

Green Streets® Principles
for the West Yorkshire Transport Fund



In collaboration with the



1. Introduction

- 1.1 Green Streets® (1) is the name of a collaboration between the West Yorkshire Combined Authority and the Yorkshire West Local Nature Partnership (2) to integrate green blue infrastructure (3) into the designs of West Yorkshire Transport Fund (WYTF) schemes and other city region investments to achieve multiple benefits and “good growth” (4).
- 1.2 This collaboration was endorsed by the West Yorkshire Combined Authority Investment Committee in June 2015. This document is to be used as an integral part of any urban infrastructure scheme development.
- 1.3 Incorporating the principles of Green Streets® into WYTF and other urban infrastructure investments will contribute to the vision of a 21st Century city region by providing attractive green transport corridors connecting areas of deprivation to areas of jobs growth. The 2016 Leeds City Region Strategic Economic Plan refresh states “..high quality green infrastructure **design** will be central to the way in which we plan and shape places and developments and the corridors that connect them”. The emerging West Yorkshire Transport Strategy will highlight the importance of Place shaping. Green and blue Infrastructure can help determine the quality of those outcomes.



- 1.4 This document aims to help designers and planners in this process. The key to this is bringing together the relevant expertise from a range of disciplines as early as possible into the project and, drawing on that expertise, to get the best holistic outcome that is practicable.
- 1.5 Green blue infrastructure is a legitimate “engineering tool” for designers to deliver added value to any investment and is an essential compliment to traditional “grey” infrastructure design
- 1.6 The Green Streets design ethos takes into account existing plans and local strategies of the project area and involves a wider group of stakeholders and professional disciplines to ensure that the process of combined design will result in a wider range of practical and evidence based multiple benefits, with local support and buy-in.
- 1.7 Primary multiple benefits include

- Creating a setting for investment by instilling investor confidence with quality place making and regional branding
- Improve air quality for community and employee health
- Improve storm water management and water quality with water sensitive design(5)
- Encourage uptake of active travel by creating and connecting attractive green and safe transport routes
- Strengthening and expanding ecological networks
- Embedding carbon sequestration and resource efficiency into the urban landscape

1.8 A key principle of the Green Streets brand is the pursuit of high quality delivery by ensuring best practice from outset to aftercare.



(Exemplar urban tree planting at Dortmund Square, Leeds)

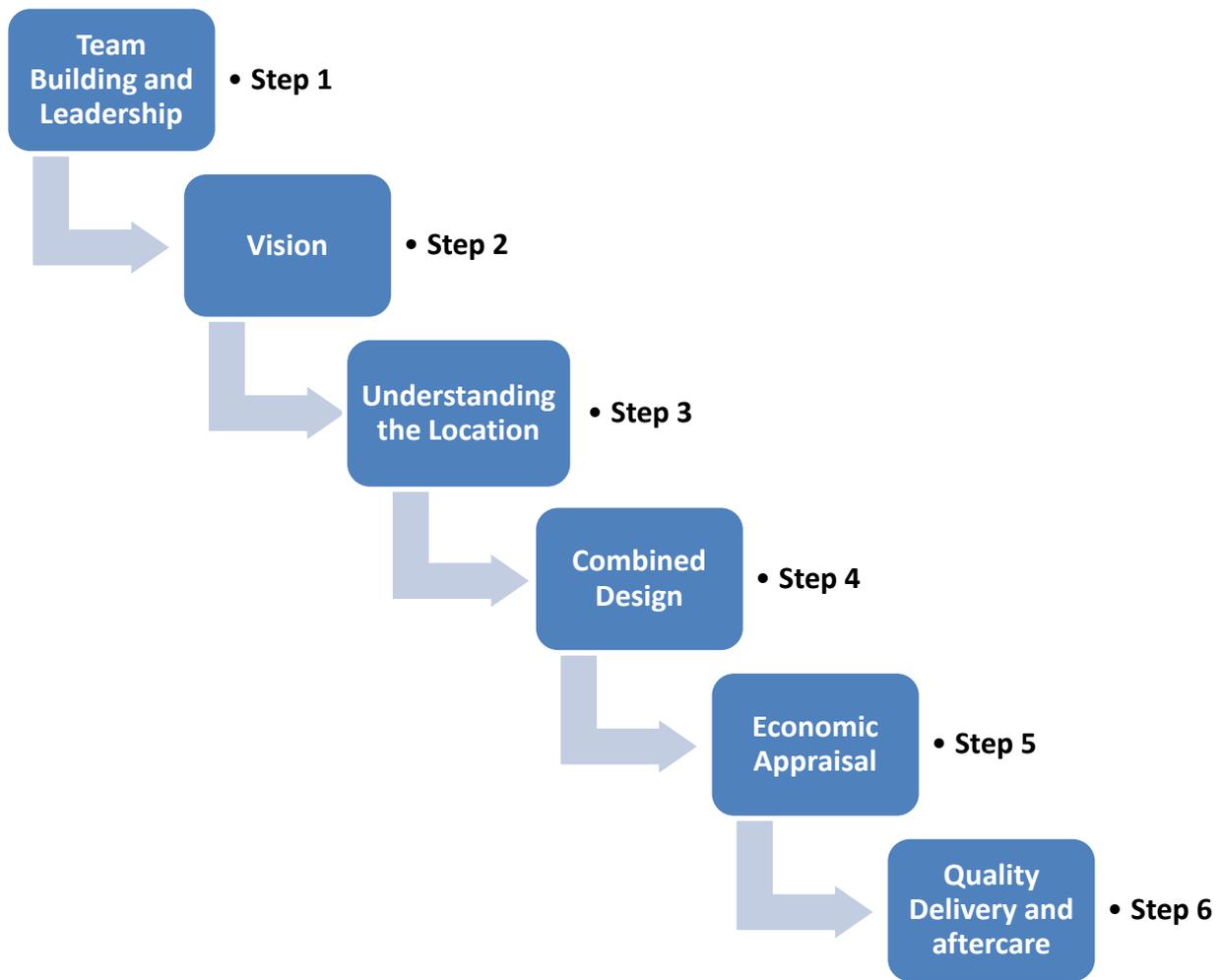
1.9 There is strong evidence to suggest that Green Street-type approaches provide a useful asset to achieve community support for engineering and transport driven projects, thus helping to ease public consultation and speed-up project delivery timescales.

1.10 The Green Streets elements of each scheme will be designed in such a way as to seek to reduce to a minimum long term maintenance liabilities and whole life costs.

1.11 Each project is unique and the opportunities for green blue infrastructure will vary considerably. In some circumstances, the wider corridor may offer mitigation opportunities that the immediate transport corridor itself can't offer.

1.12 The 6 steps below will assist in the building of a business case for the incorporation Green Streets principles into your project at each of the WYCA PMO stages and activities. It will allow the Green Streets Task Group (6) to construct their response to your design as part of the WYTF PMO Peer Review process. The design considerations should be viewed as helpful guidance to create quality designs and not as an unnecessary bureaucratic checklist to be avoided. Assistance and advice is available from the West Yorkshire Combined Authority Green Streets Task Group.

1.13 Summary of 6 Steps



This graphic is laid out as a linear process to separate out the key stages but it is understood that the process will be more dynamic with earlier stages being revisited and refined.



2 STEP 1 – Team Building and Leadership

2.1 From the outset of the project or as soon as possible, inclusion of the following disciplines will enrich the design, secure buy in and provide greater opportunities for resource efficiency by identifying design challenges and opportunities early on.



Discipline/Area of expertise	Comments
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Project Management and Leadership	An inclusive style of leadership and a purposeful management of input from other disciplines is key to making the most from their active participation, without the process becoming unnecessarily cumbersome and expensive. Project design cost needs to reflect this wider multi-disciplinary input.
Public Realm specialist	Ensuring high quality urban design and public art/cultural opportunities are incorporated into the project
Landscape Architect	Awareness of wider landscape and biophilic design (7) issues fundamental
Forestry and Tree Specialist	Central role and function of existing trees e.g BS5837 and wider urban forest principles are essential for Green Streets principles to work in practice
Cycling and Active Travel	Green blue infrastructure and access are mutually supportive and therefore must be strategically aligned from the outset
Ecologist	Opportunities to make connections to local Wildlife Habitat Network (8) provide real added value for urban sustainability
Drainage engineer	Water management with links to Yorkshire Water and Environment Agency essential
Conservation and Planning	Existing frameworks and design guides need to be understood from the outset as well as archaeology and heritage issues.
Community and Business representative	Help start process of local stakeholder buy in and design input
Air Quality	Connection to wider West Yorkshire Low Emissions Strategy
Transport corridor and green infrastructure maintenance teams	Designing in lower maintenance costs from the outset will support the business case and ensure good practice.
Marketing	Local and Regional branding
External Funder	Opportunities for additional funding especially in the wider corridor need to be identified.
Skills and Apprenticeship Specialists	This may include local organisations who can add value to the schemes by identifying how some capital works could be delivered and maintained by intermediate labour market (9) schemes

Design consideration

Please state who is on your team, their roles and area of expertise they bring to the project.

3. STEP 2 – Articulating the Vision

3.1 Key question for the team to answer and communicate

Design consideration

What is the vision for your project, detail how you want your transport corridor or urban infrastructure to look and feel like when its finished?



(Award winning green transport corridor, Spain)

- 3.2 Each project must produce a written Vision as a living contribution for the wider Vision for a 21st century city region and be a part of the WYCA PMO submission.
- 3.3 Each element of the team needs to understand this Vision and their respective role in delivering it. It is the primary communications tool for the project.
- 3.4 Useful case studies and concepts can be employed here to help unlock the imagination of the team and, by looking at successful approaches elsewhere, instigating local innovation.
- Cities Alive –ARUP
 - 14 Patterns of Biophilic Design- Terrapin
 - Designing with Trees in the City – Dr Alan Simson
 - Yorkshire West Local Nature Partnership –Our Ambition presentation –Dr Alan Simson

These will be available on the WYCA website.



4. **STEP 3 Understand the location and its aspirations**

4.1 An Integrated Sustainability Appraisal has been carried out for your project area as a statutory undertaking by the West Yorkshire Combined Authority

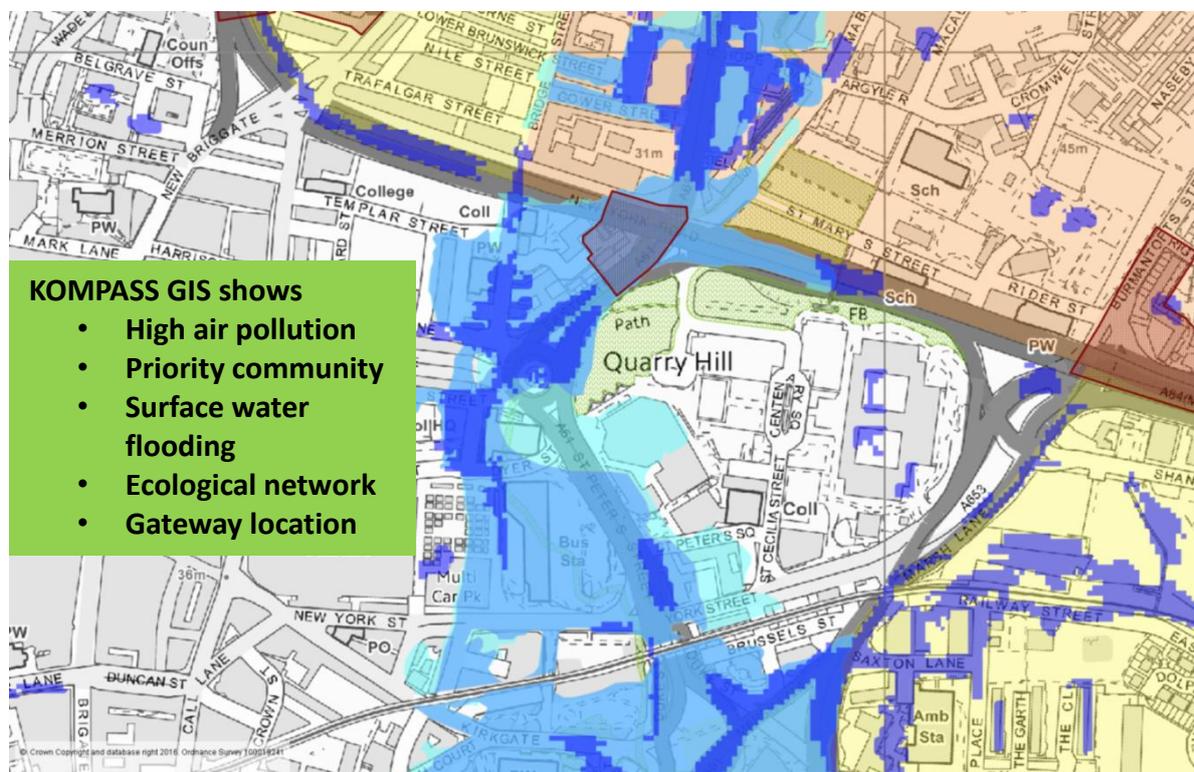
Design consideration
Have you considered and taken into account the implications of the Integrated Sustainability Appraisal for the Transport Fund and Single Transport Plan, including the <ul style="list-style-type: none">• Strategic Environmental Assessment (SEA)• Equalities Impact assessment• Health Impact Assessment• Habitats Regulations Assessment?
If applicable, have you considered the mapping and scheme assessments in the SEA?
Are there any significant impacts, and what are they?
How have the results been taken into account/ evaluated, for example what mitigation and any monitoring arrangements have been included in the design response?
Does the scheme require an Environmental Impact Assessment?

4.2 Understanding the location and local aspirations

Design consideration
What are the existing local plans/strategies /development frameworks and aspirations for the project area? What opportunities are there for synergy and added value?
What information is available on the location and extent of underground services and stats?
What are the key considerations in shaping the functionality of the transport corridor?
What are the key findings of an initial Geographic Information Systems Green Streets Kompass (10) analysis of the project corridor?

4.3 Using the online Green Streets Kompass Geographical Information System (GIS) , available from guy.thompson@kirklees.gov.uk , will allow the team to identify local issues, vulnerabilities and opportunities that could be addressed by incorporating well designed green blue infrastructure. Any advice on how to interpret the data is available from the Green Streets Task Group. The Green Streets Kompass Geographical Information System platform can be used to provide the maps for the business case.

Opportunities and project benefits	GIS datasets on Kompass applied to your project area
Creating a Setting for Investment	<ul style="list-style-type: none"> • Aerial Photography (and Street View) • Leeds City Region Commercial Addresses • Contours (for visibility in the landscape)
Air Quality	<ul style="list-style-type: none"> • Air Quality Management Areas • West Yorkshire Traffic Congestion
Community Health	<ul style="list-style-type: none"> • Areas of Deprivation • Public Rights of Way • Aerial Photography to identify local greenspace
Surface Water Flooding	<ul style="list-style-type: none"> • Surface water maps • Contours to identify possible conveyance routes
River Flooding	<ul style="list-style-type: none"> • National Flood Zone 2 and 3 • Leeds City Region Businesses in Flood Zones
Water Quality	<ul style="list-style-type: none"> • Water Body condition (Water Framework Directive) • Diffuse Pollution element of Woodlands for Water
Biodiversity	<ul style="list-style-type: none"> • Wildlife Habitat Network
Urban Heat Island Effect (11)	<ul style="list-style-type: none"> • Aerial Photography/Street View
Building Energy Use	<ul style="list-style-type: none"> • Aerial Photography • Prevailing wind (south west)



(Area around Leeds Playhouse)

Following the Desk Top and GIS analysis, relevant members of the team need to walk the corridor.

Locations should be recorded with photographs.

Walkovers will help identify

- Opportunities such as local features existing greenspace, grass verges , gardens etc in the wider corridor that could be developed with green blue infrastructure
- Constraints of junctions, site lines, stats/ services, pavement widths, business frontages condition and type of existing trees, drainage issues
- Identify Community and Business stakeholders for consultation
- Links to existing greenspaces

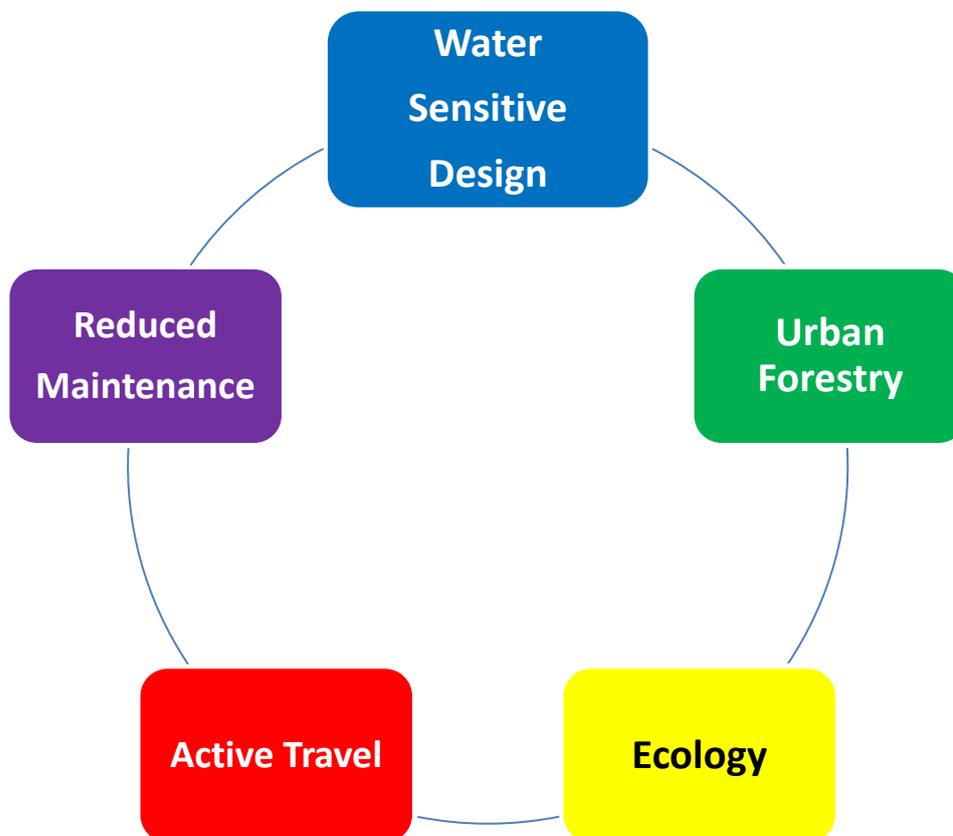
4.4 The analysis and walk overs of the corridor through which the transport infrastructure will impact, will identify opportunities for greening the wider corridor. It does not mean that the costs of the green blue infrastructure will solely come from the West Yorkshire Transport Fund. Instead it allows the transport project team to attract the interest from other partners and stakeholders to help implement wider corridor greening .



(Green Streets in Copenhagen, Denmark)

5. **STEP 4 Combined Design for Multiple Benefits**

5.1 Drawing upon the team and its collective experience in Step 1, different disciplines can combine their expertise into green blue infrastructure designs, bespoke to each scheme, that can provide a range of multiple benefits. For example



5.2 Designing green blue infrastructure into the urban environment requires careful thought and planning. The following best practice guides should be referred to in the business case and will be available on the WYCA website

- Trees in the Hard Landscapes: A Guide for Delivery (Trees and Design Action Group)
Please also refer to the four checklists on pages 40, 78, 132 and 152 to ensure that you have taken all the issues into account
- CIRIA Sustainable Urban Drainage Schemes Manual 2015
- BS8545:2014 – Trees: from Nursery to Independence in the Landscape
- Local Design Guides for the Districts



Silva Cells are laid out



Perforated distribution pipes are placed throughout the system

(Combining urban trees with management of surface water by connecting the tree pits to the combined sewer system as trailed here in the USA)

5.3 Narrative guide for business case on making the case for green blue infrastructure

The design considerations below can then be worked through systematically to ensure the benefits of green blue infrastructure can be realised by each scheme and justified in the business case.

Opportunities and project benefits	Design Consideration
Creating a Setting for Investment	Are there any features that need to be enhanced or retained to promote the attractiveness of the corridor?
	Are there any eyesores that need to be removed or screened that detract from the attractiveness of the corridor?
	Is there a need to screen any building that have a high visibility in the wider landscape?
	Are there any opportunities to design in a “WOW” factor or strengthen the architect of the transport corridor with robust tree planting
	Does the project go through/pass by business parks or commercial properties?
	How can green blue infrastructure be used to enhance the attractiveness and signposting to these key economic areas?
	Does the project boundary include key cultural or heritage features that

	need to be highlighted?
	Is there a local evening economy linked to the transport route?
	How would the use of “starpaths” (12) add value and be appropriate for this?
Air Quality	Is there a need to improve air quality along the corridor?
	What opportunities are there to use green infrastructure to help address this issue (incl. trees, green walls etc.) within the project boundary or along the wider corridor?
Community Health	Does project go through areas of deprivation?
	Can opportunities to improve the green infrastructure of these local community be created as well as promote active travel?
	Are there tree lined active travel links to the business parks work sites?
	Where can opportunities be created to use trees to enhance safety, “waymarking” for gateway areas and attractiveness of cycling and walking routes to link communities to areas of jobs growth along your project corridor?
	Can opportunities be created to help achieve the desired operational vehicular speed with trees and other green infrastructure elements?
	Have you taken advice on “hostile vehicular terrorist attacks”?
Skills	Where can the capital and subsequent maintenance works be delivered by intermediate labour market teams locally?
Surface Water Management	Is the sewer catchment area where the project is located vulnerable to surface water flooding?
	Is the project area served by a combined sewer system?
	What opportunities are there to partly manage storm water runoff with green infrastructure solutions (permeable paving, swale, storm water tree pits, green roofs, etc.) be created within the project boundary?
River Flooding	Is the project area vulnerable to river flooding?
	What opportunities are there to work with the Environment Agency?
Water Quality	Does the surface water from your project area flow into a waterbody that requires improvement in water quality? How can green blue infrastructure opportunities contribute to improving water body?
Biodiversity	How does the proposed route impact the local Wildlife Habitat Network, areas of prime greenspace such as urban parks and/or existing highways/hard landscapes trees?
	How can the project help preserve, expand and connect these key green assets?
Resource Efficiency	Is the project area vulnerable to urban heat island effect or other micro-climate issues (wind)?
	Is the green blue infrastructure associated with or surrounding the project sufficient to mitigate these issues and their impact on buildings?
	Are there any other works planned (private development, utility works) in the area that might offer opportunity for resource efficiency e.g. joint work scheduling to save on traffic control, excavation etcetera and the creation of common utility enclosures/single service trenches?

6. **STEP 5 Economic Appraisal of Green Infrastructure Investments**

6.1 Some of the benefits will be identified by the Green Streets® Valuation Toolkit currently being trailed for the WYCA PMO process. The Toolkit’s User Guide is available as a separate Appendix 1. The aim is that project managers will simply collect and upload project data using the proforma available as a separate Appendix 2. This will produce an indication of the monetised benefits of the green blue Infrastructure investments proposed in the design once entered into the Toolkit Spreadsheet Data Entry sheet . The Green Streets® Valuation Toolkit spreadsheet is available from guy.thompson@kirklees.gov.uk .

Areas cover by the Toolkit include .

Benefit Area	Tool description & basis
Water Management	Storm water volume reduction
	Energy and carbon savings from avoided storm water runoffs
	Saving to customer
Air Quality	Air pollutant removal
	Social value of pollutants
Carbon Sequestration and Storage	Carbon stored in trees
	Carbon stored in other vegetation and soil
	Social value of carbon
Active Living	Increase in active travel to work
	GVA increase from reduced-absenteeism resulting from active travel
Quality of Place	Increase in office value from uplift in rent and yield
	Residential Property Uplift
	Retail

6.2 The whole life costs of managing the green infrastructure are a key element to the business case. The design has to demonstrate that the upfront capital costs will result in reduced maintenance i.e. not lifting up pavements, excessive grass cutting.

6.3 The long term management for the trees, in addition to securing suitable soil volumes and conditions for growth, must also ensure the appropriate formative pruning regime is secured. This will minimise the need for future intervention by arboricultural teams.

7. STEP 6 Quality delivery and aftercare

7.1 There are plenty of examples in the city region where green blue infrastructure investment has failed during the delivery process. Trees die because the conditions for their growth such as suitable volumes of uncompacted , well drained soil, were not secured and aftercare neglected. It is an essential requirement of the Green Streets ethos that the risk of failure is reduced to a minimum. Therefore project managers should

- Build in BS8545 into the procurement process to ensure that the trees are grown, bought and managed to a high standard
- Monitoring process at key stages must be a condition of contract, for example tree pit inspection before the tree is planted is vital
- Plant or tree failures should be the responsibility of the contractor for up to 5 years
- Ensure a formative pruning regime is put in place for each tree

7.2 Team Leaders and project managers should communicate their teams' needs for further information as required. The Green Streets Task Group can respond with best practice seminars to fit the needs of each project.



(Best practice during planting is essential for long term success. Howard Street, Manchester)

Glossary

- (1) **Green Streets**- Green Streets® is a registered trade mark of the Community Forest Trust (Registered in England no. 3598556. Registered charity no. 1072706). The Community Forest Trust have granted permission for use by the White Rose Forest in the Leeds City Region on the conditions that only the highest quality of design and delivery is undertaken and that there is community input into any project. The term Green Streets can only be used in the Leeds city region with agreement from the White Rose Forest.
- (2) **Yorkshire West Local Nature Partnership** –A Leeds city region wide partnership run by a Board of Directors whose mission is to work in partnership with the Leeds City Region Local Enterprise Partnership and others, to be the “Green Glue” that helps bring the natural environment, with its intrinsic asset value, to the forefront in decision making; aiming to ensure it is valued, enhanced and well-managed by fostering a cohesive approach between the economic, social and environmental sectors, binding their purpose to co-create growth in a resource efficient city region fit for the 21st Century.
- (3) **Green Blue Infrastructure** –This term is interchangeable with green infrastructure and is used to describe natural or semi-natural networks of green (vegetated) and blue (water covered) spaces or corridors that maintain and deliver a wide range of environmental and quality of life benefits for local communities and businesses.
- (4) **Good Growth** -The Leeds city region Strategic Economic Plan is driven by a resolute focus on good growth – where a radical uplift in growth, productivity and business success goes hand in hand with quality jobs that connect all people and places to opportunity and improved quality of life. Good growth will underpin everything we do and be used as a principle against which we will test, judge and measure success in delivering the vision for businesses, people and places across the City Region.
- (5) **Water Sensitive Design** - creates attractive, functional and valued places that are also sensitive to the needs of the water cycle. It overcomes challenges around water resources, localised flooding; the capacity of water supply, wastewater networks and water quality.
- (6) **Green Streets Task Group** – A collaborative task group between the West Yorkshire Combined authority, Local authorities and members of the Yorkshire West Local Nature Partnership to oversee the recommendation of the June 2015 Investment Committees endorsement of Green Streets.
- (7) **Biophilic Design** – A design revolution that connects buildings to the natural world, buildings where people feel and perform better.
- (8) **Wildlife Habitat Network** – The National Planning Policy Framework defines ecological networks as networks that link sites of biodiversity of importance. West Yorkshire Ecology have done this with the Wildlife Habitat Network as therefore can be used to identify how the transport corridor can contribute to this network.
- (9) **Intermediate Labour Market**- The term refers to the use of supported work teams and training structures to facilitate the transition of individuals, currently marginalised from the jobs market, back into a job ready state.
- (10) **Green Streets Kompass**- Kirklees Council have set up an internet based Geographical Information System for officers and managers working on the West Yorkshire Transport fund. It enables access to green blue infrastructure datasets for all the projects areas.

- (11) **Urban Heat Island Effect** – Urban areas without green or blue infrastructure absorb and retain solar energy leading to a greater rise in surface temperatures particularly during extreme heat events that can result in negative economic and health impacts.
- (12) **“Starpaths”**- This is a brand new that is used to refer generally to paint that can be used on access routes. It retains solar energy received during the day and radiates light at night allowing users to follow path without street lights.

For any further information on this paper please contact Guy.thompson@kirklees.gov.uk

(Project Manager White Rose Forest)

Appendix 1

Green Streets® Valuation Toolkit User Guide – Separate pdf

Appendix 2

Green Streets® Valuation Toolkit Project Data Proforma – Separate pdf

Guy Thompson **January 2017**

Version 4