Building with Nature

Building with Nature DESIGN

Barne Barton

Development Name: Barne Barton

Location: Plymouth, Devon

Type of Project: Regeneration

Applicant: Clarion Housing

BwN Assessor: Gemma Jerome, Building with Nature

Wildlife Trust Area: Devon

BwN Award: Design

Key Stakeholders: Clifton Emery Design, Zebra Collective, RH Partnerships, Plymouth council, existing community members/residents' steering group

Barne Barton used to be Britain's largest naval estate and Clarion Housing are redeveloping this existing community into a sustainable development, transforming 4.65-hectares and the existing 226 homes into 229 new homes throughout two phases. The new homes are aimed at 55+ members of the public, however the regeneration project will also transform the layout and design of Barne Barton, introducing new green infrastructure for the wider community too. Design proposals were heavily influenced by the existing community to ensure the project reflects the community's strengths and needs, retaining existing assets and bringing in new ones to enhance the environment. One of these new changes is a Green Street in the heart of the development, tying the community in with nature. It is aspects such as these that makes the design wholly reflective of the greater Plymouth area and the Tamar Estuary AONB.

Although the development is on a site of high housing demand coupled with a lower land value, the developer has effectively promoted sustainable land-use. They have done so alongside the necessary housing development needs. Thus, both aspects of the development have had equal focus and delivery, enhancing the overall liveability of the site. BwN accredited the Outline Plan for a Design Award, and the applicant is in the process of preparing an assessment for accreditation for a Full Award.

A Building with Nature Design Award externally certifies that a design meets the BwN Standards and delivers high-quality green infrastructure. This award is used at an early stage of design i.e. an outline planning application in larger schemes.

Meeting BwN Objectives

Clarion Housing Association worked through site and spatial restrictions to create a vibrant community space and a sustainable place to live. One of the most significant aspects of the eventual success of the site is the relationship the developer established with the community. Through consultation with the community, the developer ascertained the current wellbeing aspects of value, as well as changes they would like to see in the redevelopment to promote health and wellbeing through access to nature.

Changes that took place largely due to these relationships included the re-orientation of the site from East to West, allowing residents full physical and visual access to the Tamar Estuary AONB. Other objectives incorporated the Green Street, which crosses the contours up to a gradient of 1:4. Future growth is in mind for the Green Street to eventually connect it to external green infrastructure features, such as Blackies Wood.

Biodiversity and Wildlife

Tree species must be removed due to physical restrictions on-site. The developer is duly compensating for this by planting native species tree and vegetation typologies. These plantings will include those found in tidal areas inherent to contextual sites such as the Tamar Estuary. Further biodiversity consideration was taken with ecological surveys, which advised the protection and enhancement of reptile hibernacula for existing slow worms and toads, serving to link outside habitat with that inside the development.

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Figure 1: Plan view of site showing site boundary and context of regeneration area within Barne Barton neighbourhood

The Wildlife Trusts Development Strategy Outcomes

- Throughout the development there are enhanced areas of access to nature, areas set aside where wildlife can flourish and protection and enhancement of biodiversity.
- The Green Street reduces the development's gradient, further enhancing accessibility around the site and to nearby wildlife to boost the day-to-day health and wellbeing of the community.
- Faced with green infrastructure restrictions, the developer still included permeable paving, swales and rain gardens wherever possible for the catchment and retention of rainwater.

Image 1: View from Barne Barton to the Tamar Estuary

Water

Barne Barton lies within the Southwest Water utilities catchment. They do not accept green infrastructure altered runoff, which greatly limited the incorporation of blue infrastructure onsite. The developer aims to maximise the site's potential using swales, permeable paving and rain gardens wherever feasible.

Management

The community consultations were undertaken for 2 years previous to the development plan. The plan contains objectives to meet Planning Obligations and Affordable Housing SPD for Plymouth, focusing on the management and maintenance of the open space.

CORE Standards

Standard 1 Optimises Multifunctionality and Connectivity
Standard 2 Positively responds to the Climate Emergency
Standard 3 Maximises Environmental Net Gains
Standard 4 Champions a Context Driven Approach
Standard 5 Creates Distinctive Places
Standard 6 Secures Effective Place-keeping

The Green Street is the primary green infrastructure provision in the redevelopment. It is highly multifunctional, acting as a '**green link**' for other green infrastructure features both on and off the site. Some onsite examples include communal gardens and the central green square. There are potentials for further future linkages off-site. It also performs as a community space, including areas for informal and formal play. The Green Street also encourages sustainable transport, mitigating noise and emissions while altogether boosting wellbeing.

The **Tamar Estuary AONB** holds a place of pride and influence in the design. The entire re-orientation of the development serves to allow for wide views of the estuarine feature. It also formed the reference for on-site plant species, along with Blackies Wood. The planting has a tidal succession influence, demonstrated with a graduated variance from low shrubs into multi-stemmed trees up to broad leaf trees.

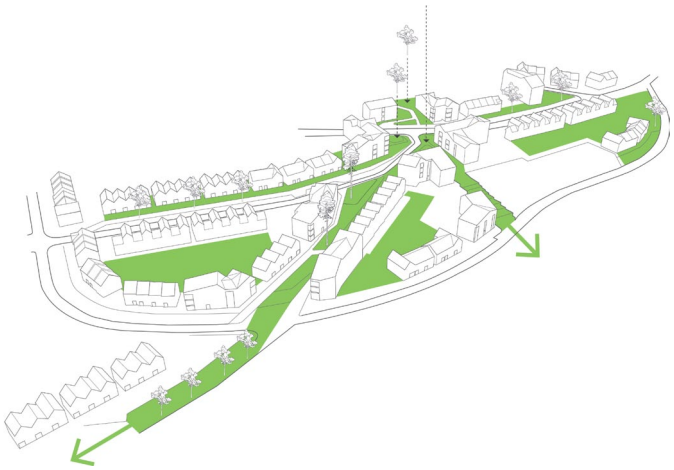

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Figure 2: Plan showing green infrastructure within the main Green Street

The planting mirrors the estuarine plant life within the Plymouth Sound Special Area of Conservation. BwN recognizes that the developer has worked to **mitigate climate change** and other environmental impacts through tree plantings which are positioned to disrupt wind flow on the Green Street. These plantings also provide carbon sequestration.

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Figure 3: Visualisation of the green street

WELLBEING Standards

Standard 7 Brings Nature Closer to People
Standard 8 Supports Equitable and Inclusive Places

The original Barne Barton development primarily rests on an extremely steep slope. The gradients ranged between 1:4 and 1:6 even within key connective areas. Considering the limited mobility found in the community, these gradients greatly reduced the residents access to open and green spaces throughout and outside the site.

Image 2 & 3: Steep slopes and steps run through the site, limiting general mobility as well as access and enjoyment of green infrastructure

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Figure 4: Visualisation showing step-free access and seating areas

One of the primary goals of the Green Street as a pivotal green infrastructure asset was to cut across these steep contours. The effect would create a much more **accessible, step-free** route featuring gentle gradients. It allows for access from the lower sections to the top of the site with high consideration given to persons with limited mobility.

Along the Green Street, there are numerous green terraces. These aim to provide the public with general use green space. For example, for planting flowers or edible arrangements. The North/South route features accessibility to orchards and allotments, enhancing the allowance for self-grown community food. This also reflects the Tamar's orchard-heavy character.

Three play areas are also provided across the development, aimed at differing ages of children and integrated into the green street, providing access to nature for members of the community of all ages.

WATER Standards

Standard 9 Delivers Climate Resilient Water Management
Standard 10 Brings Water Closer to People

The developers maximized the space available for SuDS features on the site even with considerable contextual limitations. The primary way they accomplished this was by directing the rain runoff from the Green Street to swales along the street. These provide filtration to rain gardens located at the lower levels of the development.

The rain gardens serve as **bioretention sites**. They use hydro-retaining plant species to slow the discharge of the rainfall to a grey infrastructure sub-system soak way. The marshy vegetation for the swale and rain gardens will also perform as points of carbon sequestration, boosting the overall multifunctionality of the site's **blue infrastructure features**.

Additionally, permeable paving will be placed in private areas like gardens and parking. The BwN Design Award recognises that efforts were made by the developer to integrate surface water management features, including integral GI features such as rain gardens. However, the detailed plans will be encouraged to incorporate more SuDS components and a more diverse management train, considering how for example the gradient of the development could turn the gradient of the site into an opportunity and use the SuDS system to create ephemeral and biodiverse swales, and feed water features with standing water, such as ponds. This would create more habitat types and bring nature closer to people.

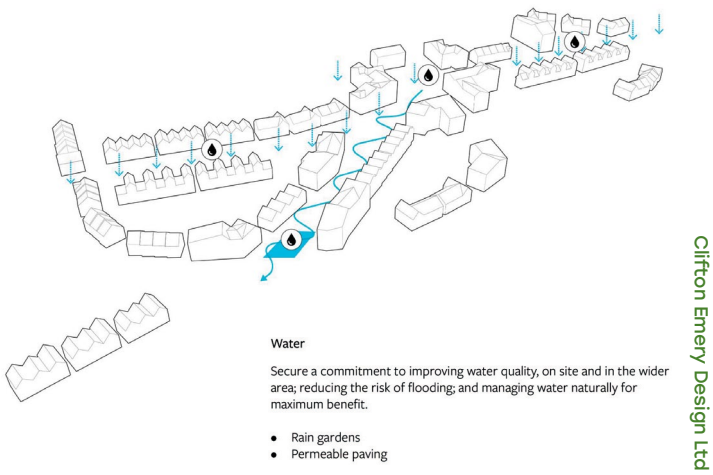

Figure 5: Plan showing water movement across the site

Images 4 & 5: Lack of surface water management means the risk of flooding is high on such a steep development

WILDLIFE Standards

Standard 11 Delivers Wildlife Enhancement
Standard 12 Underpins Nature's Recovery

The green infrastructure features included in the site helped to link internal habitats to the contextual sites. These include Blackie Woods, which is a **Plymouth Biodiversity Network site**, South West main rail, which is the Associated Green Corridor. The wider Plymouth Sound and Estuary and Kinterbury Creek County Wildlife Site also factor heavily into the consideration of the site.

The existing biodiversity of the site was measured through an EMES. This helped identify opportunities for biodiversity within the green infrastructure features. They included 70 swift boxes on higher altitude buildings and corresponding developments to mimic natural habitat. It also included 21 passerine boxes and 9 bat tubes.

Habitat is included throughout the site for invertebrates vital for pollination. That includes solitary bees by leaving cracks in retaining walls and hibernacula, which are mapped and protected. **Hedgehog highways** are installed between allotments and private gardens.

There are further ecological networks included such as East-West connections for traveling species through the Green Street, with Northwest linkages through via trees and hedgerows along corresponding pedestrian pathways. Additional street trees provide stepping stones along Poole Park Road and Wilkinson Road.

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Figure 6: Plan showing wildlife features across the site

Policy Applications

The development meets numerous policies adopted by the Core Strategy of Plymouth and Southwest Devon. These include policy CS18 which focuses on protecting green space and trees. It also includes policy CS19 which focuses on the protection and enhancement of biodiversity.

The development meets and secures Guiding Principles in the Devon County Council's Green Infrastructure Strategy. Specific achievements were made in Principle 1: Planning for Green Infrastructure, Principle 3: Protecting and Enhancing Biodiversity and Principle 4: Conserving, Enhancing and Strengthening Links with Devon's Landscape.

"We were thrilled to receive the Building with Nature accreditation for our Barne Barton regeneration scheme in Plymouth. The opportunities to link in with existing green infrastructure and enhance biodiversity were identified at an early stage in the planning process not least by the residents themselves who were keen to see nature at the heart of their new community. The Building with Nature framework offered us a route to integrate these improvements to the development in a straightforward and effective manner that was also in keeping with our focus on putting residents at the heart of our regeneration projects."

Alexandra Willey – Director of Strategic Asset Management, Clarion Housing Group

Summary

Barne Barton offers a good example of the possible achievements that a community and green infrastructure-centred redevelopment can have. The scheme makes reconnections with the landscape that had been lost over time. BwN have highlighted areas for focus at the Full Assessment stage, including optimising linkages to existing green infrastructure assets including Blackies Wood and the Tamar Estuary. Equally BwN recognise the loss of existing trees on site and will review the planting schedule closely at the next stage of planning.

Image 6: The BwN Full Assessment will look for linkages to nearby Blackies Wood

Image 7: Nicola Evans – Regeneration Projects Manager, Clarion Housing reviewing the plans for Barne Barton with Dr Gemma Jerome, Building with Nature

Useful Links

Building with Nature: www.buildingwithnature.org.uk

Applicant: www.clarionhg.com

Wildlife Trust BwN case studies: www.buildingwithnature.org.uk/wt-bwn-digital-case-studies"

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