

Valuing Natural Capital: The Importance of Trees and Greenspaces on Campus

AIMS

- Make steps towards combining economic benefits of trees with associated amenity value of trees and greenspaces.
- To provide a value to retaining and maintaining the trees on campus by providing qualitative and quantitative evidence of their positive impact on human health and wellbeing.
- To provide suggestions to University about improvements that could be made to campus green spaces.

KEY FINDINGS AND THE FUTURE

- Preserve current trees, particularly the larger older ones— avoids benefit time lapse and big old trees are preferred to younger smaller trees.
- Accessibility/signposting needs improvement.
- Focus on dedicated green spaces that allow an immersive experience.
- Correctly planted trees and well planned green spaces can economically enhance campus.
- Planting of specific species based on benefits rather than cost or growth rate would increase benefits.
- A more in depth ORVal survey of the entire campus using university footfall data would be beneficial.

KEY FIGURES

Number of Trees surveyed.	105 species	836 individuals
Most Common Species	lime, ash, sycamore, pear and wild cherry	
Replacement Value	£1.48 million	
Carbon Storage	315.33 tonnes	£74,000
Carbon Sequestration Per year	10.55 tonnes	£2,475
Pollution Removal Per year	230 kg	£5,581
Storm water Alleviation Per year	339 m ³	£518
Building Energy Interactions Per year	£-772	
ORVal Value of 5 Key Green spaces	£789,788 per year	

Carbon storage
£74,000

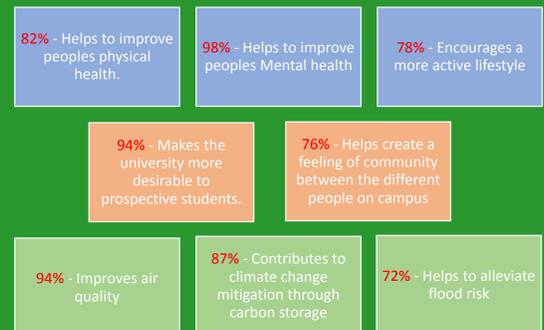
Structural value
£1.48 million

5 locations on ORVal have a social value of
£789,788 per annum

Total annual benefits of 3 planted trees from plantation at 5 year intervals for 40 years



% of respondents that agree with the statements 'Greenspace on campus...'



OVERVIEW

Research suggests that there are many benefits to human health and wellbeing that derive from the presence of trees and greenspace, from air quality improvement, through to stress reduction. This project combines two arms of research drawing upon social science and physical science in order to take a n inter-disciplinary approach to valuing the natural capital on the University of Leeds campus.

ORVal

ORVal is a statistical model of recreational demand, that attributes a monetary value to the welfare benefits of green space, based upon several socio-economic factors, alongside other variables.

- 5 Key Greenspaces on campus were plotted using ORVal.
- Areas highlighted in the survey that require improvement were plotted with the desired attributes.
- Outputs/results were critically discussed in terms of whether they were representative of the observed benefits.

SURVEY

A survey was conducted based upon the Natural England Monitoring Engagement with the Natural Environment (MENE) Survey.

- 156 campus users completed an online survey.
- Using open and closed questions based around their interactions, preferences and opinions with regards to the green spaces around campus.

i-TREE

The i-Tree software suite uses measured tree details such as height and diameter to estimate the ecosystem services being carried out by individual trees. It calculates the pollutants, CO₂, and water captured as well as any interactions with buildings heating and cooling systems. It has been used by researchers all over the world to value the urban forest.

- Phase 1
 - 80% of campus trees surveyed
 - Ecosystem services valued using i-Tree Eco v.6
- Phase 2
 - Identification of "at risk" plots
 - Calculation of effects of removing all trees on given plots
- Phase 3
 - Height and diameter of trees over time modelled using species specific growth rates
 - Modelled sizes at 5 year intervals run through i-Tree Eco model
 - Comparison of 3 planted trees at various ages to 1 mature tree

