Helios, St.Thomas Waterfront
long life, low energy village

Presented to City & County of Swansea by:
Community Development Partnerships Ltd – a Joint Venture Community Interest
Company, comprising:

Warm Wales~Cymru Gynnes CBC, as Development Planners, in association with
The Building Research Establishment Energy Division and
Context Housing Finance.

Concept Designs by:
Design Research Unit, Welsh School of Architecture and
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Draft Visioning Document – March 2014
Introduction.
This visioning document has been prepared to illustrate the potential for the development of the site known as Tawe East.
In it ideas related to the form, character and capacity of the site are explored. As such these are presented for discussion and wider analysis and emphatically should not be seen as a final solution but more of a starting point.

These original briefing notes prepared by Craig Anderson of Warm Wales form the basis of this initial ‘visioning’ study. A subsequent briefing was held with Huw Mowbray and Steve Smith from Swansea CC in November followed by a consultation in January and the outcomes of these initial discussions have been factored into this stage of design development.

The intention is to provided a conceptual framework, ideas and characteristics of place for the 6 acre site based on these consultations during which 3 principal aims emerged:

• Sustainable community with a palpable relationship to St Thomas
• Distinctive Place
• Green Healthy Neighbourhood

Reference has been made to Local Authority planning policy and Supplementary Planning Guidance.

LA Housing Strategy initial thoughts are flats/higher density near road/South side, then Key river frontage – up to say 3/4 storeys which may be a mixture of apartments and town houses for sale
Social housing mix to predominantly 2/3 bed houses
Creation of ‘intimate quiet internal landscaped courtyards, with Woonerf treatment , like South side marina
East side has high traffic volumes, so if space allows create verge tree belt, then public footpath, then further tree belt/bushes, then site/building boundary
Code 5/6 overall desire, using solar integrated roofs,
Sustrans route currently divides the site but will be rerouted slightly to track along riverfront approx 3m wide and c 1.5 m below mean level of remaining site which is relatively flat
Single road access on East of site approx 2/3 up site
Site lends itself to possible phasing of development -
Phase 1 South 3-6 st ( incl some flats) . Possible live work / live frontage
Phase 2 Middle Courtyard
Phase 3 Northern ( narrower ) part with blending into treebelt
Site will likely need traffic light control as very busy road
Main road climbs upward, therefore NE corner design/looking from road will require holding back or 1/2 storey underbuild. Former railway sidings, with made up ground 1-3m of alternating fill, some contaminated slag – a significant financial allowance for sealing /capping will therefore need to be apportioned.
Reference is made here to the Supplementary Planning Guidance originally prepared by the City for this site. It is felt that substantive parts of the guidance remain relevant.

1.1 This Supplementary Planning Guidance (SPG) relates to the site adjoining the east bank of the River Tawe immediately to the north of the new Road Bridge. The eastern boundary is formed by Pentreguinea Road (A4217). To the north of the site, the belt of land between the A4217 and the river narrows. This area forms part of the Tawe Riverside Park and the old railway line has recently been transformed into an attractive joint use path for pedestrians and cyclists. The river forms the western boundary.

1.2 The site represents one of the key development locations which have benefited from the construction of the River Tawe barrage. The impounded water area forms an attractive context, and any development proposal should maximise the advantages of a waterfront location.

1.3 This SPG complements the separate SPG for Port Tawe and Swansea Docks. Together they provide a comprehensive package for directing the development of the eastbank waterfront. It is envisaged that the development of the site will contribute to establishment of Swansea’s identity as a “major Waterfront City.”
THE SITE

The site forms the East Bank of the Tawe as it leaves the Dock and threads north. It is approximately 420m long and has an average width of about 70m.

To the west the Victorian neighbourhood of St Thomas rises on the lower slopes of the hill.

Prospects down-river are toward the Marina Area and West across to the City Centre and the Railway Station.
THE SITE 1 (History)

The site has always been a ‘terminus’ for either river traffic and through the 19th and 20th centuries the Railway. See images below.

Engraving (19thc) aerial view of city and docks from South West

Aerial photographs around 1945
The analysis of historical maps and views reveals the site to have been at the triangular centre of a network of railways - with the St Thomas Station just off the site.
THE SITE

Plan showing the ‘grain of the terraced housing of St Thomas to the East and the larger footprints of the commercial buildings of the City to the West.

Aerial view from North-East showing relationships with St Thomas, the River and City.

Aerial view from South-West. The site has the potential to bind various parts of the city.
THE SITE (Planning policy)

Based on initial briefings with the City and reference to the original SPG it is considered that an appropriate development scheme will:

• Contribute to the development of Swansea's image as a waterfront City.
• Continue the approach set out in the Port Tawe Supplementary Planning Guidance to the development of the Tawe river corridor.
• Provide positive benefits for St Thomas.
• Contribute to a modern, innovative high quality image of the city.
• Achieve a high standard of design with an integrated identity and a sense of place, which takes maximum advantage of the riverside setting.
• Secure a comprehensive development which treats the site as a whole. (A phased implementation programme leading to the completion of a comprehensive scheme will be acceptable).
• Complement and not compete with the city centre.

Vehicular access to the site will be from one point off Pentreguinea Road, to the north of Bethnal Place as indicated diagrammatically on Plan 2. Prospective developers will need to satisfy the requirements of the Director of Technical Services on the details of an all directional junction and the associated land take. There is the potential for this access route into the site to accommodate the line of a pedestrian/cycle route across the site, linking St Thomas to the riverside path. A safe and attractive pedestrian/cycle connection to serve the St. Thomas community is an essential requirement and must be seen as an integral part of the comprehensive scheme. A riverside path must also be provided so as to provide a direct and attractive link for pedestrians and cyclists between the existing sections of the path to the north and south of the development area.

The developer will be required to undertake any necessary works along the river's frontage to provide the Riverside Park link and quayside features. (See Appendix 1 of the original SPG for further information). The material and treatment details for the works on both these and other public areas within the site shall be included in any submission or planning application. Public realm areas should be attractive and imaginative and should have regard to the Port Tawe initiative further down river.

The design of the landscape area should provide for the introduction of indigenous species and enhance the biodiversity of the area. The scheme should be of a standard suitable for Council adoption on completion. Any landscaping in the vicinity of the riverside path should be kept fairly low so as to enable users to retain good surveillance of the area. It should be noted that the written consent of the Environment Agency is required for any proposed works or structures within 7 meters of the top of the river bank.

An informal landscape scheme will be required along the northern Boundary in order to ensure an attractive transition with the land to the north which forms part of the Riverside Park. The scheme should be of a standard suitable for Council adoption on completion. Where areas of public realm (both hard and soft) are to be adopted by the council, commuted sums for their ongoing maintenance will be required. These will be agreed with the Culture and Recreation Department as schemes are progressed. If such areas are not to be adopted then suitable measures for their ongoing satisfactory maintenance will need to be agreed.

Diagram prepared by Swansea CC as part of the original SPG for the site.
ST THOMAS - Topographical survey

Panorama of the site (with St Thomas above in the mist) looking from the opposite bank of the River showing the mainly original river wall at which ships moored - note piled repairs to South

Site levels rise to the North resulting in a retaining wall/railway bridge abutment
Looking North along existing cycle path

View from West Bank

From West Bank with retaining wall /bridge abutment in foreground

South East corner of the site where the pedestrian is subjugated by highway engineering
Anonymous new housing on the West Bank turns away and negates the presence of the River.
ST THOMAS - Character Zones

As the site runs lineally to the North along the River but also bounds St Thomas there is an opportunity to create distinctive development characteristics in response to the condition.

Site Terminus - continuation of Sustrans. At the extreme North the site narrows and is adjacent to the main road as it rises out of the city. Here the Sustrans is threaded through a shared triangular court (Triangle - Swindon) and which gives this part of the site a particular character.

Site hinterland - here the scale and grain of the scheme is more akin to St Thomas but the emphasis is on green private and public spaces. Affordability and well-being. The precedent here is the Clarke’s development in Street in Somerset where a combination of 2 and 3 bed Mews houses are carefully integrated with blue/green space.

River Edge and Southern (Marina) boundary. Here the emphasis is on a scale related to the feel of a vibrant River Edge and a formal connection with the earlier development to the South. Public realm contains the Sustrans route along the River Edge studded with pocket squares with some mixed use.
ST THOMAS – Site spatial strategy

1. A series of linked public spaces are located to run from the South (City end) of the site to the North.

2. Inner-courtyards are planted with trees and these ‘green’ courts are linked visually to the riverside Piazzas. These are sites for views to the river and contain public art.

3. The River is then linked by these public spaces to the blue/green corridor running North - South on the Eastern boundary of the site.

4. Dwellings are distributed within this framework with higher buildings fronting the River and the Marina and lower town houses and mews houses ‘inside’ the site.
Nolli studies undertaken to test response to grain and scale of St Thomas

Movement studies
Pedestrian and cycle
Car and pedestrian in Woonert streets
Pedestrian only through green square and promenade

Drawn studies testing grain and massing with St Thomas
ST THOMAS - creating local distinctiveness

Linking the Marina and St Thomas - potential to ‘learn’ form formal ideas of punctuation, scale, facade layering and colour - the character of Swansea and its relationship with water

This is in the tradition of other Northern Cities with particular qualities of light and water and sustainability - Copenhagen and Malmo
ST THOMAS - precedent - Feilden Clegg at Bristol Waterside
ST THOMAS - registering specifics of light and colour in Swansea Bay
ST THOMAS - Initial character studies based on mapping and registration

1. View looking North from the ‘entrance piazza’ with landmark tower and mixed use block in foreground

2. View East over the River Tawe showing massing and character of riverside dwellings. The Sustrans route is established along the River Edge.

3. View looking South to road bridge and Marina beyond showing vitality at River Edge

4. View from North ‘Triangle’ indicating the transition in scale from Riverside to St Thomas.
ST THOMAS - Sustainability - Community and buildings

The project is founded on the use of renewable energy generation - particularly the use of photovoltaic panels at roof level. This provides the opportunity for the development of a new and unique urban/suburban housing solution in which the roof and associated amenity space is a form generator and contributes to the ambition for the scheme to be a first of its kind in Wales.

**Achieving code 5**

The energy concept is supplemented by the creative use of photovoltaic panels on all south facing roof slopes designed to maximise solar access (see over). The panels provide an integrated roof solution produced by ZEDroof and are not ‘applied’ to an orthodox roof material. These panels will be integrated within a community electrical generation strategy, run from a central energy centre. In excess of 2000m² photovoltaic panels offset carbon associated with gas supply and contributes to electricity demand for lighting, fans and pumps.

Heating load to the development is supplied by different systems depending on season. A woodchip biomass boiler is used only during the peak winter heating season to prevent stopping and starting the system. A thermal store captures excess heat, used once the boiler is deactivated. During intermediate periods gas back-up can be activated on demand to provide heating as required. Heat is pumped around the site on a highly insulated hot water loop, with heat exchangers transferring heat to each house or flat. Long term reliability of supply is a significant issue and requires extensive investigation before the final system is agreed. It is estimated that the system requires 23 tonnes of woodchip per year, equating to four deliveries per annum.

Hot water is provided by a Combined Heat and Power (CHP) system. The CHP runs continuously, providing hot water and generating power. Hot water is pumped around the development in a highly insulated closed loop with heat exchangers to each dwelling.
Water use is reduced to 80l/person to maximise credits under the Code. This is achieved by using small volume baths, low flow fittings and grey and rainwater recycling. Recycled rainwater is filtered to bathing standards and used in WC’s and washing machines.

High levels of airtightness necessitate mechanical ventilation with heat recovery.

Highly insulated building envelopes face south with high glazing ratios. Each has a sun space, designed as an enclosable balcony and/or roof terraces with thermal mass floors to take advantage of solar gains and act as a buffer zone in winter.

Fabric performance
Wall construction 0.15W/m2K
Floor construction 0.15W/m2K
Airtightness 3 m3/m2/hr@50pa.

The fabric will be designed to meet Energy Saving Trust enhanced construction detail U Values of 0.15 and an airtightness of 3 m3/m2/hr@50pa. The majority of the envelope was designed to be clad in insulated render panels with timber cladding on the light chimneys.

The houses to have triple glazed windows with a U Value of 0.8W/m²K.

The apartments will be designed as the houses using a timber frame system with composite floors. The frame will be faced with 150mm EPS insulation, finished with render to achieve the required U value of 0.15W/m2K.

Windows with a U Value of 1.2 W/m²K were chosen to allow bonding of vapour control layer to the window frame. This was considered essential for achieving the required airtightness.

Systems
Hot Water: Combined Heat and Power system
Heating: Community biomass woodchip boiler, gas top up and inter-seasonal use, radiators fed by heat exchange
Electrical: Community Photovoltaic array, combined Heat and Power
Individual systems: Whole House Mechanical Ventilation and Heat Recovery
BREEAM Communities is a way to improve, measure and certify the social, environmental and economic sustainability of large-scale development plans by integrating sustainable design into the masterplanning process. The scheme is for developers, masterplanning professionals, local authority planners, local politicians, communities and relevant statutory bodies.

When can it be used?
BREEAM Communities is suitable for developments which are likely to have significant impacts on existing communities, infrastructure or the provision of local services. The scheme can be used for new mixed-use communities, or single-use developments of a significant size.

This would be a first for Wales.

### Table - 1: BREEAM Communities 2012 steps, categories and assessment issues

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<td>LE 01 - Ecology strategy</td>
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<td>LE 02 - Land use</td>
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<td><strong>UNCLASSIFIED</strong></td>
<td><strong>OUTSTANDING</strong></td>
<td><strong>EXCELLENT</strong></td>
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The BREEAM rating benchmark levels enable a client or other stakeholder to compare an individual development’s performance with other BREEAM rated developments.

An unclassified BREEAM rating represents performance that is non-compliant with BREEAM. This may be through a failure to meet either the BREEAM mandatory standards of performance for key sustainability issues or the overall threshold score required for formal BREEAM certification. No certificate will be issued for unclassified assessments and they are not listed on Green Book Live.
ST THOMAS - Studies of place

View looking North from Southern Piazza to the scheme

View looking South toward marina
Aerial view from North West

View along river edge and Sustrans route
ST THOMAS - Layout, drawn and modelled studies
Indicative Dwelling types
Physical model - view from West - St Thomas overlooking the scheme
ST THOMAS - Layout and Indicative Dwelling types

- **2B 4P House 2 Storey**: 91m²
  - Blocks J-L

- **3B 5P Courtyard House 2 Storey**: 105m²
  - Integral parking 20m² Block C

- **3B 5P House 3 Storey**: 105m²
  - Blocks F,G

- **3B 6P House 3 Storey**: 150m²
  - Blocks D,E and M
Blocks A, N and R are a variety of apartments
1 B Flat 50m2
2B 4P Flat 65 m2
Balcony 12m2

2B 4P Maisonette 90m2
Block M