should be kept to a minimum and used only as required;
- Public transport elements such as bus shelters and seating should be arranged within the furniture corridors, in relation to kerb edges, parking bays and tree planting; and
- Selection of material should take reference from the selections proposed in Part B and section 11.07.

Below are some further guidelines to instruct the detailed design:

- Seating should always be orientated towards the adjacent open space or major street/movement corridor /viewing corridor specified within Regulatory Plan;
- Ensure that seating is perceived to be 'safe' from nearby vehicular traffic;
- Litter bins should be provided near seating and all bus stops. They must be fixed to existing poles such as lighting columns where possible.
- Dog litter bins should be provided at regular intervals along the green spines and SuDS areas. They should also be provided at all open spaces such as Squares, Parks, children's play areas and courtyards as appropriate;

- Cycle parking should be located near all bus stops and at key locations such as squares, by schools, community facilities, amenity spaces and commercial / employment areas; and
- Bollards must be of solid and robust design especially where adjacent to vehicular traffic. Unless unavoidable the same bollards should be used across the public realm and should reflect the general palette of street furniture.

For more information on the tonal palette of street furniture refer to section 11.07.

Public Transport

Promoting the use of public transport is one of the commitments of Langarth Garden Village. Two main initiatives are proposed as part of this application: a new bus route along the Northern Access Road (NAR) and the incorporation of a e-bike / e-car sharing network.

A good quality public transport is crucial if residents are to have a realistic alternative to using their cars. A costed public transport plan must be agreed with the developer consortium at the outset and regularly reviewed.

Bus Stop Design

The location of bus stops is included as part of the detailed planning application part of the hybrid planning application for Langarth Garden Village. The following principles have been applied as part of the bus stops design:

- Facilities must be of a high quality, well located and easily accessible within all areas of the development;
- Dwellings should be no more than 400m (5 minutes' walk) from a bus stop;
- They are located near key destinations (such as neighbourhood centres, amenity spaces and employment areas);
- Arrival spaces must include a bus totem providing real-time passenger information;
- Buses stop parallel to the kerb to facilitate step-free access;
- Stops must be well-lit and accessible, taking into

account waiting, boarding and alighting (including step-free access) passengers, passing pedestrians, access for people with vision or physical impairments, and interaction with the bus and bus driver;

- Both shelters and stops should include Real Time Passenger Information provision compatible with the Council's Intelligent Transport System (Cloud Amber Icarus Module);
- Shelters must incorporate reactive LED lighting which conforms to IP65 rating. Lights should be housed in a protective casing to reduce vandalism, and directed so that they illuminate the waiting and boarding areas;
- Shelters must have a pitched style shelter roof should be used to prevent the collection of rain and debris;
- Shelters to be provided with full length perch style seats (or equivalent);
- The developer or supplier shall install a solar photovoltaic roof solution as a preference to supply the lighting and information signs;
- Each shelter shall have a unique reference, displayed as a Quick Reference(QR) code; and
- The flag design shall include the following:

Cornwall Council Public Transport Branding

Bus Stop identification compliant with Traffic Signs

Bus stop and shelter designs must comply with Cornwall Council's Transport Infrastructure Design Guide and further detail will be developed in the next design stages.

Mobility Hubs / E-Car and E-Bike Hubs

There are three types of mobility hubs. These are described in the Street Hierarchy section 2.19 of this document.

Primary and Secondary hubs are located in key locations mainly along the NAR, near bus stops and employment areas. They combine electrical vehicles and electric bikes for hire as part of a sharing club.

The wider community facilities are likely to incorporate seating and community space, travel and community information boards, parcel collection points, a small cafe or similar and a community WiFi hub.

A car club provides its members with the convenience of a car without the costs of car ownership.

Car and bike points are smaller and are dotted throughout residential areas facilitating easy access for residents.

All stations are to be planned and integrated into new streets and spaces. Where possible they must combine facilities with community facilities and mixed use.



Fig.263: Bicycle storage precedent image



Fig.264: Street furniture plan

The general strategy for the public realm is to enhance the experience of moving through the village from a more settlement edge character to the urban edge. The choice of planting, paving, lighting and street furniture is of vital importance to aesthetics and practicality. The adjacent table indicates the design intention of the site wide strategy.

Street furniture

The selection of street furniture must be considered in a comprehensive manner to ensure that a common language of elements is maintained across the public realm. Use previous suppliers and ranges where possible for a unified public realm.

Hard-scape

The intention of the hard-scape strategy is to reinforce the nature and settings of the main squares, streets and park, creating an attractive but safe environment at night. With further development, the intention is to produce a cohesive scheme with a cohesive blend of materials.

Site wide lighting strategy

Street lighting should be considered as an integral part of the street design. Lighting columns should generally be kept as low as possible to signify that Langarth Garden Village is a residential environment where traffic is expected to move slowly and carefully. On less trafficked streets and in key public spaces lighting attached to buildings should be considered to avoid clutter at ground level where possible. Any public realm lighting should reflect the general palette of street furniture as highlighted above and must be sensitively located respecting and ensure there is no conflict with Highway lighting

Site wide signage strategy

Wayfinding and street name signs will form part of a specially designed suite of signs with a distinctive look that will be used throughout the new settlement. Where possible, these should be attached to buildings or walls to avoid cluttering the street scene.



SETTLEMENT EDGE



Fig.265: Street Furniture

Palette including:

- Timber
- Corten Steel



Fig.266: Hard-scape

Palette including:

- Granite
- Timber
- Permeable paver



Fig.267: Lighting

Palette including:

- Corten Steel
- Stainless Steel
- Black Painted Finish



Fig.268: Signage

Palette including:

- Granite
- Timber
- Stainless Steel
- Corten Steel



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Fig.269: Street Furniture

Palette including:

- Timber
- Granite
- Corten Steel



Fig.270: Hard-scape

Palette including:

- Granite
- Permeable paver
- Corten Steel



Fig.271: Lighting

Palette including:

- Stainless Steel
- Black Painted Finish



Fig.272: Signage

Palette including:

- Granite
- Timber
- Stainless Steel



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Fig.273: Street Furniture

Palette including:

- Timber
- Granite
- Concrete



Fig.274: Hard-scape

Palette including:

- Granite
- Permeable tarmac
-



Fig.275: Lighting

Palette including:

- Stainless Steel
- Sculptural Corten Steel



Fig.276: Signage

Palette including:

- Granite
- Timber
- Stainless Steel

11.06 Outdoor Sport and Play

Outdoor Sports and Play areas must meet the minimum dimensions as specified by Fields in Trust Guidance. (Document reference: Guidance for Outdoor Sports and Play). In addition to that, materiality has to work in accordance with the palette of each of the Neighbourhood Areas. This is to ensure a coherent design of play spaces and generation of a public realm which instils a sense of community.

Equipped and Designated Play areas have to be located within the distance specified as per the Fields in Trust Guidance. This is to ensure, that the residents are not disturbed by the Play Areas in their locality.

Fitness Trail and Outdoor Gyms

As part of the proposal for Langarth Garden Village (LGV), there are two interconnected Fitness Trails providing the residents and visitors with an additional way to travel across LGV in a sustainable matter as well as aid their physical and mental health. Two combined Fitness Trails provide approximately 10,000m of route, with six Outdoor Gym Stations along their course (three stations per loop). Each of the Outdoor Gym Stations estimate approximately three pieces of equipment to enable assumptions in terms of the area and cost calculations.



Fig.277: Outdoor Gym Equipment Precedent Photo



Fig.278: Equipped Play Space Precedent Image



Fig.279: Fitness Trail Precedent Image

Open Space Typology	Quantity Guideline (Hectares per 1,000 pp)	Walking Guideline (m from dwelling)	Quality Guideline
Playing Pitches	1.20	1,200m	<ul style="list-style-type: none"> Quality appropriate to the intended level of performance, designed to appropriate technical standards; Located where they are of most value to the community to be served; Sufficiently diverse recreational use for the whole community; Appropriately landscaped; Maintained safely and to the highest possible condition with available finance; Positively managed taking account of the need for repair and replacement over time as necessary; Provision of appropriate ancillary facilities and equipment; Provision of footpaths; and Designed so as to be free of the fear of harm or crime.
All outdoor sports	1.60	1,200m	
Equipped / Designated Play Areas	0.25	LAPs - 100m LEAPs - 400m NEAPs - 1,000m	
Other outdoor provision (MUGAs and skateboard parks)	0.30	700m	

Fig.280: Fields in Trust recommended benchmark guidelines - formal outdoor space.

Open Space Typology	Minimum Sizes		Minimum Dimensions	Buffer Zones
Playing Pitches	Association football Adult Soccer	0.74 ha	106 x 70m	N/A
	Mini soccer U7/U8 pitch	0.14 ha	43 x 33m	
	Mini soccer U9/U10 pitch	0.25 ha	60 x 42m	
	Rugby Union	0.70 ha	100 x 70m	N/A
	Mini Hockey	0.31 ha	65 x 48m	N/A
	Lacrosse	0.66 ha	100 x 60m	N/A
	Cricket	1.43 ha	111.56 x 87.64m	N/A
Equipped / Designated Play Areas	LAP	0.01 ha	10 x 10m	5m minimum separation between activity zone and nearest property containing a dwelling
	LEAP	0.04 ha	20 x 20m	20m minimum separation between activity zone and the habitable room facade of dwellings
	NEAP	0.10 ha	31.6 x 31.6m	30m separation between activity zone and the boundary of the nearest property containing a dwelling
Other outdoor provision (MUGAs and skateboard parks)	MUGA	0.10 ha	40 x 20m	30m separation between activity zone and the boundary of the nearest property containing a dwelling

Fig.281: Fields in Trust recommended minimum sizes - formal outdoor space.

11.07 Inclusive Design

Design proposals shall be developed from the Masterplan, to incorporate the Inclusive Design principles set out by Design Council CABE's 2006 publication 'The Principles of Inclusive Design – They Include You':

1. Places people at the heart of the design process;
2. Acknowledges diversity and difference;
3. Offers choice where a single design solution cannot accommodate all users;
4. Provides for flexibility in use; and
5. Provides buildings and environments that are convenient and enjoyable to use for everyone.

Reference should be made to key standards including Part M of the Building Regulations and BS 8300. These documents provide technical details and standards relating to the approaches and accesses to buildings, including facilities for disabled visitors and occupants. All parts of development should be made accessible for users with reduced mobility.

Street Design

Streets within Langarth Garden Village must be designed to enable the movement of people and goods whilst making positive contribution to the development in which they are located.

Further detailed design will determine which street types are most suitable for each location. The Movement and Access Parameter Plan and Street Hierarchy indicate where these should be located. Slope must be a key driver to ensure most streets are no steeper than 1:15 (6.6%). Where and if this is not possible, resting / seating places and railings may be required to ensure streets are accessible to all.

All footways and footpaths follow desire lines and provide a network of convenient routes. All footways must be a minimum of 2m wide. Additional footway width should be provided where required, for example between a footway and a heavily used carriageway or gathering places such as schools and shops.

Footways and access routes shall be designed in accordance with the guidance set out in Manual for Streets 1 & 2 & BS8300. Further guidance including minimum footway widths is provided in Inclusive Mobility: A Guide to Best Practice on Access to Pedestrian and Transport Infrastructure.

Appropriate tactile paving should be used, where necessary, on access routes to provide warning, guidance or information to people who are blind or partially sighted. This includes delineating vehicular and pedestrian areas.

Crossings

Where pedestrian routes are separated by streets, sufficient provision shall be made for all users to cross the carriageway. The three main objectives of any crossing should be safety, convenience and accessibility. Most crossings at Langarth Garden Village will be uncontrolled or informal crossings: pedestrian refuge island or dropped kerb. Where some signal-controlled crossings (which require drivers to stop at red lights and give users a push button to register demand) will be incorporated as part of the NAR and A390 Improvements.

Crossings are important in allowing mobility and visually impaired people, to navigate independently. Accessibility features should be provided including dropped kerbs and tactile paving. Where appropriate, tactile signals and audible signals should be provided at signal-controlled crossings.

Crossing locations should be assessed and designed in accordance with the detailed guidance contained in Traffic Signs Manual Chapter 6 – Traffic Control. The provision of crossings should consider several criteria including geometry, layout, pedestrian and traffic flows. Additional controlled crossings should be considered near to shops and schools as the site develops and pedestrian activity increases.

Generally, informal crossings should be sufficient within the development, unless close to particularly attractive desire lines or across busier streets.



Fig.282: Inclusive Footway



Requirements - Approach Routes General

The approach route should be safe and convenient for everyone, including older and disabled people and some wheelchair users. It should adopt the shallowest gradient that can reasonably be achieved and be step-free where possible.

The approach route should be level, gently sloping, or where necessary, ramped. On steeply sloping plots, a stepped approach can be used.

To enable most people to approach the dwelling, approach routes should comply with all of the following:

- The approach route is level, gently sloping, ramped or, where unavoidable, stepped;
- All external parts of the approach route have a suitable ground surface;
- The approach route is a minimum of 900mm wide with a maximum cross fall of 1 in 40;
- Where a driveway forms all, or part of, the approach route, an additional allowance of at least 900mm wide should be provided so that a wheelchair user can pass a parked car.

External ramps forming part of an approach route

A ramped approach should comply with all the following:

- Individual flights are: for gradients up to 1:15 - not more than 10m long; for gradients up to 1:12 - not more than 5m long;
- Every flight has a minimum clear width of 900mm;
- Every flight has a top and bottom landing;
- An intermediate landing is provided between individual flights and at any change of direction; and
- Every landing is a minimum of 1200mm long, clear of the swing of any door (or gate).

External stepped approach

Where it is not possible to achieve step-free access to any private entrance (as may occur on a steeply sloping plot) a stepped approach is acceptable if it complies with all of the following:

- Steps are uniform with a rise of 75 - 150mm and a minimum going of 280mm (for tapered steps measured at a point 270mm from the 'inside' (narrow end) of the step);
- Steps have suitable tread nosings;
- No individual flight has a rise of more than 1800mm between landings;
- Every flight has a minimum clear width of 900mm;
- Top and bottom and, where necessary, intermediate landings, are provided and every landing has a minimum length of 900mm; and
- Every flight with three or more risers has a suitable handrail to one side. This grippable handrail is 850 - 1000mm above the pitch line of the flight and extends a minimum of 300mm beyond the top and bottom nosings.

BS 8300 provides further enhance guidance for stairs, ramps and handrails. DfT Guidance on the Use of Tactile paving Surfaces should also be applied when it is required to identify level changes such as steps & stairs, pedestrian crossings and to differentiate cycle lanes from pedestrian footpaths.

Fig.283: General Approach Table extracted from BS 8300

Visually Impaired

Providing an environment that can be safely and easily navigated by visual impaired individuals is especially important.

Kerbs and tactile surfaces are a major source of information for the visually impaired when moving around. These materials should be incorporated into the design to clearly delineate and inform key decision points along the routes.

Features such as kerbs or building lines that could be used to provide reference points for the visually impaired should be considered. The design should also incorporate reference features, such as tactile guidance paths, within more open areas to assist blind and partially sighted people navigating these spaces.

The use of lighting and footway materials with colour/tonal contrast will also enhance the usability of a space for blind and partially sighted people.

De-cluttering

Public Realm areas should be designed to remove unnecessary obstructions to pedestrian movements by minimising street clutter.

Signage and information must follow a clear, concise and consistent approach. Routes to key amenities and destinations shall be clearly indicated as part of the overall signage strategy.

Opportunities to reduce clutter should be reviewed as part of the design, examples include:

- Considering desire lines to key facilities to provide clear and logical routes;
- Providing orientation by use of existing or new landmarks such as trees or buildings;
- Provide pedestrian crossings points at appropriate locations which are clearly defined;
- The use of contrasting materials to delineate routes, as an alternative to multiple signs; and
- Mounting signage on buildings or other items of street furniture.

Accessible Housing

Some of the housing in the new residential areas should be designed with accessibility in mind. As topography is an issue, it is recommended this housing should be located on flatter terrain and as close as possible to amenities such as shops, public transport and schools.



Fig.284: Wheelchair user



Fig.285: Tactile Paving

Accessible Parking

Accessible parking will be assessed to ensure suitable provision for disabled people and provided at all key destinations. Anticipated provision is as specified in BS8300 and summarised below, but developers should make their own assessment of any additional provision of disabled bays.

Accessible parking spaces must be pepper-potted throughout the development. Extra provision of spaces should be located near community facilities, areas of mixed use, local centres and employment areas.

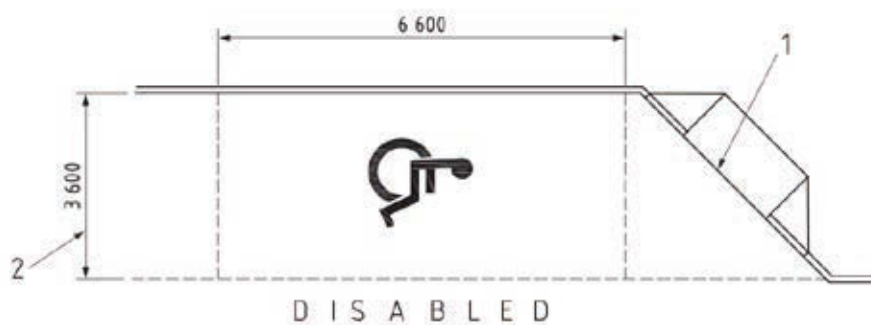
Other types of parking spaces such as spaces for families should be consider in key locations to enable safe routes to users.

Minimum provision of designated accessible parking extracted from the BS 8300:



	One space for each employee who require one:	Designated spaces	Enlarged spaces (3.6 x 6m)
		% of total parking spaces	% of total parking spaces
Workplace	Yes	5	5
Educational buildings	Yes	5	5
Shopping, recreation and leisure	Yes	6	4
Transport car parks	Yes	5	5
Medical and health facilities	Yes	6	4
Religious buildings and crematoria	Yes	Minimum two spaces or 6% - whichever is greater	4
Sports facilities	Refer to Sports England guidance		

Fig.286: Accessible Parking Provision Table



Key

- 1 Dropped kerb (with blister tactile paving)
- 2 Allows safety zone on kerb or street side

NOTE This arrangement may also be used for off-street parallel parking.

Fig.287: Example of designated on-street parallel parking space. BS8300-1:2018

11.08 Public Realm - Tonal

The materials palettes are designed to ensure that Langarth Garden Village has a distinctive character that draws inspiration from the vernacular architecture of the locality as well as a series of clearly distinguishable neighbourhoods.

The code does not seek to prescribe a particular architectural style but rather to develop a distinctive Langarth colour and materials palette that can be used on different styles of building as the place grows over time. The palette includes enough variety to create unity without uniformity, allowing each neighbourhood and residential grain to develop an individual identity but still be recognisably Langarth.

The tonal palette is based on the earthy colour tones found in the typical stonewalls on farm buildings in the area. Spanning from the light grey to darker reddish over brown and yellow.

To the South the greyish yellow tones connects with the residential areas in Threemilestone and Treliske.

To the north the earthy brown / reddish colour tone works well with the existing farmsteads and as subtle backdrop for the ancient woodland and the scheduled monuments.

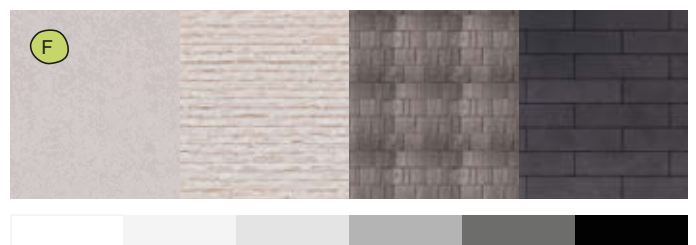
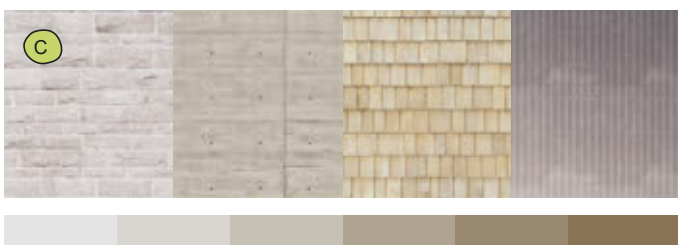
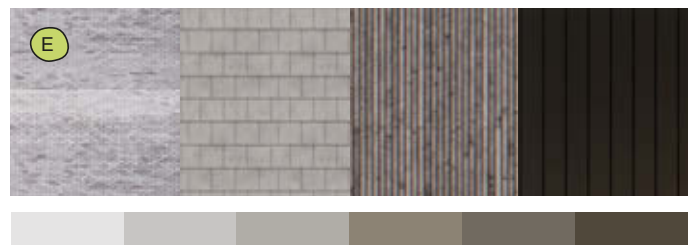
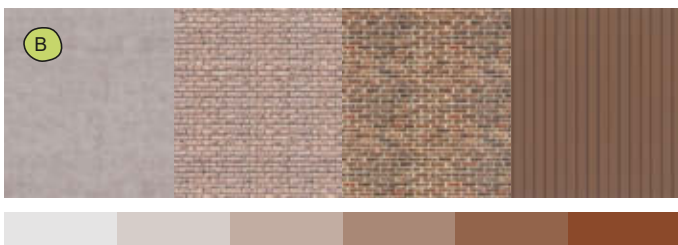
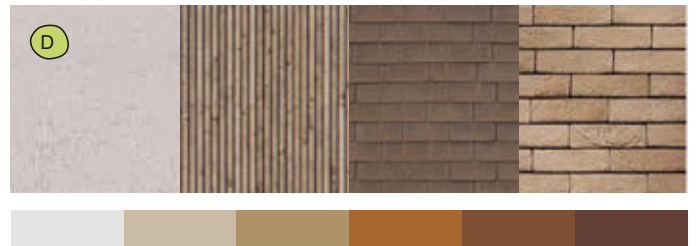
For the complete neighbourhoods material palettes refer to Part B of this Design Code. The materials must be composed in accordance with the principles as set out by the Building with Nature Accreditation Scheme in terms of their environmental performance.



Fig.288: Reference - Typical Cornish Farm Building / Cottage



Fig.289: Public Realm - Langarth Square Visual



11.09 Secure by Design

Secured by Design (SBD) is a police initiative to ensure that crime prevention measures are designed into new developments.

The design should incorporate the principles of proven crime prevention techniques into the layout and landscaping. These include:

- Access & Movement – Well defined spaces allowing convenient movement without compromising security;
- Structure - Places that are structured so that different uses do not cause conflict;
- Increasing natural surveillance - Public places which are overlooked;
- Ownership – Creating a space that promotes a sense of ownership, community and responsibility;
- Defensible spaces – Clearly defined spaces that include necessary, well designed security features;
- Activity – places that are designed to be appropriate for activities which will be undertaken; and
- Management and maintenance – Spaces which are designed to account for future management and maintenance in mind, to discourage crime in the present and the future.

Devon and Cornwall Police's Designing out Crime Officers (DOCO) provide advice and recommendations on designing out crime in the built environment. Liaison with the DOCO should be carried out for all areas of the development during the development of the design to provide feedback on proposals, identify and resolve any potential conflicts.

Access and movement through the Langarth Garden Village must be considered in terms of the nature and quality of connections. The design should incorporate well-defined routes, spaces and entrances that provide for convenient movement without compromising security.

A range of issues relating to access and movement through the residential space should be considered, with reference made to good practice guidance. A checklist is set out in the 'Safer Places – The Planning System and Crime Prevention':

1. Have the consequences of the number and nature of all connections been considered?
2. Do all routes lead to somewhere people want to go? Are all routes necessary?
3. Do routes provide potential offenders with ready and unnoticed access to potential targets?
4. Are routes for different users segregated when they could be integrated?
5. Will pedestrians, cyclists and drivers be able to understand which routes they should use?
6. Is it easy to understand how to travel through an area?

Surveillance

A design which allows natural observation by occupants, pedestrians, cyclists and motorists can create a space which discourage anti-social or criminal behaviour. Particular care should be taken to avoid gable ends fronting onto un-overlooked public areas.

Layouts should provide natural surveillance by ensuring streets are overlooked and well used. All routes and public spaces should be well and evenly lit to the relevant levels as recommended by current editions of BS 5489 & BS EN 13201 Parts 1-9.

Parking areas should benefit from good natural surveillance, for example a clear view from householder windows.

At key destinations, provision of facilities such as storage lockers for bikes and ground anchors for motorcycles / scooters provide users with confidence that these items can be safely secured.

Activity

The design of each area should be appropriate for activities which will be undertaken. Safe routes should be provided between strategic points within the development, for example between housing areas and communal spaces.

Access to communal and open spaces should be designed with an inclusive approach to ensure suitability for all users. Opportunities for natural surveillance from nearby residential properties should be maximised.

11.10 Further Design Guidance List

Document	Published By
Healthy Street for London	Transport for London (TfL)
Garden City Standards for the 21st Century - Practical guides for creating successful new communities	Town and Country Planning Association (TCPA)
Putting Health in Place - Introducing NHS England's healthy new towns programme	TCPA / NHS / Public Health England
Creating Healthy Places - Perspectives from NHS England's healthy new towns programme	The King's Fund
Garden Villages - Empowering localism to solve the housing crisis	Policy Exchange
Guidance for Outdoor Sport and Play - Beyond the six acre standard	Fields in Trust
Active Design - Planning for health and wellbeing through sport and physical activity	Sport England / Public Health England
Area Guidelines for Mainstream Schools	Department for Education / Education Funding Agency
Design Guidelines for Development Near Pylons and High Voltage Overhead Power Lines	National Grid
RIBA Sustainable Outcomes Guide	Royal Institute of British Architects (RIBA)
Biodiversity - Supplementary Planning Document (SPD)	Cornwall Council
Biodiversity Net Gain - Good design principles for development	Chartered Institute of Ecology and Environment Management (CIEEM)
Technical Housing Standards - National described space standards	Department for Communities and Local Government
Building for Life 12	Homes England
Manual for Streets (One and Two)	Department for Transport / Communities and Local Government
Cornwall Planning for Biodiversity Guide	Cornwall Council
Building for a Healthy Life - A design code for neighbourhoods, streets, homes and public spaces	Homes England
Streets for All - Advice for highway and public realm works in historic places	Historic England
Buildings Mission 2030	Construction Leadership Council / The Green Construction Board
Living with Beauty - Promoting health, wellbeing and sustainable growth	Building Better Commission
The Principles of Inclusive Design - They include you	Commission for Architecture and the Built Environment
The Building Regulations	Ministry of Housing, Communities and Local Government
Secure by Design: Version 2	Police Crime Prevention Initiatives
Safer Places - The planning system and crime prevention	Office of the Deputy Prime Minister / Home Office
New Cornwall Design Guide and New Streetscape Guide (2020)	Cornwall Council
Standards Framework (BwN 2.0)	Building with Nature Ltd.

Fig.290: List 2 - Further Design Guidance

TERRAIN ADAPTABILITY

12.01 Terrain Adaptability Principles

Flat land is relatively scarce in Cornwall and generally where existing flatter land lies in close proximity to Cornish towns and villages, the land has been developed previously. In many locations around Cornwall, settlements have had to grow and adapt to the challenges of topography and climate. These topographies are also found in the Langarth Garden Village, and the undulating landscape represents a substantial challenge to future delivery. Along with the difficulties of designing on steep slopes, the design challenge is heightened further when you include the ambition of ensuring the historic character of the area from field patterns, woodlands, traditional hedgerows and lanes which need to be respected. This requires a specific design response at Langarth Garden Village and the development must contribute to a sense of place which response to topography will play a part in forming.

Slope

Buildings can be stepped to reflect steep topography where necessary. Dwellings in these terraces may step individually in steeper locations, or step in pairs where the gradient is shallower. It will be necessary to explore non standard house types on particularly steep locations such as split level and upside down typologies to maximise views and address topographical challenges.

Where keeping the levels untouched is not feasible, re-profiling should be minimised and should follow the cut and fill principles set out as part of this section. Land taken from one area, should be used in a nearby location. Open space and gardens should also be stepped to accommodate level changes. Plot and building edge conditions and boundary treatments have to respond to existing or re-profiled terrain, to allow for a seamless connection with the adjacent development. Building frontage must allow for off street access, and be Part M accessible.

Orientation

Most areas at Langarth Garden Village are north facing, meaning most properties need to optimise west and east orientations to achieve solar gain.

Buildings must primarily be orientated in a way they can maximise the benefit of positive solar gain in cooler seasons and provide shade where necessary in the summer. It is important to note that orientation must also be considered for landscape, open public space, community buildings as well as residential dwellings, to avoid overshadowing.



- Buildings must be designed and positioned to maximise beneficial solar gain in cooler seasons and provide shade where necessary in the summer;
- Non-standard house types (e.g. split level housing) are to be utilised on steeply sloped terrain;
- Maximise the benefits of both sunlight and shade within the design of the streets, open spaces, greenspace and gardens, to create attractive and comfortable external environments;
- Careful location of food growing within private gardens to benefit from sunshine throughout an extended growing season;
- Landscape features are to be used to provide shelter from prevailing winds in exposed areas, and orientating buildings to avoid exposure to key elevations;
- Each Reserved Matters application must submit a cut and fill strategy consistent with the Design Code principles;
- Climate change mitigation and adaptation must be considered in the design of buildings and landscape;
- Roofs must be orientated to maximise generation opportunities for PV;
- On stepped terraces, exposed gable ends between properties should be constructed of hard-wearing and easy to maintain materials to avoid discolouration.

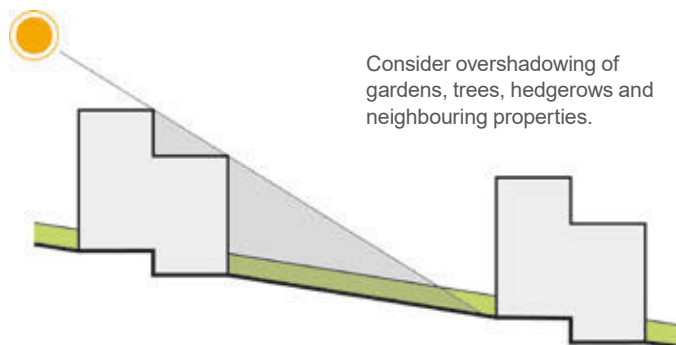


Fig.291: Orientation and Overshadowing Diagram

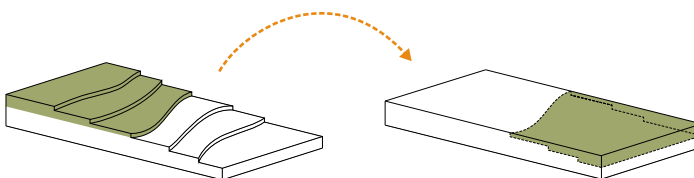


Fig.292: Cut and Fill Balance diagram

12.02 Cut and Fill Strategy

The existing site generally has a steep topography with ground slopes ranging between 5% and 20%, with a significant proportion of the land zoned for development at 5% to 10%.

The four main features that determine proposed site levels are: existing features to be retained, street gradients, drainage, and development platform slopes. All of these elements need to be considered together to ensure they tie in with the boundary constraints of the site.

Development platforms for buildings, gardens, and courtyards create a requirement for a relatively level slope across the development parcel. In general a slope of approximately 7% should remove the need for any significant retaining structures however, the exact plot layout will determine what will be required.

As outlined above, the majority of the developable site has an existing fall of around 8% and steeper. A development parcel gradient of 7% or above will create a requirement for cut and fill. The general method for determining the extents of cut and fill should be as follows:

1. Extend principle street corridors from fixed existing points using the maximum allowable gradients and street levels will be fixed from these points;
2. The vertical alignment of the NAR has been developed considering existing site constraints, geometrical design standards and the feasibility of adjacent development plots. The vertical alignment of this primary street has

dictated the extents of the earthworks cut and fill for the highway works. In general, the extents of the highway interface with the existing ground level at a gradient of 50%;

3. Determine locations of attenuation basins and fix levels of basin base and top water level to suit incoming drainage, outfall points and available land; and
4. Ascertain boundary levels for development parcels, considering items 1 and 2 above, together with fixed existing ground levels, retaining routes and Cornish hedges, and check the resulting overall slope across the parcel.

In general, where the resulting parcel slope is steeper than 10%, retaining structures will be introduced to try and 'level up' the development platform, this could be in front or back gardens or the building itself. Where possible the aim is to balance the cut and fill. However, this will not always be possible where a number of the above constraints all come in to play.

In some locations, the space available to remove the level differences is limited, therefore significant depths of cut and fill cannot be avoided. This can principally be seen for Penventinnie Square and other areas to the East of the site where there is a cut depth of up to 12m.

The cut and fill strategy must be developed in line with phasing to identify areas of storage for future use throughout the site. No fill material from cut slopes will be stored in the flood plain and key overland drainage flow routes.

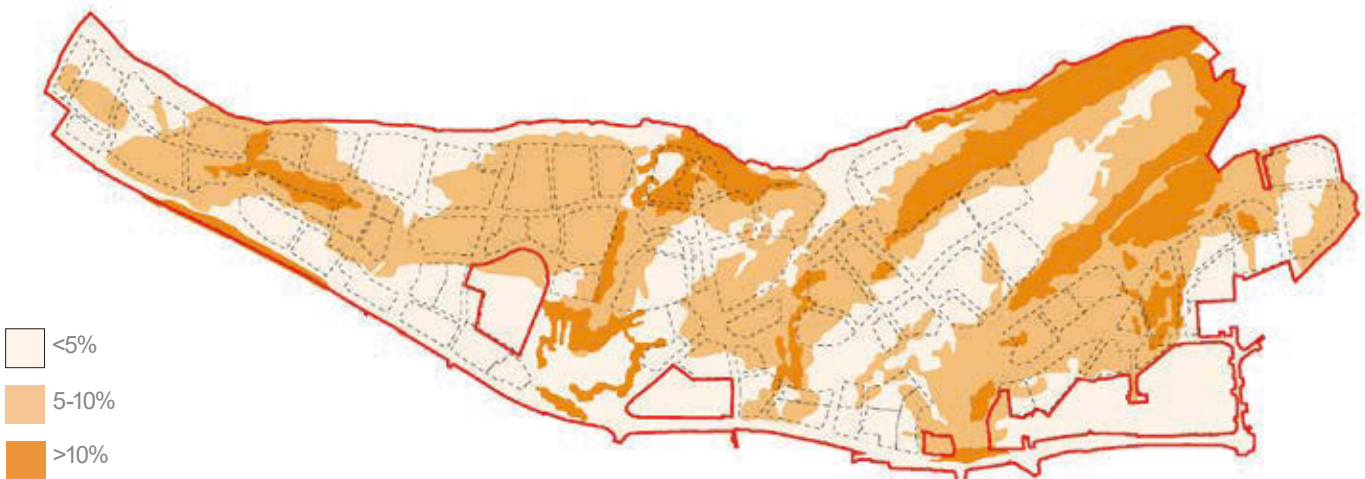
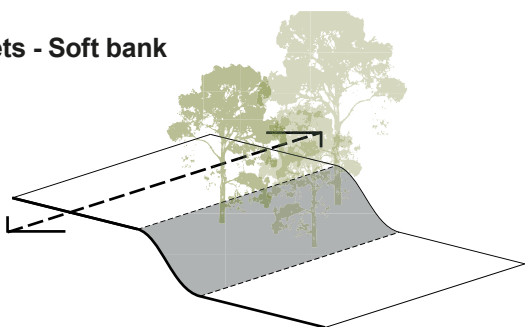


Fig.293: Slope Plan

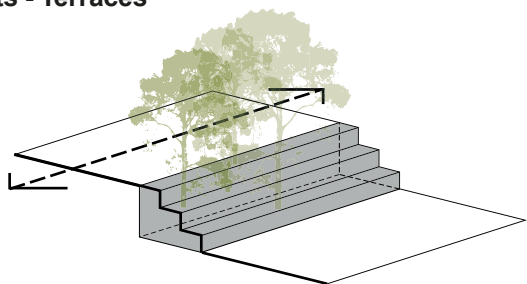
12.03 Slope Treatment

Slope Treatment - Streets

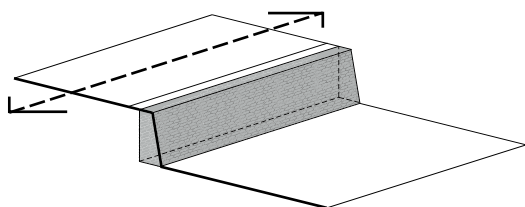
Streets - Soft bank



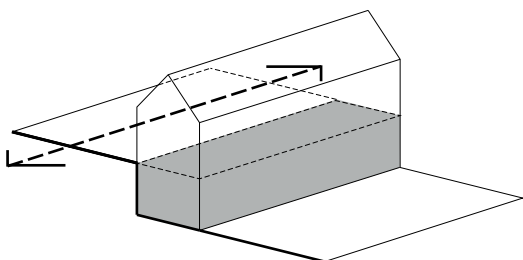
Streets - Terraces



Streets - Retaining wall



Streets - Buildings



- To secure bank stability, the bank cross fall must be below 1:3 and it should be planted with appropriate species;
- Regardless of the materials and design solution adopted, the terrace stability will be secured;
- Maintenance access needs to be provided;
- When adjacent to private properties thought must be put on anti-climbing safety measures;
- Appropriate drainage must be granted to the structure;
- Single structure height must not exceed 1800mm;
- Where street slopes are greater than 1:15 (6.6%), resting / seating places and railings may be required to ensure streets are accessible to all; and
- Street gradients are set by the design criteria laid down by the highway authority, in this case Cornwall Council. A reasonably flat gradient is required at road junctions in order to provide a safe platform for vehicles using the street junction, thereafter the gradient can be a maximum of 10%.

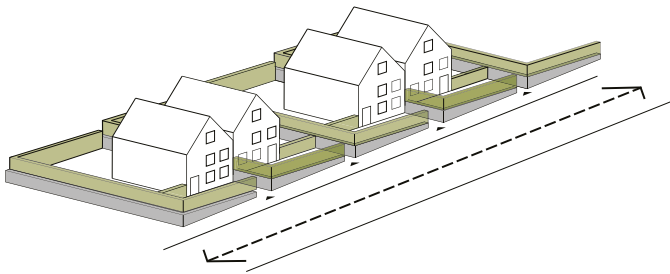


Fig.295: Slope Treatment Precedent - Park View, Gateshead by Miller Homes

Fig.294: Slope treatment - Street Diagrams



Transversal slope (retaining wall and hedge)



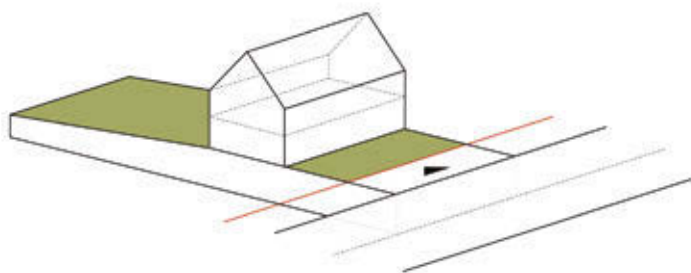
- When falls run transversally to the plot (along the street), retaining structures need to be provided between the plots;
- The height of these retaining structures should be minimised as much as possible and privacy should be granted through the use of wood fences or hedges; and
- Plot access should, as much as possible, be levelled with the street. When this is not possible, preference should be given to ramps going up from the street level to the unit FFL, complying with building regulations.



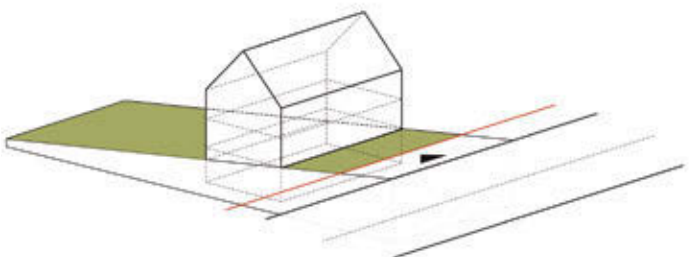
Fig.296: Slope Treatment Precedent - Stafford Close, Christow - Devon by Mitchell Architects

Slope Treatment - within Plots

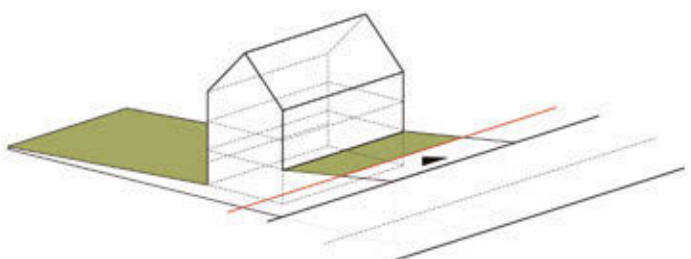
Less than 0.75m level difference:



0.75 - 2.0m level difference:



Over 2.0m level difference:



- Cut and fill compensation must always be sought, minimizing costs and impact on areas outside the site;
- The Cut and Fill Strategy must be part of any Reserved Matters Application and should be reviewed periodically in line with phasing;
- A Ground Remediation Plan must be in place, with measures to save topsoil and avoid exposure of soil toxicity;
- Level changes should be avoided at front gardens, as this incurs in additional drainage costs;
- If the fall is less than 0.75m landscape, within the plot, should be accommodating any minor re-profiling;
- If the fall is 0.75 - 2.0m level retaining structures might be needed depending on the location and re-profiling of gardens with semi natural solutions should be aimed; and
- If the fall is greater than 2.0m a combination of strategies must be used to minimise significant re-profiling, including: split level units, retaining structures, either within buildings or gardens.

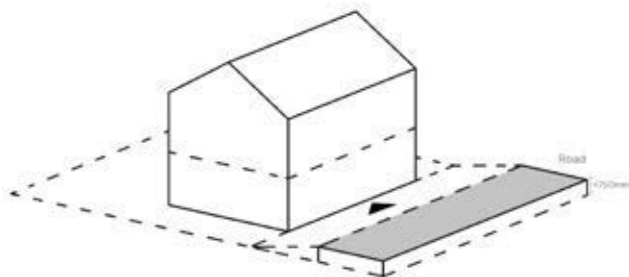
Fig.297: Slope treatment - within Plots Diagrams

Slope Treatment - within Buildings

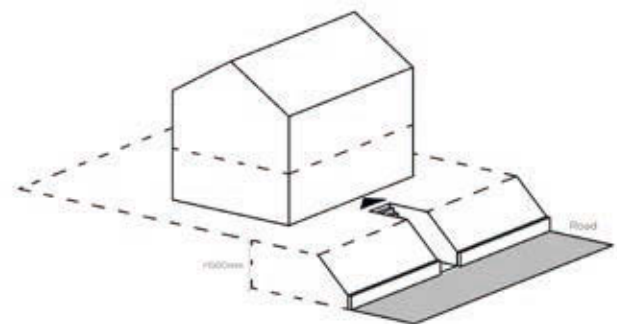


- Buildings must use their built form to mediate between steep land form and liveable floor plates, responding to sloping topography;
- The response of buildings to topography creates richness in character, and opportunities for interesting forms;
- Where a building facade aligns with the street edge thus creating a strong street presence, a retaining structure located within the footprint of the dwelling can create a split level house. The dwelling will then open onto existing ground levels at front and the rear. Steps in the floor levels should be a maximum of one storey height. Careful attention needs to be paid to achieving access to principle rooms in accordance with Approved Document M(2) guidance;
- The lower storey created opens on to a garden space with principle rooms requiring natural light and ventilation; and
- Careful detail of retaining structure is required as it both supports the highway and forms the external wall to liveable space. A lower risk option is to create undercroft parking accessible from the lower level.

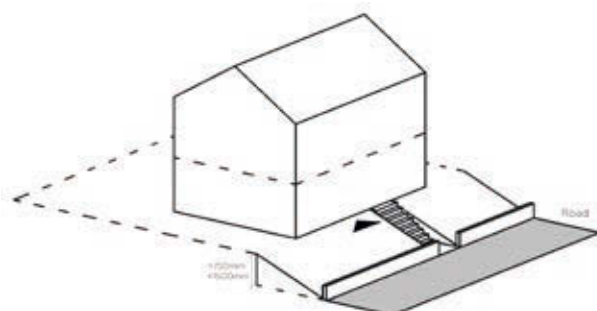
Stepped - Street Edge <750mm higher / lower



Retaining Structure



Stepped - Street Edge 750-1500mm higher / lower



Split Level Typologies

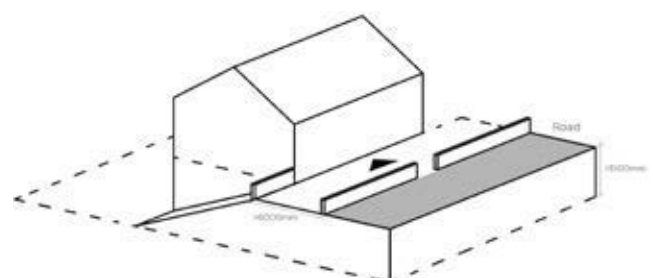
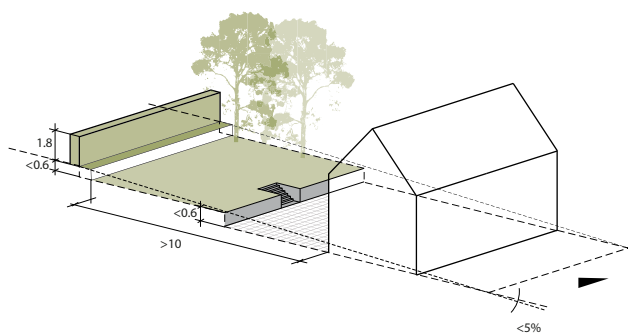


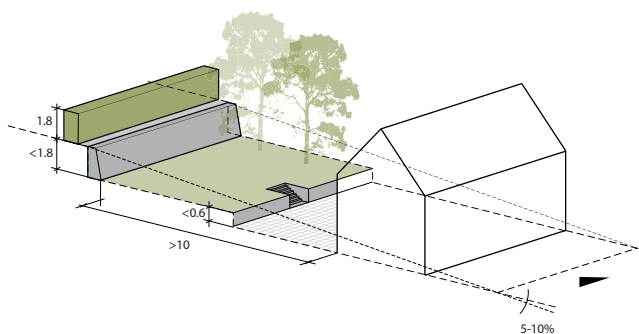
Fig.298: Slope treatment - Street Diagrams

Slope Treatment - within Gardens

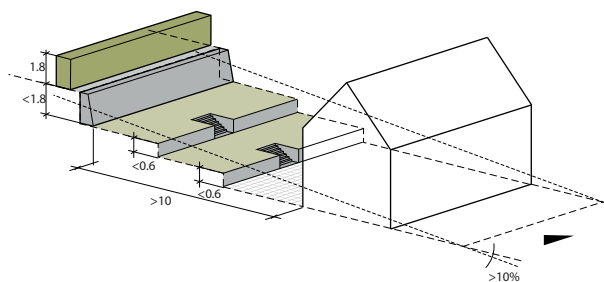
<5% Slope, within plot (raised planted and wood fence)



5-10% Slope, within plot (retaining wall and hedge)



>10% Slope, within plot (retaining wall and hedge)



- A maximum of 1.5m should be allowed for retaining structures each side of the fence, assuring back terrace and gardens depths are not lower than 10m;
- Retaining walls height must not exceed 1.80m and be combined either with a hedge or planting space in between;
- When falls run transversally to the plot (along the street), retaining structures will need to be provided between the plots;
- The height of these retaining structures must be minimised as much as possible and privacy should be granted through the use of planting; and
- Plot access must, as much as possible, be levelled with the street. When this is not possible, preference should be given to ramps going up from the street level to the unit FFL, complying with building regulations.



Fig.300: Slope Treatment Precedent - Park View, Gateshead by Miller Homes

Fig.299: Slope treatment - within Plots Diagrams

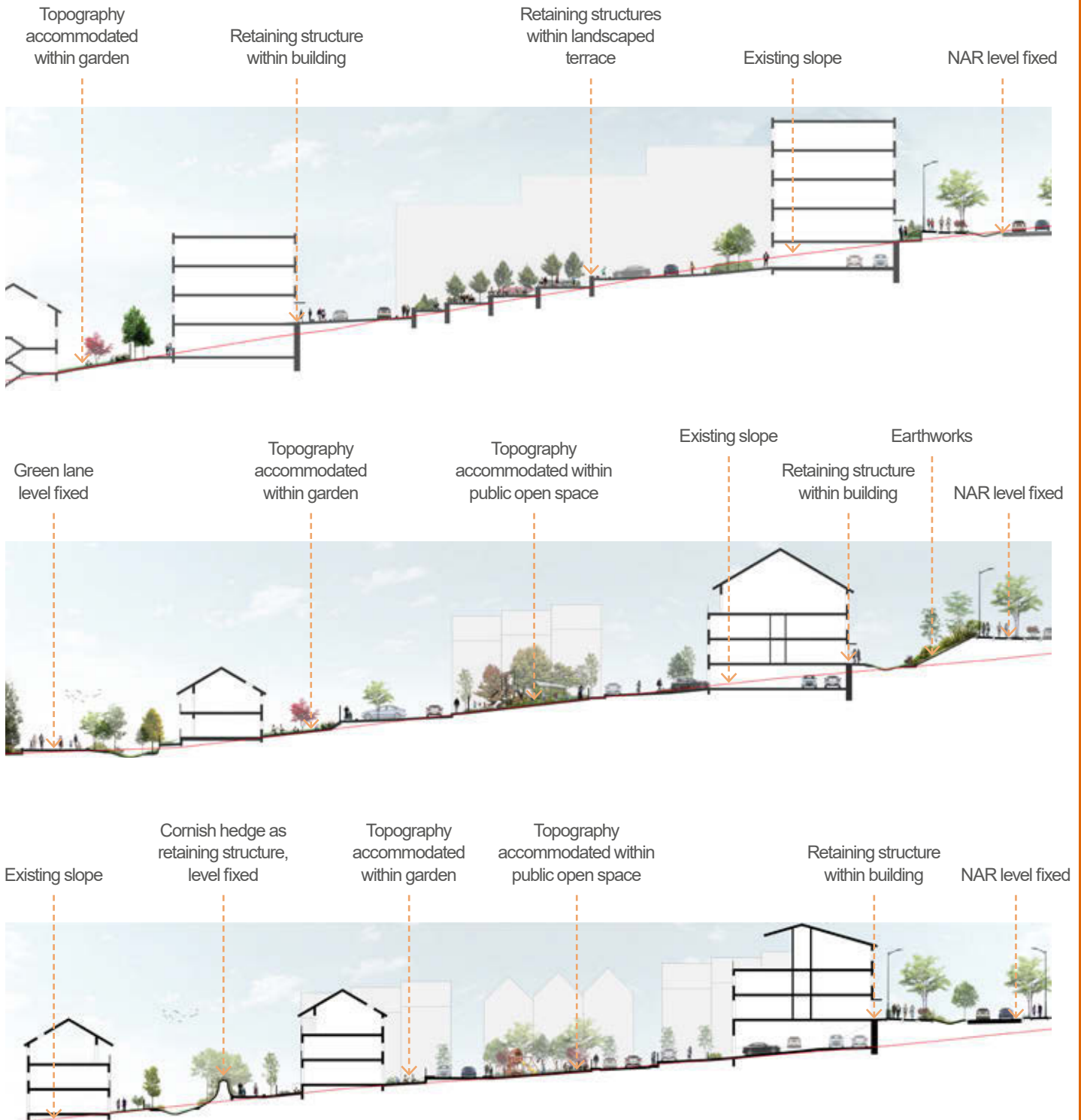


Fig.301: Slope Treatment Sections

BIODIVERSITY

13.01 Planting Strategy

New trees are to be planted across the site, incorporated within the Green Infrastructure network and into the street hierarchy and private gardens. Native species will be used where feasible although cultivars and ornamental species may need to be used where there are constraints due to highway design, underground services and building foundations. Native species will be proposed in natural areas and parts of park and amenity space. Where constraints allow, native species will be proposed along the Northern Access Road (NAR). Some cultivars and ornamental tree species will be planted on the network of streets including the NAR, secondary and tertiary streets. Other tree species should be agreed with Cornwall Council. In addition to the constraints referred to above, species will be selected according to the following:

- Position in street hierarchy;
- Space available above ground;
- Space for rooting systems below ground;
- Water demand of species in accordance with National House Building Council (NHBC) standards;
- Expected height at maturity;
- Expected width at maturity;
- Form; and
- Seasonal interest.

Trees and planting are also an opportunity for water management purposes as a SuDS feature - especially along streets and within landscape areas due to the water soaking qualities. Future planting needs to ensure compliance with the Building with Nature Accreditation Scheme.

Further detail on potential tree species selection is provided in the respective neighbourhood chapters. Further detail on the planting strategy will be agreed with the Council in future reserved matters applications.



- Street trees should create an 'avenue' effect with planting at regular spacings to provide a sense of enclosure and continuity in the streetscene;
- Trees in communal spaces should form part of a design, helping to articulate space and create a sense of enclosure; and
- Species used have to support local biodiversity, therefore must be native to the local area in order to work along the Building with Nature Accreditation Scheme principles.



Fig.302: Tree Palette Precedent Images



Fig.303: Oak (*Quercus robur*) in a park space



Fig.305: Rowan (*Sorbus aucuparia*) in natural space



Fig.304: Ornamental Pear (*Pyrus calleryana* 'Chanticleer') as a street tree



Fig.306: Field maple cultivar (*Acer campestre* 'Streetwise') as a street tree

13.02 Biodiversity Net Gain Strategy

The aspiration for Langarth Garden Village is to achieve up to a 20% Biodiversity Net Gain (BNG) across the site. In order to achieve this target, recommendations by the Cornwall Planning for Biodiversity Guide have been considered at the early stages of design. The guide relates to the aim of Cornwall Council to deliver, more and better quality green infrastructure as set out in the Local Plan. Good quality green infrastructure, including public open space and nature provision within development sites must make a valuable contribution towards liveability and the environment. This further builds upon principles as prescribed by the Building with Nature Accreditation Scheme.

It is also an aspiration for future development at LGV to be awarded with Building with Nature status. Building with Nature is a voluntary approach that enables developers, who want to go beyond the statutory requirements, to create places that really deliver for people and wildlife.

In order to meet these aspirations existing biodiversity on site and surrounding areas should be seen as an opportunity rather than a constraint. Hence the early decision to retain as much as possible of the green infrastructure existing on site and design a masterplan that protects the existing



- Hedges and other habitats marked as retained must be retained (with buffers) to ensure that the predicted Biodiversity Net Gain (BNG) can be achieved;
- Follow advice from your ecologist regarding other habitats within the site that may have biodiversity value, or the potential to be increased in biodiversity value, and retain as much of these features as possible – BNG is most easily gained by retaining and enhancing existing habitats, rather than creating new ones;
- Ensure that ongoing management and maintenance of retained and new habitats / planting chosen is feasible and can be secured; and
- Longevity of the Green Infrastructure, and therefore BNG must be ensured as part of the Building with Nature Accreditation Scheme principles.



Fig.307: Delivering biodiversity measures within mitigation hierarchy. Extracted from Cornwall Planning for Biodiversity Guide

Langarth Garden Village Enhancement for Habitats

To achieve the 20% biodiversity net gain a number of design rules have been put in place. These rules are split in two different sections, rules affecting the site wide framework and rules related to the built environment, including buildings and treatment of boundaries.

The table below summarises the elements that should be taken under consideration when designing new elements of the green infrastructure, public spaces and drainage infrastructure.

For information on biodiversity net gain and on plot mitigation rules please refer to section 13.03 Biodiversity - Plot Design below.



Habitats present at Langarth Garden Village	Mitigation to be incorporated
Waterways, water bodies	<ul style="list-style-type: none"> • Enhance water body by re-profiling banks and maintaining suitable undeveloped buffers on the advice of your ecologist; • Create new water bodies, in line with the SUDs Strategy; • Create habitat suitable for otters / amphibians; • Create bat access to roof voids and cavity walls; and • Create green walls and roofs.
Wetland	<ul style="list-style-type: none"> • Follow the Landscape and SuDS Strategy to create a suitable drainage scheme that is also a wetland habitat next to wetland areas.
Building or other structure	<ul style="list-style-type: none"> • Incorporate barn owl or bat “lofts”; • Erect bird, bat and bee bricks; and • Erect bat and bird boxes in some instances.
Grassland	<ul style="list-style-type: none"> • Create an area of wild-flower meadow, grassland, wetland scrapes - depending on the quality of the existing wetland; and • Create new areas adjacent to the site & consider inverting the soil profile.
Cornish hedge	<ul style="list-style-type: none"> • Enhance by repairing damages sections and implementing appropriate management regime; • Follow the Landscape Parameter Plan and Strategy to link existing hedges by creating new ones; and • Link other habitats by creating new hedges.
Mine sites and quarries	<ul style="list-style-type: none"> • Retain and manage areas supporting important species; and • Create suitable conditions for colonisation by lower plants and invertebrates, e.g. green / rubble roofs.
Woodland / Scrub	<ul style="list-style-type: none"> • Manage existing woodland for biodiversity, particularly old woodland; • Buffer woodland areas and link to other habitats; and • Follow the Landscape Parameter Plan to plant new trees, erect bat / bird / dormice boxes.
Trees	<ul style="list-style-type: none"> • Retain existing ancient / mature trees and trees with cracks, splits, deadwood and lifted bark; • Provide a suitable buffer from development using the advice of an arboriculturalist; • Plant native species; and • Facilitate natural regeneration (allow trees to grow naturally from seed buried in the soil).
Non-native species	<ul style="list-style-type: none"> • Control invasive non-native species at the earliest opportunity.

Fig.308: LGV Enhancement for habitats. Extract from Cornwall Planning for Biodiversity Guide

13.03 Biodiversity - Plot Design

The aspiration for Langarth Garden Village is to achieve up to a 20% Biodiversity Net Gain (BNG) across the site. In order to achieve this it is important to create the right Landscape Strategy and bring nature into development, connecting green corridors across the site. The following tables explain the ratios required in order to achieve this 20% Biodiversity Net Gain. Only by incorporating the below minimum percentages of communal gardens, semi natural open space, allotments, orchards and private gardens will the 20% BNG will be achieved across the site.

Garden provision has been subdivided depending on the Residential Grain and the density within it. This has followed the logic of providing the largest amount of private garden space within the more rural plots, and gradually shifting this amount towards communal green areas within more urban parts of the masterplan.



Garden Provision within Residential Grains				
Residential Grain	Density	Communal Gardens / Micro Allotments (%)	Private Gardens (%)	Total Gardens (%)*
Settlement Edge - Clusters				
	Up to 35	35%	15%	50%
	Up to 40	25%	15%	40%
	Up to 50	20%	15%	35%
Settlement Edge - Hillside				
	Up to 35	30%	20%	50%
	Up to 40	20%	20%	40%
	Up to 50	15%	20%	35%
Village				
	Up to 40	25%	15%	40%
	Up to 50	25%	10%	35%
	Up to 60	25%	5%	30%
	Up to 140	30%	0%	30%
Urban				
	Up to 40	30%	10%	40%
	Up to 50	30%	5%	35%
	Up to 60	30%	0%	30%
	Up to 140	30%	0%	30%

Fig.309: LGV Garden Provision table / *Total Gardens percentage refers to the percentage of total Developable Plot area

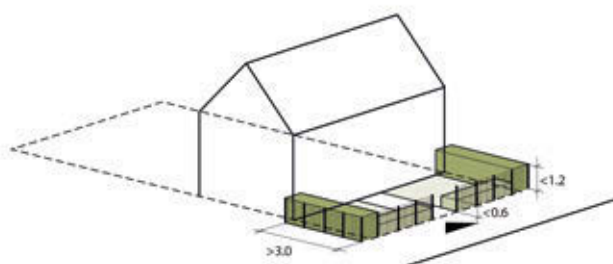


Plot Boundary Treatment

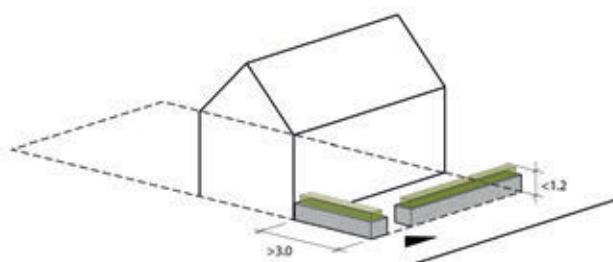
All boundary treatments used within proposed development feature planting as a combining element. Three main boundary treatments proposed are: fully planted, low walls with planting above and railings with planting behind providing screening. Timber fencing must be avoided and hedges should be used instead. Planted hedges can be made more secure with the incorporation of metal mesh blended amongst the hedge.

A full list of proposed boundary treatments is available in section 9.04 above.

A. Post and wire planted - with native shrubs



B. Planted with low walls



C. Railings with planting

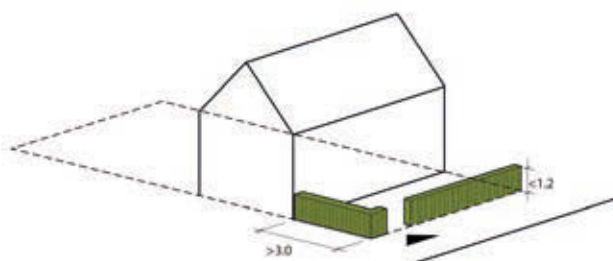


Fig.310: LGV Boundary Treatments

Boundary Treatment within Neighbourhoods		
Neighbourhood	Density	Boundary Treatment
A - The Brake		
	Up to 35	A
	Up to 40	B
	Up to 50	C
	Up to 140	C
B - West Langarth		
	Up to 35	A
	Up to 40	A
	Up to 50	B C
	Up to 60	C
C - Langarth		
	Up to 40	A B
	Up to 50	B
	Up to 60	C
	Up to 140	C
D - Governs		
	Up to 35	A
	Up to 40	A B
E - Willow Green		
	Up to 50	B C
	Up to 60	C
F - Penventinnie		
	Up to 35	A
	Up to 40	A B
	Up to 50	B C
	Up to 60	C
	Up to 140	C

Fig.311: LGV Boundary Treatment table

13.04 Communal Gardens

Streets and other public spaces such as public squares have an important social function to bring people together and to act as a focus for community life. This must be achieved by provision of spaces for social interaction such as communal gardens.

It is important that such places offer natural surveillance, therefore do not become pockets of land promoting antisocial behaviour.

- Communal Gardens must be overlooked by buildings or public space to provide suitable visual security;
- Communal Gardens must be adjacent to private gardens to encourage community interaction;
- Communal Gardens could be semi private spaces; and
- Communal Gardens need natural surveillance and to be defended from ad-hoc parking by appropriate means e.g. appropriate boundary treatment.

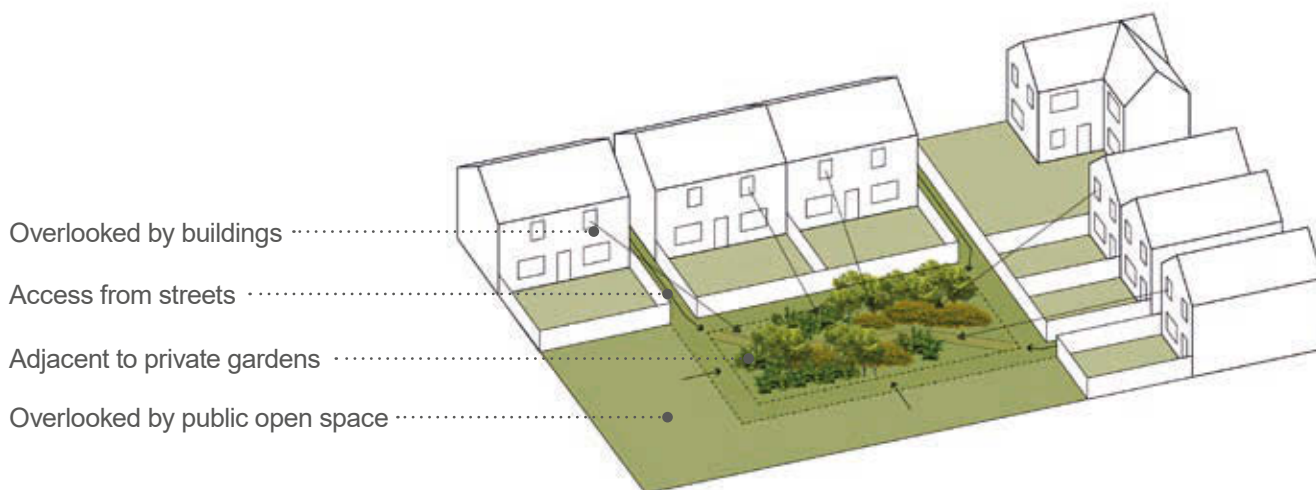


Fig.314: Communal Gardens Diagram



Fig.312: Communal Garden Precedent Image



Fig.313: Sherford Communal Space Precedent Image



13.05 Micro Allotments

Micro allotments are parcels of communal gardens dedicated to growing food dotted across the site within the development parcels. They would naturally become areas of play and community interaction.

The provision of the micro allotments in conjunction with the LGV Allotments (located near the Community Farm) must ensure that the recommendations from the National Allotment Society of 0.5ha per 1000 units is achieved at Langarth Garden Village.

For further information regarding the provision of micro allotments, refer to section 2.32 of this Design Code.

- Micro allotments must be overlooked by buildings or public space to provide suitable visual security;
- Micro allotments must be adjacent to private gardens to encourage community interaction; and
- Micro allotments could be semi private spaces.

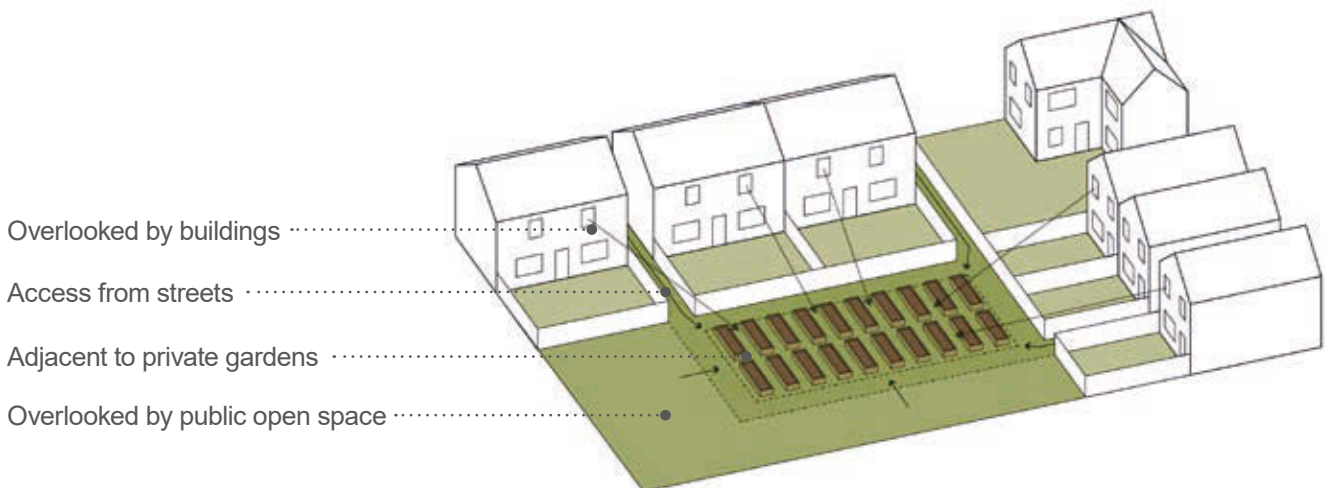


Fig.317: Micro Allotments Diagram



Fig.315: Community Allotment Precedent Image



Fig.316: Community Allotment Precedent Image

13.06 Ecology

The following pages provide information on how ecology can be integrated into the scheme and how existing plot ecology can be protected.

Trees

- Provide food, shelter, shade & nesting / roosting sites;
- Reduce pollution & create oxygen;
- Native species support more wildlife; and
- Green corridors for bats and birds.

Hedgehog Holes

- Holes in fences allow hedgehogs and other small mammal to easily move between gardens;
- Habitat boxes provide shelter.

Bat / Bird/Bee Bricks

- Provided within houses primarily adjacent to green routes in key location;
- Bats have different roosting sites & move between them at different times of the year.

Hedges

- Define boundaries and screening;
- Provide food, shelter, shade & nesting sites; and
- Native species support more wildlife.



Fig.318: Extract from Cornwall Planning for Biodiversity Guide



Fig.319: Hedgehog hole example



Fig.320: Bee brick example



Fig.321: Green roof precedent image



Fig.322: Embedded bird box

Development within parcels / plots must:

- Protect habitats already present within development parcels / plots;
- Follow advice from ecologists regarding the most appropriate habitat type or types to create within development plots (this will be based on an assessment of the habitat it will be replacing);
- For soft landscaping outside private gardens, native or wildlife friendly species must be used to create natural or semi-natural habitats – for example choose pollinator rich planting over non-native amenity planting which provides no flowers or fruit for wildlife;
- Incorporate green roofs or green walls on flatter roofs and key locations as a feature for buildings;
- Each building must incorporate a birds (e.g. swift) or bat brick in the fabric to recreate the natural cavities found in older properties and be acceptable to most building dependent species;
- Bird bricks should be approximately be a metre+ apart and approximately five metres above ground level in locations sheltered from prevailing weather conditions and direct sunlight;
- Bat bricks should be built into south facing elevations, at least 2-3m above the ground but ideally higher and not illuminated by street or other external lights;
- Bee hives should be incorporated in communal gardens to assist with pollination;
- Bee bricks are to be incorporated into buildings at a minimum ratio of one bee brick in every other dwelling; these should be on southern elevations close to but not shaded by vegetation and at least 1m above the ground;
- Ensure that ongoing management and maintenance of retained and new habitats / planting chosen is feasible and can be secured; and
- Provide advice to future homeowners in order to encourage them to think about wildlife when planting up and managing their gardens – e.g. leaving an area of the garden “wild” to encourage wildlife, planting pollinator friendly plants or planting small trees.

SUSTAINABILITY & UTILITIES

14.01 Sustainability Strategy

Sustainability should be treated as an integral overarching theme running through the design code process, across the different scales of action. Sustainable design implies both a street agenda, beyond simple energy and resource efficiency

issues and is based on a clear agenda which extends beyond generalised policy aspirations. The masterplan has been designed to encourage sustainable patterns of living, including the following:

Spatial scale	Site Wide	Neighbourhoods Urban Form
Resource Efficiency	Invest in public transport infrastructure. Utilise existing infrastructure efficiently before extending it. Consider sustainable urban drainage (SUDs). Consider combined heat and power (CHP) systems making a contribution to the creation of an identifiable sense of place.	Revised parking standards. Urban block depths that allow sun and natural light penetration and natural ventilation. Provide local access to public transport.
Diversity and Choice	Integrate travel modes. Connect route networks. Promote a centre hierarchy to boost choice. Offer variety in services and facilities between centres. Overcome 'edge' barriers to accessibility.	Mix uses within neighbourhoods. Design a fine grained street and space network. Support diversity in neighbourhood character. Localise facilities and services.
Community	Enhance legibility through neighbourhood identity and organisation. Promote equitable access through land use arrangement. Build settlement image to foster sense of belonging.	Design visually interesting networks of open space. Enhance legibility through landmark and space disposition. Encourage social mix within communities. Traffic calm via urban form.
Resilience	Build a robust web of infrastructure to last and enable the integration of new technologies over time. Recognise changing patterns of living and work and provide accordingly.	Design to allow fine grained changes of use across districts. Design robust urban block layouts. Design for revitalisation of existing areas and heritage assets.
Pollution Reduction	Sustainability should be treated as an integral overarching theme running through the design process, across the different scales of action. Sustainable design implies both a street agenda, beyond simple energy and resource efficiency issues and is based on a clear agenda which extends beyond generalised policy aspirations.	Match projected CO2 emissions with tree planting. Clean and maintain the place. Tackle light pollution. Give public transport priority.
Biodiversity	Link public (and private) open space into a network. Green urban fringe locations. Integrate town and country through landscape treatments.	Set generous public open space standards. Provide private open space such as gardens. Create new and enhance existing habitats. Respect natural features and resources.
Distinctiveness	Protect any positive regional identity and landscape character. Positively utilise topography. Preserve archaeological inheritance.	Reflect distinctive morphological patterns. Identify and reflect significant public associations. Consider neighbourhood identity and qualities.

Urban Space

Design spaces appropriate to regulated vehicle speeds and circulation. Design spaces that reduce wind speeds and enhance micro climate. Use local, natural materials. Provide bicycle parking and storage facilities.

Mix uses along streets and in blocks. Design for walking and cycling. Resist privatisation of the public realm. Remove barriers to local accessibility

Provide quality, human scale public space. Combat crime through space design and management. Enhance safety by reducing pedestrian /vehicle conflict. Design for social contact and for safe play. Allow personalisation of space

Design robust spaces, usable for many functions. Design spaces able to accommodate above and below ground infrastructure requirements. Design serviceable space

Reduce hard surfaces and water run-off. Design-in recycling facilities. Design well ventilated space to prevent pollution build-up.

Robust soft landscaping. Plant and renew street trees. Encourage greening and display in private gardens. Encourage local food production i.e. allotments

Reflect local townscape and site character in design. Retain distinctive site features. Design for sense of place. Retain important building groups and spaces

Built Form

Use passive (and active) solar gain technologies. Design for energy retention. Reduce embodied energy – local materials and low energy materials. Use recycled and renewable materials

Provide opportunity to mix uses within buildings. Mix building types, ages and tenures. Build accessible, lifetime homes and buildings. Mix home sizes . Mix home specifications

Support innovation and artistic expression in design. Design to human scale. Design visually interesting buildings. Support active frontages and entrances on to streets. Design for natural surveillance

Design for easy maintenance. Build extendible buildings. Build adaptable buildings. Build to last. Use resilient materials and fully test new building technologies before use

Reuse and recycle waste water. Insulate for reduced noise transmission - vertically and horizontally.

Provide opportunities for greening buildings. Consider buildings as habitats. Support indigenous species and habitats

Where appropriate, respond to surrounding architectural character in design. Enhance locally distinctive buildings and their settings.



- Following Cornwall Council's declaration of a Climate Emergency in January 2019, all buildings should be designed to allow progression towards achieving Net Zero Carbon by 2030.
- The frequent review of the Design Code should assess the validity of the Sustainable Design Standards and seek to amend and improve upon the targets wherever possible to meet changes in legislation or technological advancements; and
- The Building with Nature Accreditation should be sought by all developments within Reserved Matter Planning Applications which fall under Langarth Garden Village masterplan.

14.02 Sustainable Design Standards

The Langarth Garden Village design principles form a key part of the masterplan strategy to deliver a highly sustainable development suitable for future living. Designing for climate change resilience and energy transition are two of the fundamental principles of Langarth Garden Village.

Cornwall Council Climate Change Emergency

On 22 January 2019 Cornwall Council declared a climate emergency. The Council committed to reducing carbon emissions and to work towards becoming carbon neutral by 2030, a full twenty years ahead of the UK Government's target of 2050.

Cornwall Council's plan comprises several proposals including powering all new homes with renewable energy and making energy efficiency improvements to existing Council owned housing.

As a Cornwall Council led masterplan, the new development also offers a unique opportunity to deliver new buildings at the cutting edge of sustainable design. The Langarth site offers developers the scope to deliver an exemplar of Net Zero Carbon development.

In order to deliver the development to industry leading levels of sustainability, a series of Sustainable Design Standards have been developed. Designing new homes and buildings in accordance with a series of robust Standards will help achieve a zero Carbon development. The Standards offer developers guidance in how to achieve Zero Carbon performance, and are graded in three tiers; Silver, Gold and Platinum.

At the outset of development it is anticipated that the Silver Standard would typically be adopted, achieving Net Zero Carbon in operational energy only. Higher standards could be targeted at the outset if developers elect to do so. The following two stages would be implemented over time as the county progresses towards its Carbon Neutral target. As higher standards are adopted so the adoption of lower standards will become invalid.

Through consultation with specialists, it is envisaged that the Langarth Garden Village masterplan could achieve full Zero Carbon performance within the site boundary and as such implementing offsetting to other areas should be avoided.

Reference Guidance

The following reports, documents and standards have been referenced in the compilation of the Sustainable Design Standards for Langarth Garden Village:

- Cornwall Environmental Growth Strategy;
- Building Regulations - Approved Documents L and F;
- RIBA – 2030 Climate Challenge;
- Passivhaus Standards;
- Future Homes Standards;
- London Energy Transformation Initiative;
- Building with Nature;
- Buildings for Life;
- United Nations - Sustainable Development Goals;
- Intergovernmental Panel on Climate Change.

The study of the above documents has shaped the content of Sustainable Design Standards, and highlighted the aspects of Sustainable Design that should be addressed by developers to deliver a Net Zero Carbon development.

The aspects included are Energy Efficiency, Embodied Carbon, Green House Gas Emissions, '360° Energy' and Mobility. It is noted that reducing potable water use has not been targeted in the standards, as the current Building Regulations are seen to sufficiently address this issue. The impact of potable water use on achieving zero-carbon developments should, however be reviewed as building performance improves. Following opportunities have been identified:

- Behavioural change initiatives at community level and through schools to reduce demand;
- Promotion of water saving devices as part of the specification for all new buildings;
- Integration of SuDS storage features to provide irrigation water green amenity spaces;
- Rainwater harvesting for non-potable uses; and
- Grey water re-use.

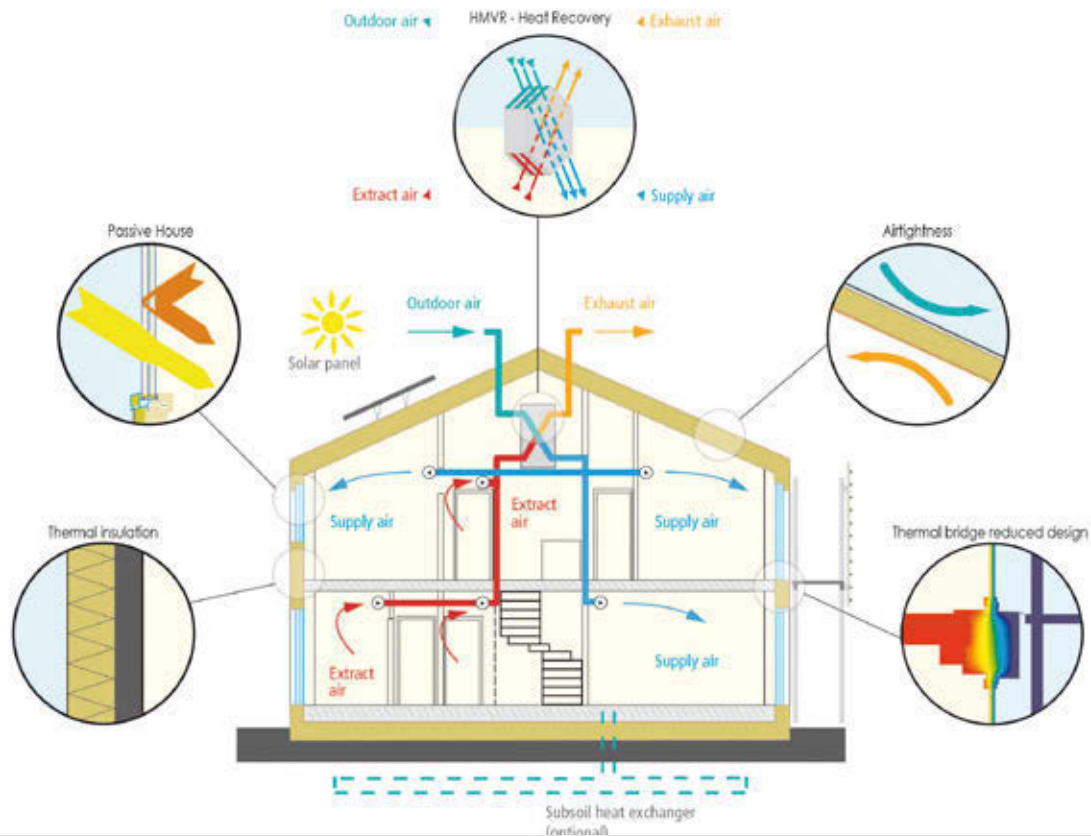


Fig.323: Indicative Passivhaus schematic



Fig.324: UN Sustainability Goals infographic

Fabric Energy Efficiency

A fabric first approach will allow a more robust path towards meeting the UK's climate targets. By starting off with a well performing thermal envelope the gap to be made up by the systems will be smaller and less costly.

Energy Use Intensity

Energy Use Intensity includes all energy uses in the building (regulated and unregulated) as measured at the meter and exclude on-site generation.

Quality

With rising focus on the quality of housing across the UK, we have introduced an added consideration for commitment to a clerk of works who will inspect the workmanship, quality and safety of work on construction sites and report back to senior managers and clients.

Embodied Carbon

The RIBA 2030 Climate Challenge document details targets for embodied carbon taking into account the latest recommendations from the Green Construction Board and have been developed in consultation with other UK professional bodies. The term embodied carbon refers to the 'upfront' emissions associated with building construction, including the extraction and processing of materials and the energy and water consumption in the production, assembly, and construction of the building. It also includes the 'in-use' stage (the maintenance, replacement, and emissions associated with refrigerant leakage) and the 'end of life' stage (demolition, disassembly, and disposal of any parts of product or building) and any transportation relating to the above. Embodied carbon is a topic that is becoming more relevant and important as we reduce operational carbon.

Green House Gas Emissions

The UKGBC Net Zero Carbon Buildings, sets out definitions and principles around two approaches to net zero carbon. Developers aiming for net zero carbon in construction should design the building to enable net zero carbon for operational energy, and where possible this should be achieved annually in-use. Net zero carbon for both construction and operational energy represents the greatest level of commitment to the framework. This has been reflected in the formulation of the Silver and Gold Standards.

360° Energy

"Net zero carbon" is not the same as "zero carbon" even though the terms are often used interchangeably. The "net" element essentially treats CO2 emissions like a balance. The problem is that this is not how our energy system works; however much solar power is generated or off-site credits bought, it doesn't actually eliminate the emissions generated, they are still out there and that is why a development is considered "Net Zero Carbon" rather than "Zero Carbon".

To address the balance of supply and demand, we have proposed a 360° approach which considers the inter-connected elements of supply (Energy efficiency, Electric Vehicles, Demand Side Management, Battery Storage) and demand (Self-generation, Procurement), in real-time. Aiming to match the two, achieving a zero carbon standard, and reducing energy bills and infrastructure costs.

Silver:

- The 'Silver' standard achieves Net Zero Carbon for operational energy and is based upon the principles of the UK Government's Future Homes Standard (FHS).
- Building to the Silver standard should help with future adaptability in moving towards reduced energy use and complete carbon neutrality.
- The 'Silver' standard needs to be achieved as the minimum within Langarth Garden Village;

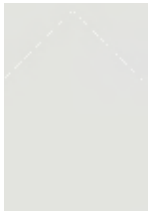
Gold:

- The 'Gold' standard drives building energy efficiency towards Passivhaus levels, without seeking specific certification.
- Zero Carbon achieved for building operation and residents' transport, in both new build and existing properties.

Platinum:

- Passivhaus standards and methodology applied to all buildings, with certification required at completion.
- Full Zero Carbon managed and monitored in real time throughout the year.





Silver



Gold



Platinum

Fabric Energy Efficiency

- Future Homes Standard Part L 2020 Option 1

- Reduced space heating demand to 15kWh / m2

- PassivHaus Plus
- Reduced space heating demand to 15kWh / m2
- Airtightness $\geq n 50 = 0.6 / h$

Energy Use Intensity

- Domestic <70kWh / m2 / year
- Non-Domestic <110kWh / m2 / year

- Domestic <35kWh / m2 / year
- Non-Domestic <55kWh / m2 / year

- PassivHaus Plus
- Primary Energy Renewable $\leq 45kWh / m2 / year$
- Renewable Energy Generation $\geq 60kWh / m2 / year$

Quality

- Commitment to Clerk of Works

- Commitment to Clerk of Works

- Commitment to Clerk of Works
- PassivHaus Plus Certified

Embodied Carbon

- Calculate Embodied Carbon using a recognised LCA Tool
- In line with RIBA Climate Challenge 2030 targets

- Domestic <450kgCO2 / m2
- Non-Domestic <650kgCO2 / m2
- In line with RIBA Climate Challenge 2030 targets

- Domestic <300kgCO2 / m2
- Non-Domestic <500kgCO2 / m2
- In line with RIBA Climate Challenge 2030 targets

Green House Gas Emissions

- Net Zero Carbon
- Operational only

- Net Zero Carbon
- Operational and Embodied

- Net Zero Carbon
- Operational, Transport and Embodied

360° Energy

- Monitoring half-hourly tracking
- Reporting of live energy demand and supply

- 360° energy review of a building to optimise mix of renewables, storage, smart energy management and efficiency

- Full 360° energy review of site to optimise mix of renewables, storage, smart energy management and efficiency

14.03 SuDS and Drainage

An outline drainage strategy has been developed in the report “The Langarth Garden Village Utilities and Drainage Strategy – Stage 2, Arcadis, November 2019”³, which should be developed further in consultation with the Cornwall Council Lead Local Flood Authority (LLFA) and Development Control teams.

As part of the drainage strategy, the Sustainable Drainage Systems (SuDS) form an important and integral part of the design. They must provide the 4 pillars of the SuDS approach, as water quantity, quality, amenity and biodiversity; therefore being integrated into green open spaces, highways and private plots.

The various SuDS features are linked and integrated in to environmental, ecological and landscape proposals promoting local biodiversity, allowing new wildlife habitats to establish, whilst enhancing existing habitats. SuDS form an interconnected system, where water flows from ‘source’ to infiltration or discharge point through a series and variety of features that help to treat, store, re-use, convey run-off to the point of discharge. In summary the use of a variety of sustainable drainage systems should be linked together in sequence.

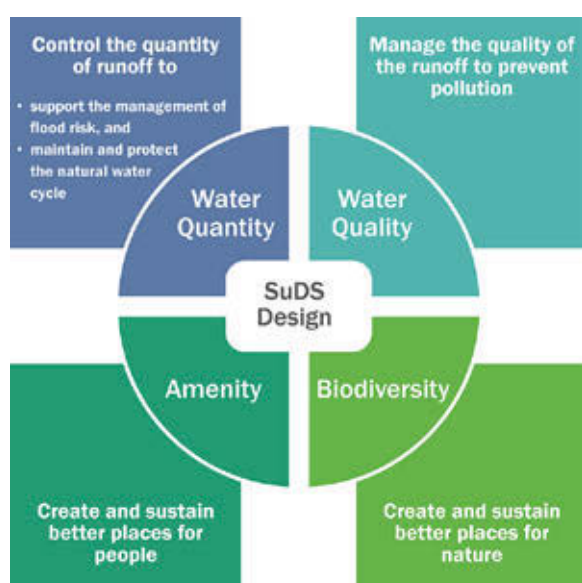


Fig.325: The 4 pillars of SuDS. Source: SUDS Manual (C753)



- SuDS features must be an integral part of the overall development design and must be integrated into green open spaces, highways and private plots;
- Features like: basins, wet basins, swales and ponds, are linked and integrated in to environmental, ecological and landscape proposals and must follow the Landscape Parameter Plan principles;
- SuDS must form an interconnected system;
- SuDS elements must consider the safety of the public using the amenities and on-going maintenance of the various features.
- The Northern Access Road (NAR) must have its specific drainage elements and be kept separate from the wider development drainage features;
- An adequate SuDS Maintenance Plan should be in place, assuring all SuDS infrastructure will be maintained to the highest standards;
- Design should aim to minimise maintenance but consider safety and mitigate against flood risk;
- SuDS features shall be avoided in flood zones 2 and 3;
- Reference to the Environment Agency document, Critical Drainage Areas for these catchments is recommended.
- Design proposals are to be submitted to the Cornwall Council Lead Local Flood Authority (LLFA) for approval;
- Design of SuDS features should generally conform to the recommendations defined within The SuDS Manual (C753), but also in accordance with the recommendations and best practices promoted by Cornwall Council in their Draft Design Guide and Sustainable drainage policy 2;
- Design and interface of green and blue infrastructure must work in accordance with principles set out as part of the Building with Nature Standards Framework (2.0).

SuDS Feature	Detail	Benefit / Function	Location	Precedent
Green Roof	Design guidance referenced in the SuDS manual.	Visual benefit Ecological value Reduction in water runoff	Bus shelters Bin stores Commercial buildings Schools	
Permeable Paving	Type to suit traffic loadings; to drain via infiltration and / or filter drain to swale / rain garden.	Infiltration Attenuation	Private driveways Parking spaces	
Bioretention Area / Rain Garden	To drain via infiltration and / or filter drain to swale. Dimensions to suit gardens, with discharge to infiltration and / or receiving swale.	Infiltration Attenuation Biodiversity Amenity	Private plots	
Filter Strip, Grass Channel, Swale	To be set just below paving level to filter runoff. Should be nominally 300 - 500mm deep with 1V:3H (or flatter) side slopes, 0.5 - 2.0m wide bases and be grassed. Crossing access should be provided with adequate frequency.	Infiltration Attenuation Biodiversity Amenity	Highway edges	
Kerb Drain	Discharge to swale / filter drain. May include: combined kerb drainage units; gullies; slotted kerbs; discharging to swales / filter drains.	Infiltration Attenuation Biodiversity Amenity	Highway edges	
Underground Storage / Infiltration	To be avoided where possible in favour of above ground communal features.	Infiltration Attenuation In more restricted spaces	Private plots Individual or group	
Infiltration / Detention Basin	Basin water depths should be no more than 1m when full. Side slopes should be 1V:3H (or flatter) and landscaped to suit the local surroundings, with safety / personal security in mind. Infiltration should be encouraged, and basins may be permanently wet as required to suit ecological requirements. A minimum freeboard at least 300mm should be added above maximum design water levels.	Infiltration Attenuation Biodiversity Amenity	Green open spaces	

Where SuDS features serve multiple phases, these should be designed and constructed as early as possible to enable establishment of landscaping and provision of recreation space, as well as providing water treatment and attenuation.

SuDS features should not be fenced; planting and landscaping should be used as appropriate.

Maintenance

A detailed maintenance schedule shall be produced for each of the SuDS elements, including ownership & responsibilities to be formally agreed with the various authorities.

Planting

Planting for SuDS features should integrate with the wider landscape and ecology strategy for the development, but some recommendations from the SuDS Manual include:

- Use a diverse range of planting; and
- Use of non-invasive planting of local provenance and known wildlife value, appropriate to the location.

On-going maintenance and ownership boundaries need to be defined.

Foul Drainage

The concept of the foul drainage strategy is defined in the Langarth Garden Village Utilities and Drainage Strategy report and summarised in the opposite table.

SuDS Features

The preferred SuDS hierarchy of discharge is as follows:

1. Infiltration;
2. Discharge to surface waters;
3. Discharge to surface water sewer, highway drain or another drainage system; and
4. Discharge to a combined sewer.

SuDS features promoted for this development include the following:

- Swales and Infiltration Trenches;
- Infiltration / Detention Basins; and
- Wetponds.

Each package of the development should have its own palette of SuDS features from plot drainage to downstream basins.

Amenity & Biodiversity

As promoted in the Cornwall Council Draft Design Guide 2, a Biodiversity Net Gain shall be demonstrated as part of the development. This should be done through the inclusive design of SuDS features to create green areas and corridors benefiting the human users as well as fauna and flora.

Both amenity and biodiversity design criteria should be considered together and follow the suggestions of The SuDS Manual¹, chapters 5 and 6.

Features should include:

- Habitat connectivity;
- Diverse, self-sustaining and resilient ecosystems;
- Support natural local habitats and species;
- Visually attractive features, enhanced with appropriate landscaping, benefiting the local community;
- Maximise multi-functionality; and
- Safe surface water management systems.

References:

1. SUDS Manual (C753) Ciria 2015
2. Cornwall Council Draft Design guide, How to achieve quality in development for people, wildlife & the environment <https://www.cornwall.gov.uk/designguide>
3. Langarth Garden Village Utilities and Drainage Strategy – Stage 2, Arcadis, November 2019
4. Cornwall Council Sustainable drainage policy <https://www.cornwall.gov.uk/media/27672602/sustainable-drainage-policy.pdf>
5. Environment Agency document , Critical Drainage Area (CDA) Cornwall – Truro – Kenwyn, Allen and Tregolls Street <https://www.cornwall.gov.uk/media/16936495/truro-kenwyn-allen-tregolls-rd-cda-2015.pdf>
6. Managing urban flooding from heavy rainfall – encouraging the uptake of designing for exceedance, Ciria C738, 2014.

Drainage Element		Maintenance Responsibility
Private non-adoptable drainage elements from one single curtilage:	<ul style="list-style-type: none"> • Pipes; • Chambers • Overground Channels; and • Rain gardens. 	Household
Highway adoptable drainage network elements:	<ul style="list-style-type: none"> • Manholes; • Pipes; • Headwalls; • Gullies with connections; • Overground channels; and • Swales and ditches. 	Cornwall Council
Communal drainage features accepting private flows from more than one property including over ground features and underground connections:	<ul style="list-style-type: none"> • Ditches; • Swales; • Overground Channels; • Rain gardens; • Heath bunds; • Headwalls; • Culverts; and • Gullies with connections. 	Maintenance Company
Underground sewers draining more than one property and underground elements combining private and highway flows;	<ul style="list-style-type: none"> • Pipes (Sewers); • Chambers; and • Headwalls. 	South West Water (SWW)

Fig.326: Surface water drainage elements with expected with expected maintenance responsibility

Foul Sewerage and Water Supply	<ul style="list-style-type: none"> • Provide development plots which have easy access to sewerage and water; • Use topography for gravity sewers; • Allow for future development phasing and NAR crossings; and • Provide sufficient capacity for future demands. 	<ul style="list-style-type: none"> • South West Water (SWW) are providing a new public trunk sewer, new pumping station and rising main to serve the whole of the site; • Individual development plot to connect via gravity using valley features; • Water supply to be provided by SWW from local trunk main; and • NAR crossing for both to be provided in advance. 	<ul style="list-style-type: none"> • Opportunity to use for non-motorised user access along sewer and trunk mains routes; • Behavioural change initiative at community level and through schools to reduce demand; • Promotion of water saving devices as part of the specification for all new buildings; • Integration of SuDS storage features to provide irrigation water green amenity spaces; • Rainwater harvesting for non-potable uses; and • Grey water re-use.
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Fig.327: Foul sewerage and water supply

Blue Infrastructure Integration

The integration of passive drainage measures is vital to achieving the sustainable vision for Langarth. Existing blue infrastructure will be integrated with proposed Sustainable Drainage System (SuDS) and multi-functional green infrastructure to manage surface water runoff and deliver multiple benefits. A comprehensive network of swales, infiltration basins and wetponds is proposed to slow the flow of surface water run-off into the wider blue infrastructure.

The overall service strategy follows and utilises the existing topography and the network of blue and green infrastructure to develop a site wide sustainable services and drainage strategy. Existing blue infrastructure must be used with the natural valleys of the sloped site to form streams and ponds that contribute to a wider sustainable drainage system.

Basins, swales, watercourses and wetlands have all been carefully considered whilst developing the sustainable drainage strategy for Langarth Garden Village. Long-term storage capacity can be provided by various interlinked SuDS components within the development parcels and in strategic attenuation areas across the site. Thus maximising ground infiltration as far as practicable and allowing for excess flows.

The SuDS system will not only reduce the risk of flooding on site and downstream, it will also help to sustain water quality, provide benefits for biodiversity, offer opportunities for informal play and contribute to Langarth's sense of place.

Cut and fill

As part of the proposed development, there are several swales, basins, wetland and ponds throughout the site which provide storage for water in extreme storm events as well as an opportunity for landscaping and ecological benefits. In order to try and maintain an ability for these areas to be useful as open space and to be safe, the side slopes to the basins and ponds should be set at around 1:3 ratio. For the swales, the side slopes have been set at 1:4 to 1:3 depending on space constraints. Whichever the case, swales, basins and ponds generally have flat or gently sloping bases and shallow side slopes. Therefore, cut and fill requirements associated with their construction, especially on steeply falling ground should be carefully factored in the detailed design.

Basins and Wetponds

Attenuation basins and permanent wetponds are proposed within the boundary of the site. These provide storage capacity for excess water which is collected and distributed by swales. In addition, wetponds, including low flow channels and small wetland, are integrated within attenuation basins,. These provide an excellent habitat for many amphibians, insects and plant species, which further enhance the overall site biodiversity.

Fishing Ponds

Within the Bosvisack Corridor lies two large fishing ponds c. 1,200m² each. Concealed by wet woodland, these ponds provide a rich environment for wildlife such as fish, water lilies and grasses to flourish whilst also providing outdoor amenity space for local anglers. The Threemilestone Angling Club has around 100 members who regularly use the two pools to catch a variety of fish such as Bream, Carp, Chub, Gudgeon, Perch, Roach, Rudd & Tench.

Located close to the Langarth Stream, these ponds provide a suitable area for supplementing the attenuation storage for the surface water runoff in conjunction with the proposed SuDS.



Fig.328: Fishing Pond at Bosvisack Corridor

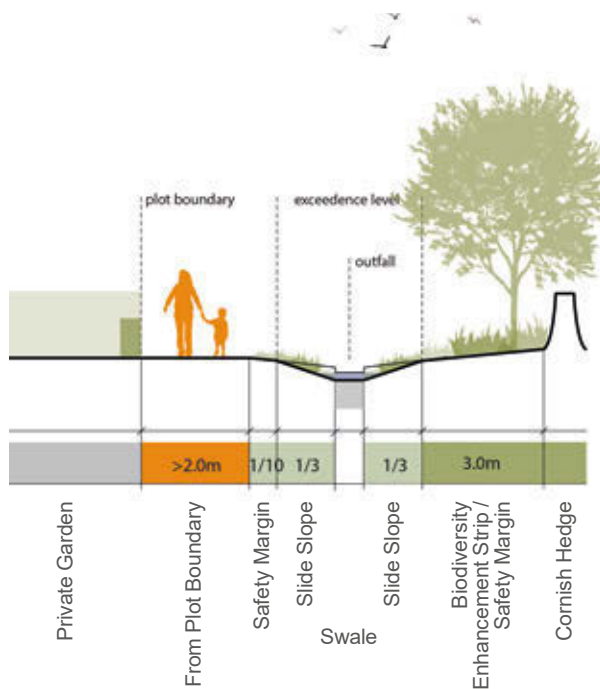


Fig.329: Bank of the Fishing Ponds at Bosvisack Corridor

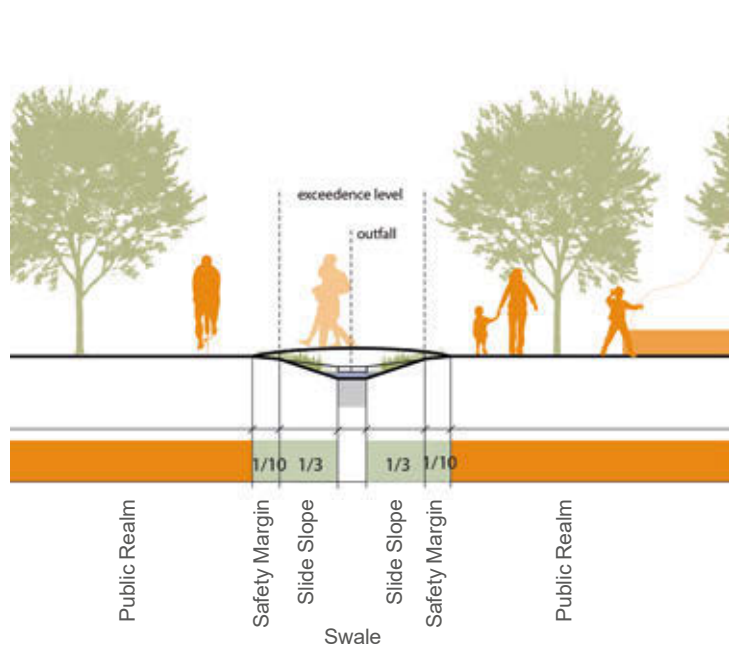


E1. Sustainable Drainage Systems (SuDS)

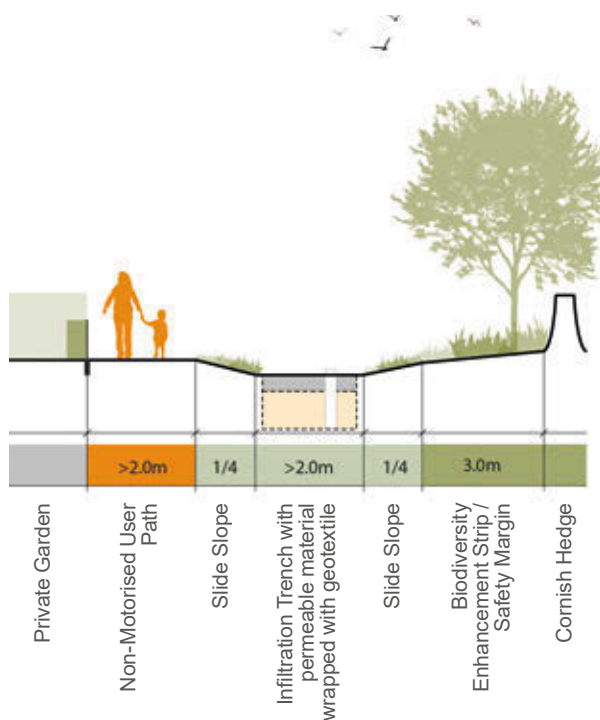
E1.1 Swale Along Plot Boundary Facing Hedge



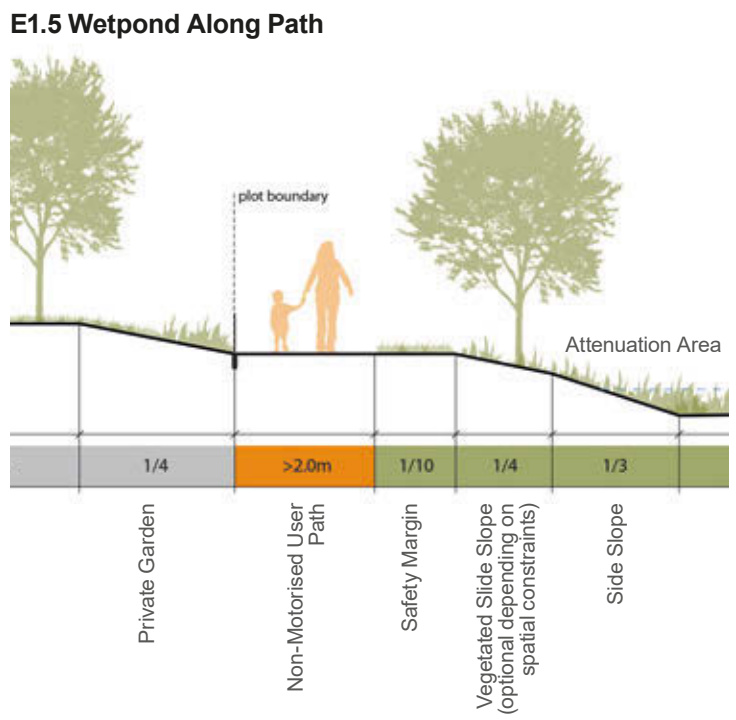
E1.2 Swale in the Public Realm with Crossing



E1.3 Infiltration Trench Along Path Facing Hedge



E1.4 Attenuation / Detention Basin Along Path



E1.5 Wetpond Along Path



Fig.330: Swale Precedent Image



Fig.331: Sherford SuDS Precedent Image

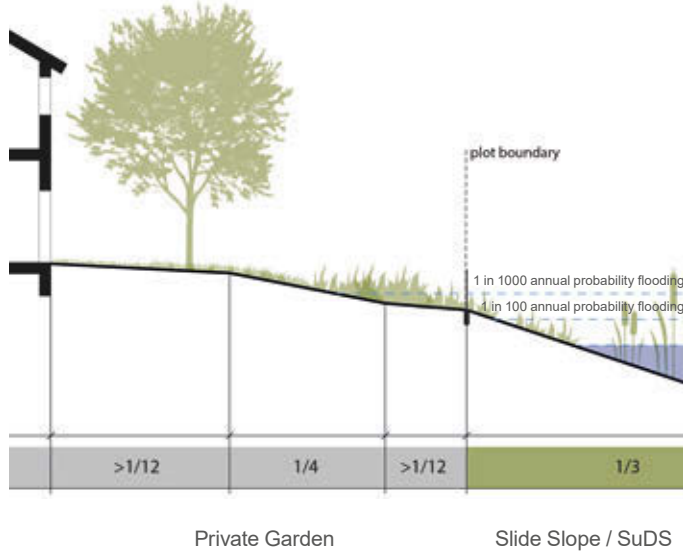


Fig.332: Swale Precedent Image

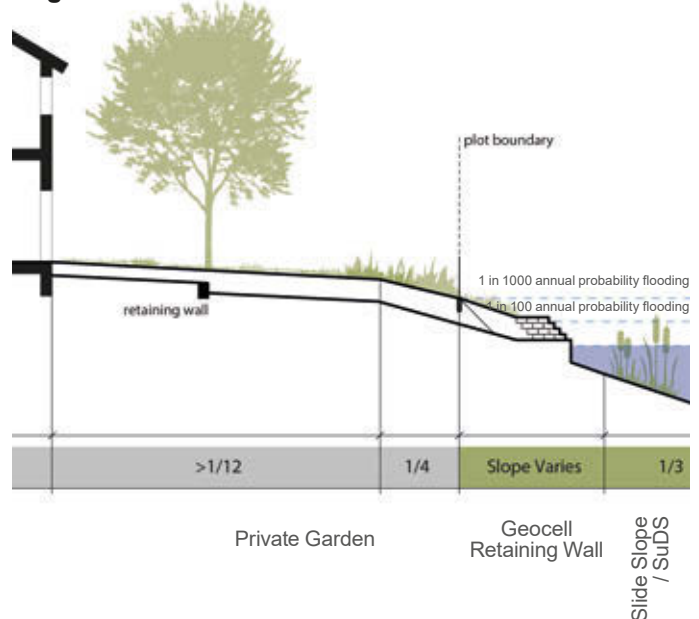
- Swale crossings should be provided with adequate frequency;
- Appropriate SuDS, drought resistant and low maintenance planting must be considered;
- Hard-standing channels are to be avoided;
- Channel surfaces must not be slippery and should be built at a minimum of 1/3 slope;
- Outfall and exceedance levels must be articulated to prevent any accidental outfalls to adjacent areas;
- Side slopes should not exceed 1/3 and be shallow enough so accidental falls are not harmful;
- Safety slopes of 1/10 should be provided in addition to side slopes;
- In areas of intensive use like along streets, guardrails must be provided;
- An adequate SuDS Maintenance Plan should be in place, assuring all SuDS infrastructure are maintained to the highest standards;
- For SuDS building and maintenance, please refer to CIRIA guidance, specifically The SuDS Manual (C753) and Guidance on the construction of SuDS (C768), Site handbook for the construction of SUDS (C698); and
- Design and interface of green and blue infrastructure must work in accordance with principles set out as part of the Building with Nature Standards Framework (2.0).

SuDS Earthworks Solutions

Terraced SuDS Solution



Engineered SuDS Solution



- Appropriate dry and wet riparian planting must be considered;
- Pond calibration should allow for exceedance levels to be articulated to prevent any accidental outfalls to adjacent areas; safety distances between outfall level and private or public property must be assured;
- Riparian dry level benches must be included, providing safety and maintenance access;
- An adequate SuDS Maintenance Plan should be in place, assuring all SuDS infrastructure will be maintained to the highest standards;
- For SuDS building and maintenance, please refer to CIRIA guidance, specifically The SuDS Manual (C753) and Guidance on the construction of SuDS (C768), Site handbook for the construction of SUDS (C698).



Fig.333: Landscape Pond - Elvetham Heath



Fig.334: Wetpond Precedent Image



Fig.335: Wetland, Banner Country Park

14.04 Utilities

There are three key existing utilities connections that cross the Langarth development, one high pressure (34 bar) gas main and two high voltage electricity cables. As part of the masterplanning exercise, the gas main will be reinforced and the electricity cables will be relocated underground below streets within the developments.

The following constraints apply to these corridors:

Gas Main

Health and Safety Executive Consultation Zone

- Inner Zone – 17m
- Middle Zone – 65m
- Outer Zone - 70m

If re-laid in 12.7m thick walled steel, the above would reduce to:

- Inner Zone – 3m
- Middle Zone – 3m
- Outer Zone - 3m

HSE advise against development within 65m of pipeline.

Wales and West require:

- Minimum cover – 1.2m
- Building proximity - 16m
- Easement 10 ft either side of pipe

In line with the site sustainability strategy, there will be no gas connection to any new properties within the development.

Electricity

Western Power easements:

- Single Cable – 6.5m centred around pipe;
- Dual Cables – 10m centred around pipe (note cables may be separated when taken underground); and
- 1m minimum cover to top of ducts.

Water

A South West Water trunk distribution main runs just outside the site's southern boundary, following the alignment of the A390, with additional distribution mains are present to the north-west and southeast of the site. Drainage is discussed in section 14.03 above.

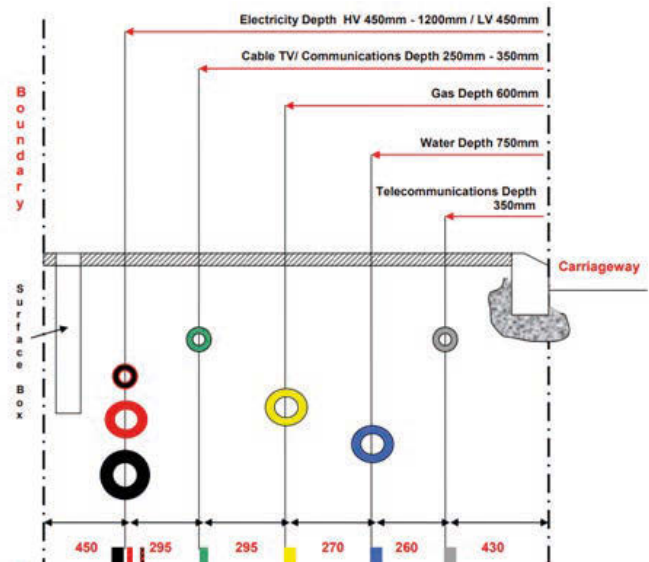


Fig.336: NJUG Guidance for Utility Apparatus within a 2m Footway



Utilities Corridors / Maintenance

Wherever possible, services should be contained within a utility corridor in order to simplify and reduce the impact of future maintenance. The design of the utility corridor should ensure that adequate working space, safety zones, running carriageway and safe pedestrian routes can be provided during future maintenance works.

The utility corridor is to be located within the footway of the adopted highway. A corridor width of 2m is required. Utility corridors should generally be provided on both sides of the street, so that connections to individual properties can be made without the need to place apparatus within the carriageway. Where services need to cross the street, this should be done at locations which minimise the number of cross connections that are required.

The utility corridor is to accommodate electricity, water and telecommunications apparatus and is to meet the technical guidelines / requirements of:

- National Joint Utilities Group (NJUG) Guidelines on the Positioning of Underground Apparatus for New Development; and
- Cornwall Council Development Layout Design – General Consideration for Adoptable Highways.

The layout of utility apparatus shall follow the National Joint Utilities Group (NJUG) Guidelines as shown below.

If the utility corridor is located adjacent to tree planting, a root barrier must be provided. The utility corridor is not to be located within any areas of permeable paving. For footway with pavers or slabs, recessed chamber covers are to be used. All covers should be aligned to suit to paving pattern and avoid any unnecessary angled cutting.

- Design of the utilities has to take appropriate easement ones into account in order to allow for safe and accessible maintenance;
- Utilities to be contained within a utility corridor where possible to reduce the impact of future maintenance;
- The utility corridor has to accommodate electricity, water and telecommunications apparatus in accordance with National Joint Utilities Group Guidelines on the Positioning of Underground Apparatus for New Development and with accordance with Cornwall Council Development Layout Design - General Consideration for Adoptable Highways;
- Appropriate root barrier must be provided, if the utility corridor is located to adjacent tree planting; Footway has to have appropriate recessed chamber covers, which have to be aligned to suit to paving patterns and avoid unnecessary angled cutting;
- As part of the Building with Nature Accreditation Scheme; and
- Design of any drainage corridors has to work with accordance to Drainage Strategy discussed in Section 14.03.

Substations

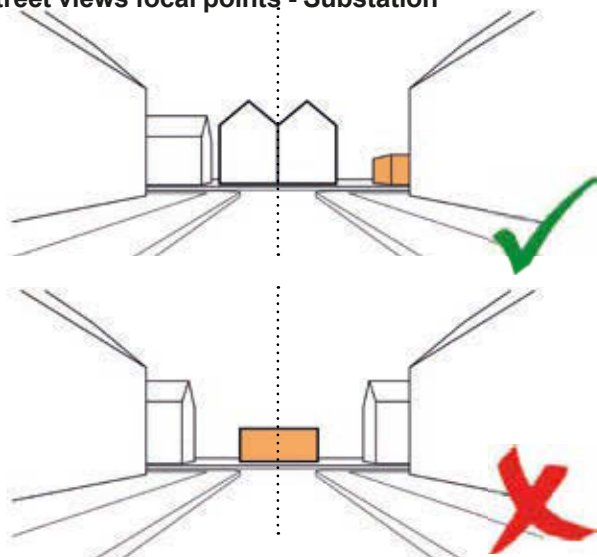
Substation should be arranged so it does not generate a focal point at the end of street design. Should be located away from the key corners, and recessed back from the building line to allow for usable public space, which could accommodate amenities such as cycle storage / stands.

Electricity substations, foul pumping stations and gas governors must be constructed in materials which match the adjacent built form. The buildings are to be located on a vehicular accessible route and a landscape buffer / maintenance parking is to be provided if required.

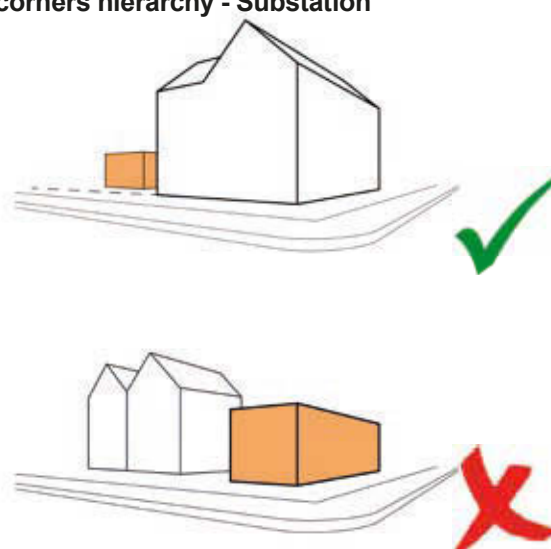
Neighbourhood	Tones Spectrum	Primary Material	Secondary Material
The Brake	Granite Grey - Dark Slate Grey	Smooth, textured and tumbled brick; Render	Timber cladding; Shingles; Stone
West Langarth	Granite Grey - Brown	Smooth, textured and tumbled brick; Render	Shingles: Bronze / Steel colour metal cladding
Langarth	Granite Grey - Light Bronze	Smooth, textured and tumbled brick; Render	Cedar shingles; Metal cladding
Governs	Granite Grey - Light Brown	Textured brick; Render	Metal cladding; Timber cladding
Willow Green	Granite Grey - Grey Bronze	Textured brick; Render	Bronze colour metal / Timber cladding
Penventinnie	White to Black	Textured brick; Render	Natural timber / Dark granite / Cedar shingles

Fig.337: Substation Tonal Materiality Guidance

Street views focal points - Substation



Key corners hierarchy - Substation



Paraphernalia

The design of various building elements, such as metre boxes, storage boxes, rainwater goods and similar has to be integrated within the building form and materiality respective for each Neighbourhood Tonal palettes.

The materials and finishes used have to be of a high standard meaning their durability and longevity. Elements also have to be designed in a way, which takes access for maintenance into account - access has to be made easy taking less abled resident's needs into account. This has an impact on location, height and orientation of the paraphernalia within built form.

Elements such as metre boxes, bin and cycle stores have to be well integrated into buildings - they need to be concealed from the street scape in a way which does not generate additional street clutter. The tones and materiality has to be in keeping with the rules set out for each Neighbourhood respectively.



Fig.338: Copperfields Precedent image - Raingoods in proposal



Fig.339: Copperfields Precedent image - Concealed expansion joints

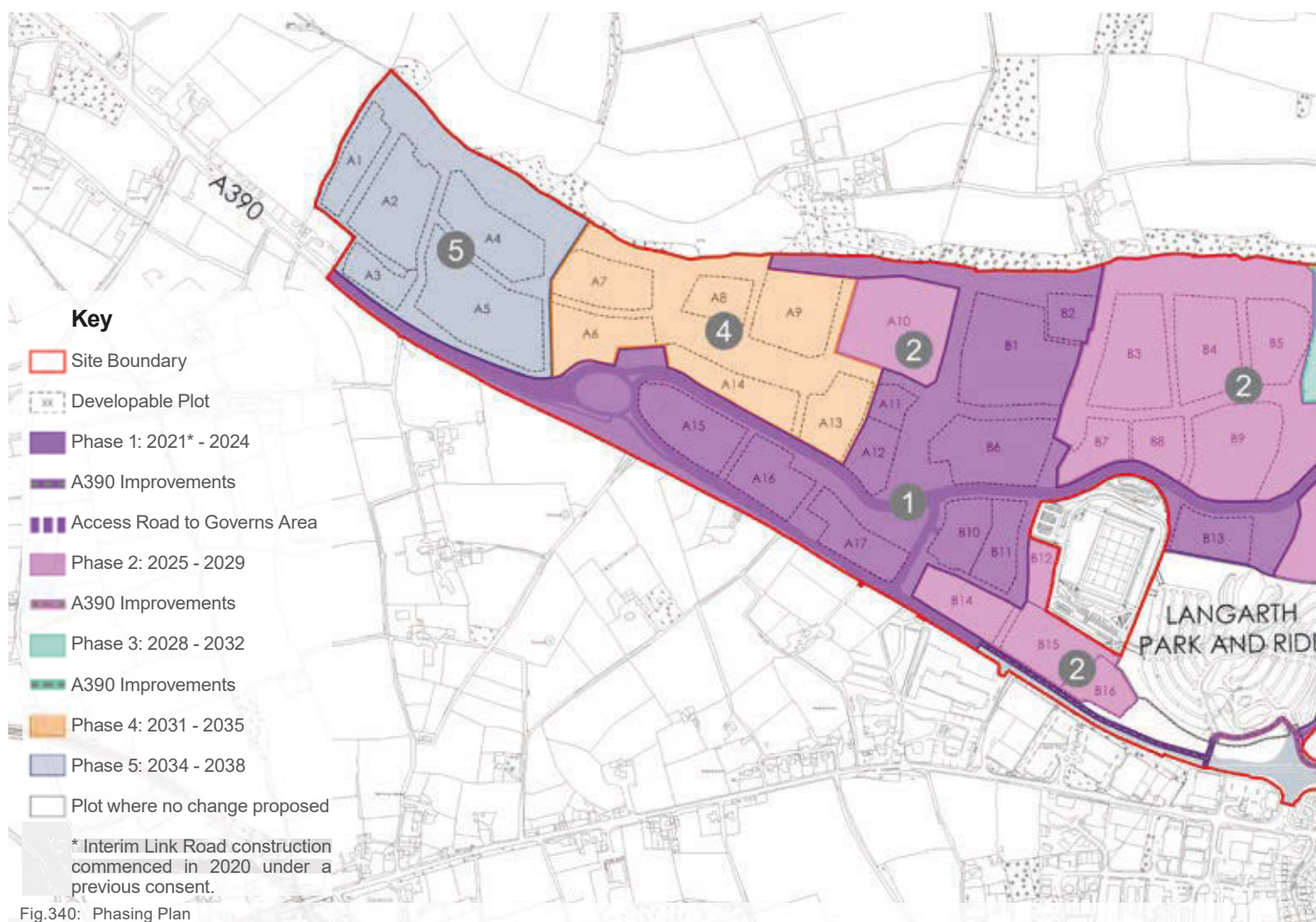


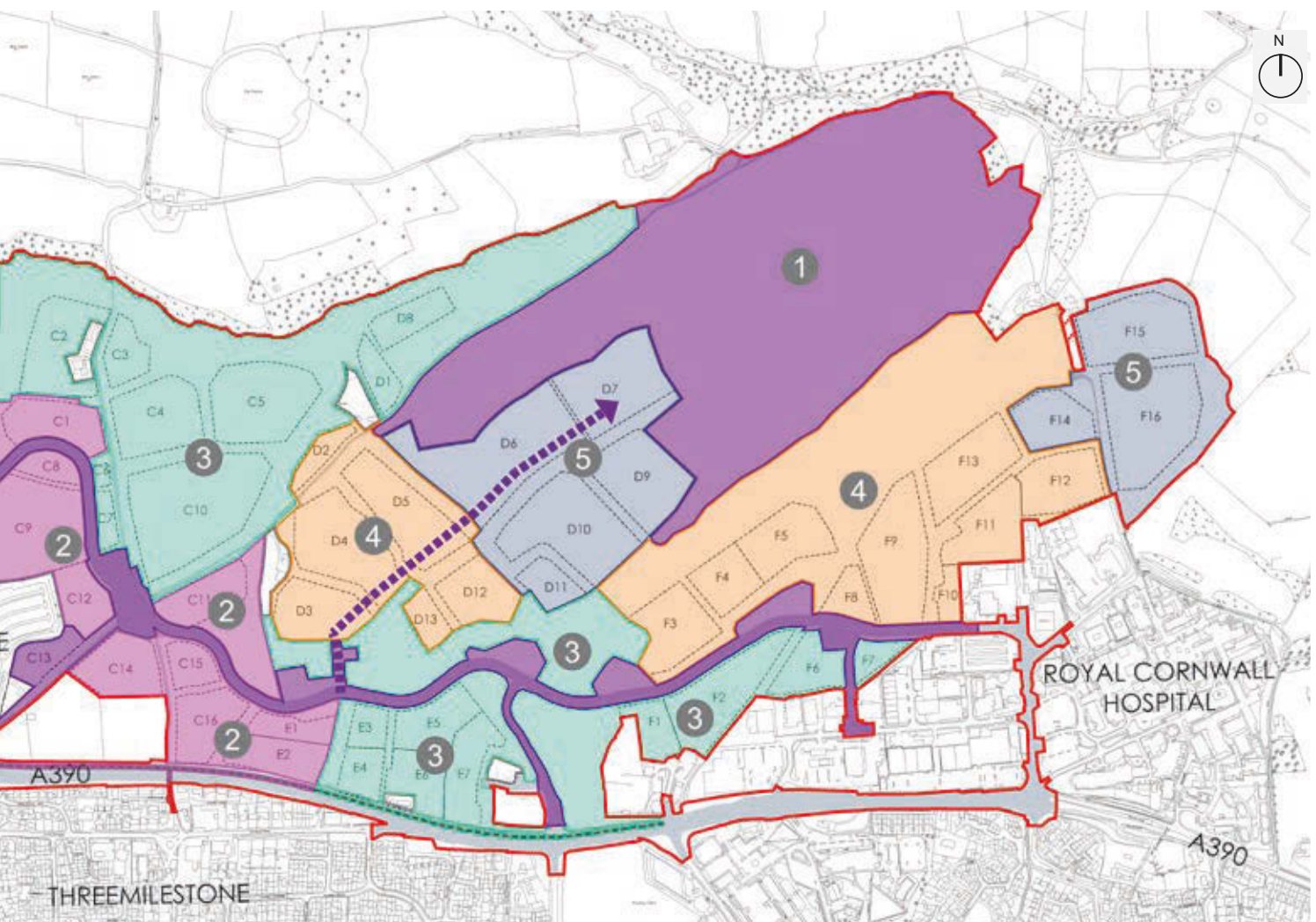
- Materials used for paraphernalia have to be of good quality, in keeping with the materiality of each respective neighbourhood tonal requirements;
- Meter boxes, vents, extractors, rainwater goods, expansion joints, windows / eave lines have to be given appropriate treatment which conceals these elements in a way they do subtract from the architectural style and do not add to street clutter;
- Relationship with neighbouring properties has to be established, in order to avoid jagged / awkward lines which deter from legibility of the public realm;
- Infrastructure such as substations are sited and accommodated, concealed from primary frontages and not positioned in key corners;
- Materiality of substations to draw on the materiality of each respective neighbourhood to keep in line with proposed tonal arrangements; and
- Appropriate material finishes have to reflect local / Cornish character and have to be contribute to reading of the development as a whole.

DELIVERY & PHASING

15.01 Phasing and Delivery

The Phasing and Delivery Strategy for Langarth Garden Village has been set out in detail in the Design & Access Statement (DAS) and should be the primary reference for information on the sequencing of house building and infrastructure delivery. For ease of reference however the diagram below has been replicated from the DAS to inform this section.





15.02 Design Quality Monitoring

To ensure the successful delivery of the Design Code it is necessary to provide effective monitoring and enforcement controls. Experience elsewhere of this by private stakeholders has proven particularly effective to date. This Design Code aims to adapt best practice from elsewhere and draw upon local experience. The following factors are relevant to this consideration:

- Truro has grown fast in recent years. Whilst a lot of effort has gone into masterplanning to improve the quality of places created, the delivery of development has too often been poorly executed;
- It is recommended that a Quality Monitoring Team role be established within the Council that will provide a frequent and regular presence on site to support developers and householders. The aim is to develop a relationship where all parties see the benefits of catching any problems early, householders get a better deal, and increased confidence in the quality of development will help the house-builder in terms of sales and values achieved;
- At Langarth Garden Village, it is recommended that all housebuilders will sign up to a Quality Agreement and Design Code;
- The Quality Monitoring Team will provide a wide range of services including:
 1. Sampling of dwellings under construction to check that typical mistakes are being avoided;
 2. Inspection of the quality of delivery of the public realm and tree planting;
 3. Working with the various agencies involved to co-ordinate the delivery and adoption of quality places;
 4. Liaising with the local community through the Community Management Organisation to make sure that people's concerns are recognised and dealt with;
 5. Making sure the Quality Agreement and the Design Code is being delivered – principles applied flexibly where needed but with no loss of quality. The Highway Authority will adopt all the street types as identified in Part B, except for central courtyards. The boundary of adoption is defined by the line of privacy strip i.e. back of pavement.

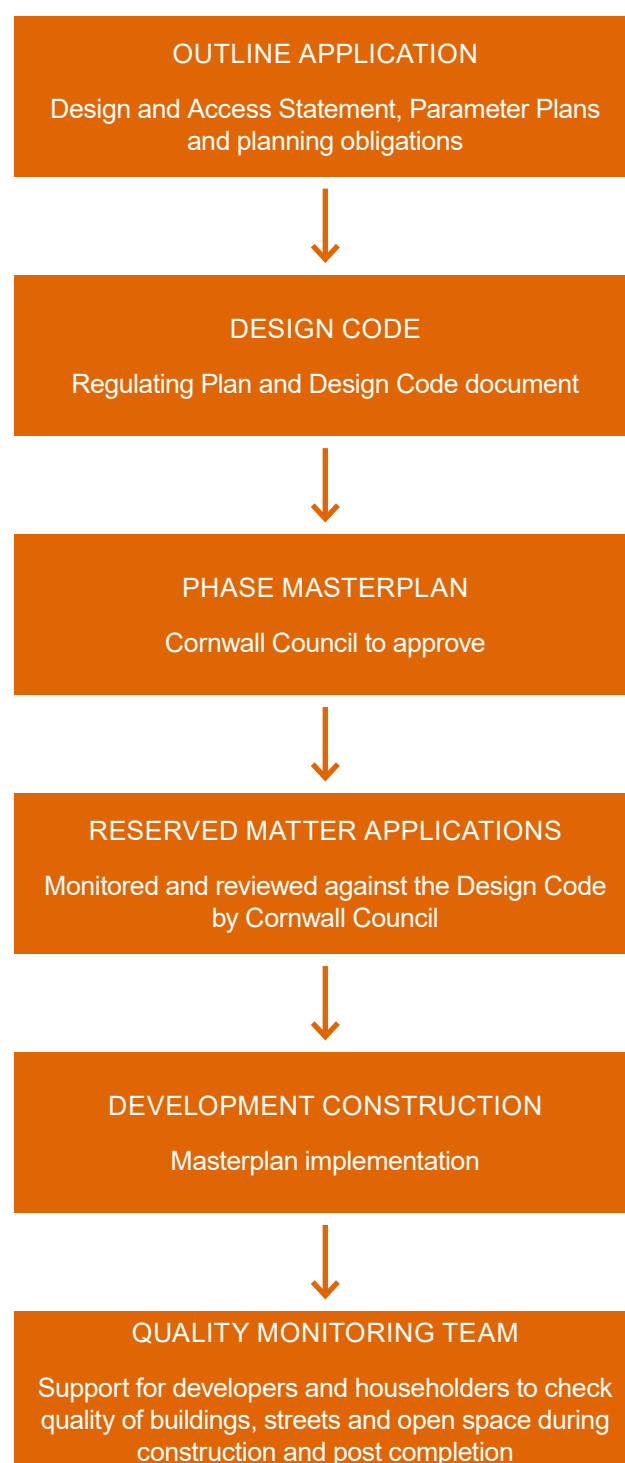


Fig.341: Process Quality monitoring

15.03 Management and Adoption

It is recommended that ongoing management and maintenance principles are built in from the outset. Various mechanisms are possible:

1. Turning the Design Code into a management and maintenance guide for the control of minor works through development management process;
2. Using the Design Code to guide the highways maintenance and urban management functions of local authorities;
3. Creating a local management company or tenants association to become the guardian (Stewardship) of the Design Code, and to offer advice on rebuilding or replacing materials to match existing;
4. Introducing restrictions on the rights of occupiers built into leases, for example no satellite dishes or the paving over of front gardens; and
5. Using an LDO and simplified design code to extend permitted development rights by prescribing what is, and is not, acceptable in a particular development.

The initial investment in design quality in line with the Code must be protected over the long-term with an adequate and sustainable management strategy. This should be explored via a planning obligation attached to any planning permission for this development.

Stewardship and Neighbourhood Management

Community assets such as parks, green spaces, community buildings and facilities are an important part of the Garden Village model and are essential elements of attractive, liveable places. This has been recognised as an important element of the original vision and objectives for Langarth, and reflected in the Design Principles and through the stakeholder engagement process.

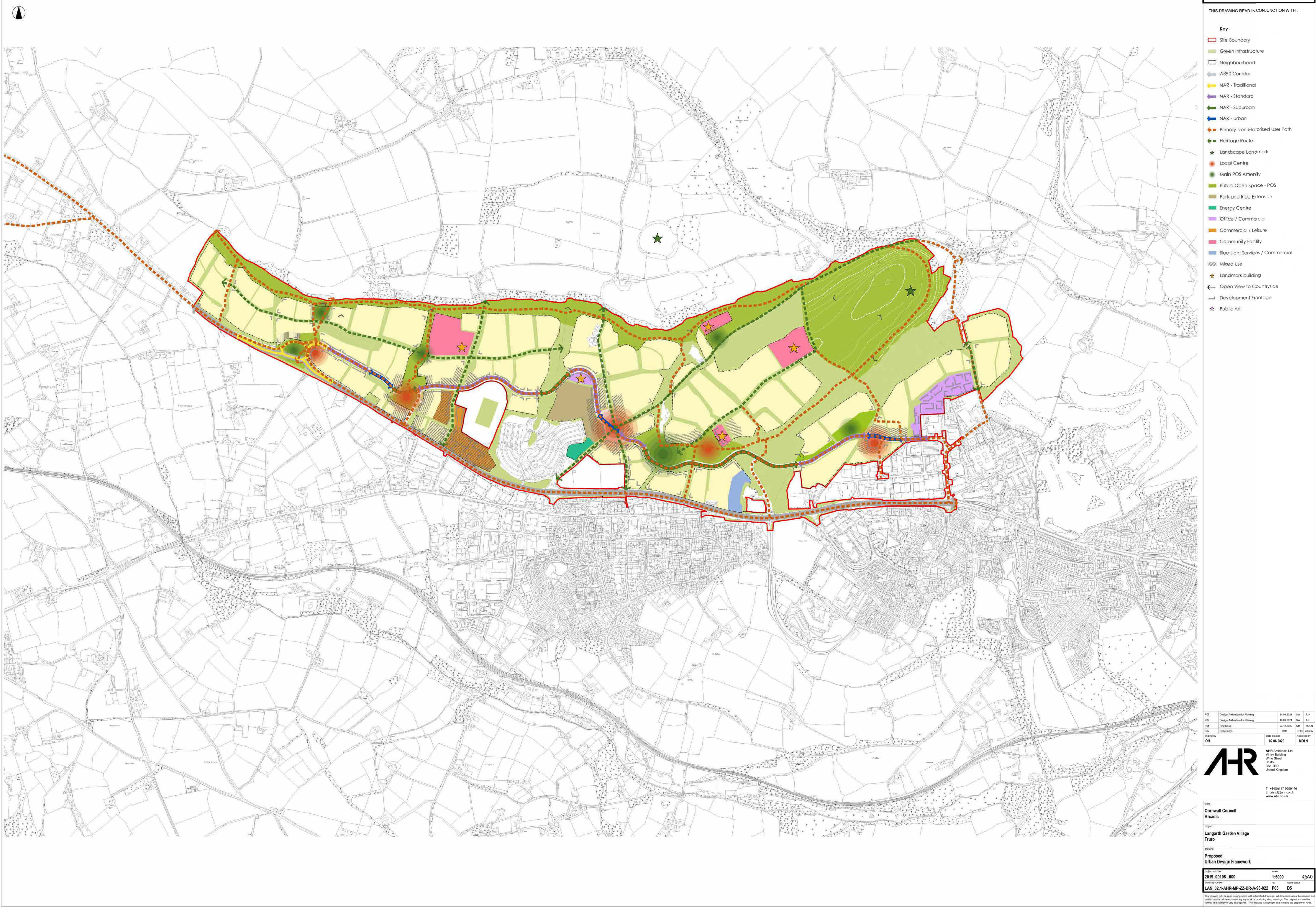
This stewardship role has been part of the Garden Village ethos going back to early examples, such as:

- Letchworth Garden City Foundation (a charitable trust that retains the freehold for some of the land); and
- Modern examples such as Poundbury in Dorset (where management companies owned by landowner and residents are responsible for maintaining common parts of the development)

The principles and proposals for the Stewardship of Langarth Garden Village are being developed and will be defined throughout 2021.

Facility or Land Use	Delivery of Facilities	Management by	Ownership by
Green Corridor including infrastructure, ponds and path network	Cornwall Council	Langarth Garden Village Management Company	Cornwall Council
North Access Street (NAR), including SuDS	Cornwall Council	Cornwall Council	Cornwall Council
Adoptable secondary, tertiary and green lanes and associated path and cycleways	House builder	Cornwall Council	Offered for adoption to Cornwall Council
Public open spaces including hedges and ditches and associated paths and cycleways	Cornwall Council & House builders	Langarth Garden Village Management Company	Offered for adoption to Cornwall Council
Primary Schools	Cornwall Council	Cornwall Council	Cornwall Council
Water attenuation	House builder	Langarth Garden Village Management Company	Offered for adoption to Cornwall Council

Fig.342: Management and Adoption Table



Notes

THIS DRAWING READ IN CONJUNCTION WITH :

- Key**
- Site Boundary
 - Green Infrastructure
 - Neighbourhood
 - A390 Corridor
 - NAR - Traditional
 - NAR - Standard
 - NAR - Suburban
 - NAR - Urban
 - Primary Non-Motorised User Path
 - Heritage Route
 - Landscape Landmark
 - Local Centre
 - Main POS Amenity
 - Public Open Space - POS
 - Park and Ride Extension
 - Energy Centre
 - Office / Commercial
 - Commercial / Leisure
 - Community Facility
 - Blue Light Services / Commercial
 - Mixed Use
 - Landmark building
 - Open View to Countryside
 - Development Frontage
 - Public Art

P03	Design Addendum for Planning	24.09.2021	SW	T.J.H.
P02	Design Addendum for Planning	16.08.2021	SW	T.J.H.
P01	Final Issue	03.12.2020	CH	MDL
Rev	Description	Date	Dr by	App by
Original				
CH		02.08.2020		MDL

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Langarth Garden Village
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Drawing
Proposed
Urban Design Framework

Project number	2019.00106.000	Scale	1:5000	Issue	@A0
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