MAPPING THE SCOTTISH PGR LANDSCAPE

Scottish Funding Council
Comhairle Maoineachaidh na h-Alba

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SFC's Review of Tertiary Education and Research, published in July 2021, included a recommendation to develop better ways to support the postgraduate researcher (PGR) experience. To understand how best to support the Scottish PGR community, and to aid in decision making when it comes to investing in PGR training, a holistic understanding of the Scottish PGR training and development landscape is required. This report aims to contribute to this by providing -

- A basis for a more detailed understanding of the PGR training and support landscape within Scotland; and
- A snapshot of PGR experiences within this landscape.

This report was compiled and written as part of an internship project by PhD student Maggie Mroczkowski during a 12-week SGSSS internship within the Research and Innovation Directorate at SFC.

SUMMARY

Postgraduate researchers (PGRs) are a significant component of Scotland's world-class research base; between 2014 and 2020, over **18,000 RESEARCH DEGREES WERE AWARDED** in Scotland, representing **11% OF THE UK TOTAL**.

PGRS ARE STRONGLY CONCENTRATED IN TWO NUTS2 REGIONS - Eastern Scotland and South Western Scotland; **AROUND 90% OF PGRS** are based in universities whose main campus **IS WITHIN THESE REGIONS.**

Snapshot interviews with PGRs suggested that **TERMS SUCH AS 'PROFESSIONAL DEVELOPMENT' AND 'DOCTORAL RESEARCHER' MAY BE PREFERABLE** to 'training' and 'student' **WHEN REFERRING TO SCOTLAND'S POSTGRADUATE RESEARCHER** community and that there is scope for practice sharing and cross sector collaboration among institutions.

THE RATIO OF PART TIME TO FULL TIME PGRS VARIES DEPENDING ON THE SIZE OF THE INSTITUTION. Smaller institutions have a more even proportion of part time and full time PGRs than larger institutions, where PGRs are predominantly full time.

The types of PGR support structures within institutions vary, but **GRADUATE SCHOOLS ARE THE MOST COMMON**. There are also doctoral schools, colleges and academies in place within Scottish institutions which have similar functions.

The **MOST COMMON PGR DEGREE** types offered by Scottish institutions are **PHD AND MASTERS BY RESEARCH**, but professional doctorates are also offered across 13 institutions, covering a range of qualifications (including DProf, DBA, DEdPsy).

UKRI-funded Doctoral Training Partnerships (DTPs) and Centres for Doctoral Training (CDTs) are important components of the Scottish PGR landscape. **NINE UKRI FUNDED DTPS AND 25 CDTS THAT PARTNER WITH SCOTTISH INSTITUTIONS WERE IDENTIFIED**, primarily in areas of STEM.

Given its **SIZE AND DIVERSITY**, the Scottish PGR landscape could be an **IDEAL TESTBED FOR FURTHER RESEARCH** into how to widen access and improve conditions for PGRs.

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INTRODUCTION

SFC's Review of Tertiary Education and Research, published in July 2021, included a recommendation to develop better ways to support the postgraduate researcher (PGR) experience. To understand how best to support the Scottish PGR community, and to aid in decision making when it comes to investing in PGR training, a holistic understanding of the Scottish PGR training and development landscape is required. This report aims to contribute to this by providing -

- A basis for a more detailed understanding of the PGR training and support landscape within Scotland; and
- A snapshot of PGR experiences within this landscape.

Between January and April 2022, the degree and support/training structures in place across 18 higher education institutions in Scotland were investigated. Desk based mapping provided an overview of the types of PGR degrees offered across Scottish Higher Education Institutions (HEIs), how they differ by university, where UKRI funded Centres for Doctoral Training (CDTs) and Doctoral Training Partnerships (DTPs) are placed across institutions and what structures are in place to provide training support for PGRs. Additionally, 12 individual and group interviews were conducted with 13 PGRs and 13 members of staff across eight Scottish HEIs to provide perspectives on the Scottish PGR experience.

Based on the findings of this work, this report draws several conclusions and highlights areas for further work with the aim of improving the PGR experience and creating equitable study conditions for all PGRs in Scotland.

This report was compiled and written as part of an internship project by PhD student Maggie Mroczkowski during a 12-week SGSSS internship within the Research and Innovation Directorate at SFC between January and April 2022.

BACKGROUND AND CONTEXT

RELATED STUDIES

The UK Council for Graduate Education (UKCGE) recently published a report focusing on Structures and Strategy in Doctoral Education in the UK and Ireland (Smith McGloin & Wynne, 2022). Although not Scotland specific, this report highlighted some aspects of the doctoral landscape that will undoubtedly be at the forefront of ongoing work in this area, such as:

- Increasing diversity;
- The importance of equitable access to funding;
- The changing remit of graduate schools (or their equivalents); and
- An increase in the number of cohort-based programmes.

Additionally, UK Research and Innovation (UKRI) is developing a New Deal for Postgraduates, an initiative set out by the UK Research and Development Roadmap (2020) and subsequently the Research and Development People and Culture Strategy (2021). Specifically, the New Deal aims to ensure for PGRs effective training and skills development, a positive research culture and support for career development.

The Economic and Social Research Council (ESRC) and the Engineering and Physical Sciences Research Council (EPSRC) have also published reviews of PhD and/or doctoral support and training within their respective subject areas. These reports highlight issues that impact on PGRs' ability to contribute to Scotland's globally competitive research landscape. For example, the Review of EPSRC-funded Doctoral Education (2021) highlights the need for more significant thought in relation to part time learning whilst avoiding "increasing the complexity of the funding system".

SCOTTISH CONTEXT

The Scottish Higher Education (HE) landscape consists of 19 institutions, of which 18 provide PGR training in a variety of forms[1]. Postgraduate researchers (PGRs) are a significant component of Scotland's world-class research base; according to the REF 2021 Environment Database, between 2014 and 2020, over 18,000 research degrees were awarded in Scotland, representing 11% of the UK total.

Scotland's universities can be grouped by the Office for National Statistics (ONS) Nomenclature of Territorial Units for Statistics (NUTS) (see Table 1, Annex 1). This grouping demonstrates that PGRs are not evenly distributed geographically across Scotland, with about 90% of PGRs based at a university whose main campus is in the south-western and eastern parts of the country. This is not surprising since most HE institutions tend to be clustered near Glasgow and Edinburgh, Scotland's largest cities, though some are based across more than one campus in different regions.

According to HESA data from 2020/2021, the number of postgraduate researchers (PGRs) enrolled at Scottish institutions totaled 13,545 (Table 2, Annex 1). Of these, the significant majority (12,575, 93%) were doctoral researchers, while 6% (820) fell into the "other postgraduate research" category and 1% (140) were in pursuit of institutional credit at postgraduate research level.

1 The Open University in Scotland does not provide postgraduate research training, and has therefore been excluded from this report.

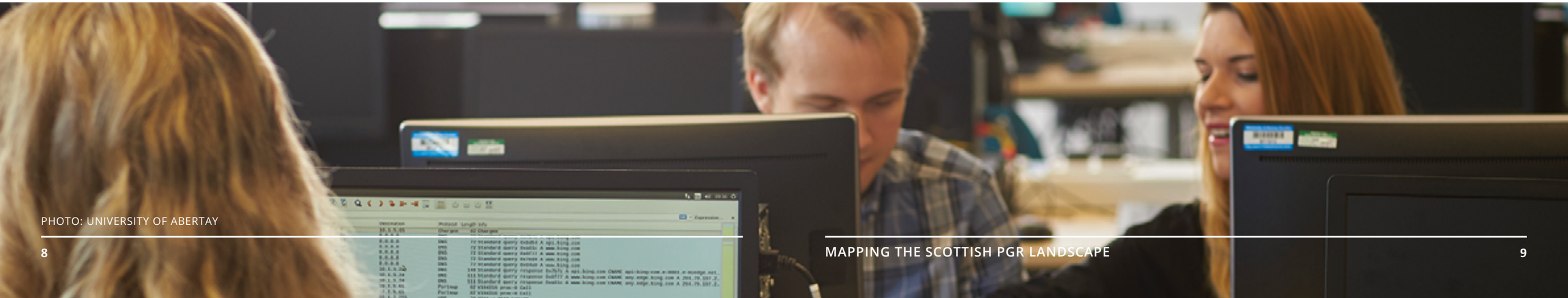

PHOTO: UNIVERSITY OF ABERTAY

PART 1: THE PGR TRAINING AND SUPPORT LANDSCAPE IN SCOTLAND

PHOTO: UNIVERSITY OF ABERDEEN

This section provides an overview of the types of PGR degrees, the balance between part time and full time study and the different support structures and doctoral routes offered across Scotland.

TYPES OF PGR DEGREES

The types of PGR degrees offered in Scotland vary widely. The range of most common PGR degrees offered by institutions is summarised in Table 5 (Annex 1).

The most common PGR degree option is a PhD (Doctor of Philosophy), which is offered at all Scottish institutions. These normally comprise 3 years (full time) or 6 years (part time) of research, culminating in a thesis of up to 100,000 words. In some cases, full time PhDs are extended to 3.5 or 4 years. For example, PhD programs that follow a 1+3 model (one year of formal training followed by three years of research) will often include the first year as a training year or the equivalent to a Master of Science or Master of Research degree.

The MPhil (Master of Philosophy) is advertised by 11 Scottish HEIs in total, spanning a range of larger institutions and smaller, specialist institutions. An MPhil is typically used as an exit degree in the event that a PhD is not completed to expectation. However, it is also a research degree in its own right, typically requiring two years of research culminating in a thesis of around 60,000 words.

The MRes (Master of Research), typically a one-year, full time degree, is offered by all Scottish institutions with the exception of the Royal Conservatoire. There are some variations, for example the University of St. Andrews also offers a MScRes (Master of Science by Research) or MStRes (Master of Studies by Research). Queen Margaret University offers a diverse range of Master of Research degrees, such as Master of Research (Person Centred Practice) and Master of Research (Cultural Leadership).

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Scottish HEIs also offer a range of professional doctorate degrees, most commonly the EdD (Doctor of Education) and the EngD (Doctor of Engineering), which can be ideal for those who wish to integrate their studies with their professional background. The EngD takes place primarily within a sponsor company or industry. While all Scottish HEIs offer a traditional PhD, only seven institutions signpost to an EngD on their website and five institutions to an EdD.

This study identified a total of 20 types of professional doctorate degrees, offered across 13 Scottish HE institutions (see Table 5). The most commonly offered is the DBA (Doctor of Business Administration) offered at Heriot-Watt University, Edinburgh Napier University, Robert Gordon University, Scotland's Rural College, the University of Strathclyde and the University of the West of Scotland. Professional doctorates are not necessarily more predominant at larger institutions: the greatest range of these doctorates are offered at the Universities of Dundee, Stirling and Strathclyde.

PART TIME AND FULL TIME PGR PROVISION

HESA data for 2020/21 provide insights into the number of Scottish PGRs undertaking full or part time study (Table 3, Annex 1). Most modern and smaller universities have a higher percentage of part time PGRs whereas larger, older institutions tend to have a higher proportion of full time PGRs. There are some striking differences between the percentage of part time students enrolled in different HEIs. For example, 91% of PGRs at the University of St Andrews were enrolled full time, while at Glasgow Caledonian University there appears to be a more even split between full time and part time study, 45% and 55%, respectively.

In AY 2020-21, male PGRs (51%, 6,820) slightly outnumbered female PGRs (49%, 6,645) within the Scottish PGR community. A slightly higher proportion of PGRs enrolled in full time study were male (51%, 5,685 out of 11,035), and a higher proportion of PGRs enrolled in part time study were female (54%, 1,350 out of 2,495).

This trend was reversed for two institutions, Abertay University and Glasgow Caledonian University, where there were a higher proportion of male part time PGRs, but a lower proportion of female full time PGRs. At Edinburgh, Glasgow and Queen Margaret Universities female PGRs outnumbered male PGRs in both part time and full time modes of study.

HESA also offers data around some other personal characteristics of Scottish PGR students, namely age group, disability status, ethnicity and religious beliefs (see Table 4, Annex 1).

PGR SUPPORT STRUCTURES WITHIN INSTITUTIONS

Scottish institutions vary in terms of the structures they have in place to provide support to PGRs. Some institutions may have one graduate school that unites PGRs across the institution, such as Queen Margaret University, while others may have multiple graduate schools housed within colleges, schools or discipline areas, such as the University of St. Andrews. In some institutions, graduate schools may also provide support to PGR staff and/or early career researchers, such as Glasgow Caledonian University.

The 2021 UKCGE report on Structures and Strategy in Doctoral Education revealed that the dominant PGR support structure within UK institutions is graduate schools (Table A). Graduate schools also tend to be the dominant structure in Scottish institutions (see Table 6, Annex 1)

Table A: Percentage of PGR support structures in place across UK institutions

Support Structure	Percentage
Graduate School	34%
Doctoral College	23%
Doctoral School	8%
Doctoral Academy	5%
Other	30%

SOURCE: UKCGE

Graduate schools appear to function differently across institutions. Their remit might include varying degrees of practice sharing opportunities, wellbeing support, PGR experience quality assurance, progress monitoring, training and/or methods of communication. There may be one graduate school across an institution or multiple graduate schools housed within colleges/ faculties. For instance, the University of Edinburgh has multiple graduate schools as well as a Doctoral College. A list of support structures within Scottish institutions is included in Table 6, Annex 1.

The concept of a doctoral college, school or academy seems to be a relatively new one and the terms are used to refer to different types of structure. For example, the University of Edinburgh Doctoral College was founded in 2020 and serves as a place to streamline and signpost information for PGRs. At the University of Strathclyde, the Doctoral School houses the Researcher Development Programme, which hosts workshops, courses and other events.

Approaches to support and training services for PGRs are organised differently by each institution (see Table 6, Annex 1). Some institutions have a body in place that centralises professional/research development opportunities for PGRs within their institution, such as Robert Gordon University's Researcher Development program. The University of Edinburgh offers researcher development opportunities through the Institute for Academic Development (IAD), although unlike the Researcher Development programme at Robert Gordon University, the IAD is not run under a graduate school. Other institutions, such as the University of the Highlands and Islands, run their researcher development services through their graduate school.

Several institutions, such Heriot-Watt University and Edinburgh Napier University, organise their researcher development programs according to Vitae's Researcher Development Framework (RDF), which allows PGRs to track their professional development within 4 domains: A) Knowledge and intellectual abilities; B) Engagement, influence and impact; C) Research governance and organisation; and D) Personal effectiveness.

At the University of Strathclyde, PGRs complete course credits meriting a PGCert. This offers PGRs recognition for the skills development they would already be expected to undertake as part of their doctoral study, and is structured based on the four domains of Vitae's RDF. The PGCert requires an element of assessment, whereby PGRs write reflective essays on the courses they take and how their skills have developed.

Whilst there does seem to be some consistency in training between different institutions, with many institutions (or parts of institutions) offering courses covering similar topics, formalised structures, such as the national graduate schools (see below) are a key route through which shared training opportunities are offered across different institutions. There is further potential for collaborative approaches to training within and across institutions.

UKRI DOCTORAL TRAINING PARTNERSHIPS (DTPS) AND CENTRES FOR DOCTORAL TRAINING (CDTS)

Many studentships available to prospective PhD students in Scotland are funded by UK Research and Innovation (UKRI) Research Councils, and offered either via an individual institution, a DTP (Doctoral Training Partnership) or a CDT (Centre for Doctoral Training) (see full list of research councils under Table 7, Annex 1).

UKRI funded DTPs are block grant awards made to research organisations, individually or as part of a consortium, to support PGR students. These are flexible awards that support doctoral training within areas of remit of a specific Research Council, with specific research topics identified in a "bottom up" approach by institutions. Eight DTPs sit across two or more Scottish Higher Education Institutions (HEIs) with many more DTPs awarded to individual HEIs (see Table 7). All but two Scottish HEIs host or are partnered with DTPs, with eight HEIs partnering with three or more.

A CDT differs from a DTP in that it offers studentships in a specific, normally interdisciplinary, research area identified by the Research Council as

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an area of priority (a “top down” approach). A CDT will include its own required training programme and, in some cases, an internship placement with an industry partner (although a DTP studentship may also have links to industry, for instance via an Industrial CASE award). CDTs bring together cohorts of doctoral students who progress through training and development stages together.

25 currently-active CDTs were identified that partner with Scottish institutions, 17 of which are hosted or joint hosted by a Scottish institution (see Table 7, Annex 1), and 18 of which are funded by EPSRC. Heriot-Watt University, University of Edinburgh, University of Glasgow, University of Strathclyde and University of St. Andrews currently host the most CDTs.

Whilst Scottish institutions that host CDTs are all partnered with five or more CDTs, the majority of institutions have 2 or fewer CDT partners. In fact, 11 institutions seem to have no partnerships with CDTs at all (the universities of Abertay, Edinburgh Napier, Queen Margaret, Stirling, the Highlands and Islands, Robert Gordon, Scotland’s Rural College, Glasgow Caledonian, Glasgow School of Art, Royal Conservatoire and West of Scotland). PGRs at these institutions are less likely to have access to the opportunities provided by a CDT (such as funding and collaborative opportunities).

SFC/UKRI NATIONAL GRADUATE SCHOOLS

All Scottish HEIs are associated with at least one of the pan-Scotland SFC/UKRI national graduate schools, which provides training and development opportunities, alongside running events such as conferences and summer schools, within a specific disciplinary area or set of related disciplinary areas.

Two national graduate schools are funded in partnership between SFC and a Research Council: the Economic and Social Research Council (ESRC) funded Scottish Graduate School for Social Sciences (SGSSS) and the Arts and Humanities Research Council (AHRC) funded Scottish Graduate School for Arts and Humanities (SGSAH). SGSSS and SGSAH are examples of UKRI funded DTPs. Not all member institutions of SGSSS and SGSAH are DTP partners and SFC’s funding serves to extend the benefits of these two graduate schools to all Scottish students in relevant disciplinary areas, not just those in institutions which are DTP partners.

RESEARCH POOL GRADUATE SCHOOLS

Scottish Research Pools make an important contribution towards graduate training and support within Scotland, with some having their own graduate schools based across multiple Scottish institutions. The effect of this is to provide Scottish students in specific discipline areas with opportunities for collaboration and shared high-quality training which are unique to the Scottish landscape.

The Natural Environment Research Council (NERC) funded Scottish Universities Partnership for Environmental Research (SUPER) is a DTP-based graduate school, associated with the Marine Alliance for Science and Technology for Scotland (MASTS) Research Pool and based across eight Scottish partners. SUPER was created when DTP funding was secured by MASTS to increase the activity and reach of its existing graduate school.

The Scottish Universities Physics Alliance (SUPA) is based across eight Scottish Universities. The SUPA Graduate School runs training and events open to all PGR physics students in Scotland, offering more than 60 courses and over 800 hours of lectures per year for PGRs and PDRAs, alongside professional development training.

Both SUPER and the SUPA Graduate School offer a wide range of training and development activities and opportunities for their students, including training courses, workshops, seminars, conference opportunities and retreats. Other Research Pools, including SULSA, ScotCHEM, SRPe, SAGES, Sinapse, SICSA and ETP offer a range of PGR training and support activities.

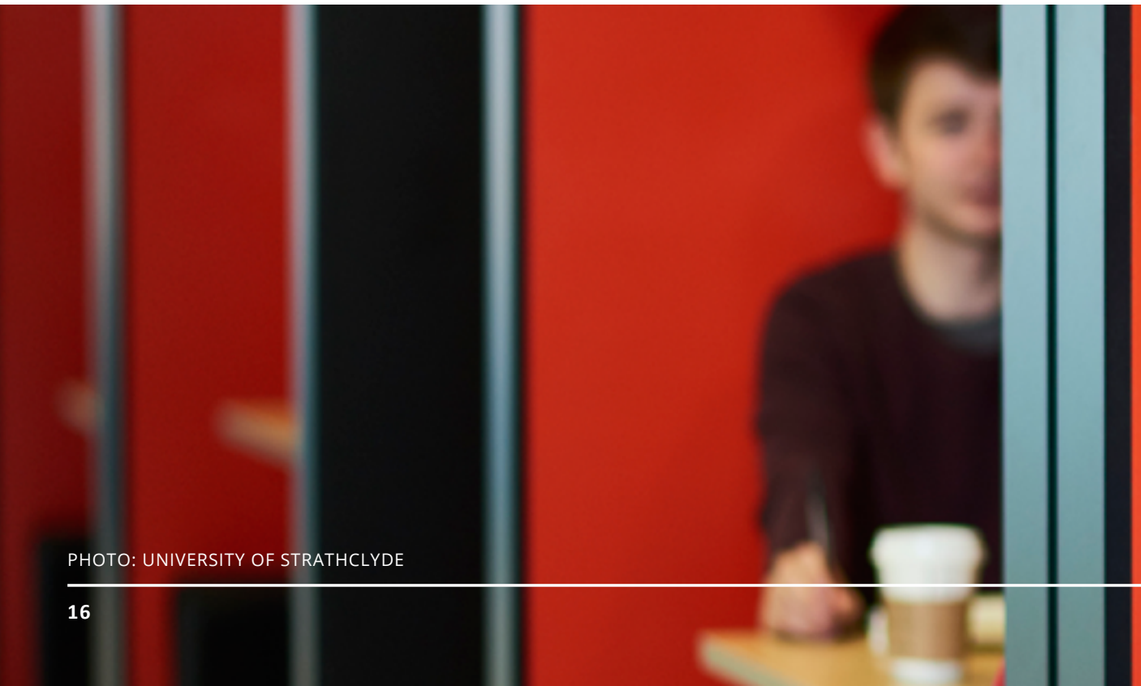

PHOTO: UNIVERSITY OF STRATHCLYDE

PART 2: A SNAPSHOT OF PGR EXPERIENCES

PHOTO: UNIVERSITY OF ST ANDREWS

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METHODOLOGY

In order to gain "snapshot" perspectives on the Scottish PGR landscape from those directly involved, a total of 12 interviews were conducted with 13 PGRs and 13 university staff members across eight Scottish HEIs. Individual and group interviews were held, lasting about an hour each.

Staff included those who work with PGRs, such as in a graduate or doctoral school or involved in organising PGR training. PGR participants came from a range of disciplines, including social sciences, medicine, environmental sciences and business. Some were part of a CDT or DTP cohort, whilst others were institution-funded, self-funded or pursuing funding opportunities.

The types of institutions represented ranged in size and location. However, the institutions included do not represent the whole of Scotland, and the findings presented in this section are not intended to be generalisable to the whole Scottish PGR landscape. Rather, they provide a snapshot of some cases within the Scottish PGR landscape and provide a stepping stone towards better understanding and informing further work in this area.

To ensure that this data collection was carried out ethically, an Equality Impact Assessment and a Data Protection Impact Assessment were carried out. Participation was voluntary and participants were notified of how their data would be stored and used.

FINDINGS

In the interviews, participants were asked questions about PGR training experiences/ opportunities (see Annex 2 for interview schedules). Thematic analysis of the interview data revealed four main themes:

- Approaches to personal and professional development;
- Sector-wide collaboration and practice sharing;
- Equity; and
- Identity.

APPROACHES TO PERSONAL AND PROFESSIONAL DEVELOPMENT

Participants highlighted differences across and within institutions regarding compulsory and optional PGR training. According to one PGR, when it comes to training, "a little bit goes a long way." Required training may, at the start of one's studies, promote cohort and community building. Yet, if training is frontloaded and not rolled out effectively throughout the PGR experience, it may also mean PGRs do not receive the support they need when it is most useful. Some participants who had undertaken compulsory training noted that that some of this training did not feel particularly relevant to them and their studies.

Some staff members argued that making training compulsory was not practical due to the difficulty of getting PGRs to attend required events. In line with this, one staff member argued that use of the term "training" was not conducive to shaping independent researchers, noting PGRs need to be guided toward whatever framework(s) of support are available to them, but should then be encouraged to seek out the skills and professional development most beneficial to them. The interviewee argued that PGRs should be encouraged to undertake personal and professional development that aligns to their future visions and goals.

Another staff member highlighted the existing breadth of training available to develop PGRs' transferable skills, arguing that that the issue is not in a lack of training opportunities but in how best to leverage what is available, so as to stop "reinventing the wheel" and avoid unnecessary duplication. Doing this would allow more time, resources and energy to be invested into thinking of other, innovative opportunities to provide for PGRs.

One of the challenges to stopping duplication of training activities in the PGR space noted by interviewees is the devolved approach to PGR training taken by many schools and colleges within institutions. Some discipline-specific professional development is always likely to be required, and best carried out within specific schools or colleges. However, staff pointed out that this can also make it difficult to bring PGRs together to share practice across disciplines where this would be of value.

SECTOR-WIDE COLLABORATION AND PRACTICE SHARING

Some roadblocks in efforts to organise Scotland-wide initiatives for PGRs were highlighted. Due to time and resourcing constraints, many institutions or schools preferred to use what is already in place, making collective training challenging to establish. According to one staff participant, centralisation can be a threatening idea to institutions (or bodies within institutions) because they want people to feel "grounded, loyal and connected" to their home schools, colleges, and/or institutions. Schools and colleges will use their expert knowledge to identify where there are gaps in certain training opportunities (for example, visual methodologies) and set up their own training opportunities in order to fill that gap.

Some success in uniting PGR reps across institutions was also highlighted. At the University of Glasgow, for example, PGR reps have formed a PhD society where they come together to articulate the training/support PGRs need. The Student Partnerships in Equality Scotland (sparqs) group has recently undertaken related work on modelling PGR representation and developing a PGR student learning experience diagram that will feed into effective and consistent training of PGR representatives across Scottish institutions.

EQUITY

Participants from smaller institutions tended to describe a more diverse range of PGRs (including part time professionals, distance learners and carers), suggesting many of these “nontraditional” PGRs find greater flexibility in degree routes at smaller institutions that tend to be specialist or profession oriented. However, they also noted that many smaller institutions have access to fewer funding opportunities through organisations such as the national graduate schools or through industry. Larger institutions, with more connections, attract a larger number of PGRs, including international PGRs who bring greater financial benefit.

One participant argued that PGRs need to be thought of as a group of complex individuals and not “as a monolith.” The COVID-19 pandemic brought inequalities into greater view and impacted some PGRs more than others, such as female PGRs in carer roles. This spotlights widening access issues and highlights the importance of ensuring that support is available for a diverse PGR population.

Interviewees also noted that PGRs often do not start out on an even footing. Although a taught 1+3 route is becoming more of a norm (as with some DTP and CDT studentships), some students carry out an MRes before doctoral study to gain a depth of methodological training. However, given the lack of MRes funding opportunities, this is a route predominantly open to those who have the means to self-fund.

IDENTITY

One reason behind some PGRs’ decisions to pursue a doctoral degree was to feel part of a collaborative space and be exposed to new ideas. Yet isolation in doctoral study persists, with a number of participants highlighting challenges in identity and belonging.

Several PGR participants expressed a preference for being described as a “researcher” or “doctoral researcher” rather than a student, noting that how your institution thinks of you (whether as a student or researcher) can impact the extent to which you feel a sense of loyalty to it. One PGR felt that the DTP they belonged to positively framed PGRs as researchers. As a result, this PGR felt a greater sense of support and identity in their role as a PGR, and believed that a PGR studying outside of a cohort or DTP was at a disadvantage in terms of having someone advocate for their status.

Participant responses highlighted the ambiguity between the boundaries of PGRs and ECRs (Early Career Researchers). One staff participant viewed “PGRs” as referring specifically to doctoral researchers, whilst “ECRs” referred to postdoctoral researchers and research fellows. Another staff participant felt PGRs fell within the category of ECRs. Several participants noted that PGRs in Scotland, and indeed in the UK, are not treated as staff members, with some believing this to be a limitation of the UK PGR context. One staff participant felt that opportunities for PGRs as paid employees have not yet been explored enough, suggesting also that if more PGRs were part time this would allow for more paid work opportunities.

PHOTO: UNIVERSITY OF DUNDEE

PHOTO: UNIVERSITY OF THE HIGHLANDS AND ISLANDS

CONCLUSION

Postgraduate researchers (PGRs) are a significant component of Scotland's world-class research base. This project has aimed to widen the evidence base around the PGR experience in Scotland but it also serves as a call for further evidence gathering. Given its size and diversity, the Scottish PGR landscape could be an ideal testbed for further research into how to widen access and improve conditions for PGRs.

Geographically, PGRs are unevenly distributed across Scotland, as can be expected by the high proportion of the general Scottish population (and universities) within the central belt.

The types of PGR degrees offered in Scotland vary widely. While the most common option is a PhD (Doctor of Philosophy), some HEIs also offer a range of professional doctorate degrees.

Larger institutions, and those more heavily involved with STEM subjects, tend to have the most partnerships with UKRI Doctoral Training Partnerships (DTPs) and Centres for Doctoral Training (CDTs), which are structures that are often based across multiple universities and may be based across different subjects. This, and the fact that many smaller Scottish HEIs have a higher proportion of part-time PGRs compared to their larger counterparts, is important to consider in the context of any future work to understand and support the Scottish PGR experience.

Scottish institutions vary in terms of the structures they have in place to provide support to PGRs. Whilst there does seem to be some consistency in training between different institutions, formalised structures, such as national graduate schools, are a key route through which shared training opportunities are offered across different institutions. All Scottish HEIs are associated with at least one of the pan-Scotland SFC/UKRI national graduate schools which provide training and development opportunities. Scottish Research Pools make an important contribution towards graduate training and support within Scotland, with some having their own graduate schools based across multiple Scottish institutions. There is further potential for a collaborative approach to training within and across institutions.

PGRs and staff interviewed for this report noted that PGRs are a complex group of individuals, and there are strengths in the different paths, structures and opportunities available to PGRs across Scotland, given their differing interests, circumstances and requirements. The complexity of who PGRs are also emphasises the need to bolster accessibility within the PGR landscape.

Interview participants identified opportunities for further collaboration within the Scottish PGR training and support landscape, such as through the potential for further joined-up thinking around training support structures and signposting of training and development opportunities which could make the PGR landscape more navigable and provide further opportunities for PGR support. This could be particularly valuable for PG researchers who identify with more than one structure within an institution or across different institutions (e.g. a PGR who receives training and support through a graduate school or CDT that spans several institutions, as well as through their own institution, college or department).

PHOTO: ROYAL CONSERVATOIRE OF SCOTLAND

ANNEX 1:

TABLES

Table 1: Scottish Higher Education Institutions (HEIs) grouped geographically by NUTS areas

NUTS 2 AREAS	NUTS 3 AREAS*	INSTITUTION
Eastern Scotland	Angus and Dundee City	Abertay University
		University of Dundee
	Clackmannanshire and Fife	University of St Andrews
	City of Edinburgh	Edinburgh Napier University
		Heriot-Watt University
		University of Edinburgh
		Queen Margaret University
	Perth & Kinross and Stirling	University of Stirling
Highlands and Islands	Caithness and & Sutherland and Ross & Cromarty	University of the Highlands and Islands
	Inverness & Nairn and Moray, Badenoch and Strathspey	
	Lochaber, Skye & Lochalsh, Arran & Cumbrae and Argyll & Bute	
	Eilean Siar (Western Isles)	
	Orkney Islands	
	Shetland Islands	
North Eastern Scotland	Aberdeen City and Aberdeenshire	Robert Gordon University
		University of Aberdeen
		Scotland's Rural College (SRUC)
South Western Scotland	Glasgow City	Glasgow Caledonian University
		Glasgow School of Art
		Royal Conservatoire of Scotland
		University of Glasgow
		University of Strathclyde
	Inverclyde, East Renfrewshire and Renfrewshire	University of the West of Scotland

*Only Level 3 areas with institutions situated within that area have been included. Source: ONS

Table 2: Geographical distribution of PGRs by NUTS areas of university main campus

NUTS 2 AREA	TOTAL PGRS	NUTS 3 AREA	TOTAL PGRS
Eastern Scotland	6, 985	Angus and Dundee City	780
		Clackmannanshire and Fife	1,025
		City of Edinburgh	4,615
		Perth & Kinross and Stirling	565
Highlands and Islands	95	Caithness and & Sutherland and Ross & Cromarty	95
		Inverness & Nairn and Moray, Badenoch and Strathspey	
		Lochaber, Skye & Lochalsh, Arran & Cumbrae and Argyll & Bute	
		Eilean Siar (Western Isles)	
		Orkney Islands	
		Shetland Islands	
North Eastern Scotland	1,210	Aberdeen City and Aberdeenshire	1,210
South Western Scotland	5,255	Glasgow City	4,895
		Inverclyde, East Renfrewshire and Renfrewshire	360

Source: HESA and ONS

Table 3: HESA 2020/2021 numbers of full time and part time male and female PGRs by institution

INSTITUTION	TOTAL PGRS ENROLLED	FULL TIME	FEMALE	MALE	PART TIME	FEMALE	MALE
Abertay University	95	55 (58%)	30	25	40 (42%)	20	25
University of Dundee	685	495 (72%)	240	255	190 (28%)	110	80
University of St Andrews	1,025	930 (91%)	435	495	95 (9%)	40	65
Edinburgh Napier University	220	130 (59%)	60	70	90 (41%)	45	45
Heriot-Watt University	680	600 (88%)	180	415	80 (12%)	20	60
University of Edinburgh	3,610	3,140 (87%)	1,575	1,540	470 (13%)	265	205
Queen Margaret University	105	50 (48%)	35	15	55 (52%)	35	20
University of Stirling	565	330	190	140	230	160	75
University of the Highlands and Islands	95	60 (63%)	30	30	35 (37%)	20	15
Robert Gordon University	190	125 (66%)	55	70	60 (32%)	35	25
University of Aberdeen	1,020	825 (81%)	405	420	195 (19%)	95	95
Scotland's Rural College (SRUC)	No PGR data	-	-	-	-	-	-
Glasgow Caledonian University	435	195 (45%)	100	95	240 (55%)	115	125
Glasgow School of Art	60	35 (58%)	25	10	25 (42%)	15	5
Royal Conservatoire of Scotland	40	15 (38%)	5	10	25 (63%)	10	10
University of Glasgow	2,800	2,430 (87%)	1,245	1,165	370 (13%)	200	165
University of Strathclyde	1,560	1,360 (87%)	545	805	200 (13%)	100	100
University of the West of Scotland	360	265 (74%)	130	135	95 (26%)	60	35
TOTAL	**13,535**	**11,035**	**5,295**	**5,685**	**2,495**	**1,350**	**1,135**

Source: HESA.
Note: all figures rounded to the nearest 5.

Table 4: HESA 2021/2021 PGR enrolment by personal characteristics

SEX	NO. OF PGRS IN SCOTTISH HEIS (N=13,535)
Female	6,645
Male	6,820
Other	70
AGE GROUP	**NO. OF PGRS IN SCOTTISH HEIS (N=13,535)**
20 and under	10
21-24	2,930
25-29	5,000
30 and over	5,595
Unknown	0
DISABILITY STATUS	**NO. OF PGRS IN SCOTTISH HEIS (N=13,535)**
Known disability	1,440
No known disability	12,095
RELIGIOUS BELIEFS	**NO. OF PGRS IN SCOTTISH HEIS (N=13,535)**
No religion	6,485
Christian	3,245
Not known	1,620
Muslim	1,300
Buddhist	235
Hindu	215
Spiritual	195
Any other religion or belief	160
Jewish	65
Sikh	15
ETHNICITY (N=7,065)	**NO. OF PGRS IN SCOTTISH HEIS (N=13,535)**
White	5,835
Black	240
Asian	395
Mixed	185
Other	130
Not known	280

Source: HESA.
Note: all figures rounded to the nearest 5.

Table 5: PGR degree types by institution
Compiled based on readily available information on each institution's website.

Institution	PhD	EngD	MPhil*	MRes or MSc by Research	Professional doctorates (DProf)	Other degrees/Types of professional doctorates highlighted on institution websitesww
Abertay University	√	-	√	√	-	-
University of Dundee	√	-	-	√	√	DEd, DEdPsy, DHSci, DSSci, DSW, DCLD
University of St Andrews	√	√	√	√	√	MFA, MD, MSt(Res), Global PhDs
Edinburgh Napier University	√	-	√	√	√	PhD by Published Works, DBA
Heriot-Watt University	√	√	√	√	√	DBA
University of Edinburgh	√	√	√	√	√	PhD with Integrated Study, DDS, DClinPsychol, EdD
Queen Margaret University	√	-	-	√	√	Various Master of Research degrees: (Business Administration), (Global Health and Development), (Psychology), (Person Centred Practice), (Public Administration), (Rehabilitation Sciences), (Speech, Language and Hearing), (Sociology), (Cultural Leadership), (Cultural Practice), (Clinical Science), (Education), (Public Psychology)
University of Stirling	√	-	√	√	√	DASR, Clinical doctorates in MidD, NursD and DPHS, EdD, DDipl, DPsych, PhD TESOL by Research, Data Science Doctorate
University of the Highlands and Islands	√	-	-	√	-	-
Robert Gordon University	√	√	√	√	√	DBA
University of Aberdeen	√	√	-	√	-	MD, MLitt, LLM, MTh
Scotland's Rural College	√	-	-	√	-	-
Glasgow Caledonian University	√	-	-	√	√	DBA
Glasgow School of Art	√	-	√	√	-	-
Royal Conservatoire	√	-	√	-	√	DPerf
University of Glasgow	√	√	√	√	√	MD, MLitt, Integrated PhD, EdD
University of Strathclyde	√	√	√	√	√	Collaborative and Industrial PhDs and Doctorates, DBA, EdD, DPharm, DInfSci, DEdPsy
University of the West of Scotland	√	-	√	√	√	DBA, PhD by Publication

*MPhil in this table refers to a standalone degree as opposed to an exit route degree.

Source: Scottish Higher Education Institution websites [links listed in references]

Acronyms and full names of postgraduate research degree types:

PhD (Doctor of Philosophy)

EngD (Doctor of Engineering)

EdD (Doctor of Education)

MPhil (Master of Philosophy)

MRes (Master of Research)

MStRes (Master of Studies by Research)

MSc by Research (Master of Science by Research)

MLitt (Master of Letters)

MTh (Master of Theology)

MFA (Master of Fine Arts)

LLM (Master of Law)

DBA (Doctor of Business Administration)

MD (Doctor of Medicine)

DDS (Doctor of Dental Surgery)

MidD (Doctor of Midwifery)

NursD (Doctor of Nursing)

DPHS (Doctor of Professional Health Studies)

DClinPsychol (Doctor of Clinical Psychology)

DEdPsy (Doctor of Educational Psychology)

DPsych (Doctor of Health Psychology)

DHSci (Doctor of Health Sciences)

DPharm (Doctor of Pharmacy)

DInfSci (Doctor of Information Science)

DSSci (Doctor of Social Sciences)

DSW (Doctor of Social Work)

DCLD (Doctor of Community Learning and Development)

DDipl (Doctor of Diplomacy)

DASR (Doctor of Applied Social Research)

DPerf (Doctor of Performing Arts)

Table 6: Support structures in place by institution
Note: not an exhaustive list of development opportunities available to PGRs

INSTITUTION	UNIVERSITY-WIDE STRUCTURES IN PLACE	MAIN CENTRE FOR RESEARCHER DEVELOPMENT
Abertay University	Graduate School	Graduate School
University of Dundee	Doctoral Academy	Organisational and Professional Development (OPD)
University of St Andrews	-	Gradskills Programme
Edinburgh Napier University	-	Research, Innovation and Enterprise
Heriot-Watt University	-	Research Futures Academy
University of Edinburgh	Doctoral College	Institute for Academic Development (IAD)
Queen Margaret University	Doctoral Academy	Graduate School
University of Stirling	-	Institute for Advanced Studies
University of the Highlands and Islands	Graduate School	Graduate School
Robert Gordon University	Graduate School	Researcher Development Programme
University of Aberdeen	Postgraduate Research School	Postgraduate Research School
Scotland's Rural College	-	Training Services
Glasgow Caledonian University	Graduate School	Researcher Development Programme
Glasgow School of Art	-	Learning Support and Development Service
Royal Conservatoire	Research and Knowledge Exchange	Research and Knowledge Exchange
University of Glasgow	-	Researcher Development
University of Strathclyde	Doctoral School	Researcher Development
University of the West of Scotland	-	Centre for Continuing Professional Development

Source: Various institution websites [links listed in references]

Blanks indicate there is not one encompassing PGR support structure in place

Table 7: UKRI funded DTPs and CDTs across Scottish institutions (note some CDTs are funded by more than one research council)

Institution	DTPs	Funder	CDTs	Funder
Abertay University	-	-	-	-
University of Dundee	SGSSS SGSAH STFC DTP (host) DTP (host) EASTBIO (host) QIBIOMED (host)	ESRC AHRC STFC EPSRC BBSRC MRC	GeoNetZero	NERC
University of St Andrews	SGSSS SGSAH EASTBIO SUPER IAPETUS2 Maths (host) Physics (host) DTP (host) Maths (host)	ESRC AHRC BBSRC NERC NERC STFC STFC EPSRC EPSRC	Industry Inspired Photonic Imaging, Sensing and Analysis (Applied Photonics) CM ScotDIST (joint host) QM (host) CRITICAT (host)	EPSRC EPSRC STFC EPSRC STFC EPSRC
Edinburgh Napier University	SGSSS SUPER	ESRC NERC	-	-
Heriot-Watt University	SGSSS SUPER IAPETUS2 STFC (host) DTP (host) Maths (host) STFC Eng (host)	ESRC NERC NERC STFC EPSRC EPSRC STFC	Industry Inspired Photonic Imaging, Sensing and Analysis (Applied Photonics) (host) GeoNetZero (host) MAC-MIGS (joint host) CM EI RAS (joint host) Oil and Gas (host) CRITICAT	EPSRC NERC EPSRC EPSRC UKRI EPSRC NERC EPSRC
University of Edinburgh	SGSSS (host) SGSAH EASTBIO Precision Medicine E3 (host) E4 (host) STFC (host) STFC Maths (host) STFC PaA (host) STFC Physics (host) EPSRC (host) EPSRC Maths (host)	ESRC AHRC BBSRC MRC NERC NERC STFC STFC STFC STFC EPSRC EPSRC	Industry Inspired Photonic Imaging, Sensing and Analysis (Applied Photonics) WAMESS MAC-MIGS (joint host) SOFI2 IDCORE CM RAS (joint host) NLP (host) BioMedAI (host) OPTIMA (joint host) ISM (joint host) SENSE (joint host with Leeds) ScotDIST (joint host)	EPSRC EPSRC EPSRC EPSRC EPSRC NERC EPSRC UKRI UKRI EPSRC MRC EPSRC NERC STFC
Queen Margaret University	SGSSS	ESRC	-	-

Table 7: UKRI funded DTPs and CDTs across Scottish institutions (note some CDTs are funded by more than one research council)

Institution	DTPs	Funder	CDTs	Funder
University of Stirling	SGSSS SGSAH EASTBIO SUPER IAPETUS2 STFC (host)	ESRC AHRC BBSRC NERC NERC STFC	-	-
University of the Highlands and Islands	SGSAH SUPER	AHRC NERC	-	-
Robert Gordon University	-	-	-	-
University of Aberdeen	SGSSS SGSAH EASTBIO TMRP QUADRAT SUPER	ESRC AHRC BBSRC MRC NERC NERC	GeoNetZero Oil and Gas	NERC NERC
Scotland's Rural College	SGSSS EASTBIO E4	ESRC BBSRC NERC	-	-
Glasgow Caledonian University	SGSSS	ESRC	-	-
Glasgow School of Art	SGSAH	AHRC	-	-
Royal Conservatoire	SGSAH	AHRC	-	-
University of Glasgow	SGSSS TMRP Precision Medicine IAPETUS2 SGSAH (host) EPSRC (host) Maths (host) STFC (host)	ESRC MRC MRC NERC AHRC EPSRC EPSRC STFC	Industry Inspired Photonic Imaging, Sensing and Analysis (Applied Photonics) ISM (joint host) FUSE (joint host) ScotDIST (joint host) LifeETIME PIADS (joint host with QUBelfast) Social AI (host)	EPSRC EPSRC EPSRC STFC EPSRC EPSRC EPSRC
University of Strathclyde	SGSSS SGSAH SUPER STFC (host) Maths (host) DTP (host)	ESRC AHRC NERC STFC EPSRC EPSRC	Industry Inspired Photonic Imaging, Sensing and Analysis (Applied Photonics) GeoNetZero WAMESS (host) IDCORE Prosthetics and Orthotics FIND FUSE (joint host) Medical Devices and Health Technology (host) OPTIMA (joint host)	EPSRC NERC EPSRC EPSRC NERC EPSRC EPSRC EPSRC EPSRC MRC
University of the West of Scotland	SUPER	NERC	-	-

List of acronyms with full names of DTPs/CDTs

SGSSS DTP – Scottish Graduate School of Social Sciences

SGSAH DTP – Scottish Graduate School of Arts and Humanities

SUPER DTP – Scottish Universities Partnership for Environmental Research

EASTBIO DTP – East of Scotland Biosciences

QIBIOMED DTP – Quantitative and Interdisciplinary approaches to Biomedical Sciences

TMRP DTP – Trials Methodology Research Partnership

QUADRAT DTP – Queens University Belfast and Aberdeen Doctoral Research and Training

IAPETUS2 DTP – Earth and Environmental Sciences

CM CDT – Condensed Matter

ScotDIST CDT – Scottish Data Intensive Triangle

QM CDT – Quantum Materials

CRITICAT CDT- Critical Resource Catalysis

MAC-MIGS CDT – Mathematical Modeling, Analysis and Computation

EI CDT – Environmental Intelligence

RAS CDT – Robotics and Autonomous Systems

WAMESS CDT – Wind and Marine Energy Systems and Structures

SOFI2 CDT – Soft Matter for Formulation and Industrial Innovation

IDCORE CDT – InDustrial CDT for Offshore Renewable Energy

NLP CDT – Natural Language Processing

BioMedAI CDT –Biomedical Artificial Intelligence

OPTIMA CDT– Optical Medical Imaging

ISM CDT – Intelligent Sensing and Measurement

SENSE CDT – Satellite Data in Environmental Science

FUSE CDT – Future Ultrasonic Engineering

LifETIME CDT – Engineered Tissues for Discovery, Industry and Medicine

PIADS CDT – Photonic Integration and Advanced Data Storage

Social AI CDT – Socially Intelligent Artificial Agents

FIND CDT – Future Innovation in Non-Destructive Evaluation

List of Research Councils

ESRC – Economic and Social Research Council

AHRC – Arts and Humanities Research Council

BBSRC – Biotechnology and Biological Sciences Research Councils

NERC – Natural Environment Research Council

MRC – Medical Research Council

EPSRC – Engineering and Physical Sciences Research Council

STFC – Science and Technology Facilities Council

ANNEX 2:

INTERVIEW SCHEDULES

PGR Interview Schedule

1. What types of PGR degrees are students involved in? (What disciplines and institutions? What is the length/structure of their research degrees? Are any students undertaking an MRes, MPhil or professional doctorate?)

2. Are there any specific skills training elements as part of their research degree, such as those done as part of a cohort? (In relation to both soft skills and more technical or discipline specific skills training)

3. Where does training typically take place? – For example, at cohort/programme level? School or college level? Institution level? At Student Associations? As part of a national graduate school like SGSSS or something similar? Or with external or industry partners?

4. Are there any links to external opportunities, such as internships or industry placements as part of students' research degrees?

5. Are you aware of other research degree types and/or training structures that differ from their own, (such as those that sit within Centres for Doctoral Training (CDTs), Doctoral Training Partnerships (DTPs) or studentships)?

6. Are there aspects about PGR support/training that students wish they had known in advance of taking on their research degrees?

7. What works well in terms of the Scottish PGR training and support landscape? What doesn't work well?

Staff Interview Schedule

1. At your institution, what types of research degrees do PGRs take on – do they tend to be PhDs or other types of research degrees?

2. At your institution, is there any specific training element or are there any qualifications required as part of doing a research degree?

3. What other types of training do PGRs engage in?

4. Where does PGR training take place? Is there a central training body?

5. Are there links to external training opportunities (in relation to where training takes place)?

6. What do you know about CDTs/DTPs at your institution? Do most PGRs take on studentships, cohort-based degrees or individualised degrees?

7. What still needs to be done in terms of PGR training? What areas need improvement?

Scottish Funding Council
Comhairle Maoineachaidh na h-Alba

APEX 2 - 97 HAYMARKET TERRACE
EDINBURGH - EH12 5HD
T 0131 313 6500 - F 0131 313 6501
WWW.SFC.AC.UK