INNOVATION & RESEARCH CAUCUS

Planning for an Open Research Future

A Practical Resource and Evidence-Based Guidance

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Executive Summary

Concerns about the reproducibility and integrity of research have inspired ongoing advocacy for the adoption of Open Research practices. These practices aim to embed transparency, openness, and accessibility across the research lifecycle, from planning to reporting, in order to strengthen research quality and credibility. Despite much investment and policy support, the extent and consistency of adoption have been uneven across disciplines, study types, and methodological approaches. A significant factor in this discrepancy is the limited availability of practical and technical tools and guidance that support the implementation of a broad range of practices at a granular level throughout the research workflow. While the rationale for Open Research has been widely championed, detailed approaches to adoption have received comparatively less attention.

This project, *Planning for an Open Research Future: A Practical Resource and Evidence-Based Guidance*, was developed to address this implementation gap. The project achieved three objectives: to identify the critical elements researchers need to consider when planning for transparency and openness, to provide evidence-based guidance for funders and other stakeholders (i.e., research-enabling organisations such as universities, publishers, scholarly societies, and infrastructure providers) on supporting the adoption of diverse open practices, and to develop a Transparency and Openness Management Plan (TOMP) template (Stewart, 2026) as a resource for researchers and stakeholders. To achieve these objectives, the project used a two-round, expert consultation approach, in which individuals with recognised expertise in Open Research from a range of disciplines provided structured feedback on key issues and the developing resource. This iterative process ensured that the TOMP was grounded in researchers' experiences and addressed expert-identified needs.

The project produced two complementary versions of the TOMP, with both supporting the implementation of a range of Open Research practices across the research lifecycle. The narrative version facilitates detailed planning, documentation, and justification, supporting rigorous and reflective implementation. The checklist version provides the same structured, comprehensive approach to planning and tracking open practices in a streamlined format for projects where extensive explanation is non-essential. Both versions are modular and adaptable to suit a range of disciplines, methods, and study types. They are designed to prompt researchers to address the impact of cross-cutting issues, such as ethics, governance,

collaboration, and resource needs, on Open Research plans. Accompanying practical guidance supports researchers in comprehensive and purposeful implementation, with signposts to relevant external guides, information, and support. The TOMP has been created as shared infrastructure for the research community. Both versions and their guidance are openly licensed under the Creative Commons Attribution (CC BY) licence, allowing them to be reused, adapted, and further developed by researchers, funders, and other stakeholders.

In addition to the TOMP, the project also generated actionable insights for stakeholders on the barriers, facilitators, and researcher needs associated with tools, resources, and guidance for implementing Open Research practices. These insights indicate that researchers value practical and technical tools that systematically guide rigorous and effective adoption. Such tools and resources should be designed to support flexibility and adaptability in use and account for methodological and disciplinary variation. Effective implementation is also enabled when tools support researchers to address cross-cutting factors, such as funding and other resources, ethics, and policy alignment. However, tools may be rendered ineffective if they create needless administrative and time burdens; use technical and inaccessible language; or operate in isolation from existing processes, systems, and resources.

For stakeholders, including funders and other research-enabling organisations such as universities, publishers, and infrastructure providers, the implications are clear: their Open Research initiatives, tools, and resources should integrate with broader support frameworks; seamlessly align with existing policies, procedures, and systems; take a flexible, modular, adaptable, and efficient approach in their design and requirements; and be accessible in structure, tone, and language. When designed this way, mechanisms to support Open Research adoption can empower researchers to implement practices effectively and appropriately for their contexts while also strengthening stakeholders' capacity to enhance the transparency, openness, and reproducibility of research they support. The TOMP and its accompanying guidance provide an immediately usable and adaptable resource, but also serve as a model for resource development that stakeholders can utilise to foster more effective, sustainable, and systemic uptake of Open Research.

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1. Introduction

In recent years, concerns about the credibility and reliability of research findings (e.g., Smaldino & McElreath, 2016) have reached a tipping point in many disciplines. Researchers, funders, publishers, institutions, and other research enablers have identified a number of issues, including failures to replicate research findings (e.g., Camerer et al., 2016; Open Science Collaboration, 2015), ineffective applications and translation into practice (e.g., Chalmers & Glasziou, 2009; Ioannidis, 2005), and violations of research integrity (Bouter, 2023). While there is debate about the extent of these problems (e.g., Guttinger, 2020), there is a broad consensus that addressing them presents an opportunity to make widespread improvements to research culture and practices and, therefore, enhance the quality of research worldwide (e.g., Munafò et al., 2017). Efforts to improve these areas span a range of interconnected domains, such as enhancing equality, diversity, and inclusion practices (e.g., Syed & Kathawalla, 2022); engendering more positive and rewarding working environments (Korbmacher et al., 2023; McKenna, 2023); reforming how research and researchers are assessed (Declaration on Research Assessment [DORA], 2012); prioritising research quality over quantity (Frith, 2020); and adopting practices that increase the openness, transparency, and reproducibility of processes and outputs (Munafò et al., 2017). This last domain is commonly referred to as “Open Research” (“Open Science” and “Open Scholarship” are also used; Parsons et al., 2022).

Open Research encompasses a set of concrete research practices designed to improve transparency in research planning, documentation, and reporting; the openness with which research elements and products are shared outside the research team; and the ability of others to reproduce reported study findings and conclusions (Dienlin et al., 2020; Parsons et al., 2022). They can also contribute to increasing the verifiability of research claims (Grant et al., 2026), improving the detection of errors in research (Frank et al., 2026), facilitating replications (Munafò et al., 2017; Open Science Collaboration, 2015), and creating resources for reuse (Allen & Mehler, 2019). Open Research practices include sharing research data, time-stamped pre-registration of research aims and methods, sharing research materials, making research outputs and objects more widely accessible, and sharing analysis code, among other practices (Grant et al., 2026; Parsons et al., 2022; UNESCO, 2021).

Open Research has received wide attention from individual researchers as well as research stakeholders such as funders, publishers, institutions, infrastructure providers, and governments. This reflects a growing recognition that increasing the uptake of Open Research practices should involve a coordinated effort across the research ecosystem (e.g., Cuevas Shaw et al., 2022; Stewart et al., 2022). Systemic changes in requirements, expectations, conventions, and incentives are needed alongside education and training efforts (e.g., Cuevas Shaw et al., 2022; Stewart et al., 2022). Thus, stakeholders have implemented a number of interventions aimed at improving the adoption of Open Research. These consist of policies requiring or encouraging researchers to make their data, materials, outputs, or other elements openly available where appropriate; infrastructure to enable open practices; funding to support implementing them or researching their uptake and impact; training programmes and resources; and incentives such as award schemes or recognition in promotion criteria (Dudda et al., 2025). In addition, many stakeholders have formed dedicated teams to support their efforts in Open Research implementation. Other organisations and communities have been founded to focus directly on Open Research adoption efforts (e.g., Azevedo et al., 2019), including advocacy and resource development.

Despite these efforts, uptake of a broad range of open practices has been uneven, suggesting that a gap exists between advocacy and adoption. In general, while providing access to research outputs and sharing of data have been more common, research indicates that other practices are less frequently implemented (Silverstein et al., 2024; Pennington et al., 2026). Evidence suggests that this discrepancy arises from a number of barriers, including inadequate training, lack of infrastructure, and insufficient recognition (e.g., Gownaris et al., 2022; Perrier et al., 2020; Silverstein et al., 2024). While many interventions introduced by stakeholders seek to address some of these barriers (e.g., providing training), there is frequently a narrow focus on individual practices, such as data management, rather than providing a comprehensive framework that integrates open practices across the research lifecycle. Furthermore, many initiatives focus primarily on persuasion rather than providing researchers with actionable procedural and technical guidance and tools (Silverstein et al., 2024). As a result, even when researchers feel a personal commitment to Open Research principles, they may struggle to implement a wide array of open practices effectively (Silverstein et al., 2024).

Thus, the current project contributed to addressing this problem by meeting three key objectives:

- To identify the critical elements researchers need to consider when planning for transparency and openness
- To provide evidence-based guidance for funders and other stakeholders on supporting the adoption of diverse open practices
- To develop a Transparency and Openness Management Plan (TOMP) template as a resource for researchers and stakeholders

2. Context, Challenges, and Existing Approaches to Open Research

This section provides key context for understanding the project's aims and outcomes, including relevant challenges and existing approaches to supporting Open Research. It covers selected evidence and literature relating to the implementation of Open Research practices, rather than attempting a comprehensive or systematic review of the broader Open Research landscape.

2.1 The Background to Open Research

Concerns about research quality have grown increasingly prominent over a number of years across evidence-based disciplines through recognition of issues such as low rates of study replications (e.g., Camerer et al., 2016; Open Science Collaboration, 2015); questionable research practices (e.g., John et al., 2012); inconsistencies, errors, and incompleteness in reporting (Hardwicke et al., 2019; Simmons et al., 2011); and a lack of transparency (Elliott, 2020). Poor quality research leads to false findings (Ioannidis, 2005), incorrect theories and literatures (Boye Nissen et al., 2016; Young et al., 2008), wasted resources (Buxton et al., 2021; Chan et al., 2014), and negative public perceptions of science (Anvari & Lakens, 2018; Bottesini et al., 2022). Researchers and the work that they do are impacted by factors that may inadvertently incentivise poor quality research. Notably, the research ecosystem is biased towards the publication of novel and attractive findings in prestigious outlets and at a high volume because incentives for researchers and stakeholders (e.g., hiring, promotion, reputation, and rankings) are often based on quantity of publications and the attention they attract (Altman, 1994; Nosek et al., 2012). This is not a new problem (e.g., Meehl, 1967), but there has been increased recognition more recently as the negative consequences of this bias have resulted in the accumulation of poor research (Smaldino & McElreath, 2016). As this is a

complex, systemic problem, there have been calls for researchers and stakeholders across disciplines to play a role in improving research practices, which necessitates a multi-faceted solution (e.g., Cuevas Shaw et al., 2022; Stewart et al., 2022). One aspect of this solution is the promotion and adoption of Open Research practices.

2.2 What is Open Research?

Open Research practices are underpinned by a philosophical stance that the outputs and products of research, as well as the research process itself, should be as open and transparent as possible as this enhances credibility (Munafò et al., 2017). Openness is the idea that elements and outputs of research should be accessible outside a research team with as few restrictions as possible, not only to other researchers but also to the general public (Levin et al., 2016). Transparency involves comprehensive documentation and reporting of the research process, allowing others to fully understand how research is conducted, how evidence is produced, and how conclusions are drawn (Elliott, 2020; Lyon, 2016). Transparency and openness often go hand-in-hand. For example, by making analysis code openly available, this transparently demonstrates how the data were processed and analysed.

Although openness and transparency are goals of Open Research practices, researchers and stakeholders often have additional goals that can be achieved, in part, by making research open and transparent (Dienlin et al., 2020). This includes improving reproducibility, or the ability of someone independent of the research team to reproduce the study findings (e.g., by re-running the analysis code on openly shared data and achieving the same results; Parsons et al., 2022). It often also includes improving replicability, or the ability of another research team to repeat the study methods to collect new data, with the aim of finding the same pattern of results (Parsons et al., 2022). Furthermore, Open Research is frequently accompanied by calls and efforts to improve research culture more broadly in order to address the issues described above (Korbmacher et al., 2023; McKenna, 2023).

Thus, Open Research consists of a set of research practices that achieve these goals (Parsons et al., 2022). In other words, they are concrete actions that researchers and stakeholders can take. There is no firm consensus about exactly which set of practices constitute Open Research, and practices can also vary greatly in applicability and prominence across different disciplines, methodological approaches, and study types. As defined in this project, practices that are often considered core to achieving the goals of Open Research include:

- **Pre-registration** (also termed **Registration**): a time-stamped record of a study that may be publicly available from the start or end of a project. This record may also describe the planned hypotheses, research questions, methods, and/or analysis strategy; however, these aspects may be documented separately as an **Open Protocol** and an **Open Analysis Plan**.

- **Registered Report**: a publication format that involves two stages of formal submission to an outlet and peer review; acceptance-in-principle prior to data collection means that the manuscript will be published regardless of the nature of the results if the authors have followed the accepted study plan.

- **Open Materials**: items that were used to generate the study data which are made available to others to use, adapt, and distribute.

- **Open Data**: quantitative and/or qualitative data which are made available to others to use, adapt, and distribute.

- **Open Analysis Code**: a computer code file that executes the analysis steps when run which is made available to others to use, adapt, and distribute.

- **Open Hardware**: physical objects (e.g., tools, devices, or components) whose design specifications are made available to others to use, adapt, and distribute.

- **Open Software:** computer programmes in which the source code is made available to others to use, adapt, and distribute.

- **Open Access Outputs and Objects**: outputs, objects, and artefacts resulting from a study which are made openly accessible to others; these include journal articles, books, monographs, and visual and interactive media.

Other common Open Research practices include Open Reporting Guidelines, Open Educational Resources, Citizen Science and Participatory Action Research, and Open Peer Review (see Parsons et al., 2022, for definitions of various open practices). Open Research efforts also frequently entail improving the level of reporting detail for methods and analyses (Aczel et al., 2020; Van Vaerenbergh et al., 2026). It should be noted that “openness” is not binary, i.e., open or closed; instead, proponents of Open Research recommend that researchers follow the maxim “as open as possible, as closed as necessary” (European

Parliament & Council of the European Union, 2019) in the context of ethical, legal, regulatory, and other concerns relating to the research project.

2.3 The implementation and benefits of Open Research

Meta-scientific research has begun evaluating the effects of adopting Open Research practices, both on researchers and on research itself. This has shown that there are individual benefits for researchers in terms of citations and opportunities for collaboration, funding, and employment (McKiernan et al., 2016). Research participants have positive views about open and transparent methods, including sharing research data (Bottesini et al., 2022). More broadly, several studies have evaluated the impact of open and transparent practices on research, both in terms of researchers' perceptions as well as research quality. One study examining pre-registration found that researchers perceived that it had a beneficial impact on the quality of their research (Sarafoglou et al., 2022). Indeed, van den Akker et al. (2023) found that pre-registered studies more frequently used higher-quality approaches such as power analyses and larger sample sizes than non-pre-registered studies, although some statistical markers of poor-quality, questionable research practices, like similar rates of positive results and inconsistencies, were still present. They also found that pre-registered studies scored higher on measures of impact, including citation rates. Soderberg et al. (2021) found that Registered Reports were rated to be of higher quality, particularly for methodological and analytical rigour, without sacrificing intellectual creativity, compared to papers published via the traditional publication model. The implementation of open practices has also led to improvements and greater efficiencies in systems, tools, and resources that support not only open practices but the research process more broadly (Allen & Mehler, 2019). For example, openly shared data and materials become part of research infrastructure, allowing new questions to be explored with existing resources (Allen & Mehler, 2019). Furthermore, Karlstrøm et al. (2024) found that while open access outputs are increasingly cited, this is particularly evident among researchers from lower-income countries, suggesting that improved access to research publications enables broader use of the literature around the world.

However, in order to be effective, Open Research practices must be implemented rigorously and comprehensively, with mechanisms in place from stakeholders to support high quality adoption of open practices (van Vaerenbergh et al., 2026). In other words, it is not sufficient to simply adopt Open Research practices; they must be implemented well (e.g., Munafò et al.,

2017). For example, in a study about the quality of pre-registration, van den Akker et al. (2024) found that there were frequently unreported differences between a pre-registration and its published paper. However, they also found that more comprehensive pre-registration templates enabled researchers to create more rigorous pre-registrations (i.e., reducing the risk of biases and questionable research practices later in the research process). Although this finding may seem intuitive, it is relevant for the TOMP because it suggests that higher quality tools enable more effective Open Research planning and implementation.

2.4 Barriers to implementing Open Research

Despite the noted advantages of Open Research and its promotion by stakeholders and many researchers, there can be challenges in adopting open practices. Indeed, research has found that early career researchers (ECRs) often face greater barriers in implementing Open Research practices (Allen & Mehler, 2019). A key conceptual barrier is the frequent separation of Open Research practices into highly individualised silos, meaning that even when ECRs are familiar with one, they may not be familiar with another, particularly those practices which are prominent in early stages of a research project (Gownaris et al., 2022), such as pre-registration. Indeed, this fragmentation has been found elsewhere, with Open Access Outputs and Open Data tending to be more commonly used over other practices (Silverstein et al., 2024; Pennington et al., 2026). Other barriers for ECRs include lack of support from supervisors, lack of training and resources, and lack of time (Gownaris et al., 2022). Inadequate funding to engage in Open Research and insufficient recognition and rewards have also been noted as barriers (Silverstein et al., 2024). Interestingly, although Silverstein et al. found that their respondents agreed that they had the necessary skills for Open Research, they did not have sufficient information and training about open practices, suggesting that availability of practical support and guidance is an essential enabler of uptake.

As currently implemented, Open Research practices are often viewed as supplementary components rather than a natural or necessary part of research. Therefore, a common criticism of Open Research practices is that they require additional workload for researchers who may already be time-poor (Hostler, 2023). Indeed, although stakeholders may be increasingly requiring or encouraging the adoption of Open Research practices, this has not been proportionately matched by increased time allocations (e.g., in workload modelling; Hostler, 2023). Perrier et al. (2020) found that administrative tasks associated with open data sharing,

such as preparing metadata and documentation, as well as a lack of technical support, were perceived by researchers to be barriers to sharing data. Relatedly, improved access to services, resources, infrastructure, and technical support, along with greater workload time, were viewed as potential facilitators of data sharing (Perrier et al., 2020). In general, despite the increased effort that may accompany the implementation of open practices, particularly for ECRs and others new to Open Research, many researchers hold the view that the benefits outweigh the costs (Sarafoglou et al., 2022; Silverstein et al., 2024).

The uptake of open practices can be understood as a scientific behaviour, which is shaped by perceived benefits and barriers, as well as other psychological factors. Silverstein et al. (2024) investigated how adoption of Open Research practices aligned with the Capability, Opportunity, Motivation – Behaviour (COM-B) model, which is a framework that describes the factors that are necessary to induce behaviour change (Michie et al., 2011). The strongest predictor was automatic motivation, or habitually embedding open practices as everyday research tasks. Other important factors were psychological capability (whether people have relevant knowledge and ability), physical opportunity (which accounts for funding, infrastructure, and time), and social opportunity (reward and recognition, as well as reinforcement by peers). Thus, Silverstein et al. emphasised the need for greater availability of tools that enable technical and practical implementation, rather than simply promoting the rationale for Open Research adoption: “It is not enough to simply increase awareness; researchers need to know how to practically implement these practices in their own research domains” (p. 523). Advocacy, encouragement, and requirements alone are insufficient to bring about an open and transparent research culture without practical and technical tools and resources that enable high-quality implementation of Open Research practices.

Thus, these findings collectively highlight a persistent gap between advocacy for Open Research and the availability of practical, integrated support to enable effective implementation. While tools and resources have been developed to address this need, providing valuable support to researchers, their scope and focus vary.

2.5 Tools and resources to support Open Research implementation

Stakeholders have developed a range of interventions to reduce barriers and support researchers in implementing Open Research, thereby improving outcomes such as

reproducibility, replicability, and transparency. These interventions include policies and guidelines (e.g., author instructions), general reporting standards, rewards and incentives (e.g., badges), tools (e.g., workflow tools and reporting aids), and training and community initiatives (Dudda et al., 2025).

While policies and guidelines have been more frequently evaluated for their impact, tools and practical resources have received comparatively less attention (Dudda et al., 2025). This is despite their potential to support implementation at a more granular level. The Transparency and Openness Management Plan (TOMP), developed in this project, is positioned as a practical tool. This section describes the four most relevant tools that have informed the development of the TOMP.

2.5.1 Data management plans

A data management plan (DMP) is a document that describes how research data will be managed and shared (e.g., Smale et al., 2020). According to the UK Data Service (n.d.-b), an effective DMP captures details about required resources, data documentation and metadata, data formats, storage, ethical issues, copyright and licensing, and data sharing. The UK Data Service (n.d.-a) further describes DMPs as "a living document," meaning that they are designed to be updated as the project progresses. Developing a DMP can support more effective management by helping researchers identify gaps in their skills and knowledge, therefore prompting more comprehensive planning from the outset of a project (Smale et al., 2020). A DMP may be required as part of a funding application, and many funders and other stakeholders provide templates for this purpose or specify required areas to address.

Thus, DMPs play an important role in supporting informed and systematic planning for data management and sharing from the outset of a project, helping to anticipate and prevent issues later. By covering multiple facets of data management and sharing, such as metadata, documentation, licensing, formats, and storage, DMPs enable more comprehensive and in-depth plans. DMPs also often prompt researchers to consider cross-cutting issues such as ethics, intellectual property, and costs, and are intended to be revised as the project progresses. However, by design, DMPs focus primarily on data (and sometimes closely related elements like analysis code and software). As a result, they do not naturally enable researchers to effectively plan for and implement a broad range of open and transparent practices. In addition, while DMPs do function as living documents, in practice they are

frequently prioritised at early stages of research, with less structured support for ongoing updates and integration with other research elements.

2.5.2 Openness and Transparency Checklists

Aczel et al. (2020) developed the Transparency Checklist 1.0 through a reactive Delphi study, similar to the approach used in the present project. It is structurally similar to reporting guideline checklists commonly used in clinical and health research that support comprehensive reporting of methods, analyses, and results. It comprises four sections containing 36 items covering pre-registration, methodological transparency, analytical transparency, and availability of data, code, and materials. The Transparency Checklist can be used to summarise the open and transparent features of a project, with comment boxes at the end of each section allowing for narrative explanation and justification. Aczel et al. also created an interactive web form version that enables users to respond “yes,” “no,” or “N/A” to each item, provide explanations for each section, and generate the completed checklist that can be submitted alongside a manuscript or other output. Aczel et al. also designed a shorter, 12-item version.

Aczel et al.’s (2020) checklist has several strengths. It covers multiple open practices, aligns with reporting standards, and allows for some explanatory detail. It is particularly suited to enabling comprehensive and transparent reporting of methodological and analytical decisions at the dissemination stage of a project. However, its focus and design are more readily applicable to quantitative research, and it provides relatively limited guidance on effective implementation. It is also less oriented for supporting planning, documentation, and reporting of open and transparent practices across the full project lifecycle.

Following a review of meta-scientific evaluations of Open Research practices, Van Vaerenbergh et al. (2026) created the Openness and Transparency Checklist. This resource includes 15 main items that cover transparency throughout the research workflow. It supports researchers in clearly reporting key study details (for example, data preprocessing decisions) and encourages the use of availability statements about open practices, such as materials and data availability. The checklist also provides clear prompts to guide researchers towards greater transparency in reporting their work, and it may also be used by peer reviewers and other stakeholders to assess the completeness of reporting and the availability of open outputs. Published alongside the associated article, the checklist is available with an open licence to

enable adaptation and reuse. The article signposts readers to additional resources and tools that may support implementation.

Van Vaerenbergh et al.'s (2026) checklist provides broad coverage of several core open practices and provides guidance for transparent reporting. While it can be used to inform planning, the phrasing of many items is oriented towards reporting completed work, which may encourage use primarily at later stages of a project. Indeed, the checklist is primarily designed to ensure detailed and transparent reporting of study details and open outputs, with more limited application to planning and management of open practices throughout the research workflow. Furthermore, it places less emphasis on consideration of cross-cutting factors, such as ethics, governance, and resources, that can affect implementation of open and transparent practices. Similar to other tools, the checklist may also be more relevant to quantitative studies, although a disclaimer acknowledges that not all items will universally apply.

2.5.3 Wellcome's outputs management plan

As part of applications for funding, Wellcome (n.d.) asks that researchers complete an outputs management plan that documents how research outputs, including data, software, and materials, will be shared. The accompanying guidance encourages comprehensive planning, prompting researchers to consider areas such as metadata, documentation, licensing, persistent identifiers, and platforms and repositories. It also addresses some cross-cutting factors, such as ethics and intellectual property, and encourages researchers to identify required resources that may be costed into the application, such as personnel support, hardware and software, and costs associated with storage and access. The guidance provides examples of completed plans and signposts to relevant external resources. Following project completion, the outputs management plan may also be used to assess how study outputs have been managed and shared in practice.

As a stakeholder-developed tool, Wellcome's (n.d.) outputs management plan is effective in prompting early and detailed consideration of how open outputs and objects will be managed and shared, including how factors such as costs and ethics may impact these plans. In providing examples and signposts to external resources, the guidance supports researchers towards more effective implementation. However, its primary focus is on outputs; and, therefore, it covers a more limited range of open and transparent practices. In addition, its fully narrative format may require a relatively higher level of time and effort at the application stage,

particularly when funding decisions are uncertain. As a result, responses may reflect only initial or provisional plans, with limited opportunity for more reflective or fully developed approaches. Relatedly, while Wellcome acknowledges that plans may change as a project progresses, the outputs management plan is primarily oriented towards upfront planning, with less explicit guidance about how updates can be transparently documented and communicated over the course of a project. Thus, this highlights a broader challenge for resources in this area in supporting evolving plans, management, and reporting of open and transparent practices across the research lifecycle.

2.5.4 Summary of tools and resources

Taken together, the tools described here represent important progress in supporting the adoption of Open Research. Within their scope, these resources are effective in areas such as data management, transparent reporting, and sharing outputs. In some cases, they also incorporate cross-cutting considerations such as ethics, governance, and resources. However, they tend to focus on a relatively narrow range of practices and/or on particular stages of the research workflow. This means that there is more limited support and guidance for transparently documenting how implementation evolves over the course of a project. Thus, this highlights the need for more comprehensive tools that support integrated planning, documentation, and reporting of multiple practices across the full research lifecycle, alongside cohesive consideration of cross-cutting factors and the provision of more extensive practical guidance. The project approach here was guided by these findings, drawing on expert insights to develop a tool that builds on and extends existing resources.

3. Project approach

3.1 Overview

The project employed a reactive Delphi design (McKenna, 1994), gathering structured feedback from experts in Open Research across two rounds of data collection. In Round 1, experts reviewed questions and prompts that were candidates for inclusion in the TOMP. They also provided broader input on what researchers should consider in planning and managing Open Research practices, including commenting on any gaps in the candidate questions and prompts. These responses were used to develop a draft TOMP template. For the second round, the same experts were invited to respond. They reviewed the draft TOMP template and provided feedback on its wording, structure, flow, usability, and effectiveness. They also

suggested topics and resources for accompanying guidance. Based on the expert feedback, two final versions of the TOMP were produced: a narrative version and a checklist version. Accompanying guidance was also developed to support the use of the TOMP, including signposting to relevant resources and guides. All study materials, procedures, recruitment methods, and approaches to managing identifiable and non-identifiable data were reviewed and approved by the University of Chester School of Society Ethics Committee (SS140825).

3.2 Identifying and recruiting experts in Open Research

The study aimed to recruit experts in Open Research. Expertise was defined as having authored a publication about Open Research, conducted published research that used Open Research practices, and/or belonging to an organisation or community that uses or advocates for Open Research. Respondents were required to be professionally based in the UK, at least 18 years of age, and fluent in English. To identify potential respondents, publicly available membership lists on the websites of Open Research communities and authorship lists of relevant publications were reviewed for UK-based individuals. This process continued until a pool of at least 100 experts were identified. Their names, affiliations, career stages, and email addresses were recorded from publicly available information.

Round 1 aimed to recruit a maximum of 30 respondents. Invitations were sent in stages in order to reach individuals from as broad a range of disciplines as possible. Where individuals declined or did not respond to three invitations, new invitations were sent to other identified experts. For Round 2, all experts who participated in Round 1 were invited to take part. A maximum of three invitations were sent to each individual. Figure 1 presents a flow chart showing the numbers of individuals at each stage of recruitment and participation. Table 1 (see Appendix A) presents demographic and career-related information for the samples at Round 1 (n = 22) and Round 2 (n = 14).

3.3 Round 1 survey

The Round 1 survey (Stewart, 2026a) consisted of both open-ended and closed-ended items. The survey first asked which of nine Open Research practices should be included in the template resource, to which respondents selected “Yes” or “No.” A definition was provided for each practice. The selected practices were drawn from the 2025 update of the Transparency and Openness Promotion Guidelines (Grant et al., 2026), along with Open Access outputs and

Registered Reports. In the open-ended questions, respondents were able to suggest other practices that they felt should be included in the resource.

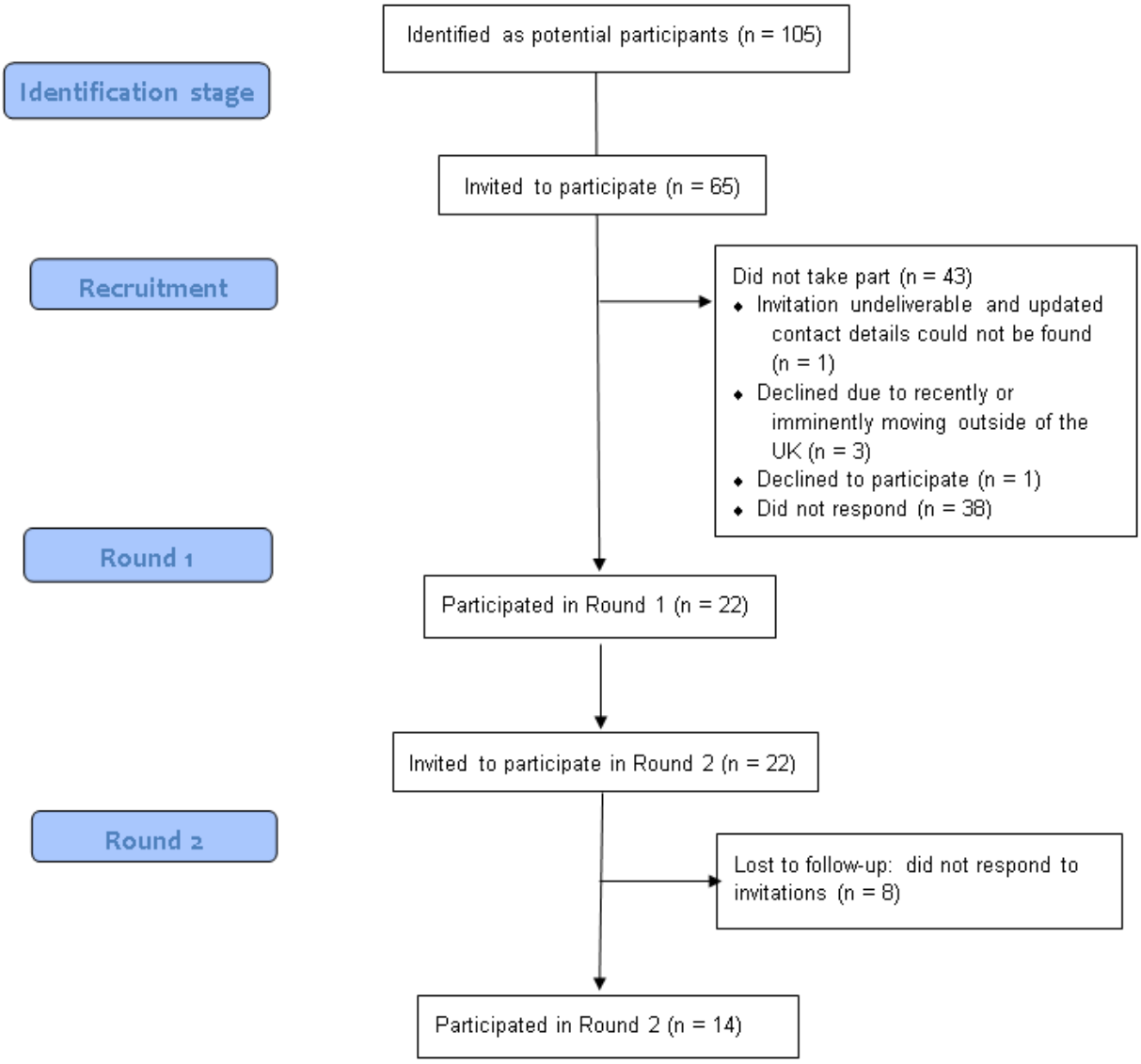

Figure 1: Flowchart of expert recruitment and participation through both rounds of data collection

Note: Source: Author; structure adapted from the CONSORT flow diagram (CONSORT Group, 2010).

Next, respondents were asked to respond to candidate items relating to each practice that they agreed should be included, with separate pages of items appearing for each relevant practice. The definition for that practice was presented at the top of the page. Respondents then reviewed candidate questions and prompts relating to the selected practices, to which they could respond “yes” or “no” about whether each one should be included. The candidate

questions and prompts were presented under headings related to study stage, e.g., “at the study planning/design stage” or “at the end of the study.” Open-ended questions provided opportunities for respondents to explain any responses to the closed-ended items, suggest wording changes to the candidate questions or prompts, suggest additional questions or prompts, and make any other comments about what the template should cover in relation to the relevant practice.

Respondents were then asked to consider five contextual or situational prompts and questions that could be included in the template resource; these covered resources, training, ethics, access to infrastructure, and stakeholder requirements. Open-ended items allowed respondents to explain their responses, suggest wording changes, and suggest additional prompts and questions.

Next, respondents were presented with four open-ended questions that asked whether there were any other technical, resource, stakeholder, and policy or governance-related considerations that researchers should make in relation to open practices. There was also an open-ended item that asked if there was anything else that researchers need to consider, plan, and manage in relation to Open Research practices that should be factored into the template resource. Finally, an open comment box allowed respondents to mention anything else they had not already covered. The final section asked a series of demographic and career-related items that were used to describe the sample.

After the initial draft of the survey was developed, the items were independently reviewed by two Open Research experts to ensure completeness, clarity, and appropriate structure. The reviewers were based at different UK universities; one was an early-career researcher and one was a senior academic. The survey items were finalised on the basis of their feedback before data collection commenced.

The survey was hosted in Jisc Online Surveys (Jisc, 2025). All items in the survey, apart from the consent questions and the boxes to provide the participant identification number from the invitation email, were optional. The survey was designed to take approximately 25 to 45 minutes and could be completed across multiple sessions.

3.4 Round 1 analysis

The responses to the Round 1 survey items were initially checked for any identifying details and these were anonymised as necessary; demographic and career-related items were saved separately to the main response set. Closed-ended and forced-choice (yes/no) responses were summarised using appropriate descriptive statistics (e.g., counts, percentages), and agreement levels of 70% or greater were considered as expert consensus. Open-ended responses were organised and coded into themes. There were planned themes (e.g., wording changes relating to a particular set of candidate items), but additional, response-driven themes were also derived. The findings were then used to develop a draft of the TOMP, which fed into the Round 2 survey. Decisions about what to include and how to structure the draft TOMP were informed both by the agreement levels as well as the strength and consistency of the open-ended responses.

3.5 Round 2 survey

A summary of the Round 1 methods and findings was provided to respondents alongside the initial TOMP draft to support informed feedback during Round 2. Both documents could be downloaded from the project's Open Science Framework (OSF) page. Respondents were not required to use either document, as all items from the TOMP draft were repeated within the survey itself.

Similar to Round 1, the Round 2 survey (Stewart, 2026b) was hosted in Jisc Online Surveys (Jisc, 2025). The prompts and questions from a given section of the TOMP draft were displayed at the top of the relevant survey page. Below this, open-ended items asked respondents to comment on the content of the section, wording changes, additional prompts or items, or anything else. Respondents were also asked to give suggestions to improve the TOMP's overall structure, usability, and effectiveness. They were asked to rank possible formats for the TOMP in terms of a priority order for development. Respondents were then asked to provide suggestions for useful resources that could be included in the accompanying TOMP guidance. They were then able to make any final comments. The last section asked the same demographic and career-related questions as in Round 1.

As with the Round 1 survey, all items in the Round 2 survey, apart from the consent questions and the prompts to provide the participant identification number from the invitation

email, were optional. Round 2 was designed to take approximately 25 to 45 minutes and could be completed across multiple sessions.

3.6 Round 2 analysis

The Round 2 responses were checked for identifying details, and these were anonymised as appropriate. The demographic and career-related responses were saved separately to the main response set. Similarly to Round 1, responses to open-ended items were organised and coded into themes. Again, there were planned and response-driven themes. Quantitative analysis involved numerically summarising the responses that ranked possible formats for the TOMP. The findings for Round 2 were used to develop the final narrative and checklist versions of the TOMP as well as the accompanying guidance.

3.7 Achieved objective 1

The two rounds of data collection met their targets. A diverse group of Open Research experts participated, providing detailed and actionable responses that led to the development of the final TOMP versions and the accompanying guidance. Thus, the successful data collection achieved the following key objective:

- To identify the critical elements researchers need to consider when planning for transparency and openness

It is these critical elements that have been integrated into the final versions of the TOMP.

4. Evidence-based insights for supporting Open Research

This section presents the key thematic findings that informed the development of the TOMP and its guidance. Rather than simply describing these findings, it provides stakeholder-focused interpretations and insights into how funders and other research enablers can better support the adoption of Open Research practices.

4.1 Enabling practical and technical implementation

Respondents were overwhelmingly positive about the concept of the TOMP, agreeing that its aim to support researchers in implementing a variety of practices would be beneficial. They commented that technical aspects of implementation are often where difficulties arise. Thus, tools and resources intended to support Open Research adoption should focus on procedures

and processes for effective implementation across the project lifecycle, with clear guidance for more technical aspects, rather than simply explaining why open practices should be adopted. Such “how-to” guidance should ideally be accompanied by examples and links to relevant policies, agreements, and other resources to create curated, multi-aspect tools. Respondents felt that the provision of more practical and technical tools, guidance, and resources would also serve an intervention purpose, in that they enhance not only uptake but also the quality of implementation.

4.2 Ensuring flexibility and adaptability across research contexts

Respondents consistently emphasised that effective tools and resources should be flexible and adaptable to accommodate variation in how Open Research is understood and implemented, not only between different projects but also across disciplines, study types, and methodological approaches.

4.2.1 Enabling flexibility in use and adaptation

Respondents strongly agreed that tools and resources should be flexible in use. Researchers should be able to justify decisions, explain why a practice or an aspect of it may not be applicable, and record notes and future actions. Tools should also be flexible in their application across study stages, for example, allowing plans and actions to be documented as “in progress” or “under consideration,” rather than only once they have been completed. Tools should be customisable, enabling researchers to choose relevant parts or tailor them in other ways to suit their project’s needs. Respondents felt that flexibility in use helps to minimise administrative and time burdens.

4.2.2 Accounting for disciplinary and methodological variation

Respondents noted a tension between discipline-general and discipline-specific aspects of Open Research and agreed that it is important for tools to explicitly account for this in their design and their level of support. For example, definitions of terms should be provided rather than assuming that terms have universally agreed meanings. A wide variety of general and discipline-specific supporting resources can be included in guidance documents. Differences in how Open Research is implemented across disciplines, methodological approaches, and study types can also be positively reflected in flexible usage formats (see 4.2.1). Adaptability,

including the ability to create new versions to suit particular disciplines, methodological approaches, and study types, would also be beneficial.

4.2.3 Accommodating variability in defining Open Research practices

As mentioned in section 2.2, there is no broad consensus about what practices constitute Open Research, which emerged as an important design consideration for practical resources. For example, respondents from different disciplines disagreed about including Open Positionality Statements, with one respondent commenting that they would consider it to be a description of methods rather than an open practice *per se*. Thus, conceptions of Open Research may vary across researchers and stakeholders. Tools and resources should address this by taking a broad and inclusive view of Open Research but allow for choice and customisation. Respondents acknowledged that a common misperception that all practices are necessary for all projects can be addressed by tools that are thoughtfully designed in their structure, flow, and tone.

4.3 Addressing cross-cutting and contextual factors

A third key theme is that a lack of attention to contextual or cross-cutting factors can disrupt researchers' ability to effectively implement open practices during a project. The management of open practices does not occur independently of other aspects of research, and tools and resources should prompt researchers to address how open practices intersect with areas such as resources, policies, ethics, and collaboration. Respondents felt that these should be addressed at an early stage of a project, although they could be developed and updated throughout. These concerns fell into several areas, as the following sub-themes show.

4.3.1 Anticipating financial resourcing and funding

Several respondents noted that inadequate plans regarding funding could derail the effective implementation of open practices. Funding may relate to costs for long-term data or materials storage, personnel resources, and publishing. Tools and resources should be designed to support researchers from the earliest planning stages, as costs relating to open practices may need to be factored into funding applications.

Specifically, costs related to publishing were a contentious point, particularly article processing charges. Some respondents felt that explicitly highlighting article processing charges

normalised them, even though it is possible to publish open access without paying such charges. Other respondents advised that without mentioning them explicitly, plans to publish in particular journals could be hindered. Thus, tools and resources need to strike a delicate balance with regard to the cost of adopting Open Research, as the example of publishing charges shows. For instance, one solution would be to provide information on the variety of open access routes, particularly those that do not require additional costs (such as publishing in diamond open access journals or publishing via a green open access route by depositing the final accepted manuscript in an accessible repository).

4.3.2 Planning for human resources, skills, and training

Although researchers often have the necessary skills to use a variety of open practices, respondents agreed that diverse research teams and additional support can often implement open practices to a higher standard, particularly where technical knowledge is crucial. Thus, tools and resources should support comprehensive planning for staffing and people resources over the full lifetime of a project. This may include accounting for staffing costs as part of a grant application or identifying institutional research support staff who can contribute to Open Research tasks, such as data stewards, software engineers, technicians, and statisticians. Relatedly, tools and resources can also be designed to prompt researchers to address skills shortages by identifying and addressing training needs. In supporting the implementation of open practices over the project lifecycle, tools and resources should encourage contingency plans regarding staffing to ensure that Open Research tasks are completed. This may involve extending contracts, paying for additional hours, or identifying internal sources of support that can help make interim and final outputs openly accessible, for example.

4.3.3 Navigating policies, procedures, and frameworks

A variety of policies, procedures, and frameworks may affect Open Research plans from the earliest stages of a project. These may include local policies for data protection, data management and storage, and data sharing, as well as national policies such as the Research Excellence Framework policy on open access for returnable outputs. Relevant stakeholder policies, such as those from the funder, may require or encourage particular practices or specify particular requirements (for example, a preferred data repository). There may also be wider frameworks and agreements that advise on best practice. Examples include the CARE (Collective benefit, Authority to control, Responsibility, Ethics) Principles for Indigenous Data Governance (Global Indigenous Data Alliance, 2019), the FAIR (Findable, Accessible,

Interoperable, Reusable) Principles (Wilkinson et al., 2016), the Barcelona Declaration on Open Research Information (2024), and the Transparency and Openness Promotion Guidelines (Center for Open Science, 2025). There may also be applicable discipline-specific frameworks. Given that policies and frameworks may shape what and how open practices are implemented, tools and resources should encourage researchers to identify relevant ones from the earliest stages and consider how they affect the project's Open Research goals.

4.3.4 Addressing ethics and governance considerations

Although related to policies and procedures, respondents emphasised that ethics and governance issues should be given distinct attention. They can create significant or even prohibitive barriers for implementing open practices effectively if not addressed early and comprehensively. Furthermore, they can interact with other policies, procedures, and frameworks to shape how essential open practices can be implemented. For example, if a funder or publisher requires that data are made openly available wherever possible, research teams collecting data from human participants must ensure that consent processes cover data sharing. This necessitates alignment between Open Research plans and institutional ethical review processes.

Governance processes can extend beyond ethics to include legal, contractual, and regulatory requirements. For example, data protection requirements may constrain how sensitive data are handled, processed, and shared. Collaborative projects with external partners or which extend across borders may also be subject to requirements and agreements that affect Open Research plans. Other governance procedures, such as those relating to export control or commercialisation, can also affect the transparency and openness of research.

Thus, resources and tools should prompt researchers to seek clarity on how ethics and governance requirements affect their Open Research plans. This enables appropriate implementation and alignment with relevant ethics and governance procedures and policies.

4.3.5 Managing collaboration, contribution, and attribution

Respondents highlighted issues relating to collaboration and contribution. While not unique to Open Research, they are connected to its emphasis on inclusion, accessibility, and increased collaboration. Thus, appropriate recognition of contributions is critical. Stakeholder tools and resources should incorporate and explain different models of attribution, such as authorship

versus contributorship, and encourage the use of recognised standards to track and report contributions transparently. Tools and resources should promote systematic documentation and acknowledgement of contributions by utilising established frameworks such as CRediT (Contributor Role Taxonomy; National Information Standards Organization [NISO], 2022) and tools like the *tenzing* tracker (Holcombe et al., 2020). This is especially important where stakeholder initiatives encourage broader collaborations, as large teams require clear and consistent approaches to recognising members' input.

More diverse collaborations also introduce complex governance and contractual considerations. Large teams, cross-institutional and international collaborations, and partnerships with industry, charities, or other external organisations may need formal agreements relating to collaboration, data transfer, data rights, intellectual property, and copyright. Stakeholder resources should prompt researchers to identify from an early stage where such agreements may be necessary and to access institutional expertise to support their arrangement. Without addressing these issues at the outset of a project, conflicts between plans for open practices and contractual or legal constraints may arise later.

Furthermore, an evolving issue concerns rights retention. As stakeholder policies continue to evolve in this area, it is essential that researchers are provided with clear and up-to-date guidance on how rights retention strategies may affect their plans for implementing open practices, particularly in relation to open access publications and other outputs and objects. Stakeholders should ensure that their available resources and guidance on rights retention are current and user-friendly.

Finally, the Open Research movement often emphasises broader forms of collaboration, including Citizen Science, service user involvement, participatory action research, and research co-production. These approaches create their own set of considerations for managing and appropriately recognising contributions. When non-professional researchers are involved in developing research aims, designing a project, collecting and analysing data, dissemination, and/or providing critical feedback, stakeholder resources should guide researchers in making appropriate attributions, engaging ethically with these groups and individuals, and providing clarity around roles and expectations. Resources and tools that are designed to support researchers in managing these arrangements effectively and efficiently will better align with stakeholder commitments to inclusion and access.

4.4 Addressing design risks in Open Research support tools

The final theme highlights design features that stakeholders should consider when developing Open Research resources and tools. If not carefully designed, they may be ineffective if they are perceived as time-consuming or burdensome, misaligned with researchers' needs, or superficial. The considerations outlined in this section, therefore, emphasise how such risks can be addressed to ensure that resources are practical, useful, and genuinely supportive.

4.4.1 Minimising time and administrative burdens

A significant risk identified here is the potential for Open Research requirements and supporting tools to create excessive time and administrative burdens. As open practices are not always considered a default and inherent part of the research process, they can be perceived as additional tasks, which may lead to resistance. To address this risk, tools should be structured so that researchers complete only what is necessary for their project. However, this should be balanced with prompts to make plans as comprehensive as possible to minimise time-consuming barriers and delays later. Design features such as checklist formats, optional or expandable sections, conditional or gating questions, and the ability to save and develop documents over time can reduce perceived burdens and improve efficiencies. The fact that this theme arose frequently in the responses collected in this project indicates that time and administrative burden is a major concern for researchers, and one that stakeholders must actively mitigate when developing tools and resources.

4.4.2 Reducing performativity and superficial compliance

A second key risk is that of superficial or "performative" compliance. In other words, tools can be perceived as "box-ticking exercises" if they are seen as administrative tasks rather than mechanisms for improving research practice. This can lead to "performative" Open Research where practices are implemented in low-quality ways. This may satisfy requirements or expectations superficially but will fail to genuinely achieve improved openness, transparency, reproducibility, and replicability. Furthermore, this risk is exacerbated when practices are presented in a fragmented way rather than as interconnected components of a coherent approach. Thus, stakeholder resources and tools should emphasise not only processes but also purpose. Resources should cover a range of open practices, clearly outlining how they interrelate with each other across the research lifecycle and how they collectively contribute to

improving transparency, openness, and reproducibility. The risk for stakeholders is that performative compliance can undermine the credibility and impact of open practices, eroding trust in initiatives that purport to engender them.

4.4.3 Supporting purpose-driven implementation

A third area of concern is that open practices should be implemented with clearly defined purposes rather than by default; that is, they should be adopted with explicit intentions regarding how they enhance a project. Tools and resources should prompt researchers to articulate why they are engaging with a particular practice. For example, if the primary purpose is reproducibility, considerations such as documentation and version control may be prioritised; in contrast, if the primary purpose is openness, then considerations like licensing and file formats may come to the fore. When researchers clarify their purposes, this supports more effective implementation and reduces the risk of performativity.

Thus, stakeholder tools should guide researchers to clarify their purposes and provide guidance on how to align their implementation with those aims. Formats that encourage reflection, justification, and iterative development, such as open-ended responses and narrative sections, can support more effective integration across the project lifecycle.

4.4.4 Aligning tools with existing systems and stakeholder processes

Another element of risk is that stakeholders fail to align new tools and resources with existing mechanisms. Tools and resources developed in isolation from other forms of support risk being perceived as a superficial bureaucratic burden, or even as “virtue signalling,” rather than as integral to improving the research process. When tools complement and reinforce existing systems and other forms of support, such as training, peer review processes, funding applications, monitoring and reporting mechanisms, and policies, they can be more effective in achieving their aims.

To reduce this risk, stakeholders should integrate tools and resources within a coherent and strategic approach to their Open Research initiatives. This means ensuring consistency in expectations, information, and language in policies, training, and responsible assessment criteria. When new tools are clearly connected with existing systems, they are more likely to be perceived as genuine mechanisms for enhancing research quality.

4.4.5 Enhancing clarity and accessibility of language

The final area of risk concerns the use of specialist terms and "jargon." Language and terms associated with Open Research can be perceived as technical, abstract, and exclusionary, which may discourage engagement. This risk is exacerbated for researchers who are newer to Open Research or who may work in areas where Open Research terms are not standardised. When tools and resources use language that feels impenetrable, or which may be perceived as stakeholder- or policy-focused rather than researcher-oriented, tools may not be readily adopted.

Thus, the phrasing of newly developed tools and resources should prioritise clarity, conciseness, and accessibility. This means using simpler or plain language where possible, alongside commonly used terms and the provision of definitions for specialist and technical words and phrases. A welcoming and user-friendly tone that accommodates a wide range of familiarity, rather than assuming prior knowledge, will enhance usability. Attending to language and tone can boost engagement with stakeholder-developed tools and improve their effectiveness in changing research practice.

4.5 Achieved objective 2

The findings and insights here, derived from two rich sets of expert responses, aim to support stakeholders, including funders, in developing their Open Research strategies, policies, and resources to better align with the needs of researchers. Altogether, these themes show that effective implementation of Open Research practices depends not only on individual practices, but also on early and ongoing attention to the broader systems, resources, and constraints that contextualise research.

In doing so, this section achieves the following key objective:

- To provide evidence-based guidance for funders and other stakeholders on supporting the adoption of diverse open practices

5. The Transparency and Openness Management Plan (TOMP) tool

At the outset of the project, a single narrative version of the TOMP was envisaged. However, as the process was response-driven, two versions were ultimately developed in order to

provide greater flexibility to researchers and stakeholders. One is a narrative version which consists mostly of open-ended questions for researchers to describe their plans, document what occurs during a project, and record final outputs. The other is a checklist version consisting of questions that are responded to with “Yes,” “No,” “In progress,” or “Not applicable.” This section describes both versions as well as the associated guidance, all of which can be found on the project’s OSF page at https://doi.org/10.17605/OSF.IO/8EBPU. The content, structure, and flow of the TOMP were informed by the thematic findings outlined in Section 4. These considerations were operationalised into a practical tool and guidance, implicitly demonstrating an evidence-informed approach for future resource development by stakeholders.

Both versions of the TOMP share core design characteristics that differentiate them from existing tools and enhance their practical value. Together, these design characteristics:

- Cover a range of prominent Open Research practices
- Support planning, documenting, and reporting open practices throughout the project lifecycle
- Encourage researchers to address cross-cutting concerns and practicalities that may impact their implementation of open practices
- Use a modular structure and conditional questions that help researchers identify and complete only those sections relevant to their project
- Provide a flexible workflow that allows researchers to iteratively develop their plans, track how these have been implemented, and record final decisions and outputs
- Feature a flexible final section for adding open practices and associated items unique to a researcher’s discipline, study type, methodological approach, or project.

Importantly, both versions of the TOMP and their accompanying guidance

- Are made available under a Creative Commons Attribution (CC BY) licence. This permits unrestricted use, adaptation, and redistribution on the condition that appropriate credit is given. The TOMP is intended as shared infrastructure and is designed to evolve through adaptation and contextualisation by researchers, institutions, funders, and other stakeholders.

The versions described here are designated “General” to signal their broad coverage (i.e., TOMP—General—Narrative; TOMP—General—Checklist). Future versions may adopt a different designation to signal their focus on a particular discipline, method, or study type.

Both versions begin with a section where researchers can record basic details of the project and the research team. This is helpful if the TOMP is to be shared externally or reviewed by peers or stakeholders. Then, the first main section prompts researchers to address relevant resources, policies and procedures, ethics and governance, and collaboration and attribution concerns. These cross-cutting considerations often impact the implementation of open practices in a more holistic way across multiple stages and elements of a research project. Thus, the TOMP asks researchers to address these from the outset.

After this, the next section in both versions asks five conditional questions which may be answered “Yes,” “No,” or “Not applicable.” These questions ask researchers to identify what practices they will be implementing; “Yes” responses prompt them to complete specific subsequent TOMP sections. The third through sixth sections then focus on particular areas of open, transparent, and reproducible practices:

- Methods (Pre-registrations, Open Protocols, and Open Analysis Plans; Registered Reports; and Open Positionality Statements)
- Materials and Data
- Analysis Code, Hardware, and Software
- Objects and Outputs

The Methods; Materials and Data; and Analysis Code, Hardware, and Software sections have “A” and “B” parts that divide each into two major components, allowing researchers to complete one part or the other, or both parts, as appropriate for their project (e.g., Part A: Analysis Code; Part B: Hardware and Software). Within the four major sections, items are grouped under headings and roughly ordered by stage of the project.

A final bespoke main section allows researchers to record additional practices that they implement. Here, they can record appropriate details and even generate their own items to prompt comprehensive planning and management.

The TOMP's flexible structure allows researchers to complete the sections and parts relevant to their projects over their lifecycles as incremental actions that contribute to completing each open practice accumulate. Both versions have been initially produced in text document formats. Thus, researchers can progress through the TOMP sequentially, or skip or revisit sections and items as relevant to their project and stage of the study. However, the open licence permits adaptation into other formats, such as a web-based form. Indeed, the expert respondents' preferred formats for the TOMP were a web-based form as well as a text document format. A web-based form would allow researchers to see only those sections selected from the conditional questions, for example.

Although the narrative and checklist versions of the TOMP overlap in the ways described above, they each possess distinguishing features to suit particular needs, which are described next.

5.1 *The Transparency and Openness Management Plan – General – Narrative*

The narrative version of the TOMP allows researchers to describe, in as much detail as is appropriate, their plans and actions. Each question is followed by an expandable open text field, which allows researchers to iteratively add details as plans develop and as actions relating to the practices are executed. These expandable text fields also allow researchers to justify decisions. Where necessary, brief instructions or guidance points are integrated with relevant questions. Researchers are prompted to refer to the accompanying guidance as necessary.

In addition to questions, the narrative TOMP contains "action points." These serve as reminders of best practice and suggestions for actions. Expandable boxes beneath these allow researchers to optionally record relevant details or notes.

5.2 *The Transparency and Openness Management Plan – General – Checklist*

A checklist version of the TOMP was developed to address concerns from the expert respondents regarding time and administrative load. This version's main sections (3-6) present forced-choice questions adapted from the narrative version's questions and action points that may be answered "Yes," "No," "In progress," or "Not applicable" by ticking boxes. The checklist version may also be used to record plans over the lifetime of a project. For example, in early

stages, many responses may be “In progress” but over time, researchers may change these to “Yes.”

5.3 *The Transparency and Openness Management Plan Guidance*

In addition to the two TOMP versions, accompanying guidance was developed. It was clear from the expert input that tools and resources should not come without guidance, both in terms of how to use a tool effectively but also as an intervention. What that means is that it should provide broader information and training on implementing open practices. Specifically, guidance should demystify terms, explain complex or confusing areas, provide advice for following best practice, and signpost to external resources. The TOMP guidance has been developed to meet these expectations.

More locally, the guidance provides information and explanations about how to use the TOMP. It provides definitions for terms, explains what kind of information should be recorded against each item in the narrative version or considered in order to answer “yes” or “in progress” for the checklist version, and advises how to select and use relevant sections during the project. It also provides detailed information on good practice relating to implementing Open Research, such as licensing, version control, securing resources, and following policies and frameworks. This is complemented by curated links and signposts to external resources, tools, and guidance to provide users with a broader range of information to support their needs. These resources were identified through a structured review as part of the project work as well as recommendations from the expert respondents. Thus, they reflect current practice and recognised sources of support and information. The guidance provides explicit acknowledgement that where external resources are referenced, responsibility for their content rests with their original creators or providers.

In addition, although a section on reporting guidelines transparency was originally proposed for the TOMP in the Round 1 survey, there was not sufficient agreement among the respondents that this should be included in the template. However, external resources for reporting guidelines have been provided in the guidance. In addition, during the two rounds of data collection, some expert respondents suggested additional open practices. These suggestions were carefully considered. Where they were judged to fall primarily under the remit of individual researchers with regard to implementation, they have been included in the

template (e.g., Open Hardware and Open Software). Open Peer Review was not included in the template because it is primarily implemented by publishers; however, some relevant external resources are included in the guidance so that researchers can make informed decisions about submitting their work to outlets with open peer review.

5.4 Achieved objective 3

As set out here, the two versions of the TOMP (Stewart, 2026) function as adaptable tools for comprehensive and flexible planning and management of openness, transparency, and reproducibility across the lifecycle of a research project. In producing two versions of the TOMP and accompanying guidance, the following objective has been met and exceeded:

- To develop a Transparency and Openness Management Plan (TOMP) template as a resource for researchers and stakeholders

6. Conclusion

Many researchers and stakeholders are committed to building a more open and transparent research and innovation ecosystem. Yet this commitment has not always been matched by the provision of actionable, practical, and technical tools and guidance that support the implementation of a broad spectrum of Open Research practices across the research lifecycle. In recognising and addressing this gap, *Planning for an Open Research Future* successfully achieved its core objectives by developing a practical, adaptable resource and associated guidance tailored to researchers, as well as generating evidence for stakeholders to inform similar initiatives in the future.

The project's key takeaways are as follows:

- The *Transparency and Openness Management Plan* template, or TOMP (Stewart, 2026), was developed through two rounds of structured feedback from experts in Open Research, ensuring the TOMP reflected priorities identified through expert consensus on how researchers should effectively implement open practices.
- The iterative development process led to two complementary versions of the TOMP, a narrative version and a checklist version, allowing researchers and stakeholders to select the version appropriate for their context, needs, and capacity.
- Both versions support researchers in planning, managing, and reporting a modular set of Open Research practices across the whole project lifecycle, as well as addressing cross-

cutting issues such as resources, ethics, and policies. This is complemented by accompanying guidance that supports effective use by providing definitions, explanations, and signposts to additional resources.

- The resource has a flexible and adaptable design to suit a range of disciplines, study types, methodological approaches, and institutional contexts, allowing researchers and stakeholders to tailor it to specific needs.
- The TOMP and its guidance are openly licensed, allowing others to share, reuse, and adapt them. This supports sustainability and scalability by enabling stakeholders to develop tailored versions for to specific disciplines, organisations, schemes, researcher career stages, or purposes.
- The project generated actionable insights and empirical evidence for stakeholders regarding the challenges researchers face in implementing Open Research practices, what needs researchers have in order to do this effectively, what barriers can hinder successful implementation, and what factors enable researchers to make their work more open, transparent, and reproducible. Stakeholders can use these insights to inform future initiatives, including policy, guidance, and infrastructure.

The TOMP responds to the needs of both researchers and stakeholders by providing a structured, flexible, and adaptable approach to effective planning, management, and reporting of Open Research practices. Its open licence ensures that it can be reused and adapted to suit particular needs within a diverse and changing research ecosystem. Thus, the TOMP acts not only as a practical tool for use at the coalface of research but also reflects an opportunity for scalable and sustained intervention. It provides a foundation upon which stakeholders can build more responsive, evidence-based, and practical tools and resources that meet the technical and practical needs of researchers, as well as their own needs for monitoring, evaluation, and development, in the pursuit of strengthening the openness, transparency, and quality of research in a changing and complex world.

Now that you have read our report, we would love to know if our research has provided you with new insights, improved your processes, or inspired innovative solutions.

Please let us know how our research is making a difference by completing our short feedback form via this link.

You are also welcome to email us if you have any questions about this report or the work of the IRC generally: info@ircaucus.ac.uk

Thank you

The Innovation & Research Caucus

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Appendix A

Table 1: Demographic and career-related characteristics of Rounds 1 and 2 respondents

	Round 1 (*n* = 22)	Round 2 (*n* = 14)
Mean age in years (standard deviation)	38.62 (6.48; *n* = 21)	37.00 (6.08)
Gender (self-described)	*n = 21*	
Male (male, cis male)	12	7
Female (female, woman)	9	7
Ethnicity (self-described)	*n* = 21	
White	19	12
East Asian	2	2
Highest degree level		
PhD	21	13
Masters	1	1
Type of employing organisation		
University	19	12
Research institute	2	1
Research funder	1	1
Mean years employed in academia or the research sector (standard deviation)	11.62 (5.85; *n* = 21)	11.64 (6.46)
Primary discipline (self-described)	*n = 20*	*n* = 12
Architectural Science	1	0
Biological Sciences	1	0
Biomedical Science	1	1
Chemical Engineering	1	0
Clinical Physiology	1	0
Computer Science	1	1
Engineering	0	1
Epidemiology	1	1

Fine Art	1	0
Interdisciplinary	1	0
Life Sciences	0	1
Linguistics	2	1
Meta Research	0	1
Open Science	1	0
Political Science	1	0
Psychology	5	3
Sociology	1	1
Statistics	1	1
Secondary discipline (self-described)	*n* = 4	*n* = 2
Criminology	1	1
Data Science	1	0
Mathematics	0	1
Pedagogy	1	0
Photography	1	0
Job title	*n* = 20	*n* = 11
Postdoctoral researcher/Research associate	4	3
Lecturer	4	3
Assistant Professor	2	1
Senior Lecturer	3	3
Associate Professor	2	1
Reader	1	0
Professor	1	0
Principal Researcher	1	0
Research Fellow	1	0
Research Professional	1	0
Methods		
Quantitative – experimental	14	10
Quantitative – observational	11	8
Quantitative - other	5	2
Qualitative	5	3

Theoretical	5	2
Open Research practices ever used		
Registration/ Pre-registration	17	9
Open protocol (study methods)	11	7
Open analysis plan	11	7
Open data	19	12
Open analysis code	18	12
Open materials	14	9
Open access outputs	21	14
Registered Reports	9	2
Open reporting guideline checklist	5	3
Open Research practices regularly used		
Registration/ Pre-registration	11	6
Open protocol (study methods)	7	6
Open analysis plan	5	5
Open data	14	8
Open analysis code	14	10
Open materials	13	7
Open access outputs	19	10
Registered Reports	3	1
Reproducible Reports (executable papers)	0	1
Open reporting guideline checklist	2	2
Not applicable	1	1
Mean years of using Open Research practices (standard deviation)	7.57 (3.25; *n* = 21)	7.36 (3.52)
Mean years of championing Open Research practices (standard deviation)	6.73 (4.27)	6.00 (3.92)

Note. Source: Author.

Appendix B

The narrative and checklist versions of the Transparency and Openness Management Plan (TOMP) – General are available on the project's Open Science Framework page (https://doi.org/10.17605/OSF.IO/8EBPU) alongside the accompanying guidance. These documents can be found in the folder "1. TOMP General Narrative and Checklist and guidance" and then in the relevant subfolder, "TOMP General Checklist," "TOMP General Narrative," and "TOMP Guidance." Each of these is available in Microsoft Word (.docx), Open Document Text (.odt), and Portable Document Format (.pdf) file formats.

This page also hosts interim outputs related to the project itself: the materials from both survey rounds, the raw data from both data collection points, and the analysis code for the Round 1 quantitative analysis. These are available in the folder "2. Project prespecification materials data and code." A README document provides information about the files available, licensing, and citing and referencing.

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