

CONFIDENTIAL

GeoRisk Alert API Service

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1. Overview

This document describes the API to access the GeoRisk Alert service.

This service can be used to determine whether specified geographical locations or regions are within or close to certain geographic features.

Five responses are made with the following categories: coal, nonCoal, brine, groundStability and groundMovement.

2. Common Technical Details

Transfer Protocol

Requests are made using the Hypertext Transfer Protocol (HTTP/1.1) as defined by the Internet Engineering Taskforce (IETF).

The document defining this protocol may be found at either of the following:

<http://www.w3.org/Protocols/rfc2616>
<http://www.ietf.org/rfc/rfc2616.txt>

Either the “GET” or “POST” methods can be used for making requests.

Both HTTP and HTTPS calls are supported.

Request Construction

A standard http GET method requires the construction of a URL defined as:

URL = "http:" "://" host [":" port] [abs_path ["?" query]]

The components of this URL are detailed below.

Host

Alternative IPv4 addresses are used for fail-over and redundancy in order to increase system reliability. These should be found using DNS look-ups from the following domains:

mapping1.net mapping2.net mapping3.net

Port

The default Transmission Control Protocol (TCP) Ports 80 and 443 are used for HTTP and HTTPS respectively. In many cases the port number may be omitted.

Co-ordinate System

Each request to the service must carry with it co-ordinates that indicate the area of interest (examples are given in a later section).

The x-y co-ordinates must refer to the British National Grid (defined by the Ordnance Survey), and should be supplied as the full figure “Eastings” and “Northings”.

Example: Trafalgar Square:

Eastings (x) = 530000
Northings (y) = 180500

Notes

In order to increase security, the use of source-IP address restrictions will be made wherever possible.

2. GeoRisk Service

Each request to the service must carry with it either a point location or a polygon defining the area of interest.

The service responds in JSON format.

The parameters are define below.

abs_path

This should be the string “.georisk” (excluding quotation delimiters).

Query

The next table summarises the available fields.

Field Name	Type	Example
userID	String, mandatory.	
passkey	String, mandatory.	
x	Floating point, use when specifying a point.	384309.6
y	Floating point, use when specifying a point.	301874.2
polygon	Floating point, use when specifying a region.	

The userID and passKey should be used as supplied. Other parameters are as follows.

There are two formats for the query depending upon whether a point search or a polygon search is being requested.

1. For point searches the query string should be constructed as:

“userID=<userID>&passKey=<passkey>&x=<Eastings>&y=<Northings>”

(excluding quotation delimiters)

2. For area searches, the region of interest is defined by supplying the co-ordinates of the vertices of the polygon. The co-ordinates are 2-dimensional Cartesian x,y pairs. The parameters for a polygon of n vertices are passed as follows:-

polygon=x₁,y₁,x₂,y₂,x₃,y₃,...x_n,y_n

The polygon is always considered to be a closed loop, where the nth point is assumed to link back to the 1st point. A triangle will therefore be specified with 3 points.

For a polygon search the query string should be constructed as:

“userID=<userID>&passKey=<passkey>&polygon=<x₁>,<y₁>,...<x_n>,<y_n>”

(excluding quotation delimiters)

Results

The results are returned in JSON format, for example:

```
{"coal":true,"nonCoal":false,"brine":false,"groundStability":true,"groundMovement":"identified"}
```

The possible responses for each of the five categories is summarised in the following table:

Category	Possible Responses	Notes
coal	true false	
nonCoal	true false	
brine	true false	
groundStability	true false	
groundMovement	notIdentified identified unknown	

Any response that is not in the expected format is indicative of an error, e.g. incorrect user identification or an exception such as system failure, e.g. server over-load (see examples section later).

Some exceptions may require administrative action to resolve, others potentially may be resolved with a re-try after a short delay. Others may indicate a problem with the input parameters.

3. Test Examples

The following strings are complete examples that should return the responses indicated.

Example 1: Failed authentication

Request:

http://mapping1.net/.georisk?userID=imposter&passKey=wrong&x=237000&y=083000

Response:

```
{"Exception":"Failure to authenticate"}
```

(Note that there will be no response if IP restrictions are used and not met.)

Example 2: Point search.

Request:

http://mapping2.net/.georisk?userID=<userID>&passKey=<passKey>&x=300000&y=527000

Response:

```
{"coal":true,"nonCoal":false,"brine":false,"groundStability":true,"groundMovement":"identified"}
```

The responses obtained may vary over time due to data updates.

Example 3: Polygon search.

Request:

http://mapping1.net/.georisk?userID=<userID>&passKey=<passKey>&x=300000&y=527000&polygon=440000,201000,440100,201000,440050,201050,440000,201000

Response:

```
{"coal":false,"nonCoal":false,"brine":false,"groundStability":true,"groundMovement":"notIdentified"}
```

The responses obtained may vary over time due to data updates.

4. Revision History

Date	Revision	Author	Notes
29 June 2020	1.0 Draft A.	PJH	For review.
8 July 2020	1.0	PJH	For review.