



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 700748

LIQUEFACT

Assessment and mitigation of liquefaction potential across Europe: a holistic approach to protect structures/infrastructure for improved resilience to earthquake-induced liquefaction disasters.

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Data Management Plan

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25/10/2016	01	Katie Hiscock	First Draft	Draft
24/05/2017	02	Keith Jones	First Draft	Final Version
31/08/18	03	Daniel Burman	First Draft	Final Version

List of Partners

Participant	Name	Country
ARU (Coordinator)	Anglia Ruskin University Higher Education Corporation	United Kingdom
UNIPV	Universita degli Studi di Pavia	Italy
UPORTO	Universidade do Porto	Portugal
UNINA	Universita degli Studi di Napoli Federico II.	Italy
TREVI	Trevi Societa per Azioni	Italy
NORSAR	Stiftelsen Norsar	Norway
ULJ	Univerza v Ljubljani	Slovenia
UNICAS	Universita degli Studi di Cassino e del Lazio Meridionale	Italy
SLP	SLP Specializirano Podjetje za Temeljenje Objektov, D.O.O, Ljubljana	Slovenia
ISMGEO	Istituto Sperimentale Modelli Geotecnici Societa a Responsabilita Limitata	Italy
Istan-Uni	Istanbul Universitesi	Turkey



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Glossary

Acronym	Description
CA	Consortium Agreement
EILD	Earthquake Induced Liquefaction Disaster
EU	European Union
GA	Grant Agreement
GDPR	General Data Protection Regulations
MS	Microsoft
SPSS	IMB Statistical Package for the Social Sciences
WP	Work Package

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Executive Summary

Recent events have demonstrated that Earthquake Induced Liquefaction Disasters (EILDs) are responsible for tremendous structural damages and fatalities causing in some cases half of the economic loss caused by earthquakes. With the causes of liquefaction being substantially acknowledged, it is important to recognize the factors that contribute to its occurrence, to estimate hazards, then to practically implement the most appropriate mitigation strategy considering the susceptibility of the site to liquefaction and the type and size of the structure. The LIQUEFACT project addresses the mitigation of risks to EILD events in European communities with a holistic approach. The project deals not only with the resistance of structures to EILD events, but also with the resilience of the collective urban community in relation to their quick recovery from an occurrence. The LIQUEFACT project sets out to achieve a more comprehensive understanding of EILDs, the applications of the mitigation techniques, and the development of more appropriate techniques tailored to each specific scenario, for both European and worldwide situations.

Introduction, Goal and Purpose of this document

The LIQUEFACT project is a collaborative project involving 11 partners from six different countries (UK, Italy, Portugal, Slovenia, Norway and Turkey) including representation from four EU Member States and is organised in three phases (Scoping, Research and Implementation) across nine work packages (WPs), each of which encapsulates a coherent body of work. The first seven WPs highlight the major technical activities that will take place throughout the project and have been scheduled to correlate with one another. The final two WPs (WP8 and WP9) are the continuous activities which will take place throughout the duration of the project.

In order to ensure the smooth running of the project for all project partners, management structures and procedures are necessary to facilitate effective and efficient working practices. Following the management information included in the Grant Agreement (GA) and its annexes, the Consortium Agreement (CA), Commission rules as contained in the Guidance Notes and organisational Risk Management policies and procedures including Corporate Risk Strategy, Policy and Guidance and Health and Safety Policies this manual highlights important procedures to be carried out in order to monitor, coordinate and evaluate the management activities of the project.

Goal: This document aims to aid the LIQUEFACT project consortium to meet their responsibilities regarding research data quality, sharing and security through the provision of an data management plan in accordance with the Horizon2020 Guidelines on Open Access and to make provision for the introduction of General Data Protection Regulations (GDPR) on 25th May 2018.



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Admin Details

Project Name: LIQUEFACT Data Management Plan - DMP title

Project Identifier: LIQUEFACT

Grant Title: 700748

Principal Investigator / Researcher: Professor Keith Jones

Project Data Contact: Professor Keith Jones, +44(0) 1245 683907. keith.jones@anglia.ac.uk

Description: Assessment and mitigation of liquefaction potential across Europe: a holistic approach to protect structures/ infrastructure for improved resilience to earthquake-induced liquefaction disasters.

Funder: European Commission (Horizon 2020)

Institution: Anglia Ruskin University

Task	Data	Type
T1.1	Reference list/Bibliography	Qualitative
T1.2	Questionnaire	Qualitative and Quantitative
T1.4	Glossary/Lexicon	Qualitative
T2.1	Ground characterization; Geophysical prospecting; Soil Geotechnical and Geophysical tests; Ground investigations; Lab testing	Quantitative
T2.6	Reference list/Bibliography	Qualitative
T3.1	Numerical modelling; Experimental data.	Quantitative
T3.2	Field trials and pilot testing; Simulations; Numerical modelling	Quantitative
T4.1	Soil characterization (Mechanics)	Quantitative
T4.2	Centrifugal Modelling	Quantitative
T4.3	Field trials; Lab and Field testing	Quantitative
T4.4	Numerical modelling	Quantitative
T5.2	Individual and Community resilience measures/metrics	Qualitative and Quantitative
T5.3	Cost/Benefit Models	Quantitative
T7.1	Reference list/Bibliography	Qualitative



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1. Data Summary

Quantitative and qualitative data will be collected in line with the overarching aims and objectives of the LIQUEFACT project; to help deliver a holistic approach to the protection of structures, infrastructure and resilience to Earthquake Induced Liquefaction Disasters (EILDs) across Europe. It is important to recognise the opportunity for mitigation strategies to help aid protection for both people, places and communities through a more comprehensive understanding of EILDs. Data collection will aid the development and application of techniques, applicable across European and global situations. Site specific data collection at differing case study sites across Europe will be undertaken alongside data gathering from the academic and community fields to better inform decision making. It is hoped that this data will be useful to a wide ranging, spatially and temporally diverse audience - across the policy-practitioner interface.

2. Fair Data

2.1 Open Access

Open access will be provided to all scientific publications in line with the guidance provided by the Commission in their letter dated 27th March 2017 (The open access to publications obligations in Horizon 2020). Self-archiving through suitable repositories within six months of publication (12 months for social science and humanities publications); or Open access publishing on the publisher/journal website. It is anticipated that data will be made available in varying forms for varying uses.

Identification mechanisms will be utilised to improve the usability of the data within differing contexts. Data cleansing will be considered in order to present clear and considered formatting. Versions, Keywords and Digital Object Identifiers will be explored in principle to aid the applicability of data.

Anglia Ruskin University adheres to the Research Data Management Guidelines;

- Encouraging scientific enquiry and debate and increase the visibility of research.
- Encouraging innovation and the reuse of existing datasets in different ways, reducing costs by removing the need to collect duplicate research data.
- Encouraging collaboration between data users and data creators.
- Maximising transparency and accountability, and to enable the validation and verification of research findings and methods.



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2.2 Repository

Appropriate data will be made available through the use of an online portal or reputable repository, details of which are yet to be confirmed but may include the LIQUEFACT website (www.liquefact.eu) and Zenodo. Generic software tools will be predominantly used including MS Office and SPSS. A Technical Data Report will be provided for each data set through the creation and statement of the aims, objectives and methodology.

2.3 Exceptions

In circumstances where the anonymization of data sets is not possible the Liquefact Project will, to protect the rights of individuals concerned, exclude certain data sets from publication in the online repository. This data will be retained in accordance with Anglia Ruskin University data Research Data Management Guidelines and held for a minimum of 5 years after the project completion.

A table of exceptions is included below:

Data Set	Related Results	Reason for Exclusion

2.4 Metadata

Text mining tools and methods will help external actors to extract common and relevant data. Commonly used ontologies will be utilised. A glossary of terms will be collated by project partners. Data files will be saved in an easily-reusable format, commonly used by the research community. Including the following format choices; .txt; .xml; .html; .rft; .csv; .SPSSportable; .tif; .jpeg; .png.

2.5 Storage

Data will be stored either on each institution's back-up server or on a separate data storage device that is kept in a secure and fireproof location, separate from the main data point. Data will be released no later than the publication of findings and within three years of project completion. Primary data will be securely retained, in an accessible format, for a minimum of five years after project completion.



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3 Allocation of Resources

At this stage costs have not been accounted for in the H2020 LIQUEFACT project budget. Data Management Plans will be regularly updated by the Project Coordinator with data collection, collation and usability the responsibility of all partners involved in the project. By providing this data it is anticipated that future utilisation will contribute to the long term success of the LIQUEFACT project and enhance EILD improvements across and between countries and organisations.

4. Data Security

This research aims to follow these principles;

- Avoid using personal data wherever possible.
- If the use of personal data is unavoidable, consider partially or fully anonymising the information to obscure the identity of the individuals concerned.
- Use our secure shared drives to store and access personal data and sensitive business information, ensuring that only those who need to use this information have access to it.
- Use remote access facilities to access personal data and sensitive business information on the central server instead of transporting it on mobile devices and portable media or using third party hosting services.
- Personal equipment (such as home PCs or personal USB sticks) or third party hosting services (such as Google Mail) should not be used for high or medium risk personal data or business information.
- If email is used to send personal data or business information outside the university environment, it should be encrypted. If you are sending unencrypted personal data or business information to another university email account, indicate in the email title that the email contains sensitive information so that the recipient can exercise caution about where they open it.
- Do not use high or medium risk personal data or business information in public places. When accessing email remotely, exercise caution to ensure that you do not download unencrypted high or medium risk personal data or business information to an insecure device.
- Consider the physical security of personal data or business information, for example use locked filing cabinets/cupboards for storage.
- The fifth principle of the General Data Protection Regulation 2018 states that personal data processed for any purpose or purposes should not be kept for longer than is necessary for that purpose or purposes. It is therefore important to implement our retention and disposal



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policies so that personal data and sensitive business information is not kept for longer than necessary.

5. GDPR

Anglia Ruskin University is fully compliant with the General Data Protection Regulation (GDPR) Act that was introduced on the 25th May 2018. All personal data is handled securely and confidentially in accordance with information security best practice policies. When it is necessary to share information with beneficiaries or third parties, appropriate protection measures are in place.

6. Ethical Aspects

Ethical considerations in making research data publicly available are clearly designed and discussed by Anglia Ruskin University regarding data sharing throughout the entire data cycle. Ensuring compliance with GDPR 2018. Informed consent will be obtained from all participants for their data to be shared/made publicly available. Providing participants with sufficient information to make an informed decision regarding involvement. Data will always be anonymised with examples of direct or sensitive identifiers removed. The user (licensor) will be given due credit for work when it is distributed, displayed, performed, or used to derive a new work.

7. Other Procedures

- Data Protection Act 1998
- General Data Protection Regulations 2018
- Anglia Ruskin University Research Training, Ethics and Governance as part of the Research Policy and Support group within the Research and Innovation Development Office
- Anglia Ruskin University's Research, Innovation and Knowledge Exchange strategy 2016-2017
- DMP Online
- Zenodo