
FSSG

Financial Sustainability
Strategy Group

Sustaining medium-scale research facilities in the UK higher education sector

September 2018

Foreword

The UK is recognised as a global leader in research and innovation and “punches above its weight as a research nation”¹. Delivering high quality research requires long term investment: in talent and expertise, infrastructure and basic and applied programmes.

Transparent Approach to Costing (TRAC) data has shown for many years that research conducted in UK universities does not fully recover its costs. Funding of research infrastructure is critical to the UK maintaining our world-leading research base. Investment in infrastructure is becoming more challenging as there is an increased expectation that UK higher education providers fully – or at least partially – fund research equipment and facilities

This review has focused on the funding of medium-scale research facilities as this is the kind of infrastructure that higher education providers seem to be increasingly investing in themselves. We have defined in-scope facilities as those between £0.5 million and £10 million purchase value. We have sought to understand how such facilities are funded, from purchase, throughout their useful life, and their eventual replacement. We have also explored practices in the UK higher education sector around income generation from such facilities, equipment sharing, future investment planning and facility management.

We have concentrated this review around how we might improve the sustainability of such facilities and the internal processes and practices used to manage them well. It is clear that first and foremost, we need to understand the full Economic Costs and whole life costs of running these facilities. We can also look at ways of generating additional income to sustain them or we can encourage collaboration.

At this point, it is worth noting that while the financial sustainability of a research facility is important, it is clear that the full ‘value’ of a facility is sometimes difficult to capture in simple monetary terms, as often it is critical to the production of high quality outputs and impact.

From the review, we have developed a set of practical recommendations which UK higher education providers could adopt to understand their medium-scale research facility needs, priorities, and planning. Many of you will already be doing this, and the recommendations have in fact been identified as good practice from across the UK higher education Sector itself. For others, we hope you will find some useful insight to drive the sustainability agenda.

Professor Lisa Roberts

FSSG Member and Chair of Oversight Group
Deputy Vice Chancellor, Research and Innovation
University of Leeds

¹ International Comparative Performance of the UK Research Base report 2016 - www.gov.uk/government/publications/performance-of-the-uk-research-base-international-comparison-2016

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1. EXECUTIVE SUMMARY

Background

The Financial Sustainability Strategy Group (FSSG) is a high-level forum that considers the strategic, policy, cultural and technical issues concerning the financial sustainability of the higher education sector.

The FSSG programme defined a review to research and identify the approaches UK higher education providers take to meeting the capital, operational, and replacement costs of medium-scale research facilities. The review was led by a FSSG Oversight Group, chaired by Professor Lisa Roberts.

The funding for research facilities and equipment is secured from many sources, but the opportunistic nature of certain capital funding schemes can sometimes mean that the whole life running, maintenance and replacement costs do not always get fully considered or funded.

Changes in government policy and funding in the UK has led to increasing uncertainties and greater challenge in ensuring higher education providers' research activity is sustainable. Therefore, it is important that higher education providers develop a rounded understanding of research cost recoveries, and specifically in the case of this report, the investment in and ongoing provision of research equipment, facilities and technical resource.

Previously, research funders have placed increased emphasis on research facility and equipment sharing. However, we need to understand any limitations of sharing, identify how sharing can be optimised, and whether increased sharing has had any impact on the sustainability of medium-scale research facilities.

With input from the sector, the FSSG Oversight Group defined medium-scale research facilities for the purpose of the review as:

'A Science, Technology, Engineering and Mathematics (STEM) research facility, which may be a single piece of equipment or a collection of research equipment, which provides resources to UK higher education providers' researchers.'

Characteristics of such facilities may include:

- the cost of the facility is between £0.5 million and £10 million
- annual running costs of the facility are £50,000 or more
- dedicated equipment is not needed in every university
- there are multiple users of the facility (this may include external users and students)
- access to the facility is managed
- particular expertise is needed to operate the equipment or interpret the results
- progress is enhanced by sharing information or software.

The review seeks to provide advice about how different operating models impact on sustainability. It also explores the links between bidding for funding for research facilities and equipment, and the

forward financial projections of the higher education providers in terms of running and replacement costs for that equipment.

The review is targeted towards two key stakeholders: UK higher education providers and research funders. UK higher education providers may find some useful, practical guidance to develop their internal controls and processes around the management and sustainability of medium-scale research facilities. As such, we have structured the findings in the section below to the groups to which they are likely to be most relevant. Research funders can identify how their role can impact the issue, and consider how they may be able to support UK higher education providers in driving the medium-scale research facilities sustainability agenda.

Key enablers of improving the sustainability of research facilities

Issues affecting the provision of research facilities have been the subject of other studies:

- a. In 2012 the Engineering and Physical Sciences Research Council (EPSRC) undertook a survey to understand the Nuclear Magnetic Resonance (NMR) equipment landscape that served the physical sciences community. This led to the development of a national infrastructure roadmap.
- b. Following the above, the work was updated in 2016 and a review was undertaken titled 'Understanding the current portfolio and resourcing implications of NMR infrastructure underpinning world class science in the UK'².
- c. The Biotechnology and Biological Sciences Research Council (BBSRC) has undertaken work to understand the importance of research technicians, technology and skills specialists³.
- d. There is a current UK Research and Innovation (UKRI) project to develop a research infrastructure roadmap⁴.

This review is complementary to the work above, but identifies some common benefits in planning for the sustainability of research facilities, the importance of technical resource and the benefits of sharing and increasing utilisation.

This review has identified the following as key factors that enable improved sustainability of research facilities:



- optimising the utilisation of facilities
- understanding the full economic cost of facilities
- pricing the use of facilities to recover all of the costs incurred
- collaboration across higher education providers and with other providers;
- having a complete record of all research facilities
- good quality booking systems to enable access to facilities
- effective management of teams and technical support for facilities.

² <https://epsrc.ukri.org/files/research/nmrkinfrastructureupdate2017/>

³ <https://bbsrc.ukri.org/skills/developing-careers/research-technicians-technology-skills-specialists/>

⁴ <https://epsrc.ukri.org/research/ourportfolio/themes/researchinfrastructure/strategy/equipmentroadmaps/>

A number of barriers have also been identified, as follows:



- the absence of an overall strategy for the maintenance and development of facilities, to support the institutional research strategy
- the absence of medium to long term equipment and facility replacement plans
- a lack of clear ownership for managing facilities
- no incentives in the resource allocation process for improving income generation from facilities
- inaccurate and/or incomplete costings of research facilities.

The observations from the enablers and barriers to improving the sustainability of research facilities has led to a number of recommendations being made. These are detailed in the following section.

Key findings and good practice recommendations

The key findings from the review have been summarised below. Based on the key findings, the review has identified a set of good practice recommendations which may help improve the sustainability of medium-scale research facilities, and the table identifies who in the institution the recommendations may be most relevant to. Higher education providers may consider these recommendations in the context of their current approach to sustaining their medium-scale research facilities. Some issues for research funders have also been identified.

Key findings	Good practice recommendations
<p>Full economic costs (fEC) of operating the facility were not widely considered by higher education providers in costing and charging for use of medium-scale research facilities. The majority of higher education providers did not include all relevant costs and there was inconsistency between providers in the costs that were included.</p> <p>Most relevant to:</p> <ul style="list-style-type: none"> • Finance Director ✓ • Research Facility Manager ✓ • Dean/Head of Department ✓ 	<p>1) Understand the fEC of medium-scale research facilities. Higher education providers should try to understand the cost of operating medium-scale research facilities by identifying their full economic costs. Currently, examples of costs which may or may not be included are maintenance, technician, energy and estates costs. It is acknowledged that costing can be complex depending on the nature of the facility, but a fuller approach to costing will allow for completeness and transparency of costing within the higher education sector. It would also improve the value for money of the funder’s investment. Further detail on the costs that should be considered in costing research facilities is given in Section 3.</p>

Key findings	Good practice recommendations
<p>Higher education providers did not generally assess whole life costs of medium-scale research facilities. Medium-scale research facilities had a useful economic life of between three and 15 years. Costs incurred over the whole life of the facility were not generally known or understood when the business case was being developed for purchasing the facility.</p> <p>Most relevant to:</p> <ul style="list-style-type: none"> • Deputy/Pro Vice Chancellor - Research ✓ • Finance Director ✓ • Research Facility Manager ✓ • Dean/Head of Department ✓ • Academic Principle Investigator ✓ • UKRI ✓ • UK research funders ✓ 	<p>2) Assess the whole life costs of medium-scale research facilities. Investment appraisals for new research facilities should consider the whole life costs i.e. the cost of acquisition, plus the future running and maintenance costs. Higher education providers could then assess the forecast income generation over the whole life of medium-scale research facilities. This will avoid them incurring unforeseen and unfunded costs, and provide a better basis from which a decision can be taken over the affordability and sustainability of the medium-scale research facility.</p> <p>3) Funding of revenue costs. To ensure the sustainability of the research infrastructure, UKRI and other research funders are encouraged to consider the funding of revenue and running costs in addition to the initial capital cost for acquiring facilities. This could be achieved in a number of ways, such as funding allowable running costs in bids, or providing addition funding to support running costs. The approval of capital bids for equipment could also assess how the facility will be sustained by the higher education provider.</p> <p>4) Improve the clarity of ‘allowable costs’ and how they are allocated in bids. Allowable costs vary from one funder to another. As a result, there can be some uncertainty around which costs are allowable expenses, leading to under-funding of medium-scale research facilities from the offset. UKRI and other research funders could improve the clarity of which costs are allowable in bid submissions. Some suggestions proposed by the research councils include seminars for higher education providers’ research officers, visits to higher education providers’ departments, and attending higher education providers’ capital boards. UKRI could further support higher education providers in claiming eligible costs by improving the consistency of review panels across the research councils in accepting the costings provided.</p>

Key findings	Good practice recommendations
<p>Medium-scale research facilities were judged to not recover their costs. Most higher education providers believe that they do not recover all of the costs of medium-scale research facilities. Nonetheless, higher education providers stated they would continue to operate these facilities in order to meet the need of the discipline. This was deemed as the ‘cost of business’ for the higher education providers.</p> <p>Most relevant to:</p> <ul style="list-style-type: none"> • Deputy/Pro Vice Chancellor – Research ✓ • Finance Director ✓ • Research Facility Manager ✓ • UKRI ✓ 	<p>5) Educate and raise awareness with funders and academic staff of the implications of not including all relevant costs in bids. To improve the understanding of why all allowable costs should be included in bids, together with the consequences of not doing this, higher education providers could consider undertaking a programme of awareness raising amongst academic staff and their research offices. This could also be an opportunity for communicating any revised policies or processes that are implemented.</p> <p>Furthermore, UKRI could be more active in promoting the importance of complete costings being submitted in bids and supporting fEC based bids. UKRI could also promote more consistent approaches across research councils.</p>
<p>Charges to users varied based on whether they were internal users or external users. Internal users, whether for teaching or research, were generally charged the ‘at cost’ rate. However, as noted above, this did not generally consider the fEC or all relevant costs. Commercial users were charged ‘market rates’. Commercial income was key in contributing toward the cost of operating the medium-scale research facility. In the absence of complete costs, it is unclear if the rates charged were sufficient.</p> <p>Most relevant to:</p> <ul style="list-style-type: none"> • Finance Director ✓ • Research Facility Manager ✓ • Dean/Head of Department ✓ • Academic Principle Investigator ✓ 	<p>6) Develop a suitable approach to pricing. A consistent approach to pricing could be developed which ensures that as far as possible, fEC is being recovered or there is a clear justification where this is not the case. This would involve firstly defining a suitable pricing unit, for example, an hourly rate, a day rate or per sample rate based for the facility. Secondly, higher education providers could develop a variable pricing tariff based on the type of user. Higher education providers could seek to maximise income generation where the rules of the funder or type of user enable this. If fEC is not recoverable, higher education providers should be aware of the implications of this.</p>
<p>The sharing agenda is active within some regional clusters. A number of benefits have been realised from sharing. However, when considering how levels of sharing could be further increased, a number of limiting factors were identified. These include:</p> <ul style="list-style-type: none"> • appropriate booking systems within the host institutions for ease of access • how close the facility is and whether it is practical for certain research to be 	<p>7) Promote the availability of research facilities that can be used. Higher education providers could consider developing a dedicated marketing strategy and pricing strategy to promote the use of medium-scale research facilities. This could help generate additional income and improve any lower levels of utilisation.</p>

Key findings	Good practice recommendations
<p>undertaken at another higher education provider</p> <ul style="list-style-type: none"> • availability of resource within the host provider to administer and manage external use of the facility • the Value Added Tax (VAT) cost that is applied to charges for facility use. <p>Most relevant to:</p> <ul style="list-style-type: none"> • Deputy/Pro Vice Chancellor – Research ✓ • Finance Director ✓ • Research Facility Manager ✓ • Dean/Head of Department ✓ • UKRI ✓ 	<p>Some options include website development with enquiry and search facilities, publication of promotional material and presence at relevant technology events. Higher education providers could also increase awareness of this among relevant academics and researchers as they are often key to developing relationships and potentially attracting new income.</p> <p>8) Incentivise and further facilitate equipment sharing. UKRI could consider how it can further support and incentivise equipment sharing by higher education providers.</p>
<p>Medium-scale research facilities were typically allocated to specific faculties or schools. Income generated and costs incurred were borne by faculties or schools. This meant it could be difficult at an institutional level to identify and assess income and costs associated with the medium-scale research facilities.</p> <p>The motivation for increasing the utilisation of a facility was also influenced by whether surplus earned from external use of a facility was allocated to the facility or department owning the facility.</p> <p>Most relevant to:</p> <ul style="list-style-type: none"> • Deputy/Pro Vice Chancellor – Research ✓ • Finance Director ✓ • Dean/Head of Department ✓ 	<p>9) Set up individual cost centres. Higher education providers could consider setting up individual cost centres for medium-scale research facilities. This will allow all relevant costs to be allocated to the facility and improve the transparency of all of the costs relevant to the facility and improved monitoring of income and costs.</p> <p>10) Review of income allocation model. Higher education providers could undertake a review of their income allocation model. Currently, the majority of higher education providers take centrally any surplus generated by medium-scale research facilities within faculties or schools at the end of the financial year. The budget for the following year may not reflect any surplus generated in prior years. Although accounting rules prevent ‘reserves’ being accumulated between years, proactive engagement with the Finance Director to discuss how economic benefits earned from sharing can support the continued operation of facilities could be beneficial.</p>

Key findings	Good practice recommendations
<p>The majority of medium-scale research facilities are funded by higher education providers' own funds. Other funders include the research councils, funding councils, industry and the charity sector. There is an increased expectation for institutional match funding.</p> <p>Most relevant to:</p> <ul style="list-style-type: none"> • Finance Director ✓ • Deputy/Pro Vice Chancellor – Research ✓ • Chief Operating Officer ✓ • Provost/Deputy Vice Chancellor ✓ 	<p>11) Develop a medium term road map. It is recognised that the availability of funding calls will always mean there is an opportunistic aspect of facility purchase and replacement. Notwithstanding this, higher education providers could develop at least a three year plan for medium-scale research facilities. This should be done at a faculty level where needs are best understood but with institutional join-up and oversight.</p> <p>Firstly, this could consider existing medium-scale research facilities, their remaining useful economic life, and future replacement requirements.</p> <p>Secondly, this could consider new medium-scale research facility requirements over the planning period.</p> <p>This could also set out how the initial purchase cost, maintenance cost, and replacement cost will be funded. This could be built into the higher education provider, faculty or school's longer term financial planning process.</p>
<p>Planning for medium-scale research facilities was generally short term. The majority of higher education providers would consider this within the annual planning cycle or budget setting process, but sometimes only at school or faculty level. Few higher education providers had considered more medium term plans of up to three years, or had assessed medium term needs to inform funding bids within the planning process. We also noted that complete records of all facilities were not typically held.</p> <p>Most relevant to:</p> <ul style="list-style-type: none"> • Deputy/Pro Vice Chancellor – Research ✓ • Finance Director ✓ • Dean/Head of Department ✓ 	<p>12) Perform a strategic review of medium-scale research facilities. Higher education providers could undertake a strategic review of all medium-scale research facilities across faculties or schools. This could consider a variety of factors including income and cost, utilisation, and research and teaching benefit. Based on this analysis, higher education providers would have a complete inventory of their research facilities. Options could then be explored for consolidating facilities, identifying a plan for renewal and replacement of certain facilities or identifying facilities to not replace.</p> <p>Also see good practice recommendation 9.</p>

Key findings	Good practice recommendations
<p>The sharing agenda is active within some regional clusters. A number of benefits have been realised from sharing. However, when considering how levels of sharing could be further increased, a number of limiting factors were identified. These include:</p> <ul style="list-style-type: none"> • appropriate booking systems within the host institutions such that the facilities available for booking are known and can be accessed • how close the facility is and whether it is practical for certain research to be undertaken at another higher education provider • availability of resource within the host provider to administer and manage external use of the facility • The Value Added Tax (VAT) cost that is applied to charges for facility use. <p>Most relevant to:</p> <ul style="list-style-type: none"> • Deputy/Pro Vice Chancellor – Research ✓ • Finance Director ✓ • UKRI ✓ • UK research funders ✓ 	<p>13) Multi-user centres or cross faculty or school collaboration. There will be medium-scale facilities which are common across a number of faculties or schools, with varying levels of utilisation. Higher education providers could consider whether there is scope and practicality in consolidating such facilities to centralised, multi-user centres. This would be particularly beneficial to consider when higher education providers are undergoing significant estates capital projects.</p> <p>14) Invest in systems and processes. Where appropriate, higher education providers could invest in suitable and consistent systems and processes which enable improved management of medium-scale research facilities. This could include policy and guidelines, access restrictions and booking systems. Booking systems should take into consideration the pricing unit defined within the pricing methodology. This would enable improved reporting and monitoring capabilities to assess utilisation and financial sustainability.</p> <p>UKRI could allow charges for use of a common system to increase usage and value for money from sharing.</p>
<p>A cross-departmental team of research, finance and operational staff was found to enable more effective management of medium-scale research facilities. Key to effective management of medium-scale research facilities, and extracting full value from them, is a strong team. Medium-scale research facilities may benefit from a dedicated team of facility managers and technicians, supported by professional support services. Institutions found that senior support enabled them to gain support for a change of this nature.</p> <p>Most relevant to:</p> <ul style="list-style-type: none"> • Dean/Head of Department ✓ • Facility Manager ✓ • UKRI ✓ • Research funders ✓ 	<p>15) Invest in technical expertise</p> <p>Up to date technical expertise is fundamental to managing the maintenance of medium-scale research facilities and extracting full value and impact from them. Higher education providers reported that they struggled to attract and retain high quality technical expertise. Higher education providers could invest in developing a structured career path for technical staff. This could take into consideration training, development and progression.</p> <p>Joint working with UKRI and other research funders could explore other solutions to this issue.</p>

2. INTRODUCTION

The UK has an ambition to continue to deliver world leading research and innovation, in order to sustain a dynamic and global research base.

The government launched its industrial strategy in November 2017 with the aim of addressing the country's productivity challenge. At the heart of the industrial strategy is the need for relevant skills, research and innovation as we address the challenges and opportunities we face in health, artificial intelligence, big data, clean growth and the future of mobility. Research is key to enabling this, which is why spending on research and development is targeted to reach 2.4 percent of Gross Domestic Product by 2027.

The quality of the UK's research is highly dependent on expertise, experience, infrastructure and funding. A key part of this infrastructure is medium-scale research facilities. If the research infrastructure is insufficient or not sustained, the quality of research could ultimately suffer. Therefore, it is important that institutions have effective processes for managing and sustaining their medium-scale research facilities.

The respondents to the survey that was undertaken as part of this review identified that the majority of medium-scale research facilities are funded by higher education providers' own funds and the core Quality-related Research (QR) income received. Other key funders include the research councils, funding councils, industry and the charity sector. Higher education providers also reported an increase in the number of funding opportunities that require match funding, which requires institutions to generate sufficient cash and surplus to enable this.

This review sought to understand how UK higher education providers plan for the funding, maintenance and replacement of medium-scale research facilities, and the extent to which this is enabling sustainability of these facilities.

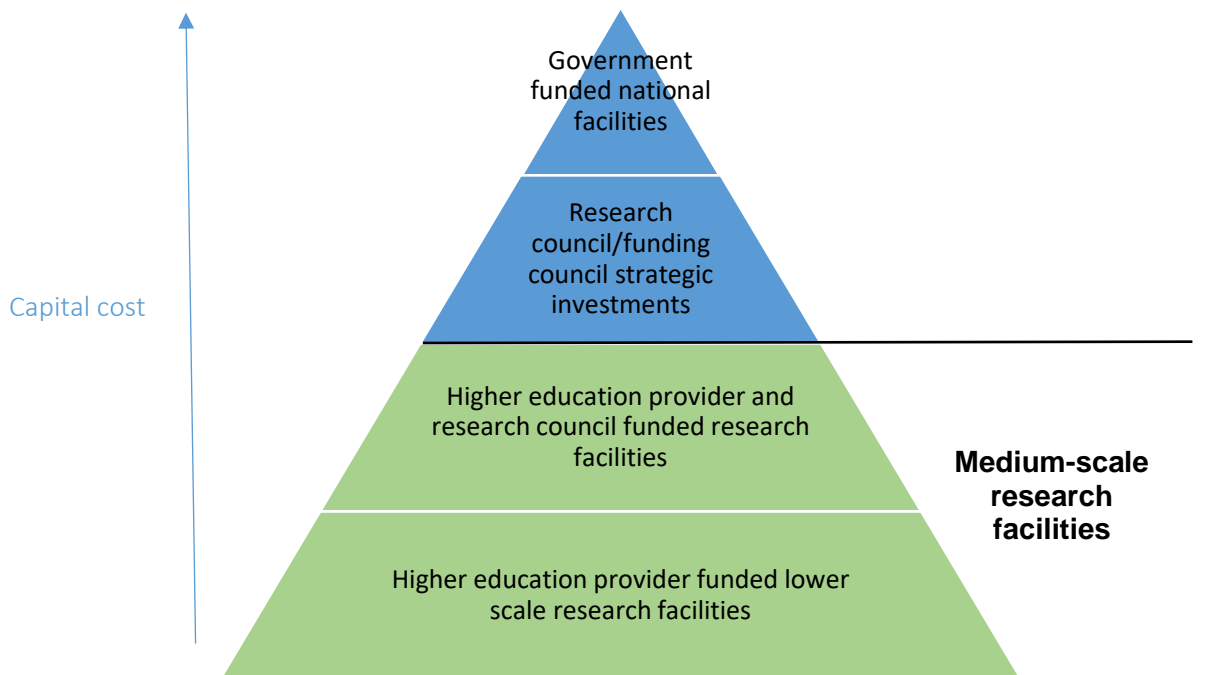
The report uses the terms 'higher education provider' and 'research funder'. 'Higher education provider' is used to describe UK publicly funded higher education institutions. The term 'research funders' is used to describe UKRI, funding councils, government departments, charities and industry.

The findings from the study are targeted at UK higher education providers and research funders. However the findings may also be useful to other publicly funded research organisations and institutes in addition to the Department for Business, Energy and Industrial Strategy.

The research capital funding landscape

The research capital funding landscape can be categorised into four broad funding groups. High capital cost national facilities were generally funded centrally by government. However, there was an increasing expectation for higher education providers to fund lower and medium-scale research facilities capital and operating costs themselves.

Figure 1: Types of research facility and the basis of funding



The FSSG Oversight Group considered a definition for medium-scale research facilities. Further details are included below. We have excluded government funded national facilities and research council strategic investments from the review. Instead, the review has focussed on the sustainability of medium-scale research facilities. Examples of medium-scale research facilities are magnetic resonance imaging scanners, electron microscopes and high performance computing facilities. Whilst the majority will be funded by higher education providers themselves, additional funding may be available from UKRI, the research councils, funding councils, industry and the charity sector.

Aims and objectives of this review

The FSSG Programme defined a review to research and identify the approaches UK higher education providers take to meeting the capital, operational, and replacement costs of medium-scale research facilities. The agreed outcome was to produce an analysis of research equipment, facility and technician resource funding and costs, with good practice for sustaining these facilities, including the role of equipment and facility sharing.

Further details on the terms of reference for this review are provided in Appendix 2.

Approach to the review

An Oversight Group was formed to oversee and guide the review. The Oversight Group was chaired by Professor Lisa Roberts, (Deputy Vice Chancellor: Research and Innovation, University of Leeds and a member of the FSSG). The Group comprised research expertise from the UK higher education Sector and representatives from other relevant bodies. The Support Unit coordinated and delivered the fieldwork. Further details of the group’s membership is provided in Appendix 3.

The role of the Oversight Group was to share its collective experience to guide and inform the review and ensure the review was delivered on time. It oversaw the delivery across four stages:

1. Desktop review of existing research
2. Data collection exercise
3. Case study visits
4. Reporting

As a first step, the FSSG Oversight Group oversaw the development and execution of a survey to the UK higher education sector in August 2017. The survey aimed to gain an understanding of how higher education providers procured, maintained and replaced medium-scale research facilities. We received responses from 22 higher education providers.

The survey asked UK higher education providers to indicate whether they would be willing to participate further in the review. The FSSG Oversight Group reviewed the survey information, together with their knowledge, to identify a pool of UK higher education providers for further participation in the review. The choice of higher education providers aimed to provide coverage of England, Scotland and Wales, as well as different scales of research activity.

From this pool of target higher education providers, eight agreed to participate in the case study stage of the review. The review acknowledges the small population of case studies; however, this included representation from England and Wales, with higher education providers sharing insight into a range of practices and experiences. A list of participating higher education providers is provided in Appendix 3.

To maximise the contribution and benefit from the case study visits, the review adopted a working principle to keep each higher education provider's insights anonymous.

Scope of the review

The range of research facilities within higher education providers varies from high end, high cost national strategic facilities, to well established lab facilities⁵. This review focused on medium-scale research facilities.

The definition of medium-scale research facility for the scope of this review was discussed at the FSSG conference, 'Competing and thriving in the new HE environment' in May 2017, by the FSSG Oversight Group meeting, and in consultation with the Engineering and Physical Sciences Research Council (EPSRC).

Initially, the EPSRC definition of mid-range facilities was proposed as a starting point for consideration at the FSSG conference. EPSRC defines a mid-range facility as a research facility which provides resources that are of limited availability to UK researchers for one of several reasons including:

- the cost of the equipment
- dedicated equipment in every university is not needed
- particular expertise is needed to operate the equipment or interpret the results
- progress is enhanced by sharing information or software.

⁵ Well found laboratories provide the minimum level of research equipment needed to facilitate basic research and attract external funding.

Feedback indicated that the EPSRC definition was biased towards STEM subjects. Delegates suggested that the definition could be widened to include research facilities which may exist in social, arts and humanities subject areas. Examples of such facilities include libraries. Other suggestions included consideration of 'special collections' where there was a research interest in them.

The FSSG Oversight Group noted the feedback. However, it was felt that to gain most value from the research review, the definition could be narrowed to provide improved focus. Following the consultation, the FSSG Oversight Group agreed on the following definition:

A STEM research facility, which may be a single piece of equipment or a collection of research equipment, which provides resources to UK higher education providers' researchers.

Characteristics of such facilities are:

- the cost of the facility is between £0.5 million and £10 million
- annual running costs of the facility are £50,000 or more
- dedicated equipment is not needed in every university
- there are multiple users of the facility (this may include external users and students)
- access to the facility is managed
- particular expertise is needed to operate the equipment or interpret the results
- progress is enhanced by sharing information or software.

Acknowledgements

A key part of the review was to engage collaboratively with key stakeholders. We were supported by a range of research, finance and academic experts who invested time and effort in contributing towards the outcomes of the review. In particular, we would like to give special thanks to the following stakeholders for their commitment, cooperation and openness:

- higher education providers who completed the survey
- higher education providers subject to case study visits
- research council workshop participants
- members of the FSSG Oversight Group.

Structure of the report

The chapters have been categorised as follows:

1. Executive summary
2. Introduction
3. Financial planning
4. Research capital strategy
5. Operational management
6. Conclusion

3. FINANCIAL PLANNING

Initial purchase cost of medium-scale research facilities

Funding research infrastructure is expensive. There are high, initial procurement costs, ongoing maintenance and running costs, and regular replacement costs to ensure higher education providers stay competitive with market leading facilities.

The survey asked participants to disclose details of the last three in-scope facilities acquired. We collected data from 22 higher education providers of 43 such facilities. The capital costs, including VAT, for these 43 facilities totalled some £100.3 million, with an average cost of £2.3 million. The capital cost of these facilities ranged from £0.5 million to £10.2 million.

The average capital cost of a medium-scale research facility was £2.3 million. The capital cost of individual facilities ranged from £0.5 million to £10.2 million

Source: FSSG Survey, How institutions fund and sustain medium-scale research facilities, August 2017

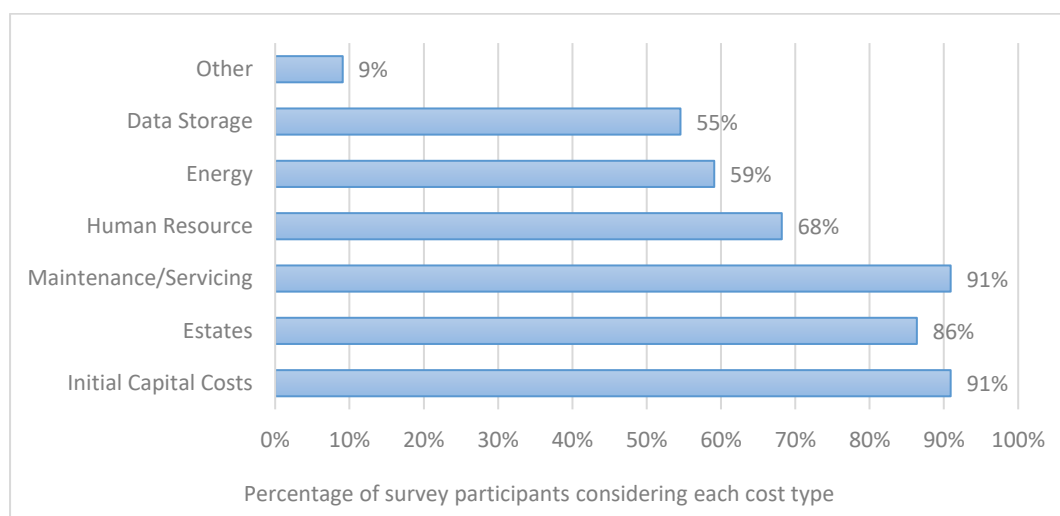
Higher education providers reported that the funding for these facilities often came from a variety of sources. Typically, higher education providers funded the majority of the initial acquisition costs, followed by the research councils (now UKRI). Other funders included the funding councils, charities, industry and philanthropic and voluntary donations.

Understanding the fEC and whole life costs of medium-scale research facilities

Medium-scale research facilities generally had a useful economic life of between three and 15 years. During this period, medium-scale research facilities incurred a range of additional costs. Whilst most higher education providers understood the capital costs involved, they did not always recognise the whole life costs of operating these medium-scale research facilities.

The review asked survey participants what costs were considered when acquiring a new medium-scale research facility. Chart 1 details the results.

Chart 1: Costs considered when acquiring medium-scale research facilities



The findings demonstrate variability in what costs were being considered at the point of acquisition. Included within 'Other' costs were installation and removal costs and specific consumable costs. We understand energy and data storage costs may be more difficult to predict; however, it is somewhat surprising that 32 percent of participants did not consider human resource costs during the acquisition process. We also asked specifically to what extent 'technician' costs were considered during the costing process: 62 percent of participants said they were.

38 percent of survey participants did not consider technician costs during the costing of facilities

Source: FSSG Survey, How institutions fund and sustain medium-scale research facilities, August 2017

This finding was supported during the case study visits. Some higher education providers did not include any staff costs when assessing fEC or whole life costs, others included only direct staff costs, whilst some included both direct and indirect staff costs.

We also identified that there was not always a standard approach to costing facilities. One faculty or school could cost facilities independently and differently to another faculty or school within the same higher education provider.

Good practice recommendation: Understand the full economic cost (fEC) of medium-scale research facilities

Higher education providers should try to understand the cost of operating medium-scale research facilities by identifying their full economic costs. Currently, examples of costs which may or may not be included are maintenance, technician, energy and estates costs. It is acknowledged that costing can be complex depending on the nature of the facility, but a fuller approach to costing will allow for completeness and transparency of costing within the higher education sector. It would also improve the value for money of the funder's investment.

Recommendation owner: higher education providers

Case study A: How do you cost a medium-scale research facility?

“If a medium-scale research facility is categorised as a research facility in the TRAC methodology, the relevant fEC cost rate will be applied to the facility. This allows a consistent approach across the higher education providers.

For other facilities, the fEC will be calculated using an internal costing template. This includes both direct and indirect costs across staff, estates, consumables, data, utilities and security.

However, from a funding bid perspective this can create some issues. Some research councils do not accept the TRAC methodology when bids are submitted. For example, the published guidance from one research council states that ‘depreciation and access charges will not be met’. This is out of line with the approved TRAC methodology.

Secondly, there is discrepancy between what a research council will and will not fund. Whilst we will still calculate the fEC for our purpose, this may have to be adjusted during the bid depending on ‘allowable’ costs. For example, one research council states that ‘depreciation on research council funded equipment may not be included in estates costs or charge out rates for use of equipment or facilities.’

And finally, as there is no consistency on the costing approach across the sector, there is potential for some bids to appear more favourable than others, due to apparently lower costs, but this is more likely to be due to certain costs being excluded from the costing. This creates false competition within the sector, resulting in under-funding.

There is a nervousness about external audits possibly ruling costs as ineligible, which is causing academics to be cautious in including all costs in the costings.”

Source: Case study institution

FSSG Comment:

Understanding whole life costs and calculating the fEC of medium-scale research facilities is important. TRAC and fEC are the approved and long standing policy that should inform costs and also the funding provided by research councils. Research councils should also be consistent in accepting TRAC based costings for facilities.

Higher education providers may conclude that although the fEC of a facility may not be recovered, there may be a strategic need for the medium-scale research facility. However, having the fEC based costing will enable higher education providers to make a more informed decision regarding the affordability of the facility and whether to invest in the medium-scale research facility or not. They can also use this information to plan how the full costs will be funded from other sources.

Whilst the review did not collate data to indicate the level of ongoing running costs incurred, institutions responding to the survey stated that the life of the facilities ranges from three to 30 years. It is therefore reasonable to assume these would be a significant cost over the life of the facility. The discussions indicate that higher education providers do not generally assess whole life costs of medium-scale research facilities. As a result, higher education providers were faced with unexpected or at least unbudgeted costs throughout the life of a facility.

Good practice recommendation: Assess the whole life costs of medium-scale research facilities in any business case for the replacement of facilities

Investment appraisals for new research facilities should consider the whole life costs i.e. the cost of acquisition, plus the future running and maintenance costs. Higher education providers could then assess the forecast income generation over the whole life of medium-scale research facilities. This will avoid higher education providers incurring unforeseen and unfunded costs, and provide a better basis from which the decision can be taken over the affordability and sustainability of the medium-scale research facility.

Recommendation owner: higher education providers and research funders

The survey also asked participants who funded running costs. Running costs, like capital costs, tended to be funded from a variety of sources. Of the 50 facilities disclosed, 12 percent had running costs which were funded in the majority by UKRI or research councils through bids and grants. Other sources of funding included higher education providers' self-funding, user charges or other charity or industry funding.

Understanding facility costings from a research council perspective

The review team held a workshop with a number of research councils in September 2017. The findings have been summarised below:

- a. Research councils may issue 'capital only' calls. For such calls, running costs will not be funded by the research councils; however, this is clear from the outset. In these instances, higher education providers have to ensure running costs will be funded from other sources.
- b. Access charges are permissible within bids. However, research council experience is that higher education providers do not commonly include such costs.
- c. Not all funding opportunities are on a full economic cost basis.
- d. Maintenance contracts are funded by some research councils and form part of the initial capital bid. However, higher education providers have to fund these maintenance contracts once the research council funding term ends.
- e. Whilst research councils may challenge how running costs will be funded, they do not view this as their responsibility.
- f. Due to the appetite amongst some academic staff for being successful in securing research council grants, it is known that some higher education providers choose to exclude certain costs within bid proposals in order to prevent the bid value appearing to be too high. This impacts on the understanding the research councils have of the real cost of the medium-scale research facilities.

As guidelines vary from one research council to another, higher education providers may not be clear about what costs are allowable. This could result in the under-funding of medium-scale research facilities, and missed opportunities for the higher education providers. A consistent costing requirement as noted above would allow for a fairer assessment process. However, research councils could do more to increase consistency between themselves, and improve guidance available to higher education providers on allowable costs.

Funding of revenue/running costs

To ensure the sustainability of the research infrastructure, UKRI and other research funders are encouraged to consider the funding of revenue and running costs in addition to the initial capital cost for acquiring facilities. This could be achieved in a number of ways, such as funding allowable running costs in bids, or providing additional funding to support running costs. The approval of capital bids for equipment could also assess how the facility will be sustained by the higher education provider.

Recommendation Owner: UKRI / Research funders / Funding Councils / Charities

Good practice recommendation: Improve the clarity of 'allowable costs'

Allowable costs vary from one funder to another. As a result, there can be some uncertainty around which costs are allowable expenses, leading to under-funding of medium-scale research facilities from the offset. UKRI and other research funders could improve the clarity of which costs are allowable in bid submissions. Some suggestions proposed by the research councils include seminars for higher education providers' research officers, visits to higher education providers' departments, and attending higher education providers' capital boards. UKRI could further support higher education providers in claiming eligible costs by improving the consistency of review panels across the research councils in accepting the costings provided.

Recommendation owner: UKRI/research funders/charities

Discussions with higher education providers also made reference to a tendency to exclude certain costs within bid proposals. In some cases academics were conscious of the high cost of research activity, and often felt that bid proposals were more likely to be rejected if all relevant costs were included. The uncertainty already identified concerning what costs are 'allowable' by certain funders further creates a tendency to exclude some eligible costs.

Taken together, these issues have created a practice of excluding costs within bid proposals, which could lead to a gap in funding and erode the higher education provider's ability to improve the sustainability of research. This can be addressed if a more consistent approach to costing is adopted by the higher education sector and if higher education providers engage with academic staff and research offices to emphasise the importance of including all allowable costs in bids.

Good practice recommendation: Educate and raise awareness with funders and academic staff of the implications of not including all relevant costs in grant bids

To improve the understanding of why all allowable costs should be included in bids, together with the consequences of not doing this, higher education providers could consider undertaking a programme of awareness raising amongst academic staff and their research offices. This could also be an opportunity for communicating any revised policies or processes that are implemented.

Furthermore, UKRI could be more active in promoting the importance of complete costings being submitted in bids and supporting FEC based bids. UKRI could also promote more consistent approaches across research councils.

Recommendation owner: higher education providers/UKRI

Once higher education providers have fully understood the full economic cost of running medium-scale research facilities, they can accurately price access to the facility. 81 percent of the survey respondents and all of the case study higher education providers we spoke to varied their pricing according to the user.

Internal or external academic users, whether usage was for teaching or research, were charged on a 'cost' basis. However, the review noted earlier that this did not necessarily mean fEC or even all costs, thus resulting in the income recovered being less than the actual cost.

The review also noted that access would not generally be denied if a student or academic did not have available funds. In such instances, the faculty or school would bear the cost of the access if the research was judged to be strategically important.

For external users, most higher education providers charged a commercial rate. Some higher education providers may offer alternative pricing models such as discounts to increase utilisation, or discounts for those members of a facility sharing group.

Good practice recommendation: Develop a suitable approach to pricing

A consistent approach to pricing could be developed which ensures that as far as possible, fEC is being recovered or there is a clear justification where this is not the case. This would involve firstly defining a suitable pricing unit, for example, an hourly rate, a day rate or per sample rate based for the facility. Secondly, higher education providers could develop a variable pricing tariff based on the type of user. Higher education providers could seek to maximise income generation where the rules of the funder or type of user enable this. If fEC is not recoverable, higher education providers should be aware of the implications of this.

Recommendation owner: higher education providers

The review recognises that commercial income is a key factor in improving the sustainability of medium-scale research facilities, particularly if there are low levels of internal utilisation. Currently, the level of marketing of facilities varied from one higher education provider to another. Some higher education providers relied on ad-hoc academic contacts, whilst others had invested in tailored marketing geared towards both the academic and commercial markets.

Good practice recommendation: Promote the availability of research facilities that can be used

Higher education providers could consider developing a dedicated marketing strategy and pricing strategy to promote the use of medium-scale research facilities. This could help generate additional income and improve any lower levels of utilisation.

Some options include website development with enquiry and search facilities, publication of promotional material, and presence at relevant technology events. Higher education providers could also increase awareness of this among relevant academics or researchers as they are often key to developing relationships and potentially attracting new income.

Recommendation owner: higher education providers

Good practice recommendation: Incentivise and further facilitate equipment sharing

UKRI could consider how it can further support and incentivise equipment sharing by higher education providers.

Recommendation owner: UKRI

Comparing income to costs

Once higher education providers have understood their costs, and developed an approach to pricing, they need to assess the income generated from operating these medium-scale research facilities. A suitable method for enabling this is to set up the facility as a separate cost centre. This enables the grouping of costs, rather than them being part of several departmental cost headings, and is a practice followed by a number of the case study subjects, although this may not be done consistently within a higher education provider.

Good practice recommendation: Set up individual cost centres to increase the transparency of all facility costs

Higher education providers could consider setting up individual cost centres for medium-scale research facilities. This will allow all relevant costs to be allocated to the facility and improve the transparency of all of the costs relevant to the facility and improved monitoring of income and costs.

Recommendation owner: higher education providers

The benefits provided by research facilities are clearly not limited to the income generated from use of the facility. The quality of the facility is inherently linked to the quality and quantity of research outputs and funding and the ability to attract quality research staff. These will all indirectly attract additional income to the higher education provider as a whole, but it is not possible to attribute this directly to the support that the research facilities have provided.

In addition, discussions with participants suggest additional income, such as QR funding is already over-committed. One higher education provider explained that QR funding is used to:

- cover the shortfall on FEC for research grants and contracts, including those from government funding sources like UKRI or research councils
- fund the postgraduate research scholarship programme
- enable research to be conducted that does not yet have external funding but which is essential to the achievement of their strategic research aims.

The review also identified that the way income is allocated can impact the culture and behaviour of academic and operational staff in relation to generating commercial income. Many higher education providers reported in the study that they do not ring-fence commercial income to specific medium-scale research facilities, or even within a faculty or school. As a result, academic and operational staff responsible for the facility did not feel they had a sufficient incentive to generate additional income. Higher education providers that had given financial benefit derived from increased sharing or income generation from research facilities back to the department or facility stated that this was an incentive to increase the utilisation of the facility.

Good practice recommendation: Review of income allocation model

Higher education providers could undertake a review of their income allocation model. Currently, the majority of higher education providers take centrally any surplus generated by medium-scale research facilities within faculties or schools at the end of the financial year. The budget for the following year may not reflect any surplus generated in prior years. Although accounting rules prevent 'reserves' being accumulated between years, proactive engagement with the Finance Director to discuss how economic benefits earned from sharing can support the continued operation of facilities could be beneficial.

Recommendation owner: higher education providers

The review has acknowledged that medium-scale research facilities are unlikely to be recovering their full costs. It also acknowledged that by no means is research measurable by financial performance alone, but positive financial performance is necessary to sustain and enable research activity. Whilst higher education providers may be able to subsidise the cost of research in the short term, this is not a sustainable approach for the future, particularly if the UK wants to remain at the cutting edge of research technology.

Findings of this review conclude that medium-scale research facilities are generally not recovering their costs, as with all research activity. Shortfalls are accepted within the sector as the 'cost of business.'

Having improved processes, procedures and practices will allow higher education providers to better understand the level of cost recovery being made, and future investment requirements. Based on this analysis, a higher education provider may well choose to continue to operate the medium-scale research facility, as the research value will be deemed far more significant and many higher education providers termed this as the 'cost of business'. But such a strategic decision will be better supported by understanding any financial consequence of doing this and the impact it has on sustainability.

4. RESEARCH INFRASTRUCTURE STRATEGY

Planning for the acquisition and replacement of medium-scale research facilities

During the review, we asked higher education providers how they planned for the initial acquisition of medium-scale research facilities. 90 percent of the survey respondents assumed that they will attract grant funding to contribute to the acquisition and replacement of medium-scale research facilities.

90 percent of HE providers assumed they will attract grant funding to contribute to the acquisition and replacement of medium-scale research facilities.

Source: FSSG Survey, How institutions fund and sustain medium-scale research facilities, August 2017

From the case study visits and the survey undertaken as part of the study, it was identified that planning for the replacement or purchase of research facilities was in some cases short term and often reactive to funding calls, either internal or external. However, there were examples where higher education providers had adopted a more planned and coordinated approach to facility replacement, which then linked to the higher education providers' financial planning process. Two examples are provided below of the approaches observed.

Case study B: How do you plan for acquiring medium-scale research facilities?

During the annual financial planning round, a central research capital equipment budget is allocated by Finance. The budget is defined by Finance with no input from the faculties, and tends to be the same amount year on year.

The budget is owned by the Pro Vice Chancellor, Research (PVCR). Deans of Faculties will submit requests to the PVCR. Discussions between the PVCR and Deans will prioritise needs and allocate the budget accordingly. The budget will be spent during that financial year.

FSSG Comment:

The majority of higher education providers we visited followed a similar short term planning model, whereby a research equipment budget was set by Finance during the annual budget setting process. This model concentrated on the following academic year only, rather than allowing higher education providers to plan ahead for the medium term. The higher education provider was not considering what funding would be required to replace equipment or new equipment needs for the future.

In contrast, some higher education providers did operate an alternative approach.

Case study C: How do you plan for acquiring medium-scale research facilities?

All faculties are decentralised. The higher education provider operates a resource allocation model based on faculty earnings and a central overhead contribution. Each year, Finance will allocate a total budget for each faculty. Heads of Faculties will allocate budgets autonomously as they see fit, and Finance would not get involved at this level. Research capital equipment will be funded from the faculty's non-pay budget. The budget will be spent during that financial year.

The PVCR also has a smaller, separate fund. This is often used to fund multi-disciplinary ideas, or funds to address needs identified by Heads of Faculties.

Heads of Faculties have a three year research capital equipment plan which identifies new and replacement needs. This enables a less reactive approach to funding research capital equipment.

As Faculty budgets are based on income generated, it has provided greater ownership and responsibility for the betterment of budget targets.

FSSG Comment:

The decentralised finance model is effective in larger higher education providers, but may be less suitable for smaller higher education providers. However, the three year capital equipment plan allows the higher education providers to better understand the research capital funding needs. Faculties are aware of the useful lives of their facilities, and can implement suitable measures to ensure those that need replacing, or any new facilities are considered adequately in advance. This means a less reactive, and more efficient approach to research equipment funding.

Regardless of whether the higher education providers operate a centralised or decentralised finance model, it is clear that improved medium term planning of medium-scale research facilities will allow for a less reactive, and more efficient approach to funding. This in turn contributes to improved sustainability.

Good practice recommendation: Develop a medium term road map

It is recognised that the availability of funding calls will always mean there is an opportunistic aspect of facility purchase and replacement. Notwithstanding this, higher education providers could develop at least a three year plan for medium-scale research facilities. This should be done at a faculty level where needs are best understood but with institutional join-up and oversight.

Firstly, this could consider existing medium-scale research facilities, their remaining useful economic life, and future replacement requirements.

Secondly, this could consider new medium-scale research facility requirements over the planning period.

This could also set out how the initial purchase cost, maintenance cost, and replacement cost will be funded. This could be built into the higher education provider, faculty or school longer term financial planning process.

Recommendation owner: higher education providers

What does your research capital landscape look like?

Many higher education providers are complex, multi-site organisations. There will be medium-scale research in multiple facilities across the estate. However, each may be managed and maintained differently.

We asked the case study higher education providers whether they would know if there could be more than one of the same facility across their estate. The most common response was “probably not”. Therefore, it is possible that there are the same facilities in the same higher education Provider that are operating at less than their full capacity.

For smaller higher education providers this is less likely to be the case. In one example, the research capital budget was owned by the PVCr who had central ownership over investment across the higher education provider. However, for larger higher education providers with budgets devolved to faculties or schools, this level of knowledge can be more difficult to obtain. This represents an area for improvement that could aid or enhance the understanding and sustainability of medium-scale research facilities.

Good practice recommendation: Perform a strategic review of medium-scale research facilities

Higher education providers could undertake a strategic review of all medium-scale research facilities across faculties or schools. This could consider a variety of factors including income and cost, utilisation, and research and teaching benefit. Based on this analysis, higher education providers would have a complete inventory of their research facilities. Options could then be explored for consolidating facilities, identifying a plan for renewal and replacement of certain facilities or identifying facilities to not replace.

Recommendation owner: higher education providers

The benefit of having a holistic approach to equipment planning has already been recognised. In 2012 EPSRC undertook a survey of NMR equipment in the sector with a view to creating a holistic

infrastructure roadmap. This work was refreshed in 2016 when a review entitled ‘Understanding the current portfolio and resourcing implications of NMR infrastructure underpinning world class science in the UK’⁶ was undertaken and supported by EPSRC. The findings from this updated study identified issues that have some consistency with the issues identified by this review. Namely:

- significant investment by institutions in research equipment from their own funds
- scope for increasing the utilisation of equipment in some cases
- variation in charging arrangements
- variation in how facilities are costed
- the continued evolution of equipment databases.

We are aware that the EPSRC has and is continuing to undertake work to collate a holistic view of research facilities in respect of certain fields of research. These are being referred to as ‘equipment roadmaps’⁷. This appears to be positive in providing a more national view of infrastructure needs.

Multi-user collaboration

Higher education providers reported that one key factor that can aid sustainability is the sharing of resources. In recent years, there have been various attempts to drive the equipment sharing agenda, initiated by the Diamond Review in 2012. The development of research partnership groups was noted, including the N8 Research Partnership, Midlands Innovation and GW4. The experiences of higher education providers to date has identified a number of benefits and barriers to sharing. These include:

Benefits to sharing include:

- increased utilisation for host, thus reducing operating costs
- reduction in capital and operating costs for users
- improved purchasing power in respect of warranty and service contract savings
- encourages collaboration in research beyond usage of the equipment.

A shared access arrangement involves higher education providers identifying medium-scale research facilities that are available for use by other higher education providers. This would mean that users did not have to invest in these facilities themselves. As a result, utilisation would be increased and additional income would be generated by the host higher education providers.

Barriers to sharing include:

- policy and procedural arrangements for host
- need for operational system for host e.g. booking systems
- geographical proximity
- additional VAT costs incurred by user
- lack of host resource/management investment to manage access.

However, in order to set up such access, higher education providers would need to invest in developing policies, procedures and systems to facilitate this. This requires time and money. VAT is also an additional cost related to sharing as higher education providers are required to charge VAT if facilities are accessed by others. This is discussed further in Section 6. Also, shared access is only practical if higher education providers wanting to use others’ facilities are within a suitable proximity.

⁶ <https://epsrc.ukri.org/files/research/nmrkinfrastructureupdate2017/>

⁷ <https://epsrc.ukri.org/research/ourportfolio/themes/researchinfrastructure/strategy/equipmentroadmaps/>

Some of the barriers can be easily overcome, albeit with some time and financial investment. However, the work undertaken in this study identified that at times the competitive nature of higher education providers and individuals in their research fields creates a barrier to sharing. Even within research partnership groups, it was identified that an element of ownership and competitiveness can exist. For example, with joint bidding for capital equipment funding, there may be difficult conversations around where the research facility will be physically located.

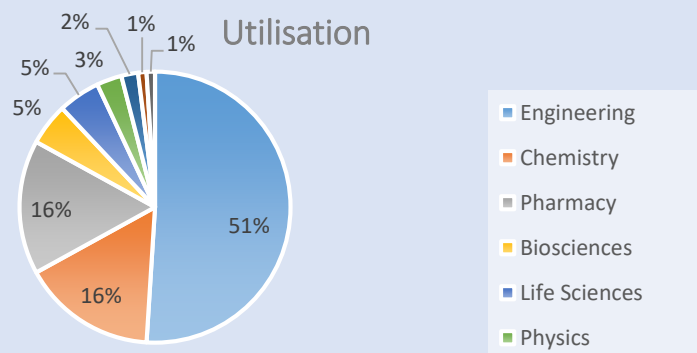
Case study D: Internal multi-user collaboration

“Following a strategic review of our research facilities, we aimed to establish a multidisciplinary research capability and expertise within a single centre site. Three main principles at the heart of the Centre are:

- an interdisciplinary collaborative environment where expertise can be shared, free of disciplinary or administrative barriers
- to provide comprehensive training for researchers, from students to academics
- to share equipment and resource through a robust and transparent structure, enabling access to internal and external researchers.

Equipment within the centre has been funded either externally, or by a combination of external plus matched funding (i.e. higher education provider’s own funds). The centre is a cross-faculty facility, with the majority of researchers from the Faculty of Engineering. This has prevented potential duplication of facilities across faculties, and low levels of utilisation.

Chart 2: Centre usage by department



We have developed a transparent tiered pricing structure for internal and external users. As we are part of a research partnership group, we offer discounts to these users. We have also developed a ‘managed access’ scheme which allows free access to some users for a monitored level of ‘pump-priming work’. This has been enabled by two successful rounds of EPSRC funding ‘Strategic equipment scheme - maximising existing equipment sharing in physical sciences’.”

Source: case study institution

FSSG Comment:

The innovative approach in the case study on the previous page, of developing a cross-Faculty facility enables increased utilisation and reduced costs. Such platforms work well when undergoing Estate developments. A degree of planning is required to enable this collaborative approach.

Following the higher education provider's strategic review of facilities, consolidation of certain facilities may be a suitable option to increase sustainability.

Good practice recommendation: Multi-user centres or cross faculty/school collaboration

There will be medium-scale facilities which are common across a number of faculties/schools, with varying levels of utilisation. Higher education providers could consider whether there is scope and practicality in consolidating such facilities to centralised, multi-user centres. This would be particularly beneficial to consider when higher education providers are undergoing significant estates capital projects.

Recommendation owner: higher education providers

Insights into VAT

VAT issues have been outlined as a barrier to equipment sharing by some institutions. However, other institutions did not view this as an issue and although it can often be an additional cost to external users, it still represents better value than investing in one's own facility.

VAT is a technical topic and in some cases there can be ways to reduce the level of VAT that is paid, often via reclaims being made by Finance. Further information about the impact that VAT can have on research facilities is provided in Appendix 5.

5. OPERATIONAL MANAGEMENT

Policies and procedures

The case study visits have highlighted that there is often inconsistency across costing, pricing, access arrangements and reporting within a single higher education provider. Improved guidance for relevant staff will ensure that medium-scale research facilities are managed appropriately and coherently.

Case study E: Research facility policy and procedures

“We have developed a set of policy and procedures which set out the definition of a research facility, TRAC guidance, guidance on research council funding, approval process for new and existing facilities, calculation of charge out rates, booking and usage monitoring, recharging and balance on accounts, and financial monitoring.

This document includes a flowchart and checklist prior to purchasing new facilities, as well as a costing template.”

Source: Case study institution

FSSG comment:

A defined set of policy and procedures enables a transparent and consistent approach to research facility management. It also encourages improved costing and reporting to enable informed decision making. Obtaining buy-in from across the higher education providers will be critical in implementing

Utilisation monitoring

A key step to improve sustainability is to review utilisation. Utilisation is one of the most significant and measurable performance indicators for medium-scale research facilities. However, monitoring utilisation requires adequate systems and processes.

During the case study visits, we were informed that booking systems varied within a higher education provider. Some faculties or schools operated simple calendars and spreadsheets, maintained by an administrator. Other faculties or schools had invested in specific booking software, such as Calpendo and the Pasteur Platform Management System. Such software systems controlled access, and enabled utilisation monitoring. There is of course a cost associated with operating such systems, and the level of research activity often determined whether simplistic or dedicated software was used.

Where utilisation can be monitored appropriately, higher education providers can better understand their facility usage requirements, and any spare capacity.

Case study F: Research facility booking system

“We use a system called Calpendo to book and monitor our medium-scale research facility usage. There is an upfront charge, with an additional per user license fee to access the system.”

Source: Case study institution

The screenshot displays the Calpendo web-based booking system interface. The top section shows a calendar view for April 2018, with a grid of days and time slots. Bookings are represented by colored blocks (green and blue) indicating resource usage. The left sidebar contains navigation options like 'Resources', 'Templates', and 'Status'. Below the calendar, there is a search and filter section, and a table listing 171 groups of bookings.

Facility	Name	Date	Time	Resource	Qty	Units
MASF-MAS		29 Mar 2018	10:00	MAS FESEM	1	hour
MASF-MAS		20 Mar 2018	14:00	MAS FACSCanto	1	hour
MASF-MAS		21 Mar 2018	14:00	MAS FACSCanto	1	hour
MASF-MAS		5 Mar 2018	15:00	MAS SEM	1	hour
MASF-MAS		8 Mar 2018	11:00	MAS SEM	1	hour
MASF-MAS		14 Mar 2018	11:00	MAS Life Sci Hood 1	1	hour
MASF-MAS		16 Mar 2018	14:00	MAS SEM	1	hour
MASF-MAS		22 Mar 2018	12:00	MAS SEM	1	hour
MASF-MAS		23 Mar 2018	12:00	MAS SEM	2	hour
MASF-MAS		6 Mar 2018	14:00	MAS FACSria	1	hour
MASF-MAS		7 Mar 2018	16:00	MAS FACSria	1	hour
MASF-MAS		14 Mar 2018	16:00	MAS FACSria	1	hour
MASF-MAS		17 Mar 2018	16:00	MAS FACSria	1	hour
MASF-MAS		9 Mar 2018	14:00	MAS TEM2100	3	hour
MASF-MAS		27 Mar 2018	14:00	MAS SEM	1	hour
MASF-MAS		23 Mar 2018	15:00	MAS FACSria	1	hour
MASF-MAS		29 Mar 2018	14:00	MAS FACSria	1	hour
MASF-MAS		6 Mar 2018	10:00	MAS SEM	1	hour
MASF-MAS		5 Mar 2018	14:00	MAS LSM880	2	hour
MASF-MAS		7 Mar 2018	12:00	MAS FACSria	4	hour
MASF-MAS		13 Mar 2018	12:00	MAS FACSria	2	hour

The system uses a web-based interface to enable booking from anywhere at any time. Administrators are able to control and manage booking capabilities across single or multiple facilities.

Calpendo enables administrators to report on the booked usage of resources by the relevant time slot, department, teaching or research activity. The reporting software enables automated finance reports to be scheduled and run as required. Rates and research project codes are uploaded onto the system also. These are then used to raise invoices.

FSSG comment:

Such systems allow for increased monitoring and reporting on usage and income generation. This information can be used to make decisions relating to the higher education provider’s medium-scale research strategy and medium term needs. It also allows for auditable utilisation reports which may be required by some funders.

Asset Registers

The equipment.data website, funded by EPSRC, was developed in an attempt to improve visibility and utilisation of UK research equipment. The database publishes UK research equipment through one central portal. However, there are varying degrees of usage of the website. Feedback on the equipment.data website has generally noted limited use due to the quality of the data. Users have commented on poor facility descriptions, poor search results, lack of detail regarding capability and techniques, and data not being updated on a timely basis.

Some higher education providers have developed their own internal asset registers, whilst others may have produced a joint register within a research partnership. Whilst this may appear to be duplication of effort, they have tailored their database to their needs, allowing for an improved system.

Good practice recommendation: Invest in systems and processes

Where appropriate, higher education providers could invest in suitable and consistent systems and processes which enable improved management of medium-scale research facilities. This could include policy and guidelines, access restrictions and booking systems. Booking systems should take into consideration the pricing unit defined within the pricing methodology. This would enable improved reporting and monitoring capabilities to assess utilisation and financial sustainability.

UKRI could allow charges for use of a common system to increase usage and value for money from sharing.

Recommendation owner: higher education providers and UKRI

Oversight and governance

Management of medium-scale research facilities is complex. It requires an efficient management of a multi-disciplinary team of academic, research, finance and operational staff. Senior management time needs to be invested in ensuring the team is well led and receives sufficient priority from the higher education provider.

Roles and responsibilities include:

- **Senior management** – ensuring appropriate financial investment is made in line with the higher education provider's research strategy
- **Academic and research staff** – preparing bid proposals, attracting research investment, identifying facility requirements
- **Finance** – developing costing and pricing models, monitoring financial performance, preparing or approving bid proposals
- **Operational** – maintaining facilities, monitoring utilisation, identifying maintenance and replacement requirements.

Case study G: Research facility team

“We operate eight research technology centres. These are an integrated network of technologies to ensure researchers, internal and external, have access to equipment and expertise.

The Pro-Vice Chancellor (Research) has central ownership over the centres. Each centre is led by an Academic Director and has an Operational Group which includes Finance representation, Facility Managers, and administrative support. The centre Operational Group feeds into a central Steering Group. The centre Steering Group will consider research capital equipment needs. The centre Steering Group then feeds into an Academic Committee.

Research centres are also supported by a separate ‘Research Services Team’. This team provides support across costing and pricing, research proposals, financial procedures and contracting.

Central to our team is the role of the technicians, particularly around maintenance and quality operation of our facilities. We are actively raising the profile of technicians as we recognise their role in improving sustainability of medium-scale research facilities.

Some measures include the recent launch of the ‘Technicians’ Commitment’, a career development programme for our technicians, and provision of routes to professional registration.

Centres are also supported by the higher education provider’s marketing team. Marketing initiatives include Facility Managers attending and hosting industry-based events, publication of a range of promotional material, investment in the website and Google search facilities. Much interest is generated from academic leads.”

Source: case study institution

FSSG comment:

Oversight and management from the Pro-Vice Chancellor (Research) demonstrates commitment and oversight from the higher education providers. Each centre operates its own cost centre, and is managed like a separate business unit. There is sufficient financial and business acumen amongst the multi-disciplinary team. The role of technicians is highly valued with direct impact on sustainability, and investment is being made to attract and retain quality technician support.

Many higher education providers highlighted the issue around short term fixed contracts for technicians due to their funding being linked to research bids. This could lead to lack of operational ownership of medium-scale research facilities. It was recognised that technicians were central to the sustainability agenda, as a good technician would take pride over maintaining facilities to a high standard, prolonging its use, and keeping maintenance costs down.

However, higher education providers reported that recruiting technicians was becoming increasingly difficult. Some noted the term ‘technician’ was viewed in a negative manner, and in fact, a change in advertised vacancies led to higher applicants.

At the recent FSSG Conference⁸ UKRI gave a presentation on the challenges for research sustainability. The presentation acknowledged that talent is a key foundation for supporting both the industrial strategy and the government’s target for gross expenditure on research and development reaching 2.4 percent of GDP by 2027. Technical staff are a key component of the talent pool required to realise the government’s aim.

In addition, BBSRC has undertaken work to understand the importance of research technicians, technology and skills specialists in supporting and enabling research. An Advisory Group was formed which developed an action plan for three areas: identity, parity and inclusion, and evaluation. Further details can be found on the BBSRC web site⁹.

Good practice recommendation: Invest in and support development of technical expertise

Up to date technical expertise is fundamental to managing the maintenance of medium-scale research facilities and extracting full value and impact from them. Higher education providers reported that they struggled to attract and retain high quality technical expertise. Higher education providers could invest in developing a structured career path for technical staff. This could take into consideration training, development and progression.

Joint working with UKRI and other research funders could explore other solutions to this issue.

Recommendation owner: higher education providers/UKRI/research funders

⁸ www.officeforstudents.org.uk/advice-and-guidance/partnerships-and-collaboration/financial-sustainability-strategy-group-and-trac/financial-sustainability-strategy-group-fssg/#conference

⁹ <https://bbsrc.ukri.org/skills/developing-careers/research-technicians-technology-skills-specialists/>

6. CONCLUSION

Summary

Medium-scale research facilities are generally funded by higher education providers (both from reserves and by utilising QR funding) and research councils (now Research England and UKRI), with some additional funding from charities and commercial organisations. The capital acquisition of medium-scale research facilities tends to be responsive in nature, based on funding opportunities becoming available. Institutions rarely had a proactive plan for the acquisition and replacement of medium-scale research facilities.

Currently, there is no consistent approach to costing and pricing of medium-scale research facilities. The study found many examples where medium-scale research facilities are not costed in full from the outset, either due to gaps in understanding of what cost are allowable, or with a view to increasing the chances of having capital funding bids approved, either internally or externally. In addition, many higher education providers do not consider whole life costs over the useful economic life of medium-scale research facilities as part of preparing the business case for the purchase of research facilities.

As a result, most higher education providers do not have a complete understanding of the costs involved in operating medium-scale research facilities over their useful economic life. However, even with this understanding, it is judged that medium-scale research facilities would not fully recover their costs. Whilst in the short term this may be acceptable, it is not considered a long term sustainable option.

The review has identified some practical recommendations relating to financial, strategic and operational considerations to help higher education providers and funders to improve the sustainability of medium-scale research facilities. Some recommendations may be relatively easy to implement, but others will require a change in behaviour and culture within the higher education sector.

The review has identified the following as key factors that enable improved sustainability of research facilities:

- optimising the utilisation of facilities
- understanding the full economic cost of facilities
- pricing the use of facilities to recover all of the costs incurred
- collaboration within higher education Providers and with other higher education providers
- having a complete record of all research facilities
- good quality booking systems to enable access to facilities
- effective teams and technical support for facilities.

A number of barriers have also been identified, as follows:

- the absence of an overall strategy for the maintenance and development of facilities, to support the research strategy
- the absence of medium to long term equipment and facility replacement plans
- a lack of clear ownership for managing facilities
- No incentives in the resource allocation process for improving income generation from facilities
- inaccurate or incomplete costings of research facilities.

The observations from the enablers and barriers to improving the sustainability of research facilities has led to a number of recommendations being made. A summary of the recommendations is detailed as an action plan in Appendix 1.

Appendix 1: Good practice recommendations

A consolidated list of the recommendations made in this report is provided below to enable institutions to assess their own practice against the recommendations.

Recommendation	Self assessment
<p>Financial</p> <p>Understand the full Economic Cost (fEC) of medium-scale research facilities Higher education providers should try to understand the cost of operating medium-scale research facilities by identifying their full economic costs. Currently, examples of costs which may or may not be included are maintenance, technician, energy and estates costs. It is acknowledged that costing can be complex depending on the nature of the facility, but a fuller approach to costing will allow for completeness and transparency of costing within the higher education sector. It would also improve the value for money on the funder’s investment.</p>	
<p>Assess the whole life costs over the life of medium-scale research facilities Investment appraisals for new research facilities should consider the whole life costs i.e. the cost of acquisition, plus the future running and maintenance costs. Higher education providers could then assess the forecast income generation over the whole life of medium-scale research facilities. This will avoid higher education providers incurring unforeseen and unfunded costs, and provide a better basis from which the decision can be taken over the affordability and sustainability of the medium-scale research facility.</p>	
<p>Funding of revenue costs To ensure the sustainability of the research infrastructure, UKRI and other research funders are encouraged to consider the funding of revenue and running costs in addition to the initial capital cost for acquiring facilities. This could be achieved in a number of ways, such as funding allowable running costs in bids, or providing addition funding to support running costs. The approval of capital bids for equipment could also assess how the facility will be sustained by the higher education provider.</p>	
<p>Improve the clarity of ‘allowable costs’ and how they are allocated in bids. Allowable costs vary from one funder to another. As a result, there can be some uncertainty around which costs are allowable expenses, leading to underfunding of medium-scale research facilities from the offset. UKRI and other research funders could improve the clarity of</p>	

Recommendation	Self assessment
<p>which costs are allowable in bid submissions. Some suggestions proposed by the research councils include seminars for higher education providers' research officers, visits to higher education providers' departments, and attending higher education providers' capital boards. UKRI could further support higher education providers in claiming eligible costs by improving the consistency of review panels across the research councils in accepting the costings provided.</p>	
<p>Engage and raise awareness with funders and academic staff of the implications of not including all relevant costs in grant bids</p> <p>To improve the understanding of why all allowable costs should be included in bids, together with the consequences of not doing this, higher education providers could consider undertaking a programme of awareness raising amongst academic staff and their research offices. This could also be an opportunity for communicating any revised policies or processes that are implemented.</p> <p>Furthermore, UKRI could be more active in promoting the importance of complete costings being submitted in bids and supporting fEC based bids. UKRI could also promote more consistent approaches across research councils.</p>	
<p>Develop a suitable approach to pricing</p> <p>A consistent approach to pricing could be developed which ensures that as far as possible, fEC is being recovered or there is a clear justification where this is not the case. This would involve firstly defining a suitable pricing unit, for example, an hourly rate, a day rate or per sample rate based for the facility. Secondly, higher education providers could develop a variable pricing tariff based on the type of user. Higher education providers could seek to maximise income generation where the rules of the funder or type of user enable this. If fEC is not recoverable, higher education providers should be aware of the implications of this.</p>	
<p>Promote the availability of research facilities that can be used</p> <p>Higher education providers could consider developing a dedicated marketing strategy and pricing strategy to promote the use of medium-scale research facilities. This could help generate additional income and improve any lower levels of utilisation.</p> <p>Some options include website development with enquiry and search facilities, publication of promotional material, and presence at relevant technology events. Higher education providers could also increase awareness of this among relevant academics and researchers as they are often key to developing relationships and potentially attracting new income.</p>	

Recommendation	Self assessment
<p>Incentivise and further facilitate equipment sharing.</p> <p>UKRI could consider how it can further support and incentivise equipment sharing by higher education providers.</p>	
<p>Review of income allocation model</p> <p>Higher education providers could undertake a review of their income allocation model. Currently, the majority of higher education providers take centrally any surplus generated by medium-scale research facilities within faculties or schools at the end of the financial year. The budget for the following year may not reflect any surplus generated in prior years. Although accounting rules prevent ‘reserves’ being accumulated between years, proactive engagement with the Finance Director to discuss how economic benefits earned from sharing can support the continued operation of facilities could be beneficial.</p>	
Strategic	
<p>Develop a medium-term road map</p> <p>It is recognised that the availability of funding calls will always mean there is an opportunistic aspect of facility purchase and replacement. Notwithstanding this, higher education providers could develop at least a three year plan for medium-scale research facilities. This should be done at a faculty level where needs are best understood but with institutional join-up and oversight.</p> <p>Firstly, this could consider existing medium-scale research facilities, their remaining useful economic life, and future replacement requirements.</p> <p>Secondly, this could consider new medium-scale research facility requirements over the planning period.</p> <p>This could also set out how the initial purchase cost, maintenance cost, and replacement cost will be funded. This could be built into the higher education provider, faculty or school longer term financial planning process.</p>	
<p>Perform a strategic review of medium-scale research facilities</p> <p>Higher education providers could undertake a strategic review of all medium-scale research facilities across faculties or schools. This could consider a variety of factors including income and cost, utilisation, and research and teaching benefit. Based on this analysis, higher education providers would have a complete inventory of their research facilities. Options could then be explored for consolidating</p>	

Recommendation	Self assessment
<p>facilities, identifying a plan for renewal and replacement of certain facilities or identifying facilities to not replace.</p>	
<p>Multi-user sites or Cross faculty/school collaboration There will be medium-scale facilities which are common across a number of faculties or schools, with varying levels of utilisation. Higher education providers could consider whether there is scope and practicality in consolidating such facilities to centralised, multi-user centres. This would be particularly beneficial to consider when higher education providers are undergoing significant estates capital projects.</p>	
Operational	
<p>Invest in systems and processes Where appropriate, higher education providers could invest in suitable and consistent systems and processes which enable improved management of medium-scale research facilities. This could include policy and guidelines, access restrictions and booking systems. Booking systems should take into consideration the pricing unit defined within the pricing methodology. This would enable improved reporting and monitoring capabilities to assess utilisation and financial sustainability.</p> <p>UKRI could allow charges for use of a common system to increase usage and value for money from sharing.</p>	
<p>Invest in technical expertise Up to date technical expertise is fundamental to managing the maintenance of medium-scale research facilities and extracting full value and impact from them. Higher education providers reported that they struggled to attract and retain high quality technical expertise. Higher education providers could invest in developing a structured career path for technical staff. This could take into consideration training, development and progression.</p> <p>Joint working with UKRI and other research funders could explore other solutions to this issue.</p>	

Appendix 2: Terms of reference

The Financial Sustainability Strategy Group (FSSG) is a high-level forum that considers the strategic, policy, cultural and technical issues concerning the financial sustainability of the higher education sector.

The FSSG Programme defined a review to research and identify the approaches higher education providers take to meeting the capital, operational, and replacement costs of medium-scale research facilities. The review was led by a FSSG Oversight Group, chaired by Professor Lisa Roberts.

This will be a collaborative review with the UK higher education Sector. It will be led by an Oversight Group, made up of a combination of FSSG members and key representatives from a variety of research leaders and finance directors in the UK higher education sector, together with representatives from other relevant bodies. The review will be supported by the Support Unit.

It is proposed that the review be broken down into two phases. Following the data collection the interim findings will be reviewed by the oversight group to enable the scope for the second phase to be either confirmed or refined as appropriate.

Key elements of the approach and activities are proposed as follows:

Phase 1

- a. Oversight Group to agree the definition of research equipment and facilities that are in the scope of this review.
- b. Desk based review of:
 - i. existing work on assessing research facility and equipment costs
 - ii. previous research on the sharing of research facilities and equipment, and an assessment of current developments
 - iii. funding policy across government, funding councils, charities and the research councils for research facilities, equipment and technicians.
- c. Develop a data collection from research intensive higher education providers to:
 - i. provide an analysis of research facilities and equipment procured in the last three years together with details of grants (i.e. non-institutional reserves) received towards the purchase
 - ii. identify known or planned replacements of research facilities and equipment in the next three years and the extent to which this is included in the financial forecasts. Detail will also be sought on the assumptions made for how the equipment will be funded. This will be based on equipment replacement programmes, where they exist, to provide legitimacy to the information received
 - iii. develop an understanding of how research intensive higher education providers plan for the replacement or renewal of research facilities, equipment and associated costs such as technicians and energy, which are required in a well-founded laboratory
 - iv. identify the extent of sharing that has taken place in the last two years and reflect on any trends in equipment and facilities that are more commonly shared. The factors that enable or restrict sharing will be identified. Views will also be sought on the extent to which equipment sharing is supporting sustainability, or not.

- d. From the above, initial findings will be discussed with the Oversight Group. This will then be used to inform and confirm the direction for the remainder of the study.

Phase 2

Phase 2 encompassed the following:

- case studies on particular types of equipment or facility outlining the whole life costs and considerations for higher education providers that are entering into the acquisition of such items
- lessons learned on VAT and other taxes as a result of equipment sharing
- outline of any facilities or equipment that it is not possible to share, together with the factors that enable and restrict sharing
- good practice for forward planning for the replacement of research equipment, facilities and technician resources.

Appendix 3: Oversight Group membership

Name	Role	Organisation	
Professor Lisa Roberts	Chair	University of Leeds	Deputy Vice Chancellor, Research and Innovation
Professor Tim Gallagher	Member	University of Bristol	Dean of Science
Professor Steve Rothberg	Member	Loughborough University	Pro Vice-Chancellor Research
Susan Morrell	Member	EPSRC	Lead, Research Infrastructure
Julie Pringle-Stewart	Member	National Oceanography Centre	Chief Operating Officer
Julie Tam	Member	Universities UK	Assistant Director of Policy
Liam McCabe	Member	University of Stirling	Director of Finance
Heather Williams	FSSG Secretariat	Office for Students	Finance Consultant
Andrew Bush	FSSG Support Unit	KPMG UK LLP	Director
Sitha Khanam	FSSG Support Unit	KPMG UK LLP	Project Manager

Appendix 4: Case study participants

Higher education providers
Cardiff University
Imperial College London
Loughborough University
University of Bath
University of Lancaster
University of Nottingham
University of Surrey
University of Warwick

Oversight Group members also provided valuable insights from their own institutions (Loughborough University, the University of Bristol, and the University of Leeds).

Appendix 5: Understanding value added tax on research facilities

Chapter 4 outlined how some institutions see the VAT charge for using research facilities as a barrier to sharing the research facility. VAT is a complex matter and one that can be different in different institutions. This appendix provides some further details about how VAT may affect research facilities. VAT rules can change and therefore the details below should always be checked. The finance team within your institution should be contacted if further information is needed regarding VAT.

An extra or double VAT charge?

If the customer's purpose for using those facilities or equipment is for either educational or non-business research use, the 20 percent VAT on the charge will be an additional cost. This is because educational use and non-business research are not activities that allow for recovery of VAT incurred on expenditure. Arguably the 20 percent VAT would be much lower than the cost of purchase of the equipment.

Practically, it is more likely that the customer would be putting the facilities or equipment to mixed use which would typically result in only the partial VAT recovery being possible (typically this would result in approximately 90 percent of the VAT being irrecoverable).

The following example illustrates how VAT becomes an additional, and in some cases a double, charge.

Case Study H: Research facility VAT example

Higher education provider 1 (HE1) purchases a new piece of equipment at a cost of £1 million plus VAT of £200,000. It employs two technicians at a cost of £100,000 to operate the system. 50 percent of the time the equipment will be used by higher education provider 2 (HE2) and 50 percent of the cost will therefore be charged to HE2 as a supply of equipment. Using the VAT calculation ordinarily used by higher education providers, HE1 may at best be able to reclaim 10 percent of the VAT incurred on the equipment purchase. So the total cost to HE1 is £1 million plus VAT of £180,000 plus salary cost of £100,000, giving a total cost of £1,280,000 (£1.3 million). 50 percent of this is charged to HE2 and VAT is added to the amount charged. Thus, the cost to HE2 is £640,000 plus VAT of £128,000 of which it may be able to reclaim 10 percent, giving a total cost of £755,000. Whilst HE1 correctly incurs 50 percent of the cost, HE2 ends up incurring a cost which is equivalent to 60 percent of the cost of the enterprise despite only having 50 percent of the use of the equipment.

This arises for two reasons. Firstly, VAT is added to the cost of the technicians' salaries when they are charged on to a third party, and secondly, VAT is added to the irrecoverable VAT which is incurred by HE1 when the cost is charged on.

In some cases, the VAT will not be an additional burden if the use of the facilities or equipment is solely in relation to commercial research, as VAT can ordinarily be reclaimed on this type of activity. However, there are few cases where commercial research is the sole activity undertaken and in reality, the opportunity for VAT recovery may be missed without careful monitoring.

Overall, there is a risk that there is a real VAT inefficiency resulting from the arrangements if both higher education providers (HE1 and HE2) are suffering irrecoverable VAT on their respective expenditure.

In principle, the VAT recovery position for the supplier (HE1 in the example) could be managed by seeking permission from HM Revenue and Customs (HMRC) to implement a VAT recovery method that treats the facility as a separate and specific calculation such that if 50 percent is used to make VATable supplies to other higher education providers, this entitles the supplier to 50 percent VAT recovery on the costs incurred. The ability to apply this type of use based calculation is dependent on HMRC approval (which is not always given) and it adds layers of complexity and compliance cost to the VAT calculations for the supplier (HE1).

Loss of VAT relief on buildings and equipment for medical research

In some cases the construction of new research facilities can be zero rated¹⁰ where they are used for non-business purposes such as grant funded research. Thus a £10 million construction project can be delivered without an additional VAT charge of £2 million. Charging third parties (including other universities) for use of facilities is regarded as being a business activity and zero rating would not be available to a research facility which was expected to be used for this purpose. This adds substantial cost to the construction of such facilities.

Where a facility has previously been zero rated, a VAT charge can also arise where third party charges are subsequently introduced. These rules are complicated and require the use of buildings that benefitted from VAT at the zero rate to be monitored for a period of 10 years and to exclude third party use for that time if an additional VAT charge is not to be incurred.

Where a higher education provider purchases or hires equipment for use in medical or veterinary research, relief from VAT is available. Where equipment is made available to another higher education provider – but it includes staff costs to operate the equipment that are often viewed by HMRC as a service which extends beyond the mere hire of equipment – VAT relief is not available.

Does the VAT exemption for cost sharing groups solve all of this?

There is a specific VAT exemption for supplies of services made by a Cost Sharing Entity (CSE) to members of a Cost Sharing Group. The critical point which often makes the use of a CSE impractical is that the cost being shared must be incurred before being recharged to members by a body (the CSE) which is separate to any of the entities which wish to share costs. Research equipment would therefore need to be in possession not of the higher education providers but of a separate entity established for this purpose.

Whereas this type of structure would eliminate VAT from being charged on services supplied (thereby removing a VAT cost for the customer) it may not necessarily remove the VAT cost entirely as VAT incurred by the Cost Sharing Group will be irrecoverable and it would simply pass on this irrecoverable VAT as a component of its charges. In this regard, the transfer of assets into the Cost

¹⁰ 'Zero rated' in Vat refers to items that are taxable, but the rate of tax is nil on their input supplies.

Sharing Group could involve a VAT cost (i.e. VAT chargeable by the supplier or a VAT cost for the supplier if they face a clawback adjustment as a result of making a VAT exempt supply).

Anecdotally, the correct establishment of a Cost Sharing Group to access the cost sharing exemption is structurally difficult and those that have been implemented within the UK higher education Sector have been abandoned on the basis of them being too complicated.

In addition, it is worth noting there is an element of legal uncertainty regarding VAT cost sharing groups as a result of ongoing EU VAT cases.

Hire of premises rather than equipment

If instead of shared facilities, the customer were provided with a discreet area of a research facility, which it kitted out with its own equipment, this could be structured so that the supply being made is an interest in land and potentially VAT exempt. However, this proposition would appear to be at odds with the key objective of sharing facilities and equipment, i.e. why would a higher education provider pay for property at another site if it still has the expenditure of fitting it out with equipment?