Dublin City University

Renewal for Green Campus Flag

June 2018

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1. Introduction

As DCU was only reassessed in November 2017 for our Green Flag much of this report for renewal in 2018 is a repeat of what was reported in late 2017.

Dublin City University, originally established in 1989 by the University statue, is located to the north of Dublin City and is the most significant and comprehensive provider of university education on the rapidly growing and economically important Eastern corridor.

There have been some significant changes at DCU since the initial An Tasice Green Flag was awarded in July 2014. September 2016 saw the completion of the process by which St Patrick's College Drumcondra (SPD), Mater Dei Institute (MDI) and Church of Ireland College of Education (CICE) were fully incorporated with DCU. From this date, all students and staff of St Patrick's College, Mater Dei Institute and the Church of Ireland College of Education are students and staff of DCU.

Two of the most significant changes arising from Incorporation are the establishment of a new Faculty of Education that will be known as the "DCU Institute of Education", the first faculty of education in an Irish university and one of the largest in Europe; and an enhanced Faculty of Humanities and Social Sciences which has a much broader array of subjects on offer.

In addition DCU now has a larger community and a multi campus structure see figure below. It has a stronger, more visible, presence in North Dublin, St Patrick's College, Drumcondra campus is now known as DCU - St Patrick's Campus. DCU All Hallows campus, also in Drumcondra, is now the third academic campus of DCU.

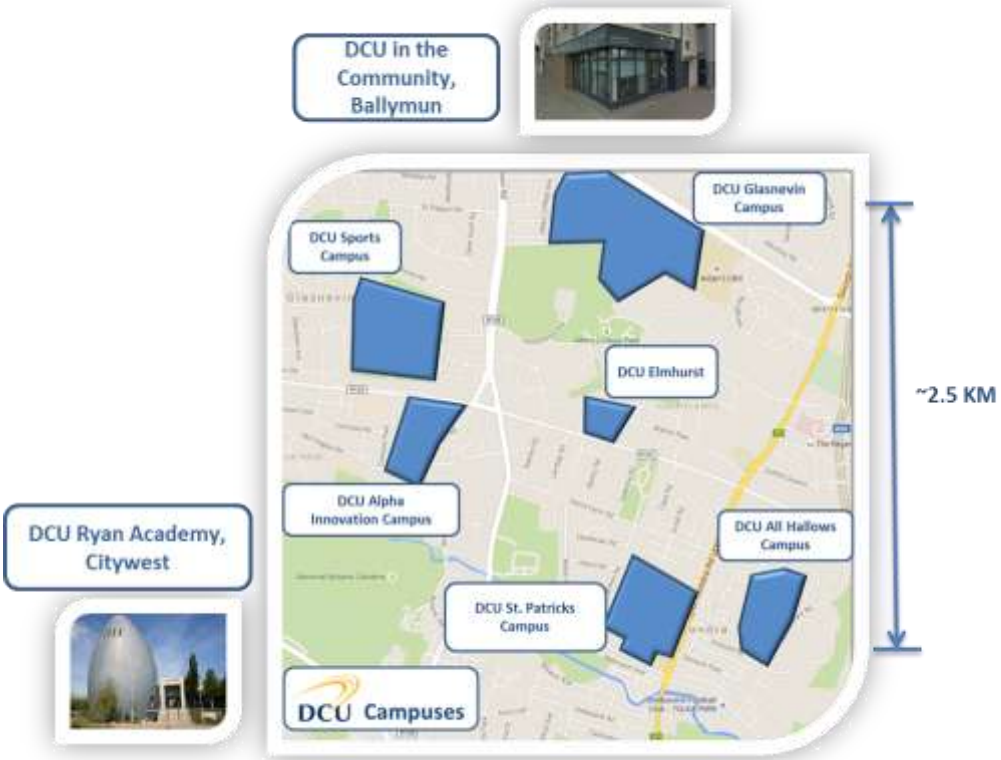


Figure 1: DCU Campuses 2017

This newly expanded DCU is well equipped to support its approximately 16,500 students with a continuing focus on personal, academic and professional life-skill development. The **DCU Access programme** was established more than two decades ago and identifies and supports students from groups currently under-represented in higher education. In 2017, DCU supported nearly 1,300 access students, making it the largest such programme by far in any Irish university.

DCU is the first Irish university to be designated as a "**University of Sanctuary**", awarded by the City of Sanctuary, in recognition of a range of initiatives demonstrating commitment to welcoming asylum seekers and refugees into the university community and to fostering a culture of inclusion for all.

The **Age-Friendly University (AFU)** initiative at DCU is committed to widening access to higher education, and this includes enhancing the lives of older members of the community through innovative educational programmes, research agenda, curriculum development, online education, health and wellness activities, arts and culture programme and civic engagement opportunities.

2017 seen the launch of the new **DCU Strategic Plan: TALENT, DISCOVERY, AND TRANSFORMATION (2017 – 2022)**[1]. In presenting this plan the DCU President Prof. Brian MacCraith said

> *"Our purpose must surely be to address the major challenges facing the world today and to develop the talent and knowledge that society needs."*

Continuing its mission statement DCU aims to transform lives and societies through education, research, innovation and engagement.

DCUs vision is to be a globally significant University of Transformation and Enterprise that is renowned for:

- the development of talent;
- the discovery and translation of knowledge to advance society;
- its focus on creativity and innovation;
- the advancement and application of technology, and
- its commitment to sustainability.

DCUs commitment to sustainability is clearly articulated in one of the nine strategic goals for the University over the next five year – Strategic Goal : Place sustainability at the core of the university.

At the core of the Strategic Plan 2017-2022, DCU will seek to further develop and implementation the DCU Sustainability Plan created by a cross-institutional Sustainability Council. This council will also play a key role in monitoring the implementation of the plan.

From the narrower environmental perspective of sustainability, DCU will seek to embed best practice across the broad range of DCU multi-campus operations. It will establish ecological footprint metrics and set ambitious targets to reduce these. As an extension of this objective, a specific campus will be identified and developed as a carbon-neutral exemplar campus.
Sustainability will play a key role in academic and research activities, with a view to enhancing the insight and commitment of students, the principles of sustainability and sustainability literacy will be integrated into the undergraduate curricula. Specific degree programme(s) will be developed at

[1] http://www.dcu.ie/sites/default/files/marketing/digitalmedia/presidents-office/strategic-plan/index.html

postgraduate level. Research focusing on sustainability will continue to be focused on and fostered. Such activity is likely to build on existing strengths and existing international collaborations.

	Specific Actions: Over the next 5 years we will	Indicators of Success/Progress
Sustainability Plan	8.1 Create a **DCU Sustainability Plan** that will be a roadmap for operating a healthier and more sustainable University, including responsible management, for students, staff, and the local community. A cross-institutional Sustainability Council will be established to support the creation of the plan and to monitor its implementation.	• Establishment of Sustainability Council • Completion & dissemination of Sustainability Plan • Roll out of implementation plan • Annual reports on achievement of goals set
Sustainable Operations	8.2 Embed **Sustainability as a key driver** in DCU operations including building management, energy, water, CO2 emissions, transportation, operational resilience, public realm spaces and in the construction of new buildings. The new challenges facing DCU in operating a decentralised campus will have to be taken into account here.	• Achievement of ISO 50001 certification for energy & water • Retention of An Taisce/FEE Green Campus Flag • Levels of sustainable commuting to, from & between campuses • Implementation of NZEB standard for all future buildings
Curricular Integration	8.3 Integrate **Sustainability Principles, Literacy and Awareness** into the student curriculum. This will involve working closely with Faculties and the Education Committee to establish the optimal approaches to achieving this objective. There will be a particular emphasis on awareness of the UN Sustainable Development Goals (SDGs).	• The number of degree programmes with Sustainability components integrated • The number of students participating in such degree programmes • Creation of optional (online) sustainability module • Develop of a Sustainability Engagement digital credential
Ecological Footprint	8.4 Establish **Ecological Footprint Metrics** for the University and set ambitious targets to reduce these.	• Establishment of Footprint Metrics for each campus/ faculty/unit • Annual reports on targets achieved • Measures of student engagement & behavioural change
Research Focus	8.5 Promote and support **Sustainability Research** across the University. This will include, for example, our involvement in the Global Consortium for Sustainability Outcomes (GCSO) and the ongoing work of the DCU Water Institute.	• Sustainability research metrics • International partnerships in sustainability • Impact case studies
Carbon-Neutral Campus	8.6 Develop a DCU campus as an exemplar **Carbon Neutral Campus**.	• Identification of optimal campus & required implementation plan • % progress to carbon-neutral status for exemplar campus

Figure 2: DCUs commitment to Sustainability at the Core as identified in the DCU Strategic Plan 2017-2022.

Building on its existing structures within DCU (see figure below) a cross institutional Sustainability Council is being established reporting to DCU Executive Committee/DCU Governing Authority with representative from each faculty and key operational units.

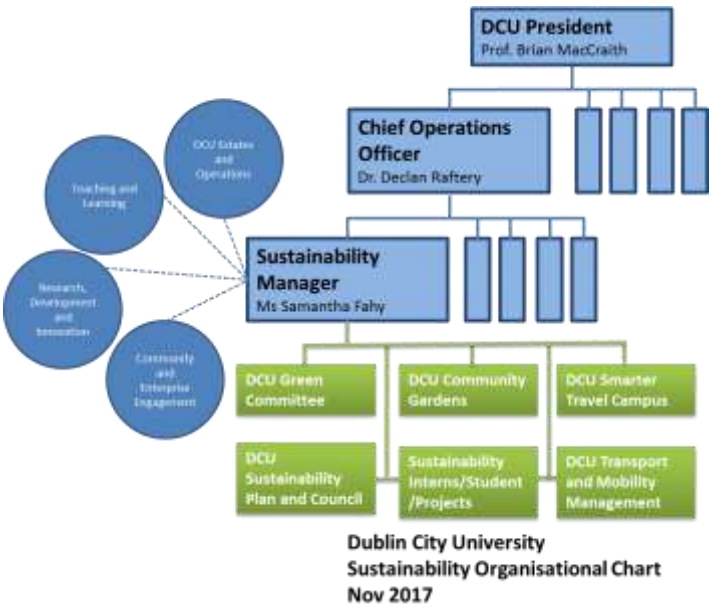


Figure 3: Current organisational structure for Sustainability at DCU

The DCU Sustainability Council is responsible for the further development, approval and implementation of the DCU Sustainability Plan. This cross institutional council, chaired by Dr. Declan Raftery, DCU Chief Operations Officer is currently being established with its first meeting planned for September 2018.

Green Campus at DCU

The awarding of the first green flag to DCU (Glasnevin Campus) in July 2014 had a significant impact on all campus users i.e. DCU staff and students but also local community and visitors to the campus. It raised the profile of sustainability actions across campus and with Incorporation has proven to be one of the linking factors behind which all staff and students can get behind. With this view of cooperation and collaboration DCU aims to create a One DCU Green Campus across all its campuses rather than focus on individual flags for individual campuses. In November 2017 DCU hosted a site visit from An Taisce and following this our Green Flag status was renewed for Glasnevin Campus and awarded afresh to the DCU St. Patricks Campus. It is hoped that in 2018/2019 the All Hallows campus can follow suit.

2. Green Campus Committee

In January 2012, DCU formally began its campaign towards 'Green Flag' accreditation with An Taisce. A Green Committee was set up comprising of 15 staff and students. The committee was formed following an email call to all staff and students. All those who expressed an interest in engaging with the Green committee were accepted. Over the years since we have looked a difference ways of engaging the DCU Green Committee from leaving it to the students themselves to our most recent google survey. As can be seen from the figures below, apart from the large surge in 2014 (the year of our first assessment !) the Green Committee on campus has ups and downs! One of the ongoing challenges is how to manage the initial large groups and their hugely varying expectations. It is hoped that the approach taken in 2017/2018 will aid this process by identifying in advance that membership of the Green committee is not passive and identifying some key project in advance and getting feedback on levels of interest. It is also expected that the establishment of the DCU Sustainability Council will aid the operation of the Green Committee by giving it a direct channel of report to DCU senior management.

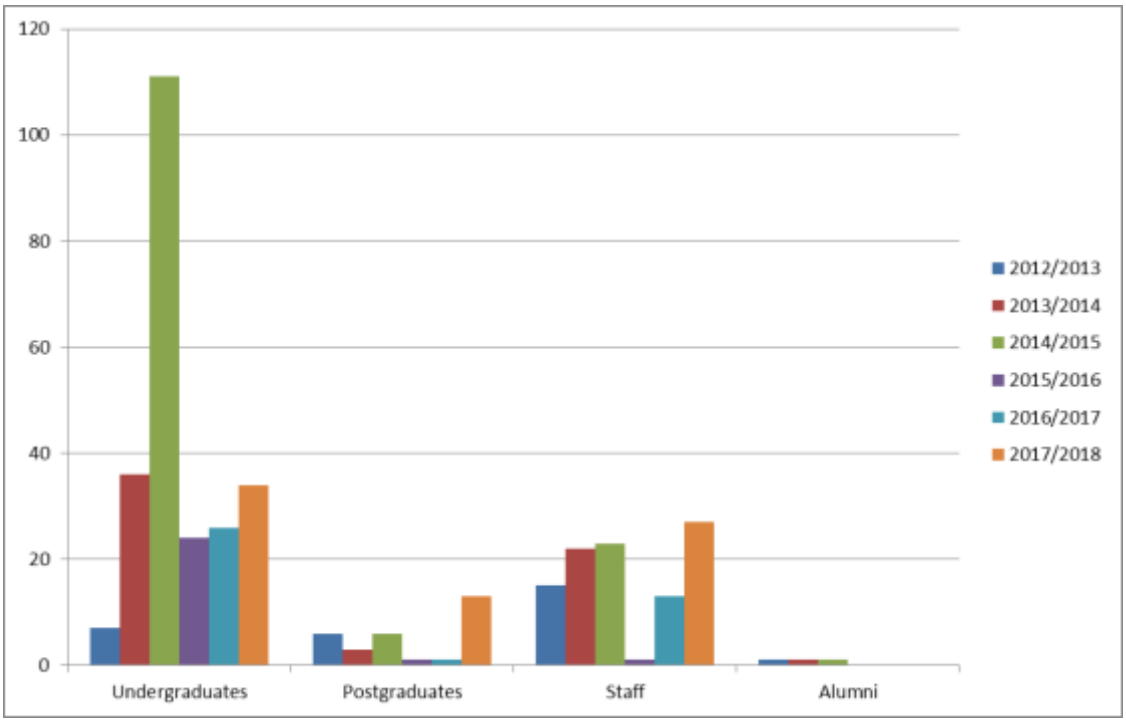


Figure 4: DCU Green Committee Membership 2012 – 2018

Review of 2016/2017 Committee

The Green Committee at DCU is renewed each year early in semester one. With a focus on the New DCU being One DCU it was agreed that there would be one Green Committee bringing together representatives from all campuses. A call to all staff and students via email was circulated early in term 1 with a very positive response. Below is a list of those who indicated that they wished to be involved in the DCU Green Committee. In addition the students established a new sustainability society - DCU's Students for Sustainability in Human Lifestyles (SSHL), with the aim to not only advocate and educate, but to equip students with sustainability skills to last a lifetime to aid the

individual to live a minimal damage and conscious lifestyle. Skills lessons and workshops will include bicycle riding/repairs, seminars, vegan cooking class, permaculture, urban gardening, work in the DCU community garden, trips to sustainable communities & working via WWOOF on organic farms and a range of other groovy stuff.

Table 1: DCU Green Committee Members 2016/2017

DCU Green Committee Members 2016/2017	
Mariane Galpo Masters in Management Business Co-Chair Green Committee	Sam Fahy Sustainability Manager at DCU Co-Chair Green Committee
Rosalind Duke Lecturer (AHC)	Saorla Kavanagh PhD Student at DCU
Conall Ó Dubihir Stockholm Resilience Centre, Stockholm University Interim @ Sustainability DCU Summer 2017	Siobhan Sleeman DICE Project Manager SPC
Ann-Christin Arras Heidelberg University in Germany Interim @ Sustainability DCU Summer 2016	Eleanor Hulm DCU SSHL
Cody Byrne DCU SU VP Welfare	Eimear Maguire DCU SU VP Engagement & Development
Manus Mc Loughlin DCU SU VP Education & Placement	Eamonn Carroll Undergrad SPD
Rita O Dwyer SEN	Seán James Walpole Undergrad DCU
Minako Muraki Exchange Student	Killian Barry GDip Learning Support & Inclusion
Antonio Pupulin BT	Gráinne Smith BUPY2
Ana Jaranay STEP (Staff)	Le Min Chan Actuarial Maths
Effat Ashi Financial Maths	Roxana Pedan Business Studies
Yan Jun Chua Economics, Politics & Law	Oraianthi Touma2atou MTT
Arjon Sengh MSBN	Muthanna Kodana MSBM
Maria Barry Post Doc (SPC)	Ross Kiernan MPS
Jack Philips BMMS	Cara Cavanaugh MSc
Bisimwa JP International Development	Ryan Plaitts Maters Jounalism
Thomas McCloughlin Lecturer (SPC)	Susan Pike Lecturer (SPC)
Andrea Cleary Lecturer (SPC)	Conor Maguire DCU SIPTU Rep on Green Committee

There was an initial introductory Green Committee talk/meeting on both the DCU Glasnevin and SPD Campuses which were well attended by both staff and students. At these meetings the achievements of the previous year were reviewed and plans for 2016/2017 were discussed. While

there were several meeting called throughout the year it proved difficult to identify times/places that attracted a critical mass and hence several meeting required parallel processing i.e. the same info communicated to small groups on different campuses. While this was necessary in year 1 of incorporation to help manage the amalgamation, assuring members of all campuses that their contribution was as important as any other, it was not particularly effective for enabling discussion and debate. Asynchronous meetings, website, email and social media communications were used to circulate the message and activity of the committee within DCU.

Outlook for 2017/2018 Committee

A different approach will need to be taken in 2017/2018 with particular emphasis in getting the entire group together to capture and communicate the diversity of the whole new DCU student body. Over the summer 2017, with the help of Conall Ó Dubihir, an interin working with Sustainability DCU from the Stockholm Resilience Centre at Stockholm University, significant work has focused on how to engage and facilitate a multi-campus green committee. The outcome has been the development of an online platform for the capturing and priortisation of activities as well as a remote participation methodology for online meeting. Appendix 1 provides a short report on the new 2017/2018 committee. There have been over 100 responses from right across campus

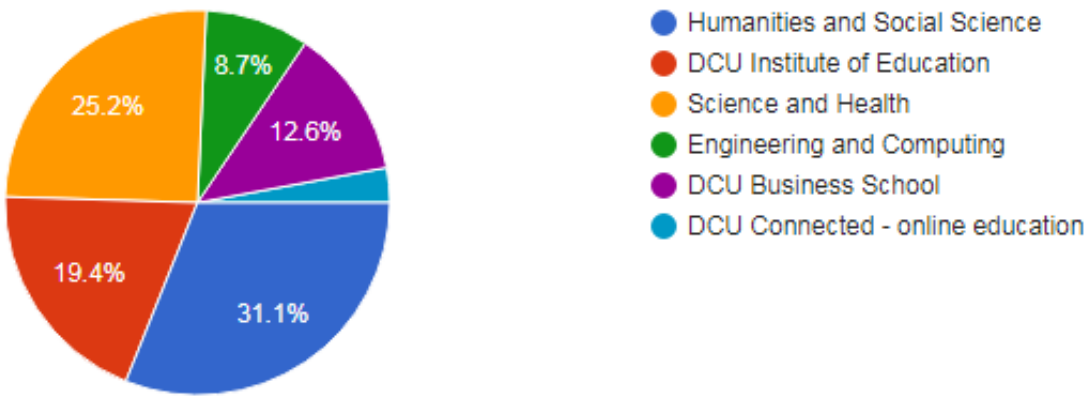


Figure 5: Breakdown of responses across DCU Faculties

The figure above shows the breakdown of the response rate to the online Sustainability/Green Committee. The table below compares this with the percentage of student in each faculty – this would appear to indicate that the response rate is in line with the representation of students with perhaps less student responding from the Business School and more from the Humanities & Social Sciences.

Table 2: Comparison of students per faculty to response rate on Green Committee Email

Faculty	Percentage of student 2016/2017	Response rate
Humanities and Social Sciences	26%	31.1%
Science and Health	23%	25.2%
DCU Business School	22%	12.6%
DCU Institute of Education	17%	19.4%
Engineering and Computing	12%	8.7%

There is a good breakdown across Staff, postgrads and undergrads and as well as giving their input on different projects there was also the opportunity to indicate if they wanted to join the Green Committee as can be seen in the table below.

Table 3: Breakdown of respondents

		Membership of Green Committee		
Role in DCU	**Total**	**Maybe**	**No**	**Yes**
Postgraduate Student	16	8	3	5
Staff	40	11	13	16
Undergraduate Student	47	15	11	21
Grand Total	**103**	**34**	**27**	**42**

As is mentioned in the report is it is viable to coordinate a committee of ~74 members and so it is proposed to create working groups to focus on specific tasks. A proposed list of working groups has been circulated back to all interested parties along with a request for nominations for working group coordinators.

It is planned that at least some of these meetings will align with DCU SU Green Day events with the SU VP for Engagement (Siobhán Nic Thaidhg, Vice-President, Engagement and Development) also sitting on the DCU Green Committee. Note that these events are being co-supported by the DCU SU and the Union of Students under the EU funded Students Achieving Valuable Energy Savings (SAVES) programme.

Green Committee Associations

DCU Green committee has several links and associations

Organisation	Activity
Cloughjordan Eco Village	Memo of Understanding, Working together on shared learning journey.
DCU Sustainable Living Society	Strongly linked to green committee and activities to promote sustainability to student body
DCU Students Union	Work together with Sustainability and Green Committee to communicate message and organize and support events
Global Consortium for Sustainability Outcome (GCSO)	The Global Consortium for Sustainability Outcomes is a non-profit international consortium of universities that collaborate to implement and scale solutions to sustainability challenges. GCSO membership spans seven countries on three continents, enabling universities to work together in partnership with each other and with governments, businesses, schools and NGOs.
Sustainable Energy Authority of Ireland (SEAI)	DCU have several links to SEAI including grant aid under the Better Energy Communities Awards, as members of the Better Energy Communities Network, and also working with SEAI to increase awareness of energy reduction and efficiency by DCU Staff through energy awareness workshops

Organisation	Activity
Union of Students of Ireland (USI)	DCU is one of the four universities participating in the EU funded SAVES (Students Achieving Valuable Energy Savings) Programme in conjunction with DCU Residences.
Other third level institutions	DCU participated in several forums and event where it works together with other HEI's to develop and delivery the sustainability message! Eg coffee cups campaign.
An Taisce Green Communities	DCU and particularly DCU community gardens work with the An Taisce Green Communities team to provide access and support for project in the community.
Mens Shed Association & Ballymun Mens Shed Association	DCU is working together with the Mens Shed association and Ballymun Shed to establish a Shed on the DCU Community Garden.
Dublin City Council	DCU Sustainability/Green Committee have several engagements with DCC including the removal of hot water from public sanitary facilities, refurbishment of sheds on the DCU Glasnevin Community Garden and the Adopt a Street programme
Drumcondra Tidy Towns Association	DCU Sustainability/Green Committee are working with the Drumcondra TT Ass to help increase biodiversity on the Drumcondra facing perimeter of St. Patricks Campus including new flower baskets, propagation of native ivy, support maintenance of DTT planters etc
Phibsboro Tidy Towns Association	DCU Sustainability/Green Committee are working with the Phibsboro TT Ass to raise awareness on waste and water issues
The DCU Vegan Society	To support positive choices in the DCU restaurants
DCU Cycling Club	To promote cycling facilities on campus and intercampus
IBikeDCU Society	To promote biking, basic skills incl rules of road etc.
Smarter Travel Campus Group	Working to achieve a 90% of campus users using a sustainable form of transport.
DCU Office of Student Life	Several linkages including sustainable bottle/cups, community employment and engagement
Rediscovery Centre	Several linkages including weekly bike clinics, fashion workshop and education and awareness raising programmes.
North Dublin Chamber of Commerce (NorDubCo)	Working on sustainable project implementation including hot water and policy recommendations
RCE Dublin United National Regional Centre for Expertise in Education for Sustainable Development	RCE Dublin is coordinated by Dublin City University (DCU) and its partnership includes educational organisations (DCU, Educate Together), Public bodies (An Taisce, Dublin City Council), industry-academia networks (Sustainable Nation) and non-governmental organisations (FightingWords, Exchange House Ireland and ECO-UNESCO).
National Transport Authority	Smarter Travel Campuses programme and several support awards to improve transport related initiatives at DCU

3. Environmental Review

There have been major changes at DCU over the past number of years with the expansion of the campus with student population increasing by over 32% (figure 6) and estimated to reach 22,000 by 2026. In addition two additional academic campuses have been added at St. Patricks and All Hallows both in Drumcondra (figure 1 in Introduction). While nominally during this phase the DCU Green Committee is focusing on the Water and Transport themes, work has continued on all themes and in many such as energy has even increased further.

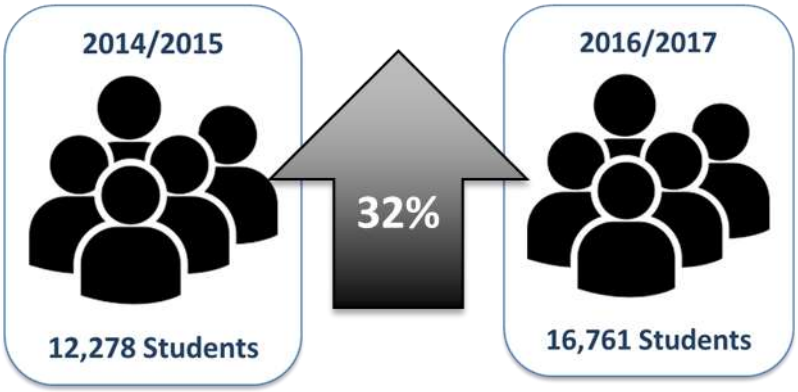


Figure 6: DCU Student pollution growth through Incorporation

Figure 7: DCU Campus Development 2017

DCU in 2017 encompasses 5 primary campus locations with a ~2km radius. With 75 buildings dating from 1680 – 2016 across 128 acres there are many challenges and opportunities. In this section we report progress on environmental performance across the DCU academic campuses – Glasnevin, St. Patricks and All Hallows for Energy, Water, Waste, Biodiversity and Transport.

Energy

DCU continues to work toward its agreed target of 33% energy reduction by 2020 on 2010 figures and has undertaken several infrastructural projects include LED retrofit, insulation upgrades, building fabric and glazing upgrades with several more in the pipeline.

The primary factors influencing energy consumption are :

- Increase in population (84% since 2007)
- Increase in footprint (30% 2017 +18% by 2020)
- Increase in demand (Living Campus)
    - Increased student residences
    - Campus operation 365 days per year
    - Library pilot open 24/7

Over the past year DCU has reviewed its energy manage system and to enable greater clarity energy reports are now broken down across the following areas:

1. DCU Research Buildings
2. DCU Educational Buildings
3. DCU Support Buildings
4. DCU Campus Residences
5. DCU St. Patrick's Campus
6. DCU All Hallows Campus

This new scheme establishes 2016 as a baseline and DCU has ambitiously set a target of 35% energy efficiency improvement by 2020. Monthly reports on electricity and gas usage are available – See samples below.

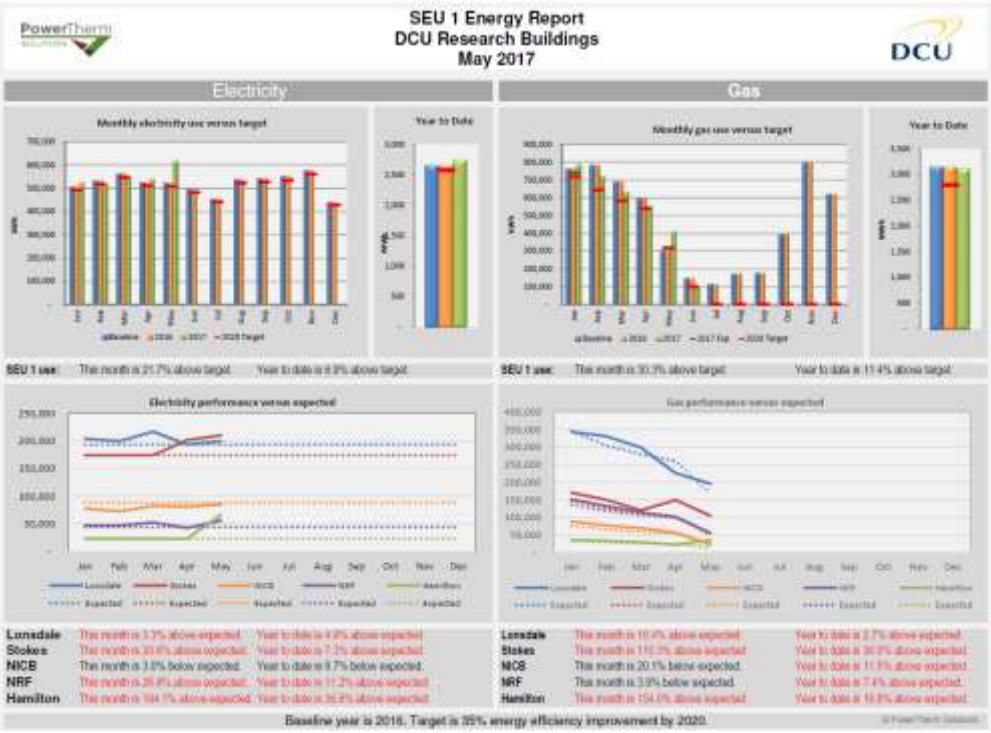


Figure 8: Monthly report for Energy and Gas usage

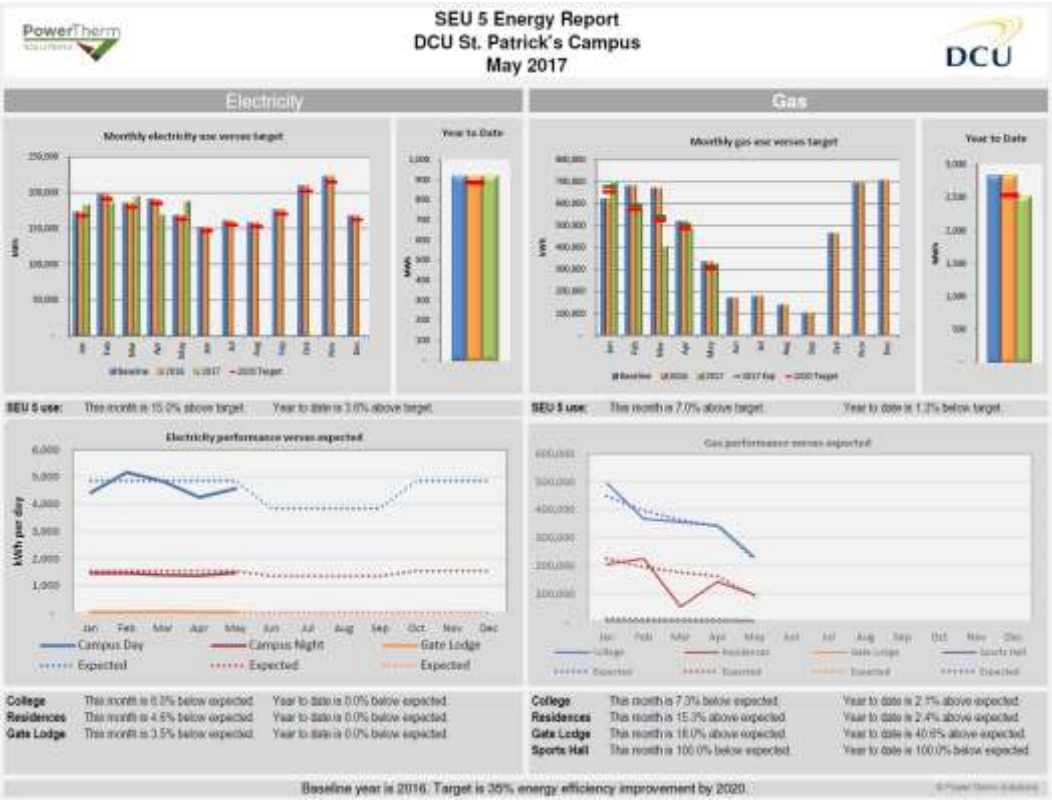


Figure 9: DCU St. Patricks Campus

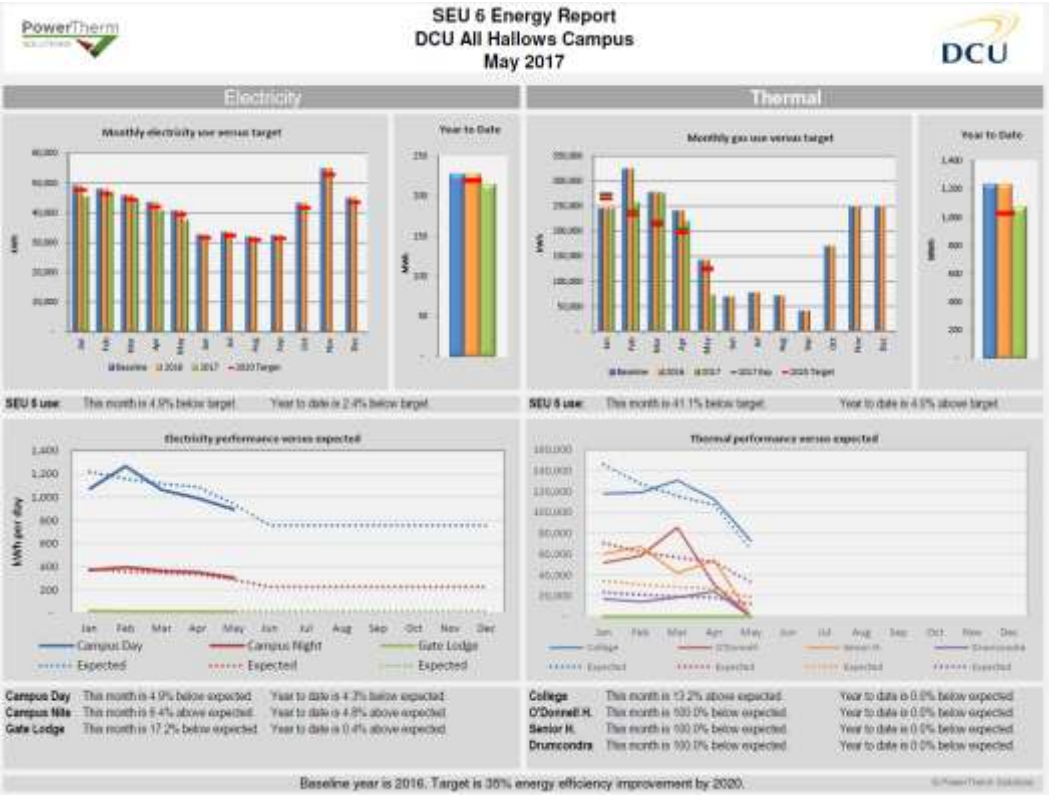


Figure 10: DCU All Hallows Campus

The finer grained information enables the DCU Energy Management Team to deliver targeted initiatives for specific buildings and building types and usage.

In 2016 the total consumption across all the DCU campuses rose by 32% (figure 7). This of course is predominantly to the expansion of the campus.

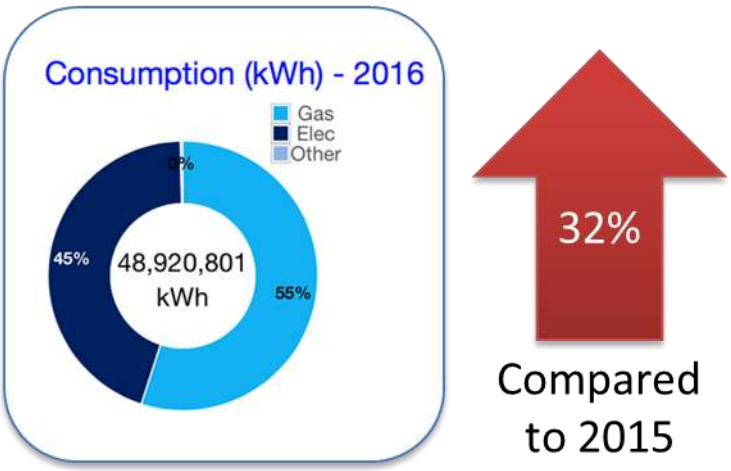


Figure 11: DCU Energy Consumption 2016

As with all public sector bodies DCU makes annual returns to SEAI under the energy consumption in the public sector scheme. The DCU report based on the data collected through the monitoring & reporting system for 2015 and 2016 can be seen in the figures below.

The 2016 report indicated that DCU is at 32% toward the 2020 target of 33%. We do however anticipate that there will be an upward trend in 2017 due to the increased activities on all campuses we do however estimate that we will continue to reach our 2020 target of a 33% reduction over 2010 levels across all campuses.

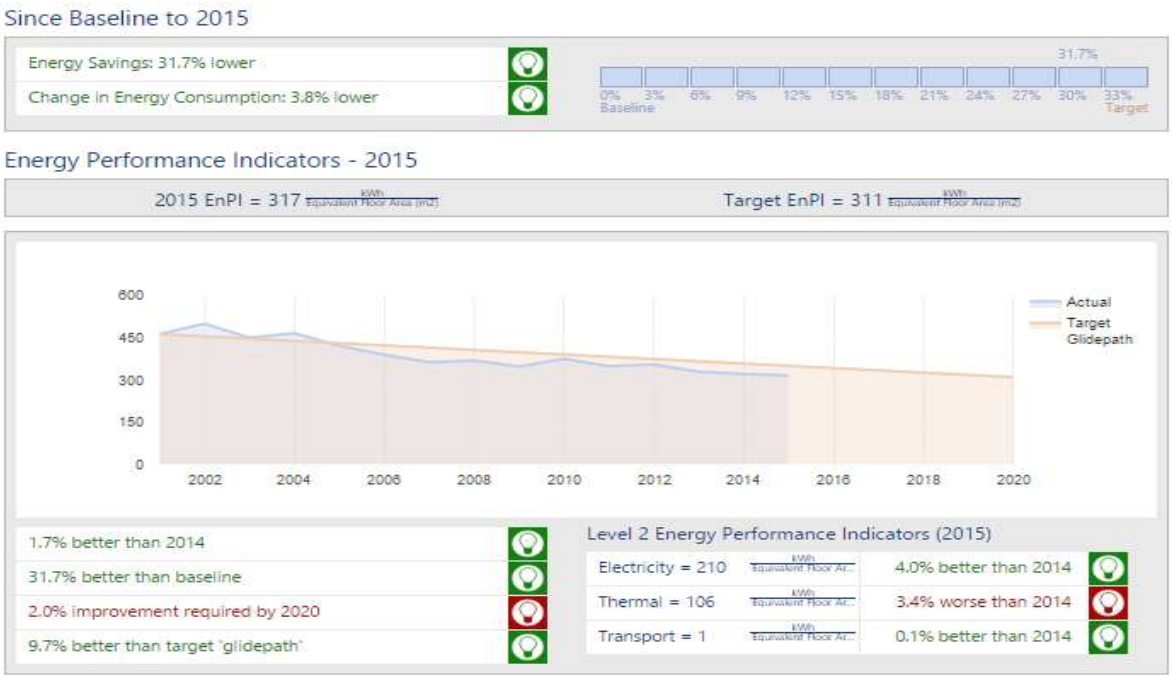


Figure 12: DCU 2015 SEAI Energy Efficiency - Progress to 2020 Report

Figure 13: DCU 2016 SEAI Energy Efficiency - Progress to 2020 Report

Water

With a specific focus on addressing water as a theme in 2016 DCU commissioned LowFlow to undertake a full audit of water consumption on the St. Patricks and All Hallows Campuses. In addition Leak detection surveys were undertaken on Glasnevin campus following the previous years audit. As can be seen from Fig 17 below, Glasnevin campus reduced water consumption via leak fixing, significantly more leaks have been addressed on the Glasnevin campus as identified in fig 13 which should result in significant water saving in the 2017 report. Figure 18 shows the inclusion of the St. Patricks campus which has an estimated annual consumption of 21,024m3 following the fixing of a major leak. Due to meter faults on the All Hallows campus data was not available for 2016 reports, it will be included for 2017.

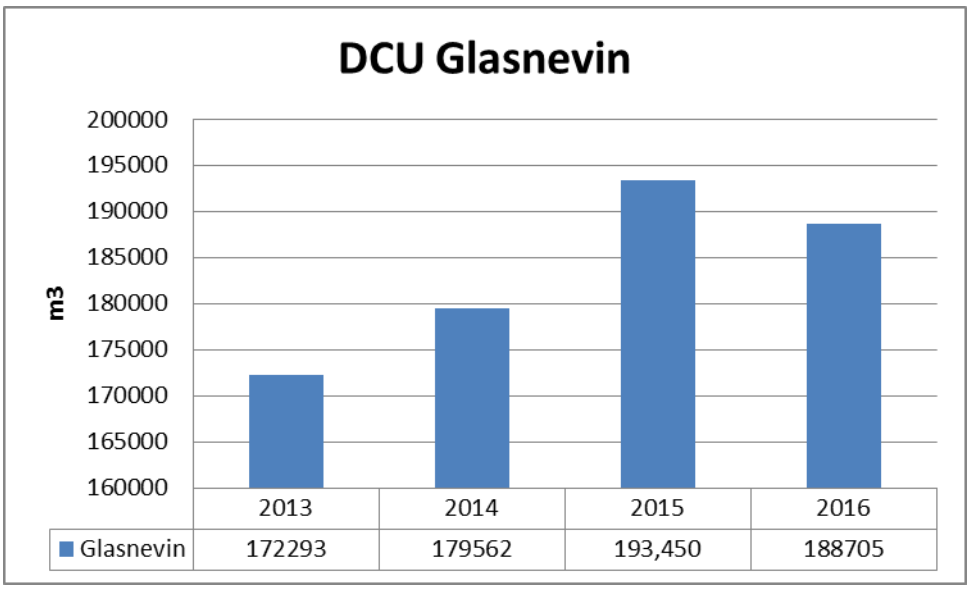


Figure 14: Total Water Consumption in DCU Glasnevin 2013 -2016

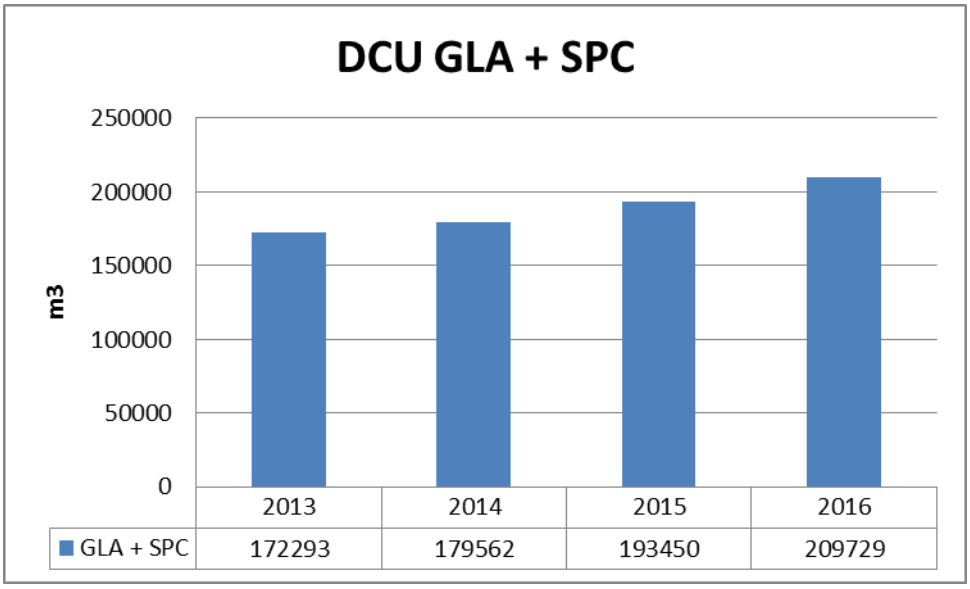


Figure 15: Water Consumption for DCU Glasnevin + DCU St. Patricks

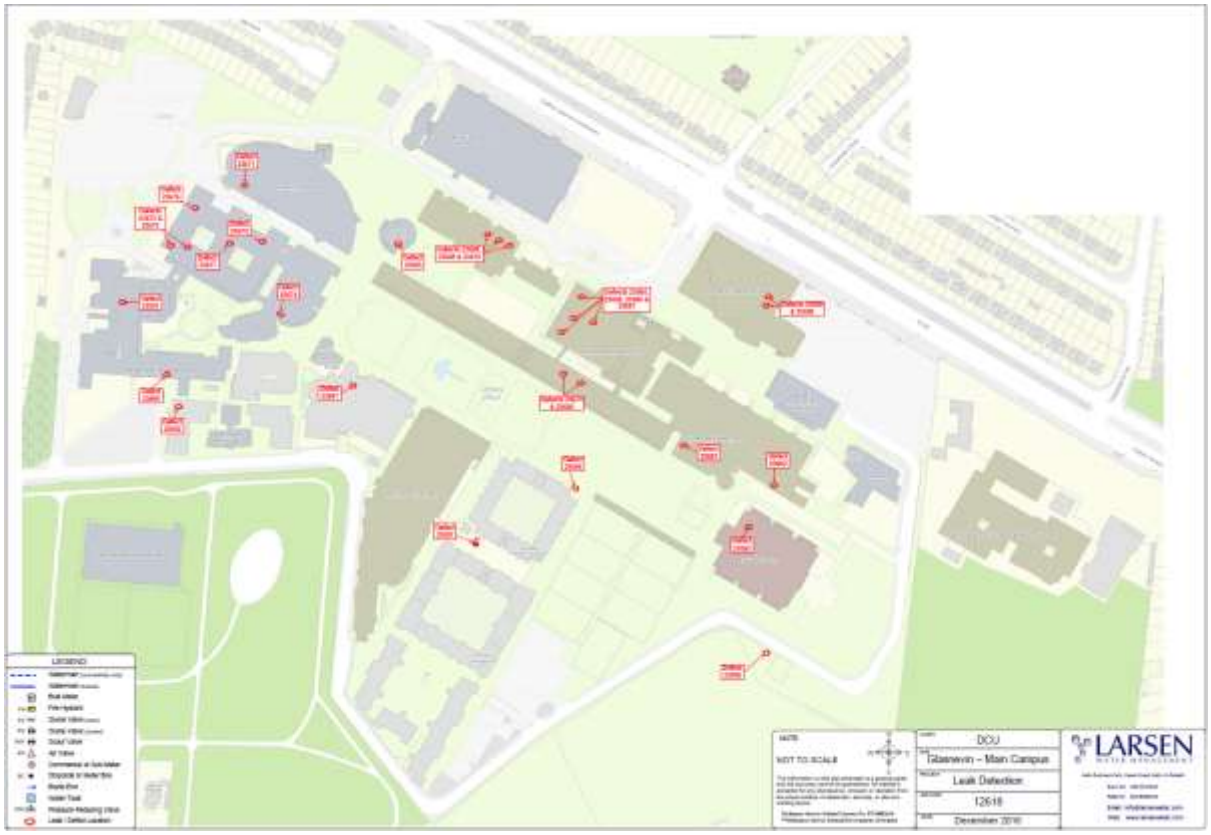


Figure 16: Leak detection survey located three external/mains leaks and twenty-six internal defect on the DCU Glasnevin network.

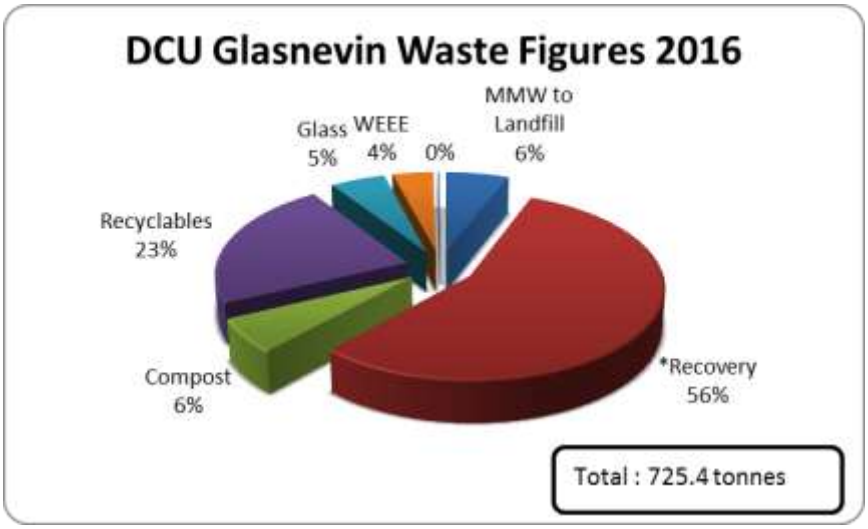
Figure 19 above shows the location and scale of the leaks identified on the Glasnevin campus with similar detail available for the other campuses. Further monitoring is being undertaken across all campuses in 2017/2018 and DCU will include water as part of ISO50001. We therefore expect significant improvements in our next report.

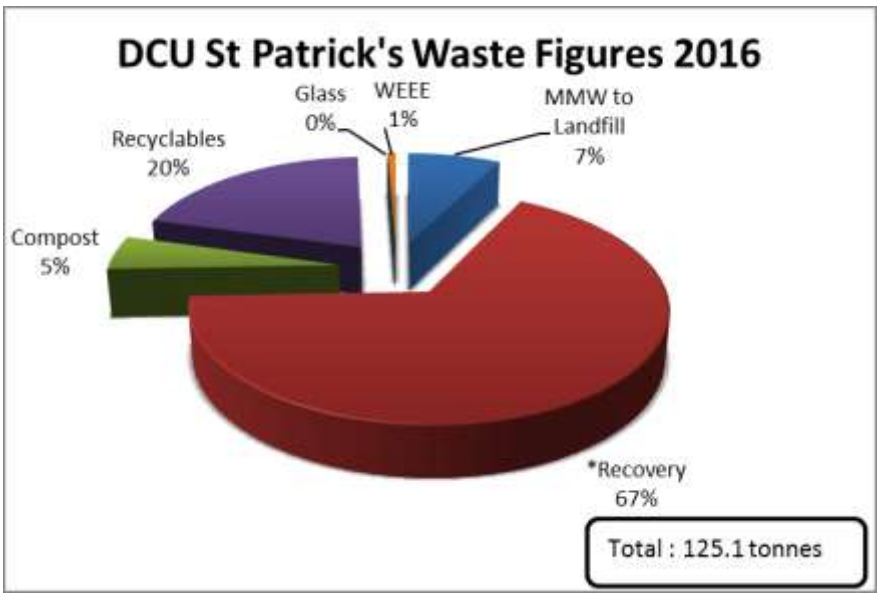
Waste

DCU continues to closely monitor its waste and is working towards reducing total waste. The table below identified the progress or lack thereof made between 2015 and 2016.

Table 4: DCU Glasnevin Waste for 2015 and 2016 in metric tonnes.

	MMW to Landfill		*Recovery		Compost		Recyclables	
2016	43.092	↑	405.329	↑	44.241	↓	165.198	↑
2015	35.9		389.7		52.3		157.9	
	Glass		WEEE		C & D		Total	
2016	37.732	↓	28	↑	1.8	↓	725.392	↑
2015	53.4		26.8		2.36		718.36	





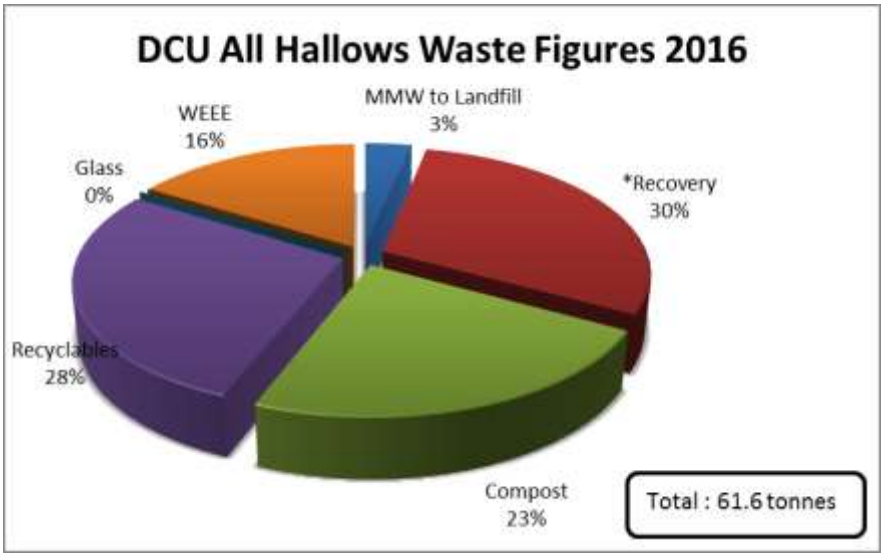


Figure 17: DCU Campus waste for 2016

Biodiversity

DCU has not been in a position to patriciate in the annual BioBlitz due to conflicts in timings i.e. our student body had not returned from break when it was happening. We are however continuing to monitor our potential invasive species (see table below) on Glasnevin campus and this is being extended to all campuses. In 2016/2017 this has been done ad hoc and therefore a full review will be required in 2017/2018.

Table 5: Potential Invasive Species at DCU Glasnevin

Species	Common Name	Invasive	Other Info	Where	What action we are taking
Acer pseudoplatanus	Sycamore maple	Potential	Listed as potential by NBDC, does not appear to be a threat however.	Throughout campus	Monitoring
Clematis vitalba		Potential	Can "suffocate" other plants, would recommend removal or close monitoring		Monitoring
Cornus sericea / alba		Potential			Monitoring
Fallopia japonica	Japanese Knot weed	Confirmed	Listed as one of the World Conservation Units "Worst Invasives". Would recommend eradication from campus.	SPC (beside ERC Centre on Milbourn ne Ave)	Treating and Monitoring
Gunnera tinctoria	Chillian Rubarb	Confirmed	Can lead to reduced biodiversity and "local extinction", would recommend removal from campus	on ballymun avenue opposite Bea Orpen	Monitoring
Hyacinthoides hispanica		Potential	Can take over native bluebell, would recommend removal or close monitoring		Monitoring
Libertia formosa		Potential			Monitoring
Petasites fragrans		Potential	Considered "Potentially Invasive", but also "serves as a winter food source for		Monitoring

			bees"		
Prunus laurocerasus		Potential	Would recommend monitoring, can outcompete natives		Monitoring
Rhododendron (Rhododendron ponticum)		Potential	"Control is a key element in nature conservation" in certain areas, would recommend close monitoring	In Presidents Garden but not ponticum	Monitoring
Sciurus carolinensis	Grey Squirrel	Confirmed	Grey Squirrel, drives out native Red squirell, appears to have already happened on campus	Albert College Park and surrounding areas	Monitoring

On the St. Patricks Campus a biodiversity/environmental audit was undertaken, a draft summary of which is presented in the table below. This work was undertaken by Tom McCloughlin and the Ecology class.

Table 6: Survey of St. Patricks Campus

				NOTES / OBSERVATIONS
MAMMALS		***MAMMALIA***		
Grey squirrel				
Fox				
CRUSTACEANS	***CRUSTACEA***			
Woodlouse				
MOLLUSCS		***MOLLUSCA***		
Snail	Sprial	*Hydrobiidae*	**seilide hidribiach**	
Snail	Garden	*Helix aspera*	**seilide garraí**	
BIRDS		***AVES***		
Robin		*Erithacus rubecula*	**spideog**	
Wood pigeon		*Columba palumbus*	**colm coille**	
Pied Wagtail		*Motacilla alba yarrellii*	**glasóg shráide**	
Sea Gull		*Larus argentatus*	**faoileán scadán**	
Blackbird (male)	*Turdus merula*	**lon dubh**		
Blackbird (female)	*Turdus merula*	**céirseach**		
Magpie		*Pica pica*	**snag breac**	
Thrush		*Turdus philomelos*	**smólach**	
PLANTS: TREES	***PLANTAE:***			
Cedar of Lebanon	*Cedrus sp.*	**céadar**	ceremonial tree, late 18th century, broken off top third	
Elm	Common	*Ulmus sp.*	**leamhán**	possibly hybrids, suckers prevalent
Larch	European	*Larix decidua*	**learóg Eorpach**	
Oak	Pedunculate	*Quercus robur*	**dair choiteann**	Y2K ceremonial

				tree
Oak	Sessile	*Quercus petraea*	**dair neamhghasánach**	
Oak	Turkey	*Quercus cerris*	**dair -**	
Walnut				ceremonial tree planted by Archbishop
Beech	Copper	*Fagus sylvatica atropunicea*	**feá rua**	
Beech	Common	*Fagus sylvatica*	**feá**	
Beech	Heterophyllous	*Fagus sylvatica heterophyllea*	**feá -**	very unusual
Horse chestnut	White flowered	*Aesculus hippocastanum*	**crann cnó capaill**	
Horse chestnut	Red flowered	*Aesculus hippocastanum*	**crann cnó capaill rua**	removed
Lime / Linden	Common	*Tilia sp.*	**teile**	
Maple	Canadian	*Acer mollis*	**mailp**	suckers prevalent
Sycamore		*Acer pseudoplatanus*	**seiceamar**	self sown
Maple	Field	*Acer campestre*	**mailp**	
Holly	Wild	*Ilex aquifolium*	**cuileann**	
Ash	Weeping	*Fraxinus excelsior pendula*	**fuinseaog shilte**	removed for F1 prefab building
Ash		*Fraxinus excelsior*	**fuinseaog**	saplings planted 2013
PLANTS: HERBS	***PLANTAE:***			
Primrose		*Primula vulgaris*		
Daisy		*Bellis perennis*	**nóinín**	
Dandelion		*Taraxacum sp.*	**caisearbhán**	
Speedwell	Slender	*Veronica filiformis*	**lus cré réileáin**	
Mouse-ear	Common	*Cerastium fontanum triviale*	**cluas luchóige choiteann**	
Clover	White	*Trifolium repens*	**seamair bhán**	
Groundsel		*Senecio vulgaris*	**grúnlas**	
sticky backs / goosegrass	*Galium aparine*	**garbhlus**		
Speedwell		*Veronica sp.*		
Speedwell		*Veronica montana*	**lus -**	
Angelica	Wild	*Angelica sylvestris*	**gallfheabhrán**	
chickweed		*Stellaria media*	**fliodh**	
Blue Bells	Native	*Scilla non-scripta*	**coinnle corra**	
Blue Bells	Spanish	*Scilla hispanica*	**-**	
Groundsel		*Senecio vulgaris*	**grúnlas**	
Lesser Celandine	*Ranunculus ficaria*	**grán arcáin / aonscoth**		
Fumitory		*Fumaria officinalis*	**camán searraigh coiteann**	
Wild Garlic / Ramsons	*Allium ursinum*	**creamh**		
Dock		*Rumex sp.*	**copóg**	
Snowdrops		*Galanthus nivalis*	**plúirín sneachta**	
Stinging Nettle		*Urtica dioica*	**neantóg**	
Heliotrope	Winter	*Petasites fragrans*	**plúr gréine**	
Goldilocks		*Ranunculus auricomus*	**gruaig Mhuire**	under the F1 prefab building

Cow Parsley	*Anthriscus sylvestris*	**peirsil bhó**	
Hogweed			
Bitter cress			
Groundsel	*Senecio vulgaris*		
Daffodils	*Pseudonarcissus*		various garden varieties

It is hoped that in 2017/2018 this will be extended to the All Hallows Campus.

Biodiversity/Community Garden Spaces at DCU

Following consultation with several interested actors across our campuses it was agreed to clearly identify specific areas on the campuses that are dedicated to supporting biodiversity on campus. Below is a list of the arears across all three academic campuses.

1 Millbourne Garden, SPC

It was agreed to establish a 'school garden' to the side of the ERC Building. This garden will be a resource for several of the education programmes incl BEd, PMEP etc. In addition it will engage with the St. Patricks Primary School and with the Age Friendly University Initiative through education and participation activities.

Signage will be designed and installed to identify the area clearly. This area will be excluded from all herbicide and pesticide spraying with the exception of treatment for the Japanese Knotweed.

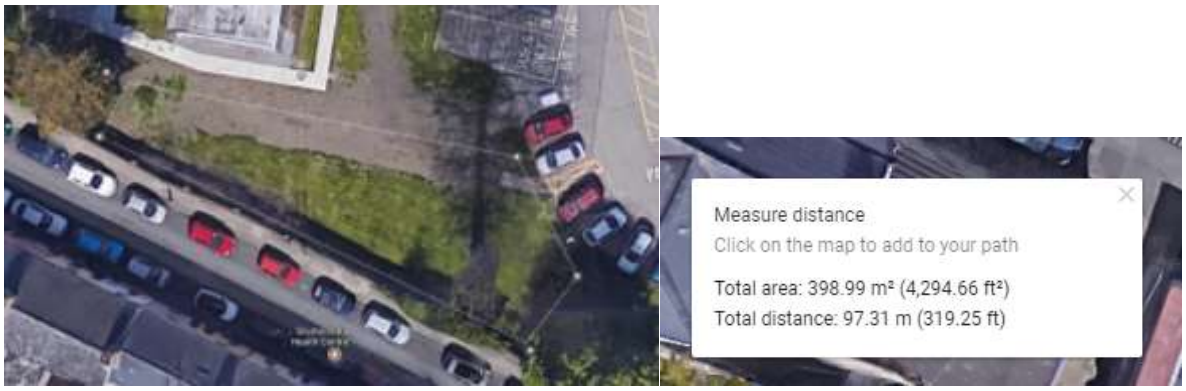


Figure 18: Proposed area of Millbourne Garden (Exact boundary needs to be agreed on site)

2. East Woodland, SPC

This area will continue to be used as a teaching resource for several courses incl BEd, PMEP etc. and will be used for species identification, to hand raise trees, sanctuary for biodiversity, reuse and upcycling of bird boxes etc.

Signage will be designed and installed to identify the area clearly. This area will be excluded from all herbicide and pesticide spraying.

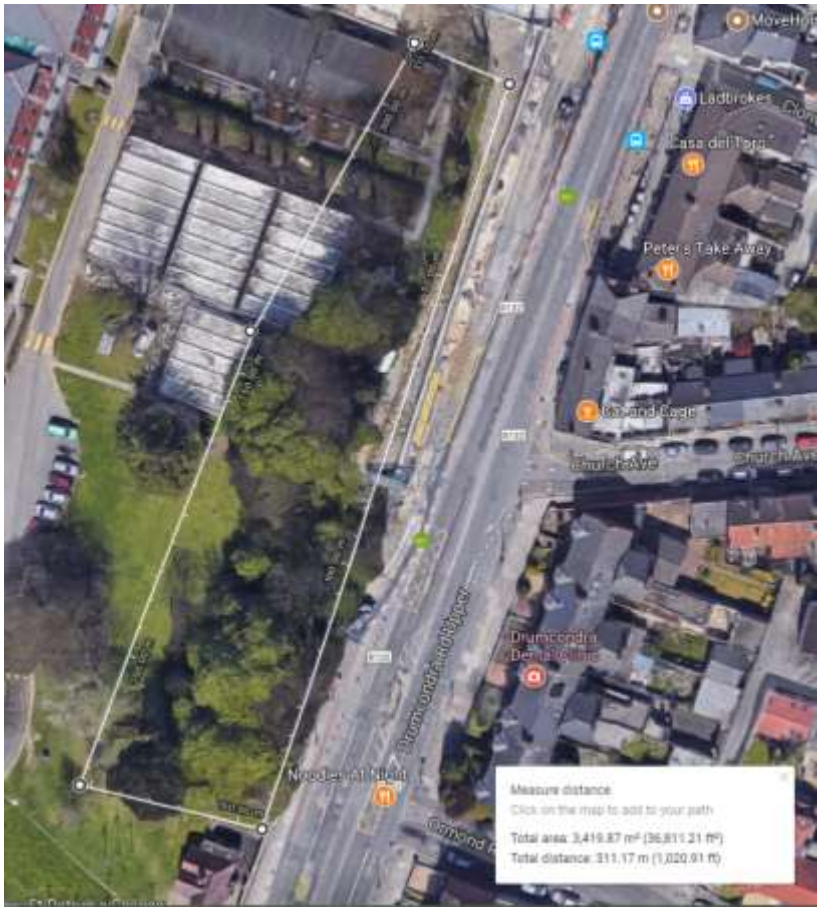


Figure 19: East Woodland (Exact boundary needs to be agreed on site) NOTE this is an old google map image - the prefabs etc have now been removed from this area.

3. Natural Grasslands, SPC

This area will be used as a teaching resource for several courses incl BEd, PMEP etc. and will be used for species identification, biodiversity of grasses and support DCU Campus wide pollinator plan to identify and sow specific native species that will support and encourage native biodiversity.

Signage will be designed and installed to identify the area clearly. This area will be excluded from all herbicide and pesticide spraying and will not be mowed.

Figure 20: Sloped grass area from steps to boundary wall with Drumcondra road, also incl small area to left of steps.

4. Community Garden Space, SPC

The current community garden boxes will continue to be used as a teaching resource for several courses incl BEd, PMEP etc. Signage will be designed and installed to identify the area clearly. This area will be excluded from all herbicide and pesticide spraying.

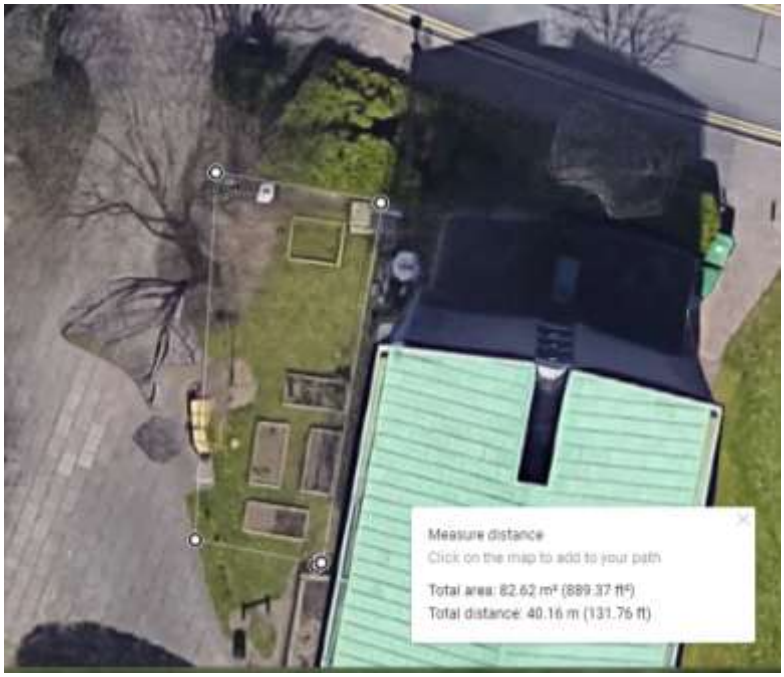


Figure 21: Community Garden Space on SPC.

5. All Hallows Community Garden

DCU has agreed to establish a community garden on the All Hallow Campus. This space can also be used as a teaching and learning resource for SPC and AHC campuses. The apple trees (19) donated from Blancherstown IT will be transplanted into this space.

Figure 22: Community Garden Space at AHC

6. DCU Glasnevin Community Garden

The DCU Glasnevin Community Garden is open to the whole community – including DCU Staff and students, local community individuals and groups (such as Ballymun Men's Shed Association) as well as companies who wish to work together to cultivate and grow wholesome organic food. In addition the garden has recently agreed with Grow Dome (social enterprise) to allow them erect an 11 meter grow dome (similar to that in Rialto) in the garden and it is working with a pre-start-up – Garden Gnomes on the practices and methodologies around urban gardening.

The 1.6 acre garden is a focus for engagement and promotion of healthy living, physical and mental. The garden endeavours to educate and train members in cultivation of organic fruit and veg to enable them to eat healthier while gaining some exercise and fresh air in a supportive learning environment. As a 'sustainability' focused garden it seek to develop and demonstrate new methodologies and technologies that will enable a more sustainable practices not only when it comes to food but all aspects of sustainability.

Figure 23: Community Garden at DCU Glasnevin.

Transport

Dublin City University is now a multi campus university and the second largest commuting hub in the north Dublin region after the airport. In early 2017 DCU undertook a survey of all staff and students across all incorporating institutions to assess current transport choices vs a similar survey undertaken in 2016. This project was undertaken in conjunction with the National Transport Authority.

In the 2017 survey the response rate among students was dramatically lower in comparison to 2016. It was so low that the margin of error was 7% based on 99% confidence level (1,848 in 2016 v 357 in 2017 student responses). As a result, while the results are presented below it must be noted that the margin of error is very high. It is believed that the issuing of the survey after the ISSE survey in 2017 as opposed to before it in 2016 has created this anomaly.

STAFF Analysis

Table 7: DCU All Campuses Staff comparison 2017 V 2016

Answer Options	2017	2016	Change
Driving a car	46%	53%	7% ↓

Bus, minibus or coach	22%	15%	7% ↑
On foot	12%	11%	1% ↑
Bicycle	11%	13%	2% ↓
Train or DART	5%	3%	2% ↑
Other	4%	5%	1% ↓

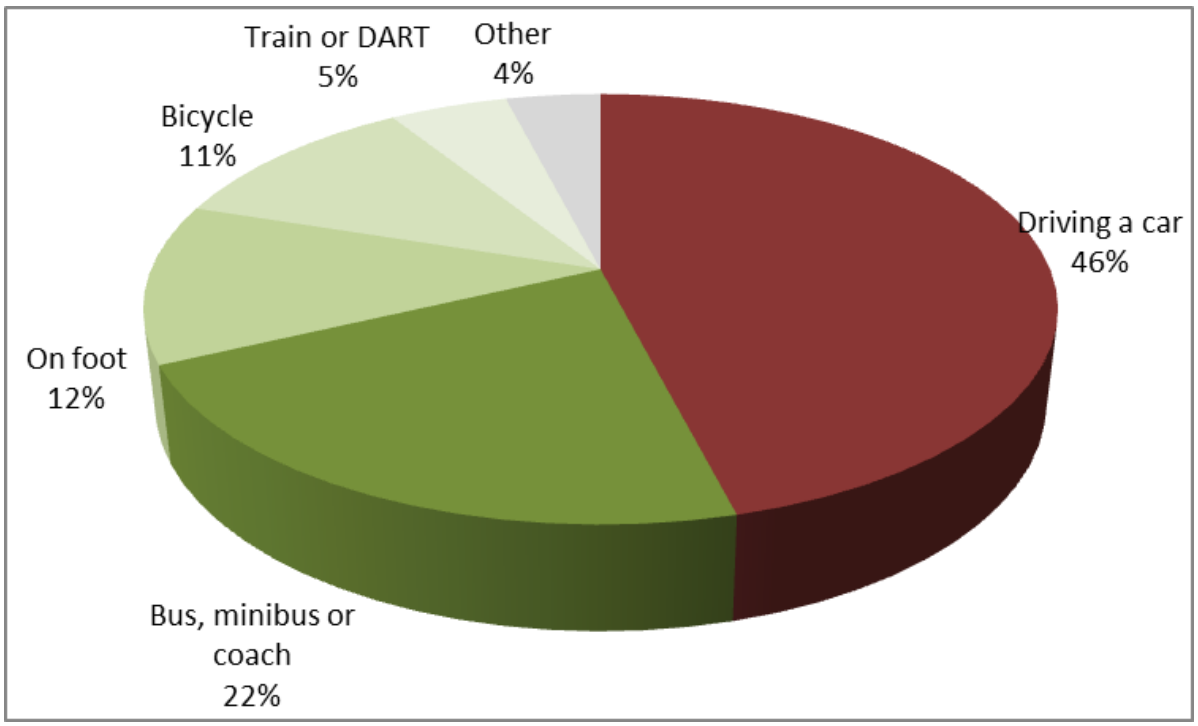


Figure 24: Sustainable vs non sustainable commuting mode

STUDENT Analysis

Table 8: DCU All Campuses Student 2016 v 2017

Answer Options	2017	2016	Change
Driving a car	46%	53%	7% ↓
Bus, minibus or coach	22%	15%	7% ↑
On foot	12%	11%	1% ↑
Bicycle	11%	13%	2% ↓
Train or DART	5%	3%	2% ↑
Other	4%	5%	1% ↓

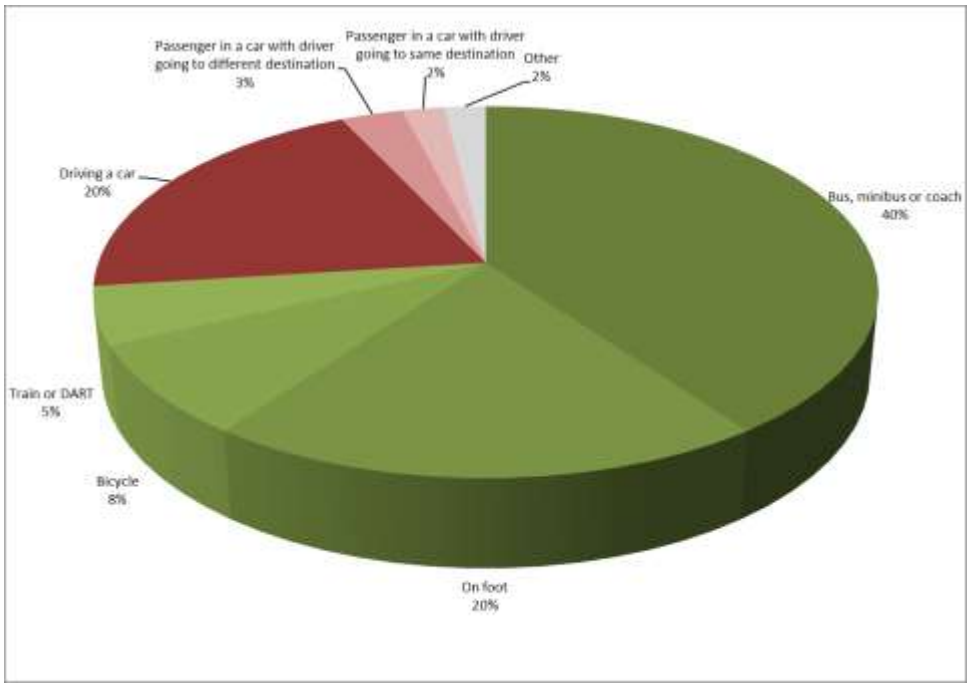


Figure 25: Sustainable vs non sustainable commuting mode

Summary

	Students		Staff	
	2016	**2017**	**2016**	**2017**
Sustainable Commute	76%	73%	42%	50%
Non Sustainable	22%	25%	53%	46%
Other	2%	2%	5%	4%

Carbon Footprint

DCU seeks to actively contribute to the creation of a post carbon world and in doing so it is seeking to become a carbon neutral campus. Following the **Greenhouse Gas Protocol Corporate Standard** DCU is currently carrying out a full carbon footprint of all of its activities.

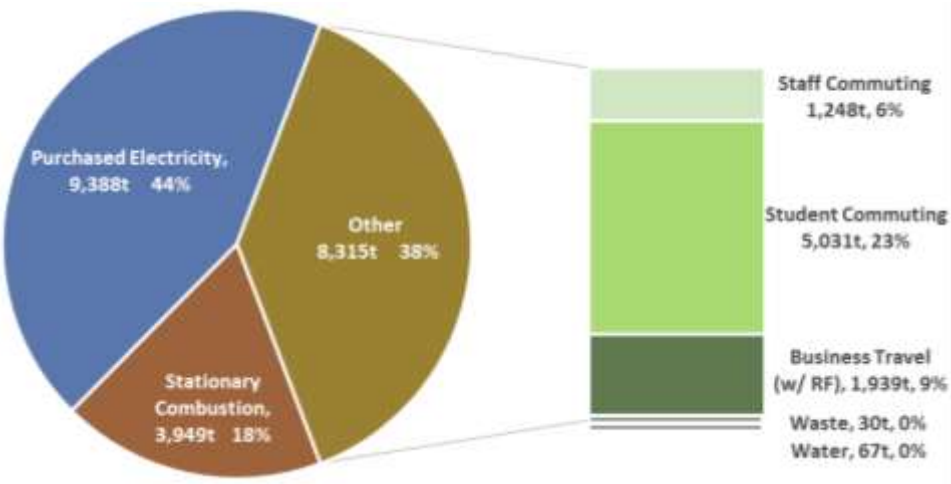


Figure 26: DCU Carbon Footprint for 2015

The total Carbon footprint analysis for 2016 is still ongoing, Scope 1 & 2 (energy) has been analysed and as can be seen below while we have gone from 13,337 tCO2e in 2015 to 14,680tCO2e in 2016 (figure 27) there has been a per capita reduction in emissions (figure 28).

Figure 27: DCU Scope 1 & 2 Carbon Footprint for 2016

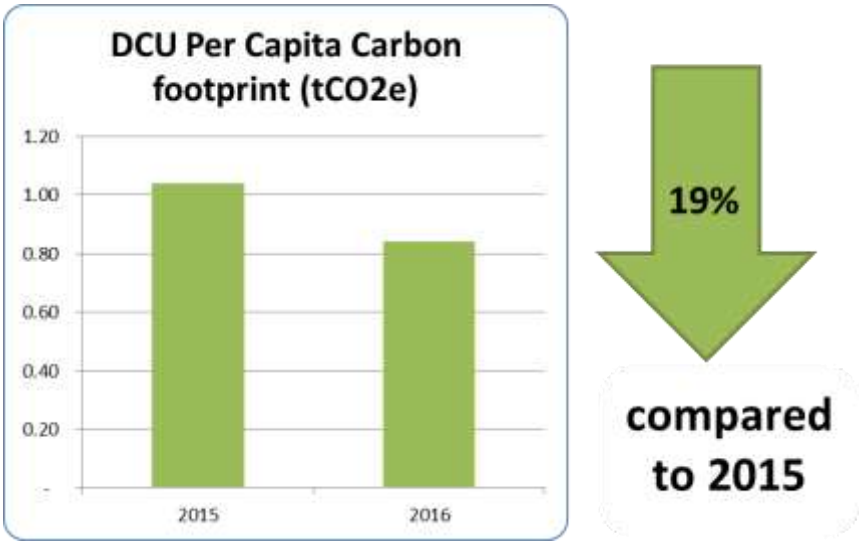


Figure 28: Carbon per capita is down 19%

4. Action Plan for 2016/2017

The DCU Green Committee endeavours to keep our Action Plans up to date. They are available on a share drive for individuals to update. This sometimes does happen! However most updates are done by the Sustainability Manager with information supplied by different groups etc. New actions are added to the end of the list to ensure that where projects have not been finished that they are not forgotten and have to be reinvented. It is evident from the Action plans which measures are new and which are ongoing. One of the ongoing challenges is the capturing of ideas and suggestions from enthusiastic new members and the management of their expectations on who should deliver the absolutely fantastic solution that they propose. An attempt to management this in 2017/2018 was the circulation of a feedback form to all staff and students – part of this form was a question on what the individual themselves could do to make the DCU campus more sustainable – there were over 100 responses. The figure below breaks down the theme of these responses across the An Taisce Green Campus themes.

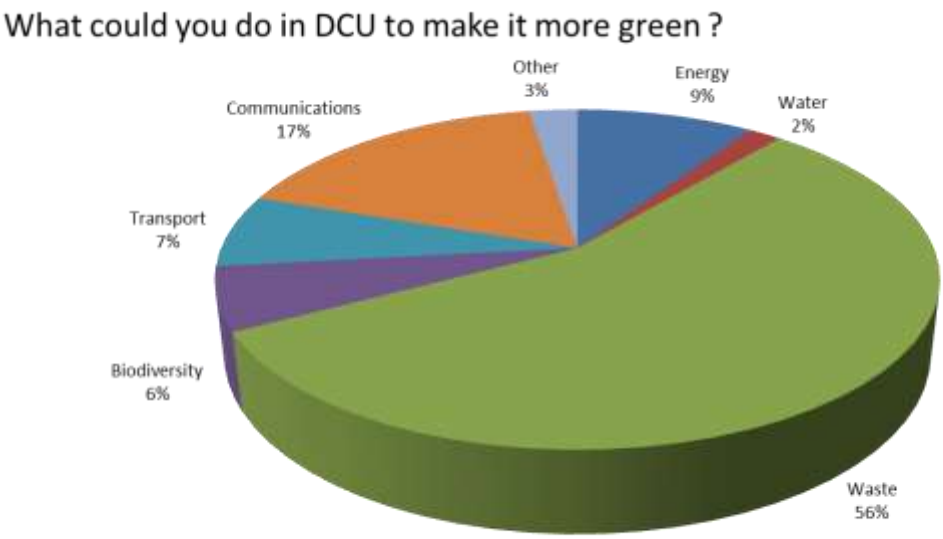


Figure 29: Thematic analysis of ALL responses to individual contribution, note that in several cases more than one theme was identified in the response.

It is really interesting to note the prevalence of waste focused responses. While, of course, waste is a significant issue its impact on the carbon footprint of the University is significantly (many orders of magnitude) less than for instance energy or transport. It could be that people 'see' waste more frequently in their daily lives and feel that they can make an impact on it.

In addition to this open ended question specific projects – as identify by previous green committees – were proposed to see which would be most likely to gain support. The figure below shows a breakdown of support for these projects with the removal of non-recyclable coffee cups gaining the highest level of support at 83% of respondents supporting it ! Other highly supported projects included removal of once used plastics and drinking fountains on campuses.

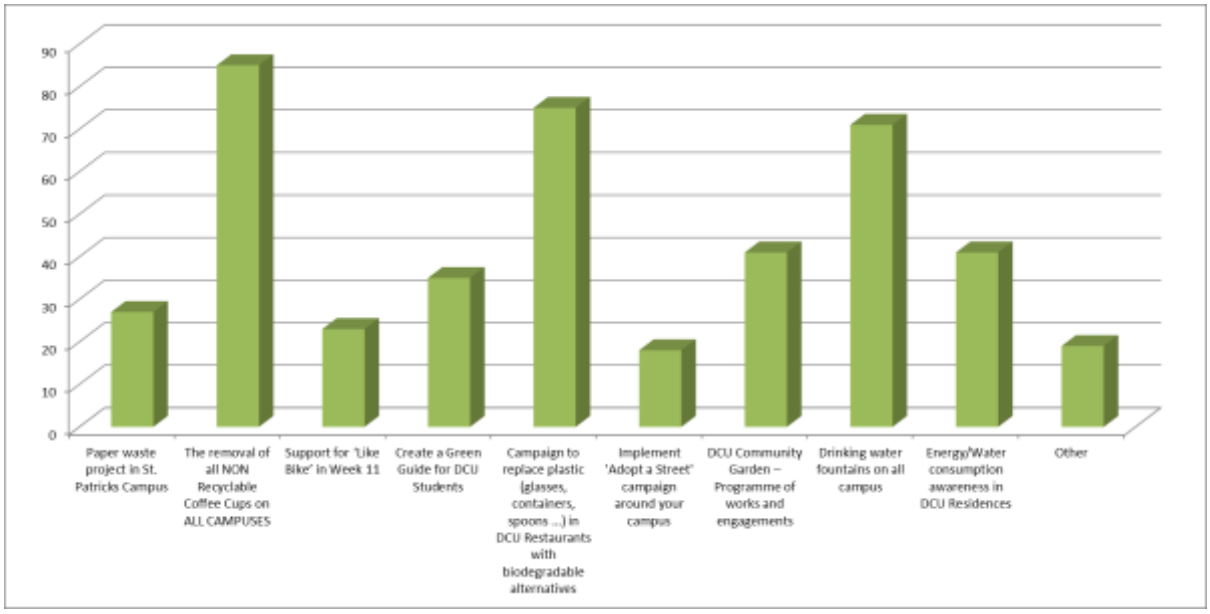


Figure 30: Support for specific projects at DCU

Below is a summary of proposed actions planned for 2017/2018 – these have been drawn from suggestion from the all staff/student engagement

Energy

- Work toward an ISO50001 Standard
- Develop and communicate a energy/carbon management plan
- Raise awareness of energy consumption by Students, Staff and Visitors
- Energy consumption awareness & behavioural change programme in DCU Residences with SAVES Prog
- Seek renewable technology (Solar/wind) for Student Hub

Water

- Water consumption awareness & behavioural change programme in DCU Residences with SAVES Prog
- Identify leaks and fix
- Communicate water consumption data to all staff and students
- Treat as a valuable resource
- Paper waste project in St. Patricks Campus
- Continue 'Adopt a Street' campaign around your campus
- Drinking water fountains on all campus

Waste

- Campaign for the removal of all NON Recyclable Cups on ALL CAMPUSES
- Communicate waste information to all staff and studnets
- Campaign to replace plastic (glasses, containers, spoons …) in DCU Restaurants with biodegradable alternatives

Biodiversity

- DCU Community Garden – Programme of works and engagements
- Pollinator plan for DCU
- Increase awareness of the importance of biodiversity
- Update biodiversity database
- Increase biodiversity on campus through tree planting events

Transport

- Mobility management plan support active commuting
- Continue Smarter Travel Campus' Walking and Cycling Challenges
- Support for 'Like Bike' in Week 11

Communications

- Info wall on all campus providing current consumption data on key metrics including initiatives to reduce and scope to accept suggestions
- Create a Green Guide for DCU Students

A full list of the completed and ongoing actions plans for the DCU Green Committee are in Appendix 2. These are in the appendix as they make more sense when seen as part of the total document rather than a snippet.

5. Monitoring and Evaluation

In this section we will discuss the monitoring and evaluation of the additional assessment we have undertaken in 2016/2017.

Energy

As presented in Section 3 DCU continues to work toward its agreed target of 33% energy reduction by 2020 on 2010 figures. As can be seen for the data report in the environmental review section above there has been a 32% increase in actual energy consumption from 2015 to 2016 – this is cumulative across all campuses and is predominately attributed to the expansion of the campus. DCU's Energy Management team have undertaken a raft of project to reduce the rate of energy consumption on campus and increase efficiencies. These incl

- Completed energy audit of Residences
- New condensing gas boilers
- Shared learnings across campuses
- Reduced pool boiler flow temperature setpoint at night
- Appointment of Energy Champions in the BDI, Sciences, Residences and NICB buildings; regular meetings between Estates and Energy Champions
- Completion of EPC assessment of carpark lighting
- Completed gap analysis for ISO50001 certification
- Expansion of the BMS Implement Carpark lighting EPC
- Implement humidity control of pool ventilation system
- Complete DCU Strategic Energy Plan

In addition to this DCU Estates is working with the DCU Green Committee and together working toward ISO50001 Certification in 2017. The challenge of achieving this requires cross campus engagement and together we are working on several project including the EU funded SAVES project.

    - Strategic Plan implementation
    - Whole campus engagement
    - Upgrade boilers and LED lighting
- Carbon neutral strategy development
- GCSO Project – Hot water in public sanitary facilities

Saves Project

This project will work very closely with the DCU Students Union, Sustainability Office and Green Committee to capitalise on the potential impact of this innovative behavioural change programme.

Irish Targets

University	No. of Dormitories	No. of Students in dorm
Dublin City University	15	1,400
NUI Galway	8	1,100
NUI Maynooth	23	986
University College Cork	5	1000

Objectives of overall project:

1. Reach 38.000 students living in dormitories each academic year (114,000 students over 42 months) with the Student Switch Off energy-saving campaign that inspires them to adopt sustainable energy behaviours at a key stage of their lives.

2. Save quantifiable amounts energy (9GWh in final energy consumption) in student dormitories through the adoption of sustainable energy behaviours by students

3. Reach over 100,000 students when they are looking at moving into the private-rented sector to encourage them to make housing choices that minimise their exposure to fuel poverty – e.g. by demanding to see the Energy Performance Certificate (EPC) of the property, not selecting poor-rated properties, and creating more demand for efficient rental properties;

4. Reach over 100,000 students when they move into, and live in, the private-rented sector to improve understanding of their energy bills, to provide general advice on the efficient management of equipment and heating controls, to encourage the uptake of smart meters and to raise awareness of how to use in-home displays to reduce household energy consumption.

   Partner countries:
   United Kingdom, Greece, Cyprus, Ireland, Lithuania, Romania, Bulgaria

Student Switch Off dormitories monitoring and evaluation

Pre -intervention attitude and behavior questionnaire survey	Sept 2017, Sept 2018, Sept 2019
Follow-up questionnaire survey	May 2018, May 2019, May 2020
Focus groups with students as they leave dormitories	May 2017, May 2018

DCU

GCSO GLOBAL CONSORTIUM FOR SUSTAINABILITY OUTCOMES

GCSO/DCU Hot Water Project

DCU, along with nine other partner Universities, are participating in the Global Consortium for Sustainability Outcomes (GCSO) project on trialling the removal of hot water from public sanitary facilities. In DCU we plan to remove hot water from the majority of sanitary facilities in one designated building for the period of one year and closely monitor the impact and perspectives of staff, students and other building users. Hot water is not required for hygiene purposed and due to legionnaire's disease all public hot water system must hold hot water at circa 60 degC to prevent

spread of the disease. It is proposed that there are significant energy saving and associated greenhouse gas emissions savings for the building over the period. We hope that our findings of this innovative project will be of relevance to planning legislation with the potential to be scaled up. We are working closely with Dublin City Council and the Health and Safety Authority in this project..

SEAI Better Energy Community Grant

In early 2017 DCU was awarded a Better Energy Community grant. This grant will go towards new high efficiency boilers on All Hallows' Campus and the retrofitting of LED lights in the multi-storey car park on Glasnevin Campus. In addition just over €30k will be donated by SEAI on behalf of DCU towards Fuel Poor Housing in the DCU Community.

Renewable Energy in DCU Community Garden

As the threat of global warming becomes more imminent, so does the drive for solutions. With carbon emission levels continuing to rise, a diversification from carbon combustion methods for energy generation is needed if peak emissions are to be reached and begin to reduce the damage caused to the planetary boundaries. This project aims to examine a number of renewable energy systems for implementation in the DCU Community garden. It is hoped that through converting to sustainable forms of energy production within the Community Garden, the proposed renewable systems can supply clean sustainable energy to support the Community Garden Sheds, but more importantly, reduce the University's carbon footprint. This project also aims to show that by installing renewable systems within a community setting, a number of indirect benefits are possible. This project will show that through community engagement, a wider population may be influenced into making necessary changes to improve their sustainable practices. This demonstration may be seen as a platform by which other stakeholders, visitors, students and staff may follow suit to pursue more sustainable and carbon neutral practices by which the DCU and surrounding community will benefit.

Roadmap to Carbon Neutrality

DCU recognised the need to move toward a low carbon environment, to support this effort a roadmap is being developed to identify the challenges and opportunity that arise on the road to a carbon neutral campus. Initial steps included the carbon footprinting of the DCU Glasnevin Campus and also a fourth year project on creating Carbon Neutral Interfaith facilities on the DCU Campuses (Glasnevin, St. Patrick's and All Hallows)**.**

A literature review was completed looking at the current carbon foot printing methodologies and potential mitigation or adaptations to create carbon neutral facilities. The final report is not completed as yet.

Table 9: Table of energy consumption in 2016 for DCU Academic Campuses

2015	Elec (MWh)	Gas (MWh)	Total energy (MWh)	Carbon (tonne)	Students 14/15	Carbon tonne per student
DCU Glas	17,781	19,262	37,043	13,337	11,820	1.13
DCU SP	5,600	2,000	7,600	2,204	2,711	0.81
2016	**Elec (MWh)**	**Gas (MWh)**	**Total energy (MWh)**	**Carbon (tonne)**	**Students 14/15**	**Carbon tonne per student**
DCU All Campuses	22,014	26,907	48,921	14,680	16,761	0.88

As can be seen from the table above the estimated the overall carbon footprint per student has reduced from 2015 to 2016, where DCU Glasnevin students have decreased and the SPC/AHC students increased. It is expected that this is primarily due to the higher energy intensity use on the DCU Glasnevin campus due to research laboratories/residences etc.

Starting back in 2015 the then co-chair of the DCU Green Committee, Denah Harris, established a campaign to have DCU divest from fossil fuel investments. The committee established a petition page (https://campaigns.gofossilfree.org/petitions/divest-dcu?source=facebook-share-button&time=1455825568) and just before the end of semester a letter was send to Prof. Brian MacCraith, President of DCU. In late 2016 Dublin City University Senior Management agreed to divest from Fossil Fuels and have direct their fund managers to implement this request.

The following correction was included post publication of this report.

On 22 November 2017 (at the An Taisce Green Campus Renewal Site Visit) DCU announced the following

Statement re Fossil Fuel Divestment:

> *"We are delighted to announce today at this An Taisce site visit that Dublin City University has confirmed that it (along with DCU Educational Trust) has divested from any direct holdings in Fossil Fuels and has committed to reducing indirect holdings to below 1% by 31 December 2017. This action has been taken following a review of DCU ethical policy and a petition from the DCU Student body seeking divestment. DCUs commitment to sustainability reflects not only our commitment to play our part as a responsible organisation but also our realisation of the messages we can convey as an exemplar organisation to both our students and society around us."*

Water

Water continues to be a concern at DCU. As can be seen from the Lowflow report there is a high probability that there are several leaks both on the DCU Glasnevin, St. Patricks and All Hallows campuses. The DCU Estates office are undertaking several measures to enable the identification and rectification of leaks on both campuses which will be reflected in both the consumption and financial reports in 2017.

Hot water project

As mentioned in the Energy section above DCU is participating in an international Hot Water project. This project is being driven by the DCU Sustainability Office in conjunction with interns and members of the DCU Green Committee. It is expected that not only will there be energy savings but that due to the need to flush the systems to prevent the spread of legionnaire's disease that by removing the hot water there will also be water savings. Please note that there will be single point hot water sources in all accessible bathroom for those who require it.

Potable water at DCU

The DCU Green Committee continues to promote the use of reusable water bottles and in conjunction with the DCU students union reusable water bottles are available for €5. In additional in 2016 new potable water found were installed in several locations on the DCU St. Patricks and All Hallows campuses.

Waste

The total waste from DCU Figure 19 below is a reflection of the DCU waste streams per student. The data up until 2015 is for DCU Glasnevin campus and its associated student body. The 2016 data is a combination of all DCU academic campuses.

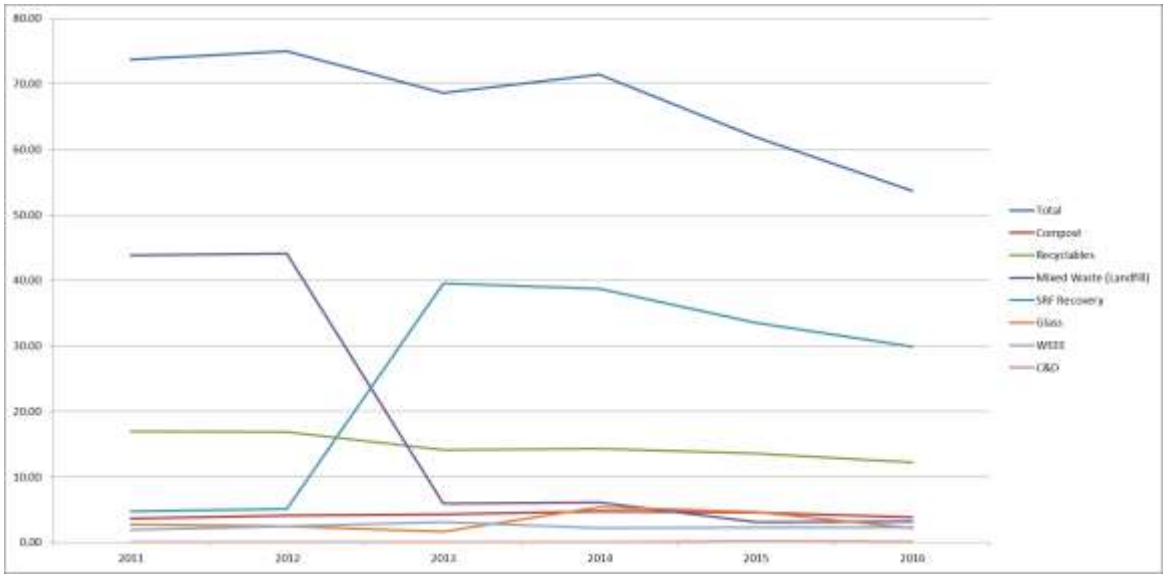
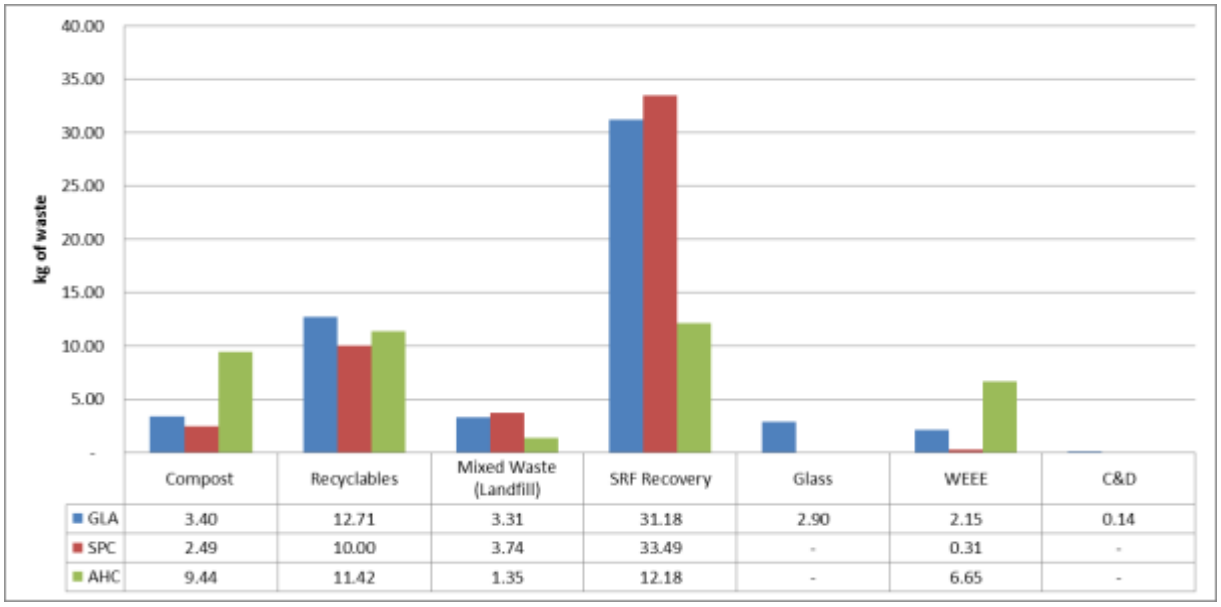


Figure 31: Waste (in Kg) per student at all DCU Academic Campuses

The figure below breakdowns the total waste streams per student per academic campus to all for a focused analysis. As can be seen in this 2016 data it is evident that there was no glass recycling on the SPC or AHC campuses – this is now being addressed. Also it is interesting to note that there are much higher levels of composting per student on the AHC – this may be because it is a less densely populated campus that either SPC or GLA. The significant difference between the campuses on SRF recovered waste may be due to different work practices across campus and it is expected that this will adjust as we move forward.



	Compost	Recyclables	Mixed Waste (Landfill)	SRF Recovery	Glass	WEEE	C&D
GLA	3.40	12.71	3.31	31.18	2.90	2.15	0.14
SPC	2.49	10.00	3.74	33.49	-	0.31	-
AHC	9.44	11.42	1.35	12.18	-	6.65	-

Figure 32: Breakdown of waste per student per academic campus in 2016

Recyclable Coffee Cups

DCU is working with An Taisce and our other partner Green Campuses to target the use of non-recyclable coffee cups. This is a project that DCU Green Committee members have been working on for many year. Over the past year Mariane Galpo has undertaken to do a business case analysis on non-recyclable coffee cups. (See Appendix 3 for full report)

The table below indicated how many coffee cups DCU consumes across all our campuses.

2,697 PER DAY
13,485 PER WEEK
701,200 PER YEAR

Taking the Environmental Footprint Calculator Considerations from Keep Cup [www.keepcup.com/userfiles/files/KeepCup%20Calculator%20Considerations.pdf]

Table 10: The impact and cost of non-recyclable coffee cups

Non-Recyclable Cup Waste		
Average disposable cup	0.011	kg
Plastic lid	0.003	kg
Paper sleeve	0.005	kg
Total weight	0.019	kg
Total Annual cups at DCU	701,200	
DCU annual non-recyclable cups waste	13,323	kg
	13.3228	tonnes
Total DCU waste 2016	912.008	
% of DCU total waste	1.5%	
Average price of cups/lids/sleeves	0.12	€
Total Cost	84,144	€

To try and combat this wanton waste DCU will again in Sept 2017 be making available to all staff and students at an introductory rate of €5.50 from the DCU Students Union.

Figure 33: The new DCU reusable coffee cups, include the new logo and colour scheme

WEEE Waste Initiatives to increase take back of electrical and electronic waste (WEEE) for recovery

DCU has been working for some time to increase the level of WEEE recycling, From observations it was noted that there was a lot of electrical and electronic equipment being thrown into skips which at the time would have ended up in landfill. The DCU Waste Management tender was tailored to elicit some feedback and hopefully generate some ideas about to how to go about implementing Electrical and electronic recycling on campus. Working with partner companies DCU has increased its WEEE levels year on year. In 2016 DCU applied under the PakMan Awards and was shortlisted. (copy of application in Appendix 4.)

YEAR	2011	2012	2013	2014	2015	2016
Tonnes	16.4	21.9	28.5	22.2	26.8	38.7

The DCU Green Committee has run several initiatives to support the WEEE target including setting up a competition between staff, students and local community around the DCU Campus to see how could recycle the most.

Figure 34: WEEE Recycling Initiative in conjunction with DCU Green Committee

All is not rosie however and there is lots more to be done. On several occasions it has been reported by Green Committee members that during refurbishments furniture, lockers, seat, partitions etc are being put in a skip typically going to landfill (Figure 36 below). We have 'rescued' some of these with donations going to the Rediscovery Centre in Ballymun and also to the DCU Community Garden. The DCU Green Committee will work with the DCU waste team to identify a process to try and avoid such waste.

Figure 35: Skipping of refurbishment waste in 2016

PakMan Awards

In 2016 DCU submitted a application to the PakMan awards under the WEEE Category and were short listed – unfortunately we didn't win – maybe next time !! (See appendices for full details)

Paper Waste at DCU

Following on from a project in 2015/2016 targeting paper waste at DCU, specific efforts were undertaken in SPC to address the excessive paper waste on this campus. It was discovered that, lead by Andrea Cleary significant quantities of paper waste are re/ up cycled and used as a resource material for Art Classes as part of the BEd Programme.

Figure 36: Art from re/up cycled paper at SPC

In addition in 2017/2018 these classes in SPC will seek to design and construct a piece of art for a community garden in Ballymun.

Litter surveys

As per recommendations from our assessment in July 2014 DCU Green Committee continues to undertaken litter surveys across campus. While the overall the level of litter is low there are consistent black spots. Major issues that need to be addresses is the continued perception that cigarette butts are not litter. DCU Green Committee has done some work on looking into potential alternatives include portable ash trays – this needs further work considering the health impact of smoking and DCU initiative under the Healthy Campus initiative and DCU is looking as becoming a smoke free campus.

In addition the DCU green committee hopes to work with the DCU language schools to encourage summer language student not to litter. Significant effort is needed here ! Contact has been made with the Language school and inclusion in the 'Adopt a Street' initiative is being considered.

Pack it up Pass it on – Version 3

Following several year of 'pack it up and pass it on' in 2015/2016/2017, together with the DCU SU we undertook another form of recycling/upcycling of surplus stuff from student apartments when they were leaving DCU. For three week over the end of semester and the exams period we provided a space for people to leave their unwanted 'stuff' which was then taken away by Rags 2 Riches Recycling. Following these collections Rags 2 Riches Recycling then made a cash donation to DCU SU who combined it would their other fund raising and donated it to the charities.

Beach Clean

In February 2017 a group DCU students from the surf and sail club undertook a beach and cliff clean up at Howth. The beach bums collected several bags of rubbish and intend to continue their efforts in 2017/2018.

Figure 37: DCU Surf and Sail Society after a beach clean in Feb 2017

Biodiversity

The Green Committee at DCU has from its inception been very engaged in biodiversity both on and off campus – below is a list of some of the projects and initiatives that DCU and its Green Committee have recently been involved in.

Horticulture Histories

Horticulture Histories (HH) is one of several project being undertaken under the RCE umbrella, it seeks to engage with primary schools to create and new and innovative account of flora & fauna in the North Dublin region building on archival material captured by primary schools in the 1930's and digitised by Dúchas.ie in the National Folklore Collection of Ireland. During the summer of 2016 Ann-Christin Arras from Heidelberg University in Germany who was undertaking and internship with Sustainability DCU worked on the development of this project (see Appendix 5 attached). While the resources were not available to fully exploit this project initial steps were taken with the St. Patrick National School on the SP Campus supporting their campaign for the Biodiversity Flag. DCU undertook workshop with 6 classes from 1st – 4th on Biodiversity (worksheet attached)

Figure 38: Celebration for the awarding of the Biodiversity Flag to St Patricks National School Drumcondra. Sam Fahy was invited speaker at the Flag raising.

DCU Biodiversity and Community Gardens Spaces

A major recent achievement has been the identification and cross campus agreement on designated biodiversity and community garden spaces across all DCU Academic campuses (see Environmental Review Section pg 24).

In addition to this DCU continues to run a vibrant and active community garden on the Glasnevin Campus. The Community Garden at the Dublin City University Glasnevin Campus aims to

- Be a welcoming space for the whole community where organic fruit and vegetables and sown, harvested and consumed by members of the community garden,
- Provide an opportunity for intergenerational and cross community education and training through active working/volunteering in the garden and tutor lead on site training courses,
- provide an space on a university campus for joint and shared learning across all garden members from academia, under and postgraduate students, local community members, enterprises, community employments schemes, Men's Shed Associations etc
- Be a living lab garden for the demonstration of new and innovation solutions to local and global issues, social, cultural, economic and environmental.

With the support of the Garden Gnomes DCU community garden provides a weekly organic fruit and veg stall for staff, student and general public.

Figure 39: Martin, Jason and Paddy - our very own Garden Gnomes !

Community Supported Agriculture

Activities in the garden include the cultivation and planting of fruit and veg, training and development of Community Employment placements. In additional, in 2017 DCU has signed a

formal Memorandum of Understanding with the Eco Village in Cloughjordan. As part of this new partnership we aim to further develop the community support agriculture aspect of the community garden and potentially expand to all campuses.

Pollinator Plan

Saorla Kavanagh, together with member of the DCU Green committee and supported by the DCU President are developing and implementation a pollinator plan for all DCU campuses. Globally, 87 of the leading food crops (accounting for 35% of the world food production volume) depend on animal pollination. Pollinators and the services they provide are threatened by a range of factors including: the loss of floral resources and nesting habitats, pesticide use and climate change. Six bumblebee and 24 solitary species are threatened with extinction from Ireland.

DCU is committed to changing certain management practices in order to protect pollinators on campus. This will be achieved by improving pollinator habitats across all Campus' by increasing the amount of floral resources and nesting habitats and reducing the use of pesticides (herbicides, insecticides and fungicides). The actions of DCU's Campus Pollinator Plan will be based on the AIPP "Local Communities: actions to help pollinators". Specifically 9 actions will be taken in the coming year.

1. Identify and protect existing areas that are good for pollinators.
2. Planting on campus will be focussed towards flowers with accessible and high quantity and quality rewards.
3. Reducing or stopping the unnecessary cutting hedges during flowing periods.
4. Reducing or stopping the unnecessary use of pesticides.
5. Reducing mowing on some areas.
6. Raise awareness of the importance of pollinators and how to protect them via teaching and outreach.
7. Provide an undisturbed area for bumble nesting.
8. Install and maintain bee hotels.
9. Supporting beekeeping on campus.

DCU is committed to pollinator friendly alternatives to current land management practices and believe that these actions are urgently needed for the sake of the sustainability of Ireland's pollinators.

Management Support

In early 2017 Prof. Brian MacCraith was asked to give the introductory remarks at the Biodiversity Forum - http://biodiversityforum.eu/agenda.php. Prof. MacCraith gave a introduction to the efforts being undertaken by DCU to support biodiversity. Copy of the talk in Appendices.

St. Patricks Ivy Project

In 2016/2017 in conjunction with the Drumcondra Tidy Towns, DCU agreed to enhance the Drumcondra Road facing side of the St. Patricks Campus. A budget of €2000 was allocation by DCU to support additional flower baskets as well as support for a student project to propagate native Irish ivy from the wall to the south of the main entrance and to transplant this to the newly moved wall to the north of the entrance. This project is support by Dr. Tom McLoughlin and his students.

Transport

A significant focus has been placed on sustainable transport theme by the DCU Green Committee over the past number of years. DCU is an active partner in the NTA Smarter Travel Campus Programme. The DCU Mobility Management Plan aims to have 90% of commuters to DCU avail of a sustainable form of transport. Major efforts toward this target were :

- Cycling on Campus initiatives
- Public Transport connectivity

Cycling on Campus

Cycle Parking

DCU Campus	No. of cycle parking slots 2016/ 2017	Increase from 2015/2016
Glasnevin Campus	744	+300
St. Patricks Campus	250	+150
All Hallows Campus	120	+100

In addtion to cycle parking additional computer facilities have also been installed at the St. Patricks Campus and are under development at the All Hallows Campus.

Figure 40: New Shower facilities in Block F (4 independent units)

Figure 41: Over 150 covered cycle parking at Block F, SPC.

Bicycle Maintenance Stands

Bicycle maintenance stands insalled on all three academic campuses

Figure 42: Cycle Maintenance Stands on All Hallows Campus

Bicycle Clinics

Bicycle clinics on a weekly basis on the Glasnevin campus and monthly on the St Patricks Campus where staff and students can get their bikes serviced for free. Initiative supported by the Sustainability Office/OCOO and the DCU Students Union. There are approx 18-20 bikes services on a first come first served basis each week on the Glasnevin Campus and approx the same at the monthly clinics at SPC.

LikeBike Week

A promotional week of activiteis to promote cycling as a safe and healthy option. This week ran from 28/11/2016 – 1/12/2016 and inclded a promotion fair on each of the DCU acadmeic campuses, several compeitions and activities including smoothie making time trials, cycle safety etc. Over 500 people engaged in the activites throughout the week. In addition a lecuter from Nursing re-wrote the words for the BeeGees song Staying alive to staying alive at 1.5 (ie safe passing distance for a bike) and this was recorded by the DCU Glee club and was played on DCU radio during the week.

DCU Like Bike Week

Mon 28/11 – Thur 1/12 PROGRAMME

	Monday (28/11)	Tuesday (29/11)	Wednesday (30/11)	Thursday (1/12)
DCU Glasnevin Campus (DCUGLA)	Like Bike Stand – The Street – Info on cycling, safety gear, bike to work - Lunch Time	Light your bike campaign – (1530 – 1630) - DCUGLA	Like Bike Stand – The Street – Info on cycling, safety gear, bike to work - Lunch Time	
	Cycle Tours : DCU Intercampus bikes : DCUGLA to DCU SPC to DCU AHC to DCU GC 12:30 – 14:00 - If interested please sign up here	Cycle Fitness Class in DCUGLASports Complex (0745-0845) – Open to all staff and students Register here if you are not a member of the Sports Complex: https://goo.gl/forms/1dhjwaPdIIz2qaGAkm1	How to lock your bike demonstration – DCUGLA	Cycle Fitness Class in DCUGLA Sports Complex (0745-0845) – Open to all staff and students. Register here if you are not a member of the Sports Complex: https://goo.gl/forms/XGGGZYIONEvL9O7d53
	Introductory Cycle Training – 12:00 – 1400 DCU Sports Grounds Register here	Smoothie Bikes : the Pedal Powered Blenders Competition (1200-1430) - SIGN UP HERE DCUGLA	Pedal Bus Tours : DCUGLA to DCUSPC to DCUAHC (10.00 – 15.00) - Volunteers needed to cycle between campuses - SIGN UP here	
		Free Bike Clinic 13:30 – 1600 DCUGLA - Albert College Foyer outside A000	Fastest team on campus? (2 min competition) – Two person teams (12.00 – 13.30) The Street, DCUGLA Who is the fastest unit/faculty/ department/club/committee on campus. Choose your two person team and REGISTER here	
DCU St. Patrick's Campus (DCUSPC)	Cycle Tours : DCU Intercampus bikes : DCUGLA to DCU SPC to DCU AHC to DCU GC 12:30 – 14:00 - If interested please sign up here	Like Bike Stand – Main Reception – Info on cycling, safety gear, bike to work - Lunch Time	Free Bike Clinic 11:00 – 15:00, PF207, DCUSPC	
		RSA Simulator/Shuttle Bus – All Day - DCUSPC	Pedal Bus Tours : DCUGLA to DCUSPC to DCUAHC (10.00 – 15.00) - Volunteers needed to cycle between campuses - SIGN UP here	
		How to lock your bike demonstration – (1300 – 1330) - DCUSPC	Light your bike campaign – (1530 – 1630) - DCUSPC	
			Fastest team on campus? (2 min competition) – Two person teams (12.00 – 13.30) The Street, DCUGLA Who is the fastest unit/faculty/ department/club/committee on campus. Choose your two person team and REGISTER here	
DCU All Hallows Campus (DCU AHC)	Cycle Tours : DCU Intercampus bikes : DCUGLA to DCU SPC to DCU AHC to DCU GC 12:30 – 14:00 - If interested please sign up here	Light your bike campaign – (1530 – 1630) - DCUAHC	Pedal Bus Tours : DCUGLA to DCUSPC to DCUAHC (10.00 – 15.00) - Volunteers needed to cycle between campuses - SIGN UP here	Like Bike Stand – Purcell House Cafe – Info on cycling, safety gear, bike to work - Lunch Time
			Fastest team on campus? (2 min competition) – Two person teams (12.00 – 13.30) The Street, DCUGLA Who is the fastest unit/faculty/ department/club/committee on campus. Choose your two person team and REGISTER here	How to lock your bike demonstration – (1300 – 1330) - DCUAHC

Figure 43: Programme for Like Bike Week

Figure 44: Collage of Like Bike Week activities

Cycle for Coffee

On Friday 4th November from 12-2pm the Sports Development Service organised a Cycle and Coffee for SS&D staff to Clontarf. The idea was to promote physical activity and to catch up with colleagues after such a busy first 7 weeks of semester. The DCU Intercampus bikes and helmets etc were provided. Ten members of the Student Support and Development participated. This was organised by Ross Munnelly, Senior Sports and Skills Development Officer.

Figure 45: Promotion of Cycling initiative with SS&D

DCU becomes Chapter of the Cycling Without Age movement

DCU signs up as the first Irish University to establish a Chapter of the Cycling Without Age movement. This is a liaison between School of Nursing and the Age Friendly University with the intension of establishing and providing an engagement with local nursing homes in the north Dublin region. (http://cyclingwithoutage.org/)

Cycling on Campus

Prior to 2016 cycling was not permitted within the pedestrian areas at DCU. Following much consultation with several unit at DCU including Health and Safety, Estates, Student Union, Communication and Marketing and Sustainability it was agreed to change the signs on campus to permit cycling.

Figure 46: New Sign for all public areas in DCU

DCU Intercampus Bike Scheme/Bleeper Bikes

In 2015/2016 DCU introducted an intercampus bike scheme for Staff for intercampus commuting. In excess of 150 staff sign up and the scheme is running reasonable well. There is a considerable amount of adminsitration and not all user remember to drop back the bikes where they should be. In late 2016 a new bike scheme company (Bleeperbikes) approached DCU to undertake a pilot for a stationless bike scheme. Following much discussion the first bikes appeared on campus in August 2017. Full report to follow !

Figure 47: New Bleeperbikes at DCU

Public Transport Smarter Travel Campus

Enhancing Connectivity to DCU Campuses

As a key driver of undergraduate student application numbers the connectivity of DCU campuses to the public transport network is key. In conjunction with the National Transport Authority and their Smarter Travel Campus programmes, DCU have made significant advances in enhancing the public transport connectivity to all campuses. The table below give a summary of the increased public transport connectivity to the DCU Campuses.

Table 11: Busses serving the DCU Campuses.

Jan 2016	**Jan 2017**
Dublin Bus Routes: 14 Bus Eireann : 2 Private Busses : 1	Dublin Bus Routes: 17 Bus Eireann : 5 Private Busses : 3

The new services include

Provider	NEW Routes in 2016
Dublin Bus	31D (Baldoyle – DCU) 42D (Portmarnock – DCU) 70D (Dunboyne – DCU)
Bus Eireann	Navan – DCU Kells – DCU Rathoath - DCU
Private Busses	Dundalk – DCU Direct (Matthews) Monaghan – DCU (Collins) Ballyfermot – DCU – Airport (Dualway) Newbridge/Naas – DCU (JJ Kavanaghs) Discontinued Swords – Airport – DCU (JJ Kavanaghs) Discontinued

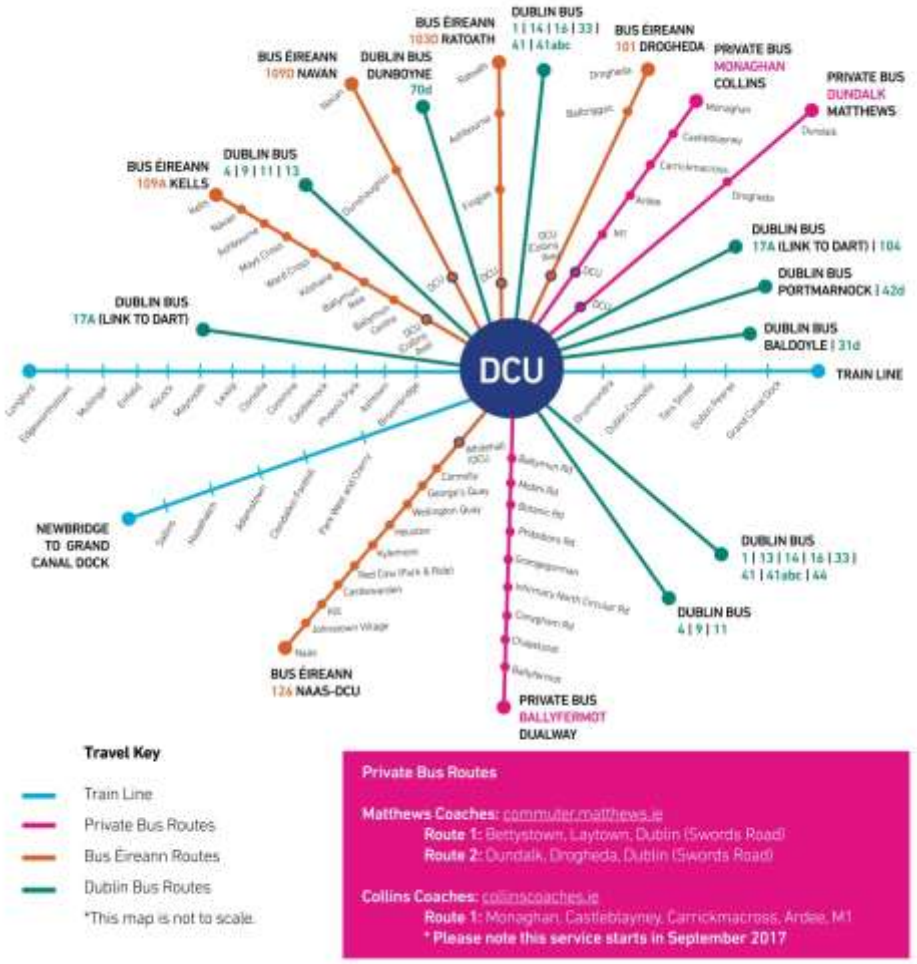


Figure 48: DCU Public Transport Connectivity Jan 2017

Enhanced Promotion

To increase the number of people using public transport to commute to the DCU Campus the following actions were taken:

- Public Transport connections were included in all presentation at School recruitment drives (Ita McGuigan and Jonny Cooper)
- The DCU website information was regularly updates and engaging visuals were developed (Figures 1 above). (Sam Fahy, Katy Halpin and Kerry-Anne Ridley)
- Information of public transport included in DCU Frist year packs
- Information on public transport included in Staff and Student orientation (Sam Fahy)
- Direct public transport links between campuses were highlighted to Incorporation teams (Incorporation Office)
- LEAP cards were made available to University Department where commuting between campuses was required on a daily basis. (Incorporation Office/Departments)
- Regular email notification of public transport connections
- Promotion of RTPI across campuses on screens.
- Media Production Society – News clip on new busses at DCU (https://www.facebook.com/DCUtvNews/videos/1815500952007279)

Modal Shift.

In a survey undertaken in Jan 2017 it was evident that there was an increase in the number of staff using public transport to get to campus (increase of 5%). However due to student number responses it was not possible to make any analysis of the student modal choices.

In 2017 DCU was awarded the National Transport Authority award for Smarter Travel Public Transport Campus of the year in recognition of the efforts made.

Figure 49: DCU Smarter Travel Public Transport Campus award

potter1808#

1.1 Research Problem

Efforts to encourage more sustainable commuting at DCU have included joining and committing to the 'Smarter Travel Campus' organised by the National Transport Authority, to installing free bike maintenance tools on campus, bike rental schemes and collating user-friendly information for sustainable commuting to DCU. While considerable efforts have been made the transport related carbon footprint is 38% of all emissions for DCU's largest campus (Walpole, 2016).

1.2 Scope of Research

This research aims to gain an insight into obstacles that could be experienced in DCU in trying to introduce an uncompromised sustainable transport strategy while also creating an awareness of the topic. It will further examine the level of awareness students, staff and senior management have regarding the

environmental and financial consequences of their current transport habits and question if education/knowledge could have an impact on their decisions regarding transport in the future. The purpose of this research is to establish how can DCU:

a) reduce transport related emissions

b) promote sustainable transport solutions more effectively

c) achieve DCU commuter modal change to more sustainable modes of transport

Cycle right Pilot

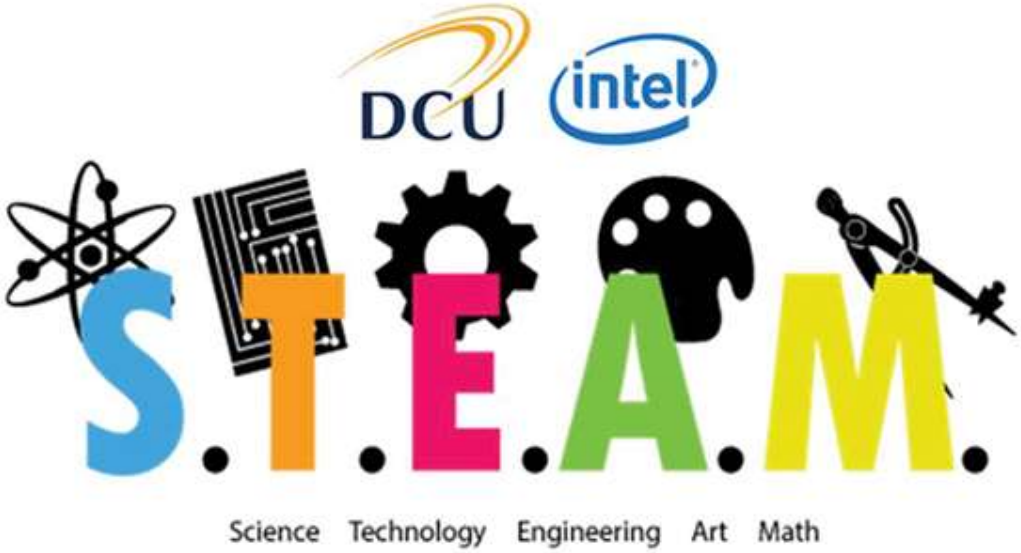
6. Link to Learning on Campus

Over the past year the linkages to education programmes on campus have grown. We are not yet at the point where sustainability is embedded into all modules so that all graduates of DCU understand the meaning of sustainability and the interrelationship between the social, cultural economic and environmental factors that need to be balanced to ensure a sustainable future for all BUT we are making progress! In particular the new DCU Strategic Plan for 2017-2022 will seek to among other thinks seek to integrate Sustainability Principles, Literacy and Awareness into the student curriculum. This will involve working closely with Faculties and the Education Committee to establish the optimal approaches to achieving this objective. There will be a particular emphasis on awareness of the UN Sustainable Development Goals (SDGs).

Other linkages include over the past year several projects,

Project title	Student	Project	Year	Programme
Reducing the Quantity and increasing the recycling of waste in DCU campus Residences	Sean Daly	Final year thesis	2014/15	Environmental Science and Health
The Viability of DCU's community garden	Alan Rigney	Final year thesis	2014/15	Environmental Science and Health
Water usage and reduction in DCU's Sports Complex	Clionadh Williams	Final year thesis	2014/15	Environmental Science and Health
Feasibility Study of Rainwater Harvesting on the DCU Campus	Mohammed Alotaibi	Master's Thesis	2015	MM544 Sustainable Energy
Biodiversity at DCU	Joe Cornish	Final year thesis	2014/15	Horticulture
The use of potable water in DCU	Ellen Kelly	Final year thesis	2015/16	Environmental Science and Health
Paper consumption at DCU	Bernadette Leng Ian Lo	Final year thesis	2015/16	Environmental Science and Health
Soil analysis in the DCU	James Platt	Final year thesis	2015/16	Environmental Science

Community Garden				and Health
Food Waste	Margaret Cronin	Master's Thesis	2015/16	Open Education
DCU Carbon Footprint	Sean Walpole	Intern	2015/16	Environmental Science and Health
Transport and Behavioral Change	Stephen Dowling	Intern	2015/16	Psychology
INSULATION PRODUCTS, FOCUSING ON GLOBAL WARMING	Natalie Farrell	Master's Thesis	2015/16	Open Education
Carbon Neutral Interfaiths	Brendan Deehan	Final year lit review	2016/17	Environmental Science and Health
Coffee Cups and Beh Change	Cody Byrne	Intern	2015/16	Psychology
Horticulture Histories	Ann Christin Aaras	Intern	2015/2016	Sustainability DCU
Renewable energy in Community Garden	Tadhg Meaney	Final year thesis	2016/17	Environmental Science and Health
Hot Water in public Sanitary Facilities	Oisin Foley	Intern	2016/17	Psychology
Flying Less	Conal Ó Dubihir	Intern	2017	Sustainability DCU
Decoupling environmental impacts from economic activity, what it means and how it relates to the concrete sector in Ireland.	Andrew McGrane	Master's Thesis	2016/17	Open Education - MASTER OF SCIENCE IN MANAGEMENT FOR SUSTAINABLE DEVELOPMENT
A study on the adoption of clean technologies within the Irish seafood processing industry	Tomas Cooper	Master's Thesis	2016/17	Open Education - MASTER OF SCIENCE IN MANAGEMENT FOR SUSTAINABLE DEVELOPMENT
University Transport management	Ann Whyte	Master's Thesis	2017/18	Open Education - MSc IN MANAGEMENT FOR SUSTAINABLE DEVELOPMENT
Food Waste and our legal requirements	Anorai Rooney	Final year thesis	2017/18	Environmental Science and Health
Impact and potential alternatives to hot water supply in public buildings.	Colin Cleary	Final year thesis	2017/18	Environmental Science and Health
DCU Exemplar Carbon Neutral Campus	Safa Al Mashaikhi	Final year thesis	2017/18	Environmental Science and Health



On Friday, October 20, 2017 - 18:00 to Sunday, October 22, 2017 - 20:00 DCU together with Intel Ireland organised the first ever STEAM Hackathon weekend which took place at DCU St. Patrick's Campus.

The 54-hour free event brought together DCU student innovators, creatives, entrepreneurs and developers to build something real and innovative using Intel technology. Students had the opportunity to learn new skills, meet new people, build new solutions and have lots of fun!

About the 'STEAM' challenge - Putting the 'A into STEM Education – This enables students to explore their artistic and creative sides in combination with STEM (Science, Technology, Engineering, Maths) skillsets to generate new exciting and innovative experiences or products

Link to YouTube of STEAM Hack https://www.youtube.com/watch?v=mh3tS2u-qtA

BA in Communications/Journalism/Media Studies

Dr. Brenda McNally, who works in Media Representations of Climate Change and Low Carbon Transition in the School of Communications has set up a challenge for first years in the BA programmes to think up communication events for the following list of Green Initiatives:

- Paper waste project in St. Patricks Campus
- The removal of all NON Recyclable Coffee Cups on ALL CAMPUSES
- Support for 'Like Bike' in Week 11
- Create a Green Guide for DCU Students
- Campaign to replace plastic (glasses, containers, spoons …) in DCU Restaurants with biodegradable alternatives
- Implement 'Adopt a Street' campaign around your campus
- DCU Community Garden – Programme of works and engagements
- Drinking water fountains on all campus
- Energy/Water consumption awareness in DCU Residences

They are now working on them at present and will have presentations on the last day of semester (Dec 2017) - I will send you on the good ones (and the names of the students) and you can see if there is anything that might work.

Linkages to MG334 Business and Society : This module addresses the key environmental and sustainable development issues facing organisations today. It focuses on the links between corporate social responsibilities, management of the organisation and the environment and on how these may be integrated through strategy and operations. The module assignment require student to research and write a report on one of the following :

- How to make the New Hub sustainable
- Reduce waste production on DCU Campus
- National No Smoking Day on Campus
- Car Sharing Initiative
- Energy Awareness Campaign for Students
- DCU in the Community
- Education – integrating sustainability
- Social Enterprise Model for the DCU Community Garden
- Intercampus bike scheme for students

Space to Grow Module

This module run in St Patricks focused on provide student teachers with an understand of biodiversity and the development and implementation of outdoor teaching tools and methodologies. The module has undertaken several interesting project including establishing and maintaining its own growing space on the SPD campus and well and bring primary school children together to design and build a plastic bottle green house – this project is half way thru construction and will be finished in 2016/2017.

Within this project trainee teachers also went to work in a preschool in Drumcondra to establish a growing space for the preschool children.

Also as part of this project the student not only created new habitats for birds they recycled old microscope boxes in the process. The group also participated in an bioblitz of the Royal Canal and posted their results on this website http://www.ispotnature.org/projects/spdroyalcanal.

New International Project on Sustainability Education that is being funded by the Global Consortium for Sustainability Outcomes (GCSO) (Cliona Murphy/Greg Smith)

The GCSO Education Project recognizes that for the world to become more sustainable, people of all ages need to learn certain principles of sustainability and attain relevant competencies. The GCSO Education project is therefore aimed at supporting primary school teachers from Ireland, Germany, USA and Mexico to effectively teach about sustainability as an integral component of their respective curricula.

The project will involve 80 primary school teachers from the four countries participating in a Continuing Professional Development (CPD) programme that is aimed at developing teachers' conceptual and pedagogical knowledge of Sustainability. The CPD programme will support teachers in helping children to develop essential sustainability competencies while engaging with different subject areas in the different National Curricula.

In Ireland staff from the Institute of Education (IOE) in DCU will develop and implement a CPD programme on Sustainability that will be tailored to suit the Irish primary school context. The content of this tailored CPD programme will in particular integrate with the SESE, English and Mathematics curricula (DES, 1999).

The IOE research team will work closely with the participating teachers to ensure that the content of the workshops is also relevant to each school's environment. The IOE team will work closely with the teachers and their schools to support them in implementing the CPD activities and methodologies in their classrooms and within whole school settings.

7. Informing and Involving the Campus and Wider Community

Encompassing such issues as equal access to social resources, corporate governance, community, diversity, culture and quality of life, social sustainability is one aspect of sustainability but one that is often the weakest in terms of representation. DCU has long recognised the merits and responsibilities of engaging with the wider community and contributing to the social and economic contexts of the community in which we are based. The development of a specific 'Civic Engagement' mission and the establishment of the DCU in the Community Outreach Centre in Ballymun is a solid expression of the commitment which DCU has made to community outreach projects.

The DCU Green Committee/Sustainability Programme has leveraged several of these existing link to enhance our engagement with the local community. We have worked closely with several local organisations and intend to continue and build on these mutually beneficial linkages.

The Community Garden is now open to all of our community internal and external to DCU. We are working closely with the Age Friendly University Initiative at DCU to support intergenerational learning.

DCU and Cloughjordan ecovillage

After much discussion and work through 2016, in 2017 DCU signed an memorandum of understanding with the Cloughjordan ecovillage. Under this agreement there will be shared learning, research collaboration, internships and the promotion of An Ghaeilge. (See Appendix 6)

Alumni Party in DCU Community Garden (Summer 2016)

In summer 2016 the DCU Alumni Office held a garden party in the DCU Community Garden.

Focus Group on Engagement

As part of a Master programme in the Business School a group of student lead by Mariane Galpo undertook a focus group looking at student engagement in sustainability activities on campus. Full report in appendices.

Seomra Caidrimh

Sustainability is seen as the balancing of social, cultural, economic and environmental activities to create a sustainable future for all. A fundamental element of the Irish culture is our language. There are currently ~75,000 daily speakers of Irish and according to our latest census out of a national population of 4.7million approx. 1.7million indicate they can speak Irish. The most recent Government strategy has indicated that it is targeting a daily speaker rate of ~200,000-250,000 by 2030. DCU seeks to support this strategy by supporting staff and students to positively engage with the Irish language. As part of this the Seomra Caidrimh (Common Room) was revamped on the DCU St Patrick's Campus. The Seomra Caidrimh is open to all students, all staff and the DCU community and facilitates a wide range of Irish language events, workshops and information sessions. The space is also available for those who wish to use and improve their cúpla focal in a welcoming and comfortable environment.

Tá an Seomra Caidrimh oscailte do mhic léinn, foireann na hOllscoile agus pobail DCU. Bíonn réimse leathan d'imeachtaí, ceardlanna agus seisiúin eolais ar siúil sa Seomra. Tá an spás ar fáil dóibh siúd ar mian leo a gcuid Gaeilge a úsáid agus a fheabhsú i dtimpeallacht fháilteach agus compordach.

DCU Procurement Policy

DCU Procurement Policy reflect DCU desire to ensure that sustainability is considering in the operations of the DCU campuses. A copy of our Procurement policy can be seen in Appendix 9.

DCU Community Garden Engagement – CSR Days

In Sept 2015 Marks & Spencer Ireland launched Spark Something Good, an initiative aiming to inspire employees and customers to donate their time to improve the lives of others in their local community. Spark Something Good Dublin engaged in 24 projects over seven days across the city, with M&S is calling upon volunteers to get involved and take action for social good. One of these project was the DCU Community Garden with ten M&S Staff and volunteers weeding and mulching their way through the DCU community garden.

The An Taisce Green Communities CSR day on the 17th of September saw 17 volunteers from Deloitte take part in a very successful second volunteer day at the DCU Community Garden. Their efforts have visibly helped progress the gardens creation, and its production. This September volunteer day saw four work groups active within the garden from 10 am

https://www.facebook.com/An-Taisce-Green-Communities-133325730075465/timeline/

In May 2016, An Taisce again brought along another CSR group to the DCU Community Garden. 50 volunteers from AOL worked in the garden all day chopping down weeds and mulching fruit bushes and trees as well as funding and putting up the second polytunnel in the garden.

The DCU Community garden is very happy to support lots more CSR days – the joys of a garden is that it keeps growing and there is always lots to do.

DCU Community Garden and Social Enterprises

DCU community garden is delighted to have signed an agreement with Grow Dome (http://www.thegrowdomeproject.com/) . Grow

THE GROW DOME PROJECT

Dome are in the process are building an 11 mtr aquaponics grow dome in the DCU Community Garden. Lots more to come on this!!

Figure 50: Grow Dome in DCU Community Garden under construction summer 2017.

DCU Community Garden and Community Employment

DCU Community Garden now host 2.5 community employment placements who are building their experience and skills to help them progress to further education or employment over the next year. Jason and Marty are both registered with the Royal Horticulture Society and over this last summer have been working on the development of their own enterprise in urban gardening/farming. They are being supported by the DCU Community Garden and have had a garden stall each Friday on the Glasnevin Campus over the summers. Significant effort was needed to ensure that there was fruit and veg for each week with planning and planting schedules. Volunteers from the campus also help out in the garden.

Figure 51: Martin Matthews and Jason Maguire managing the garden stall

Figure 52: Some of the fruit and veg available on the stall (cucumbers, chillies, artichoke, turnips, courgette, salads....)

In addition to Jason and Marty, Paddy spends 50% of his placement working in the garden but also he has with the support of the DCU Office of Student Life has started a small garden on the All Hallow Campus. As well as a small herb plot twenty vintage apple trees have been sown in a new All Hallow orchard. These trees will be transplanted to the new Community Garden space on the All Hallows campus that will be open to all staff, students and local community.

Figure 53: New Orchard at All Hallows Campus

Adopt a street

The DCU Green Committee has participated in the Adopt a Street initiative for several year and this continued in 2016/2017 with over 20 volunteers participating. DCC have been very helpful in early 2017 with the provision of lots of equipment (pickers, brushes, bags etc) to enable a resource to be put on all three campuses to help facilitate this. This activity is well received by the local community with many coming out to thank volunteers for their efforts - a win for both community and DCU public relations ! There is however some effort needed to manage and organise the groups to go out.

Figure 54: Adopt a street volunteers 2016/2017

Blessington Street Basin Project

The Blessington Street Basin was built in the early nineteenth century to provide a clean water supply to the northside of the city. It was opened in 1810 and officially named 'the Royal George Reservoir'. A reservoir is an area like a lake, where water is kept until it is needed.

The water was brought to Dublin from Lough Owel in Co. Westmeath by the Royal Canal and through a two-mile pipe to Blessington Street. There was a lot of water needed and the Basin could hold four million gallons of water.

In 1869 even more water was needed, and a new reservoir was built at Vartry in Co. Wicklow. However, the Basin continued to supply water to Jameson's distilleries in Bow Street and Power's distilleries in John's Lane until the mid-1970s. It then became a public park but so few Dubliners knew of its existence then that it became known as 'the secret garden'.

The Blessington Street Basin was renovated in 1993-94 and reopened in November 1994 as a local amenity including a walled park with a fountain and a bird sanctuary on its central island. However there are some challenges at the moment with regard to the water quality which has deterioriated significantly in recent year.

Figure 55: Blessington St. Basin

In 2017 the DCU Water institute was approached regarding the establishment of an outreach project that could provide some expertise for the benefit of the basis. The DCU Water Institute aims to provide some basic analysis of the water contaminant and is hope to work with local residences to raise some necessary funds to provide some additional filtering of the water into the basin.

8. DCU's Green Committees Green Charter

The Green Committee at Dublin City University, made up of volunteer staff and students, believes in a sustainable future that provides the fair and equitable balance that is needed to share the earth's resources between all its inhabitants. It believes that as an educational institution DCU much tackle this existential challenge through our teaching and learning, research and innovation and by operationally working toward reducing our carbon emissions. It is an enormous task that we must all tackle together.

Our Green Committee is committed to

- embedding sustainable practices across our University
- informing and educating other within the DCU Community about importance of sustainability and why we need to create a more sustainable future
- informing and educating other within DCU on what they can do to have a positive impact both on and off campus
- informing and educating our wider community, including family and friends about importance of sustainability and why we need to create a more sustainable future
- informing and educating our wider community, including family and friends about what they can do to have a positive impact the sustainability of our planet

Specifically in 2017/2018 we are focusing on

Energy

- Work toward an ISO50001 Standard
- Develop and communicate a energy/carbon management plan
- Raise awareness of energy consumption by Students, Staff and Visitors
- Energy consumption awareness & behavioural change programme in DCU Residences with SAVES Prog
- Seek renewable technology (Solar/wind) for Student Hub

Water

- Water consumption awareness & behavioural change programme in DCU Residences with SAVES Prog
- Identify leaks and fix
- Communicate water consumption data to all staff and students
- Treat as a valuable resource
- Paper waste project in St. Patricks Campus
- Continue 'Adopt a Street' campaign around your campus
- Drinking water fountains on all campus

Waste

- Campaign for the removal of all NON Recyclable Cups on ALL CAMPUSES

- Communicate waste information to all staff and studnets
- Campaign to replace plastic (glasses, containers, spoons …) in DCU Restaurants with biodegradable alternatives

Biodiversity

- DCU Community Garden – Programme of works and engagements
- Pollinator plan for DCU
- Increase awareness of the importance of biodiversity
- Update biodiversity database
- Increase biodiversity on campus through tree planting events

Transport

- Mobility management plan support active commuting
- Continue Smarter Travel Campus' Walking and Cycling Challenges
- Support for 'Like Bike' in Week 11

Communications

- Info wall on all campus providing current consumption data on key metrics including initiatives to reduce and scope to accept suggestions
- Create a Green Guide for DCU Students

To get involved just email sustainability@dcu.ie

http://www.dcu.ie/ocoo/sustainability/sustainable-campus.shtml
https://www.facebook.com/sustainabilitydcu
https://www.facebook.com/DCUCommunityGarden

Here is a link to the Charter: https://www4.dcu.ie/ocoo/sustainability.shtml

9. Appendices

1. Sustainability/Green Committee Online Engagement Report
2. DCU Green Committee Action Plan 2016/2017/2018 (rolling)
3. Coffee Cup Report
4. PakMan Awards
5. Biodiversity Worksheet
6. Cloughjordan agreement
7. Horticulture Histories
8. Urban Garden Workshop Series
9. DCU Procurement Policy

Appendix 1

Draft Report on Staff/Student engagement on Sustainability

Oct/Nov 2017

Report date : 06/11/2017

Introduction

In early October 2017 an email was circulated to all staff and students at DCU regarding engagement on sustainability activities at DCU. This is a brief report on the response to this email.

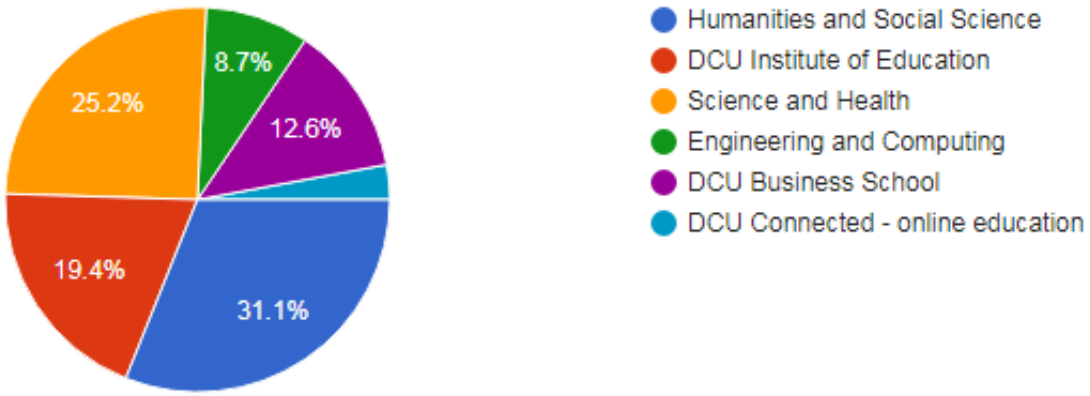


Figure 56: Breakdown of respondents across faculty

Figure 1 above shows the breakdown of the response rate to the online Sustainability/Green Committee. The table below compares this with the percentage of student in each faculty – this would appear to indicate that the response rate is in line with the representation of students with perhaps less student responding from the Business School and more from the Institute of Education.

Table 12: Comparison of students per faculty to response rate on Green Committee Email

Faculty	Percentage of student 2016/2017	Response rate
Humanities and Social Sciences	26%	31.1%
Science and Health	23%	25.2%
DCU Business School	22%	12.6%
DCU Institute of Education	17%	19.4%
Engineering and Computing	12%	8.7%

		Membership of Green Committee		
Role in DCU	**Total**	**Maybe**	**No**	**Yes**
Postgraduate Student	16	8	3	5
Staff	40	11	13	16
Undergraduate Student	47	15	11	21
Grand Total	**103**	**34**	**27**	**42**

Figure 57: Breakdown of respondents

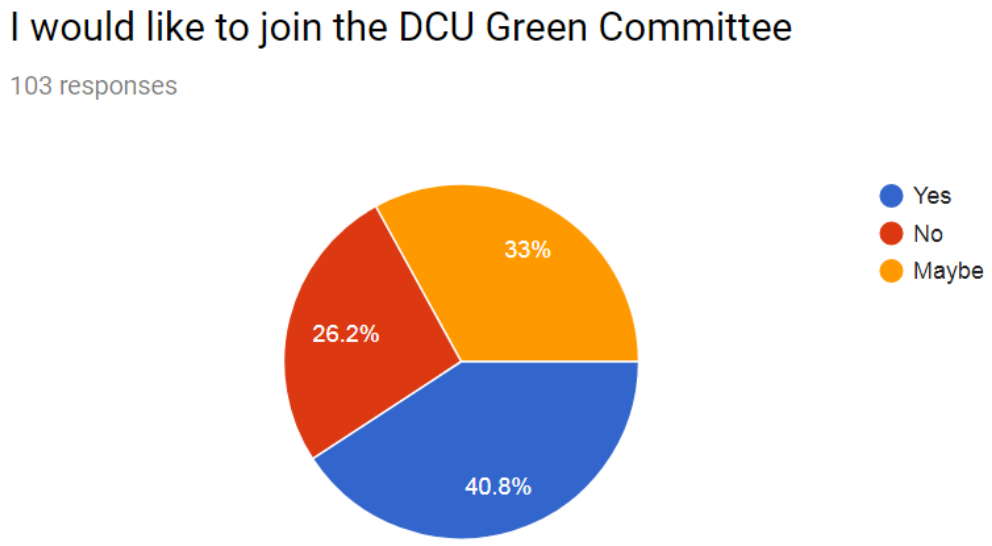


Figure 58: Response indicating that 42 people have indicated that they wish to join the DCU Green Committee for 2017/2018 (an additional 34 indicated that may like to join the committee)

It is evident from these numbers that there is strong support for the Green Campus programme across DCU at all levels. What is less evident is how to manage a committee of ~74 members !

In an attempt to make this more manageable, responses to individual input have been thematically grouped across the broad An Tasice Green Campus themes i.e. Energy Water, Waste, Biodiversity, Transport and Communications. The results of this

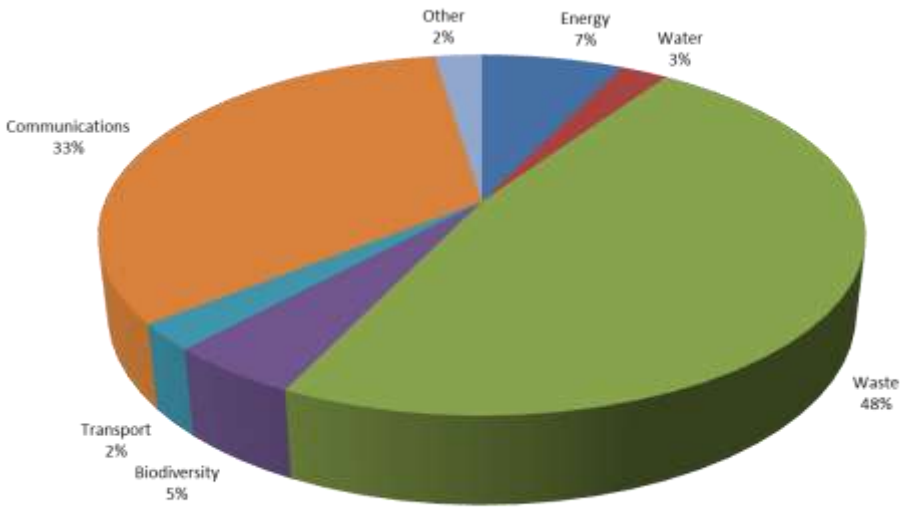


Figure 59: Breakdown of responses to individual contribution for those who wanted to join Green Committee

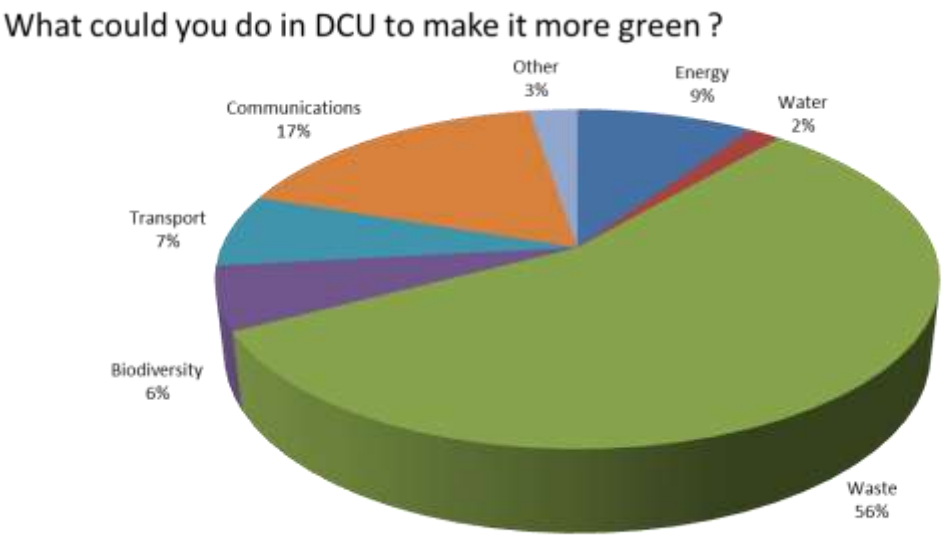


Figure 60: Thematic analysis of ALL responses to individual contribution, note that in several cases more than one theme was identified in the response.

It is evident that a significant number are focused on or view waste as a major element of being more sustainable. It is encouraging to see that many see communications as a key activity that needs addressing.

In addition the respondents were polled on their support for a list of pre-identified projects.

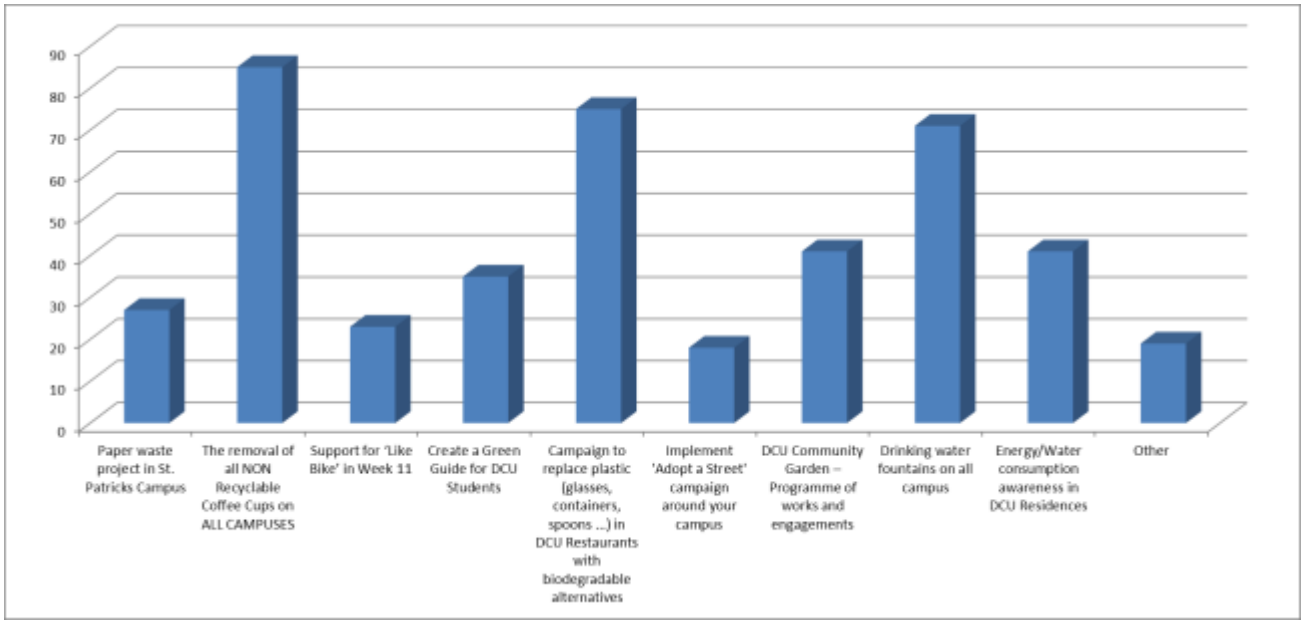


Figure 61: Respondents support for specific projects

Top three supported project	% support from respondents
The removal of all NON Recyclable Coffee Cups on ALL CAMPUSES	83%
Campaign to replace plastic (glasses, containers, spoons …) in DCU Restaurants with biodegradable alternatives	73%
Drinking water fountains on all campus	69%

Proposal :

It is therefore proposed to create three working groups as part of the DCU Green Committee:

Working Group 1: Tackling Waste incl 'non-recyclable cups' and 'once use plastics'

Working Group 2: Communications

Working Group 3: Sustainable Campus (Energy, Water, Biodiversity, Transport, Other)

Reviewing all the responses here is a breakdown of how these committees would breakdown

Table 13: Summary of DCU Green Committee 2017/2018

	WG1	WG2	WG3	Total
Staff	10	8	9	27
Postgraduate Student	8	3	2	13
Undergraduate Student	25	5	4	34
	43	16	15	74

Table 14: Green Committee Membership

Full name	Faculty	Role 2	Working Group	Green Committee Status
Aileen O'Driscoll	Humanities and Social Science	Staff	WG1	Maybe
Áine Lawless	Humanities and Social Science	Undergraduate Student	WG1	Maybe
Aisling Byrne	DCU Institute of	Undergraduate	WG1	Maybe

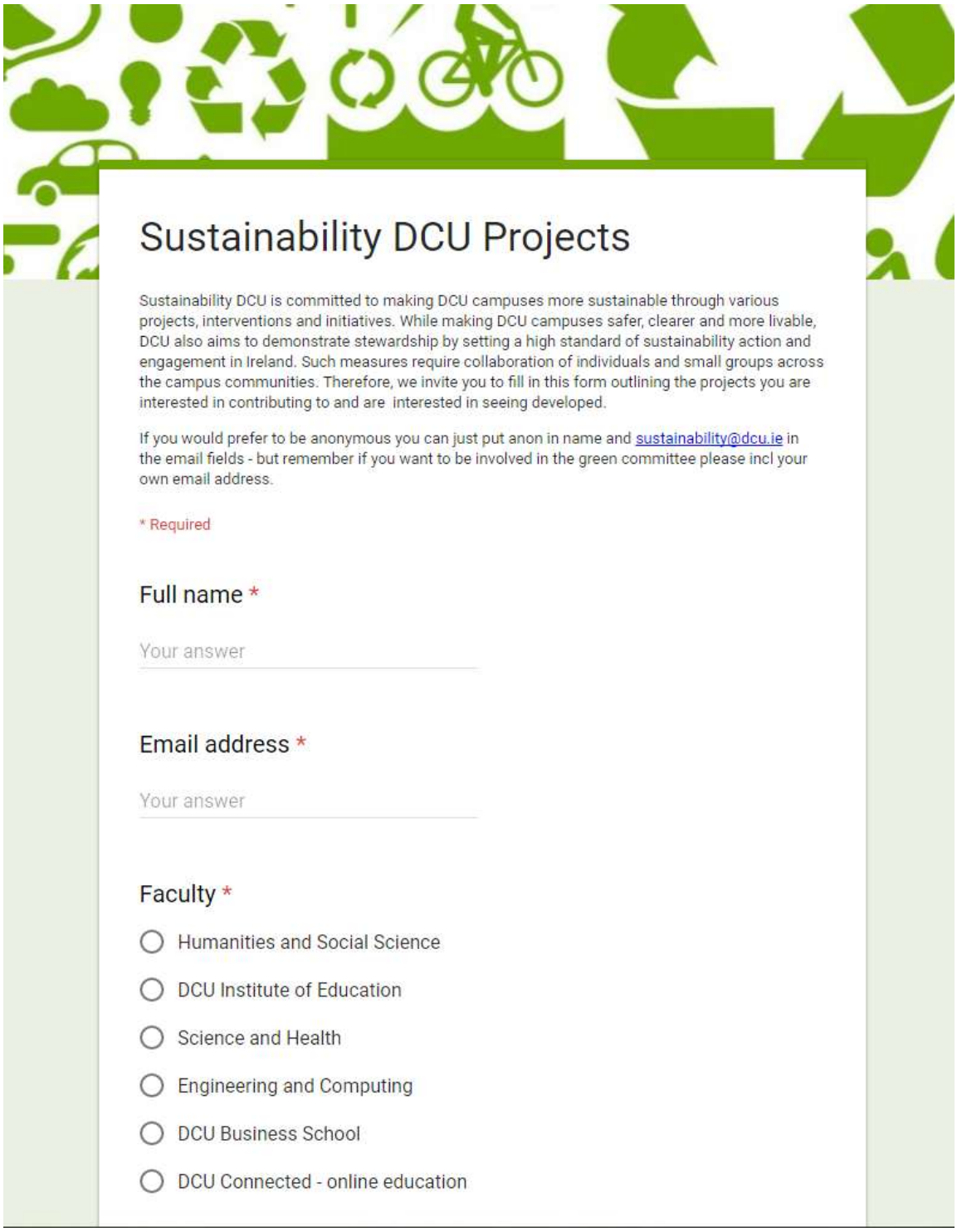
	Education	Student		
aisling feeney	Humanities and Social Science	Undergraduate Student	WG1	Maybe
Aisling sexton	Science and Health	Undergraduate Student	WG1	Maybe
Aisling sexton	Science and Health	Undergraduate Student	WG1	Maybe
Angelica Liem	Humanities and Social Science	Undergraduate Student	WG1	YES
Ann-Katrin Kaimer	DCU Business School	Undergraduate Student	WG1	Maybe
Ashling Moffitt	Humanities and Social Science	Undergraduate Student	WG1	Maybe
Bianca Tampu	Humanities and Social Science	Undergraduate Student	WG1	YES
Bilja Anns Thomas	Science and Health	Undergraduate Student	WG1	YES
Brendan Kelly Palenque	Humanities and Social Science	Undergraduate Student	WG1	Maybe
Bryony Archer	Humanities and Social Science	Undergraduate Student	WG1	YES
Caoimhe Foran	Humanities and Social Science	Undergraduate Student	WG1	YES
Chinchu Pauline Jose	Science and Health	Undergraduate Student	WG1	YES
Cian Hade	Humanities and Social Science	Undergraduate Student	WG1	Maybe
Conor McGeoguh	Science and Health	Postgraduate Student	WG1	Maybe
Daniel Doyle	DCU Institute of Education	Undergraduate Student	WG1	Maybe
Dara Cummins	DCU Connected - online education	Staff	WG1	Maybe
Emma Begley	Humanities and Social Science	Undergraduate Student	WG1	YES
Emma Gallagher	DCU Institute of Education	Undergraduate Student	WG1	YES
Georgiana Suduc	Humanities and Social Science	Undergraduate Student	WG1	YES
Hiba Filaih	DCU Institute of Education	Undergraduate Student	WG1	YES
Huw Leggate	Science and Health	Staff	WG1	YES
Iain McMenamin	Humanities and Social Science	Staff	WG1	Maybe
Irene McEvoy	Engineering and Computing	Staff	WG1	Maybe
Iseult O'Donoghue	DCU Institute of Education	Postgraduate Student	WG1	Maybe
Jessie Byrne	Science and Health	Staff	WG1	Maybe
Joseph sullivan	DCU Business School	Postgraduate Student	WG1	Maybe
Kilian Wegner	DCU Business School	Postgraduate Student	WG1	YES
Laura Bartley	Humanities and Social Science	Undergraduate Student	WG1	YES
Lorraine Tham	Science and Health	Undergraduate Student	WG1	YES

Mary Rafter	Science and Health	Staff	WG1	Maybe
Moign Khawaja	Humanities and Social Science	Postgraduate Student	WG1	Maybe
Monica Cappelletti	Humanities and Social Science	Staff	WG1	YES
Niamh Gurrin	DCU Institute of Education	Undergraduate Student	WG1	YES
Olive Maitha	DCU Business School	Postgraduate Student	WG1	YES
Orla Delaney	DCU Business School	Staff	WG1	YES
Orla Sherwood	Humanities and Social Science	Postgraduate Student	WG1	Maybe
Roisin McGrath	Science and Health	Undergraduate Student	WG1	YES
Sarah Connolly	DCU Institute of Education	Undergraduate Student	WG1	YES
Tommy Murtagh	DCU Institute of Education	Staff	WG1	Maybe
Zephra Cooney	DCU Institute of Education	Postgraduate Student	WG1	Maybe
Aoife Anderson	Humanities and Social Science	Undergraduate Student	WG2	YES
Aoife McCrave	Science and Health	Undergraduate Student	WG2	Maybe
Benjamin Mallon	DCU Institute of Education	Staff	WG2	YES
Brenda McNally	Humanities and Social Science	Staff	WG2	YES
Ciara Larkin	Science and Health	Postgraduate Student	WG2	YES
Eoin Campbell	Humanities and Social Science	Staff	WG2	YES
Eoin O'Malley	Humanities and Social Science	Staff	WG2	Maybe
Harry Carr	Science and Health	Undergraduate Student	WG2	Maybe
James Spalding	Science and Health	Staff	WG2	YES
Kateryna Pikalova	Humanities and Social Science	Undergraduate Student	WG2	YES
Louise Curtis	DCU Business School	Postgraduate Student	WG2	YES
Maeve Dupont	DCU Institute of Education	Staff	WG2	Maybe
Mark Brown	DCU Connected - online education	Staff	WG2	YES
Martin Nolan	Science and Health	Postgraduate Student	WG2	YES
Miracle Peromingan	Humanities and Social Science	Undergraduate Student	WG2	YES
Prince Anandarajah	Engineering and Computing	Staff	WG2	YES
Alexandre Rickert Llacer	DCU Business School	Undergraduate Student	WG3	Maybe
Chris Sanchez	Humanities and Social Science	Undergraduate Student	WG3	YES
Danika Sugrue	DCU Business School	Undergraduate Student	WG3	YES

James Carton	Engineering and Computing	Staff	WG3	YES
Jamie Murphy	Humanities and Social Science	Staff	WG3	Maybe
Jenny Lawler	Science and Health	Staff	WG3	YES
John Gallagher	Science and Health	Staff	WG3	YES
Lorraine Ní Gháirbhith	DCU Institute of Education	Staff	WG3	YES
Mairéad Nic Giolla Mhichíll	Humanities and Social Science	Staff	WG3	YES
Michelle sweeney	DCU Business School	Postgraduate Student	WG3	Maybe
Peter Deeney	DCU Business School	Staff	WG3	Maybe
Richard Kelly	Engineering and Computing	Staff	WG3	YES
Shrey bhalla	DCU Business School	Postgraduate Student	WG3	Maybe
Suzanne Brewer	Humanities and Social Science	Undergraduate Student	WG3	YES
Tom McCloughlin	DCU Institute of Education	Staff	WG3	YES

If you would prefer to change working groups or also be included in the other working groups please let me know.

Appendix 1.1 : Engagement form



Sustainability DCU Projects

Sustainability DCU is committed to making DCU campuses more sustainable through various projects, interventions and initiatives. While making DCU campuses safer, clearer and more livable, DCU also aims to demonstrate stewardship by setting a high standard of sustainability action and engagement in Ireland. Such measures require collaboration of individuals and small groups across the campus communities. Therefore, we invite you to fill in this form outlining the projects you are interested in contributing to and are interested in seeing developed.

If you would prefer to be anonymous you can just put anon in name and sustainability@dcu.ie in the email fields - but remember if you want to be involved in the green committee please incl your own email address.

* Required

Full name *

Your answer

Email address *

Your answer

Faculty *

- Humanities and Social Science
- DCU Institute of Education
- Science and Health
- Engineering and Computing
- DCU Business School
- DCU Connected - online education

Role *

- [ ] Undergraduate Student
- [ ] Postgraduate Student
- [ ] Staff
- [ ] Other: _____

What could you do in DCU to make it more green ? *

Your answer

Here are some suggestion from past students please tick any you would like to support *

- [ ] Paper waste project in St. Patricks Campus
- [ ] The removal of all NON Recyclable Coffee Cups on ALL CAMPUSES
- [ ] Support for 'Like Bike' in Week 11
- [ ] Create a Green Guide for DCU Students
- [ ] Campaign to replace plastic (glasses, containers, spoons ...) in DCU Restaurants with biodegradable alternatives
- [ ] Implement 'Adopt a Street' campaign around your campus
- [ ] DCU Community Garden – Programme of works and engagements
- [ ] Drinking water fountains on all campus
- [ ] Energy/Water consumption awareness in DCU Residences
- [ ] Other: _____

Please identify any specific skills you can offer to any of the projects selected in the previous question *

Your answer

I would like to join the DCU Green Committee *

- ◯ Yes
- ◯ No
- ◯ Maybe

Thank you

Thank you for taking the time to complete this form. We appreciate your interest in Sustainability at DCU and look forward to working together on creating a greener DCU.

SUBMIT

Never submit passwords through Google Forms.

Appendix 1.2 : Email to all staff/students

On 6 Oct 2017 7:18 a.m., "Samantha Fahy" <samantha.fahy@dcu.ie> wrote:
Dear All,

DCU is an An Tasice Green Campus, with the Glasnevin Campus having achieved it first flag in 2014. In November this year the Glasnevin Campus will be reassessed for its second flag and the St. Patrick's Campus will assessed for its first and we are hoping to have the All Hallows campus assessed in 2018.

The Green Campus programme along with the management of these assessments are run by the DCU Green Committee. The DCU Green Committees is a voluntary committee composed of students and staff working together to raise awareness and make DCU and our community more sustainable.

While much work has been done by previous green committees for which we are very appreciative, there is lots more to do and to be successful in these assessments your input and help is needed.

Can you please provide your input via this form and if you have some spare capacity please join our DCU Green Committee.

Many thanks,

Sam

From: **Sustain Ability** <sustainability@dcu.ie>
Date: 8 November 2017 at 11:02
Subject: DCU Green Committee
To: Samantha Fahy <samantha.fahy@dcu.ie>

Dear All,
Further to a call for DCU Green Committee Membership that was sent out in October - I apologies for the delay in getting back to you - it took me some time to review the >100 responses.
I am attaching a short report on this and how I tried to make a manageable committee - I welcome all feedback including nominations (self nominations is absolutely fine)
Also for your information the An Taisce Green Campus Site Visit for DCU is on Wed 22 November from 11.30 - 15.00 on the St. Patrick's Campus - if any of you would like to attend please let me know - below is a draft agenda.

I look forward to hearing from you.

Kind regards,

Sam

Appendix 2 : DCU Green Committee Action Plan 2016/2017/2018 (rolling)

Appendix 3 – Coffee Cup Report

Dublin City University
Business School

Assignment:	Paper Coffee Cups Campaign Business Report
Module	Sustainability DCU (Report as part of MT5113 Portfolio Activity)
Sustainability Manager	Ms. Samantha Fahy
Student Name/Number	Mariane Galpo: 16213269

DCU University's Declaration on Plagiarism

Module Code:	MT5113 – Business and Society – Sustainability DCU
Assignment Title:	Paper Coffee Cups Campaign – Sustainability DCU

I declare that this material, which I now submit for assessment, is entirely my own work and has not been taken from the work of others, save and to the extent that such work has been cited and acknowledged within the text of my work. I understand that plagiarism, collusion, and copying are grave and serious offences in the university and accept the penalties that would be imposed should I engage in plagiarism, collusion or copying. I have read and understood the Assignment Regulations set out in the module documentation. I have identified and included the source of all facts, ideas, opinions, and viewpoints of others in the assignment references. Direct quotations from books, journal articles, internet sources, module text, or any other source whatsoever are acknowledged and the source cited are identified in the assignment references. This assignment, or any part of it, has not been previously submitted by me or any other person for assessment on this or any other course of study. I have read and understood the referencing guidelines found at http://www.library.dcu.ie/citing&refguide08.pdf and/or recommended in the assignment guidelines.

Name: Mariane Galpo Date: June 2017

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Impacts of Disposable Cup 100

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Coffee Mugs 103

Reusable Cups 103

Section 3: Analysis of the approaches can be considered to reduce consumption of paper coffee cups in the main restaurant 104

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Introduction

The aim of this report is to provide recommendations that could be considered to reduce the usage of paper coffee cups in the main restaurant of DCU.

To able to create approaches that could be beneficial on this case, it is necessary to start with the analysis of the product and the problem.

This report is especially dedicated to Sustainability DCU, to help achieve the initiatives of the college in terms of Sustainability issues.

Section 1: Literature Review

Consumer consumption of goods and services has increased tremendously around the world causing depletion of natural resources and severe damage to the environment (Chen & Chai, 2010). Some examples of environmental damages are global warming, environmental pollution, and decline in flora and fauna (Chen & Chai, 2010). According to Lauren Hepler and Barbara Grady 2015 of GreenBiz Group, volatile environment affects not just the global population but also the global economy. But though the damages in the environment impacts the economy, the society still do not see any meaningful progress on sustainability issues because of the nexus between making money and degrading the environment (Hepler & Grady, 2015). This is supported by a statement declared by Richard Mattison, CEO of sustainability research firm Trucost, "If companies were to have to pay for the costs they created, it would actually wipe out profit" (Hepler & Grady, 2015).

Mattison also stated that, as a result of performing business operations, the relationship that occurs between corporate revenue and the environmental damage showing that sustainability initiatives could undercut financial self-interest (shown in figure 1) (Hepler & Grady, 2015). Increasing corporate environmental impacts reflects to the increase of the corporate revenues.

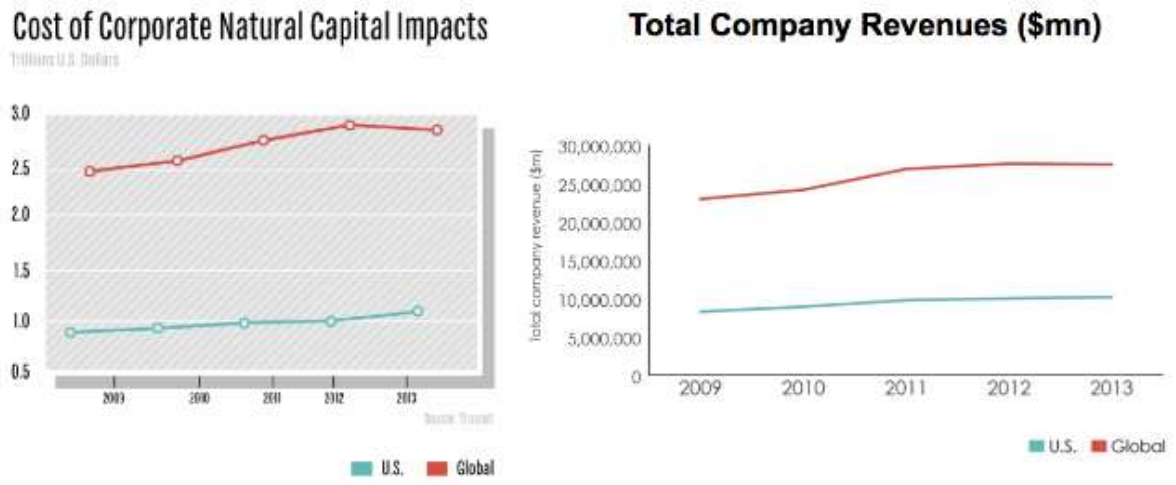


Figure 62 (Hepler & Grady, 2015)

Consumer buying behaviour

"Buying behaviour is the decision processes and acts of people involved in buying and using products" (pp. 52) (Rani, 2014). Companies have the opportunity to develop a strategy by defining and understanding the factors that impacts their customers in terms of decision making process, shopping habits, purchasing behaviour, the brands he buys or the retailers he goes (Rani, 2014).

A consumer goes through a decision process that consists of 5 stages when purchasing any product (Rani, 2014):

Stage 1: Recognition of the problem,

Stage 2: Search of information,

Stage 3: Alternatives evaluation,

Stage 4: Purchase decision,

Stage 5: Post purchase behaviour.

Rani also suggested that there are four major factors that influences consumer's buying behaviour:

1. *Culture* – different countries have different cultures. This culture impacts the wants and the behaviour of a person. Marketers have to be careful in studying the culture of different groups, regions or even countries. Example of this is the West where it is very common to invite colleagues or friends at home for a drink or dinner. In comparison, Japan, it is preferable to invite friends in a restaurant.

2. *Social* – There is a form called social hierarchy in a society where groups of people are ranked against each other. Individuals in the same social class usually have similar values, lifestyles, interests and behaviour. And depending on social class, buying behaviour of a consumer can also change. For example, if a person is coming from a lower class, he might be more focused on the price of the product. While people from upper class may be more attracted to quality, innovation, feature, or even the "social benefit" that they can gain from the product.

3. *Personal* – Preferences of a consumer often changes as "situation changes", which depends on the personal variables such as age and lifecycle stage, occupation, economic circumstances, lifestyle (activities, interests, opinions and demographics), personality and self-concept. Example is a 25 year old consumer may prefer to have branded products than a 65 year old. Economic situation has greatest impact because if a customer's income and savings is high, they might prefer to buy expensive products. In contrast, customers with lower income and savings may prefer to buy inexpensive products.

4. *Psychological* – Purchase decision is also influenced by motivation, perception, learning, beliefs and attitudes. "Other people often influence a consumer's purchase decision" (pp. 58).

Disposable cups

Disposable cups can be divided into three categories: paper, plastic, and foam. As the focus of this project is for paper-coffee cups, depending on the needs of the company, paper disposable cups can be made of (WebstaurantStore, 2003-2017) (healthydietbase, 2016):

1. *Air Pocket Insulated* – This cup is designed with air pocket insulation to keep hot beverages like coffee and tea warm without burning the consumer's hands. Therefore, this design eliminates the use of sleeves.

2. *Poly-Coated Paper cups* – The design have a single or double poly-coating which offers additional rigidity and insulation. The lining keeps the liquid inside cup to protect the cup from weakening or leaking due to condensation or sweating. They come in array of colours and sizes and can also be used by hot or cold beverages.

3. *Post-Consumer paper cups*- This paper cup is made using post-consumer fibres. The materials used are recycled paper cups, which are prepared from virgin paper. This is considered the most eco-friendly designed paper cups out of all types. The cup is also safe to use as it is made from FDA approved fibres.

4. *Sustainable* – This is made from renewable resources which are available in compostable paper styles, double-sided poly paper styles, and paper-lined styles with thick PLA shells. The designs are also available in hot or cold beverages. Like post-consumer paper cups, they are also very eco-friendly.

5. *Wax-coated paper* – This cup also offer extra rigidity and protection from leaks and absorption, which also adds extra insulation. The design comes in a wide range of designs, colours, and sizes. They are not really suitable for hot beverages as the hot liquid melts the wax. As a result, the material deteriorate.

Benefits of Disposable Cups

According to Laur Fisher 2008, there are three primary reasons why most establishments prefer disposable product: sanitation, cost, and convenience (Durocher, 1982) (Grishchenko, 2007).

1. Keeping it clean – This is the main reason why disposable cups are being made. According to Felix 1990, disposable products are exposed to high heat in the manufacturing process, which kills bacteria and renders the product to be practically sterile. As they are disposable cups, they are only being handled less and used once. On the other hand, dishes are more often exposed to bacteria and must be washed and dried properly to achieve the level of sanitization required in any establishments (Durocher, 1982) (Felix, 1990).

2. Keeping it cheap – "Dishwasher, labour, water, and energy costs may push businesses away from reusable initially, but they can save money in the long run" (pp. 4) (Fisher, 2008). On the other hand, "the price of disposables is highly dependent on the fluctuating costs of paper, gasoline, energy, chemicals, and labour" (pp. 4). Fisher also said, that though there are some contraries, there is still no clear reason why establishments should choose disposable cups.

3. Keeping it easy – Based on Cohen and Darian's (2000) research, the most prevailing reason on purchasing disposable products is convenience. As disposable products can be discarded after use, therefore, they do not need cleaning and does not need to be returned.

Impacts of Disposable Cup

Pollution and resource consumption are mainly the problem that occurs on using disposable cups. These include harvesting of trees, transportation to disposal in a landfill, incinerator, or public area as litter (Fisher, 2008).

An example is the Starbucks Coffee in collaboration with Alliance for Environmental Innovation (Shown in table 1). They performed a life cycle analysis for the cup and the sleeve that they currently offer.

	Stage	Description
1	Tree Harvest/Transport	felling and transporting trees to the mill
2	Virgin Manufacturing Energy	preparing the pulp for paper
3	Municipal Solid Waste Collection	local trash collection
4a	Collection Vehicle and Landfill Equipment	transporting to and containing waste in landfills
4b	Waste-to-Energy Combustion Process	burning waste in an incinerator
	Avoided Utility Energy Releases	energy regenerated by burning waste
	Ash Landfill Disposal	transporting ash from incinerators
4c*	Litter	improperly disposed of in public areas

*Added by the author; not included in the original study.
Stages 1-4b were based on the data on p. 25-26 in Alliance for Environmental Innovation (2000)

Table 15 (pp. 55) (Fisher, 2008)

There are some factors that majority of the studies do not take into consideration including chemical output from production of paper, which releases high amount and variety of inorganic compounds and water effluents (Tammemagi, 1999). Another factor is the negative impact of landfill use "ranging from the leeching of chemicals into aquifers and waterways to the release of methane, a potent greenhouse gas, to harbouring disease, to the large area of secluded land required" (pp. 55) (Fisher, 2008) (Tammemagi, 1999). Pollution caused by transportation of disposable products from the production area to the distributers is also a factor that has to be considered. Last factor that Fisher listed is the effect of littering. Some consumers do not always make an effort to throw the cups into the bin, therefore, the cups do not usually end up in the landfill or incinerator. The cups end up as litter in public places such as water systems or roadsides. It impacts the aesthetic and the government.

Starbucks Company also conducted a research on the environmental impacts of Starbucks' Coffee Cups in 2006 shown in table (2).

Environmental Impact of Starbucks' Coffee Cups (2006)							
Cups Thrown Away	Wood Consumed	Trees Cut Down	Energy Consumed	Equivalent Number of Homes that Could be Powered	Water Used	Equivalent Olympic-sized Swimming Pools	Solid Waste Created*
2.3 billion	136,789 tons	944,211	702 billion BTUs	7,747	569 million gallons	859	36 million lbs.

*Starbucks' disposable hot beverage cups are not recyclable (Starbucks Coffee Company, 2007)

Adapted from a table created by (Starbucks Coffee Company, 2007), based on figures from the Environmental Defense Organization's Paper Calculator

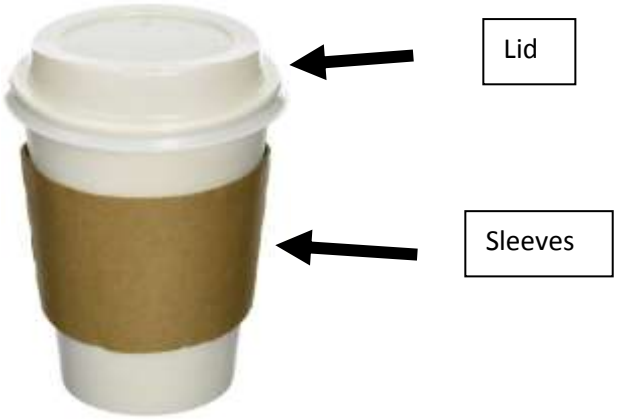
Table 16: Environmental impact of Starbuck's coffee cups 2006

Financial value could be estimated depending on the market prices of wood, energy, water and the cost of environmental abatement.

Section 2: Analysis of the product focus

With the help of the General Manager of Catering in DCU, Mr. Brian Bates, and the Sustainability Manager of DCU, Ms. Samantha Fahy, the information required to write the report is provided.

Paper Coffee Cups



(Amazon, 1996-2017)

Total Annual Coffee Cups Usage at DCU	701, 200

Coffee Cup Information	Weight (kg)	Cost (€)
Average Disposable cup	0.11	0.05
Plastic Lid	0.03	0.02
Paper Sleeve	0.05	0.07
	Total Weight: 0.19	**Average Cost:** 0.14

DCU Annual non-recyclable cups waste	Weight (kg)	Weight (Tonnes)
(Total Weight of a Coffee Cup x Total Annual Coffee Cups Usage at DCU)	133 228	133.228

Total DCU Waste 2016 (Tonnes)	912.008
% of DCU Total Waste	15%

Total Cost of Waste (€)	98 168

Coffee Mugs

Due to lack of demand of the mugs, Main Restaurant does not really order mugs. According to Brian, customers can still ask for the mugs but because of safety issues (i.e. burning of skin), they do not recommend it.

Reusable Cups

In 2015, all the catering facility in DCU started offering 10% discount for people who bring reusable cups with them. But as months passed by, staffs and students have stopped bringing them, which according to the manager, is because of:

1. No facility to wash them
2. Convenience

Section 3: Analysis of the approaches can be considered to reduce consumption of paper coffee cups in the main restaurant

Approaches:

1. Reusable cups

   Reusable cups has been introduced to DCU, the issue is the advertisement. There are different DCU reusable cups introduced in the campus for the past 3 years.

   a. Green Reusable Cup

   b. Spar Reusable Cup

   c. Keep Cup

   These are all not advertised well enough, neither the discount that applies when students/staffs bring these reusable cups with them. People do not know where to purchase them. Based on the people that were interviewed, they like the DCU logo but they are not sure where to get them.

   Upon studying the case, I informally interviewed some students who always buy coffee. Knowing that the price impacts the buying behaviour of a consumer, I started the conversation telling them that they can get discount by bringing their own reusable coffee cup.

   First response was “My bag is too heavy; I do not have enough space in my bag.

   Second response was “It is only 10 c discount”.

   As literature also indicated, convenience is one of the main reason why consumers prefer disposable than reusable cups.

   Price is another factor that affect staffs and students to use disposable cups. For the past few years, it is clearly proven that 10 c discount is not effective enough to change consumer’s buying behaviour in DCU.

   Upon studying a marketing module and working as retail assistant in a big company, changing prices affect the behaviour of the consumer. This is also supported by the literature under personal factor. Consumer often changes as “situation changes”. Therefore, there is a potential increase of consumers who will use reusable cups if the college change the pricing system of the beverages. This will push people to stop and think about the price differences between the day they bought the coffee for two euros and the new payment they have to do now. According to literature, as purchase decision is also influenced by motivation, perception, learning, and beliefs, one or two purchases can spread the price changes in their own group of friends, which can potentially spread to the area.

   From customer’s perspective, 10 c discount does not work because paying a whole number (two euros) is better than paying 1.80 euros. Again, it is because of the convenience factor.

Working as retail assistant gave me view that majority of customers do not want to have a lot of changes in their pocket. They want it when they need it. Two euro is considered as a “cheap” enough price for a coffee. It is the average price for an average hot beverage for most of the shops in Ireland.

Figure 63: McDonald's Price (zomato, 2008-2017)

McDonald’s	€2.40
Bewley’s	€2.50
Starbucks	€2.85
Insomnia	€2.80

Table 17: Value for money (Rate of Coffee from Irish Times by Conor Pope)

(Pope, 2014)

Therefore, instead of a discount, charging 10 c more for not bringing a reusable cup could potentially impact consumer’s buying behaviour, because it is extra 10 c that should be taken from their pocket.

This might affect the number of the consumers of the shop for the first few weeks or months because the idea of bringing the reusable cup could take time to get into the habit. But as

discussed previously, DCU has to advertise the reusable cups effectively. Student Union has big influence in the campus, if they give more support on this issue, they could impact the views of the students.

2. Ceramic mugs

   Ceramic mugs should available on request. If a customer requests it, they are taking responsibility for their own act.
   Meetings in DCU like committee meetings or small meetings should also provide ceramic mugs instead of non-recyclable cups, as it reduces the number of cups being wasted.

3. Compostable coffee cups

   Finally, compostable coffee cups are one of the best recommendations as it saves the environment and it saves the organisation and customer's money.
   According to BBC1, Hugh's War on Waste, 7 million of coffee cups being used in the UK everyday goes to landfill or incineration, even though many of them are claimed to be recyclable (Vegware, 2016).
   Vegware stated in their commercial video that the reason for the coffee cups not being recycled is because if card and plastic are mixed, there would be a recycling problem, as contamination occurs between the two materials. Compostable cup can be recycled with food waste, made from plants and 72% less carbon than plastic (Vegware, 2016). They also have suggested that the only solution is to have an eco-friendly start to finish. For example, using materials for serving food to the proper bins provided (Vegware, 2016).
   To support, Environmental enterprises, a company who sell biodegradable and compostable products, also added that purchasing and producing products made of plastics contribute to global warming and other environmental issues (Environmental Enterprises, 2017). "You'll not only lower your CO2 emissions by purchasing biodegradable products no matter if you're an individual or a company, you'll also help reduce the amount of oil used for plastic products. Everyone can contribute to a plastic free future; it's easy to make the switch once you know where to look" (Environmental Enterprises, 2017).

   As discussed previously, products cannot be recycled because of the contamination between materials. If compostable cups are going to be sold around the campus, it means that there should also be proper bins provided which can be easily accessed by everyone.
   Communication is the tool to make this effective. DCU community might not be aware of the changes that are happening in DCU. Therefore, if compostable cups are to be sold, it is necessary to provide DCU information before it is going to happen and while it is happening. This is not to annoy the students or staffs but to make sure that the committee shows a strong support on the issue. Another challenge for DCU is to recognise the difference between wastes. For example, compostable cups could be a huge benefit, but only if the people recognise where to dispose it properly. There could be a huge problem on mistaking compostable cups as old cups if not applied to the whole campus. Therefore, this will confuse the consumers where to actually throw the cups that they are using anywhere in DCU. As suggested earlier by Environmental Enterprises, the solution to zero waste is to

support the eco-act all the way. In DCU case, if the campus is going to start using compostable cups, it should be provided not just in one place but also everywhere in the campus. Brown bins should be provided and be accessed easily. DCU community should be provided with clear and honest information about these bins and the issues the campus are facing. It all lead to proper and effective communication.

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Appendix 4 : PakMan Application

Appendix 5 : Biodiversity Worksheet + Presentation

Appendix 6 : Cloughjordan Agreement

Appendix 7 : Horticulture Histories

Appendix 8 : Urban Gardening

Workshop Series: Urban Gardening at DCU

Target Audience : DCU Students
Timeframe : Oct – Nov 2017
Cost : Free to DCU registered students

Workshop Intro : The objective of this series of workshops is to engage DCU students in the DCU Community Garden and thereby increase their awareness of sustainability issues while training them to grow healthy food in a local urban environment.

Date	Workshop title	Presenters	Time & Location
04 Oct 2017	Introduction to Sustainability, DCU Community Garden & Cloughjordan Eco Village	Samantha Fahy/ Eoin Cambell	13.00 – 14.00 TBC
11 Oct 2017	RiotRye bakery for a lunchtime demo	Joe Fitzmaurice of http://www.riotrye.ie	12.30 – 14.00 TBC
18 Oct 2017	Compost Training Day & Compost Demonstration Site Build	Rediscovery Centre www.rediscovery centre.ie	10.00 – 16.00 Rediscovery Centre
25 Oct 2017	Introduction to Horticulture 101	Jason and Marty Garden Gnomes	12.30 – 14.00 DCU Comm Garden
01 Nov 2017	Introduction to Urban Farming	Jason and Marty Garden Gnomes	12.30 – 14.00 DCU Comm Garden
08 Nov 2017	Cloughjordan Community Farm CSA	Dr. Ollie Moore	12.30 – 14.00 TBC

There are a limited number of spaces so please email asap sustainability@dcu.ie if you are interested in participating. You do not have to attend all sessions.

Supported by : DCU Quality Improvement & Development (QuID) Fund