Collaborative Doctoral Awards
Studentship Competition (Project-led)

Project Proposal

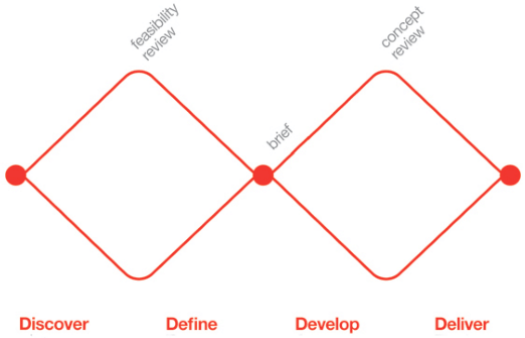
NORTHERN BRIDGE CONSORTIUM DOCTORAL TRAINING PARTNERSHIP

UKRI Arts and Humanities Research Council

SECTION 1: PROJECT PROPOSAL AND CASE FOR SUPPORT			
Proposed Project Title:	Designing where we live		
Project Summary: *(Maximum 100 words)*	This PhD is a design-based collaboration with the YMCA, Ryder Architecture, and Northumbria University to co-design high-quality innovative housing solutions with young adults, *not in Employment, Education or Training (NEETS)*. This doctorate will produce housing designs suitable for fabrication through the charity's facilities and supply chain. The YMCA users will contribute to the design process and assembly of the houses, leading to employment opportunities and homes for the charity's users. The PhD candidate will develop, record and reflect on the codesign process to ensure transferability and maximise impact, as well as producing the detail design and assembly information for the homes.		
Name of non-HE Partner Organisation:	The YMCA Newcastle		
Name of Contact at non-HE Partner Organisation:	Jeff Hurst	Email Address:	jeff.hurst@ymcanewcastle.com
Primary AHRC Subject Area: Design	Design: History, Theory and Practice		
Secondary AHRC Subject Area (if **Interdisciplinary**):	Choose an item.		
Does the project Include a creative practice component?	YES X NO		
If you have listed two subject areas above, do you consider the project to be interdisciplinary?	YES NO N/A X		
If Yes, please briefly state why: *(Maximum 100 words)***:**			
Please provide full details of the proposal and make your case for support below: *(Maximum 750 words)*			
Research questions: 1. How to develop a codesign process that empowers young disenfranchised adults to fully engage in the project, leading to transferable methods and successful outcomes. 2. How can the codesign be used to develop house designs and construction technologies for novice builders to assemble homes to live in, and learn new transferable skills that improve employability? 3. How can a practice-based doctorate highlight the power of design, as a way of thinking, acting and doing, in addressing significant social, cultural and economic opportunities for the YMCA and beyond?			

YMCA Newcastle was established 170 years ago to deliver a range of services to support young people living in the city. Over the last decade, the charity has seen a 96% reduction in funding. In response, it changed its business model to generate its own income from companies it has established, providing employment opportunities for its users.

The government acknowledges that the UK's housing market is broken; a lack of access to housing is a significant barrier to social and economic progress, particularly for young people. In the North East, young people are less likely to be on the housing ladder than anywhere else in the UK other than London as a result of a weak labour market, low-skilled and low-paid employment. In response, the YMCA is establishing a construction company to build new housing for its users leading to employment opportunities. The doctorate is fundamental to this ambition. It is comprised of two principal investigations that looks to fulfil the Design Council's *Double Diamond* framework to achieve outstanding design outcomes:



The first concerns the use of codesign as a methodology covering the *Discover and Define* diamond, establishing a process of utilising the skills and insights of unemployed young people, and reflecting on that process to build the capacity of the YMCA to develop outstanding homes. The second strand also involves practice and praxis-related methods to cover the *Develop and Deliver* diamond, using drawings and model making (both physical and digital) as well as the prototyping of components and construction systems, to turn the codesign process into production information to be assembled by young people, developing new skills.

Contribution to Knowledge

Codesign is utilised across many areas of design to bring together the insights of users and professional. There have been to date several recorded codesign projects working with NEETS; none consider the design of products. The topics instead include: *Access to public services* (Fassi 2020); *Entrepreneurial Skills* (Marragiannis, 2019); *Quality of Life* (Bianchi, 2016); *Mental Health* (Iorfino, 2019). Projects involving codesign for housing include *Designing for Ethnic Minorities* (Shelby, 2010); *the Elderly* (Abellard, 2012); *Housing Accessibility,* (Jonsson, 2018). The housing codesign projects listed above inform only the first diamond of the diagram.

There is scholarly consensus that we are all designers, given the opportunity, confidence and tools; this doctorate presents a significant and unique challenge for the candidate to consider how best to engage this social group who are disenfranchised and rarely given the opportunity to contribute to projects that affect their lives. To oversee this highly ambitious project, a very strong supervision team of experts will be assembled with multiple perspectives from academia, professional practice, and the charity sector. The doctoral student will also work alongside the key workers at the charity who have extensive experience of working with their users. Beyond the academic team, the engagement of Dr. Oliver Jones, the research director of Ryder Architecture, and Jeff Hurst, CEO of the YMCA Newcastle, will ensure a rounded holistic approach (see section on supervisors).

The participants will be involved across the full design process (as per the double diamond diagram above). This will be an original piece of work, leading to considerable impact, including capacity building within the YMCA, new transferable codesign methodologies, employment opportunities and sustainable housing designs.

Components of the doctorate

The thesis will record the process, and critically reflect on, the co-design process to facilitate the doctorate's transferability to similar contexts. A design portfolio will be assembled of the house designs and construction components; an assembly manual will be produced to be used by the charity.

The candidate will showcase the work through exhibitions, as well as writing papers for international journals such as *Codesign* and presenting at relevant conferences. Possible exhibition venues include the Design Museum, enabled through the PS's (Jones) contacts. The YMCA have access to local and national venues to further showcase the project's outcomes.

Please provide details of any resources and facilities, including details of any high cost equipment, fieldwork, training, etc., that may be required to complete the project successfully, and where you will seek these resources (e.g. NBCDTP; partner resources; departmental/school funds). Please include estimated costs:
(Maximum 200 words)

The doctorate requires access to a powerful computer and industry software, as well as rapid prototyping workshops to develop the designs. The Faculty at Northumbria invested £2 million over the last five years into state-of-the-art workshops and 3D rapid prototyping facilities. It has employed technical staff with extensive knowledge of this equipment. These facilities are amongst the best in the UK. The doctorate candidate will have access to the full suite of workshops. The Faculty provides designated space within the postgraduate hub for all its doctorate students, providing a high-powered computer with the full range of software required for their study. The successful candidate will be expected to have a working knowledge of the relevant industry-standard software; we therefore do not envisage any specific training, other than that provided by the technicians to use the equipment. If training is required, we will pay for it through the £4000 per year contribution from Ryder and the YMCA (see funding section).

There will be materials required for making models and prototypes; there will be site visits, materials required for the codesign workshops, attendance at conferences, printing material for exhibitions etc. This will all be covered by the £4000/year contribution from Ryder and the YMCA.

Please outline the arrangements for communication between the partner organisation and academic host organisation in regard of the project management and the monitoring of academic progress:
(Maximum 150 words)

The supervision team includes the principal supervisor, Professor Paul Jones, second supervisor Will Campbell, advisor no.1 Jeff Hurst, CEO of YMCA, and advisor no.2 Dr Oliver Jones, Research Director of Ryder.

Paul Jones has extensive experience of working with each member of the team: collaborating with Campbell on research projects over the last decade. He has worked with Jeff Hurst for five years on design for the YMCA facilities. Dr Oliver Jones, from Ryder, is an ex-colleague from Northumbria. All supervisors/advisors are based in Newcastle, as is the project. This arrangement will facilitate regular and well-connected communication. Monthly meetings will take place at the YMCA offices. In line with the university's doctorate guidance, the supervision team will meet the candidate monthly. From year 3 onwards, the candidate will share his/her time between the university and the YMCA factory to ensure that the houses are manufactured correctly.

What benefits will accrue to the student and the partner organisation as a result of your collaboration?
(Maximum 300 words)

Benefits for the student

The candidate will benefit from the applied nature of the doctorate, as a result of being exposed to real life opportunities, especially working with a diverse set of people; this will bring challenges that will enrich the research and undoubtedly increase resilience and life skills. More specifically, the candidate will gain from developing knowledge of codesign as a

method, a requirement of community and user-participation. There will be cutting-edge technical knowledge acquired around digital workflows and fabrication techniques of modern house design and construction assembly. The PhD will equip the candidate with the skills necessary to a career in academia or industry on completion. The YMCA is a mature provider of staff development; the doctorate student will be given opportunities to engage with this over the duration of the PhD.

The benefits to the partner organisation are manifold: the project will, by its very nature, directly address a number of the charity's priorities. The project has been developed in close collaboration with the YMCA and seeks to address a particular need within the organisation for research-informed guidance on the design and manufacture of houses suitable for its users. Neither architectural practice, nor the housing industry, have the capacity – or are generally willing – to engage with the charity in such an involved project. A significant benefit to the partner is that these dwellings will provide places for their users to live; having a happy and stable workforce increases the productivity of their companies, enabling the YMCA to help more disadvantaged young people. The process of assembly will lead to new skills through working with the YMCA's construction professional. The charity see value in building their research capacity, undertaking projects and building relationships with academic institutions enabling them to apply for other funding to widen their operation.

Please briefly state what financial (if any) or in-kind contribution the partner will be making over the duration of the award:
(Maximum 100 words)

The YMCA will make a £2K/year contribution. Ryder Architecture have also agreed a £2k/year contribution

Total contribution will be **£14000** over duration of the project (42 months).

The research director of Ryder (Oliver Jones) will join the supervision team every two months. His contribution over the 42 month duration will be 32 hrs.
The CEO of YMCA (Jeff Hurst) will contribute to the supervision each month for the duration of the project, his contribution will be 72hrs.

Their commercial rates are £1200/day and £500 respectively. Jones's contribution is **£4800**, and Hurst's is **£4500**.

Total = **£9300.**

<u>Overall total contribution= £23300</u>

Please describe the nature of the collaborative arrangement and the activities the student will be taking with the organisation:
(*Maximum 300 words*)

In projects of this nature that we have undertaken in the past, a MOU has been established and IP issues bottomed out from the outset. The YMCA and the university have provisionally agreed to establish an MOU and share the IP; this will be formally agreed if the application is successful. The university legal team including the IP advisor will be consulted. Jeff Hurst has a legal background and understands IP. Ryder are providing their expertise for free and will not be looking to make commercial gain from IP and the associated research, although they would welcome the opportunity to showcase the project as part of their charitable work. Regarding the codesign, and other research activities, we will ensure that this benefits from the full scrutiny and support of Northumbria University's Ethics procedures, supported by a supervision team. All the participants will be adults; the codesign activities will be carried out in the presence of the YMCA's staff.

The candidate will be designing a range of affordable, sustainable and easy to assemble houses. This will be a thorough design process, utilising the following:

1. Co-design activities- **covered by ethics approval and YMCA support.**

2. Inscriptive methods, including: site analysis and surveys to establish site measurements, physical and environmental conditions. **University risk assessment**
3. Primary/secondary analysis of papers, report, books, exhibitions and building precedents on topics related to the research questions- **no risks associated**
4. Collaboration with manufacturers and supply chain to undertake prototypes of building components. **Covered by university and manufacturer's risk assessment, and Health and Safety at Work Act**
5. Environmental computer modelling to calculate embodied and operational energy, carbon u-values and air leakage: **no risks associated**
6. Computer and physical modelling, and drawing, (in combination) used to develop and test design solutions: **Workshop training and risk assessment.**

SECTION 2: SUPERVISION AND EXTERNAL ADVISORS			
First Supervisor:	Professor Paul Jones	School/Department:	Architecture and the Built Environment
Second Supervisor:	Will Cambell	School/Department:	Architecture and the Built Environment
Additional Advisor:	Dr Oliver Jones	Organisation/Institution:	Ryder Architecture
Additional Advisor:	Jeff Hurst	Organisation/Institution:	YMCA

Explain how the expertise of the supervisory team and external advisors will allow them to support the proposed project and the selected student:
(Maximum 500 words)

The supervision team from Northumbria, and Dr Jones (Ryder Architecture), collaborating with the doctorate candidate, will use their expertise to maximise the quality of the outcomes and their impact. They have recent and relevant experience in the use of codesign and the technical expertise to supervise the candidate to produce outstanding housing solutions. Prof. Paul Jones (PS) is the Director of the *Homes for the Future Innovation Centre*. This was established in 2018 to improve housing design. He is the lead for Design Research for Unit 13 for the REF, and therefore has extensive understanding of design research and methods. He recently completed a £3.2million, award winning, sustainable housing scheme in Sunderland, working with Building Design North Ltd, using digitised workflow and *Modern Methods of Construction* (MMC). With the same team he is collaborating on the design of the first Bradpad, a £1million holiday home for the Bradley Lowery Foundation to be used by children (and the families) who have life-threatening or shortening illnesses. The project utilises cutting edge technologies to produce an autonomous dwelling and clean air environment. He is working on six prototype houses for South Seaham Garden village, funded by a £60K *European Social Catalyst Fund* grant and equivalent private match funding. Each house is a case study investigating MMC, sustainable materials, smart technology, energy use, ageing, work/live etc. Jones has successfully supervised four doctorate students to completion and has five students currently progressing, three of which are design-based.

The SS (Campbell) joined the university in March 2020 as an experienced practitioner and Early Career Researcher. He has a track record of delivering complex architectural projects in the residential and housing sector. He has expertise in digital workflow and MMC, both requirements for this doctorate. His technical and design expertise is significant and will provide an invaluable locus of support for the project. His expertise will be invaluable to the team in years 2 and 3 when the project transitions from the codesign to technical and detail design phase.

Advisor 1. Jeff Hurst LLB MBA is the CEO of YMCA and has a 25 year track record ensuring charities are financially viable; he has established several successful companies under the ownership of the YMCA that have enabled the charity to maintain its

services, despite a significant decrease in funding. His business acumen will help with the scalability of the housing innovation, and its potential impact.

Advisor 2. Dr Oliver Jones is the Research Director at Ryder Architecture. He oversees all ongoing research projects for the company across their international offices. He works with government, policy makers, international funding bodies, academic networks and industry partners; he conducts collaborative, pioneering research across many areas including housing, wellbeing, environmental efficiency, digital and smart integration, all of which are relevant to the doctorate. He is currently supervising two PhDs. He has recently joined the Department for Business Energy and Industry Strategy Board for the House of 2030; he will help maximise the impact through his governmental and industrial contacts.

SECTION 3: RESEARCH ENVIRONMENT

Please provide details about the research environment the selected student will be joining and its suitability:
(Maximum 500 words)

The candidate will join the *Homes for the Future Innovation Centre* that has other doctorate students supervised by staff within the department, whose work engages with improving housing in the UK. This centre was established in 2018 to coordinate research and PhDs supervision in this area. A number of doctorates are design based, so the candidate will benefit from working alongside PhD students who are undertaking similar projects. These include PhDs investigating the domestic environment and ageing; housing and prefabrication; smart technology integration; the role of the house in wellbeing and health outcomes. A number are set in real life contexts with students collaborating with other public and private organisations. The PS (Jones) is currently contributing to writing an application with colleagues in the department to the *Strength in Places Fund*, having been successful in attaining £55K Seed-Corn money. This is a £25 million application, and a number of demonstrator projects forming the bid aim to improve housing quality and delivery. If successful, there will be significant opportunities for the PhD candidate to build synergies with other similar projects within the department and the potential for further RA opportunities following completion of the doctorate.

There are 12 academic staff within the Architecture Department who describe themselves as design researchers who will also be available, if required, for the guidance of the candidate. The department is set to return 90% of its staff to the REF; this is four times the number returned in 2014. The significant shift in culture is reflected in 65% of staff having doctorates; this is one of the highest percentages of any school of architecture in the country. Within the wider Faculty (Engineering and Environment) there is an improving Engineering and Construction Department, with 90% of its staff having doctorates, many of whom are collaborating with academics on built environment research projects. Relevant expertise includes: Building Information Modelling (BIM) , digital workflow, material and construction innovation, building systems, smart technologies, digital living and machine learning. Many of these areas have relevance to the doctorate and the PS will engage the necessary expertise, if and when it is required.

As already stated, the PhD candidate will have access to some of the best workshops and prefabrication facilities in the UK, located within the faculty, as well as high-powered computers with every software package required to undertake the project. They will be working in the same postgraduate hub as other doctorate students and benefit from this association and community.

SECTION 4: STUDENT SPECIFICATION

For further information about this Collaborative Doctoral Award and to submit an expression of interest, please contact:			
Lead Supervisor (or alternative Contact)	Paul Jones	**Email:**	p.jones@unn.ac.uk
Expressions of interest must be received no later than:			*06/01/2021*
Expressions of interest should be accompanied by the following documentation:			Provide a 2-page CV, along with a personal statement (no longer than 1000 words) indicating your suitability and preparedness for undertaking this project.
Interviews for shortlisted candidates are expected to take place:			*February 2021*

APPLICANT SPECIFICATION

Note, applicants must also meet the criteria for the acceptance on a doctoral programme as set out by the host institution's Postgraduate Admissions Service.

Education and Professional Qualifications	Essential Criteria	Undergraduate degree at 2:1 or above in relevant discipline; Masters Degree; or equivalent professional qualifications
	Desirable Criteria	
Research and Impact Experience and Training	Essential Criteria	- Ability to manage the research project - Experience of research skills and methodologies relevant to the project
	Desirable Criteria	- Experience of codesign, community consultation or participatory methods
Professional Practice and Job-related Experience	Essential Criteria	Should have at least RIBA Part II (or equivalent)
	Desirable Criteria	- Have worked on housing projects in professional practice - Have skills and expertise in industry software such as Autocad, revit (or equivalent)
Interpersonal Skills	Essential Criteria	- Excellent communication and interpersonal skills - Ability to show initiative and be self reliant - Experience of working within a team - Ability to initiate, develop and maintain good working relationships
	Desirable Criteria	- Project management skills at a level approapriate for the project
Other Factors	Essential Criteria	
	Desirable Criteria	