

# Counting the Costs of Open Access

THE ESTIMATED COST TO UK RESEARCH ORGANISATIONS OF ACHIEVING COMPLIANCE WITH OPEN ACCESS MANDATES IN 2013/14

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A report prepared on behalf of

  
**LONDON HIGHER**  
Supporting Higher Education in London

and



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# 1. Executive Summary

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## 1.1. Background

Research Councils UK (RCUK) and the Higher Education Funding Councils are the two most significant providers of public funding for research in the UK. Both have recently introduced new requirements for UK research organisations to make their published outputs openly accessible. Research Consulting was commissioned by London Higher and SPARC Europe to undertake this study of the costs to research organisations of implementing these requirements.

## 1.2. Findings

The total cost to UK research organisations in the 2013/14 academic year of implementing the RCUK open access policy was at least **£9.2m**. This figure excludes expenditure on article processing charges (APCs) for RCUK publications of some **£11m** or more, meaning the total costs were in excess of **£20m**. The majority of implementation costs related to management, advocacy and infrastructure development. Article administration accounted for only a small proportion of the total, at £0.8m for 'gold' and £0.1m for 'green' open access. While APCs and a proportion of other costs can be met from RCUK block grants, many costs are not recoverable through this route, and must be borne by research organisations. In the case of less research-intensive institutions, the cost of implementation vastly outweighs spending on articles, and is substantially greater than the block grant funding these institutions receive from RCUK.

The cost to the higher education sector of meeting the deposit requirements of the post-2014 Research Excellence Framework (REF) is provisionally estimated at **£4-5m** per annum. This excludes the costs of management, advocacy and infrastructure development, which institutions anticipate will be comparable to or greater than those of the RCUK open access policy. Further work would be needed to validate this expectation, and to establish the extent to which the costs of REF compliance are additional to those of compliance with the RCUK policy.

The directly attributable costs to research organisations of the 'gold' and 'green' routes to open access are £81 and £33 per article respectively. At present, making an article open access through the gold route is more than twice as time-consuming and costly for research organisations as green, even before allowing for the cost of APCs. Benchmark figures of 1 additional administrative FTE per 1,500 repository deposits, or 1 FTE per

## Key Findings

- £9.2m cost to UK research organisations of achieving compliance with RCUK Open Access Policy in 2013/14.
- The time devoted to OA compliance is equivalent to 110 full-time staff members across the UK
- The burden of compliance falls disproportionately on smaller institutions, who receive minimal grant funding.
- The cost of meeting the deposit requirements for a post-2014 REF is estimated at £4-5m.
- Gold OA takes 2 hours per article, at a cost of £81.
- Green OA takes just over 45 minutes, at a cost of £33.
- There is significant scope to realise efficiency savings in open access processes.

500 APCs, are suggested for most institutions to use in planning their future resource needs for open access. Larger institutions with multiple staff dedicated to OA administration could expect to process much higher numbers of articles per FTE.

### 1.3. Cutting the Costs of Open Access

The majority of costs relate to staff time, often at a senior level, spent on policy implementation, management, advocacy and infrastructure development. The costs of achieving cultural change are largely unavoidable, but there is scope to reduce costs through:

- Improvements in knowledge-sharing;
- Joint development of systems (in collaboration with third party vendors);
- Greater sharing of policies and procedures; and
- Automation of compliance reporting processes.

To date there is only limited evidence of economies of scale in the gold and green OA processes, though at present article administration costs remain relatively low. As the number of open access articles rises, the benefits from streamlining gold and green processes will become more significant. In the case of gold OA, the focus to date has been on improving payment mechanisms. This offers scope for efficiencies, but it is likely that equal or greater savings can be achieved through:

- Reducing the small number of 'difficult' cases, which account for the majority of the time spent. This will require working closely with certain publishers to identify and address causes of delay in the process.
- Improving automation and data-sharing, which could cut time spent by authors at the outset and administrators at the end of the process in particular.

Efforts to cut the costs of green OA are best focussed on two areas:

- Making the deposit process as quick and easy for authors as possible; and
- Working to achieve greater clarity in publisher policies, while establishing a set of 'reasonable steps' institutions could take in order to comply with these at minimal cost.

There are existing Jisc projects seeking to address many of the above opportunities on behalf of the sector. The findings of this report reinforce the importance of these initiatives in reducing the overall cost of open access for research organisations.

### 1.4. Conclusions

Academic publishing in the UK is currently in a transitional period, during which the cost of cultural, process and systems change for research organisations represents a significant overhead. Institutions recognise the importance of increasing access to their research, but are naturally concerned at the costs involved, which are expected to continue at a similar level for several years to come. These costs should reduce in time, but there is also significant scope to realise efficiency savings in current open access processes. Further work will be needed to understand how the costs to research organisations of complying with open access mandates change over the coming years, and to monitor the level of savings made.

## 2. Introduction

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### 2.1. Background

The June 2012 release of *The Report of the Working Group on Expanding Access to Published Research Findings*<sup>1</sup> (better known as the “Finch Report”) was the catalyst for a major shift in the open access (OA) requirements of public funders of research in the United Kingdom. Research Councils UK (RCUK) announced its open access policy later that same year, intended to deliver immediate, unrestricted, on-line access to peer-reviewed and published research<sup>2</sup>. The policy came into effect on 1 April 2013, and includes a preference for immediate publication, usually through payment of an article processing charge (APC) to the publisher (the ‘gold’ route to open access). Other UK government funders, such as the National Institute for Health Research<sup>3</sup>, have adopted similar policies, while many UK medical charities have also introduced policies favouring gold open access<sup>4</sup>. Perhaps most significantly, the announcement of the *Policy for open access in the post-2014 Research Excellence Framework*<sup>5</sup> in early 2014 has extended OA requirements still further. Due to come into effect on 1 April 2016, the policy requires that all peer-reviewed articles be deposited in an institutional or subject repository (the ‘green’ route to open access).

These policies collectively place significant new obligations on authors and research organisations in receipt of public funding, both at UK higher education institutions (HEIs) and public sector research establishment (PSREs). Past studies have investigated the economic implications of alternative scholarly publishing models<sup>6</sup>, but the administrative implications and costs for institutions of a shift to open access publishing remain poorly understood. Institutional librarians and research managers have for some time expressed the view that the costs of compliance with funder open access policies are significant<sup>7</sup>, and go well beyond the costs of article processing charges (APCs) or institutional repository software and maintenance. This study was commissioned on behalf of the UK higher education sector by London Higher and SPARC Europe in order to collect data on the additional administrative burden placed on research organisations by funder OA policies. Copyright in this report vests jointly in London Higher and SPARC Europe, as project sponsors. They have given permission for both the report itself and the underlying data to be made available under a CC-BY licence in order to maximise dissemination and re-use of the findings.

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<sup>1</sup> Available at <http://www.researchinfonet.org/publish/finch/>

<sup>2</sup> See <http://www.rcuk.ac.uk/research/openaccess/policy/>

<sup>3</sup> See <http://www.nihr.ac.uk/policy-and-standards/nihr-policy-on-open-access-for-its-funded-research.htm>

<sup>4</sup> See <http://www.wellcome.ac.uk/About-us/Policy/Spotlight-issues/Open-access/Charity-open-access-fund/index.htm>

<sup>5</sup> See <http://www.hefce.ac.uk/whatwedo/rsrch/rinfrastruct/oa/policy/>

<sup>6</sup> See Houghton et al (2009), *Economic Implications of Alternative Scholarly Publishing Models* available at: <http://www.iisc.ac.uk/publications/reports/2009/economicpublishingmodelsfinalreport.aspx>

<sup>7</sup> See for example [http://www.researchinformation.info/features/feature.php?feature\\_id=434](http://www.researchinformation.info/features/feature.php?feature_id=434)

## 2.2. Terms of Reference

The overall aim of this study is to evaluate the costs to UK higher education institutions of compliance with funder open access policies, specifically those of Research Councils UK and the post-2014 REF. The study has sought to establish:

- The range of costs to institutions of implementing the RCUK policy, and its impact on research intensive, teaching-led and specialist institutions.
- An estimated compliance cost for the UK higher education sector as a whole of implementing the RCUK and REF policies.
- Indicative figures for the full economic cost to institutions of making an article open access through the 'gold' (publishing in an OA journal) and 'green' routes (self-archiving by authors in an institutional or other repository).

The study was also designed to investigate institutional views on the benefits arising or anticipated from implementation of the policies.

## 2.3. Methodology

The project was undertaken by Research Consulting over the period August to November 2014. It comprised a web-based survey, open to all UK higher education institutions (HEIs) and public sector research establishments (PSREs) in September 2014, followed by a series of case study discussions with a subset of the participating institutions. Data were received from a total of 29 respondents (28 HEIs and one PSRE) on a range of quantitative and qualitative aspects of open access management. The full list of respondents is provided at Appendix 1. This data was combined with publicly available information from sources including the Higher Education Statistics Agency (average salary data), RCUK (institutional block grant allocations and compliance targets) and HEFCE (numbers of articles submitted to the 2014 REF) to generate the findings in this report.

In order to capture the total costs to institutions of achieving compliance with research funder policies, including the cost of existing staff time and resources, the study relies on institutions' estimates of time spent on open access. Wherever possible, the assumptions used in this study follow accepted practice within the UK higher education sector. Staff time has been converted into full time equivalent members of staff (FTEs) and costs using a figure of 1,650 productive hours per annum.

Unless otherwise stated, the figures for time and cost per article cited in this report are weighted averages, which take account of the differing article volumes handled by each responding institution in determining representative figures for the sector as a whole.

Further details on the study methodology can be found at Appendix 3, and an anonymised dataset plus the workings used in preparation of this report can be accessed via Figshare at <http://dx.doi.org/10.6084/m9.figshare.1228126>.

## 2.4. Limitations

Open access remains a rapidly evolving area, with little stability in the arrangements for its management within HEIs and PSREs. Inevitably, this means the findings of this study are subject to a number of limitations, including the following:

- The information collected as part of this study relates only to identifiable costs associated with the implementation of the RCUK open access policy, and the estimated costs of the REF open access policy. In many cases institutions will have incurred other open access costs, which may be met by other funders (such as the Wellcome Trust) or from their own resources. These costs are not reflected in the results of this study.
- Figures quoted for expenditure on APCs relate only to those costs met from RCUK block grants and managed by university libraries and research offices. Previous work in this area has established that institutions cannot provide reliable data on the value of APCs met directly from research project grants or departmental funds<sup>8</sup>, which may nonetheless be very significant.
- Data on time for the gold and green routes to open access are based on estimates provided by survey respondents. In many cases these represent the best guess of a single member of staff, but relate to activities completed by academic and administrative staff located across the organisation.
- The findings are based on the responses of 29 organisations, who collectively were in receipt of £7.7m of RCUK block grant funding for open access in 2013/14 (or 46% of the total). While this represents a good overall response rate for a survey of this type, lower response rates to some questions and from some institutional groups mean the results may not be wholly representative. A full list of respondents can be found at Appendix 1.
- A fixed overhead percentage of 50% on staff costs has been used in this study. The effect of using alternative overhead methodologies has been modelled at Appendix 4.
- The first implementation period for the RCUK open access policy ran over 16 months, from 1 April 2013 to 31 July 2014. As far as possible cost figures used in this study have been calculated on a per annum basis, but there is a risk that some costs are overstated where these reflect the 16-month RCUK reporting period.

## 2.5. Acknowledgements

The willingness of the participating institutions (see Appendix 1) to supply data on their experiences has been invaluable in the preparation of this report, particularly those used as case studies. Thanks are due to London Higher, SPARC Europe and the project steering group members for their guidance and input throughout the project, and the contributions of staff at Jisc, RCUK and HEFCE in providing feedback on the draft findings are gratefully acknowledged.

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<sup>8</sup> See

[http://figshare.com/articles/Report\\_for\\_Jisc\\_Collections\\_on\\_Total\\_Cost\\_of\\_Ownership\\_Project\\_Data\\_Capture\\_and\\_Process/1093755](http://figshare.com/articles/Report_for_Jisc_Collections_on_Total_Cost_of_Ownership_Project_Data_Capture_and_Process/1093755)

### 3. Findings

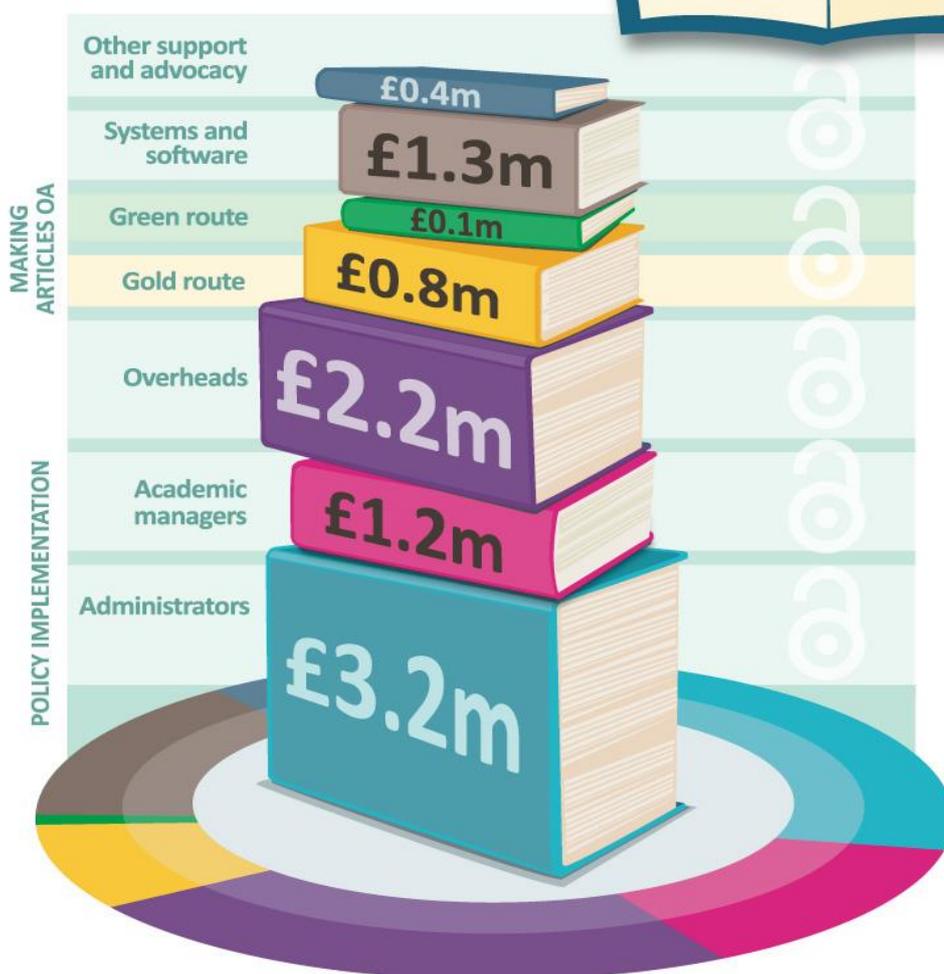
#### 3.1. Cost to UK Research Organisations of the RCUK Open Access Policy

The cost to UK higher education institutions and public sector research establishments of implementing the RCUK open access policy in the 2013/14 academic year was at least **£9.2million**. This represents the cost of staff time, overheads and direct expenditure associated with the policy’s implementation, *excluding* the cost of article processing charges. A full breakdown of the costs is shown below.

### Compliance Cost of the RCUK Open Access Policy

A Snapshot of Costs to UK Research Organisations in 2013/14

**£9.2 MILLION**



The majority of these costs are borne by research organisations, and are not recoverable from RCUK funding. In addition, universities have spent an estimated **£11m** on article processing charges from RCUK block grants, with an unknown level of APCs funded from individual research projects. The total cost of implementing the policy in 2013/14 is therefore at least **£20m**.

The total administrative staff time dedicated to implementing the policy equates to at least **95 full-time equivalent staff members (FTEs)**, with the time of academic staff representing a **further 16 FTEs**. In total this means **over 110 FTEs** have been devoted to implementation of the RCUK OA policy in the 2013/14 academic year.

In interpreting these figures, it is important to note that many of the costs incurred are nominally attributable to the RCUK policy, but in fact underpin open access across the entire research organisation. This is particularly true in the case of investment in repository software and other systems, but it also applies to the considerable staff time spent on advocacy and policy development.

Furthermore, the administrative costs of OA (whether green or gold) represent only a small fraction of institutions' total spend on subscriptions, some £175m per annum<sup>9</sup>. It may be that these costs, which are largely transitional in nature, will be more than recovered through future savings on subscriptions under an open access publishing model. Nevertheless, the significant administrative cost to research organisations of making the transition to open access merits further consideration by funders and other stakeholders than it has been given to date.

### Managing APCs at Scale – University College London

University College London is a large, research intensive institution, consistently ranked among the world's best universities, with over 9,000 researchers producing more than 11,000 scholarly articles per year. UCL received an RCUK block grant of over £1.1m in 2013/14, and introduced its own open access fund in August 2013. Following the introduction of the RCUK OA policy, UCL established a dedicated Open Access Funding Team, comprising four posts. UCL's Open Access Funding Manager explained: 'Open access is a simple concept, but its practical complexities can discourage academics from complying with funders' policies. Having an expert funding team enables us to streamline processes for authors, to deliver a coordinated advocacy programme, and to influence publishers to improve their systems.'

The Open Access Funding Manager, and one Open Access Funding Assistant, are funded by UCL's open access budget. A second Open Access Funding Assistant, and UCL's Open Access Compliance Officer, spend the majority of their time processing RCUK payments and monitoring compliance with the RCUK Open Access Policy, and are funded from the RCUK block grant. Paying more than 2,500 APCs a year, UCL sees economies of scale as critical to managing its open access funding. The Open Access Funding Manager has worked closely with publishers to establish prepayment schemes, the benefits of which include discounted APCs and simpler processes for both authors and administrators.

UCL's Open Access and REF teams are delivering a comprehensive communications plan for the REF open access policy, with the choice of Gold or Green open access remaining an academic decision for authors, and have convened an Academic Advisory Group to assist with its implementation. With UCL's existing publications management systems geared towards post-publication harvesting of information, adapting these to support deposit on acceptance for REF purposes is a considerable challenge. The REF policy has already led to increases in workload for the repository and funding teams, who now need to explain the nuances of the policy to authors and monitor all publication activity closely in order to ensure compliance.

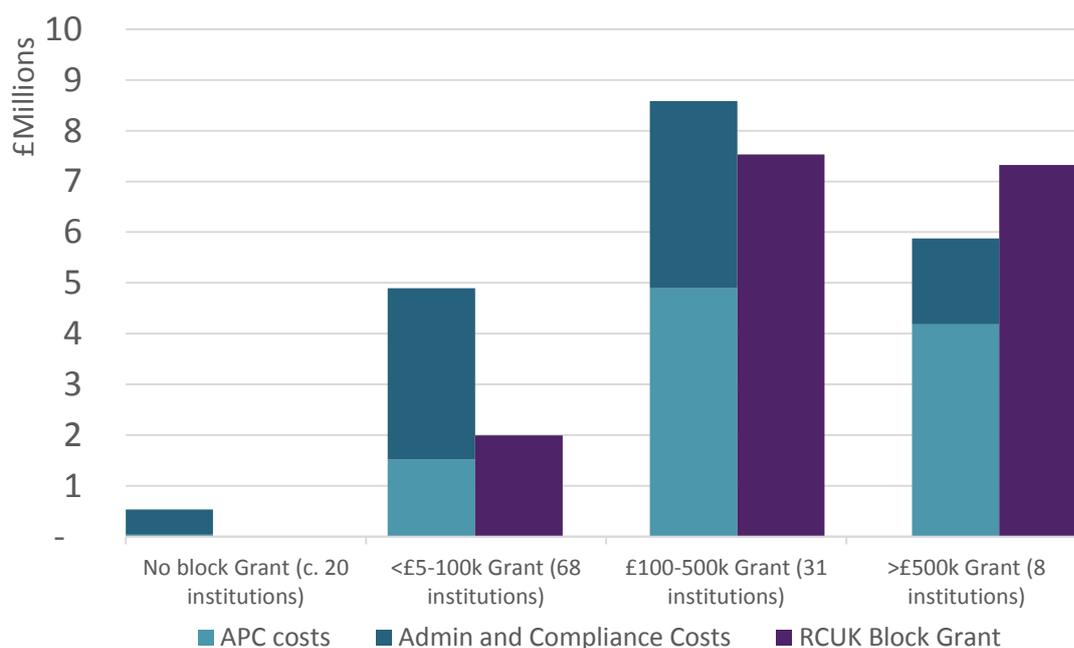
<sup>9</sup> Based on a conservative estimate of increases since 2010/11, when SCONUL statistics show expenditure on serials was £160m: <http://www.sconul.ac.uk/sites/default/files/documents/ALS1011.pdf>

### 3.2. Distribution of Costs vs. Grant Funding

The total cost of compliance with the RCUK open access policy in 2013/14 (c.£20m) appears broadly comparable to the total block grants provided by RCUK in the period of £16.9m. RCUK has offered institutions significant flexibility to meet non-APC costs from block grant funding in the early years of its policy, an approach which was welcomed by many of the survey respondents. In practice, however, a significant proportion of research organisations’ costs (predominantly academic and administrative staff time and overheads) are not easily identifiable and recoverable from these grants, and are thus borne by the organisations themselves. Many therefore find themselves carrying forward significant balances of unspent RCUK funding, even though the overall cost they have incurred is likely to exceed the value of grant received.

A further significant finding of this study is the high fixed cost to institutions of implementing the RCUK open access policy. This results in a mismatch between the allocation of RCUK block grant funding, which is based on historic levels of RCUK funding, and the actual costs incurred, as illustrated by the graph below.

Indicative Distribution of Compliance Costs (incl. APCs) vs Allocation of RCUK Block Grant



The burden of open access compliance has fallen disproportionately on less research-intensive institutions, whose costs substantially exceed the available grant funding. Institutions with small but growing portfolios of RCUK funding note that they are particularly disadvantaged by the current methodology for allocating funds. For the majority of research intensive institutions the costs are roughly comparable to the grant received, though the two will not be fully offset in practice for the reasons outlined above. Meanwhile, the very largest institutions have found it difficult to scale up their OA activities to the level required to utilise the significant grants made available to them.

### Open Access in a Large Metropolitan University – MMU

Manchester Metropolitan University (MMU) is the fifth largest university in the United Kingdom by student numbers, and describes itself as ‘research rich with pockets of excellence’. It received a block grant of only £11k in 2013/14, and communicating OA policy to staff across such a large institution has proven a significant challenge.

The University’s Academic Lead on OA stated: ‘What we have found is that we are under-resourced to deal with this. There are lots of well-developed systems that colleagues in research intensive universities have in place, but we don’t. For us, access to funds, whether from RCUK, Jisc or elsewhere is a real problem.’ As a result, achieving compliance has become an additional task for existing staff: ‘We don’t have anybody in our repository team, people are squeezing this in around their day jobs’, notes the Head of Library Services

The University has worked hard to turn the scarcity of resource to its advantage, engaging closely with academic staff to develop a workable response to both the RCUK and REF OA policies. It is actively engaging with staff through a series of events and communications to ensure that academics understand the requirements of OA, and is linking OA to its new research strategy and the issue of REF impact. Nevertheless, MMU’s Impact and Engagement Manager notes that balancing OA with other policy changes is far from easy: ‘In isolation the OA agenda is fine, I understand it. The challenge for us is it’s just one of a number of agendas that are all being pushed at the same time.’

### 3.3. Article Level Time and Costs – Gold Open Access

The data collected as part of this study have allowed the typical cost to institutions of administering an article processing charge (APC) to be estimated for the first time. In order to calculate a representative cost for the sector as a whole, institutional responses have been weighted by the number of RCUK articles made gold open access. The resulting cost per article is **£81**<sup>10</sup> (the unweighted cost differs only slightly, at £80).

On average, it takes an institution around **2 hours** to process each APC - weighting responses by number of APCs results in a time of 134 minutes, with an unweighted figure of 119 minutes. For the purposes of this study, the Gold OA process was broken down into the following stages:

- **Author** (Identify requirement or option to make article Gold OA, direct request to appropriate point in the institution, provide relevant information to administrative staff)<sup>11</sup>.
- **Administrator - Triage** (Receive and review a request, confirm whether gold is appropriate, identify steps required to make article gold OA).
- **Administrator – Payment** (Request and pay invoice/use purchase card to pay invoice/advise author on use of prepayment account, liaise with publisher).
- **Administrator – Closure** (Confirm payment is made correctly, reconciliation of prepayment accounts to finance system, check article is made OA and correct licence applied).

<sup>10</sup> This figure is based on the cost of time directly attributable to article processing. Overheads on staff time are included, but the costs of open access management, advocacy, policy-making and infrastructure development are not included. This would result in much higher costs per article, and would fail to reflect the fact that many of these costs are transitional in nature, and are only weakly correlated with the number of articles made open access in the period.

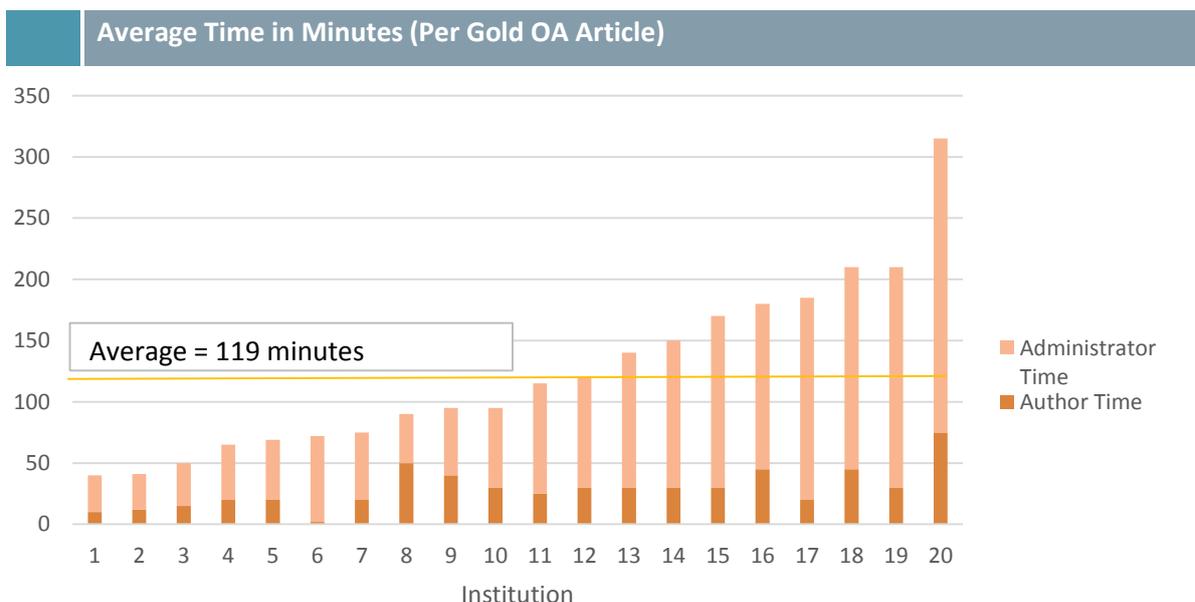
<sup>11</sup> The survey also captured data on peer and line management review, where this was used to allocate funding for APCs. Only 5 smaller institutions operated such a process, which on average took 11 minutes. When weighted by article numbers across the whole sample the average time spent on this stage was less than 1 minute per article, and so it is not reflected here.

The cost and time associated with each stage of the process is shown in the graphic below.



The minimal difference between weighted and unweighted time and costs for gold illustrates that at present there are few economies of scale in the process. It would appear that most APCs are being processed individually and still require multiple interactions with the author and publisher. In fact, institutions processing large numbers of APCs typically gave slightly higher estimates of time per APC than those handling only a few. This may reflect a more established and rigorous approach to compliance checking at larger institutions.

Institutional responses vary from as little as 40 minutes to over 5 hours, though these extreme examples come from smaller institutions handling a relatively low volume of articles. The full range of institutional responses is shown below, and a further breakdown of time and cost for gold open access can be found in Appendix 2.



### 3.4. Article Level Time and Costs – Green Open Access

The costs of depositing an article in an institutional repository are calculated at **£33** per article when weighted by article numbers, while the unweighted figure is £36. Across the responding institutions, it takes 48 minutes (weighted average) or 52 minutes (unweighted) to deposit an article. The slight reduction when weighting figures for article volumes indicates institutions may be achieving slight economies of scale in the deposit process.

For the purposes of this study, the Green OA process was broken down into the following stages:

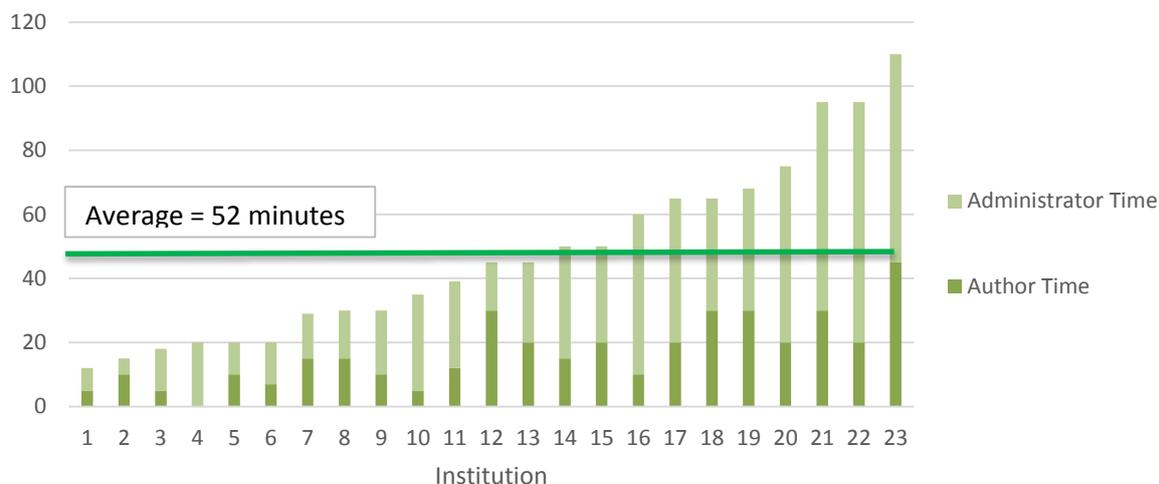
- **Author** (Identify and provide the appropriate version of the article to administrative staff, or undertake deposit where this is the author's responsibility).
- **Administrator – Triage** (Receive and review article or request, ensure correct version is supplied, check funder and journal policies, and obtain any other information required).
- **Administrator – Deposit** (Update repository with article, notify author, create any associations required to other systems or records e.g. PubMed or links to research data).

The time and cost for each stage of the process is summarised below. For the period under review there was no equivalent 'closure' process in place for green OA as there was for gold, but many institutions anticipate that such a process time may be required in future as a result of the REF policy. It is worth noting that the absence of such a process from these figures does contribute in part to the disparity in time taken for the gold and green processes.



As with the figures for gold OA, these figures reflect the time directly attributable to article deposit only. The range of institutional responses is shown below, and a further breakdown of time and cost for green open access can be found in Appendix 2.

Average Time in Minutes (Per Green OA Article)



### 3.5. Future Costs of Open Access Compliance

In 2013/14, the cost of staff time, overheads and direct expenditure on OA compliance accounted for a high proportion of spend on the RCUK open access policy, at 45%, versus 55% spend on APCs. This ratio can be expected to change substantially in future years for the following reasons:

- The 2013/14 figures do not include APC expenditure met from existing RCUK project grants. This expenditure is not easily identifiable by most institutions, but is likely to represent several million pounds of spend across the sector. As existing grants finish, this spend will be shifted to the block grants, increasing the proportion of reported spend that relates to APCs.
- Levels of APC expenditure will need to rise substantially in order to meet RCUK’s current expectation of 75% gold OA by 2017/18, while costs associated with advocacy and infrastructure development are in large part independent of the volume of articles made OA, and should in fact reduce over time.

It is therefore reasonable to expect that the cost of administration and compliance will reduce as a percentage of total expenditure under the RCUK open access policy over time.

For individual institutions, the costs of open access tend to crystallise at the point where additional resource must be put in place to meet rising demand, usually in the library or research office. The findings of this report will therefore be of value to institutions in estimating their future resource needs. For example, were a full-time administrator to be wholly devoted to processing articles, they could conceivably handle some 3,000 repository deposits (at 32 minutes per article) or 1,000 APCs (at 103 minutes per article) per annum. In practice, only the very largest institutions are likely to have staff dedicated to these functions. For most institutions, open access administrators would also spend time on advocacy, systems and policy development and internal liaison, which currently account for a much greater proportion of their time. Benchmark figures of 1 additional FTE per 1,500 repository deposits, or 1 FTE per 500 APCs, would therefore seem appropriate for most institutions to use in planning their future resource needs.

### 3.6. Implementation Cost of the Open Access Policy for a Post-2014 REF

At this stage, any attempt to estimate the cost to institutions of compliance with the REF OA policy remains somewhat speculative. Nevertheless, many institutions did comment on areas where the REF policy was expected to result in additional costs, as follows:

- Staff involvement in monitoring and validation of metadata for repository deposits (mentioned by 12 respondents).
- Academic support and training (mentioned by 10 respondents).
- Advocacy and communication (mentioned by 9 respondents).
- Development of repository software (mentioned by 6 respondents, with cost estimates ranging from £10,000 to £30,000).

Although the extra work may be partly absorbed by existing staff, the level of input needed from senior academic management is expected to be significant, and several institutions noted an intention to recruit additional administrative support to handle the expected increase in repository deposits. The table below illustrates the potential cost to institutions of depositing articles in the institutional repository in accordance with the REF policy. This is based on the data derived from this study on average time and cost per deposit, excluding the costs of advocacy, policy and infrastructure development, which are considered further below.

Scenario	10,000 articles (2013/14 RCUK target)	25,000 articles (approximate REF-returnable outputs per annum)	70,000 articles (50% of UK article outputs per Scopus)	140,000 articles (entire UK article output per Scopus <sup>12</sup> )
<b>Cost to institutions (£33/per article)</b>	£0.3m	£0.8m	£2.3m	£4.6m
<b>Academic time in FTEs (16 minutes per article)</b>	2	4	11	23
<b>Administrative time in FTEs (32 minutes per article)</b>	3	8	23	45

On balance it seems likely that the total cost of deposit under the REF policy will be at the upper end of this range (i.e. circa £4-5m), as most institutions are implementing deposit mandates covering all peer-reviewed journal articles and conference proceedings. There are several caveats to this figure, including the following:

- Not all of the 140,000 articles attributable to UK authors are produced by HEIs;

<sup>12</sup> Source: Elsevier (2013), *International Comparative Performance of the UK Research Base*, available at: <https://www.gov.uk/government/publications/performance-of-the-uk-research-base-international-comparison-2013>

- It is unlikely 100% of articles will be deposited in an institutional repository, as there will be legitimate exceptions and deposit in subject repositories is also acceptable;
- Not all of these costs will be incremental, as a minority of articles are already being deposited;
- Further economies of scale can be expected at higher processing volumes, which would likely push down average deposit time and costs and therefore limit the incremental cost indicated above (see section 4)

However, there are compensating factors such as the likelihood that many articles will be deposited in more than one institutional repository, and incomplete coverage in the Scopus database. Furthermore, institutions anticipate that the REF requirement for deposit on acceptance may well introduce additional time and cost into the green OA process.

It is important to stress that the above estimates only represent the cost and time of processing and validating article deposits in accordance with REF OA policy. Advocacy, communication and training costs are not reflected in the figures, but in light of the evidence of this report will undoubtedly be substantial. Equally, the above estimates do not include other cost items identified by survey respondents, such as the further development of institutional repositories. Overall institutions' expectation is that the effort required to achieve compliance for REF will, if anything, be greater than that of the RCUK open access policy. However, further work would be needed to determine the total cost of REF compliance with any degree of certainty.

### Open Access at a Specialist Institution – Goldsmiths, University of London

Goldsmiths, University of London is a small research-intensive institution, with particular strengths in the arts, humanities and social sciences. With a block grant of just over £20k in 2013/14, the University decided to use the majority of these funds to enhance its systems and support for OA, in addition to meeting a small number of APCs.

Many of the University's staff are actively involved in the creative industries, and OA has been the subject of much debate within the academic community. Concerns around copyright and re-use are particularly acute amongst the University's creative artists and writers, and the University's Research Development Officer notes: 'Because we deal with a lot of people who publish monographs, the concern about where this is all heading is perhaps greater than elsewhere. Staff in the arts and humanities are less familiar with the principles of open access, so there is more for us to do.'

The costs of gold OA are of particular concern for academic staff at Goldsmiths. Many face intense competition to access small amounts of grant funding in their chosen disciplines, yet see APCs of a similar value being paid almost without question. The University is also keen to mitigate the potential adverse impact of OA on early career researchers and students. In addition to concerns over a 'pay-to-say' model of publishing, it is feared the careers of junior staff could be disadvantaged if they aren't made fully aware of the need to ensure their outputs are eligible for a future REF.

Collectively, addressing all of this places major demands on the time of academic managers and administrators. The University's academic lead for OA concludes: 'There is a bottom line cost to implementing this policy which doesn't depend on how big you are. If you have a certain mix of disciplines, as we do, that cost is going to be greater than elsewhere.'

## 4. Cutting the Costs of Open Access

### 4.1. Management, Advocacy and Infrastructure Development

A key finding of this study is that only a minority of the costs associated with implementing the RCUK open access policy arise from inefficiencies in the process of making articles green and gold open access. By far the largest proportion of the costs relate to staff time, often at a senior level within the institution, spent on policy implementation, management, advocacy and infrastructure development. Institutions anticipate a transition period lasting three to five years or more, during which more stringent compliance requirements and the interaction of multiple funder mandates will continue to demand significant management time and effort. The costs of direct engagement with researchers to promote and facilitate open access cannot easily be reduced.

Other costs are in large part transitional and can be expected to reduce over time. Improvements in knowledge-sharing, joint development of systems (in collaboration with third party vendors) and greater sharing of policies and procedures within the sector could result in substantial time savings. It is notable, for example, that many institutions have gone through a lengthy internal consultation process to inform development of their institutional open access policy, resulting in documents that in substance look remarkably similar across the sector.

Further savings can be made in relation to compliance reporting. Most institutions remain reliant on manual processes to identify their total of RCUK-funded outputs. Automation of this process, whether through improvements to institutional systems or a sector-wide service such as Jisc Monitor (see below) would reduce the administrative burden. Greater standardisation in the data required by RCUK for compliance purposes, and the potential to collect and analyse this information electronically, would also be of value.

#### Cross-Sector Initiatives to Reduce the Costs of OA

A number of cross-sector bodies are already working to support institutions with the transition to open access, including the Association of Research Managers and Administrators (ARMA), Research Libraries UK (RLUK), and the Society of College, National and University Libraries (SCONUL). All three of these bodies are also contributing to the Jisc OA Good Practice project ([www.openaccess.jiscinvolve.org](http://www.openaccess.jiscinvolve.org)). This aims to reduce the burden on HEIs of implementing funders' OA requirements through enabling universities, working with others both within and beyond the sector, to develop improvements in IT tools, standards and services, and the related workflows and organisational arrangements for OA implementation.

As part of the project, a suite of institutional Pathfinder projects have been commissioned to find out what works best in implementing OA, and develop shareable models of good practice. Jisc is also developing a range of other projects and services, which offer the potential to reduce the compliance burden of OA for institutions. These include Jisc Monitor ([www.jiscmonitor.jiscinvolve.org](http://www.jiscmonitor.jiscinvolve.org)), intended to assist institutions in monitoring publication output and reporting on compliance with OA policies, and Jisc Publications Router (<http://broker.edina.ac.uk/>), which aims to automate the delivery of research publications from publishers and subject repositories to institutional repositories.

## 4.2. Gold Open Access

The opportunities to reduce the administrative cost of gold open access per article are notable, although the level of savings will only become significant at a sector level if APC volumes continue to rise. If all transactions were processed in line with the current ‘best case’ estimates made by institutions, the cost per article would fall by £50, or over 60%, from £81 to £31 (less than the current cost of green OA), and the time spent could be reduced from over two hours to less than one.

The potential savings this would represent for the sector in a range of possible scenarios are set out below.

Scenario	10,000 articles (2013/14 RCUK target)	25,000 articles (approximate REF-returnable outputs per annum)	70,000 articles (50% of UK article outputs)	140,000 articles (entire UK article output)
<b>Cost at 2013/14 average of £81 per article</b>	£0.8m	£2.0m	£5.7m	£11.3m
<b>Cost at best case scenario of £31 per article</b>	£0.3m	£0.8	£2.2m	£4.3m
<b>Potential savings per annum</b>	<b>£0.5m</b>	<b>£1.2m</b>	<b>£3.5m</b>	<b>£7m</b>

A significant contributing factor to the time involved in gold OA is the requirement to liaise with publishers (in contrast to green OA, which is largely an internal process for institutions). Many of the survey respondents noted a wide range of experiences in dealing with publishers to make articles open access. ‘Born OA’ publishers were generally identified as being quick and easy to deal with, and prepayment schemes with these publishers could allow authors to arrange gold OA in a matter of a few minutes, with a CC-BY licence as standard. By contrast, institutions cited numerous cases where they had difficulties in managing and monitoring payments to hybrid publishers or where incorrect licences were applied, though experiences varied widely between the different subscription publishers. These ‘difficult’ cases significantly increase the average time for gold OA (‘worst case’ figures suggest at times it can take more than a day to successfully process a single APC), and limit institutions’ attempts to develop a streamlined process for the management of APCs.

To date most efforts to streamline gold OA have been focussed on the payment stage, whether through the use of intermediaries or publisher prepayment accounts. Yet this step only accounts for 25% of the time and 20% of the cost in the APC management process for institutions. There is an equally pressing need to address the following areas:

- Reducing the small number of ‘difficult’ cases, which account for the majority of the time spent. This will require working closely with certain publishers to identify and address causes of delay in the process.
- Improving automation and data-sharing in the process, which could cut time spent by authors at the outset and by administrators at the triage and closure stages in particular.

### 4.3. Green Open Access

The potential savings from streamlining the green OA process are relatively small on a per article basis - moving from the current average to the 'best case' position would reduce costs per article by £18, or 50%, from £36 to £17. Time per deposit would be reduced from 48 to 22 minutes. In light of the rapid increase in rates of deposit expected under the REF policy, the potential savings do become significant as article numbers rise:

Scenario	10,000 articles (2013/14 RCUK target)	25,000 articles (approximate REF- returnable outputs per annum)	70,000 articles (50% of UK article outputs)	140,000 articles (entire UK article output)
<b>Cost at 2013/14 average of £33 per article</b>	£0.3m	£0.8m	£2.3m	£4.6m
<b>Cost at best case scenario of £17 per article</b>	£0.2m	£0.4m	£1.1m	£2.2m
<b>Potential savings per annum</b>	<b>£0.1m</b>	<b>£0.4m</b>	<b>£1.2m</b>	<b>£2.4m</b>

A lack of author familiarity with the green OA process was the most commonly cited cause of delays at present, though other concerns include:

- Obtaining the correct version of the article for deposit, particularly for co-authored papers;
- Checking compliance with publisher policies, which can often be difficult to interpret;
- Communication with publishers where policies are unclear or do not allow compliance with funder mandates.

Efforts to cut the costs of green OA are perhaps best focussed on two areas:

- Making the deposit process as quick and easy for authors as possible; and
- Working to achieve greater clarity in publisher policies.

With regard to the latter point, many institutions already use the SHERPA/RoMEO<sup>13</sup> and SHERPA/FACT<sup>14</sup> services to check publisher policies. However, in most cases librarians do not feel confident relying on the accuracy of these services, or cannot obtain journal-specific data, so also refer directly to publisher policies. Several institutions participating in this project raised the question of whether libraries' current role in rigorously policing individual deposits to ensure compliance with publisher policies is sustainable as volumes increase. Three participant organisations noted that simply making the author responsible for the accuracy and legitimacy of deposits would be the easiest way to save time and cut costs in the process. There would be value in giving further consideration to what might constitute 'reasonable steps' for an institution to take in checking deposits.

<sup>13</sup>See [www.sherpa.ac.uk/romeo/](http://www.sherpa.ac.uk/romeo/)

<sup>14</sup> See [www.sherpa.ac.uk/fact/](http://www.sherpa.ac.uk/fact/)

## 5. Conclusion

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This report has sought to quantify the costs to UK research organisations of achieving compliance with funder open access policies. The findings demonstrate that in this transitional period the administrative and management costs of achieving compliance with the RCUK open access policy are substantial, and at over £9m accounted for some 45% of the total 2013/14 costs identified in this study. As article volumes rise and processes become embedded this amount can be expected to fall in both absolute and relative terms over time, but the REF policy means the aggregate cost of complying with research funder OA policies is not expected to reduce in the immediate future. There would be value in continuing to monitor the costs of OA for research organisations in the coming years in order to track changes in the cost base over time.

None of the institutions responding to the survey questioned the principle of increasing open access to their research outputs. 15 of the survey respondents explicitly stated their expectation that OA will increase the visibility of their research, though only a few were capturing data to track this. Other potential benefits of OA cited by institutions include:

- Increased research impact (10 respondents).
- Wider reputational benefits (7 institutions).
- Enabling cultural change in line with the institutions' own objectives (4 institutions).
- Increased research collaborations (2 institutions).
- Savings on subscriptions expenditure in the longer term (2 institutions).

The extent to which these benefits can be quantified remains unclear, and is an area for further work as funder and institutional mandates continue to gain traction.

This study has raised important questions about the mechanisms through which open access can best be achieved, the costs to research organisations, and the potential savings available if efficiencies can

### Using Open Access to Intensify Research - Northumbria University

Northumbria University is a research rich and business-focused institution, which received one of the smallest RCUK block grants in 2013/14 (£8k). The University took the decision to supplement this with its own funds, based on the expected benefits of immediate OA for Northumbria's research impact and standing. One of the University's Research Funding and Policy Managers explains, 'We're pretty clear we see the RCUK and REF policies as a good thing. Our response to these has been to develop a policy which encourages and supports staff to publish in higher quality journals, and to intensify our research activity.'

The University's Scholarly Publications Librarian emphasises Northumbria's evidence-based approach: 'We were able to set a baseline cost for Open Access in REF 2014 and, based on projections for our next REF submission, we extrapolated from this to determine the budgeted costs for our institutional open access fund.' The University has also launched its own OA publishing platform, focussed on law where traditional subscription journals have long embargo periods or may not be available in electronic form.

As an institution with a developing research culture, Northumbria has embraced open access as a means of both furthering its own mission and supporting its academic staff to reach their full potential in research.

be made. Future studies of this nature would benefit from likely improvements in the accuracy of institutional estimates, particularly with regard to the costs of achieving REF compliance, while the impact of inefficiencies and process improvements on costs should also become clearer with time.

The findings also have wider implications for the debate about the future of scholarly publishing, but must be treated with care in this respect. A fully comprehensive comparison of the green and gold routes would also need to consider the administrative costs of subscriptions as part of the green process, and indeed the relative burdens of each route on other stakeholders, such as publishers and funders. For the moment, the gold and green routes are by no means mutually exclusive. In many cases UK authors will need to achieve compliance with RCUK or other funders' policies through the gold route, whilst also depositing their author's accepted manuscript in the institutional repository for the purposes of the REF. The two routes will therefore co-exist for the foreseeable future, and institutions, sector bodies and funders should seek efficiencies in both, while working to keep the overall administrative burden of open access to a necessary minimum.

## Appendix 1 – Participating Institutions

Institution Name	Value of RCUK Block Grant 2013/14 (£)	Green OA Time Estimates	Gold OA Time Estimates
Bangor University	72,846		Y
Bath Spa University	-	Y	
Birkbeck College	50,998	Y	Y
Bournemouth University	-	Y	Y
British Antarctic Survey	38,293		
Durham University	276,578	Y	Y
Goldsmiths, University of London	20,878	Y	Y
Imperial College London	1,150,458	Y	Y
King's College London	414,707	Y	Y
Lancaster University	139,788	Y	Y
Manchester Metropolitan University	11,442		
Nottingham Trent University	11,744	Y	Y
Open University	77,477	Y	Y
Royal Holloway, University of London	81,627	Y	Y
School of Advanced Study, University of London	-		Y
The University of Northampton	-	Y	
University College London	1,149,066	Y	Y
University of Bedfordshire	-	Y	
University of Bristol	581,597	Y	Y
University of Chester	-	Y	
University of East Anglia	161,538	Y	Y
University of Edinburgh	830,550	Y	
University of Exeter	215,932	Y	Y
University of Glasgow	407,728	Y	Y

University of Hull	19,614	Y	Y
University of Nottingham	536,256	Y	Y
University of Oxford	1,102,549	Y	Y (admin only)
University of St Andrews	203,593	Y	Y
University of Sussex	162,921	Y	Y
<b>Total (29 Responses)</b>	<b>7,718,180</b>	<b>25</b>	<b>22</b>

Note: the University of Northumbria did not contribute a response to the survey, but participated in the project as a case study institution only

## Appendix 2 – Detailed Findings: Costs of Gold and Green OA

All results are averaged across all responding institutions, both as a simple (unweighted) average, and a weighted average to reflect article volumes at the responding institutions.

	Gold OA			Green OA			Increase - Gold vs Green		
	Best case	Average	Worst case	Best case	Average	Worst case	Best case	Average	Worst case
Academic Time in mins (Unweighted)	14	29	95	9	17	52	146%	165%	183%
Academic Time in mins (Weighted)	12	31	174	8	16	50	155%	197%	345%
Admin Time in mins (Unweighted)	40	90	265	16	34	86	252%	264%	308%
Admin Time in mins (Weighted)	42	103	340	14	32	82	294%	323%	415%
Total Time in mins (Unweighted)	53	119	360	25	52	138	212%	230%	261%
Total Time in mins (Weighted)	54	134	514	22	48	132	245%	282%	389%
Salary cost in £ (Unweighted)	24	53	164	12	24	65	204%	223%	251%
Salary cost in £ (Weighted)	21	54	212	10	22	64	202%	246%	339%
Salary + overhead cost in £ (Unweighted)	36	80	246	8	36	98	204%	223%	251%
Salary + overhead cost in £ (Weighted)	31	<b>81</b>	318	16	<b>33</b>	95	202%	246%	339%

## Appendix 3 – Study Methodology

Anonymised survey results and workings for this study are available on Figshare at <http://dx.doi.org/10.6084/m9.figshare.1228126>. A summary of the methodology followed is provided below.

Stage	Description	Cross-Reference to Dataset
Survey	<p>A web-based survey was made live for the period 1 to 30 September 2014. UK research organisations were encouraged to respond through a range of mailing lists and social media channels.</p> <p>The survey asked respondents to provide the following information:</p> <ul style="list-style-type: none"> <li>• Time estimates for processing articles through the gold and green routes (with best case, average and worst case figures in each case, and for each identified stage of the process)</li> <li>• Estimates of the time spent managing and implementing the RCUK policy (in full time equivalent staff numbers) in 2013/14</li> <li>• Details of other costs incurred in supporting, promoting or facilitating open access</li> <li>• Spend on APCs, in total and from RCUK funds, and number of article deposits, in total and for RCUK-funded articles.</li> <li>• Total number of publications and expenditure on serials per year (for contextual purposes only)</li> <li>• Free text comments on a range of questions about the RCUK and REF open access policies, and institutional approaches to the management of open access.</li> </ul> <p>The majority of the survey questions were optional, in recognition of the fact many institutions would find it difficult to provide the requested information in full.</p>	N/A
Review of survey responses	<p>25 complete submissions were received, and a large number of partial responses. 4 of these were found to contain useful information, and permission was obtained from the institutions in question to include this data in the analysis. A small number of outlying results were also queried with respondents, and corrected where appropriate.</p>	See Worksheet 1. 'Anonymised Responses'

<p>Calculation of weightings</p>	<p>To allow for the differing volumes of APCs/article deposits handled by each institution, a set of weightings were calculated, reflecting the number of RCUK APC payments and the number of RCUK article deposits reported by responding institution, as a percentage of the total across all the respondents.</p> <p>The figures used in this calculation have not been made available in order to preserve anonymity of the responding institutions.</p>	<p>See Worksheet 2. 'Article Weightings'</p>
<p>Calculation of average salaries</p>	<p>In order to minimise the burden on respondents, the survey requested data on staff time and FTEs only, not salary costs. HESA average salaries were used to convert the survey data into costs as follows:</p> <ul style="list-style-type: none"> <li>• Author time for gold and green routes – HESA UK average salary for Academic Staff</li> <li>• Peer review time for gold routes – HESA UK average salary for Professors</li> <li>• Administrative time for gold and green routes, and policy implementation – HESA UK average salary for Professional, Technical and Clerical Staff</li> <li>• Academic management time - HESA UK average salary for Academic Managers</li> </ul> <p>In each case HESA average salaries for the 2012/13 academic year were obtained from the HESA website, uplifted by 1% to reflect the 2013/14 pay award, and uplifted by between 24% and 27% to allow for on-costs (Employer's National Insurance and superannuation).</p>	<p>See Worksheet 3. 'Salary Workings'</p>
<p>Calculation of time and cost per article</p>	<p>The estimates of time provided by each institution for the gold and green process were collated, and an average figure calculated for each stage, giving best case, worst case and average scenarios. A weighted average was also calculated using the article weightings referred to above.</p> <p>Time estimates in minutes were converted to hours, and then converted into costs using a standard working year of 1,650 hours<sup>15</sup> and the salary costs referred to above.</p>	<p>See Worksheets 4a, 4b, 5a and 5b and 'Summary – Article Level'</p>
<p>Calculation of overheads</p>	<p>A range of options for calculating overhead costs associated with article administration and the implementation of open access policies were considered. The accepted approach to costing research activity in UK HEIs is the full economic costing (fEC) methodology. Using this methodology in this case was not considered appropriate, since the majority of the staff time relates to administrators and academic managers, who do not attract overheads under fEC. In view of this, a fixed overhead rate of 50% on all staff costs was adopted,</p>	<p>See Worksheets 4a, 4b, 5a, 5b and 'Summary – Sector Level'</p>

<sup>15</sup> This figure is consistent with the Transparent Approach to Costing Methodology used in calculating the costs of activities within UK higher education, for details see <http://www.hefce.ac.uk/whatwedo/lgm/finsustain/trac/>

	<p>which is considered to represent a reasonable estimate of overheads. It is recognised that use of a different overhead methodology would significantly change the results of this study, and the effect of alternative rates on the study results is modelled in Appendix 4.</p>	
Average FTEs	<p>Institutions were asked to estimate the amount of time, in FTEs, spent responding to and implementing RCUK's open access policy in 2013/14. The responses received were grouped according to the level of RCUK block grant received by each institution in the 2013/14 year, and an average number of FTEs was then calculated for that group. The groupings used were as follows:</p> <ul style="list-style-type: none"> <li>• Block grant &gt;£500k</li> <li>• Block grant between £100-500k</li> <li>• Block grant £5-100k</li> <li>• No block grant received</li> </ul> <p>These groupings were chosen in order to allow some segmentation of the results, while retaining a broadly representative sample within each group. While other groupings such as institutional mission group or TRAC peer group could have been used, these were considered less appropriate given the specific focus of this study on the RCUK open access policy.</p>	See worksheet 6. 'FTEs'
Other costs	<p>Institutions also provided details on other costs incurred in support of open access during the 2013/14 year. Costs were aggregated into two general headings of 'Systems and software' and 'Other support and advocacy costs'. These figures were grouped by level of institutional block grant in the same way as for the FTE data, in order to arrive at average cost figures for each group.</p>	See worksheet 7. 'Other costs'
Extrapolation from survey results to determine sector costs	<p>In order to calculate the estimated cost to UK HEIs and PSREs of implementing the RCUK open access policy, the average FTE figures were converted into costs using the average salary figures referred to above. Together with costs for 'Systems and software' and 'Other support and advocacy costs' the results were extrapolated across all research organisations subject to the RCUK open access policy.</p> <p>This extrapolation was undertaken for the groupings outlined above (based on level of 2013/14 block grant), with the total population sourced from RCUK's published APC fund distribution<sup>16</sup>. For the purposes of this study it was assumed that a further 20 institutions not in receipt of a block grant would have incurred compliance costs as a result of the RCUK open access policy.</p>	See Worksheet 'Summary – Sector Level'

<sup>16</sup>See [http://www.rcuk.ac.uk/RCUK-prod/assets/documents/documents/RCUK\\_APCfundDistribution.pdf](http://www.rcuk.ac.uk/RCUK-prod/assets/documents/documents/RCUK_APCfundDistribution.pdf)

	<p>A figure was also calculated for the total costs associated with administration of gold and green articles. Based on data from the responding institutions, it was estimated that some 10,000 RCUK articles had been processed via the gold route, and 3,000 via green in 2013/14. These figures were multiplied by the costs per gold and green article as previously calculated to give a total cost.</p>	
Actual expenditure on APCs	<p>In order to allow spend on the RCUK policy to be compared with the level of block grant received, it was necessary to estimate the actual expenditure on APCs across the sector. In order to achieve this, reported spend on APCs for the sampled institutions was compared to the level of RCUK block grant received. This indicated that institutions had on average spent just over 60% of their block grants on APCs. The results for the responding institutions were extrapolated across the total block grant figure of £16.85 to determine an estimated actual spend on APCs of £11m. This figure does not include APCs spent directly from individual RCUK project grants, hence the actual expenditure figures are lower than the number of articles (10,000) might suggest.</p>	N/A

## Appendix 4 – Sensitivity Analysis on Overheads

The most significant assumption made in calculating the figures referred to in this report is the use of a 50% overhead rate on all staff costs. The table below illustrates the effect using several alternative overhead methodologies would have on the costs of implementing the RCUK open access policy in 2013/14, and the gold and green costs per article.

Cost of RCUK OA Policy (excl. APCs)	No provision for overheads		Overheads calculated using Full Economic Cost (fEC) methodology (on researcher time only)		Baseline position - 50% overheads on all staff costs		100% overheads on all salary costs	
	£m	Change vs. baseline	£m	Change vs. baseline	£m	N/A	£m	Change vs. baseline
Policy Implementation - Administrators	3.2	0%	3.2	0%	3.2	N/A	3.2	0%
Policy Implementation - Academic Managers	1.2	0%	1.2	0%	1.2	N/A	1.2	0%
Overheads	-	-100%	-	-100%	2.2	N/A	4.4	100%
Making articles OA - Gold route	0.5	-33%	0.7	-19%	0.8	N/A	1.1	34%
Making articles OA - Green route	0.1	-34%	0.1	-14%	0.1	N/A	0.1	31%
Systems and software	1.3	0%	1.3	0%	1.3	N/A	1.3	0%

Other support and advocacy costs	0.4	0%		0.4	0%		0.4	N/A		0.4	0%
<b>Total</b>	<b>6.7</b>	<b>-27%</b>		<b>6.9</b>	<b>-26%</b>		<b>9.2</b>	<b>N/A</b>		<b>11.8</b>	<b>27%</b>
<b>Cost per article (excl. APCs)</b>	<b>£</b>	<b>Change vs. baseline</b>		<b>£m</b>	<b>Change vs. baseline</b>		<b>£m</b>	<b>N/A</b>		<b>£m</b>	<b>Change vs. baseline</b>
Cost per Gold OA article	54	-33%		65	-20%		81	N/A		108	33%
Cost per Green OA article	22	-34%		30	-14%		33	N/A		44	31%

*For further information on the report findings please contact  
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