REQUEST FOR COMMITTEE / FULL COUNCIL FUNDING

Name of Delivery Organisation	Greening Twizell Partnership
Purpose of Funding	South Moor/Twizell Burn Heritage Trail access and environmental improvements Background The Greening Twizell Partnership brings together local community and statutory bodies responsible for the Twizell Burn including The River Wears Trust, Natural England Groundwork, The Environment Agency, Durham University and Durham County Council. The Partnership seeks to improve the green infrastructure, environment and public amenity use of the River Twizell, between its headwaters around New Kyo to its confluence with the River Wear at Chester le Street via a channel meandering between and through the Stanley villages of South Moor, Quaking Houses, South Stanley and Craghead. The accountable body and delivery agent for this funding application is Durham County Council who currently lead on the South Moor and Craghead housing regeneration projects and who are lead applicants for the South Moor and Quaking Houses Heritage Trail. This application seeks to secure funding from Stanley Town Council to deliver environmental improvements that add to and enhance projects planned for delivery in 2015/16 i.e The HLF Heritage Trail and South Moor Environmental improvements. The funding will not displace funding already allocated or applied for but rather pay for elements of work not eligible or affordable through current applications to the HLF and other partner funding sources. This application relates to the 'Upper' section of the Twizell in and around the Stanley villages mentioned. The application refers to two key

	priorities and projects identified within the Twizell Burn Masterplan • Improving access and public amenity use of the Burn through a marked Heritage trail • Improving water quality and incidences of flooding South Moor and Twizell Burn Heritage Trail improvements to access, footpaths and heritage interpretation A funding bid has been submitted to the HLF 'Our Heritage' pot to fund signage, way markers and interpretation boards with QR codes linked to a heritage website for South Moor and Quaking Houses. Stanley Town Council has previously agreed to maintain the interpretation boards along the trail. The South Moor and Twizell Burn HeritageTrail extends 3.5 miles from South Stanley Nature Reserve to Langley View Plantation and Wetland (see maps) incorporating South Moor Memorial Park and South Stanley Woods and nature reserve. Much of the footpath is defined and well used, although key entrance points at South Stanley and Langley View are poor and require improvement for easy and safe access to the burn and trail. Heritage and natural history interpretation at these points is also poor. Stanley Town Council funding will be used to provide improved footpath access and interpretation at these locations. The heritage lottery fund have advised they will not fund public footpath or access improvements. The section of footpath running along the Twizell Burn through South Moor Woods links the WW1 Memorial Park to the site of the former Shield Row drift mine. This section of the heritage trail is very flat and would be suitable for wheelchair access with some improvements and remodelling, particularly focussing on drainage and surfacing works. Two foot-bridges over the burn also require some

	improvement however are not on the County Council's bridges maintenance schedule, meaning that DCC investment is highly unlikely in the foreseeable future. The Wear Rivers Trust, funded by the Environment Agency are conducting a feasibility study to explore the re-naturalisation of the course of the burn in this section. There is a probability of capital funding to deliver feasibility recommendations to achieve this complimentary objective. Funding from Stanley Town Council will greatly improve public access to South Moor Woods and part of the Heritage Trail, particularly for wheelchair users and those with prams/ pushchairs. The headwater section of the burn and Heritage Trail linking the Shield Row Drift to the site of the former Charlie Colliery is accessed via a long set of steps to the rear of South Moor Woods. Drainage runoff to the side of these steps is causing rapid erosion threatening step stability. The re-routing of a field drain at the head of the steps will help prevent further erosion and stabilise the bank. Pine Street heritage SUDS trees Pine Street is a prominent terrace within South Moor and key walkway within the Heritage Trail linking the colliery terraces with the former Holmside and South Moor Colliery Company coal depot, the former brickworks and The Charlie Colliery. It is proposed to install 5 street trees along the length of Pine Street as markers in the heritage trail. Each tree will commemorate one year of the First World War. Individual cast metal 'fallen soldier' markers are to be located at the former homes of miner soldiers named on the WW1 memorial. The trees themselves will planted as part of a sustainable urban drainage system channelling and retaining surface water run off away from the main combined sewer. Excess runoff and rainfall from the South Moor Terraces in periods of heavy rain frequently

	causes sewage outfall at the overflow which discharges directly into the burn in the Memorial Park. The trees will have appropriate metal grates and guards and form a part of the overall regeneration and landscaping of Pine Street funded by DCC, Derwentside Homes, property owners and British gas (see funding table attached.) Stanley Town Council support to fund the purchase and installation of the street trees will contribute to both the environmental improvement, flood alleviation and interpretation of South Moor's Heritage.
Total Amount Required	£ 42 975
	£8 500 Access and footpath improvements to heritage trail/Twizzell Burn South Stanley Nature Reserve section .
	£13,125 Access footpath improvements heritage trail/Twizzell Burn South Moor Memorial Park section -to allow for wheelchair/buggy users to use heritage trail.
	£ 1 850 Access improvements Langley View and Wetland section heritage trail
	£ 19 500 Pine Street, heritage/SUDS trees
Match Funding	£45 000 Heritage Lottery Fund : (heritage Trail)
	£79 000 Durham County Council (Pine Street environmentals confirmed)
	£36 100 Owner contributions (Pine street environmentals confirmed)
	£31 000 British Gas ECO (Pine street environmentals heritage trail confirmed)
	£20 000 Derwentside Homes (Pine Street environmentals confirmed)
Total Match Funding	£211 100
Other Related Funding	£385 761 Durham County Council (Pine Street Housing Regeneration external improvements confirmed and delivered) £31,000 Catchment Partnership Action Fund (Stanley Burn: Secure the Headwaters) £20,000 New Kyo Section 106 funding for wetland

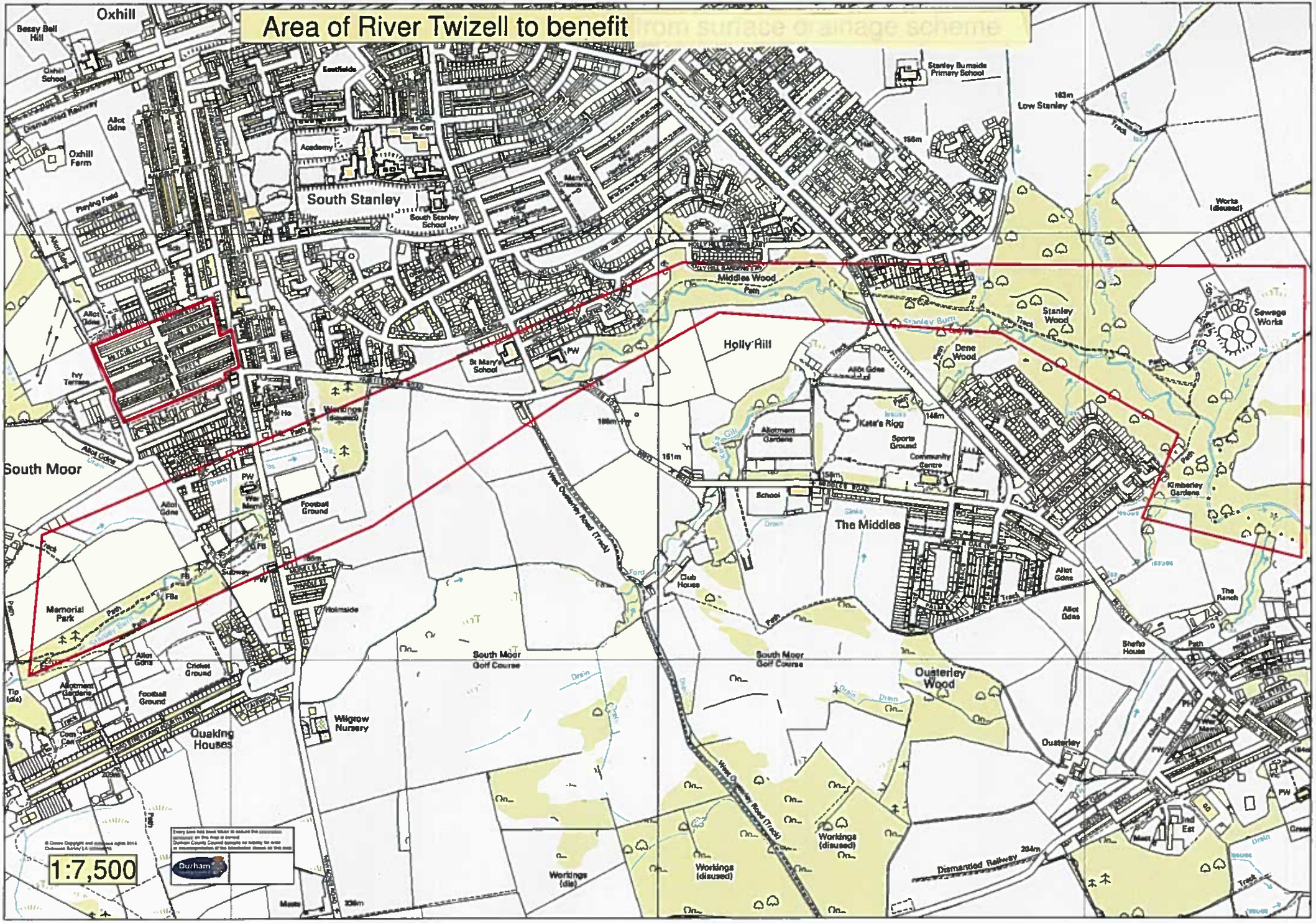
	creation upper Stanley Burn £61,440 Living Waterways feasibility to specify Sustainable Urban Drainage and habitat improvements/re-naturalise Twizell Burn Source to Grange Villa

Applicants Details

Project Manager / Lead Officer	Adrian Cantle-Jones
Position Held on Organisation	Project Manger
Telephone Number	03000 265259
Address	Room 5/123County Hall, Durham
Email Address	Adrian.cantle-jones@durham.gov.ukl
Cheque to be made Payable to	DCC

PLEASE ATTACH A QUOTE / EVIDENCE OF COSTINGS TO THIS APPLICATION
(i.e. letter headed quote or price list from reputable supplier)

Done ☐


Area of River Twizell to benefit
Oxhill
Bessy Bell Hill
Oxhill School
Dismantled Railway
Allot Gdns
Oxhill Farm
Eastfields
Academy
South Stanley
South Stanley School
Stanley Burnside Primary School
Low Stanley
Works (disused)
Middles Wood
Stanley Burn
Stanley Wood
Sewage Works
Holly Hill
St Mary's School
Dene Wood
Ivy Terrace
Kate's Rigg
Allotment Gardens
Sports Ground
Community Centre
Kimberley Gardens
South Moor
Football Ground
West Quarrington Road (Track)
The Middles
School
Club House
Memorial Park
Holmside
South Moor Golf Course
Ouston Wood
Ouston
The Ranch
Sherlo House
Cricket Ground
Allotment Gardens
Tip (dis)
Wilgrow Nursery
Quaking Houses
Workings (disused)
Workings (dis)
Dismantled Railway
1:7,500
Durham

South Stanley

N

Tivoli Cinema

The Cinema

WWI Memorial Park

Arcadia Cinema

Hedley Pit

South Moor

Old Co-op

Shield Row Drift

Coal Depot / overhead waggon terminal

Billy Pit

Holmside Brickworks

Magic Lantern / Miners hall

St Georges Church

WW1 Memorial Park

Hedley Pit

Shield Row Drift

Billy Pit

Quaking Houses

South Moor

Quaking Houses

0 100 200 300 Meters

- Recreational Route
- Existing Public Art
- Colliery locations (potential interpretive features to be located at Pits)
- Memorial Park
- Previous South Moor cinema locations
- Heritage Interpretation Board
- Heritage Lottery Trail
- Heritage Lottery Trail (Enhanced existing pedestrian route)
- Commemorative tree locations
- Fallen Soldier house markers (See inset)
- New commemorative art locations (See Inset)
- Proposed VC Trail (Heaviside VC)

Durham County Council

Map number GIS1513 created by DCC Spatial Technologies on 03/09/2015

Project: South Moor Tree Pit Options Study

Client: Fairhurst

FAIRHURST

Presented by: **Dean Bowie**

Date: **25th July 2014**





GreenBlue URBAN

FAO Steve Dickie

Dear Steve

Re: South Moor SUDS Report -, tree planting Proposals

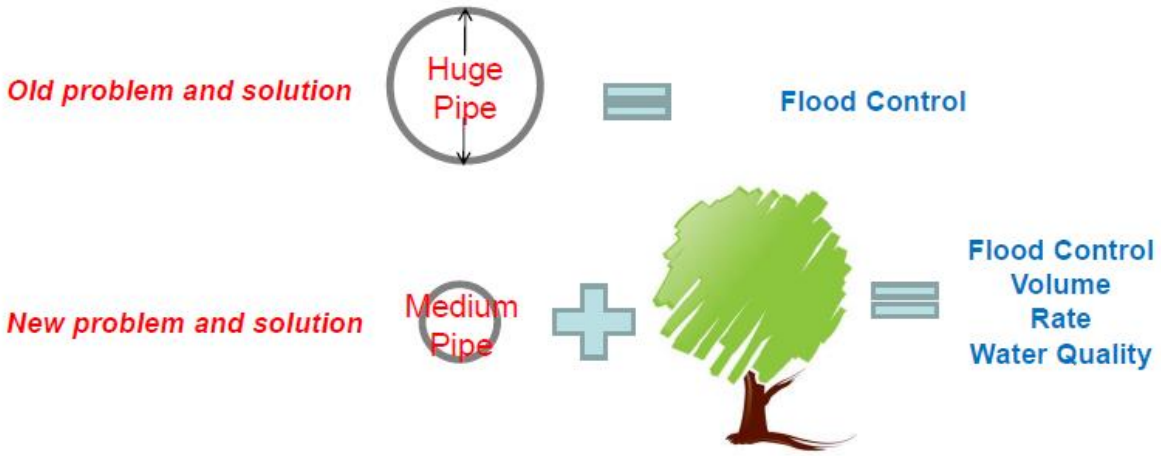
Brief

Further to our meeting of 10th July, we understand that there is a need for tree planting pit profiles for your planned SuDs project at South Moor, Stanley. We are pleased to make the following design suggestions, having visited the site to view the variety of conditions and situations likely to be encountered.

We at GreenBlue Urban believe that with over 20 years' experience of specialist urban tree planting products, research and methodologies in the UK, the designs detailed here will offer Durham County Council and the Environment Agency, both best value for their investment, and best practice to ensure healthy trees for decades to come.

Trees planted in London's busy streets - utilizing GreenBlue Soil Cells

Contents



The Existing Situation

Hardly a leaf in sight...

Existing street layout is a grid of Victorian era housing stock, originally to serve the mining community. As such, there are no front garden areas in most of the streets and no street trees or other green infrastructure elements to reduce storm water runoff or soften and cool the built environment.

In some areas, kerb lines are raised to direct water flow and protect houses from flooding. High thresholds provide a further line of defence

The Tree Aspect

Street trees in urban areas such as South Moor, can bring a broad range of benefits if planted and established in accordance with best practice. To summarise;

- Aesthetic – unarguably the largest living things on the earth, beautiful both in and out of season
- Bio diversity – bringing birds and other wildlife into our cities
- Shade – natural, increasingly valued UV protection
- Urban cooling – significant cooling through both shade and evapotranspiration
- Health improvement and crime reduction benefits – research statistically proven
- Significantly increasing property values – research backed
- Wind speed reduction – trees reduce wind speeds for a distance from the tree of six times their height
- Pollutant reduction - Proven
- Storm water run-off reduction, attenuation and filtration

More specifically, the trees roles in urban water management are:

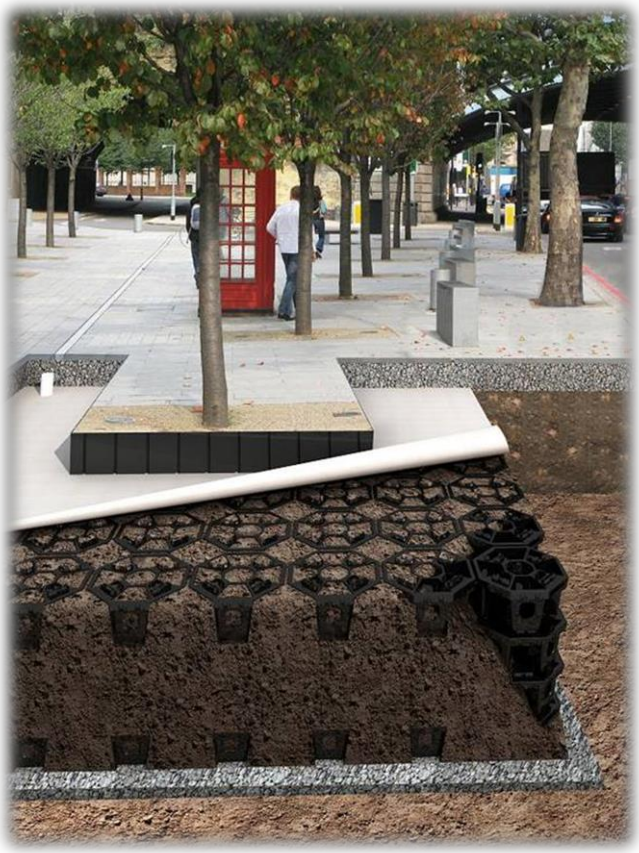
1. ***Canopy absorption and rainfall interception***
2. ***Evapotranspiration – through leaf stomata***
3. ***Root zone attenuation – Depending on soil media used, up to 25% of the root zone can be available for water attenuation***
4. ***Pollutant filtration – soil and roots can manage, sequestrate and break down pollutants***
5. ***Water transportation via deep rooting profiles to increase penetrative ground recharge***

No other single component brings such a diverse breadth of benefits to our cities and helps them live and breathe; they are truly green lungs - making urban space attractive and liveable.

Design Parameters for South Moor SuDs tree pits:

A very robust, low maintenance design is called for with emphasis on the engineered strength of the tree pit system to accommodate potential for repeated direct and indirect heavy loading, both static and dynamic.

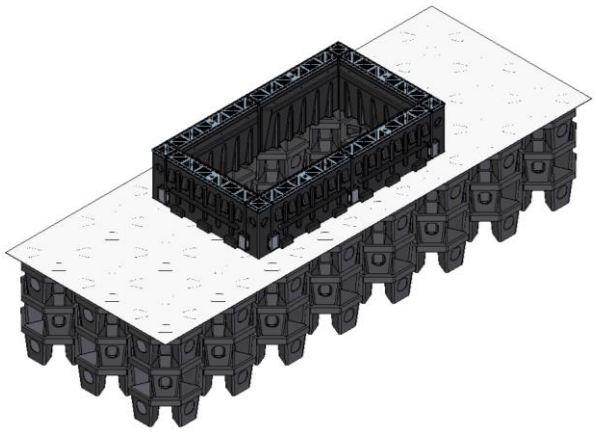
- Large volume 'shared space' pits capable of providing both adequate root volumes and significant water attenuation, ground recharge and infiltration
- Design for trees both in continuous paved surfaces and vegetated swales
- Low maintenance design, for self-sufficient trees – however it should be kept in mind that these constructions will not be zero maintenance.
- Minimal parking space loss vital, so tree root zones used fir water attenuation must be capable of heavy vehicle overrun.
- Potentially, pavement re-alignment could potentially affect tree pit sizes – flexibility may be required with the system to accommodate variations in the ultimate tree pit volume and dimensions.
- The presence of electricity cables and other subterranean services may necessitate a tree pit design with flexible boundaries and pit interruption protocols
- Soil types utilized must be able to sustain water inundation without undue nutrient leaching
- Use of 'Arborsoil' as much as possible in preferred in rooting areas due to the longer term nutrient availability and healthy establishment value this brings. This soil also has the ability to withstand repeated inundations without losing 'structure'
- Tree pit designs must be able to easily accommodate overrun by HGV and PSV traffic without loss of pavement integrity or compaction of the rooting zone
- Continuous corridor tree pits to be used where possible.
- Tree pits must be active drained to avoid prolonged waterlogging



Trees in Continuous Paved Surfaces – Suggested baseline tree package for South Moor

Description

Arborflow 1250



This drawing illustrates the use of a compact SuDs tree pit construction section, and incorporates the following GreenlBlue products:

- Six 750mm Arborflow water storage and dispersion panels, incorporating flood level indicator and surface root direction.
- Four corner modules to connect Arborflow panels
- Sixtythree GBU Stratacell 30 modules, these load bearing soil cells are loaded with soil and allow shared soilspace for water and tree roots
- NOT SHOWN – we recommend incorporation of two additional aeration inlets per tree to allow additional air to the root zone – these would be integrated into the tree grille.
- Geotextile seperation membranes to sides and top of below ground cell structures

This product package provides aproximately **1250 litres of water attenuation capacity per tree** in a total soil volume availabe to the tree for root growth of aproximately five cubic metres.

Our minimum soil volume target for a self sustainble, small cannopy tree is 4.24 cubic metres, so this system would work well as a basic model to add to, or link to, further tree pits, soft landscape raingardens or other SUDS train elements

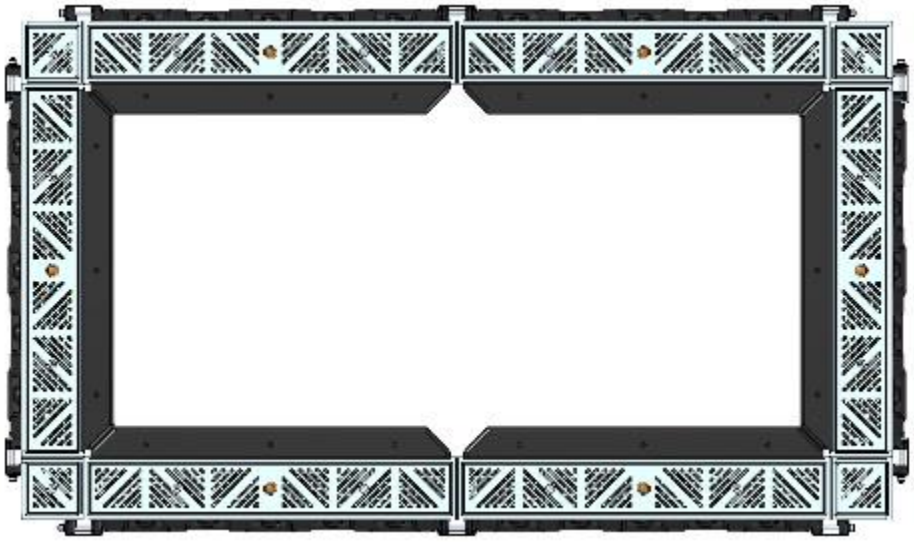
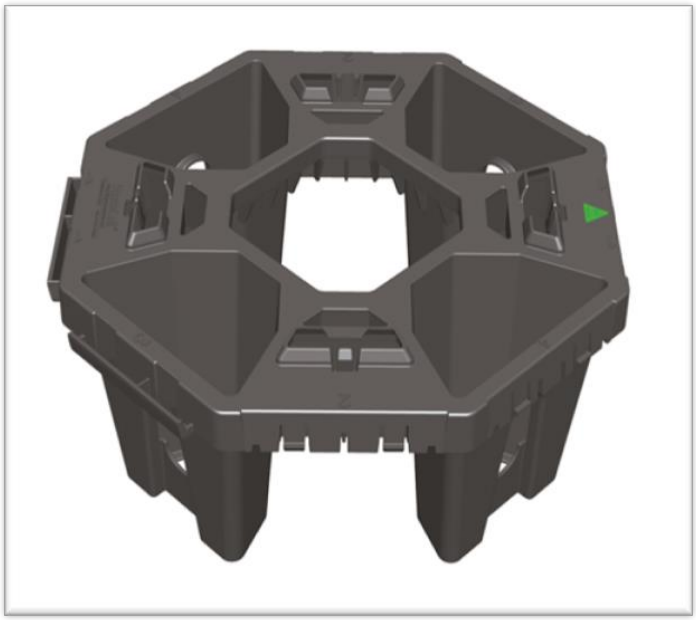


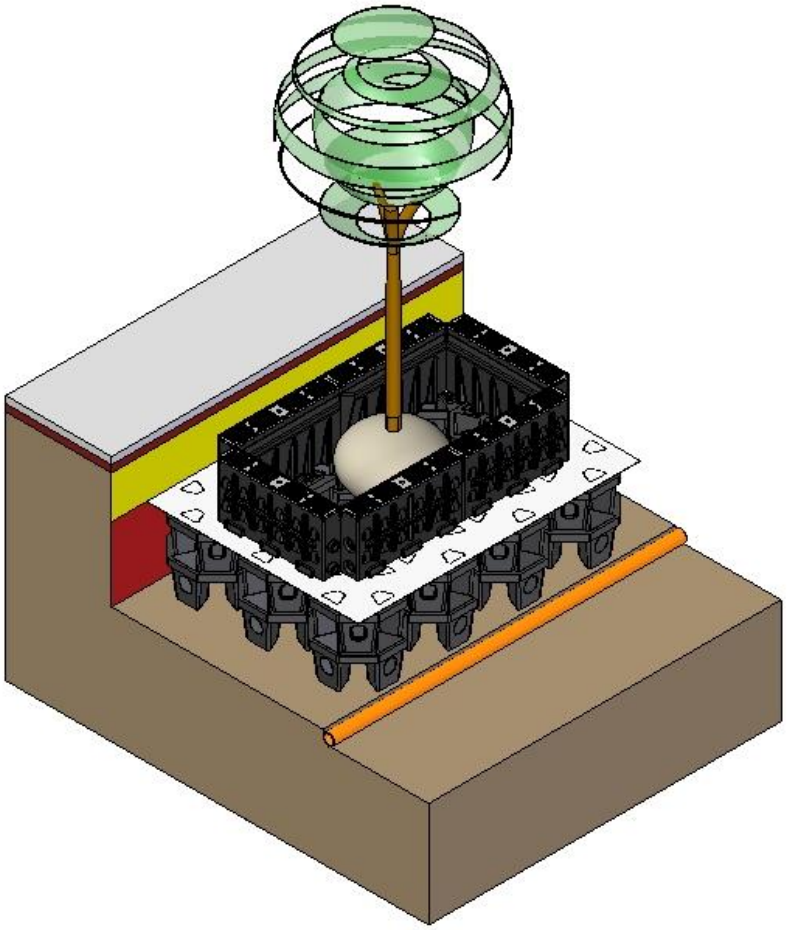
Figure 1 Plan view showing inlet grilles - the only part of the construction which will be visible on the surface

Stratacell - strongest load bearing soil cell available - made in the UK from recycled plastic – 94% volume available for soil and water

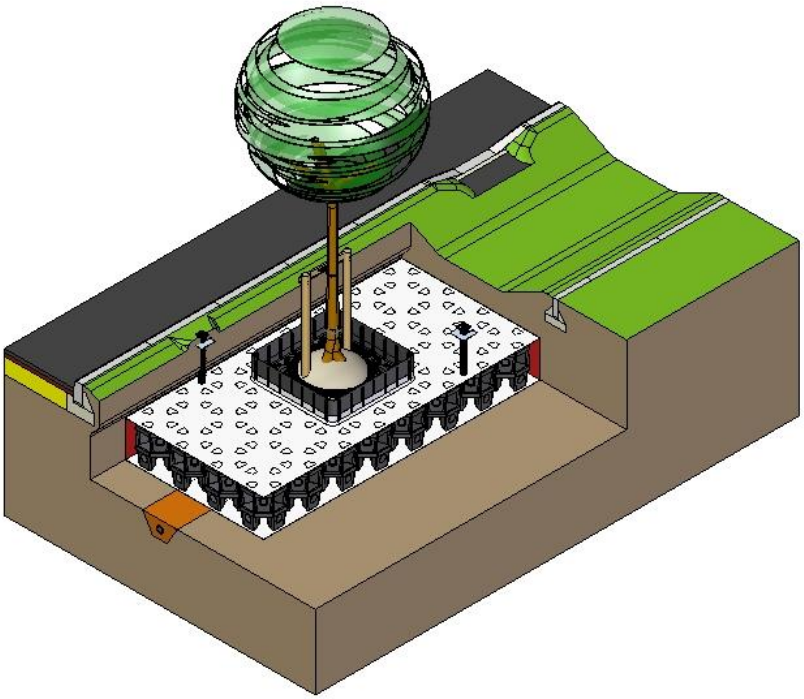


Sections through tree pit

(Showing a two cell depth layer sample section)



Bio retention feature - Type Option – (street space at South Moor, may preclude the use of this type of open bio swale type features)



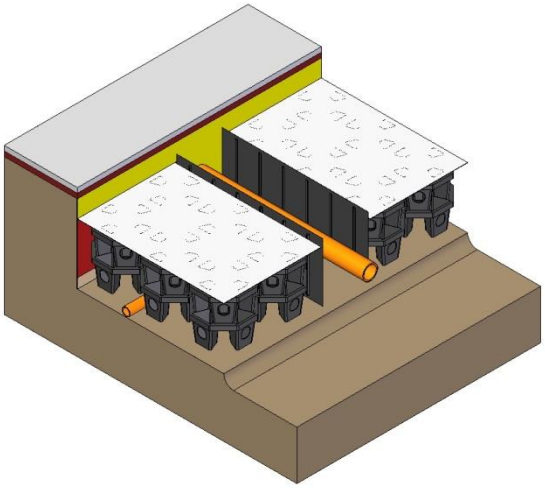
For this type, a soft landscape feature incorporating low level planting in the bio swale to aid pollutant removal and increase evapotranspiration is used.

However – there are further issues regarding trip hazards which will need addressing.

Non Standard below Ground Variations

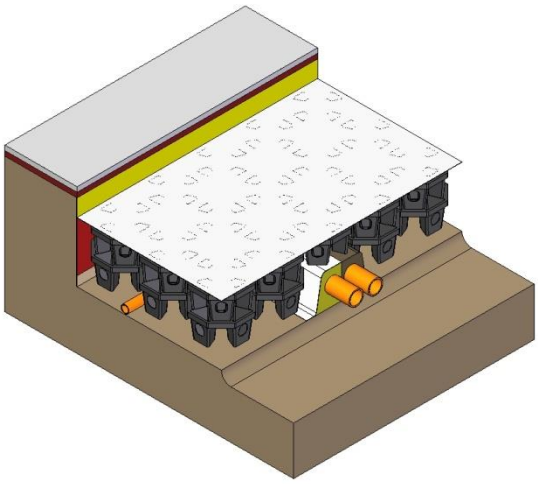
Recognising that no two street planting projects are identical, GreenBlue Urban have established a series of protocols and methodologies for below ground soil cell useage, to successfully integrate varying parameters.

For example:



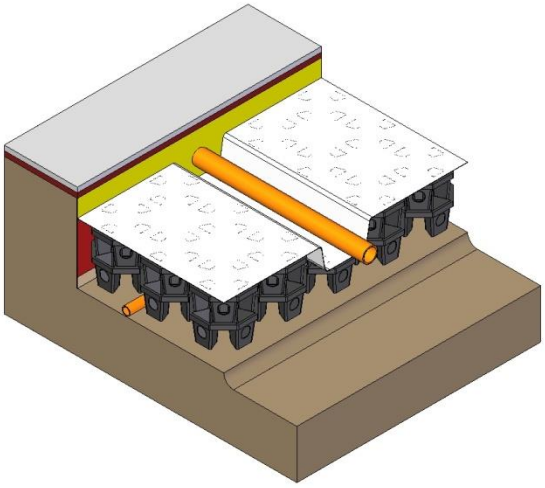
PC Intersection - Protected 1

This detail shows a root protected complete intersection. This allows utilities to dissect the corridor but protects pipes from root invasion by using a ReRoot barrier



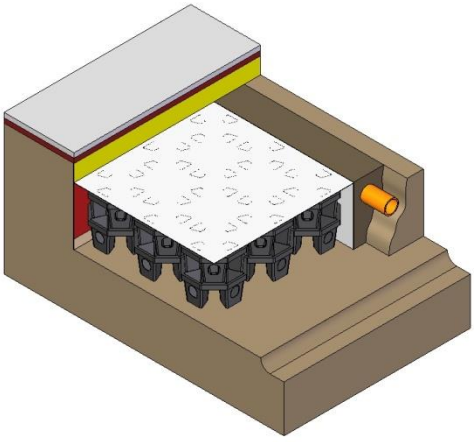
PC - Shallow Section 1

This detail illustrates how a loadbearing planting corridor may be modified to allow utilities to cross the root zone, but maintains a continuous rooting corridor link.



Shallow utility intersection 1

Section shows accommodation of a higher level service duct across the rooting corridor.



Uneven Trench wall detail 1

Where rooting corridor abuts utilities or uneven excavations, the root zone is protected by a geotextile and ground filled with MOT type 1 or other load bearing material.

On Site Support

GreenBlue Urban Ltd offer an invaluable 'on site' visit to assist and instruct operatives in the correct installation processes for the Arborsystem range of products.

There is no charge for this service.

In addition, contractors can access the Greenleaf website to view videos showing installation or simply phone our technical helpline for support relating to installation methods.

A post planting visit will be scheduled in, 6-12 months after project completion, to survey tree health and ensure client satisfaction.

Installation Hints

- Assembly of the Stratacell modules is a quick process. Once excavation is complete and the drainage layer installed, the cells are individually clipped together horizontally a layer at a time, then the next layer is placed on top and clipped vertically.
- This simple one piece construction means that if pallets of product are located nearby, two operatives can assemble a cubic metre (16 cells) in approximately 2-3 minutes.
- Filling the cells is best done two layers at a time and care must be taken to work the soil down thoroughly into the cells, eliminating voids. We suggest 100mm square rammers are used.
- Final construction compacted using a heavy whacker plate to vibrate the structure and eliminate soil voids.
- A video is viewable on our website showing installation methods

Maintenance Requirements - General

- Soil cells and the soil within them is maintenance free, providing aeration and drainage is adequate
- Ventilation inlets will need inspection and cleaning every 12 months
- Surface water inlets and channels will need inspection and cleaning twice annually – once after leaf fall and then the following Spring
- Soft landscape bio swales require weeding - and watering in the first three years
- All trees will require manual irrigation monthly through the first two summers.

The Next Stage…

We have made these details available to you for the purpose of exploring the options for tree planting in these narrow street situations. We appreciate that this is probably only one element of what you are considering in the holistic approach to water sensitive urban design for South Moor. However – we do feel trees can successfully become a vital part of your SuDS train for this area.

We would suggest that when you have collated all your service run and drainage data, if you would feel it beneficial, we could review your design proposals and comment accordingly.

Two questions:

1. Have we interpreted your needs correctly?
2. Are there any parts that need further clarification?

There will be further design input required to establish the finer details and specifics but we hope this report and estimate is of assistance to you in assessing the viability of the proposed scheme.

We look forward to working with you to take this to the next stage.

Yours sincerely,

On Behalf of GreenBlue Urban Ltd

Dean Bowie

CEO


GGIG
Global Green Infrastructures Group

From: **Susan Harrison** Susan.Harrison@durham.gov.uk
Subject: Footways Stanley Area
Date: 15 October 2015 16:32
To: Adrian Cantle-Jones Adrian.Cantle-Jones@durham.gov.uk

SH

Hi Adrian

Further to our site visits yesterday please see below outline budgetary costs for the works as discussed.

Nature Reserve off Durham Road, Stanley
Provide a footway from the Durham Road small access adjacent to housing estate through to access road to Nature Reserve.
Footway to comprise 150mm planings dressed with 20mm whinestone dust approx. 1.5m wide as is standard for countryside paths.
Provide a small section of drainage if deemed necessary on site following investigation. 150mm dia field drain/terram approx. 20m section in total.
Provide section of approx. 5 no timber edging steps on approach to bridge.
Regrade section near tree widening footway in this area.
Provide landing area at far section of bridge extending footway to meet access road.
Approx total length – 200m
£8,500

Memorial Park South Moor
Scrape off existing surface
Provide whinstone dust dressing as above specification
Provide planings in low spots
Re-ditch area at the top of the steps, Install 300mm pipe a 'culvert' to divert running water to bankside
Provide 2 no 1x1x1 gabion baskets to scoured abutments of first small bridge
Replace edging boards to steps and infill with dust as required
Regrade bridal way slip
Approx total length 500m
£13,125.00

Steps at Langley View
Provide clay to form steps with timber edgings, stone infill with dust topping
£1,850.00

As discussed, these prices are budget only due to timescale for return. Should the works go ahead then I will reprice.
The prices quoted are based on the works being carried out prior to April 2016. It has been assumed that access to the sites will be unrestricted and all relevant consents from various authorities such as Environment Agency et al will be in place. All works to DCC spec.

All quotations are exclusive of VAT.

Please do not hesitate to contact me if you have any queries.

Regards

Susan

Susan Harrison
Estimator
Neighbourhood Services
Durham County Council
St John's Road
Meadowfield
DH7 8XQ

03000 269243

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