Central Park SuDS
Submitted by Plymouth Highways

Awards category
Catchment based SuDS solutions

Lead or collaborating organisation(s)	**Plymouth City Council**
Location of SuDS	PL2 3DG What3Words: notion.tides.canny

1. SuDS overview

SuDS components used	• Infiltration Swales • Detention Ponds • Gravel Filter Drains • Proprietary Rootlook Living Wall System • Cascade feature • Piped overflow control
Size of the scheme and its local context	£4.2m Scheme in Central Park (68 hectares of green land)
Approximate age of scheme (years)	2 years
Benefits of the scheme	• Flood prevention • Improvement to biodiversity • Community space • Air quality improvements • Adaption to climate change • Sustainable solution to surface water retention
Briefly describe the scheme	The Central Park Sustainable Drainage System remodelling scheme in Plymouth incorporated a variety of drainage improvement works to capture rainwater and contain it, whilst maintaining a natural environment for wildlife and simultaneously encouraging biodiversity. The objective was to transform water from a problem into a resource for the local community and wildlife existing in the area. The project involved re-landscaping a large area of Central Park, the installation of additional ponds, swales and Geo-Grow systems to provide a nature-based solution to flooding. By creating permanent bodies of water to store rainfall and implementing this sustainable drainage system, we have managed excess surface water and provided a safe space for wildlife and people. The existing pond and park drainage was defunct; heavy rainfall regularly flooded the area and caused drains to overflow, which resulted in difficulty for the public to travel through the park. Steep banks and ground conditions compounded this situation and runoff from the park during times of rainfall put the cities' combined sewer system under pressure. Flooding issues were intensified in times of heavy rain and with the impending threat of climate change, this is only forecast to increase in the coming years.

2. SuDS details

No.	Question	Answer
1	What difference has this scheme made to the local community or area?	The scheme has resulted in a positive impact on many areas of the community. Residents have benefited from the reduction in flooding hazards posed by living in proximity to the Park as well as improved accessibility to one of the core features of Plymouth. An increase in footfall through the park is expected, due to a reduction of areas cordoned off from ground saturation. The increase in footfall will in turn aid local businesses by expanding the customer profile. The public have increased access to a natural environment which has many benefits to improvement in mental and physical health.
2	What is exceptional about this scheme beyond a standard approach?	Part of the solution involved recycling materials on site such as 18,000 existing granite setts, over 11,500m3 of soil was excavated and filled over approximately 48,300m2. Without the ability to fill areas across site, the majority of spoil would have had to be moved away from site at a great expense and impact on Co2e. We also used a proprietary root-lock system; self-seeded/green retaining wall instead of sheet piling or Gabion Baskets. This is a natural retaining wall system which incorporates seeded bags stacked on top of each other that interlock to form a natural, self-sustaining, vegetated wall.
3	How much work went into getting this scheme realised?	When faced with these challenges, the Plymouth Highways team; Plymouth Council, South West Highways, and their specialist suppliers, developed an innovative and sustainable solution. The strategy was to provide an engineering solution to manage the flooding, with wider benefits for nature and the community. To achieve these objectives, the team created two new ponds and installed connecting swales; shallow drainage channels with gentle side slopes where water running off a site can collect and soak away, and root-lock systems; self-seeded/green retaining walls, thus forming a natural, sustainable urban drainage system within the park.
4	Is this scheme part of a masterplan or integrated into other initiatives?	The scheme was predicted to increase biodiversity and provide a natural habitat for both existing fauna and attract wildlife to the area. Supporting a healthy environment for pollinators, cleaner air quality, and creating a space for the mental well-being of visitors to the park. The interest from the community and support received by the positive comments throughout the scheme have instigated proposals for further development in upcoming schemes to implement more environmentally friendly initiatives.

5	What value does this scheme provide to the local area and beyond?	The Central Park scheme in Plymouth transformed this space from a local flooding problem into an incredible place for the local community and local wildlife. The project created a sustainable urban drainage system through landscaping a large area of Central Park; installing ponds, and other natural systems to turn an unusable section of park into a key community resource. This nature-based solution to flooding has solved the surface water issue and provided a revitalised space for wildlife and people.
6	What challenges/problems needed to be addressed to realise this scheme?	Protecting the existing habitat - A specialist arboriculturalist was engaged to undertake a full Landscaping Appraisal. Water runoff - Water arising due to the works outfalls were shaped into a beautiful cascade feature, and erosion proofing used. Local geography - tens of thousands of cubic meters of earth were moved as part of the cut/fill process to enable the pond's successful completion. Programme - The team accommodated changes to design, an increase in scope and an expansion of the landscaping area. Community Liaison – via face-to-face consultations, pre-works notification letters, emails to stakeholders, calls to businesses, and a pre-construction residential survey.
7	How does the scheme address related issues such as water scarcity, nutrient neutrality, or biodiversity net gain?	44,398m2 of wildflower meadow has been planted (including through the root-lock system), with 29 different species of wildflower represented. This will increase biodiversity in the area and encourage a wide variety of fauna. Additionally, 71 new trees are planned for summer 2024, surrounded by 2,800m of tree-protection fencing. By making the environment more habitable, we have provided a platform for local species to flourish. The scheme was designed to incorporate a 115-litres-a-second flow control system at the drainage outlet to reduce water retention; the swale system also captures water ingress for nearly 250m further reducing chances of flooding.
8	Is learning from the scheme continually captured and communicated? Please give examples.	The design incorporated multiple viewing points and seating so that the park can be appreciated by all and allow people to get close to nature. Information boards provide a platform from which people can learn about the benefits of water conservation and how this can positively impact wildlife and the environment. There is an educational aspect to consider with the information boards, which will provide wildlife information to the public and educate them on interaction improvements to wildlife.
9	What approaches/measures are taken to ensure the scheme is properly managed and maintained?	By using innovative, low-impact, low-carbon engineering solutions, the team created a sustainable, secure and accessible green space in Plymouth. Little to no maintenance is required for this system making it a resilient and sustainable solution for the future.

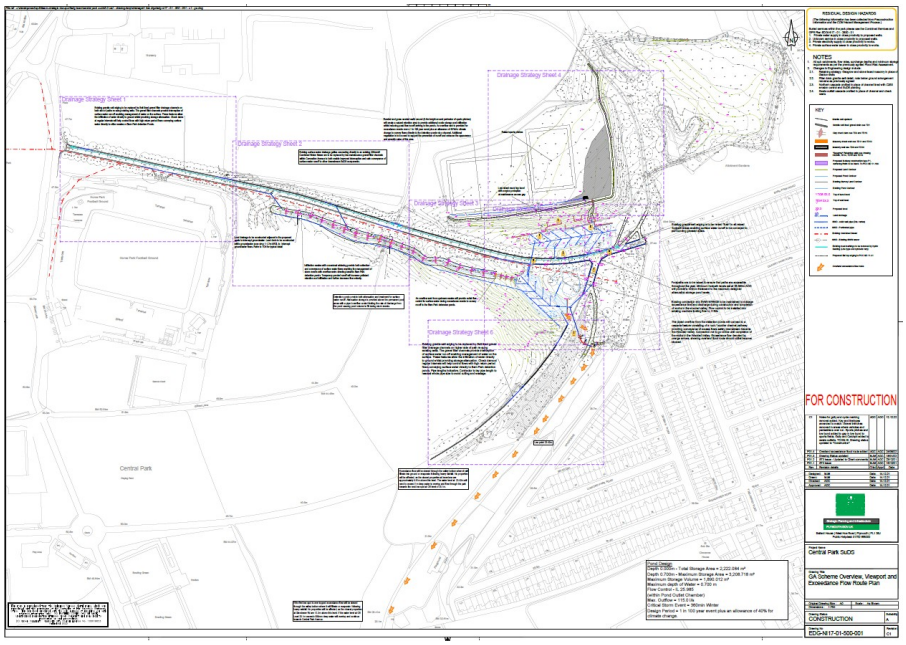
10	Have you collected any feedback on your scheme? What do people say about it? Can you provide any quotes?	Endorsement from Plymouth City Council (client for the scheme): "Throughout the delivery of the Central Park SUDS project, South West Highways have managed to supersede expectations in the undertaking of this large and complex scheme. They achieved completion of the works in a timely fashion, whilst balancing the workload of the Term Maintenance Contract. Their dedication, determination and resilience throughout the scheme resulted in the production of high-quality work. We are extremely pleased with the outcome and the positive feedback received from the public; we look forward to collaborating on future projects." – Phil Bellamy, Plymouth City Council Head of Service

3. Supporting materials

Image (low resolution)	Caption	Image credit
	Aerial drone footage of scheme during excavation process	Richard Carroll Photography
	Proprietary Root-Lock System	Richard Carroll Photography

	Aerial drone footage of scheme in progress including filled ponds and swales	Richard Carroll Photography
	Swales	Richard Carroll Photography
	Information Boards	Richard Carroll Photography

	Cascade feature with erosion proofing	Richard Carroll Photography
	Central Park in bloom	Anonymous

	GA Scheme Overview, Viewport and Exceedance Flow Route Plan	EDG