

PROPOSED LOWER GROUND FLOOR APARTMENT AT 51 HIGHGATE HIGH STREET, LONDON N6 5JX

FLOOD RISK ASSESSMENT

J-367-Rev.01



PROPOSED LOWER GROUND FLOOR APARTMENT AT 51 HIGHGATE HIGH STREET, LONDON N6 5JX

FLOOD RISK ASSESSMENT

| Report No. | Issue Detail | Originator | Date | Checked by | Date |
|------------|--------------|------------|------------|------------|------------|
| J-367 | 01 | EC | 10/01/2018 | JC | 10/01/2018 |

For: Dransfield Owens Design Ltd
Pyramid Building
31 Queen Elizabeth Street
London
SE1 2LP

Job No: J-367
Date: January 2018
Edition: 01

CONTENTS

| Item | Content | Page No. |
|-------------|---------------------------|-----------------|
| 1.0 | Introduction | 1 |
| 2.0 | Assessment of Flood Risks | 3 |
| 3.0 | Mitigation Measures | 5 |
| 4.0 | Policy | 6 |
| 5.0 | Summary and Conclusions | 7 |

APPENDICES

Appendix A Environment Agency Correspondence

1.0 INTRODUCTION

Dransfield Owens Design Ltd are representing a client who is proposing to provide a lower ground floor apartment at 51 Highgate High Street. The existing building is situated on Highgate High Street, though is accessed from Pond Square to the rear of the building, as shown in **Figures 1 & 2** below.

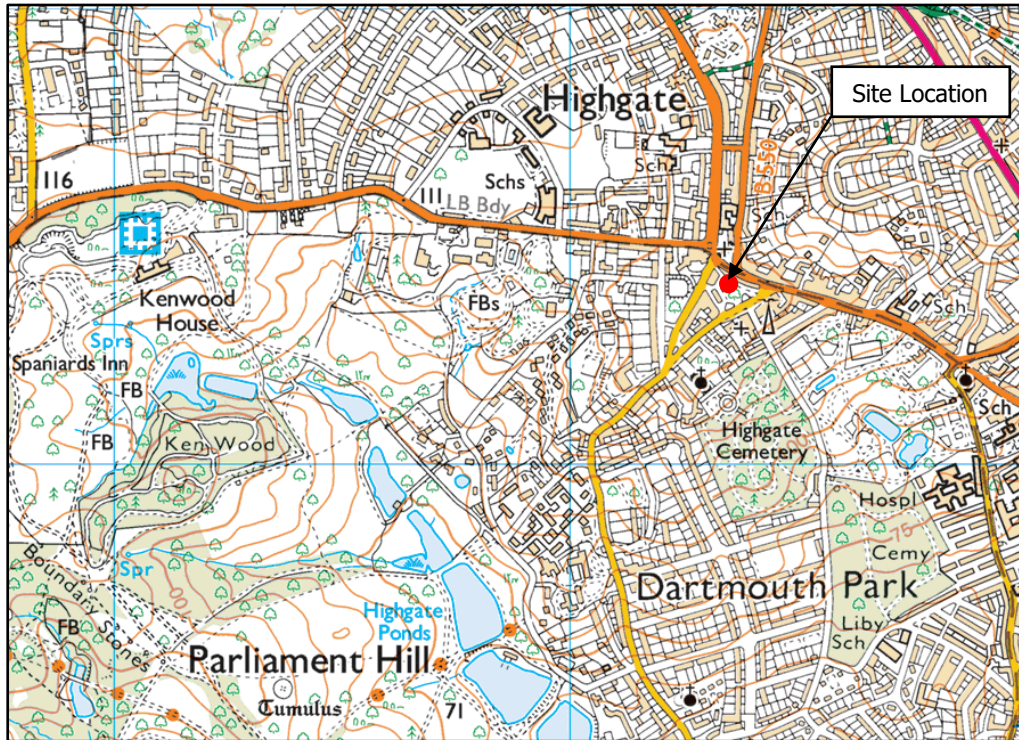


Figure 1 Site Location & Geographical Area

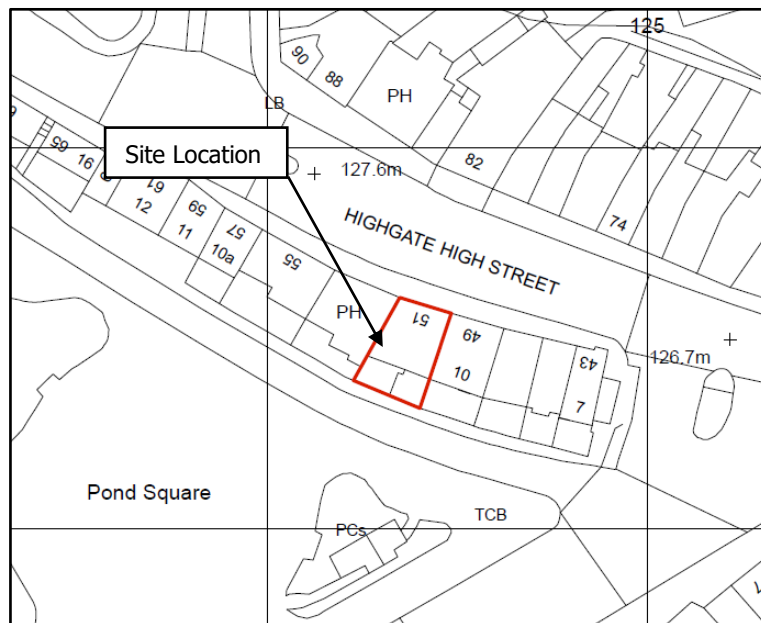


Figure 2 Site Boundary

Site Description

The site currently comprises the lower ground floor of an existing building with commercial use, situated on the southern side of Highgate High Street, London N6 5JX. The approximate Ordnance Survey Grid Reference for the site is TQ 28390 87395.

The lower ground floor is currently accessed via Pond Square on the southern side of the building.

The proposed works will not alter the footprint of the original building. The development proposal is for interior conversion to provide a residential apartment.

Flood Risk Context

Reference to the Environment Agency (EA) flood map for planning shows the site to be within Flood Zone 1 (Low Probability). However, the London Borough of Camden Strategic Flood Risk Assessment (SFRA) indicates that the site is within a Critical Drainage Area, therefore the development will require a Flood Risk Assessment (FRA) in accordance with Paragraph 103 of the National Planning Policy Framework (NPPF).

Engineering and Development Solutions (EDS) have been commissioned to undertake an FRA for the site to assess the potential flood risks at the subject site. This report comprises the FRA for the proposed development, in line with the National Planning Policy Framework (NPPF), Planning Practice Guidance (PPG) and London Borough of Camden guidance.

The Environment Agency indicative flood map for planning in **Figure 3** below, shows that the site and surrounding area is in Flood Zone 1 (less than 1 in 1,000 annual probability of river or sea flooding) and is therefore not at risk from either fluvial or tidal flooding. Other possible flooding mechanisms have been considered at the site and are discussed in **Section 2**.

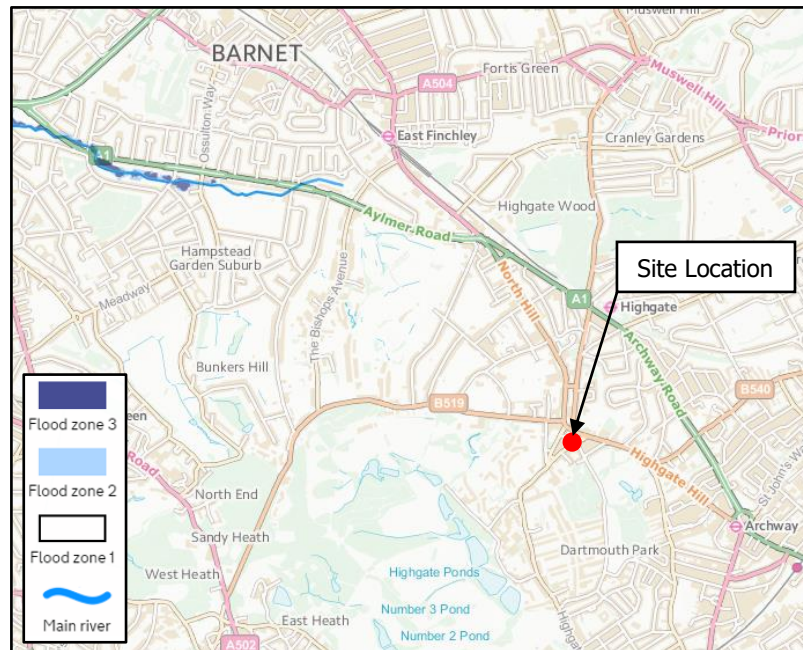


Figure 3 Environment Agency Flood Map for Planning (Rivers & Sea) Extract

2.0 ASSESSMENT OF FLOOD RISKS

Analysis of the Environment Agency (EA) indicative flood map shows that the site is within Flood Zone 1, indicating that it is at very low risk from tidal or fluvial flooding and therefore suitable for all types of development. Several other potential flooding mechanisms have been considered for the site, and are discussed below.

Groundwater

Groundwater flooding is linked to the presence of aquifers and the ability of the underlying geological strata to bear water. Flooding occurs when water levels in the ground rise above surface elevations. According to the Camden SFRA, the site is not within an area at increased susceptibility to elevated groundwater. The Camden flood risk management strategy states that there have been a small number of recorded incidents of groundwater flooding in basements and cellars, though the EA have no records of groundwater flooding at the site or in the nearby area. Correspondence with the EA is included in **Appendix A**.

Given that the development is on the lower ground floor of a building, information presented in **Section 3** of this report will show how groundwater flood risk for this site can be mitigated for the site.

Overland Flow

The site is located within the urbanised area of Highgate, London. It is anticipated that any overland surface water flows generated upstream would be intercepted by the surrounding highway and drainage infrastructure and would be directed away from the site. The EA map extract, **Figure 4** below, shows the risk of flooding from surface water for the site. It indicates that the site is at very low/low risk of flooding from surface water.

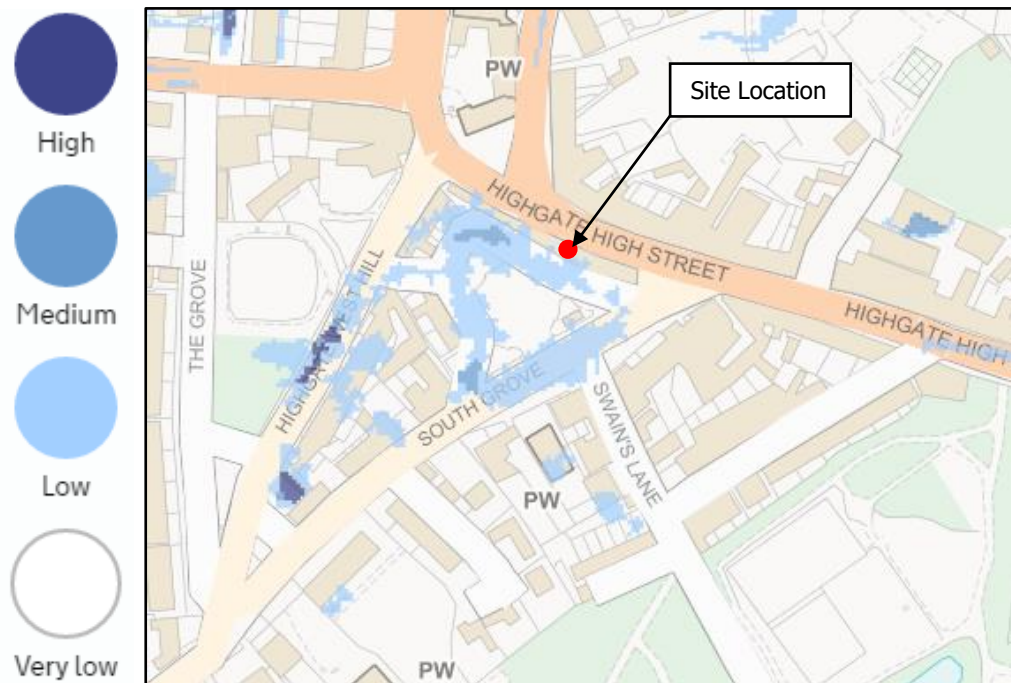


Figure 4 EA Flood Risk from Surface Water Map Extract

Engineering and Development Solutions Ltd

Surface water flooding occurred in the Borough following extreme rainfall events in 1975 and 2002. The Camden SFRA mapping shows that the highways adjacent to the site were not flooded during either event.

The site is only accessed from Pond Square, south of the building, so is not at risk of surface water flooding from Highgate High Street, north of the building. It is predicted that any surface water flooding in the area would be contained within the highway at Pond Square, which generally falls away from the site. An existing dwarf wall and raised step into the site further restrict surface water from entering the building.

Flooding from Sewers

The sewer network can become overwhelmed following extreme heavy rainfall or become blocked causing flooding. The nearest public sewers run within the adjacent highways. Should the sewers surcharge then any flows would run away from the site within the road carriageway. Therefore, the risk of flooding from sewers is deemed to be low.

Flooding from Reservoirs, Canals and other Artificial Sources

With reference to the 1:25,000 Ordnance Survey mapping and EA map 'Flood risk from reservoirs', there appear to be no impounded waterbodies or reservoirs within the vicinity of the site, therefore flooding of the site from these sources can be discounted.

Flooding as a Result of Development

Developments have the potential to increase flood risk to properties down slope of the proposed development through the introduction of impermeable areas on previously permeable areas. In this case, however, there is no change in building footprint as the proposal is for internal alterations of an existing building. As such there will be no increase in impermeable area, therefore there will be no increase in runoff or flood risk to third parties elsewhere due to this development.

Given that the proposal is for a change in use of the lower ground floor of an existing building, the development will not affect groundwater flows, cause obstruction or impact nearby properties.

Flood Summary

From the information provided above, the proposed development site has been shown to be in Flood Zone 1 and at low risk from all other forms of flooding.

Information presented in **Section 3** of this report will consider how flood risks for this site could be reduced to make the development more resilient/resistant to surface water and groundwater flooding.

3.0 MITIGATION MEASURES

The following mitigation measures are recommended to ensure the risk of flooding to the development is minimised.

1. The existing lower ground floor unit will include flood/damp proofing measures, and these should be kept in place and not damaged during any works.
2. The condition of the existing dwarf wall and step along the southern boundary of the site should be inspected and any growth should be removed with mortar renewed/repaired as necessary to ensure flood resistance.

4.0 POLICY

The development has been shown to be located within Flood Zone 1. In accordance with PPG Table 2, a development of this type '*Basement dwellings*' is classified as 'Highly Vulnerable'. Referring to Table 3 of PPG (**Figure 5**, below), a 'Highly Vulnerable' development within Flood Zone 1 is entirely appropriate.

| Flood Zones | Flood Risk Vulnerability Classification | | | | |
|-------------|---|-------------------------|-------------------------|-----------------|------------------|
| | Essential infrastructure | Highly vulnerable | More vulnerable | Less vulnerable | Water compatible |
| Zone 1 | ✓ | ✓ | ✓ | ✓ | ✓ |
| Zone 2 | ✓ | Exception Test required | ✓ | ✓ | ✓ |
| Zone 3a † | Exception Test required † | x | Exception Test required | ✓ | ✓ |
| Zone 3b * | Exception Test required * | x | x | x | ✓* |

Key:
 ✓ Development is appropriate
 x Development should not be permitted.

Figure 5 PPG Table 3

5.0 SUMMARY AND CONCLUSIONS

This report has shown that the property at 51 Highgate High Street is situated within Flood Zone 1, at low risk of flooding.

The proposal is for internal modifications of the lower ground floor of an existing building to form a residential apartment. As such the development will not cause an increase in downstream flooding or affect groundwater flow routes.

Flood mitigation measures have been presented in this report in relation to the development proposals on this site, which include maintaining the flood resistance of the dwarf wall and raised step on the southern boundary.

Considering the findings of this study, the development site can be concluded as being situated within Flood Zone 1, at low risk of flooding. NPPF therefore states that all uses of land are appropriate in this zone from a flooding perspective.

APPENDIX A

EA CORRESPONDENCE

Erica Chick

From: HNL Enquiries <HNLenquiries@environment-agency.gov.uk>
Sent: Friday, December 22, 2017 11:42
To: Erica Chick
Subject: RE: HNL71008NR - Product 4 - London N6 5JX
Attachments: Open Government Licence.pdf

Dear Erica

Thank you for your request dated 18/12/2017 to use Product 4 Environment Agency data.

The information on Flood Zones in the area relating to this address is as follows: 51 Highgate High Street, London N6 5JX.

The property is in an area located within Flood Zone 1 shown on our Flood Map for Planning (Rivers and Sea).

Note - This information relates to the area that the above named site is in and is not specific to the property/proposed development itself.

Because this site does not fall within an area at risk of flooding from rivers or the sea, we do not hold any detailed flood modelling data. As such we are unable to provide a flood risk product.

We have no record of this site having been affected by flooding in the past. Since this site is classed as being "very low risk" from fluvial or tidal flooding we have no plans to carry out any works which would reduce flood risk.

If you have requested this information to help inform a development proposal, then you should note the information on GOV.UK on the use of Environment Agency Information for Flood Risk Assessments

<https://www.gov.uk/planning-applications-assessing-flood-risk>
<https://www.gov.uk/government/publications/pre-planning-application-enquiry-form-preliminary-opinion>

You can view and download flood risk maps from our website at:

<http://watermaps.environment-agency.gov.uk/wiyby/wiyby.aspx?topic=floodmap#x=357683&y=355134&scale=2>

You can also view and print surface water flood maps online at:

<http://watermaps.environment-agency.gov.uk/wiyby/wiyby.aspx?topic=ufmfsw#x=357683&y=355134&scale=2>

You can then use these maps as part of any flood risk assessment. Please note, surface water flood risk is now managed by Lead Local Flood Authorities, which in this instance is London Borough or Camden.

This information is provided subject to the enclosed Open Government licence, which you should read.

I hope that we have correctly interpreted your request. Please see the attached Open Government licence for details of permitted use.

We respond to requests for recorded information that we hold under the Freedom of Information Act 2000 (FOIA) and the associated Environmental Information Regulations 2004 (EIR).

If you are not satisfied with our response to your request for information you can contact us within 2 calendar months to ask for our decision to be reviewed.

Kind regards,

Naoimh Richardson

Customers and Engagement Officer
Environment Agency, Hertfordshire and North London
Alchemy, Bessemer Road, Welwyn Garden City, Hertfordshire, AL7 1HE
Direct dial 0203 0257507

Direct email HNLquiries@environment-agency.gov.uk

Working days: Monday to Friday 7am – 3pm



From: Erica Chick [mailto:erica@eadsolutions.co.uk]
Sent: 18 December 2017 11:17
To: HNL Enquiries <HNLquiries@environment-agency.gov.uk>
Subject: Product 4 - London N6 5JX

Good morning,

We are currently undertaking a Flood Risk Assessment for a potential development site. The site address is as follows.

51 Highgate High Street, London N6 5JX

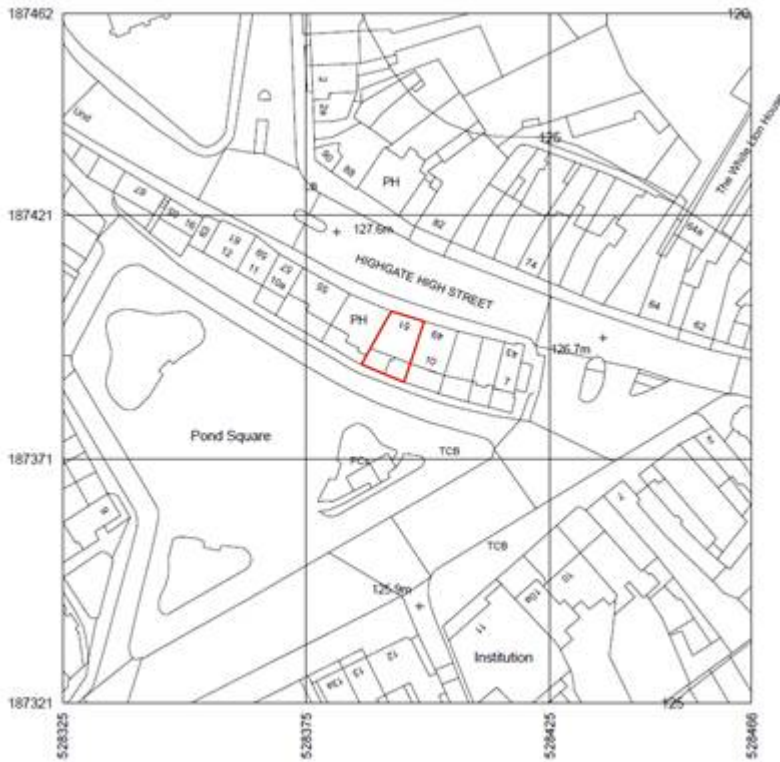
The indicative site boundary is shown in red on the plan below.

We would like to obtain product 4 flood information for this site.

We would be particularly interested in any flood levels for the area (levels to include detailed modelled levels ISIS, TU-Flow, HEC-RAS etc. (or if none of these are available JFLOW data), extreme tidal or fluvial levels and depths, as well as flood plain extents, flood history, flows and the standard and detail of any flood defences.

Kind regards,

Erica



Erica Chick
Environmental Engineer

erica@eadsolutions.co.uk

EDS | enquiries@eadsolutions.co.uk | www.eadsolutions.co.uk

Contact | Phone 01872 306311

Office | Unit 10 Penstraze Business Centre | Truro | Cornwall | TR4 8PN



Engineering & Development Solutions

- **Flood Risk Assessment**
- **SuDS and Surface Water**
- **Foul and Sewage Treatment**
- **Highways**
- **Civil Engineering**

Registered Office: Unit 10, Penstraze Business Centre, Truro Cornwall, TR4 8PN. Registered in England & Wales No. 10467487.

This message has been scanned and no issues were discovered.
[Click here](#) to report this email as spam

Information in this message may be confidential and may be legally privileged. If you have received this message by mistake, please notify the sender immediately, delete it and do not copy it to anyone else.

We have checked this email and its attachments for viruses. But you should still check any attachment before opening it.

We may have to make this message and any reply to it public if asked to under the Freedom of Information Act, Data Protection Act or for litigation. Email messages and attachments sent to or from any Environment Agency address may also be accessed by someone other than the sender or recipient, for business purposes.

Click [here](#) to report this email as spam



Open Government Licence

for public sector information

delivered by
A The National Archives

[Back to The National Archives](#)

You are encouraged to use and re-use the Information that is available under this licence freely and flexibly, with only a few conditions.




Using Information under this licence

Use of copyright and database right material expressly made available under this licence (the 'Information') indicates your acceptance of the terms and conditions below.


The Licensor grants you a worldwide, royalty-free, perpetual, non-exclusive licence to use the Information subject to the conditions below.

This licence does not affect your freedom under fair dealing or fair use or any other copyright or database right exceptions and limitations.

You are free to:

-  copy, publish, distribute and transmit the Information;
-  adapt the Information;
-  exploit the Information commercially and non-commercially for example, by combining it with other Information, or by including it in your own product or application.

You must (where you do any of the above):

-  acknowledge the source of the Information in your product or application by including or linking to any attribution statement specified by the Information Provider(s) and, where possible, provide a link to this licence;

If the Information Provider does not provide a specific attribution statement, you must use the following:

Contains public sector information licensed under the Open Government Licence v3.0.

If you are using Information from several Information Providers and listing multiple attributions is not practical in your product or application, you may include a URI or hyperlink to a resource that contains the required attribution statements.

These are important conditions of this licence and if you fail to comply with them the rights granted to you under this licence, or any similar licence granted by the Licensor, will end automatically.

Exemptions

This licence does not cover:

- personal data in the Information;
- Information that has not been accessed by way of publication or disclosure under information access legislation (including the Freedom of Information Acts for the UK and Scotland) by or with the consent of the Information Provider;
- departmental or public sector organisation logos, crests and the Royal Arms except where they form an integral part of a document or dataset;
- military insignia;
- third party rights the Information Provider is not authorised to license;
- other intellectual property rights, including patents, trade marks, and design rights; and
- identity documents such as the British Passport

Non-endorsement

This licence does not grant you any right to use the Information in a way that suggests any official status or that the Information Provider and/or Licensor endorse you or your use of the Information.

No warranty

The Information is licensed 'as is' and the Information Provider and/or Licensor excludes all representations, warranties, obligations and liabilities in relation to the Information to the maximum extent permitted by law.

The Information Provider and/or Licensor are not liable for any errors or omissions in the Information and shall not be liable for any loss, injury or damage of any kind caused by its use. The Information Provider does not guarantee the continued supply of the Information.

Governing Law

This licence is governed by the laws of the jurisdiction in which the Information Provider has its principal place of business, unless otherwise specified by the Information Provider.

Definitions

In this licence, the terms below have the following meanings:

'Information' means information protected by copyright or by database right (for example, literary and artistic works, content, data and source code) offered for use under the terms of this licence.

'Information Provider' means the person or organisation providing the Information under this licence.

'Licensor' means any Information Provider which has the authority to offer Information under the terms of this licence or the Controller of Her Majesty's Stationery Office, who has the authority to offer Information subject to Crown copyright and Crown database rights and Information subject to copyright and database right that has been assigned to or acquired by the Crown, under the terms of this licence.

'Use' means doing any act which is restricted by copyright or database right, whether in the original medium or in any other medium, and includes without limitation distributing, copying, adapting, modifying as may be technically necessary to use it in a different mode or format.

'You', 'you' and 'your' means the natural or legal person, or body of persons corporate or incorporate, acquiring rights in the Information (whether the Information is obtained directly from the Licensor or otherwise) under this licence.

About the Open Government Licence

The Controller of Her Majesty's Stationery Office (HMSO) has developed this licence as a tool to enable Information Providers in the public sector to license the use and re-use of their Information under a common open licence. The Controller invites public sector bodies owning their own copyright and database rights to permit the use of their Information under this licence.

The Controller of HMSO has authority to license Information subject to copyright and database right owned by the Crown. The extent of the Controller's offer to license this Information under the terms of this licence is set out in [the UK Government Licensing Framework](#).

This is version 3.0 of the Open Government Licence. The Controller of HMSO may, from time to time, issue new versions of the Open Government Licence. If you are already using Information under a previous version of the Open Government Licence, the terms of that licence will continue to apply.

These terms are compatible with the Creative Commons Attribution License 4.0 and the Open Data Commons Attribution License, both of which license copyright and database rights. This means that when the Information is adapted and licensed under either of those licences, you automatically satisfy the conditions of the OGL when you comply with the other licence. The OGLv3.0 is Open Definition compliant.

Further context, best practice and guidance can be found in the [UK Government Licensing Framework section](#) on The National Archives website.





Engineering and Development Solutions Ltd

Registered Office: Unit 10 | Penstraze Business Centre | Truro | Cornwall | TR4 8PN

Registered in England No. 10467487