

Institution: University of Greenwich

Unit of Assessment: 32 - Art and Design: History, Practice and Theory

1. Unit context and structure, research and impact strategy

a) Overview

Executive Statement: Since REF2014 there have been very clear advances in terms of the research profile of the School of Design. We have more than doubled the number staff undertaking research, significantly increased our number of outputs, and more than doubled our external research income.

[The School of Design \(DSC\)](#) sits within the Faculty of Liberal Arts and Sciences. The School was formed from three previous departments – Architecture & Landscape, Built Environment, and Creative Professions and the Digital Arts – as part of a wider restructuring of the University and Faculties in August 2018. In terms of research this new configuration has provided an opportunity to bring a number of design-related disciplines together under a single administrative heading. The benefit of this, and the stated strategic aim, has been to begin to develop cross-disciplinary collaboration and to identify future opportunities in relation to the formation of specific research groups and income generation. For this reason, the decision was taken to combine all three existing areas together to form a single submission to UoA 32, though it is acknowledged that the submission will take full advantage of the cross-referral mechanism where outputs are judged to require specific disciplinary validation.

The DSC therefore brings together three research clusters that submitted to the 2014 REF in two separate units of assessment: UoA 16 – Architecture & Landscape and Built Environment, and UoA 34 – Art & Design, History, Practice and Theory, to form specific groups with an enhanced design focus. The strategic aim has been to encourage both continuity of good practice and evolution as new members of staff have joined, and new areas of expertise and interests have emerged. The current three Research Groups are: [DARE \(Digital Arts Research and Enterprise\)](#), [CAPTIVATE: Spatial Modelling Research Group](#), and [INTENT \(Integrated Nature and Technology Research Group\)](#) (Figure 1).

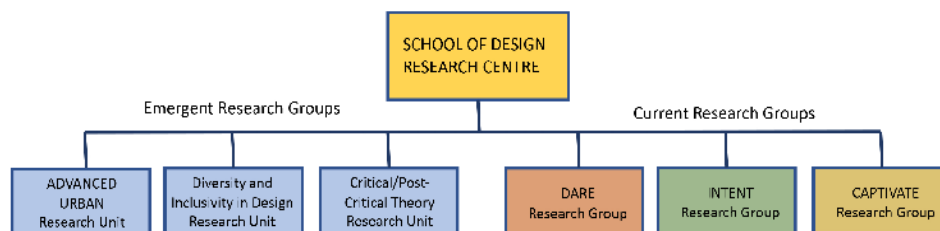


Figure 1. School of Design Research Diagram

At present then research in the School is organised around these 3 groups and 3 research units under an umbrella DSC Centre that ensures effective dialogue and interaction. A designated research group is an institutionally recognised entity whereas a unit is a less formal coming together of research active colleagues with the goal of identifying new areas of common interest.

Since the formation of the School in August 2018, there has been a concerted drive to further develop the groups and to focus on research in key areas which relate to current environmental and social issues, as well as on design practice and theory. The groups are encouraged to be collaborative and innovative across disciplinary boundaries and to interact with the emerging research units. Current research units: the Advanced Urban Research Unit (landscape, architecture, film) the Diversity and Inclusivity in Design Unit, and the Critical/Post-Critical Theory Unit.

The research groups and developing research units provide a forum for mentorship of ECRs and mid-stage researchers and encourage everyone in the School to undertake research.

Since 2014 there has been significant increase in research and enterprise activity with:

- a. An increase in staff submitting to the REF from 14 to 33, within a staff cohort which has remained constant at approximately 68;
- b. More formal designation of research groups (the intention is to have 8 to 10 groups in 5 years' time);
- c. An increase in the number of publications by staff:
 - Overall quality – an increase in 3* and 4* outputs (based on internal and external reviews of 2.5 outputs per FTE of 30.3) from 47 to 76
 - Journal Papers: an increase from 17 to 109
 - Monographs: an increase from 6 to 11
 - Edited Books: an increase from 1 to 15
 - Book Chapters: an increase from 7 to 38
 - Multi Component Outputs (in REF2014 categorised as Design portfolios) from 7 to 16
 - Conference Papers/Proceedings: an increase to 40
 - Shows/Exhibitions: an increase to 40+
 - Artefacts / Performances / Composition / Patent / Digital, Visual Media: an increase from 7 to 10
- d. A staff recruitment strategy to employ internationally excellent research active staff who have PhDs and, where they do not have PhDs, to encourage them to undertake PhD studies (Refer to Section 2. People and Staff Recruitment). The increase in numbers of staff with PhDs and who are working towards PhDs are as follows:
 - Staff with PhD's within the School: 27
 - Staff currently engaged in PGR studies: 7
 - Staff currently in discussion and writing up proposals for PhD studies: 5
- e. There has been a drive to increase PhD student numbers prior to and post the setting up of the DSC. This has been assisted by the Vice Chancellor's Scholarship scheme, where staff are able to apply for a scholarship for a student. This is competitive within the University and the Faculty. The School is also encouraging existing taught Masters students to continue in the DSC with PGR studies. The number of PhD students have increased as follows:
 - VC PhD Scholarships: to 10
 - PhD completions: increase from 3 to 16
- f. A notable increase in staff supervising PGR students as first and second supervisors and as internal and external examiners
- g. The sabbatical programme allows staff members to take periods of time to concentrate on particular research projects, 'where it is aligned to the strategic priorities of the University and in line with the individual's career aspirations and development. All permanent members of academic staff are eligible to apply'.
- h. Sabbatical periods are also used to provide time to write funding applications.
- i. A drive to increase our research presence across the various disciplinary areas covered in the DSC, where staff sit on journal editorial panels, are judges for national and international competitions, and participate in projects with industry (See Section 4 for more information).
 - Fellowships: increase from 0 to 2
- j. Research (and enterprise) bidding and funding for internal and external funds has increased significantly:
 - Internal bidding/successes (HEIF, Seedling Fund, Proof of Concept, RCIF and ECR Investment) to £275,067. (See page 8 for breakdown).
 - External bidding/successes increased to 24 with increases in funding to £2,968,122

- k. An increased social, economic and environmental impact, with particular successes in areas of improving access to STEM subjects for underprivileged children in London, inclusive design in marginal communities through theatrical engagement activities, exhibitions, sound and image concerts, and through media exposure, for example, on the BBC, newspapers and other online forums.
- l. Hosting of Exhibitions and Conferences:
 - An increase in exhibitions from an average of 6 per annum to an average of 14 per annum.
 - A significant increase in conferences. (See pages 11 and 13).

b) Research Strategy

Our central research strategy is to support the production and dissemination of outputs across the full range of disciplines within the school and wherever practicable to encourage meaningful collaboration and innovation. Researchers in the DSC are active in the areas of Film and TV, Sound and Image, Digital Design and Animation, Architecture, Landscape and Built Environment. Research is therefore present across the full range of design disciplines, and whilst this demonstrates comprehensive coverage it also affords the opportunity for extensive cross-fertilisation. This range of areas is seen as a strength and the School has encouraged the setting up of interdisciplinary Research Groups comprising staff from the various disciplines represented in this submission.

Our current and future research objectives are to:

- Initiate research which has social, environmental and economic impact at its core and ensure that impact is embedded from the very beginning;
- Grow practice-based research, ensuring that impact is embedded from the very beginning;
- Firmly embed impact in the research life cycle, from grant proposal through to project delivery;
- Increase the quality and number of our academic staff, research assistants and research students;
- Provide the intellectual leadership, guidance and support needed to enable everyone to realize their research potential;
- Secure more and higher quality funding and manage it more effectively in order to deliver greater intellectual contribution, user engagement, and professional and social impact;
- Further develop the interdisciplinary and international dimensions of our research in terms of networking, projects and influence;
- Further develop our links with key partners and stakeholders, in order to facilitate the co-production of knowledge and to enhance its impact on industry, policy and practice;
- Lead in the areas of co-design and inclusive design;
- Raise the profile of research amongst current students, and encourage them to continue their studies into Post Graduate Research;
- Mentor new and existing staff in order to fulfil the above strategies in three directions: to encourage them to enrol in research degree programmes; to encourage the writing up of research interests and advance professional practice; and to encourage the development of individual research programmes by attachment to existing research groups;
- Disseminate research findings through research forums and symposia involving staff, research students and external experts; and
- Ensure that research, whatever form it takes is open access and/or accessible to anyone who wishes to access it.

The significant increase in staff with SRR and outputs allows the School to submit 3 Impact Case Studies to the REF, selected from a number which could have been developed. Impact is at the centre of all research activity in the School and is now embedded in all of our projects and focused activities, even where they are not specifically selected as case studies.

All academic staff are entitled to undertake research. There are some staff who undertake a small amount of research, and others who are full-time researchers. The staff development strategy maintains that:

- All staff are encouraged to undertake research and to this end, each person has an allocation of 100 BAW points (0.5 days per week);
- Increased allocation in BAW points is considered within the annual appraisal system, and a normal general proposition is for 210 BAW points (1.0 day per week) for someone both teaching and undertaking research;
- Annual staff appraisals are used to encourage research each individual's research and enterprise activities;
- Staff are able to take sabbaticals in order to undertake and/or prepare for research, including writing papers and monographs;
- ECR staff are mentored in their research by more experienced researchers;
- ECRs are provided with opportunities to get supervision experience and to sit on research panels;
- BAME staff are enabled;
- Research is a constant topic in the School, with a periodic newsletter and meetings which highlight current research and opportunities;
- Opportunities for internal and external funding are constantly advertised;
- Staff are supported within the School by the Head of School and the Head of Research and Enterprise Lead and by a 0.5 FTE Research Administrator; and
- Staff are represented at the Faculty level by the School's Head of Research and Enterprise.

The School encourages collaboration with industry and this has occurred across many of the disciplines within the School:

- Artist-curator [Ghislaine Boddington](#), was appointed Reader in Digital Immersion
- Documentary producer and director [Lindsay Keith](#) was appointed Creative Research Fellow
- [Miriam Sorrentino](#) has been working as a consultant for advertising agency [M&C Saatchi's Carbon Academy](#) creative mentor programme
- With regard to a Knowledge Transfer Partnership (KTP), the School with [Benz Kotzen](#) as PI used KEEP+ funding to employ Ian Herriott from [Scotscape](#) to research the development of a [Living Pillar](#).
- [George Agyekum-Mensah](#) is on the advisory panel of the [Built Environment Advisory Group](#).
- [Anastasios Maragiannis](#) through the [Empowering Youth through Entrepreneurial Skills \(EYES\)](#) project works with Royal Borough of Greenwich and the South East London Chamber of Commerce.. He is also fellow of the Royal Society of the Arts and a Non-Executive Director of [ECOLUXE London](#).

Our national and international research collaborations are extensive across academic and research institutions as well as industry. A select list of 50 is as follows: [Imperial College London](#) / [University College London](#) / [Slade School of Fine Art, UCL](#) / [SSEES, UCL](#) / [University of Leeds](#) / [Cardiff University](#) / [University of St Andrews](#) / [University of Glasgow](#) / [University of Salford](#) / [University of Portsmouth](#) / [University of Exeter](#) / [Canterbury University](#) / [Salford University](#) / [Politecnico di Milano, Italy](#) / [Humboldt University, Berlin, Germany](#) / [University of Rostock, Germany](#) / [University of Leiden, Netherlands](#) / [Johns Hopkins University, USA](#) / [Zurich University of Applied Sciences, Switzerland](#) / [Technical University of Madrid, Spain](#) / [University of Ljubljana, Slovenia](#) / [Biotechnical Centre Naklo, Slovenia](#) / [University of Lisbon](#) / [University of Sao Paulo, Brazil](#) / [Baikal School of Social Research, Irkutsk, Russia](#) / [FABRICA Research Centre Italy](#) / [IRSS, Burkina Faso](#) / [IRD, France](#) / [Ircam, France](#) / [IRIT, France](#) / [LABRI, France](#) / [Puce Muse, France](#) / [LAM, France](#) / [Greece AIGA-USA](#) / [French National Museum of Natural](#) / [Cyprus High](#)

[Commission in UK](#) / [International Refugees Forum](#) / [Rosphoto Gallery, St Petersburg, Russia](#) / [Digital Humanities Lab, ITMO University, St Petersburg, Russia](#) / [Global Information Society Watch](#) / [Internet Governance Forum, Berlin, Germany](#) / [Organization of Security and Cooperation in Europe, Vienna, Austria](#) / [Centre Pompidou, Paris, France](#) / [Kino Klassika Foundation](#) / [Barbican Centre](#) / [Electric Cinema](#) / [Maison de la Culture du Japon, Paris](#) / [Arne Nordheim Centre for Artistic Research at the Norwegian Music Academy](#) / [Greenwich Autistic Society](#) / [M&C Saatchi Group](#).

The formation of the DSC has encouraged a culture of research and the imbedding of impact as part of that research. Staff are encouraged to build impact as a key part of the research design, and to monitor impact throughout the lifecycle of the project, and afterwards. Staff have been encouraged to join workshops on impact, including on the [Impact Tracker](#) tool and to use this tool whilst developing their research proposal and through the research cycle. Impact will continue to be a key focus for staff research, with further sessions and workshops planned to ensure that impact is achieved. The appointment of Jean Malan, an expert in research impact, will enable researchers to build impact into their work more effectively.

2. People

a) Staff

Staff recruitment

The School has prioritized the recruitment of ECRs with PhDs, those who have published, and those who have the potential to contribute to one of the School's existing core research strengths or to develop new impactful areas of research. Where new staff do not have a PhD, they are mandated in their contracts to do so, starting this journey even in their probation period. Incentives are provided by the School and University by allocating research time through the BAW and absorbing the fees. While recruitment focuses primarily on ECRs, University investment has allowed the appointment of Research Fellows to strengthen the critical mass of researchers.

We recognise that staff need stability in order to build research careers. The policy of the DSC is to make appointments on a permanent basis (98.3%). Of those staff with permanent contracts 81% are 1.0 FTE. The success of the recruitment strategy is reflected in the growth in the overall number of staff with significant responsibility for research from 14 (REF2014) to 33 (REF2021) and the development of specialised research groups and units, projected to be between 8 and 10 in the next 5 years.

Our main recruitment process for applicants who are being employed on a combined teaching and research contract is based on a selection model, with two presentations and one interview all delivered to different review groups. The staff involved in the selection and recruitment process are diverse and all have EDI training. We endeavour to ensure that we recruit a diverse set of new staff. Regarding gender 59.3% of our academic staff identify as male and 40.7% as female. With regard to ethnicity 56.9% identify as white and 37.9% as BAME. Our aim is to close these gaps and also to provide equal opportunities for those people who have disabilities.

Staff development

Staff development is facilitated by a number of pillars which include the freedom to carry out research within an existing area covered by research groups and/or by investigating new fields and also provides and supports training in self and career development. Staff are encouraged to undertake training to become PGR supervisors, examiners and chairs of examinations.

Development programmes

The [University Research and Enterprise Institute \(RETI\)](#) provides systematic training for researchers from early to established career researchers, with workshops ranging from [Project Management and Organisation for researchers](#), [Research Data Management](#); [Impactful Academic Writing](#); Publishing; [The Digital Researcher](#); Planning, Developing and Demonstrating

Research Impact, [Research Ethics](#) and various courses relating to [examinations](#) and being a [chair](#) and an [examiner](#).

Academic conferences

Conferences have been hosted, chaired and attended by researchers and they have participated on organizing committees, selection panels, discussion panels and as keynote speakers. Staff with SRs are supported and encouraged to engage with the leading international conferences in their field. We see this as strategic, enabling staff to present and get feedback on their research outputs and build their research networks. (See Section 3 for the Conferences hosted by the DSC).

Early Career Researchers - ECRs

ECRs are recognized for the vitality and continuity going forward in the School's plans for research. Individuals at the beginning of their research career are supported and integrated into the research culture of the School ECRs. They:

- form part of the Faculty ECR group;
- are supported with funding from the ECR Network;
- can apply for funding to attend and present at conferences; and
- form part of the Research Groups.

Started in 2018, the Faculty ECR Network. In 2018-19 ECRs in the DSC were awarded £8235 and in the 2019-20 period this was £9891. Funding was used for research, book publications, furthering collaborations and networking, travel, delivering seminar series, workshops and exhibitions, and developing grant proposals. Additionally, ECRs are incentivised in their research through a number of awards and prizes:

- [Early Career Researcher Impact Prize 2019/20](#)
- [ECR Excellence Awards](#)
- [Early Career Researcher Communications and Engagement Prize](#)
- [PGR Student Poster Competition](#)

Equality, Diversity and Inclusion

The DSC, like the University, is committed to placing equality, diversity and inclusion at its heart for both staff and students. This is made clear in the [Equality, Diversity and Inclusion Strategy 2019-2022](#) and in the [Equality and Diversity Statement](#). The School reinforces the requirements for staff to undertake mandatory training in 2 modules run by the University, the 'Equality and Diversity Essentials' course on joining the University (and thereafter every three years). All managers are required to complete the 'Managing Diversity' course when joining the University or taking on management responsibilities (and thereafter every three years). Whilst making staff aware of the University's EDI objectives, we also encourage staff to be aware of the EDI-focused accreditation, charters and networks that the University is signed up to or is a member of. These networks these include the:

- [Aurora Programme](#)
- [LGBT+ Staff Network](#)
- [Disability Staff Network](#)
- [BAME Staff Network](#)
- [Women Staff Network](#)

Within the School overall staff identifying as white is 56.9% and 37.9% as BAME, with 5.2% not prepared to say. With regard to staff with SRR, 62.5% identify as white with 34.4% as BAME and 3.1% not prepared to say. Regarding gender, within the School 59.3% identify as male and 40.7% as female.

b) Postgraduate Research Students

The School provides a lively and intellectually stimulating environment for Research Students. We have been successful in being awarded a share of the annual Vice Chancellor (VC) Scholarships, and currently have 4 VC Scholars. The School would like to increase the number of PGR students, whilst ensuring that the supervisory staff are not overloaded, and we will endeavour to recruit more students through upgrading our research web presence and continuing to apply for VC scholarships. We will also endeavour to recruit from our Masters cohorts (which we have not done previously).

In terms of monitoring and support mechanisms to ensure progress and successful completion of doctoral students, first and foremost the School follows the protocols of the Faculty Postgraduate Research Officer who oversees the required administrative processes. The Head of Research and supervisors advise and assist the students with their administrative tasks, and the Head of Research sits on all the panels related to PGR in order to support the School's students. Progress of the students is monitored through an annual progress report and supervisors meet their students on a weekly basis or at appropriate intervals. The Head of Research has initiated regular meetings with the PGR students in order to check progress and to assist with any issues. The PGR students are linked to the ECR group which also assists with issues raised by students.

With regard to the skills development of research students and preparation for their future career, the School follows University and Faculty protocols by, for example, providing teaching opportunities and the ability to attend courses that are not directly linked to their studies but that may be useful in their future careers. We are, however, also aware of other industry-related opportunities; thus for example students are encouraged to get practical experience running the aquaponics unit and with other related operations. Students are also highly encouraged to attend workshops and conferences to deliver papers and to network. The School has also initiated an annual PhD Colloquium in order to allow students to disseminate their research more broadly and as a way to build their confidence and skills in public speaking. The last colloquium was held on [05 February 2020](#). In the future, the School will set up a DSC PGR group, and staff will assist them with its management. This group will meet 4 times per annum. Periodic Teams meetings have been held with PGR students through the Covid-19 period.

The School follows the established protocols of the University and Faculty in terms of equality and diversity considerations with regard to support for submission of funding applications, access to internal funds, conference attendance, sabbaticals and training. Support strategies are in place for staff and research students returning from periods of leave or ill-health, managing long-term illness, or with caring responsibilities, and for staff with protected characteristics (e.g., disabilities) and the School also follows the established protocols of the University and Faculty.

The School also follows the established protocols of the University and Faculty with regard to the wellbeing of its staff and research students. On a more personal level, and with regard to PGR students, the Head of Research is diligent in providing opportunities for PGR students to approach him regarding any issues, and every opportunity is taken to engage with the PGR students to ascertain their health and wellbeing, particularly if they are not attending University daily or weekly. This has been the case throughout the Covid-19 period where students have been under duress caused by various aspects of the pandemic.

3. Income, infrastructure and facilities

Income

The School receives funding as part of the University's Quality Related (QR) allocation which is used by its Research Groups and individuals to fund activities that enhance research, facilitate publication and other forms of dissemination such as exhibitions, as well as priming and seeding new research. Individuals and groups within the School are also active in applying for internal research funds.

Internal Research Funding

Internal research funding, other than from QR funding, which is administered by the School, is fully or partly managed by the Faculty and is open to any staff member, following discussion and approval with their line manager and approvals from the School's Head of Research and/or the Head of School. Completed applications are forwarded to Faculty and then to various committees which normally include the Heads of Research from each School, the ECR representative, the Faculty Operating Officer and the Faculty Head of Research & Enterprise Support and are reviewed prior to the meetings and are given scores in terms of Excellence, Impact and Quality of Implementation.

Internal investments for research and allied activities for the REF period for UoA32 was £923,361 broken down as follows:

- QR Investment over the period: £648,295
- HEIF overall investment over the period: £178,043
 - Seedling Fund: 6 projects to the value of £24,443
 - Proof-of-Concept Funding: £3674
- RCIF Investment: £66,456
- ECR investment: 3 awards to the value of £2450

External Funding

All staff are encouraged to apply for external funding, following discussion and approval with their line manager and approvals from the School's Head of Research and/or the Head of School. External funding applications are assisted by Greenwich Research and Enterprise (GRE) who identify and develop funding opportunities. Funding based on turnover per annum according to the HESA categories was £266,343. This is recorded in REF 4b submission section.

Bidding by the DSC for the REF period for research was £491,289 and enterprise £2,476,833 with a total of £2,968,122. The sums allocated to the DSC were £553,398 for research and £939,137 for enterprise with a total of £1,492, 535. Enterprise funding was obtained as follows broken down into Funding Source / Project Title / Date / Total Project Value / School Allocation: Projects Description relating to Research and Research Impact – This is a select list which mostly includes those projects with a value above £10,000:

- Arts Council England / [The Broken Plate](#) / 2016 / £17,050 / £15,000 - A site specific, digital performance/installation enabling local artists to work with academics and technicians at the University. It attracted a new audience, including local residents, involving hundreds of local residents and school children in the development of the artistic work.
- Creative Skills / VFX-HE Online Mentoring / 2017 / £69,268 / £35,000: The idea behind the 2017 programme was to give an in-depth understanding of VFX productions by providing a systematic chain of understanding and learning VFX, and a direct professional voice from the VFX industry to the UK VFX learners in higher education.
- DRHA Organisation / DRHA 2014 Project / 2014 / £28,500 / £28,500: The project brought together more than 300 international academics and practitioner to discuss the theme "connecting interdisciplinary practices". Outcomes of the event included exhibition catalogues, papers and artistic outputs.
- Erasmus+ / [Aqua@teach](#) / £42,644 / £49, 938: The open access Aquaponics Curriculum for Higher Education (5 ECTS) and optional Entrepreneurial Skills module (2 ECTS) were developed by a consortium of 5 EU partners. As the curriculum was only released to the public in 2020 its impact is unknown, but it is expected to promote greater interest and a growth in research and economic activity relating to aquaponics.
- Erasmus+ / [Vertical Plant Life](#) / 2015-17 / £174,338 / £31,536 : The aim of the project was to provide a quality assurance approach to construction and maintenance of living

walls through a European credit system recognising skills and qualifications for vocational education and training, (VET) through European reference tools. The project is important for understanding industry needs, industry expansion and job creation.

- European Cooperation in Science and Technology (COST) / 2014-18 / [EU Aquaponics Hub](#) / £384,000 / £448,000 : The EU Aquaponics Hub played an important role in bringing together key researchers and industry across the EU and further afield in order to undertake collaborative research to facilitate the development of aquaponics at a commercial scale, as part of urban agriculture, and to solve food security in the developing world. Key outputs were numerous papers, 47 training videos on YouTube and the publication of the open access 'Aquaponics Food Production Systems' book (Springer) which has been downloaded over 900,000 times.
- European Science Foundation / [EU Future Aquaponics \(Futaquaponics\)](#) / 2014 / £11,111 / £11,111: The aquaponics workshop brought together the key researchers in aquaponics from around the world and the EU and was a driver for the directions taken by the EU Aquaponics Hub.
- Independent Social Research Foundation (ISRF) / ISRF Independent Scholar Fellowship / £24,048 / £24,048 : The award enabled research by Dr Joy White, under supervision from the University to complete a monograph 'Urban Music and Entrepreneurship: Beats, Rhymes and Young People's Enterprise' (Routledge Advances in Sociology)
- Interreg Europe / [Blue and Green Infrastructure for Sustainable Cities](#) / 2019-2022 / £109,326 / £64,921 : The specific objective is to improve the implementation of regional development policies and programmes in relation to the protection and development of natural and cultural heritage.
- Nesta / Collective Reality / £260,834 / £35,070: An immersive installation, creating real-time generative visuals and sound score. The public interact in real-time and are empowered, through social media, to reach back into the outside world engaging in conversations about their experience with the "remote" audience and with a wider trans-national online public.
- Saatchi and Saatchi Advertising and Creative Agency / [Carbon Academy](#) - Set up of a mentoring and educational 'academy' / £4952 / £4592 : [The Carbon Academy](#) project was set up to attract underrepresented groups to M&C Saatchi. The aim is to increase diversity which was the research path to investigate how cultural and social capital have an impact on underrepresented groups entering creative departments in advertising agencies.
- Science and Technology Facilities Council (STFC) / [The Earth and Sky Tour: Building capacity for hyperlocal STEM engagement with astronomy at hubs in England and Wales](#) / £15,000 / £15,000 : Taking the SMASHfestUK engagement model (narrative-lead and inquiry driven, designed to increase science capital in its audience) outside London to test its robustness and the development of the Young Innovators model.
- Science and Technology Facilities Council (STFC) / [Space Plague](#) / £124,926 / £14,894 : Space Plague is a co-designed, fully immersive theatrical experience for young people and families developed using community-based participatory action research (CBPAR) employing a novel model for engaging underserved and under-represented audiences, 'SCENE'. Results confirmed that indications of narrative transportation effects were achieved, demonstrating enhanced learning and understanding alongside changing attitudes and indicated positive change when negotiating the COVID-19 crisis.
- UK Space Agency / [SMASHfestUK: Earth and Sky Tour](#) / £39,500 / £10,000 : Delivery of a Survival Village and Space Camp (SVSC) to four areas in each of the new locations which are currently under-served by current informal engineering outreach or learning activities nearby, carrying out engineering workshops which relate to the school curriculum, providing training and outreach support to the engineers to better enable them to carry future public engagement projects of their own.

Infrastructure and facilities supporting research and impact

The DSC is housed in and has the majority of use of the Stockwell Street building which cost approximately £84 million and is located in the heart of Greenwich, within the UNESCO World

Heritage Site. The new building, which opened in 2014, was commissioned by the University, and the design was chosen through international competition. Nominated for the 2015 Stirling Prize for architecture, it was designed specifically for teaching and research across a wide range of design disciplines, and it includes state of the art film and TV studios, a central double height 'crit pit', and nearly [half a hectare of green roofs](#). The building was rated as 'excellent' by BREEAM and also won two [BREEAM innovation awards](#), one of which was for the green roofs, for their teaching, learning and research innovation. The 14 different landscape roofs (0.5 ha, equivalent in size to 12 tennis courts) include environments and 'climates' for teaching, learning and research, and provide a living laboratory where new ideas in landscape and architecture are tested and innovations developed. Together they form the UK's leading teaching, learning and research innovated roof top landscapes, and they are among the largest multi-functional landscape roofs anywhere in the world. The roofs include outdoor classrooms as well as areas for testing plants, soil types and irrigation regimes. The Stockwell Street landscape roofs foster research in urban farming, innovative façade materials and water management, as well as the study of living walls and green roofs. The facilities are not only unique because of the infrastructure available for outdoor, green, urban infrastructure research, but because they include two rooftop greenhouses, which is unique in itself, paving the way for innovation in rooftop urban agriculture. The largest greenhouse contains an aquaponic system purchased from the leading manufacturer in the USA (Nelson & Pade) in order to provide tried and tested equipment for research. The 'EU Aquaponics Hub' (see page 11) was enabled by this facility, which has also enabled two research projects funded by VC scholarships resulting in 3 peer reviewed papers published to date. The second, slightly smaller greenhouse, is used for additional aquaponic and horticulture research. The School's green roofs, aquaponics greenhouse and interior living wall are used as the armature for short courses which are directed towards the public, but also target academics and practitioners and local authorities (see below).

The [University of Greenwich Green Roofs and Living Walls Centre](#) was set up prior to and in anticipation of the implementation of the Stockwell Street roofs. The green roofs and laboratories have facilitated the hosting of international conferences and workshops on green infrastructure and aquaponics over the last 6 years and have been instrumental in providing a base for research and inclusion in research projects. Projects, conferences and Knowledge Transfer Events include:

- [Erasmus+ 'Aqua@teach'](#)
- [Interreg Europe 'Blue Green City'](#)
- [Erasmus+ 'Vertical Plant Life'](#)
- [European Science Foundation \(ESF\) 'Futaquaponics' \(1-4 September 2014\)](#)
- [Living Walls Knowledge Transfer Day 2014](#)
- [International Conference on Living Walls and Ecosystem Services \(6-8 July 2015\)](#)
- [Vertical Plant Life: In-Service Teacher Training Week \(4-8 April 2016\)](#)
- [Green Infrastructure in Urban Living: Creating Jobs through Education \(2 September 2016\)](#)
- [ECLAS Conference 2017 Creation / Reaction \(10-13 September 2017\)](#)
- [Aquaponics: From Science to Practice \(9-10 April 2018\)](#)
- [Investing in Living Walls: Factors for Specification and Maintenance \(19-20 April 2018\)](#)
- [ABC: Activating Biophilic Cities Conference \(4-5 September 2018\)](#)

The roofs and the aquaponics greenhouses are central to attracting postgraduate as well as undergraduate students. Over the last 5 years numerous tours of the roofs have been conducted with local as well as overseas groups, and a number of public lectures have been given about the roofs and the research carried out. Tours included annual groups from China, Denmark and the USA and include:

- The Women's Institute planned for 2020/21 but postponed because of Covid.
- Landscape Institute planned 15 June 2020 by postponed because of Covid.
- Hyde Chinese Delegation 24 July 2019.

- National Park City Rooftops, a project by Open House with the GLA 20-21 July 2019.
- Greenwich Book Festival 14-15 June 2019.
- The Charlton and Blackheath Amateur Horticultural Society 5 June 2019.
- Michigan State University Horticulture 16 May 2019.
- Dutch Group 13 December 2018.
- Work experience students 22 November 2018.
- London Open House 22-23 September 2018.
- Landscape Institute 21 May 2018.
- Wageningen University 3 April 2018.

A first for Greenwich, the University of Greenwich weather station from Campbell Scientific was purchased and installed on the roofs in 2019. The various sensors of this research grade automated weather station include solar radiation, air temperature and relative humidity, precipitation, soil and leaf wetting, anemometer and wind direction enabling student and staff research. The data is also being collected and can be used retrospectively.

Below the roofs, the Stockwell Street building is divided into two parts, Building 10 and Building 11 which are separated by an outdoor courtyard/light well. Building 10 hosts the University's [Main Library](#) with impressive collections of books and journals and facilitating access to on-line information, in all the fields covered in the DSC as well as state of the art facilities for undertaking study, which includes a separate room for PGR students. Apart from its lending services the library also provides [courses](#) which are a valuable resource for PGR students. Building 11 is impressive in its own right, with basement levels incorporating two large state of the art lecture theatres which provide for student lectures, conferences, film evenings and public lectures. These have included the:

- [Hawksmoor International Lecture Series 15-16](#)
- [Hawksmoor International Lecture Series 16-17](#)
- [Hawksmoor International Lecture Series 17-18](#)

Various sound, music and film public events have been held, including concerts and conferences:

- [Phase IV Symposium 2020 \(15 February 2020\)](#)
- [Sound & Image 2019 \(9-10 November 2019\)](#)
- [Electro Acoustic Music Association Anniversary 2019 \(26-27 January 2019\)](#)
- [Trailblazing Women \(13 June 2018\)](#)
- [Granular: The Material Properties of Noise colloquium \(27 January 2018\)](#)
- [Sound & Image 2018 \(10-11 November 2018\)](#)
- [Black Film, British Cinema 2017](#)
- [Trailblazing Women On and Off Screen Symposium 2017 \(29 June 2017\)](#)
- [Sound / Image Colloquium 2017 \(10-12 November 2017\)](#)
- [Sound / Image Colloquium 2016 \(12-13 November 2016\)](#)

The history of contributions of the Sound / Image event is reflected in a recent Routledge publication '[Sound & Image](#)' edited by Sound/Image Festival Director [Dr Andrew Knight-Hill](#).

Stephen Lawrence Gallery and Project Space

[The Stephen Lawrence Gallery](#) was founded in 2000. In 2014 the Gallery moved into a purpose-built space in the new Stockwell Street Academic Building. The relocation of the Gallery occasioned a concomitant expansion of the University's total exhibition provision, through an additional '[Project Space](#)' and the retention of the previous site of the Stephen Lawrence Gallery as the '[Heritage Gallery](#)' on the main campus.

Unit-level environment template (REF5b)

These changes enabled a significant increase in the number of exhibitions staged at the University from the 2014/15 academic year onwards, rising from an average of 6 exhibitions per academic year between 2011-2014 to the numbers given below.

- 2014/15 - 12 exhibitions
- 2015/16 - 17 exhibitions
- 2016/17 - 16 exhibitions
- 2017/18 - 13 exhibitions
- 2018/19 - 19 exhibitions
- 2019/20 - 07 exhibitions (interrupted by Covid-19)

The types of exhibition fall into 3 categories, which together reflect the range of roles the galleries fulfil.

Supporting and Enhancing Research

Many exhibitions are a curated response to ongoing research projects emerging from the University and its partners in academia. The total number of exhibitions falling within this general category is 41; examples are:

- January/February 2020 '[Phase IV: Intersections Art/Architecture](#)'
- July/August 2019 'Keep the Door of My Lips' and
- July/September 2015 '[Stockwell Depot 1967-79](#)'

Platform for students and alumni

All 3 galleries also host exhibitions that form part of PhD submissions, MA and undergraduate interim and final shows, and they regularly platform the work of former students across a full range of disciplines in the creative industries. The 31 exhibitions comprise PhD exhibitions (6), postgraduate interim shows (6), undergraduate interim shows (8), post/undergraduate end of year shows (5), alumni exhibitions (6).

Working in the Community

The gallery programme takes full account of the 'placemaking' responsibilities the University has within its community, contributing to the local arts offer through a range of approaches.

University of Greenwich Galleries regularly collaborates with local third sector partners such as [eye4change](#) and [Emergency Exit Arts](#) with a focus on facilitating access to, and involvement in, the programme by marginalised groups and communities. The Galleries have regularly hosted critically acclaimed solo and curated exhibitions, such as 'Where Is My Mind? Vaughan Oliver and the Pixies' (2016) Reviewed: '[Design Week](#)' March 2016 and 'Drawing Towards Sound' (2015) Reviewed: 'Wire' March 2015. Other exhibitions that may be highlighted here include:

- October 2019 '[Let Our Legacy Continue](#)';
- May/June 2019 '[For Walls with Tongues](#)'; and
- May 2016 '[Broken Plate, Drawing on the Past, Looking to the Future](#)'.

The University has substantially invested in film and TV studios and control centres. These are mainly used for teaching but are also used for research. Staff also use the space at [Bathway Theatre](#) and the School has partnered with and hosted a number of film festivals, including the long-running '[Screentest: The National Student Film Festival](#)' and our own student-run '[SE10 Film Festival](#)'. Pre Covid, our partners [FEST Training Ground](#) hosted regular industry workshops using our facilities, which in turn allowed staff and students to attend the festival in Portugal for free. All of these link to the research interests of staff in developing filmmakers and filmmaking education. Facilities include:

- Multicam TV and Film studio, both with green screen capabilities. Post-production support in editing suites and sound recording studios.
- New Capital Research Funding including a high-end 360-degree camera.

Breakdown of events open to the public

The following lists provide a breakdown of events open to the public.

Conferences associated with exhibitions. Total: 21

- 4 x "Future Cities" 4-7 (4 conferences one each year 2015 – 2018 [[links-2015](#), [2016](#), [2017](#), [2018](#)])
- 5 x "Sound/Image" (5 conferences, one each November 2015-2019 [[links-2015](#), [2016](#), [2017](#), [2018](#), [2019](#)])
- [Noise Colloquium March 2015](#)
- [Granular, The Material properties of Noise](#) Colloquium Feb 2018
- 9 x Landscape and Green Infrastructure related Conferences and Workshops (2014-2018) – see page 11 for links
- Feb 2020 ["Phase IV" Relationships Between Art and Architecture](#)

Panel Discussions, Public Talks etc. Total 51

- 2014-2020 Public Talks Art/Architecture series
- Nov 2014 [Dan Walwin/Flea Folly](#)
- Jan 2016 [Fran Cottell / Liz Harrison: Cold Storage](#)
- May 2016 [EYEtry / Steve Johnson](#)
- May 2018 [Suzanne Mooney / Felix Robbins "Unstable Foundations"](#)

2015-2020 Public Talks: Exhibitor Lectures

- March 2015 [David Ryan, Drawing Towards Sound](#)
- Feb 2016 [Vaughan Oliver](#)
- Jan 2017 ["In Conversation" with Sayed Hasan and Karl Ohiiri](#)
- Jan 2019 [Mary Maclean's Photographic Works](#)
- Feb 2020 [Jaimi Gili](#)
- Feb 2020 [Tatty Devine](#)

2014-2018 Hawksmoor Public Lecture series

Approx. 8 lectures per year - total 32 lectures (links on page 12)

Panel Discussion Creative Conversations Series

- May 2015 ["The New Space of publishing"](#)
- March 2016 [Building Reader Communities](#)
- March 2016 [Gub Neal Talk](#)
- April 2016 [The Writer as Catalyst and Collaborator](#)
- February 2017 [Cinematography: A dialogue with Billy Williams OBE, BSC and Vanessa White.](#)

Other Panel Discussions

- March 2017 Panel Discussion ["Designing Death: Aesthetics and Challenges for the 21st Century"](#)
- October 2017: [Panel Discussion Diversity and inclusivity By Design](#)
- December 2017 [Journeying Home, Family Ties Network Seminar](#)
- February 2018 ["The Performativity of Painting" - Artists' Panel](#)

Performances and Performance Series. Total 26 + events

- March 2015: drawing Towards Sound Performance Series
- 5 events, including live performance of full score of Cornelius Cardew's Treatise and live [performance and screening by Anton Lukoszevieze.](#)
- October 2015 [Manuela Blackburn, Loudspeaker Orchestra](#)
- October 2015 "Soundscapes" Performance Event

Unit-level environment template (REF5b)

- July 2017 "Incandescent" Performance event
- [2018-19 Loudspeaker Concert Series, \(10 performances\)](#)
- [2019-20 Loudspeaker Concert Series \(6 events\)](#)
- Jan 2018 [Recitativo Performance - David Ryan and Ensemble](#)
- Dec 2019 [Solstice Shorts, Time and Tide live stories, poems and songs](#)

The School also has a number of technical sectors and facilities relating to Film and TV, Photography, Architecture, Landscape and the Built Environment. This technical infrastructure facilitates practice research in Architecture/Landscape/Art/Design/Film/Sound & Image. The School also receives significant support at both University and Faculty level, e.g., from [Greenwich Research and Enterprise \(GRE\)](#), particularly in the development of funding strategies for funding applications.

The School has an operational infrastructure which echoes those across the Faculty and University, with a Head of Research and Enterprise, Research & Enterprise Officer whose role is to support the Head of Research and to assist with post-award support, the research bidding and management processes and research dissemination activities.

4. Collaboration and contribution to the research base, economy and society

Collaboration, networks and partnerships

Members of staff collaborate widely with academic colleagues in other institutions nationally and internationally. For example, the 'EU Aquaponics Hub' ([Kotzen](#), [Milliken](#)) was a four year COST Action (2014-2018) that brought together 90 researchers and SMEs from 30 countries in order to develop aquaponics in the EU. This resulted in 24 collaborative journal articles, [an open access book](#) which has been downloaded over 900,000 times and [58 videos](#) with hundreds of hours of knowledge exchange.

The '[Desert Restoration Hub](#)' ([Kotzen](#), [Milliken](#)) was another four year COST Action (2012-2016) that brought together 80 researchers from 31 countries to provide the science and practical guidance for dryland restoration and the combat of desertification. This resulted in 21 collaborative journal articles, a book of [60 fact sheets](#) on various aspects of restoration, a White Paper containing recommendations aimed at policy makers and key stakeholders, and [61 videos](#).

The Built Environment Group has ongoing collaborations with institutes in China and the Netherlands, and some individual research collaborations with Global South countries such as Brazil and Mexico. For example, [Garcia Kerdan](#) was part of the NERC funded project '[Sustainable gas pathways for Brazil: from microcosm to macrocosm](#)', a £1m funded collaboration between UK and Brazilian institutions. The project resulted in the publication of 48 collaborative journal articles. [Garcia Kerdan](#) has ongoing collaboration with the National Autonomous University of Mexico tackling issues on how to employ Machine Learning techniques in the design of sustainable buildings and communities. [Evangelinos](#) has ongoing collaboration with the University of the Aegean, Greece, tackling issues on [Environmental Management Practices of Environmental Management and Audit Scheme](#) (EMAS) and the evaluation of corporate social responsibility for firms located in different regions.

As noted in Section 3, a key feature of the research activity associated with the [Stephen Lawrence Gallery](#) is an ongoing series of exhibitions where, using a traditional 'two-person' format, an artist and architect (or practice) are invited to collaborate on an exhibition and a joint public talk. Thus far, this series has seen the following partnerships:

- [Dan Walwin \(artist-in-residence, Rijksakademie\) and Flea Folly Architects \(UoG\) 2014](#);
- Steve Johnson (artist, SE London) and Eva Sommeregger (EYEtry architecture, Vienna) 2016; and
- Suzanne Mooney (artist, Uniarts Helsinki) and Dr Felix Robbins (architect, a-projects, London) 2018.

The programme has also seen an ongoing partnership with [‘Outside Architecture’](#), a curatorial research project by artist/researchers from University of the Arts London and Reading University, which held its inaugural exhibition at the gallery in 2009 and subsequently exhibited [‘Plan/Unplan’ in 2017](#). The gallery also participates in an international art/architecture project led by Anglia Ruskin University in collaboration with Réseau Peinture and associated HE institutions in France. The exhibition and symposium [‘Phase IV – Intersections’](#) (February 2020) followed participation in [‘Phase III – Modular’](#) (2019) at HLM Gallery Marseille.

Relationships with key research users, beneficiaries and audiences

[‘The Broken Plate: Drawing On the Past – Looking to the Future’](#) ([Hobbs](#), [Kennedy](#)) was an Arts Council England funded (15k) collaboration between the University of Greenwich/CPDA and Emergency Exit Arts group. The project was intended to foster an open dialogue between the University and the public in relation to new Stockwell St building. The two day event in 2016 was a site specific, promenade and digital performance/installation that:

- enabled local artists to work with University academics and technicians;
- attracted a new audience, including local residents, to our architecturally significant building;
- involved hundreds of local residents in the development of the artistic piece; and
- demonstrated an awareness of the historical context of the building’s setting and its future as an inclusive driver of creative practice in the area.

Due to their research expertise in green infrastructure and ecosystem services, [Kotzen](#) and [Milliken](#) were invited to serve as academic advisors to the Interreg Europe [‘Blue Green City’](#) consortium of regional and local authorities in Sweden, Germany, France, Italy, Romania, Ireland, and Croatia (2019-2023). The project seeks to improve policies that promote blue and green infrastructure as an integral part of local/regional natural heritage preservation strategies, by stakeholder knowledge of the concept of ecosystem services through an interregional learning process and collaboration in finding common solutions to common challenges posed by climate change adaptation.

Research in the Built Environment Group tackles weaknesses in different sectors such as buildings and energy. For instance, [Garcia Kerdan](#) has investigated existing built asset management theory and identified the business challenges to be addressed if adaptation were to be integrated into maintenance and refurbishment planning. Different pieces of research have provided solutions which have subsequently been used by industrial companies (e.g., Shell, BG Group), policy makers and professionals to improve the resilience – of buildings, communities, and energy systems at different scales – to current and future climate change.

The wider impact of the School's research on the economy and society

The Interreg NW Europe EYES project (680k)– [Empowering Youth through Entrepreneurial Skills](#) (2018-2021) – ([Kennedy](#), [Maragiannis](#), [Maffioletti](#), [Rehal](#)) is a European partnership of universities, municipalities, regional governments and social services which combines entrepreneurial education with personal coaching and a digital platform to integrate vulnerable young people in the labour market. The Greenwich team is leading the co-design work package. This was the first Interreg funded social innovation project and was the winner of the [2019 NWE Impact Award](#).

[Korolkova](#) explores the current state of the information society in Ukraine from the bottom up by giving a voice to civil society organisations and non-government social justice actors. Her research, commissioned by an international independent NGO, [Global Information Society Watch](#), focuses on three areas – AI and social justice; economic, social, and cultural rights in the media; and sexual rights and digital activism – in order to build policy analysis skills and ‘habits’ into the work of civil society organisations related to information technologies for the development of democracy and social justice in Ukraine.

The development of open-source e-learning courses is one of the best possible solutions for providing inclusive and equitable quality education and lifelong opportunities for all. The

'[Aqu@teach](#)' Erasmus+ Strategic Partnership for Higher Education ([Kotzen](#), [Milliken](#)) developed the first ever aquaponics curriculum specifically for higher education students, in collaboration with partners from Switzerland, Spain and Slovenia. The open-source e-learning course and accompanying teaching resources have been released with Creative Commons NonCommercial-ShareAlike licenses, enabling educators to translate them beyond the currently available: English, Spanish, German and Slovene.

The British Council funded UKIERI project 'Ecosystem assessment and Natural Character Area profiling in Kachchh district, India' ([Milliken](#)) enabled strategic objectives to be identified which balance the priorities of ensuring the livelihoods of local stakeholders and maintaining important habitats in the context of poorly planned industrial growth which is exacerbating social inequalities, damaging the environment, and compromising the delivery of ecosystem services. The project was Highly Commended in the [Best Practice Knowledge Sharing Award](#) at the Chartered Institute of Ecology and Environmental Management Awards 2017.

The research and business decision-making models and methods developed from recent projects by the Built Environment Group have directly informed local and national government policy frameworks as well as the building industry, for example Garcia Kerdan's work on the future natural gas infrastructure in southern Brazil.

Engagement with diverse communities and publics

Practice-based research provides plenty of scope for engaging with diverse communities and publics. [Keith](#) explores the barriers to access informal science education for BAME and white working-class people, and the mechanisms that can be used to increase science capital. Her [SMASHfestUK](#) project has received a number of awards in recognition of its outreach work with primary schools, including [1st prize in the National Co-ordinating Centre for Public Engagement \(NCCPE\) 'Engage' awards \(2016\)](#), two ['Collaborate to Innovate' awards from The Engineer \(2017 and 2018\)](#), and a [Times Higher Education Award for Outstanding Contribution to the Local Community \(2018\)](#). The project has become widely recognized for its successful approach to inclusive engagement and has been made a best practice case study by a number of organisations including the Science and Technology Facilities Council, The Royal Academy of Engineers, The Wellcome Trust and the Million+ Society of Modern Universities.

[Sorrentino](#) questions whether addressing social and cultural capital openly and honestly would help a more diverse range of people, cutting across gender, race, social class, age and sexual orientation, to see themselves as employable in the advertising sector. The [Carbon Academy](#) is an extra-curricular scheme that takes place within M&C Saatchi in London to run alongside London schools' existing level three post-16 provision. The programme supports under-represented groups, such as those identifying as women and those from BAME backgrounds, by supporting the growth of their social and cultural capital.

[Maragiannis](#) uses practice-based research methods to co-design projects that engage people throughout the design processes. The [Diversity and Inclusivity by Design \(d+iD\)](#) project explores ideas of diversity and inclusivity in the creative spaces of art and design in order to empower marginalised groups, in particular refugees and economic migrants. The project is a collaboration with [FABRICA Research Centre Italy](#), [AIGA \(USA\)](#), International Refugees Forum (GR), The [Cyprus High Commission](#) and the [Greenwich Autistic Society](#) (UK). It has shown that by using a co-design approach, design can act inclusively regardless of age, gender, ethnicity, disability or language, and can therefore be used as a powerful tool to create positive social impact and change. The project has been able to influence and create policy in governmental (Cyprus High Commission) and non-governmental (International Refugees Forum) organisations, and was shortlisted for the [Research Award at the International Institute for Information Design \(IIID\) Awards 2020](#).

[Boddington](#) uses practice-based research to explore how forms of the body are created and transmitted using digital tools, and how living and working in virtual space enables and encourages collective intelligence, collaboration and co-creation. From user experience (UX)

design and audience journeys to innovations in virtual/physical blending, the Internet of Bodies project is used to pattern forward insights as a mode of trend forecasting, and to demystify these technologies for wider public debate which has been heightened by the COVID-19 crisis. Knowledge sharing with the general public has extended into radio broadcasting, the performing arts, sci-arts, and social tech creative industries.

The [Stephen Lawrence Gallery](#), see Section 3, holds numerous exhibitions per year with over 800 visitors, a third of which are external to the University and therefore the gallery has a significant reach outside the institution. The gallery has hosted exhibitions curated by numerous staff members, including [Kennedy](#), [Hobbs](#), [Waterworth](#), [Maragiannis](#), [Watkins](#), [Boddington](#), [Papadaki](#) and [Aling](#). Two main strands of related research activity have been developed for the gallery programme: Art/Architecture and Sound/Image. The focus is on the potential for the gallery to foster meaningful and productive dialogue between the selected disciplines, which it communicates to a wider public. Exhibitions and associated events are put to the service of creative and academic interchange, through which the potential of practitioners to learn from each other's approaches is explored. Both strands reflect teaching and research specialisms at the DSC, while contributing to a wider community of research and practice – locally, nationally and internationally. The resulting outputs are regularly explored through activities aimed at the general public, often delivered in collaboration with locally based community arts organisations (e.g. Emergency Exit Arts and Eye4Change).

For the Sound/Image strand, performances are invariably integrated into the programming. A yearly feature is the exhibition held and organised in tandem with Sound/Image conferences led [Knight-Hill](#). The exhibition has grown in reputation alongside the conference since its inception in 2015, and now receives over 250 applications for inclusion, many international. Additionally, the programme includes a triannual 'Noise' event (2015, 2018) where a curated exhibition is similarly central to proceedings, alongside performances and talks. Both series explore interfaces between practice and ideas addressing the aural and the visual.

Responsiveness to national and international priorities and initiatives

The DSC is responsive to national and international research priorities. Much of the research carried out is focused on the UN Sustainable Development Goals:

- 2 – Zero Hunger: EU Aquaponics Hub ([Kotzen](#), [Milliken](#))
- 3 – Good Health and Wellbeing: Bioaerosol control in waste gas ([Ibanga](#))
- 4 – Quality Education: Aqu@teach ([Kotzen](#), [Milliken](#))
- 5 – Gender Equality: Carbon Academy ([Sorrentino](#))
- 7 – Affordable and Clean Energy: Renewable energy in buildings ([Garcia Kerdan](#))
- 8 – Decent work and economic growth: Occupational health and safety ([Evangelinos](#), [Agyekum-Mensah](#))
- 9 – Industry, Innovation and Infrastructure: Modelling cost effective pathways for natural gas infrastructure in southern Brazil ([Garcia Kerdan](#))
- 10 – Reducing Inequality: SMASHfestUK ([Keith](#)), Carbon Academy ([Sorrentino](#)), EYES ([Kennedy](#), [Maragiannis](#), [Maffioletti](#), [Rehal](#)); integration of LGBT issues in corporate social responsibility ([Evangelinos](#))
- 11 – Sustainable Cities and Communities: Blue Green City ([Kotzen](#), [Milliken](#)); Water supply in Malawian cities ([Mpakati-Gama](#)); Agile project management and BIM for improved building performance ([Sakikhali](#))
- 12 – Responsible Consumption and Production: Corporate social responsibility ([Evangelinos](#))
- 13 – Climate Action: Blue Green City ([Kotzen](#), [Milliken](#)); Carbon sequestration by reforestation in Brazil (([Garcia Kerdan](#)); Building energy optimisation ([Garcia Kerdan](#), [Mpakati-Gama](#))
- 15 – Life on Land: Desert Restoration Hub ([Kotzen](#), [Milliken](#)); Ecosystem assessment and NCA profiling in Kachchh district, India ([Milliken](#))
- 16 – Peace, Justice, and Strong Institutions: Human rights in Ukraine ([Korolkova](#))

Recognition by the research base

Unit-level environment template (REF5b)

Staff members serve on the editorial boards or have been guest editors for [Architectural Design](#) ([Wall](#)); [Cities and Health](#) ([Kotzen](#), [Milliken](#)); Design Ecologies ([Murray](#)); [Ecocycles](#) ([Kotzen](#)); [Land Degradation and Development](#) ([Kotzen](#)); [Leonardo Electronic Almanac](#), [Music, Sound and Moving Image](#) ([Knight-Hill](#), [Kennedy](#)); and [Zetesis](#) ([Kennedy](#)).

The staff also serve on the review boards of a wide variety of journals, including [Applied Energy](#); [Aquaculture International](#); [Aquaculture Reports](#); [Building and Environment](#); [East Asian Journal of Popular Culture](#); [Energy](#); [Energy and Buildings](#); [Energy Conversion and Management](#); [Energy Policy](#); [Energy Strategy Reviews](#); [Frames Cinema Journal](#); [Frontiers in Plant Science](#); [Horticulturae](#); [Intensities](#); [Journal of Architectural Education](#); [Journal of Building Engineering](#); [Journal of Cleaner Production](#); [Journal of Illustration](#); [Land](#); [Land Degradation and Development](#); [Land Use Policy](#); [Leonardo](#); [MAST](#); [Networking Knowledge](#); [Organised Sound](#); [Plaridel](#); [Renewable and Sustainable Energy Reviews](#); [Resources, Environment & Sustainability](#); [Science of the Total Environment](#); [Sustainability](#); [Technological Forecasting and Social Change](#); and [Urban Forestry & Urban Greening](#).

Research funding review panels: [AHRC](#) ([Kennedy](#)), [FWF Austrian Science Fund](#) ([Hultzschn](#)).