Background

The UK Green Building Council (UK-GBC)

The UK Green Building Council (UK-GBC) is a membership organisation campaigning for a sustainable built environment – one that minimises negative environmental impacts while maximising benefits for people everywhere. Our mission is to radically improve the sustainability of the built environment, by transforming the way it is planned, designed, constructed, maintained and operated.

Learning and development at UK-GBC is viewed as an essential part of achieving our mission of market transformation. We deliver a range of courses and programmes designed to equip industry professionals with the green skills and knowledge required to deliver a sustainable built environment.

With thanks and contributions from:

Introduction

Recognising the large role that the built environment sector has to play on green infrastructure (GI), The UK-GBC delivered a report in February 2015 entitled Demystifying green infrastructure. The report focused on defining the benefits of, and the business case for, GI. This ‘how to’ guide is a next step and focuses on the practical aspects of how to develop and implement a GI strategy on a project.

“Green infrastructure (GI) is a catch-all term to describe the network of natural and semi-natural features within and between our villages, towns and cities. These features range in scale, from street trees, green roofs and private gardens through to parks, rivers and woodlands. At the larger scale, wetlands, forests and agricultural land are all captured by the term GI.” Demystifying green infrastructure UK-GBC
KEY TIPS BEFORE YOU GET STARTED

✓ Define the business case for GI on your project (note the business case may vary per project or be dependent upon which stakeholder you are talking to). This involves assigning a value and payback period to the GI features
✓ Put the strategy in place as early as possible in the project, this may end up saving you time and money
✓ What has worked previously? – There are numerous resources and case studies that can help guide you through what has been done on similar projects, check Pinpoint for the latest information
✓ Understand the policy landscape and the GI frameworks at an EU, national and local level
✓ Don’t forget to value the existing resource that you have to work with
✓ Size does not matter – GI can be enhanced on any site no matter how small

This short guide will set out the key steps in formulating a GI strategy for your projects and how to embed GI in your organisational strategies.

STEP 1: IDENTIFY STAKEHOLDERS AND COLLABORATIVE GROUPS

No matter what size your project you will have a wide range of stakeholders you need to engage with to deliver a successful GI strategy; local planning authorities, architects, ecologists, community groups, wildlife trusts, contractors, neighbouring developers to name but a few. Identifying your stakeholders early on will help you identify those that could have the greatest influence over GI on your project (See Table 1. for a list of possible stakeholders and their key roles).

▷ Encourage groups that may not usually work together to collaborate such as the Environment Agency and Local Authorities. Partnerships or collaborative working could be the key to delivering a successful GI strategy and creating a lasting legacy that is properly managed throughout its entire lifecycle.
▷ Assess the issues facing each stakeholder group and form your list of key issues for the project site which will help you identify the priorities and highlight opportunities for you to enhance and create GI.
▷ Look at existing information and case studies, draw on the past experiences of your stakeholder groups to see what has been done on similar projects. Take the lessons learned and apply this to your thinking throughout the project.

STEP 2: ENGAGE EXPERTS

Bringing in experts in the early stages of the project could save you time and money. In step one you identified the key issues affecting the site, from this you can determine which areas you need to seek expert advice, you will probably need to consult more than one expert.

▷ Biodiversity and Ecology experts can provide an understanding of the site and what already exists there, guiding you through issues such as the protection of species.
▷ Hydrology/drainage experts will be able to give guidance on areas that are susceptible to flooding or where surface water run off may be increased.
▷ Design consultants/Landscape architects can help you to decide what the best outcome would be for the overall development and design of the site.
▷ It may be beneficial to bring the experts together for a combined approach to ensure that there are no conflicting actions as they may be required at different stages of the project.

Local authorities will often have their own green infrastructure strategies for the local area, check what their strategic GI goals are and how you can link with these to mitigate your projects’ environmental impact whilst creating a beautiful place. There may be many ways in which you can address specific needs in the area through your project.
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<tr>
<th>STAKEHOLDER</th>
<th>KEY ROLE</th>
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<tr>
<td>Local Authority</td>
<td>To ensure GI is incorporated into the Local Plan and Infrastructure Development Plan. Can offer insight into surrounding GI and where your project can link up to provide the best benefit to the area.</td>
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<tr>
<td>Developer</td>
<td>To mitigate their environmental impact and to not only protect existing GI but to increase it wherever possible.</td>
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<tr>
<td>Client</td>
<td>To clearly articulate the GI strategy and ensure all involved understand their roles and responsibilities on the project.</td>
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<tr>
<td>Landowner</td>
<td>Management and upkeep of GI is essential for it to function properly and deliver long term benefits. Landowners can look to maximise the benefits of GI by adding revenue streams such as renewable energy or food production.</td>
</tr>
<tr>
<td>Landscape professional</td>
<td>To advise clients on the value and range of benefits of GI and tailor its provision on projects to maximise the benefits available on site.</td>
</tr>
<tr>
<td>Community group</td>
<td>To communicate the needs of the area from a community perspective and to work with the client/developer/landowner to deliver the best outcome for the community as a whole.</td>
</tr>
<tr>
<td>Wildlife trust/Charity</td>
<td>To collaborate with other stakeholders to offer advice and support on the project. Providing local knowledge and supporting the community post project completion.</td>
</tr>
<tr>
<td>Architect</td>
<td>To collaborate with the client and expert advisors to ensure that designs are not only aesthetically pleasing but also incorporate the maximum GI benefits available for the project.</td>
</tr>
<tr>
<td>Ecologist</td>
<td>To advise the client/developer on ecological aspects of GI for the project and the impact on ecology/biodiversity that the project may have. To advise how to mitigate impact and also improve the GI of the site.</td>
</tr>
<tr>
<td>Contractor</td>
<td>To collaborate with client and stakeholder groups to understand the possible constraints to their work during the project (e.g. ecological constraints) and the importance of GI on the project. To feedback to the stakeholders on their impact and progress.</td>
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STEP 3: UNDERSTAND THE POLICY LANDSCAPE AND ESTABLISH LINKS TO PLANNING FRAMEWORKS

Make sure you have a clear understanding of the policy landscape and any planning frameworks that may affect the project site. What are the key EU, national and local policies? (See Table 2. for an overview of these).

- Check the Local Authority GI strategy to see if there are any areas in which you can tie in with existing plans. Think outside of the box here as there may be underlying social issues of ill health or biodiversity issues involving protected species that improvements in GI of an area can help to address.
- Use the network you have built up from steps 1 and 2 of stakeholder groups and experts to check that you are linking to all available plans in the area to ensure that there are no missed opportunities.

<table>
<thead>
<tr>
<th>LEVEL</th>
<th>POLICY</th>
<th>FRAMEWORK</th>
<th>GUIDANCE</th>
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STEP 4: ASSESSMENT OF EXISTING FEATURES ON PROJECT SITE

Now you have an understanding of the plans in place for the area and the overarching policies and frameworks that will affect the project, you can start to assess the site and look for existing GI that can be enhanced and where there may be opportunities to increase GI through new initiatives.

- Identify existing features and character of the site and how they could be enhanced.
- Don’t limit your assessment to the boundary of the site as you may miss an opportunity to link up to GI just a little further afield that could have a positive impact on your project.
- Careful planning to the placement of buildings can maximise the GI potential, looking to the existing features may help to plan this in the most cost effective way.
- Think about GI holistically, it rarely only provides one function, explore the multi-functionality it can offer. For example, a green roof not only provides a habitat for nature, it also provides thermal benefits for the building, sound proofing, storm water retention etc.
- GI can often be a solution to drainage and flood water issues that can provide protection not only for the site but for the wider community.
Below is an extract from Natural England’s green infrastructure guidance showing how a change in placement of buildings can allow for SUDs (Sustainable Urban Drainage Systems) on a site creating useable green space that links permeability.

### STEP 5: DEVELOP GREEN INFRASTRUCTURE PLAN

Using all of the information you have gathered through steps 1-4 you are now in a position to develop your GI plan.

- **State what you want to achieve on this project, clearly identifying specifics of your GI design.**
- **Set clear targets to achieve, you will first need to create a baseline to inform target setting and monitoring.** This could be number of invertebrate species, the biodiversity levels of trees, physical square metres of green space etc. This will help to provide you with a before and after picture to demonstrate impact. Remember ecology can be fickle – surveys will need to be done at appropriate times (see ecology survey calendar to the right).
- **Create an action plan stating what is to be done, who is responsible/what support you may need and when the action is to be completed.** This will mitigate the risk of the strategy becoming diluted as the project moves on.
- **Analyse different design options to ascertain where you can add value** (see Table 3. on the next page for some ideas of design approaches for various types of projects).
- **Identify the reporting mechanism you will use to keep stakeholders informed of progress.** Think about the language you will communicate with, you need to make things clear to stakeholders in a way they can understand.
- **Ensure that your plan meets the requirements(addresses the issues you identified in step 1. Re-consult your stakeholder groups to ensure that you will deliver to their expectations, and make improvements to your plan as necessary.**
Table 3. Green infrastructure design approaches

<table>
<thead>
<tr>
<th>SPACE/PROJECT TYPE</th>
<th>DESIGN APPROACH</th>
<th>BUSINESS CASE FOR GI</th>
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<tbody>
<tr>
<td>Urban areas</td>
<td>Plazas, streets/boulevards, green roofs, green walls etc.</td>
<td>Creates better living space for communities, improves air quality, increases health and wellbeing etc.</td>
</tr>
<tr>
<td>Business parks</td>
<td>SUDs, rain water collection, waste water cleansing.</td>
<td>Attractive settings to attract investment, health and wellbeing in the workplace, reducing flood risk and impact of climate change.</td>
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<tr>
<td>Suburban housing</td>
<td>Green spaces for community engagement, outdoor sports, allotments, social interaction.</td>
<td>Increased health and wellbeing, interconnected communities etc.</td>
</tr>
<tr>
<td>Community centres</td>
<td>Green roofs, rain water collection, geothermal heating and cooling.</td>
<td>Healthy living, employment, community inclusion.</td>
</tr>
<tr>
<td>Parks</td>
<td>Increase habitats, green spaces.</td>
<td>Active recreation, learning and employment opportunities.</td>
</tr>
<tr>
<td>Green corridor</td>
<td>Trees, green spaces, river valleys, waterways, cycle routes etc.</td>
<td>Sustainable transport routes, reduction of climate change impact.</td>
</tr>
</tbody>
</table>

STEP 6: IMPLEMENT YOUR GI PLAN, MONITOR AND MANAGE IT

- **Implement**
  You now have your GI plan for the project site that has been carefully created through consulting your stakeholders, using expert advice and taking account of the policies and frameworks that are in place that may affect the site. Identify who will be responsible for the GI plans implementation on this project and what the checkpoint mechanisms will be. If you are handing over the GI plan to a project manager to implement ensure they are fully aware of the importance of GI on the project and where they can look to for support throughout the project implementation.

- **Monitor**
  As you have set targets within your GI plan, these will need to be monitored and reported on to your stakeholder groups. Capture the project benefits and provide feedback, look for any areas for improvement where the GI plan can be amended (or inform future plans) for optimum benefits. Think carefully about how to communicate progress.

- **Manage**
  There is often a misunderstanding that GI can be expensive due to the management legacy once the site has been developed. This is usually due to the fact that a clear management legacy may not have been agreed beforehand. To avoid this it is important that you agree early on who is responsible for the legacy/upkeep once you leave the site whether that be the Local Authority, a trust, a charity or a management company; and ensure costs are clearly identified at the design stage and built into the full project plan.

  Make sure that the legacy includes either a management or operation plan that states key actions that need to be taken in the short and long term maintenance of the GI. These plans will need to be reviewed so make sure that this is accounted for in your agreements.
Green infrastructure makes sense on so many levels that it is easy to sell to a company, what is often lacking is why it matters to the organisation and what are the benefits. Once packaged in a way an organisation can understand, it shouldn’t be too hard to embed the principles across multiple projects.

- Reinforce the message through internal training – Why is GI important to the organisation?
- Find GI champions within the organisation – Look for a personal connection e.g. is the finance director a birdwatcher on weekends? Does your CEO secretly like long walks in the countryside? Did your Head of IT do a geography degree first at uni? Try and get them onboard to support and champion GI.
- Get senior support from the decision makers – Get to know your organisation and how decisions are made, you will need backing from someone senior in the organisation that can support the weight of the checkpoints, policies and procedures.
- Policies and procedures – A great place to start, first look to your sustainability policy and make sure it mentions GI, then work towards a GI policy.
- Project checkpoints – With policies and procedures in place you can set certain checkpoints for projects to ensure they have complied.
- Engage the organisation on progress - Communicate successful projects that have achieved a good level of GI, what impact has this had on the people, the environment, the organisation. What was important in terms of the approach taken to this project? What are the lessons learned that can be applied to future projects?

The only way to embed GI and make it work for an organisation is to use its own language and make it matter to those who make decisions.

**RESOURCES**

**REPORTS**
- Demystifying Green Infrastructure (2015) - [UK-GBC](#)
- Rethinking Green Infrastructure (2014) - [ARUP](#)
- Green infrastructure: An integrated approach to land use (2013) - [Landscape Institute](#)
- Green infrastructure: Connected and multi-functional landscapes (2009) - [Landscape Institute](#)

**GUIDANCE**
- Green Infrastructure Guidance (2009) - [Natural England](#)
- Planning for a healthy environment: Good practice for green infrastructure and biodiversity (2012) - [TCPA](#)
- Natural Environment White Paper (2001) - [Department for Environment, Food and Rural Affairs](#)

**CASE STUDY EXAMPLES**
- Elephant & Castle, [Lend Lease](#)
- Kingsbrook, Aylesbury, [Barratt Developments](#)
- Olympic Parklands Green Infrastructure (2011) - [London Legacy Development Corporation](#)
- St. Ermins bee & bee hotel, [St Ermins hotel London](#)
- Madrid Rio, Salon de pinos, [West 8](#)
- From Demystifying green infrastructure, [UK-GBC](#)
  - Canary Wharf CrossRail station
  - Manchester green and blue infrastructure strategy
  - The Crown Estate London ecology masterplan

**BOOKS**
- What has nature ever done for us? (2013) [Tony Juniper](#)