



Political and sOcial awareness on Water EnviRonmental challenges GA N.687809

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| Abstract | <p>This deliverable reports on the management of data within the POWER project, with particular reference to the Open Research Data Pilot.</p> <p>The report also provides an update of the previous internal documentation of project data management details in Deliverables 1.1, 6.1, 6.2 and 6.3.</p> <p>The report details how project research data output has been made open access for current and future users, and how data will be stored and preserved beyond the project end.</p> |



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Executive Summary

This deliverable reports on the management of data within the POWER project, with particular reference to the Open Research Data Pilot.

The report also provides an update of the previous internal documentation of project data management details in Deliverables 1.1 (Quality assurance plan), 6.1 (Ethics approval for POWER research activities), 6.2 (Ethical data management procedures) and 6.3 (Informed consent procedures), and describes how data will be managed after the project completion.

The primary open research output of the project is the open-source software of the POWER digital social platform (DSP), which is freely available on the well-known software repository GitHub. The POWER project's Best Practice Repository (BPR) is also a modification of the Digital Social Platform (DSP) software and gathers together knowledge and experience of innovative solutions to global urban water challenges.

During the project lifetime this software has been tested and piloted in four Key Demonstration Cities (KDCs) in order to facilitate public participation in tackling priority urban water challenges. Before the end of the project, one Follower City has also begun to develop their own platform. All platforms will remain active after the end of the project, hosted by POWER consortium partner Climate Alliance.

All information and data presented on the platforms (DSPs, BPR and mobile application) is published under a Creative Commons licence. Project deliverables with public dissemination status are available on the POWER project's website and will be published in an open repository on completion of the project.

Project data have been stored securely during the lifetime of the project and will be securely archived and preserved for five years after completion of the project.

Five years after project completion all personal data will be destroyed, unless they are contained in DSPs which are still operational at that time.

Following the completion of the project, the primary contact for data queries will be the POWER Principal Investigator, Professor Ljiljana Marjanovic-Halburd of De Montfort University.

1 Introduction

1.1 A short introduction to the POWER project

The POWER project (“Political and SOcial Awareness of Water EnviRonmental Challenges”) has developed an innovative Digital Social Platform (DSP) to raise political and social awareness of water environmental problems using digital media. The DSP has been piloted on four Key Demonstration Cities (each represented in the POWER consortium by one partner organisation) which are each addressing a priority water environmental issue (Table 1):

Table 1: Water Challenges and Key Demonstration Cities (KDCs)

| Water environmental challenge | Location | Key Partner |
|---|-------------------|--------------------------------------|
| Reduction in water consumption | Milton Keynes, UK | Milton Keynes Council |
| Extreme weather events (surface water flood risk) | Leicester, UK | Leicester City Council |
| Water quality | Sabadell, Spain | Companyia D'aigues De Sabadell, S.A. |
| Variables related to water conservation and water quality | Jerusalem, Israel | Hagihon Company LTD |

The DSP communicates information about these issues through the display of qualitative text information and quantitative information in the form of different sets of water quality and quantity data and spatial flood risk provided by the relevant local authorities and/or water companies. Use of the DSP generates a further class of data as users register with the DSP and participate in social aspects (comments and tips) and through gamification. Registered users may also submit case studies in the Best Practice Repository (BPR). These pilot DSPs remain active at the end of the POWER project.

The POWER project also involves the collection of data and information from city stakeholders, city professionals and the general public to support the development and provide feedback on the POWER DSPs and BPR, and through involvement in local water governance initiatives such as the Council for Council of Citizen Engagement in Sustainable Urban Strategies (ConCensus).

Public participation has also been involved in the design, promotion and evaluation of the platforms through interviews, workshops and other assorted engagement and dissemination events, which have subsequently generated data regarding participation.

The software of all three tiers of the DSP is available for new municipalities or entities to use and is published in an open-source software repository (Section 2.1).

1.2 Open access to research data

The POWER project was selected as an Open Research Data Pilot, as specified in Article 29.3 (Open access to research data) of Grant Agreement No. 687809:

‘Regarding the digital research data generated in the action (‘data’), the beneficiaries must:

(a) deposit in a research data repository and take measures to make it possible for third parties to access, mine, exploit, reproduce and disseminate — free of charge for any user — the following:

(i) the data, including associated metadata, needed to validate the results presented in scientific publications as soon as possible;

(ii) other data, including associated metadata, as specified and within the deadlines laid down in the ‘data management plan’ (see Annex 1);

(b) provide information — via the repository — about tools and instruments at the disposal of the beneficiaries and necessary for validating the results (and — where possible — provide the tools and instruments themselves).

This does not change the obligation to protect results in Article 27, the confidentiality obligations in Article 36, the security obligations in Article 37 or the obligations to protect personal data in Article 39, all of which still apply.

As an exception, the beneficiaries do not have to ensure open access to specific parts of their research data if the achievement of the action's main objective, as described in Annex 1, would be jeopardised by making those specific parts of the research data openly accessible. In this case, the data management plan must contain the reasons for not giving access.'

As well as displaying research transparency, the publication of open research data presents the opportunity for project dissemination and linkage to other related research projects.

1.3 Scope of this document

This document (D1.4)¹ was added as a new deliverable output for Work Package 1 (Project Management and Quality Assurance) in a grant amendment in January 2018 (M26 of the project) in order to address open data reporting. A description of the scope is:

'Data Management Plan (DMP) – to include details of the management of the digital research data generated in the action, in particular regarding:

(a) the research data repository and measures taken to make it possible for third parties to access, mine, exploit, reproduce and disseminate — free of charge for any user — the following:

(i) the data, including associated metadata, needed to validate the results presented in scientific publications;

(ii) other data, including associated metadata;

(b) information to be made available via the chosen repository about the tools and instruments at the disposal of the beneficiaries and necessary for validating the results e.g. specialised software or software code, algorithms and analysis protocols (and — where possible — provide the tools and instruments themselves).'

1.4 Related topics and project deliverables

Related aspects of the collection, management and publication of research data have been covered in previous project deliverables, as referenced in the following sub-sections.

1.4.1 Quality assurance

The Quality assurance plan (D1.1; internal document) established the principles of quality assurance and data management at the commencement of the project (M2).

1.4.2 Ethical data management

Three deliverables submitted in M22 cover ethical data management within the project:

- D6.1: Ethics approval for POWER research activities (describing how ethical approval was obtained for the collection of personal data in the research activities);
- D6.2: Ethical data management procedures (describing the procedures that have been/ are being implemented in the POWER project for data collection, storage, protection, retention and

¹ Originally the deliverable was identified as D1.5. However, following the deletion of another deliverable in an Grant Agreement Amendment of 2019, the deliverable was identified as D1.4. Due to an error, both numbers remained on the portal, therefore two copies of the same document have been uploaded.

destruction (whether personal or not), as well as the project's early understanding of the principles of open research data as applied to the POWER project.);

- D6.3: Informed consent procedures (describing how personal data has only been collected following a participant's signing of an appropriate consent form).

As these documents were internal to the project and with confidential status, this document intentionally reproduces and updates material previously presented in D6.2. In particular, ethical considerations are summarised in Section 3.

1.4.3 Open access to scientific publications

Open access to scientific publications is covered by related Article 29.2 of the grant agreement, requiring that each beneficiary must ensure open access (free of charge online access for any user) to all peer reviewed scientific publications relating to its results.

A list of POWER open access scientific publications is contained in Deliverable D5.8 'Dissemination activities final report, including final conference report' (M48).

1.5 Open data principles and guidance consulted

Information about the Open Research Data is available on the Horizon 2020 Participant Portal². De Montfort University publishes recommendations on good practice in research data management³. UK guidance provided by the Digital Curation Centre⁴ was also consulted.

Accessibility of data has been reviewed continually throughout the project. Horizon 2020 guidance promotes the principles of making data findable, accessible, interoperable and reusable (FAIR⁵). The document 'Guidelines on FAIR data management in Horizon H2020'⁶ available through the openAIRE project⁷ has been consulted in the drafting of this document. The FAIR principles – findable, accessible, interoperable and re-use – and relevant considerations for the POWER project are each discussed in Table 2. These principles have been applied, where applicable, during the project and remain relevant for data use/re-use beyond project completion, when some categories of data (e.g. platform usage statistics) become available for analysis and publication in scientific documents.

²http://ec.europa.eu/research/participants/docs/h2020-funding-guide/cross-cutting-issues/open-access-dissemination_en.htm

³https://libguides.library.dmu.ac.uk/ld.php?content_id=29461243

⁴<https://dmponline.dcc.ac.uk/>

⁵http://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/hi/oa_pilot/h2020-hi-oa-data-mgt_en.pdf

⁶http://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/hi/oa_pilot/h2020-hi-oa-data-mgt_en.pdf

⁷<https://www.openaire.eu/>

Table 2 Open data considerations for the POWER project under Horizon 2020's FAIR principles

| FAIR | Consideration |
|----------------------|--|
| Findable | <p>Open data will be made as findable as possible. Project partners will consider the following issues:</p> <ul style="list-style-type: none"> - provision of suitable associated metadata (accompanying information about the data) and documentation; - existing metadata standards within the project research areas/disciplines; - ability to identify and locate by means of a standard identification mechanism (e.g. persistent and unique identifiers such as Digital Object Identifiers); - use of appropriate naming conventions (the open data language will be English); - provision of clear version numbers. |
| Accessible | <p>Anticipated data categories suitable for open access publication are discussed in Section 2. No personal data will be available for publication, although anonymised and collated data may be suitable for publication.</p> <p>No proprietary code will be necessary to access or process the project open data. It is expected that data will be available in tabular formats such as *csv or openoffice.</p> <p>The POWER DSP software allows full export of collected data and generated analytics to open data formats as above.</p> <p>The DMU open data repository Figshare (https://figshare.com/) has been chosen as the default project open data repository.</p> <p>On a case-by-case basis, consideration will also be given to issues such as:</p> <ul style="list-style-type: none"> - whether there will need to be restrictions on use, and if so, how access will be provided; - whether any conditions for access are described well e.g. by a machine-readable license; - whether and how the identity of the person accessing the data will be ascertained. |
| Interoperable | <p>The data will not be saved in proprietary formats or software. The open formats to be used have not yet been determined, however it is anticipated that they will include comma-delimited files (*.csv) and open data text tiles (*.odt).</p> <p>The data and metadata vocabularies, standards or methodologies to be followed have not yet been determined.</p> |
| Re-use | <p>Data licensing should aim to permit the widest re-use possible.</p> <p>Research data should be made available as soon as possible after publication, or at the latest at the end of the project. It is noted that final research data regarding the social and political impact of the DSP may only be available towards the very end of the project.</p> <p>Data will be preserved and will remain re-usable for a period of five years beyond the end of the project. No personal data will be preserved beyond this point, unless it belongs to a DSP which is still in operation.</p> |

2 POWER research data

2.1 POWER open source software

The POWER project has created the POWER Digital Social Platform (DSP), which is an innovative communication and engagement tool that uses gamification to reward citizen participation. The software is described in D2.1 General architecture, functionalities and analysis report (M36)⁸ and the piloting process is documented in D2.5 Report on piloting of the DSP POWER model (M48).

The software for all three components:

1. The HUB (content manager for city DSPs and BPR),
2. the PUB (website) and
3. the MOB (the mobile app, for both Android and iOS versions)

was released in its entirety in M34 as an open source software on the GitHub online server and repository, available at the following URL:

<https://github.com/power-baseform>

The software is licensed under GNU General Public License v3.0. In M48 the latest version of the software is released.

Documentation is provided as a downloadable document on GitHub, and a link is provided to training videos:

<https://vimeo.com/channels/powertraining>

For further details regarding the POWER open source software, reference should be made to this repository and to deliverables D2.1, D2.2, D2.3, D2.4 and D2.5.

During the POWER project, the DSP has been piloted by the four Key Demonstration Cities (Table 1). The DSP is one of the main methods for the collection and generation of research data within the POWER project, as described in Section 2.2.

The DSP software is relevant and applicable to any municipality or entity wishing to engage with citizens and/or professionals in relation to water and other climate change issues. Several Follower entities or municipalities have expressed interest in using the software. In the lifetime of the project, the municipality of Hanau (Germany) has begun development of a DSP, using the software to address Hanau's most urgent climate change issue. The process of setting up a new DSP and adding a new language is described in D2.5. Depending on the modifications that may need to be made, the software developers may need experience in programming in the following languages and environments:

- Ruby on Rails
- Java EE
- PostgreSQL
- Web app hosting (Apache/NGINX server + Resin/JavaEE + RoR/Passenger + PostgreSQL + Linux server environment)
- Apple iOS and Android mobile operating systems.

2.2 Research data collected or generated by the POWER project

The POWER project collects or generates data which have been categorised as belonging to ten data types (updating the six originally presented in D6.2). A summary is provided in Table 3, covering the type of data, the data manager(s), the source of the data, the purpose for collecting the data and the relationship of the data with the project work packages and tasks. Some of the data collected include personal data, as indicated in the seventh column, and this affects whether and how these data types can be published. The final column of the table contains details on the secure storage, preservation and open access (where relevant). The table has been available in a live document during the lifetime of the project and is now updated to reflect the status at M48 on completion of the project.

⁸ <https://www.power-h2020.eu/wp-content/uploads/D2.1.pdf>

It is considered that the volume of data that has been generated by the project is not particularly large. In particular, the KDCs have mainly displayed data that are derived from other stakeholders and are already open source. The data categories have been used by the project partners, including the Key Demonstration Cities.

In addition, the data may also be of interest and use to other cities (such as the project's Follower Cities) intending to use the POWER DSP or BPR to raise social and political awareness of water environmental issues.

Table 3 Data categories within the POWER project: purpose, storage and publication (where applicable)

| Category | Work Package and Tasks | Data Manager and Country | Data Source/ Location | Data purpose | Existing data or new data? | Includes personal data? | Storage, preservation and publication (where applicable) |
|------------------------------------|---|---|---|--|----------------------------|-------------------------|---|
| (1) DSP public-facing content | WP3: T3.1, T3.2, T3.3, T3.4, T3.5 | CA (Germany), MKC (UK), LCC (UK), CASSA (Spain), HAGIHON (Israel) | MKC (UK), LCC (UK), CASSA (Spain), HAGIHON (Israel), together with contributions from registered citizen platform users | Populate the DSP to raise awareness, change behaviour and inform users on water environmental issues for Key Demonstration Cities. | New | No | <p>All content on the DSPs is available online under the Creative Commons Licence (Creative Commons Attribution 4.0 Int.).</p> <p>The four DSPs are available at the following URLs:</p> <p>https://milton-keynes.power-h2020.eu</p> <p>https://leicester.power-h2020.eu/</p> <p>https://sabadell.power-h2020.eu</p> <p>https://jerusalem.power-h2020.eu</p> <p>The DSPs and their content were originally held on Baseform's secure server, but have now been transferred to be hosted post-project by consortium partner Climate Alliance. Each of the DSPs continue to be live and are maintained by the KDC partners (see D5.7 for details of the POWER business plan).</p> |
| (2) Best Practice Repository (BPR) | WP3: T3.1 WP4 | CA (Germany), | CA (Germany), together with contributions from municipalities and Cities Blueprint cities | Sharing of knowledge and experiences in innovative water environmental technologies and solutions | New | No | <p>All content on the POWER Best Practice Repository is available online under the Creative Commons Licence (Creative Commons Attribution 4.0 Int.).</p> <p>The BPR's URL is: https://bestpractices.power-h2020.eu/</p> <p>The BPR and its content were originally held on Baseform's secure server, but has now been transferred to be hosted post-project by consortium partner Climate Alliance.</p> |
| (3) Water and environmental data | WP2: T2.2, T2.3, T2.4, T2.5 | MKC (UK), LCC (UK), CASSA (Spain), HAGIHON (Israel) | MKC (UK), LCC (UK), CASSA (Spain), HAGIHON (Israel), | Populate the DSP to raise awareness, change behaviour and inform users on water environmental | Existing | No | <p>The DSP has mainly used water and environmental data that are already openly accessible from the partner organisations or other sources (e.g. river levels for the River Soar, published by the Environment Agency, UK), therefore these data will not be published in an open data repository by the POWER project.</p> |

| Category | Work Package and Tasks | Data Manager and Country | Data Source/ Location | Data purpose | Existing data or new data? | Includes personal data? | Storage, preservation and publication (where applicable) |
|---|--|---|---|--|----------------------------|-------------------------|---|
| | | | together with other existing open data; contributions from other local stakeholders. | issues for key demonstration cities. | | | All content on the DSPs is available online under the Creative Commons Licence (Creative Commons Attribution 4.0 Int.) and is hosted post project by Climate Alliance. |
| (4) Interview, survey and workshop data | WP3: T3.1, T3.2, T3.3, T3.4, T3.5 WP4: T4.1, T4.3, T4.4, T4.5 | DMU (UK), EIPCM (Germany), CTM (Spain), KWR & UU (Netherlands) | Participants from: Milton Keynes, Leicester, Sabadell and Jerusalem; International water professionals. | Design of DSP and content, governance activities through the use of DSPs | New | Yes | <p>Personal contact data will not be available for publication. Anonymised and collated data generated from interviews, surveys and workshops may be suitable for open data publication e.g. supporting scientific publications originating from the project.</p> <p>During the project lifetime, this category of data has been stored securely on a dedicated 'virtual' server which has been created by the DMU IT department for use in the POWER project. DMU servers are backed up daily, on-site. OwnCloud has been used to access the data from the DMU server. OwnCloud is a universal file access front-end application that allows access to files from anywhere. It is different to alternatives such as cloud storage options (e.g. Dropbox, AmazonCloud) because the data remains on the servers at DMU. Registered users from project partners can access data files from any device, from anywhere, provided through a common file access application. Access to the server through OwnCloud is either via login via the OwnCloud website, or via the desktop client. Both require a user to have an account created for them by the OwnCloud administrator (DMU researcher). Connections to the server via OwnCloud are secured with encrypted HTTPS.</p> <p>Following completion of the project, this data category will be moved to a secure DMU data archive and preserved for five years. All personal data will be destroyed by DMU after this period. The remaining data may be destroyed if no further use is foreseen.</p> |

| Category | Work Package and Tasks | Data Manager and Country | Data Source/ Location | Data purpose | Existing data or new data? | Includes personal data? | Storage, preservation and publication (where applicable) |
|--|---|----------------------------|--|---|----------------------------|-------------------------|--|
| (5) DSP user data | WP3: T3.1, T3.2, T3.3, T3.4, T3.5 | Climate Alliance (Germany) | International, with significant numbers from KDCs (UK, Spain and Israel) | Collect data from DSP users who will be professionals and politicians (HUB and PUB tier) and citizens (PUB tier). | New | Yes | Personal contact data will not be available for sharing. Anonymised and collated data generated from or collected by the DSP are likely to be suitable for open data e.g. supporting scientific publications originating from the project. For storage, see entry for category (1) 'DSP public-facing content' above. |
| (6) POWER newsletters and subscriber data | WP5: T5.2 | Climate Alliance (Germany) | Professionals, politicians and citizens of Pilot Cities, Target and Follower Cities (through networks such as BlueSCities, Netwerch20, Climate Alliance) | Promotion of DSP and research, raising awareness and changing behaviour on water environmental issues | New | Yes | Personal contact data will not be available for publication. The newsletters have published on the POWER website https://www.power-h2020.eu/newsletter/ . Content is published under Creative Commons licence (Creative Commons BY-SA 3.0 DE). No further newsletters will be produced on completion of the project. Climate Alliance has held subscriber data securely in a TYP03 database on a server (IP: 188.94.249.59; p number / account 358594) from the German provider Mittwald which is hosted by Climate Alliance and located in Germany. On completion of the project this data will be archived securely and held until the end of 2020, after which it will be destroyed. |
| (7) POWER website and external social media (Facebook, Twitter, LinkedIn) usage data | WP5: T5.3 | CUBIT (Italy) | Website and external social media users | Statistical: track visitors' traffic and preferences | New | Yes | Personal contact data will not be available for publication. All material on the website is distributed under a Creative Commons Attribution-NonCommercial 4.0 International (CC BY-NC 4.0) License. All information gathered by the POWER website is stored on the controlled database MySQL of Aruba.it located in Italy. The website will be kept online until February 2021, when the hosting period of the website finishes. Afterwards, a backup of the entire website and database will be made and stored on CUBIT's server. |

| Category | Work Package and Tasks | Data Manager and Country | Data Source/ Location | Data purpose | Existing data or new data? | Includes personal data? | Storage, preservation and publication (where applicable) |
|---|--|--|---|--|----------------------------|-------------------------|--|
| | | | | | | | <p>Then, five years after the payment of the balance, the website and database will be deleted permanently.</p> <p>External social media are managed as per individual application security arrangements. Following completion of the project, the social media accounts will remain, but not be serviced, for a period of five years, after which all data will be deleted.</p> |
| (8) Engagement events and dissemination activity data | <p>WP3: T3.5</p> <p>WP4: T4.3, T4.4, T4.5</p> <p>WP5: T5.1, T5.2, T5.3, T5.5</p> | CUBIT (Italy), CTM (Spain), KWR & UU (Netherlands), Climate Alliance (Germany) | Primarily Milton Keynes, Leicester, Sabadell and Jerusalem, but international potential | Promotion and evaluation of DSP and research including governance issues; comments and feedback of individuals | Existing and new | Yes | <p>Personal contact data will not be available for publication.</p> <p>Photographs have been taken subject to prior permission having been obtained (according to project informed consent procedures in Section 6.2 of D6.3). These have been used in project newsletters, presentations, social media posts, or on the DSPs and will not be published in any other way.</p> <p>Anonymised data and collated data generated from engagement events and dissemination activities may be suitable for open data publication e.g. supporting scientific publications originating from the project.</p> <p>Any data of this category have that have been stored on the project's OwnCloud server (see entry for category (4) 'Interview, survey and workshop data'), will be archived on DMU's secure data storage and preserved for five years.</p> <p>Climate Alliance has stored event registration data in an access database. This database is stored on servers located in their office in Frankfurt am Main, Germany. The database is hosted at a file server. The office servers are not public and not connected to the internet. Photos or videos taken during events have also been stored on servers in their office in Frankfurt am Main, Germany. This data will be preserved for five years.</p> |

| Category | Work Package and Tasks | Data Manager and Country | Data Source/ Location | Data purpose | Existing data or new data? | Includes personal data? | Storage, preservation and publication (where applicable) |
|--|------------------------|---------------------------|-----------------------|---|----------------------------|-------------------------|---|
| (9) POWER deliverables | All WP | DMU (UK) CUBIT (Italy) | Consortium partners | Project communication and dissemination | New | No | <p>All EU-approved deliverables with public dissemination status have been uploaded onto the project website as downloadable documents (https://www.power-h2020.eu/deliverables/). After project completion it is intended that the public deliverables will be published on DMU's open data repository Figshare (https://figshare.com/) and thus assigned their own digital object identifier.</p> <p>All remaining deliverables (confidential or not yet approved) are stored on the project dedicated server 'OwnCloud' (see category (4) above). After project completion, confidential status deliverables will be moved to secure document storage at DMU and preserved for five years. All personal data will be destroyed by DMU after this period. The remaining data may be destroyed if no further use is foreseen.</p> |
| (10) POWER internal communications and financial information | WP1 | DMU (UK) | Consortium partners | International project information | New | Yes | <p>This data category is not suitable for open publication.</p> <p>During the project lifetime, internal data has been stored securely on the project dedicated server 'OwnCloud', accessible to any registered user representing the POWER consortium. Following completion of the project, the data will be archived to secure storage accessible by DMU POWER representatives only. In compliance with Article 18, all information including financial information will be preserved for five years. All personal data will be destroyed by DMU after this period. The remaining data may be destroyed if no further use is foreseen.</p> |

3 Ethics

All project data have been managed according to the plans set out in the project's ethics deliverables D6.1, D6.2 and D6.3. Some essential principles are outlined below. Within the lifetime of the project new legislation, in the form of the General Regulation of Data Protection (GDPR) has been introduced, and the project has ensured compliance.

Of the project data categories presented in Table 3, six categories have included personal data.

3.1 Ethical approval for data collection

The procedures comply with policies of the participating universities and institutions, together with national and EU legislation. In particular, they comply with the ethical standards and guidelines of Horizon 2020.

The data management procedures have been applied rigorously, regardless of the country in which the research is carried out. As one of the project partners (HAGIHON, Israel) is located outside the EU, the project has involved the import/export of data to/from the EU. Israel is one of the 'third countries' on the Commission list of countries offering adequate protection, therefore there have not been any additional requirements with regard to data protection.

3.2 Informed consent for data collection

No personal data has been collected without the consent of the owner. In all cases the minimum necessary amount of information or data has been collected.

The request for consent has varied according to the data category and context, but may have included:

- Full details of the objectives of the research
- Explaining the participants' involvement and their freedom to withdraw (with associated destruction of data)
- Assuring that appropriate records are kept and information is held securely
- Assuring participants about anonymity and confidentiality in project reports or associated publications.
- The reasons for research and how (and in what form) the data is going to be used
- Details about who is sponsoring the study and what the terms of the sponsorship are (reference is made to the POWER project and EU Horizon 2020 funding)
- Consent to collect photographs, audio or video records and how these will be used (data analysis, illustration purposes, displayed to sponsors/non-public academic audiences, printed in public domain documents, etc.)
- Details of who is conducting the research activity
- Details about who to contact if questions or problems arise
- Links to the privacy policy and terms of use of the city's DSP
- An 'unsubscribe' link.

For each data category, fundamental to the informed consent is that the participant has been given the opportunity to show whether they agree to the data collection.

3.3 Ethical data management

Finally, the project has followed ethical data management procedures, ensuring that all collected data are stored securely. Any personal data that have been further used/analysed has been anonymised by removal of personal identifiers.

4 Conclusion

This deliverable has set out how research output, in the form of software, information and data, has been managed within the lifetime of the project and (where appropriate), made open access. The document provides information on how the data will be stored and preserved on completion of the project at the end of November 2019 (M48).

The primary open research output of the POWER project is the open-source software of the POWER digital social platform (DSP), which is freely available on the well-known software repository GitHub. The POWER project's Best Practice Repository (BPR) is also a modification of the Digital Social Platform (DSP) software and gathers together knowledge and experience of innovative solutions to global urban water challenges.

During the project lifetime this software has been tested and piloted in four Key Demonstration Cities (KDCs) in order to facilitate public participation in tackling priority urban water challenges. Before the end of the project, one Follower City has also begun to develop their own platform. All platforms will remain active after the end of the project, hosted by POWER consortium partner Climate Alliance.

All information and data presented on the platforms (DSPs, BPR and mobile application) is published under a Creative Commons licence. Project deliverables with public dissemination status are available on the POWER project's website and will be published in an open repository on completion of the project.

Project data have been stored securely during the lifetime of the project and will be securely archived and preserved for five years after completion of the project. Five years after project completion all personal data will be destroyed, unless they are contained in DSPs which are still operational at that time.

Following the completion of the project, the primary contact for data queries will be the POWER Principal Investigator, Professor Ljiljana Marjanovic-Halburd of De Montfort University.