

Systemau Draenio Cynaliadwy a Grangetown Werddach **Sustainable Drainage Systems and Greener Grangetown**



Introducing SuDS

Sustainable Drainage Systems (SuDS)

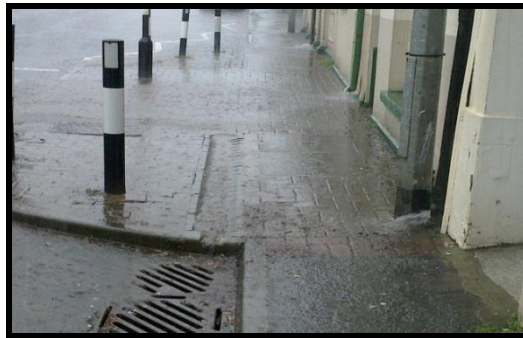
- Mimic natural drainage
- Reduce flow rates and volume of runoff
- Series of drainage components

Water Sensitive Urban Design (WSUD)

- Integrate water cycle management with the built environment, through planning.
- All elements of the water cycle considered concurrently.
- WSUD is the process, not the outcome.



RAINFALL SEEN AS A PROBLEM



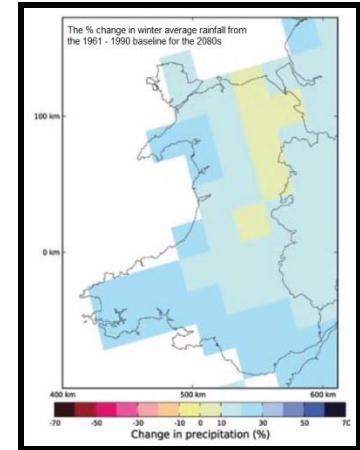
Tongwynlais, Cardiff

FLOOD RISK



Llanberis, November 2012

CLIMATE CHANGE



WETTER IN WINTER...

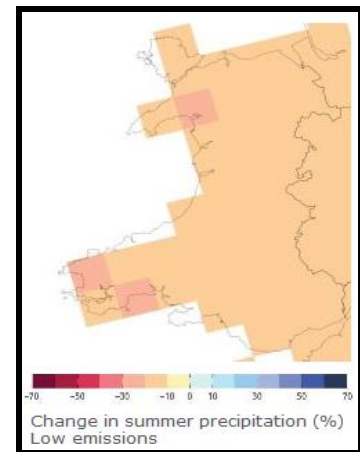
INCREASED URBANISATION



Pentyrch, Cardiff

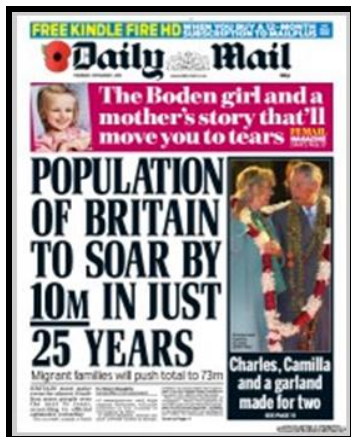
Ecosystem Pressures

... AND DRIER IN SUMMER



UKCP09 (50%, 2080s)

POPULATION GROWTH



POLLUTION AND SEWER DISCHARGES

Gwenfro, Wrexham



DEGRADED HABITAT AND BIODIVERSITY LOSS

Thinking sustainably

- Opportunity to think and act differently, and link with new purpose, roles and legislative requirements.
- An integrated approach – understanding natural systems
- Benefits for people, business and the environment
- Good design



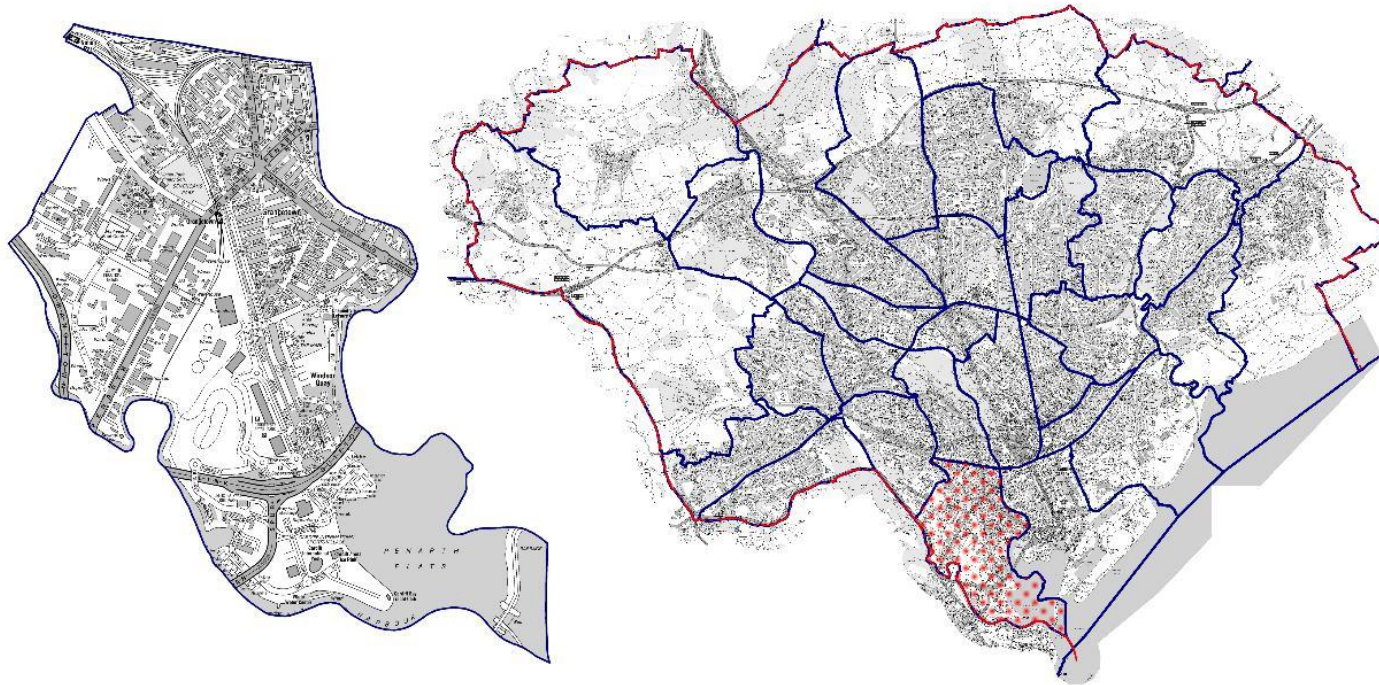


GREENER GRANGETOWN WERDDACH

A partnership initiative to help make
Grangetown a greener, cleaner place to live

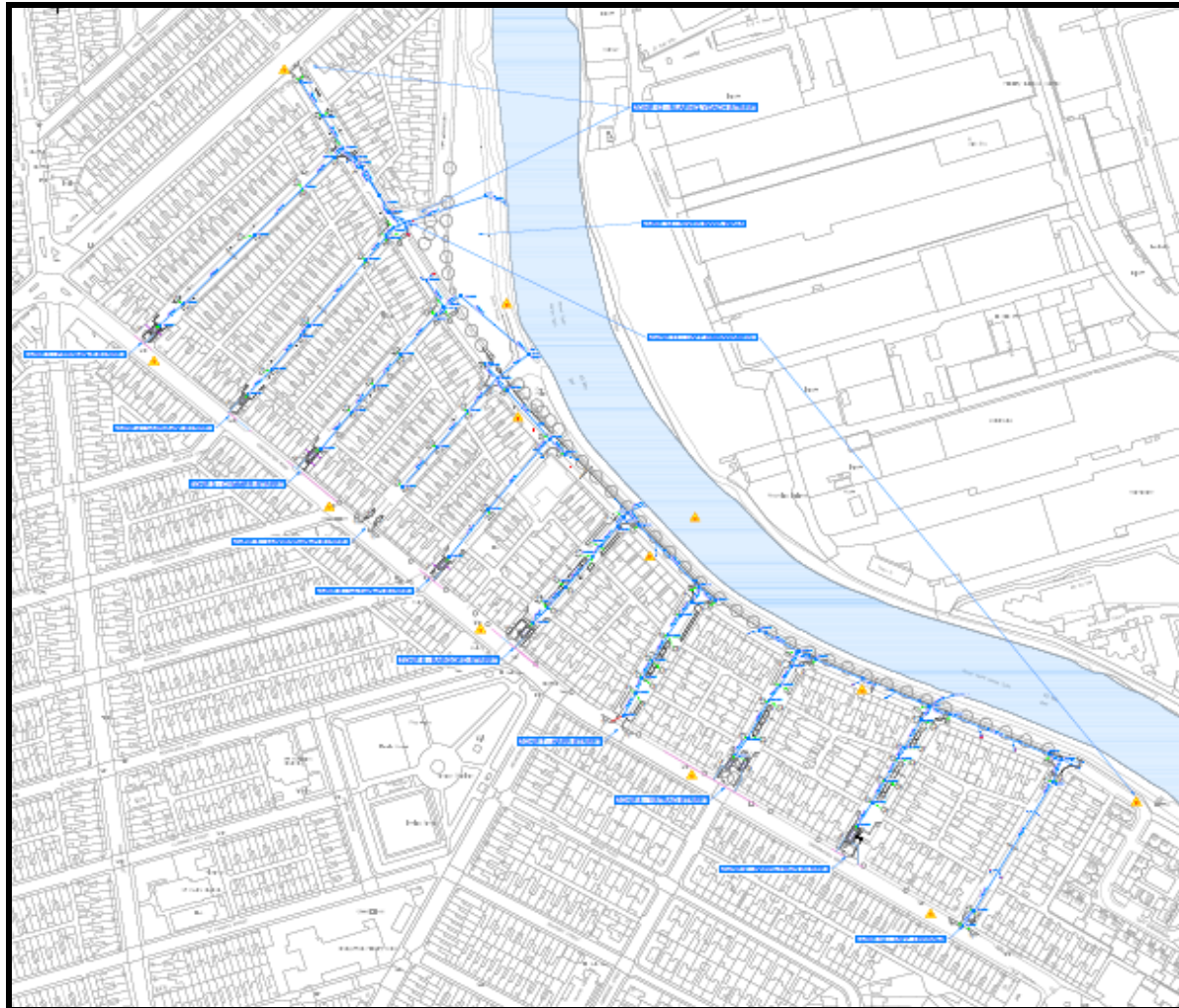


Grangetown in context



- 20,000 residents
- Population density of almost twice the average of the city
- One of the most diverse communities of any council ward in Wales

Grangetown in context



Greener Grangetown - before



Greener Grangetown - before



Greener Grangetown - before



Greener Grangetown - before



Feasibility study - “art of the possible” (2012)



Initial Feasibility Study (2013)



Central greenspace
Västra Hamnen, Malmö, Sweden



Central greenspace
Västra Hamnen, Malmö, Sweden



Rain Garden
Västra Hamnen, Malmö, Sweden

First Public Consultation (2014)



GREENER GRANGETOWN WERDDACH

Wide Streets: Option 2

- Bargoed Street
- Ystrad Street
- Abercynon Street
- Aber Street (To remain as a through road for traffic).

Key:

P Parking:

Parking requirements to be agreed with residents

Green Spaces:

Location of proposed trees to be determined in agreement with residents and subject to underground services (Water, Gas & Electric)

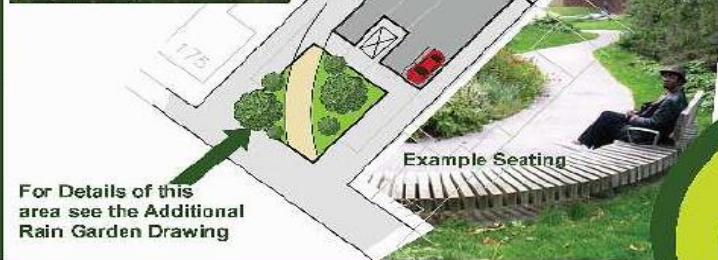
Cardiff Council (CC), Dŵr Cymru/Welsh Water (DŴW) and Natural Resources Wales (NRW) commissioned Arup to undertake a feasibility study for Greener Grangetown. A project for surface water management with the supplementary aim of unifying this part of Cardiff with the riverine environment and providing connectivity to the bay.

This study benefits from the pioneering work under DŴW's Programme strategy and supplements it with water and energy efficient measures for the community within a Water Sensitive Urban Design (WSUD) framework.

It infost free solutions that meet the hydraulic and engineering requirements and which also maximise the wider benefits by integrating them into the public realm. Greener Grangetown will serve as a valuable amenity feature by providing attractive open space along with a variety of economic, environmental, ecological and social socio-economic benefits.

Improved Streetscape by:

- Increasing Green Space
- Improving the Bio-diversity and Water Quality
- Optional Seating Areas
- Improving Cycling Facilities
- Installing Planters & Verges with Local Species of Plants
- Increasing the Habitat for Wildlife



Example of an existing Sustainable Drainage System showing mixed planting

For Details of this area see the Additional Rain Garden Drawing

Benefits:

- Economy
- Education
- Water Quality
- Natural Cycle
- Carbon
- Microclimate
- Biodiversity
- Habitat
- Amenities
- Wellbeing
- Cycling
- Walking

CONSULTATION DRAWINGS WIDE STREET

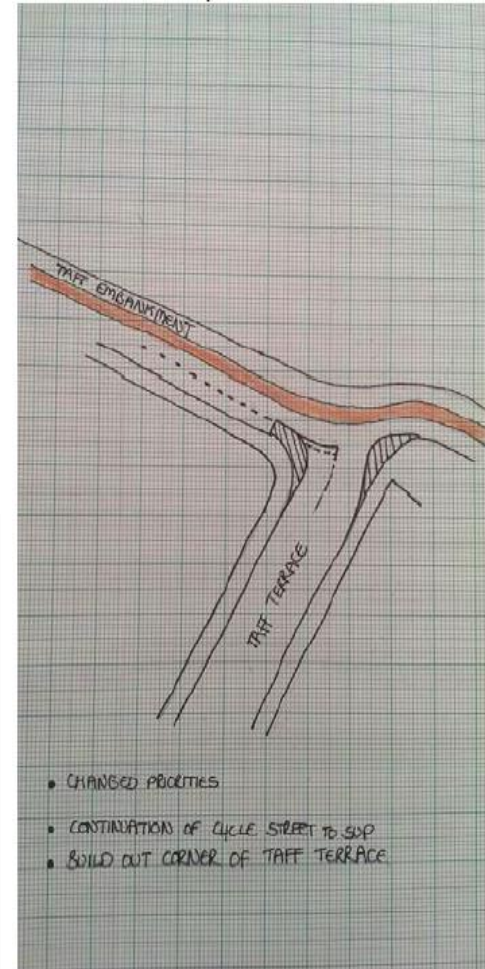
In partnership with:



Consultation – an overview



	High priority	Neither high nor low	Low priority
	1-3	4-5	6-8
Trees	7	4	5
Wild flowers	7	4	6
Raised beds	7	4	5
Benches	5	1	10
Community allotment	7	2	6
Cycle parking	5	1	8
Wildlife habitat	7	2	6
Community art project	1	7	8



clean park rubbish work day
 all green spaces permits feel
 cycle residents area river
 idea cars parking benches
 good Taff people litter
 less trees Embankment
 make traffic streets space



Second Public Consultation (2015)



Bargoed Street

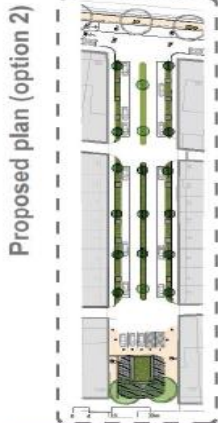
1 You said...

- ...that litter was an issue
- ...you liked the idea of trees
- ...that you didn't want benches
- ...that parking was an issue in this street



Roadside rain garden with tree to catch and clean rain water

Dead end rain garden to catch and clean rain water



Proposed plan (option 2)



New cycle stand (if requested)

An effective increase in resident parking
50% residents only parking



New bollards



New litter bin

2 We did...

Proposed plan (option 1)



Existing tree to be retained where possible



Proposed tree



Proposed roadside rain garden



Proposed shrubs and grasses



Proposed new surface



Proposed permeable paving



Proposed block paving



Tree to be removed



3 You decide...

Permeable paving colour options



What planting would you like to see?



Trees

Shrub planting (flowering months)

Other shrubs and grasses

Proposed view (sketch)

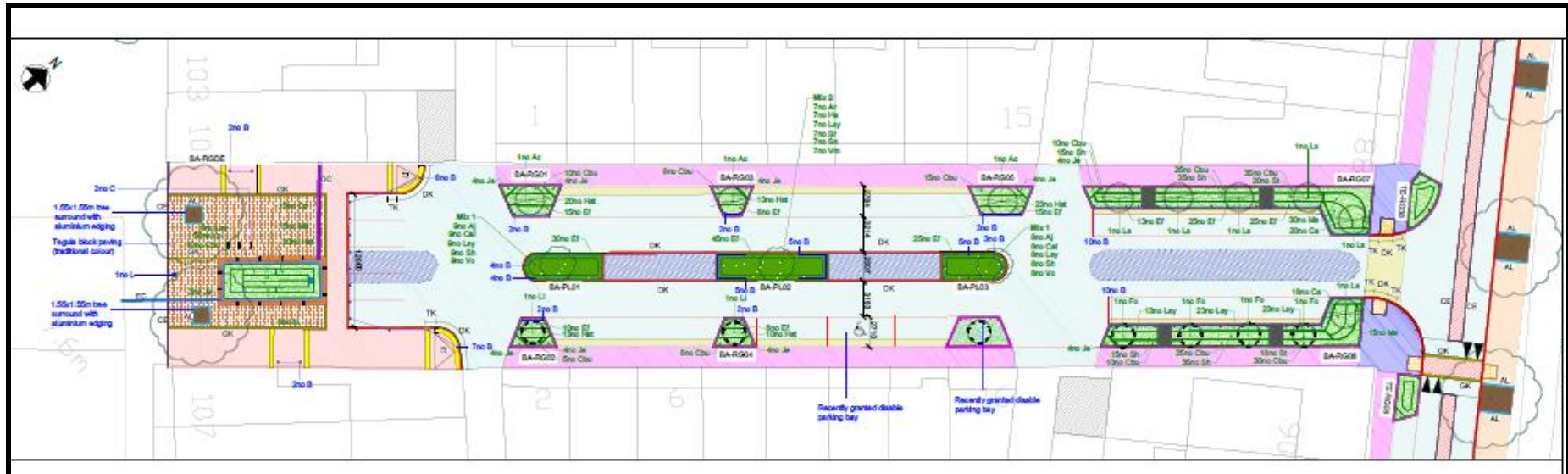


Current view

Please fill out the questionnaire



Final Design (2017)



Construction (2017/18)



... and 'hands on' participation (2017/18)



Completed Street (2018)





Multiple benefits

- 42,000m² of surface water removed from combined wastewater network
- 1,600m² of additional green space
- 495m² of new permeable paving, replacing block paving and tarmac
- 135 new semi-mature trees (32 with underground cells to treat water)
- Improved air quality
- Reduced noise pollution
- Habitat creation and increase in biodiversity
- Improved urban environment

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Diolch
Thank you

