



Green Gown
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Finalist's case study

Newcastle University Research and Development – Institution

The Toon Monsoon's Silver Lining - Climate Change Adaptation at Newcastle University

About the project

Summary

Climate change predictions suggest that severe weather events causing urban flooding will increase in frequency and magnitude. Having been directly affected by this Newcastle University are using a research informed approach to adapt the Estate environment to reduce flood risk. The University is using modelling and radar monitoring predicting risk based on climate science, planning for the future, benefiting the University and surrounding City.

Project partners

The University Estate Support Service and the Department of Civil Engineering and Geosciences have worked together alongside students. We have also worked and continue to work with many City Stakeholders including Newcastle City Council, the Environment Agency, Northumbrian Water, the Freemen of Newcastle upon Tyne, local home owners and many other organisations.

The results

The problem

Climate change predictions suggest that severe weather events causing urban flooding are set to increase. The University has already been affected by one event where in excess of £1 million worth of damage was caused to the University Campus alone. Traditional infrastructure is unable to cope with this type of event, therefore it is necessary to manage surface water better within the urban landscape to become more resilient to flooding protecting buildings, assets and business continuity.

The approach

Following the 'Toon Monsoon' and the extensive clean up operation Professor Chris Kilsby, Professor of Hydrology and Climate Change and Newcastle University contacted the Estate Support Service to discuss using the Estate to validate a surface water flood model CityCAT, developed by his research team. This model had accurately predicted those areas of the Campus that were flooded in June 2012. The benefit of academic and support services working together to proactively reduce the future flooding risk became clear. The



Profile

- Higher Education
- 24,696 students
- 5,786 staff
- Urban

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University funded a new post of Flood Risk Manager to implement a programme of adaptive measures, initially risk assessing all buildings and business critical assets, producing a programme of actions to mitigate against future flooding. As part of the improvement work Estate Support Service funded an academic post and worked together to model flooding and plan and design sustainable urban drainage for the infrastructure and landscaping around the £58M Urban Sciences Building under construction at Science Central.

Estate and academic colleagues worked together to raise the profile of surface water management and blue green infrastructure, working with the Nottingham University led Blue Green Cities Research Project and in particular being part of a Local Action Alliance (LAA), set up as part of the research which includes various stakeholders Newcastle City Council, Northumbrian Water, the Environment Agency, local businesses and wildlife groups. The LAA purpose is to develop ideas and blue-green strategies for Newcastle, challenging traditional approaches, indicate how new benefits will be generated and how these can promote partnerships in Newcastle. At the conclusion of the research a dissemination event 'Improving Flood Resilience: The Blue Green Advantage' was held. The event concluded with key stakeholders signing a city wide pledge for joint working to achieve the highest standards of water management, infrastructure to promote cultural change and investment in Suds measures to prevent flooding. The LAA is continuing its work although the research project has now ended.

Our goals

- For the University to lead by example improving the way in which we manage surface water on our Campus, working with others to improve the surface water infrastructure for all, to benefit the City of Newcastle upon Tyne.
- To work together with other City stakeholders, removing organisational hats where necessary to explore opportunities for implementation of blue green infrastructure to benefit the whole City.
- The redevelopment of Science Central to become an exemplar for sustainable urban drainage.
- Raising awareness of blue-green infrastructure and building capacity within our Estate to develop and maintain blue green space, as part of wider resilience building initiatives.

Obstacles and solutions

Obstacles	Solutions
Lack of knowledge and understanding of blue-green infrastructure, how it functions and the role it can play in surface water and flood risk management.	Promotion of blue-green infrastructure through the Newcastle Learning and Action Alliance and also through stakeholders who committed to the City's blue-green pledge.
Lack of confidence in changing practices and new approaches.	Science Central will soon have sustainable urban drainage in place which can be used for continued research, become an exemplar and demonstrator for future blue-green infrastructure.



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The cause of flooding within your site boundary may originate in another land owners area and in order to mitigate may need to be managed at source.	Key city stakeholders involved with the LAA have, due to academic input, a greater understanding on the overland flow of water through the City, its effect and recognise that this a shared problem that can only be resolved together.
Funding of schemes.	A greater understanding is required on the importance of blue-green infrastructure and how it can prepare buildings and assets for the future to prevent flooding, loss of business continuity and significant financial loss.

Performance and results

The project is unique, with Estates operational staff working with academic colleagues and students, drawing on academic expertise and incorporating leading edge research projects on the Campus. This specifically applies to the Science Central redevelopment where UKCRIC research funding will be used to incorporate Suds for both site infrastructure and research purposes. Our approach could be adopted by any organisation. We link with local organisations via the Local Learning Action Alliance and are working on identifying opportunities across the City to improve the management of water to benefit the wider City. Significant impacts can be felt on a local scale however replicability means they can be easily applied to other regions.

The project is an example of best practice using an academic research model to test actual Estates projects ensuring we improve the management of urban water for all City stakeholders. This project did not just look at localised flooding to the University Campus and how to mitigate, but where the surface water originated from and what effect surface water that passed through our site had on the wider community. We were working with City Stakeholders including Newcastle City Council, the Environment Agency, Northumbrian Water and many other organisations to improve the surface water infrastructure for all, often removing our organisational hats to explore benefits.

At Newcastle University there is a high level of commitment at the most senior level to embedding sustainability. Within the University we hope to continue to work collectively both academic and support services across a broad range of topics not just sustainable drainage, building on the success of this collaboration. Many within our organisations have been involved with this project including operational staff, academic staff and student's in addition local businesses, engineering professionals and other City stakeholders.

The future

Lessons learned

From an adverse event emerged significant positive benefit and learning opportunity to understand climate change impact, become more resilient and plan for the future.

By challenging traditional approaches we have identified new benefits and culture change that can be generated.

When resolving a problem and exploring potential solutions, hypothetically removing organizational barriers and interests can be greatly beneficial.

Sharing your project

At the conclusion of the research a dissemination event 'Improving Flood Resilience: The Blue Green Advantage' was held. Open to all, the event attracted over 100 delegates, and presentations were given by



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members of the LAA, Local Councillors, industry leaders and researchers. The event concluded with key stakeholders signing a city wide pledge for joint working to achieve the highest standards of water management, infrastructure to promote cultural change and investment in Suds measures to prevent flooding.

What has it meant to your institution to be a Green Gown Award finalist?

We are extremely proud to be a Green Gown Award Finalist in recognition of the research and development at Newcastle University in blue green infrastructure to mitigate against environmental impacts, this has been a joint accomplishment with a shared vision of operational and academic staff with the collaboration of wider City stakeholders.

Further information

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