Good practice in retrofitting SuDS

Interreg NWA
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The problem in the UK

ISSUE
- Changing weather patterns
- Towns and cities located on rivers
- Groundwater
- Coastal flooding
- Land management
- Urban creep and upstream development
- Combined sewers have limited capacity

OUTCOME
- 1 in 5 homes and businesses at risk
- Huge financial and social cost of flood damage and reinstatement

The problem is increasing
Revisioning our towns and cities

PLANNING
• Good planning
• Flood alleviation & protection
• Realignment/routing water
• Reconsidering land planning

DELIVERY
• SuDS for all new development
• Comprehensive SuDS retrofitting
• Property level resilience

By jove! It’s going to get worse!
Strategy for Derby

- Derwent Valley World Heritage Site
- Re-masterplanning the city centre
- Blue corridor vision – 120m wide
- Considered land-swaps
- Challenged town planning principles
- Made the city consider resilience
- Engineer led, but visioned through urban design
- SuDS and WSUD principles led all new development
- Need for retrofitted SuDS

Having the imagination to rethink
Rethinking our towns

Surface water flooding

Environment Agency surface water flooding map of Cheltenham town centre
Rethinking our towns

Arrival and connections

CONNECTIVITY

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Arrival and connections

Strong main east-west and north south streets

Many smaller interconnecting lateral streets, mainly north-south

Five main bus nodes within study area, all generally along shop frontages, giving rise to range of problems

Lots of car parks, well distributed throughout area
Rethinking locally... and for cycles

Cycle restrictions lifted down High Street but not a commuter route

Lack of connectivity for safe / defined cycle routes

KEY
- Study Area
- Permissive / on-road cycling route
- Permissive route - non commuter
- Off road cycle route
- Lack of connectivity
- Dangerous junctions for cyclists

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... and for cycles
1. **Royal Well**: buses and cars dominate; located at 'back' of council offices; architecture of Royal Crescent not celebrated

2. **Poor gateway into town from east**: traffic dominated and narrow pavements

3. **The Strand**: poor quality urban realm

4. **Rodney Road / High Street junction**: vehicle priority a barrier to continuity of pedestrian access; concern over increased traffic following closure of Boots Corner

5. **Boots Corner**: traffic dominates; pedestrian flows stopped; poor quality urban realm

6. **Council Office / Promenade**: ringed by vehicles; long gardens underutilised; traffic dominated; poor setting for civic building; buses in front of shops

**Problems and Issues**

**Quality of place**
Rethinking our towns

**Land use and destinations**

- **Development of Cheltenham House increases use of St Marys Churchyard**
- **Green spaces within town centre not well used**
- **Well-defined shopping areas**
- **Proposed development of old BHS site for further restaurants, opening into Regent Street will strengthen space**

**KEY**
- Study Area
- Green space
- Shopping
- Night time
- Cultural destinations

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**Land use and destinations**
**Rethinking locally**

**Major opportunities**

- **Royal Well:** move buses or redesign to create an improved setting.
- **Regent Street:** extend character of Regent 'Chambers' throughout street - vibrant night time economy and placemaking. Associate with re-development of BHS.
- **Sort Rodney Road traffic flows - remove vehicle/pedestrian conflicts - make pedestrian priority**
- **Winchcombe Street:** make pedestrian priority and expand 'cafe culture' developments, to colonise street.
- **The Strand:** improve public realm to Strand - extend up Winchcombe Street past entrance to new John Lewis.
- **Create gateway into town from east - change character at entrance to Sandford Park**
- **Boots Corner:** reduce domination of traffic; allow better pedestrian flows; improve urban realm.
Rethinking our towns

Potential for blue/green

Street treatment type A:
Permeable paving in parking areas with street tree planting also forming part of SuDS system

Street treatment type B:
Permeable paving with bioretention planters

Street treatment type C:
Permeable paving with bioretention planters and street tree planting as part of SuDS system

Street treatment type D:
Street tree planting forming part of SuDS system

Feature areas: areas of new urban design incorporating road infrastructure with bioretention planters and street tree planting as part of SuDS system.
SuDS retrofitting...

• Incremental but immediate effect
• Multiple interventions inherently build greater resilience
• Flexible application and value for money
• Develop a mindset that considers SuDS first
• Consider its application everywhere
• Integrate with other planned works
• Aligns with other objectives around public health, GI, biodiversity, water quality and place-making

• NEED TO DO ..... all the time ........ everywhere!

Portland – 56,000 downspouts     Philadelphia – 25 year ongoing plan

... the need to Nibble!
Finding opportunities to get it right

ANY BUILDING
• Rainwater harvesting for internal use
• Water butts or tanks for external re-use
• Use green/brown/blue roofs in new build or when roofs need repair/renewal
• Permeable drives and connect downpipes to raingardens

FLATS AND APARTMENTS
• Connect downpipes to SuDS or for communal car washing facility or...
• Use communal space for to raingardens ponds or other garden features
• Green roofs to garages, cycle sheds or bin stores
Finding opportunities to get it right

CAR PARKS, RETAIL AND COMMERCIAL
- Use permeable paving within parking bays and potentially connect to rain gardens
- Use stormwater planters or linear swales and basins around boundaries
- Collect rain water for recycling on site

SCHOOL GROUNDS
- Redesign for creative play/use
- Often extensive hard surfaces
- ‘Spare’ green space invariably available
- Soft SuDS especially align with the curriculum
Finding opportunities to get it right

TRANSPORT AND HIGHWAYS
• Road widening/narrowing schemes
• Traffic management schemes
• Integrate with shared surface schemes
• Tram routes or light rail
• Parking schemes
• New cycle routes or pedestrianisation
• Use street tree planters

URBAN DESIGN AND CITY PARKS
• Town centre regeneration
• Commercial/retail redevelopment
• Use parks or ‘left over’ urban space
• Verges and roundabouts
• Temporary ‘Meanwhile’ projects
Drivers for change

• Uptake of water through SuDS
• Interception of water
• Water quality improvements

OTHER BENEFITS
• Air quality improvements
• Urban heat island effect
• Increase in biodiversity and opportunities for wildlife
• Species migration and GI networks
• Visual quality in the environment
• Health and wellbeing – physical and mental

...creating multiple benefits

it’s not just about water
Ashford ringroad
Large scale water management parks
Current schemes – LIFE project

Flooding problems

Queen Caroline Estate
262 properties

Cheeseman’s Terrace
317 properties

Cyril Thatcher, Eric MacDonald and Richard Knight Houses
30 properties
Current schemes – original condition
Current schemes
Current schemes

Groundwork for Hammersmith & Fulham Council
Road redesign

Parking areas repaved as permeable
Any questions?