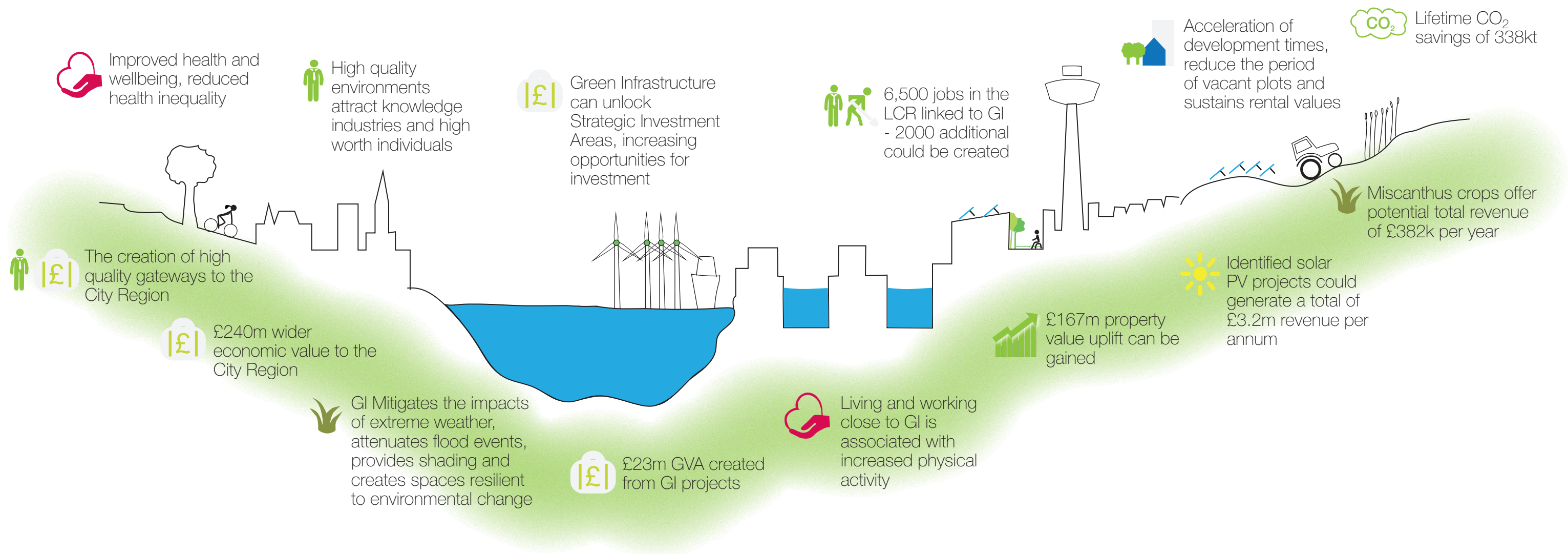


The benefits of Green Infrastructure to the Liverpool City Region

We have identified a pipeline of projects that could deliver the following benefits for the city region:



Health and Wellbeing

Quality of life is an important consideration in modern business location decisions. Cities with attractive green spaces, parks and natural surroundings are more likely to attract and retain knowledge workers and individuals on high salaries. Studies show that office workers who enjoy natural views, report fewer physical ailments and greater job satisfaction.

Liverpool City Region experiences high levels of health deprivation and inequality, coronary heart disease, obesity and diabetes plus low levels of physical activity making health and well-being a significant issue. High quality GI supports opportunities to address a range of health policy objectives, and provides spaces for physical activity, which

in turn, improves well-being, reduces the prevalence of diseases and also reduces incidences of mental illnesses.

There is increasing evidence of the value of GI based health products. Initiatives such as the City Region's Natural Health Service have shown that the significant health benefits it brings can be used to support people to return to work, secure and maintain a job.

Green spaces offer possibilities of social activity, improving community cohesion by bringing people together from different social groupings. These activities can develop local attachment and lower levels of crime.

Jobs and Training

There are currently 6,500 jobs in the City Region directly linked to, or dependant on, GI with an associated GVA of £300m - £37,000 GVA Equivalent per Full-Time Job. Investing in the GI and renewables will add more as well as provide training and skills development opportunities.

The City Region's expanding GI sector needs skills and knowledge development at all levels from school leavers to qualified and experienced professionals. Sector growth will provide individuals with skill development opportunities which are both within the sector and transferrable to other sectors

GI projects also have an excellent track record in supporting excluded groups back to work. Established programmes offer jobs, training and volunteering opportunities that can be targeted at individuals who may have complex needs, such as long term health issues and ex-offenders. This approach offers individuals additional support, complements existing health services and as a result maximises job retention rates.

Green EnerGI - A Strategic Alliance

A mix of private sector investors and public agencies have confirmed their interest to form a strategic alliance to collaborate and link GI and renewable investments directly with built infrastructure, unlock ESIF and explore other funding and investment mechanisms to progress the delivery of GI and energy projects across the City Region.

Green EnerGI's strategic approach will accelerate project delivery and maximise economic, social and environmental outcomes as well as the economic value of projects. The alliance will support project development and delivery and their collaboration will bring investments, match funding and added value.

The need to capitalise on GI interventions and renewable energy sites opportunities is pressing so that the benefits brought by these projects can be realised to support growth and enhance economic

prosperity, as well as provide the City Region with an ability to compete nationally and internationally attracting further investment as well as a greater number of visitors and tourists.

This programme of commissionable projects will accelerate the delivery of investment that will lead to growth in terms of new jobs, training opportunities and GVA. These projects also offer opportunities for linking health and well-being into the programme as essential components of sustainable growth and reducing inequalities across the City Region.

There is a now a need to move to commissioning stage to realise the projects set out here, and in particular, to ensure that strategic alliance members can see progress in and the efficacy of this new alliance as well as prepare to access ESIF funding.

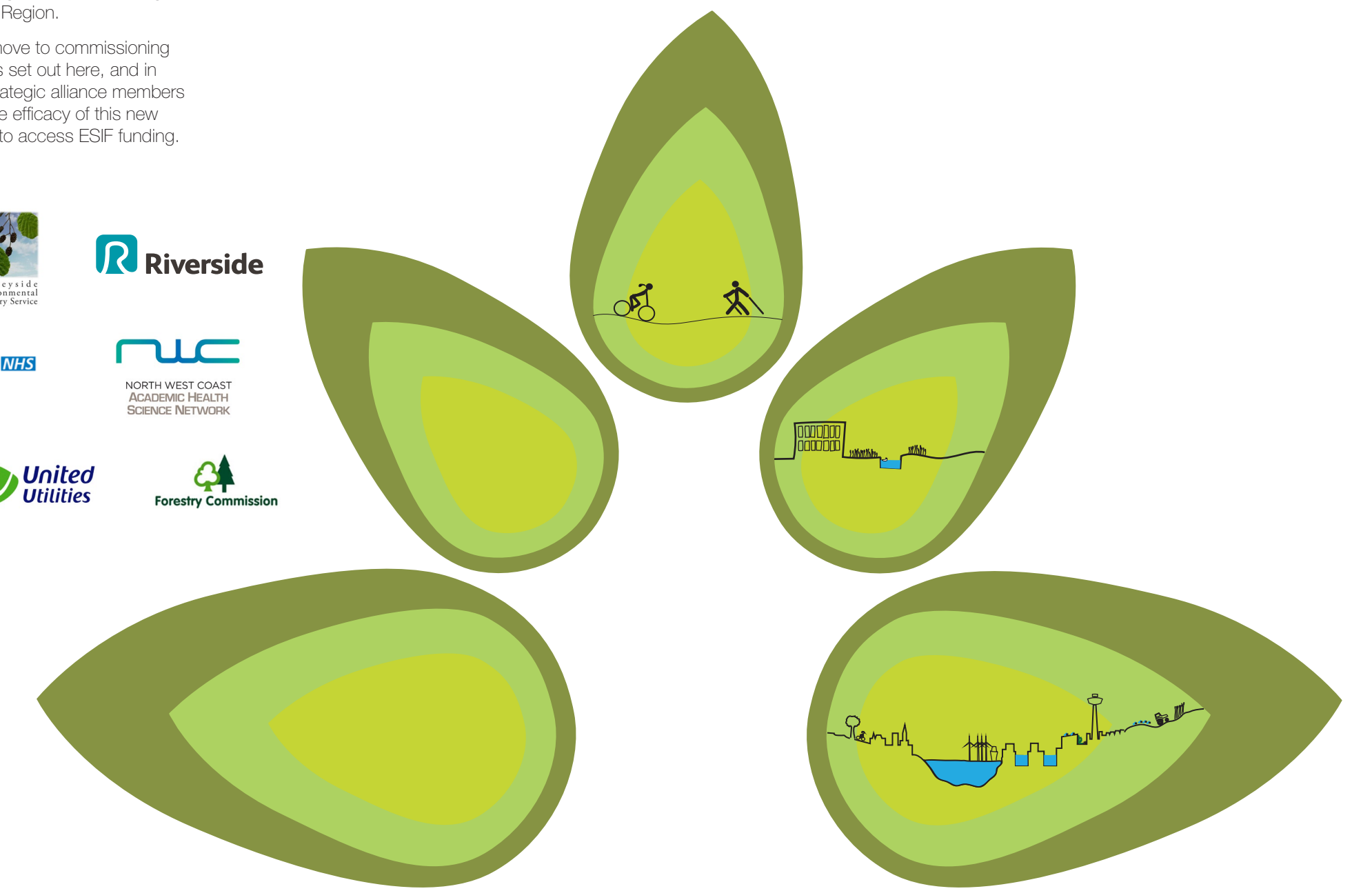


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To access a copy of the accompanying Green Infrastructure Technical report please go to www.natureconnected.org/get-involved/

Green Infrastructure in the Liverpool City Region

A pipeline of commissionable projects



The Green Infrastructure Prospectus

This prospectus, supported by a complementary technical report, sets out a ground breaking approach to demonstrate how investing in both Green Infrastructure (GI) and renewable energy can be a catalyst for innovation and economic growth across the City Region. This combined approach is both innovative and potentially powerful.

This work has been commissioned by Nature Connected and the Liverpool City Region Local Enterprise Partnership (LCR LEP) with additional support from the NWC Academic Health Science Network. It demonstrates how GI and renewables can create "whole place low carbon solutions" mitigating issues that make areas unattractive to development. In addition, investment in renewables on derelict and underused (DUN) sites will provide a direct return on investment for reinvestment in GI.

Under-utilised and derelict sites provide the perfect opportunity to contribute to the Liverpool City Region's economy. Often overlooked, they are potential environmental assets that can play a vital role in developing a sustainable economy. Through the application of GI practices, projects on strategic

investment areas (SIAs) and on DUN sites, can bring measurable value to the local economy, improve health and wellbeing and add to the Region's distinctiveness making it an attractive place to live and work.

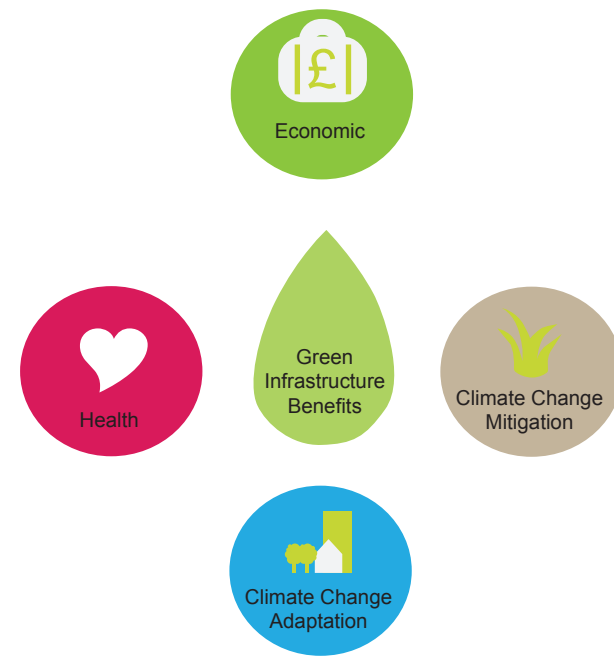
Evidence shows that GI and renewable investment can unlock sites and lead to increased economic activity, delivering new jobs, training opportunities, developing skills and increasing the Region's GVA. These impacts all help to address the City Region's serious health inequalities.

An investment portfolio of commissionable GI and renewable energy projects has been identified across the Liverpool City Region. Also, a strategic alliance – Green EnerGI – of key investors and partner organisations has been created to drive forward the portfolio and promote the benefits of this innovative approach. These projects will compliment the Region's Sustainable Urban Development (SUD) strategy and provide an opportunity for the Combined Authority to strategically support the GI and renewables investment approach articulated here. They will also satisfy the requirements of the European Structural and Investment Funds (ESIF) and deliver priority outputs for the LCR LEP.

Green Spaces - an opportunity to invest

Recent research by BE Group for the Mersey Forest has for the first time identified that GI can increase investment values by up to 20%, decreasing yields expected in financial appraisal. This is achieved by accelerating development times, reducing the period of vacant plots/buildings in a development and, even in periods of poor economic growth, sustaining increased rental value.

Eleven sites across the City Region have been identified for GI investment along with associated economic and GI benefits. A total on site development investment of £163.7 million is expected to be made in buildings and infrastructure between 2015 -2020. Alongside this investment, attributable match funding (10%) is expected to total £16.37 million. An investment in GI interventions (ESIF investment) totalling £10.86 million has also been identified. This will lead to the creation of 200 hectares of improved GI functionality resulting in related GVA of almost £18 million, property values of £208 million, and bring an economic value of £176 million to the City Region.



The four main benefits of Green Infrastructure.

Green Infrastructure enhancing our economy

“Our life support system – the network of natural environmental components and green and blue spaces that lie within and around our towns and city, providing multiple social, economic and environmental benefits.”

Improving the environment we live and work in is recognised as being critical to the City Region's sustainable economic growth. The competitiveness of business locations, as well as attracting and retaining a skilled workforce can benefit from the use of GI interventions as they remove barriers to growth on SIAs as well as address the City Region's legacy of DUN sites.

Using GI to overcome pinch points on sites will improve visual amenity, making them attractive to investment and increase the value of residential and commercial property. The use of GI can ameliorate the impacts of extreme weather, attenuate flood events, provide shading and filter air pollutants as well as screening visually intrusive but necessary infrastructure. Investment in GI develops places that are resilient to environmental change and creates

attractive places for the establishment and development of SMEs. Essentially, GI can create high quality gateways to the City Region, providing good first impressions for potential investors.

GI planning has been explicitly developed as an approach that promotes the value of the natural environment to the wider economy. For every £1 invested in GI £2.30 of GVA can be created, along with a further £6.90 of wider economic benefit.



Power in Renewables

Maximising self-generation of renewable and low carbon energy and delivery of "whole place low carbon" solutions is a key aspiration for the Liverpool City Region to help drive growth. This includes micro generation via solar and wind, smart energy and demand management concepts, biomass supply chain development and opportunities for community energy schemes. These solutions all compliment the City Region's GI agenda.

Developing renewables brings benefits to the wider economy, less dependency on fossil fuels, reduced CO₂ production and decarbonisation of the grid.

Renewable energy projects provide opportunities to supply competitively priced energy that is not subject to the volatility of the market place. They make use of secure and local resources and create local employment.

Energy projects offer potential solutions to bring DUN land back into positive use and can enable new development. Used in combination, GI and renewables can be a powerful and economically advantageous approach which compliments the aspirations of the Liverpool City Region Sustainable Energy Action Plan (LCR SEAP) and the emerging Sustainable Urban Development strategy.

Renewables – an opportunity to invest

The potential for development of renewable energy projects and energy crops on DUN sites has been investigated to understand the range of technically feasible and commercially viable renewable energy options. Twelve sites with potential for solar PV schemes and 17 sites for biomass production have already been identified across the City Region. Of the 12 sites identified for solar PV, 2 are roof mounted arrays and 10 ground mounted.

Summary of findings for solar PV sites

- 12 sites with commercial potential identified
- Positive Net Present Value of between £4k and £796k (over 25 years)
- Schemes range from 0.02MW to 5 MW in energy generation and £43k to £4.3m in costs
- Lifetime carbon savings of 338 ktCO₂ (over 25 years)
- ESIF funding has been excluded in the investment revenue calculations because it cannot be accessed alongside Feed In Tariff (FIT) payments. It has instead, been assumed that ESIF funding can be accessed for site enabling works

- Total investment of £31.6m across the sites identified
- Total revenues of £3.2m a year generated

Analysis identified that generally the bigger the scheme, the better the commercial performance/ revenue generation and associated carbon savings. Many sites identified are extensive and could potentially accommodate larger PV arrays than the conservative estimates of 5MW that have been assumed in producing this portfolio.

It is worth noting that while the costs for solar PV have been falling commensurate with a depression in the FIT the City Region should be acting quickly to take advantage of solar PV opportunities and associated FITs while they last.

It has been identified that GI and energy are readily integrated, and that there are potential opportunities for energy production to fund and manage GI on sites. This approach is also in line with high level guidance from the European Union on the incorporation of green infrastructure into ESIF. GI and renewable projects will compliment the City Region's SUD strategy and provide an opportunity for the Combined Authority to strategically support the approach articulated here.

Solar PV Benefits

Energy security: the benefit to the wider economy arising from less dependency on fossil fuels contributes to a diverse efficient energy mix bringing Gross Value Added savings;

Social benefits: fuel poverty is a significant issue. Energy projects provide opportunities to provide competitively priced energy that is not subject to the volatility of the markets;

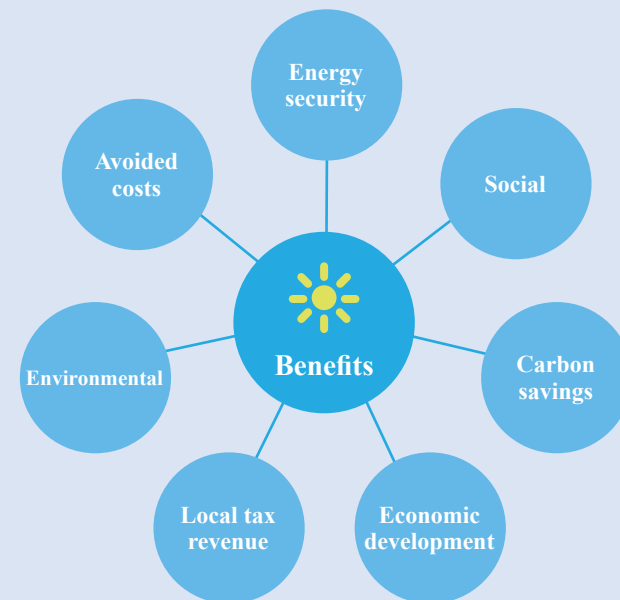
Carbon savings: provide a low carbon option, reduce dependency on fossil fuels, reduced greenhouse gas production and decarbonises the grid;

Economic development: energy projects have employment effects like other forms of investment in a local economy. In this study, analysis focused on the total number of jobs created expressed as Full Time Equivalent (FTE) and translated into the impact on Gross Value Added (based on GVA per job);

Avoided costs: certain projects have the potential to avoid other costs associated with a conventional alternative. For example, it may be possible to forego grid connection costs;

Local tax revenue: different projects will have a greater potential to generate local tax revenues mainly through the Business Rate; and

Other environmental benefits: such as air quality improvement because solar PV results in zero emissions.



Energy Crop Benefits

Strong commercial returns: energy crops can offer better financial returns than conventional crops on non-prime land and a potential source of commercially viable revenue generation;

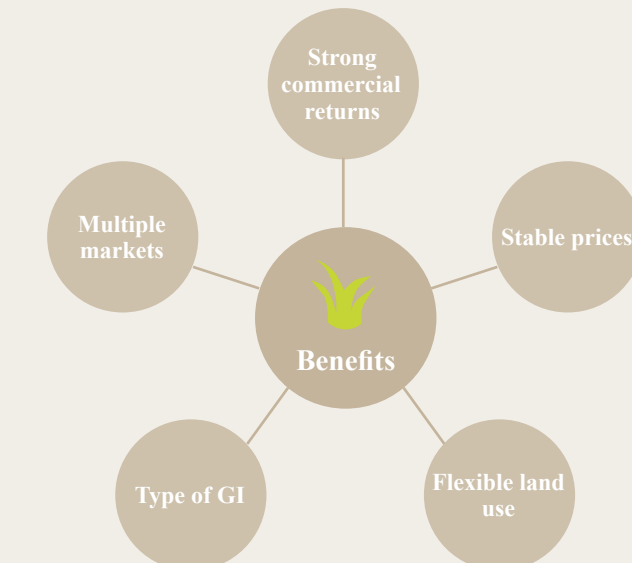
Stable prices: more stable prices and long-term contracts compared with arable crops;

Multiple markets: can be used by large power stations or attract a premium through the local heat market;

Flexible land use: provides a more flexible land use than managed forest and woodland ensuring that land can be used for alternative uses once the lifecycle of a crop has ended. The crop can be produced on less fertile land meaning it does not occupy high-value agricultural land;

Form of Green Infrastructure: that provides functions such as reducing surface run-off; and

Improve site and land management: provides options to turn marginal poorer quality land into profit. It is a 'hands off' crop requiring low input. Miscanthus does not need fertilizer, chemicals or annual soil cultivation.



Growing Energy

Energy crops such as the biofuel Miscanthus grass offer better financial returns, more stable prices and long-term contracts compared to arable crops. They have multiple markets and for example, can be used by larger power stations or attract a premium through a more local heat market. Miscanthus can be produced on less fertile and underused land so it will not occupy the City Region's high-value agricultural land. Miscanthus also provides a more flexible land use than managed woodland because sites can be used for alternative uses once the comparatively shorter lifecycle of a Miscanthus crop has ended. Biomass crops are also a form of GI providing functions such as reducing surface run-off on site.

Summary of key findings for Miscanthus crop sites

- 17 locations totalling 413 ha identified with potential commercial viability
- Net Present Values range between £65k and £5.7m
- The majority of sites assessed were historic landfill
- Capital investment total of £825k
- Revenues on individual sites range between £2k and £61k a year
- Total revenues between of £227k and £382k a year estimated

Investing in Solar PV and biomass projects will improve the diversity and quality of "whole place low carbon solutions" as well as provide further options to fund GI projects across the City Region.

