



Flood Re

Flood Re Technical Specification: Property Data Hub & Bordereaux and Additional Services

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1 INTRODUCTION

1.1 Document Purpose

This document details the interface specifications for the Insurer facing IT systems which are being developed, hosted and maintained by the Flood Re Managing Agent.

This document also details the implementation of the requirements described in the Functional Specifications documents for Flood Re.

1.2 Document Audience and Other Associated Documents

This document is intended to be read to provide functional and logical understanding of the service being provided by the Managing Agent and to inform the Insurer's planning and processes for the implementation of Flood Re. The recommended audience for this document is likely to include Project Managers, Business Analysts, and Solution Architects.

This forms part of the document suite for Flood Re as listed below.

Reference	Details
Layman's Guide	Overview and Summary of End to End implementation.
High Level Solution Architecture Document	High Level End to End Solution Architecture
Bordereaux Functional Design	Business process and Solution functional details for Underwriting and Claims Bordereau services
Property Data Hub Functional Design	Business process and Solution functional details for Property Address Enquiry services for validating Eligibility Category and Eligibility Period.
Technical Design	Provides the Technical Interface Details for the Bordereaux and Property Data Hub solution services.

1.3 Implementation Overview

All interfaces are RESTful web services, with JSON and CSV representations of each of the resources. The choice between JSON and CSV is decided through the Content-Type HTTP request header.

There will be a Web Portal to provide a user interface to several of the web services, this will be implemented as a JavaScript client to those services.

Throughout the application(s), email notifications can be provided to Insurers to confirm actions performed and these will be sent to the email address attached to the user's account on the system. Email contact details will be collected from Insurers during the on-boarding process and these will be maintained in the Managing Agent's User Management System.

Application security is provided through client digital certificates. These will be provided to authorised Industry Participants once they have been successfully on-boarded by the Managing Agent. These digital certificates must be installed by the software calling the web services.

All services require authentication, with each service having authorisation protocols with valid permissions against each.

2 BORDEREAUX SUBMISSIONS

The Bordereaux Submission Service is for the submission of Bordereaux documents to the Flood Re system. Upon receipt, each Bordereaux will be validated structurally with the data and business validation rules applied.

2.1 HTTP Definition

The web service for submitting underwriting Bordereaux documents listens only to the HTTP PUT method. The URL is structured as below:

<https://<platform>.floodre.co.uk/service/bordereaux/{document}/{insurerId}/{year}/{month}/{version}>

Field	Description
platform	One of uat, ote, or www.
document	This must be either 'claims' or 'underwriting'.
insurerId	The insurer Id assigned to the user by the Flood Re system.
year	The year of the underwriting document, formatted as YYYY.
month	The month of the underwriting document, formatted as the full name.
version	The version of the bordereau.

e.g. <https://www.floodre.co.uk/service/bordereaux/underwriting/00001/2015/January/1>

The insurerId, year, month, and version fields must match the values in the date, month, floodre_id and version fields of the document. The document field must match the type of document being sent.

Any fields not matching the values within the document will result in an error response with HTTP Status code 400 bad request, and a body detailing where the errors occur.

2.2 Example JSON Underwriting Document

```
{
  "date": "2015-01-01",
  "month": "February",
  "version": 1,
  "floodre_treaty_reference_number": 999,
  "insurer": {
    "id": "00001",
    "name": "insurer name",
    "fca_number": 123
  },
  "line_count": 1,
  "total_premium_payment": 20,
  "underwriting": [
    {
      "insurer_reference": "reference",
      "insurer_brand": "insurer brand",
      "policy_transaction_type": {
        "type": "Mid Term Adjustment",
        "reason": "New Address"
      },
      "cover_commences": "2015-01-01",
      "total_premium_payable": "£12.00",
      "term": {
        "effective_start_date": "2015-01-01",
        "effective_end_date": "2016-01-01"
      },
      "transaction": {
        "effective_start_date": "2015-01-01",
        "sequence_number": 1
      },
      "property": {
        "FRid": "de305d54-75b4-431b-adb2-eb6b9e546013",
        "tax_band_derivation": "Property Hub",
        "type": "Flat",
        "use": "Policyholder Residence",
        "number_of_storeys": 3,
        "number_of_bedrooms": 6,
        "resilience_work": true,
        "construction": {
          "wall": "Aluminium", "roof": "Zinc"
        },
        "basement": {
          "present": true,
          "usage": "Storage",
          "flood_protection": "Undefined"
        },
        "eligibility_criteria": true,
        "rebuilding": {
          "cost": "£123123",
          "basis": "I"
        },
        "addresses": [
          {
            "house_number": "1",
            "house_name": "house name 1",
```

```

        "floor_level": 1,
        "line1": "line1",
        "line2": "line2",
        "line3": "line3",
        "postcode": "EX1 1EX",
        "tax_band": "B"
      },
      {
        "house_number": "2",
        "house_name": "house name 2",
        "floor_level": 1,
        "line1": "line1",
        "line2": "line2",
        "line3": "line3",
        "postcode": "EX1 1EX",
        "tax_band": "B"
      },
      {
        "house_number": "3",
        "house_name": "house name 3",
        "floor_level": 1,
        "line1": "line1",
        "line2": "line2",
        "line3": "line3",
        "postcode": "EX1 1EX",
        "tax_band": "B"
      }
    ]
  },
  "premium": {
    "building": {
      "new_annual": "£132",
      "transaction": "£60",
      "rating_date": "2015-01-01"
    },
    "contents": {
      "new_annual": "£132",
      "transaction": "£60",
      "rating_date": "2015-01-01"
    },
    "total_payable": "£777"
  },
  "coverage": {
    "building": {
      "sum_blanket_limit": "£123",
      "specific_sum_insured": "£234",
      "transaction_rating_date": "2014-12-31",
      "excess_amount": "£12",
      "alternative_accommodation_limit": "£5000"
    },
    "contents": {
      "sum_blanket_limit": "£123",
      "actual_sum_insured": "£234",
      "transaction_rating_date": "2014-12-31",
      "excess_amount": "£123",
      "alternative_accommodation_limit": "£5000",
      "high_value_fine_art_items_insured": true
    }
  }
}

```


}
]
}
}
}

2.3 Example CSV Underwriting Document

date,month,version,line_count,total_premium_payment,insurer_id,insurer_name,insurer_fca_number,floodre_treaty_number,insurer_brand,insuruer_reference,transaction_type,reason_code,cover_commences,term_effective_start_date,term_effective_end_date,transaction_effective_start_date,transaction_sequence_no,frid,country,number_of_units,address1_house_number,address1_name,address1_floor_level,address1_line1,address1_line2,address1_line3,address1_postcode,address1_tax_band,address2_house_number,address2_name,address2_floor_level,address2_line1,address2_line2,address2_line3,address2_postcode,address2_tax_band,address3_house_number,address3_name,address3_floor_level,address3_line1,address3_line2,address3_line3,address3_postcode,address3_tax_band,tax_band_derivation,built_pre2009,property_type,property_use,number_of_storeys,resilience_work,basement_present,basement_usage,basement_flood_protection,number_of_bedrooms,construction_wall,construction_roof,building_coverage,building_coverage_sum_blanket_limit,building_coverage_specific_sum_insured,building_coverage_rebuilding_cost,building_coverage_rebuilding_cost_basis,building_coverage_transaction_rating_date,building_coverage_excess_amount,building_coverage_alternative_accommodation_limit,contents_coverage,contents_coverage_sum_blanket_limit,contents_coverage_specific_sum_insured,contents_coverage_rebuilding_cost,contents_coverage_rebuilding_cost_indicator,contents_coverage_transaction_rating_date,contents_coverage_excess_amount,contents_coverage_alternative_accommodation_limit,rebuild_cost,rebuild_basis,buildings_premium_new_annual,buildings_premium_transaction,buildings_premium_rating_date,contents_premium_new_annual,contents_premium_transaction,contents_premium_rating_date

15/04/2015,201504,1,1,132,FR12345,ALLIANZ,FCA1,FRT555,AGCS,AX1755341,Mid Term
Adjustment,New Address,01/04/2015,01/01/2015,31/12/2015,01/01/2015,01/01/1900,824f88ad-6341-4429-884b-443887966b65,England,1,2a,,,St Loyes Gardens,Exeter,,EX25FL,A,,,,,,,,,,,,,Proprty
Tax Table,TRUE,Detatched House,Policy Holder
Residence,0,TRUE,TRUE,Storage,TRUE,3,Brick,Slate,BLD,2500,0,0,N,31/12/2014,,132,132,255,,N,,,,,
,132,,,,

2.4 Example JSON Claims Document

```
{
  "date": "2015-01-01",
  "month": "February",
  "version": 1,
  "floodre_treaty_reference_no": 999,
  "insurer": {
    "id": "00001",
    "name": "insurer name",
    "fca_number": 123
  },
  "excess": {
    "buildings": {
      "applied": true,
      "amount": "£123"
    },
    "contents": {
      "applied": true,
      "amount": "£234"
    }
  },
  "overall_total_requested_this_time": "£0.20",
  "line_count": 1,
  "claims": [
    {
      "insurer_brand": "insurer brand",
      "insurer_policy_reference": "reference",
      "FRid": "de305d54-75b4-431b-adb2-eb6b9e546013",
      "insurer_claim_number": 123,
      "insurer_latest_claim_movement_number": 123,
      "date_of_loss": "2012-04-23",
      "time_of_loss": "2012-04-23T18:25:43.511Z",
      "date_of_notification": "2014-12-31",
      "initial_reserve": "£123",
      "initial_reserve_type": "Property Owner",
      "claim_status": "S",
      "claim_reopened_reason_code": "More Information",
      "claim_repudiation_code": "Not Covered",
      "claim_settlement_date": "2014-12-31",
      "claim_closed_date": "2015-01-01",
      "cat_event_code": "abc",
      "type_of_flooding": "Coastal",
      "flood_height_at_property_ft": 12,
      "buildings": {
        "excess_amount_applied": "£123",
        "initial_reserve": "£111",
        "current_reserve": "£100",
        "excess_amount_applied": "£100",
        "indemnity": { "paid": "£123", "outstanding": "£123" },
        "alternative_accomodation": {
          "paid": "£123",
          "outstanding": "£123"
        }
      },
      "loss_adjuster_fees": {
        "paid": "£123",
        "outstanding": "£123"
      }
    }
  ]
}
```

```

    },
    "specialist_fees": {
      "paid": "£123",
      "outstanding": "£123"
    },
    "third_party": {
      "paid": "£123",
      "outstanding": "£123"
    },
    "fos": {
      "paid": "£123",
      "outstanding": "£123"
    },
    "recovery": {
      "type": "Y",
      "received": "£123",
      "outstanding": "£123"
    }
  },
  "contents": {
    "high_value_fine_art_item_excluded": true,
    "indemnity": {
      "paid": "£123",
      "outstanding": "£123"
    },
    "alternative_accomodation": {
      "paid": "£123",
      "outstanding": "£123"
    },
    "loss_adjuster_fees": {
      "paid": "£123",
      "outstanding": "£123"
    },
    "specialist_fees": {
      "paid": "£123",
      "outstanding": "£123"
    },
    "recovery": {
      "type": "Y",
      "received": "£123",
      "outstanding": "£123"
    }
  },
  "combined_excess_amount": "£150",
  "total_incurred": "£1233",
  "total_request_this_time": "£2312",
  "payment_final": true
}
]
}

```

2.5 Example CSV Claims Document

date,month,version,line_count,overall_total_requested_this_time,insurer_id,insurer_name,insurer_fca_number,floodre_treaty_number,frid,insurer_brand,insurer_policy_reference,insurer_claim_number,insurer_latest_claim_movement_number,date_of_loss,time_of_loss,date_of_notification,initial_reserve,initial_reserve_type,claim_status,claim_reopened_reason_code,claim_repudiation_code,claim_settlement_date,claim_closed_date,cat_event_code,building_excess_applied,building_excess_amount,contents_excess_applied,contents_excess_amount,combined_excess_amount,type_of_flooding,flood_height_at_property_ft,building_initial_reserve,building_current_reserve_paid,building_alternative_accommodation_paid,building_loss_adjuster_fees_paid,building_specialist_fees_paid,building_third_party_paid,building_fos_paid,building_current_reserve_outstanding,building_alternative_accommodation_outstanding,building_loss_adjuster_fees_outstanding,building_specialist_fees_outstanding,building_third_party_outstanding,building_fos_outstanding,building_recovery_type,building_recovery_amount_outstanding,building_recovery_amount_received,high_value_fine_art_item_excluded,contents_initial_reserve,contents_current_paid,contents_alternative_accommodation_paid,contents_loss_adjuster_fees_paid,contents_specialist_fees_paid,contents_third_party_paid,contents_fos_paid,contents_current_reserve_outstanding,contents_alternative_accommodation_outstanding,contents_loss_adjuster_fees_outstanding,contents_specialist_fees_outstanding,contents_third_party_outstanding,contents_fos_outstanding,contents_recovery_type,contents_recovery_amount_received,contents_recovery_amount_outstanding,total_incurred,total_request_this_time,payment_final

15/04/2015,201504,1,1,132,FR12345,ALLIANZ,FCA1,FRT555,824f88ad-6341-4429-884b-
443887966b65,AGCS,AX1755341,9783673245,7862354872,12/12/2014,2014-12-
12T18:25:43.511Z,12/12/2014,£53,Unknown,Open,,Not
Defined,13/02/2015,13/02/2015,,,£400,150,£250,£550,River,9,£333,£550,£0,£0,£0,£0,£0,£0,£0,£0,
£0,£0,£0,£0,£0,£0,TRUE,£0,£0,£0,£0,£0,£0,£0,£0,£0,£0,£0,£0,£0,£0,£0,£564,,

2.6 Example JSON Error Response

The error response format is the same for both the underwriting and claims web services.

```
[
  {
    "field": "insurer.fca_number",
    "code": "ABC123",
    "message": "Unknown insurer"
  },
  {
    "field": "underwriting[2].cover_commences",
    "code": "ABC222",
    "message": "Invalid date, format is YYYY-MM-DD"
  }
]
```

2.7 Example CSV Error Response

```
field,code,message
insurer.fca_number,ABC123,Unknown insurer
underwriting[2].cover_commences,ABC222,"Invalid date, format is YYYY-MM-DD"
```

All CSV documents must contain a header row containing all the fields whether mandatory or optional.

2.8 Bordereaux specific HTTP Status Codes

2.8.1 204 No Content

The submission has been successful and the Bordereaux document has been validated and stored for processing. The HTTP response body will be empty.

2.9 Auditing

The data of the headers and body, and statuses of the successful requests and responses for Bordereaux submission will be stored for auditing. A log of unsuccessful (rejected) requests and responses for Bordereaux submission will also be stored for auditing.

3 PROPERTY DATA HUB

3.1 Single Query

A single address query can be made of the Hub to retrieve data on the Eligibility Criteria (tax band) and Eligibility Period (whether a property was built pre or post 2009).

3.1.1 HTTP Definition

There are two URL structures for providing a single query for property data. Both use the HTTP GET method. The first is used if Insurers know the FloodRe id (FRid) of the address they are querying:

https://www.floodre.co.uk/service/property/{floodre_id}

Where {floodre_id} is replaced with the specific key for the property. This method is the most reliable, and the fastest way to query the property data.

The URL noted below is for when Insurers do not know the key of the property they wish to retrieve data for:

[https://www.floodre.co.uk/service/property?
uprn=123&rm_udprn=&line1=line1&line2=line2&line3=line3& line4=line4& line5=line5&
line6=line6&line7=line7&postcode=PP1%201PP](https://www.floodre.co.uk/service/property?uprn=123&rm_udprn=&line1=line1&line2=line2&line3=line3&line4=line4&line5=line5&line6=line6&line7=line7&postcode=PP1%201PP)

The more descriptive the input from Insurers the more likely it is that there will be an address match found on the Property Data Hub. At least one address line is required. Postcode is also mandatory.

Additionally this service supports both input of either a UPRN and UDPRN. In this context the UPRN is the NLPG unique key for a property, and the UDPRN is the PAF delivery point address key. End users who have access to data sets which contain these fields can use them to aid in their queries when searching the Property Data Hub.

However there is not a complete mapping between these keys and the core Flood Re dataset. Whilst it may be very helpful to supply one or more of these address keys in the search method, it will not be a failsafe method for retrieving the data.

The maintenance of NLPG and PAF unique keys is by external data agencies and therefore is potentially subject to change. **The most reliable address key to use for address searches on the Property Data Hub is the Flood Re id (FRid).**

3.1.2 Example JSON Response

```
{  
  "floodre_id": "de305d54-75b4-431b-adb2-eb6b9e546013"  
  "tax_band": "A",  
  "built_before_2009": true  
}
```

3.2 Batch Queries

3.2.1 Process Overview

To support the renewals process, the Insurer can submit batch queries of the Property Data Hub. The fields within the structure match the field definitions in the two single query URLs.

The user first submits the request document to the web service, which performs validation checks against the structure and content of the document. If validation fails, the service will return a 400 Bad Request response detailing the errors. If validation is successful, the service will return a 202 Accepted response with a HTTP request header called 'Location' containing a URL pointing to an entry in the submission queue.

When the user goes to the URL for the submission queue, they will be able to see the response being built. As the request gets processed the "floodre_data" element in each request line will get filled with the matched data from the Property Data Hub.

Once the request has been fully processed the request will be removed from the queue, and subsequent requests to the queue URL, will return an HTTP 303 See Other, with another Location HTTP Header pointing to where the final built response is held.

3.2.2 Submission HTTP Definition

The web service for batch queries against the Property Data Hub supports the HTTP POST method. The structure of the URL is as follows:

<https://www.floodre.co.uk/service/property/renewals/{insurerId}>

With insurerId being the Flood Re user id assigned during the on-boarding process.

3.2.3 Example Submission JSON Request

```
[
  {
    "frid": "de305d54-75b4-431b-adb2-eb6b9e546013",
    "uprn": "",
    "rm_udprn": "",
    "address_line_1": "1",
    "address_line_2": "house name",
    "address_line_3": "street",
    "address_line_4": "town",
    "address_line_5": "county",
    "address_line_6": "",
    "address_line_7": "",
    "postcode": "EX1 1EX"
  },
  {
    "floodre_id": "29463f4c-b68b-11e4-a71e-12e3f512a338",
    "uprn": "",
    "udprn": "",
    "address_line_1": "2",
    "address_line_2": "house name",
    "address_line_3": "street",
    "address_line_4": "town",
    "address_line_5": "county",
    "address_line_6": "",
    "address_line_7": "",
    "postcode": "EX1 1EX"
  }
]
```

3.2.4 Example Submission CSV Request

```
frid,uprn,rm_udprn,address_line_1, address_line_2, address_line_3, address_line_4,
address_line_5, address_line_6, address_line_7,postcode
de305d54-75b4-431b-adb2-eb6b9e546013,,,1,house name,line1,line2,line3,,,,EX1 1EX
29463f4c-b68b-11e4-a71e-12e3f512a338,,,2,house name,line1,line2,line3,,,,EX1 1EX
```

3.2.5 Submission Fields

Either the FRid, or the postcode and address_line_1 is mandatory. Submissions not fulfilling this for each line will be returned with a 400 Bad Request.

3.2.6 Submission HTTP Status Codes

3.2.6.1 202 Accepted

The submission has been successful and the placed in the queue for processing. There will be a response header called location containing a URL where Insurers can check on the status of the submission.

3.2.7 Batch Submission Processing Queue HTTP Definition

The batch submission processing queue supports the HTTP GET method. The structure of the URL is as follows:

<https://www.floodre.co.uk/service/property/renewals/queue/{insurerId}/{queueId}>

Where insurerId is the Id assigned to the user during the on-boarding process, and queueId is a user unique reference to the queue.

3.2.7.1 Example JSON Queue Response

```
{  
  "status": "incomplete"  
}
```

3.2.7.2 HTTP Status Codes

3.2.7.2.1 200 OK

The request is successful, and the submission remains on the processing queue.

3.2.7.2.2 303 See Other

This response is returned when the submission has been completely processed and removed from the queue. This response will contain an HTTP header called location which will be a URL pointing to where the user can retrieve their completed submission.

3.2.8 Batch Submission Completed Submission HTTP Definition

The web service for retrieving completed batch queries against the property data hub supports the HTTP GET method. The structure of the URL is as follows:

<https://www.floodre.co.uk/service/property/renewals/{insurerId}/{submissionId}>

3.2.8.1 Example JSON Completed renewals submission Response

```
{
  "frid": "de305d54-75b4-431b-adb2-eb6b9e546013",
  "uprn": "",
  "rm_udprn": "",
  "address_line_1": "1",
  "address_line_2": "house name",
  "address_line_3": "street",
  "address_line_4": "town",
  "address_line_5": "county",
  "address_line_6": "",
  "address_line_7": "",
  "postcode": "EX1 1EX",
  "floodre_data": { "tax_band": "A", "built_before_2009": true }
}
```

3.2.8.2 Example CSV Queue Response

frid,uprn,rm_udprn,address_line_1, address_line_2, address_line_3, address_line_4, address_line_5,
 address_line_6, address_line_7,postcode,tax_band,built_before_2009

de305d54-75b4-431b-adb2-eb6b9e546013,,,1,house name,line1,line2,line3,,,,EX1 1EX,A,true

29463f4c-b68b-11e4-a71e-12e3f512a338,,,2,house name,line1,line2,line3,,,,EX1 1EX,B,false

3.3 Offline Property Data Hub

A version of the Property Data Hub information can be downloaded from the application for offline use.

This service will only listen for GET requests, and the response will be a zipped csv document containing the details of each of the addresses on the Property Data Hub.

<http://www.floodre.co.uk/service/properties>

4 USER MANAGEMENT

The User Management System is a Web Portal, backed by RESTful web services. It is secured with the same mechanisms as the application but is only viewable by agreed super users. It is used to create new users / update passwords / renew and issue digital certificates and revoke accounts.

5 DATA WAREHOUSE FEEDS

Extracts are fed to the Managing Agent's Data Warehouse through a scheduled job service that collects data from the system, packages it up and places it onto the supplied SFTP server. This is an internal service to the Managing Agent and there is no Insurer interface to this.

6 WEB PORTAL

The Web Portal is a Website, secured by digital certificate that provides an interface to some of the web services. It is implemented through directly calling and parsing the responses of those services.

6.1 Browser Support

The Managing Agent supports the current and previous main versions of the major browser types. New version releases will need to be impact assessed and approved before being supported, with any Website redevelopment being completed during change control.

7 COMMON HTTP STATUS CODES

7.1 404 Not Found

This is used across the system for GET requests where the document requested by the URL cannot be found on the system. For any other HTTP method this is more likely to be returned in the case of mistyped URLs.

7.2 401 Unauthorised

The user has not provided the required authentication for the service. All web services in the application require both digital certificates, usernames and passwords to access.

7.3 403 Forbidden

The user has supplied authentication, but they do not possess the required permissions to use the service requested.

7.4 405 Method Not Allowed

This is returned in the case of calling any of the web services with an HTTP method that is not supported e.g. calling HTTP GET on the bordereaux submission service.

7.5 415 Unsupported Media Type

These services all accept JSON and CSV documents. The Content-Type HTTP request header must match the format of the incoming document:

Format	Content-Type
JSON	application/json
CSV	text/csv

7.6 500 Internal Server Error

This status will be returned, if an error occurs during processing of the document on the server that cannot be handled. The response body will be a JSON document giving an explanation of the error that occurred.

8 HTTP REQUEST HEADERS

The HTTP Request headers are common across all of the web services.

8.1.1 Accept

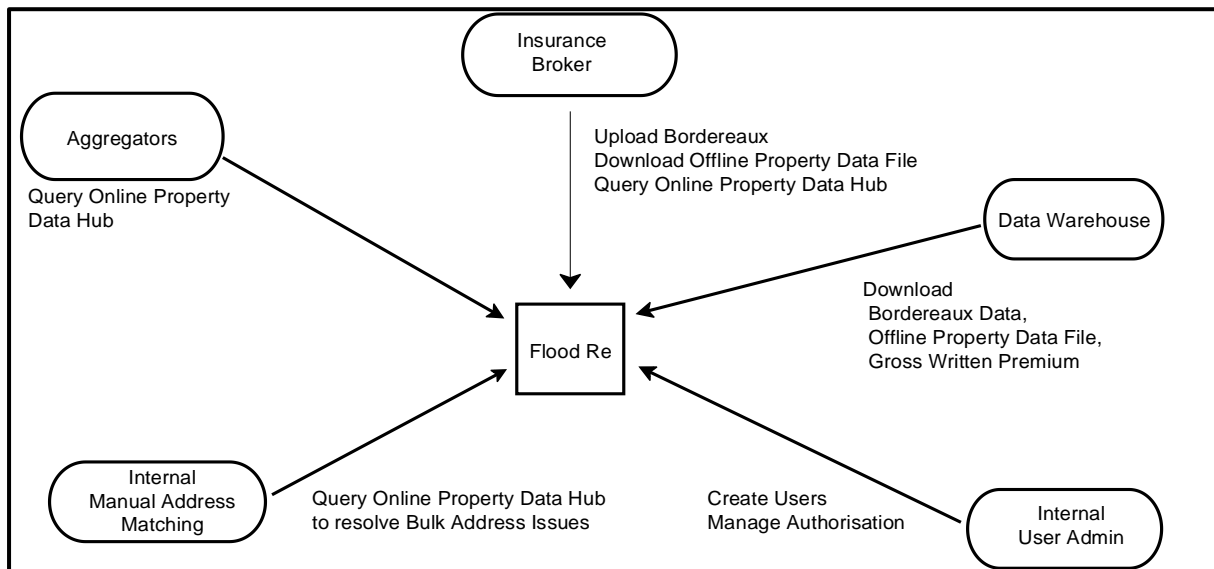
The value of this header describes the content type of the response.

8.1.2 Authorisation

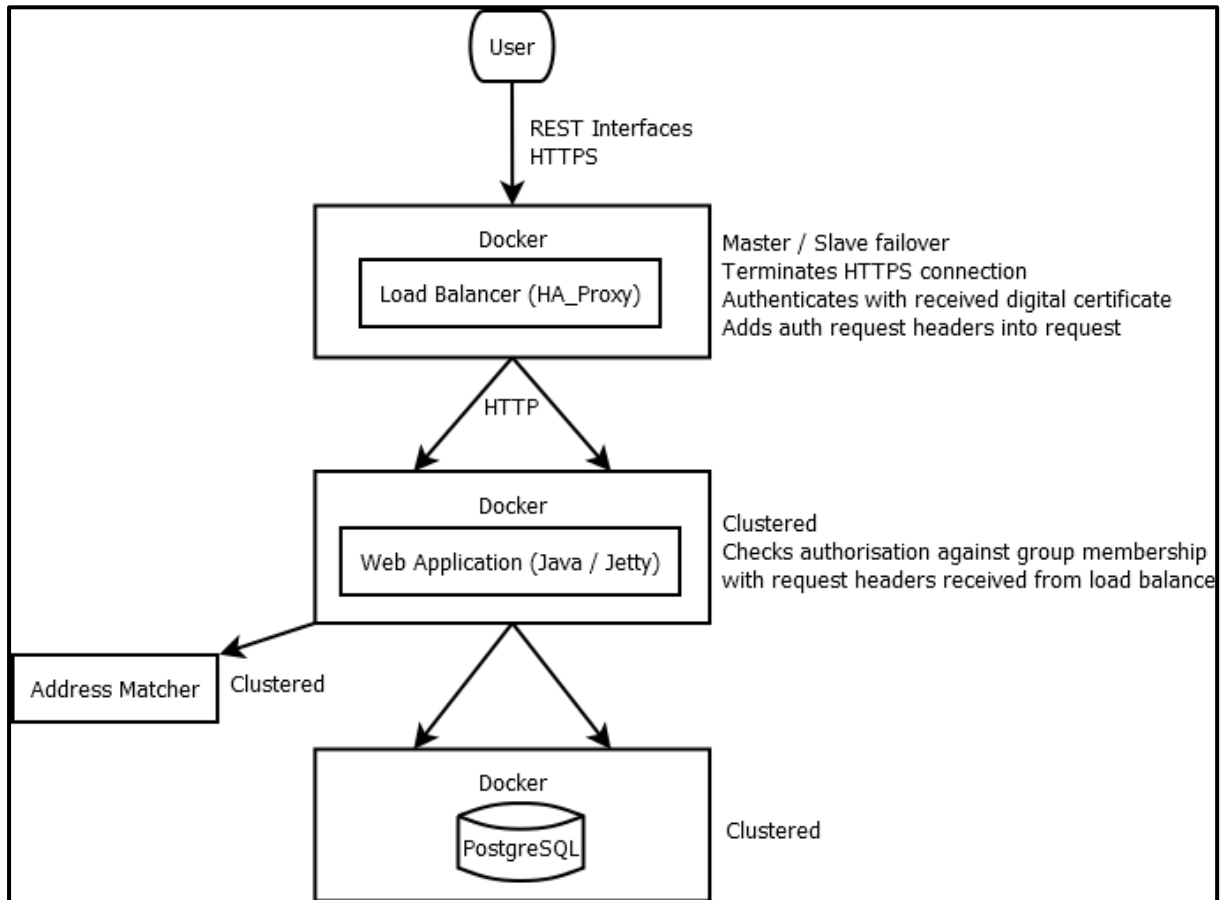
HTTP Basic authentication header, this should contain the md5 hash of the user's password.

9 DIAGRAMS

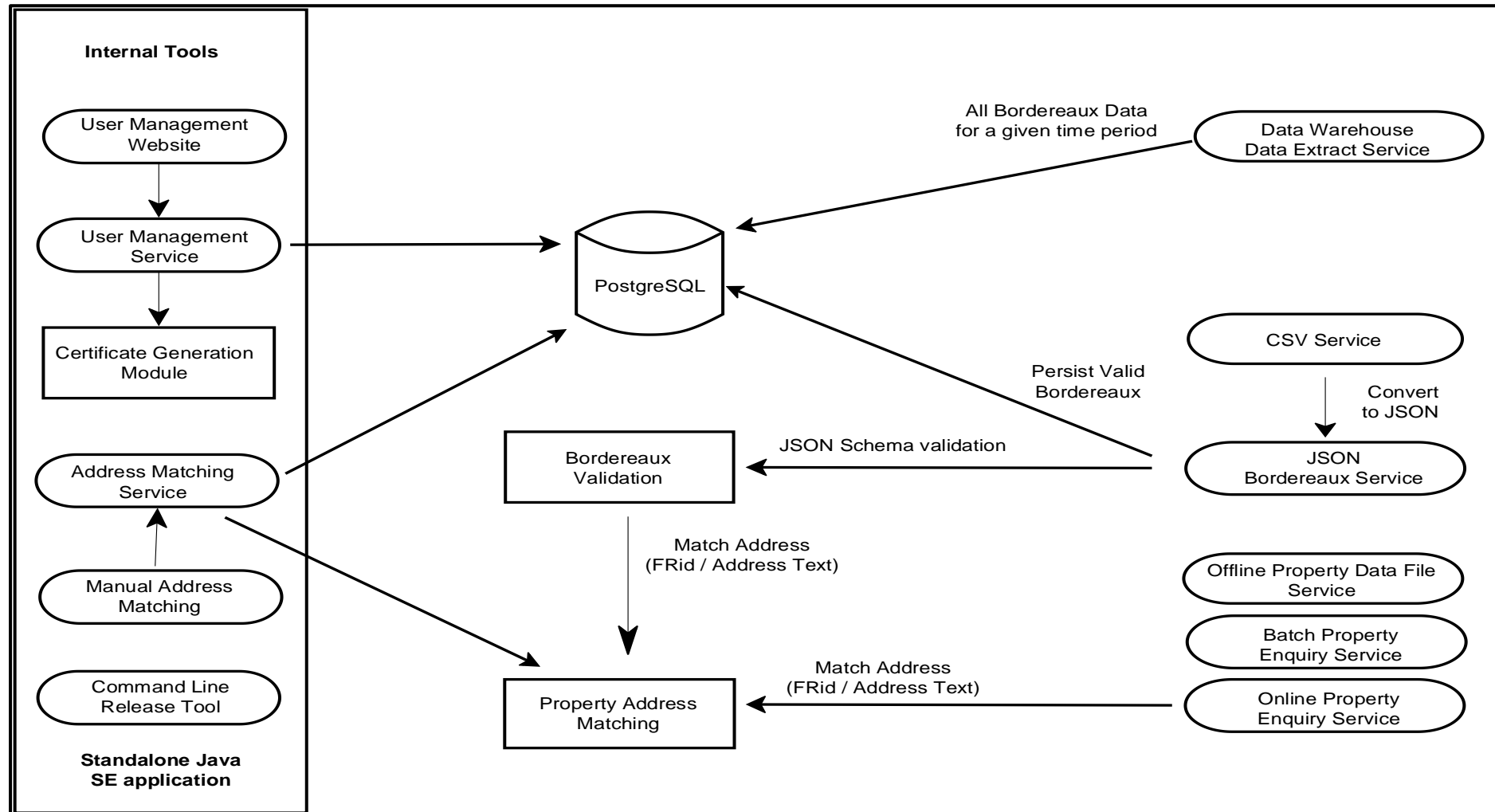
9.1 Context



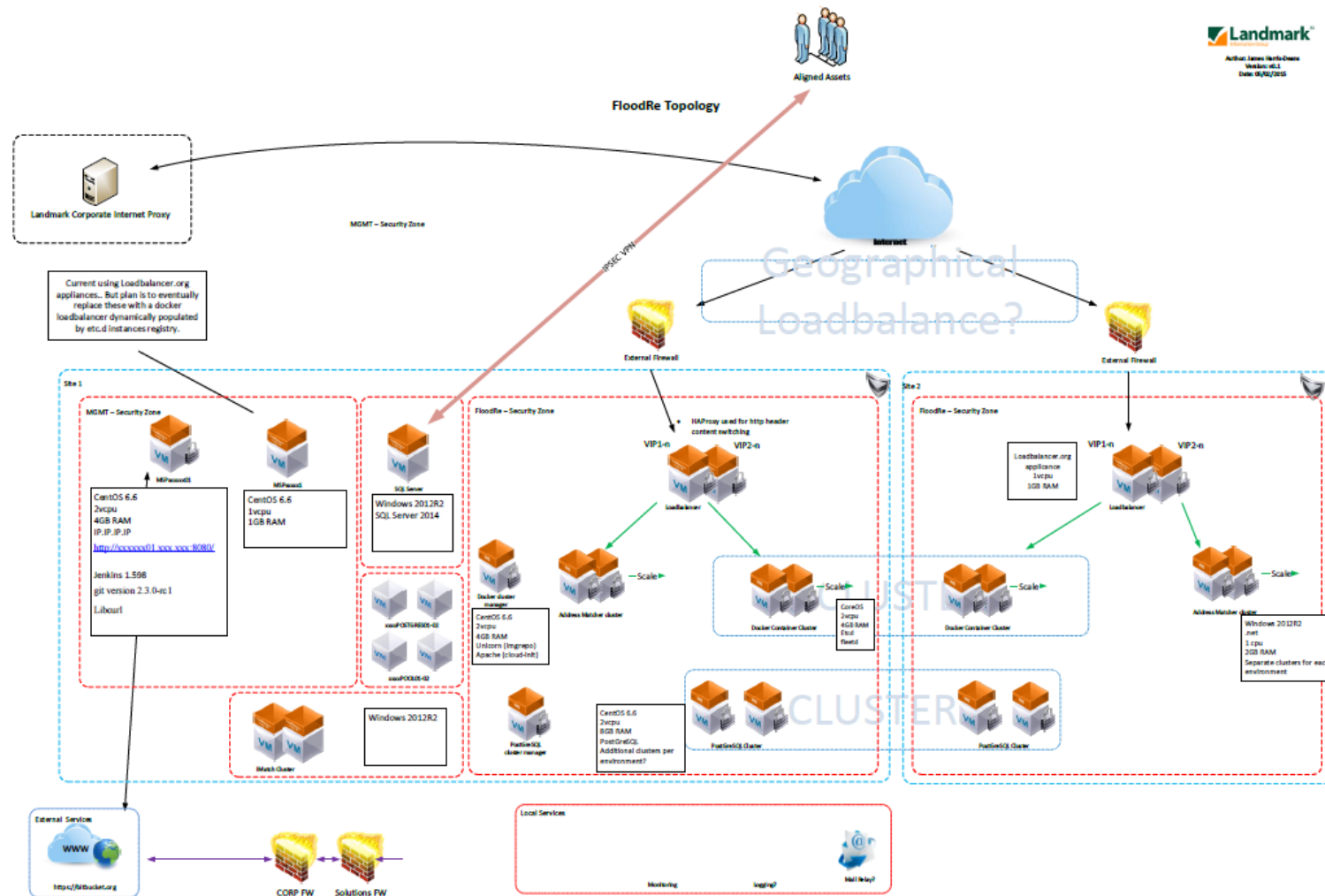
9.2 Container



9.3 Component



9.4 Proposed Topology Diagram



10 APPENDIX 1: SCHEMAS

10.1 Underwriting

```
{
  "type": "object",
  "properties": {
    "date": { "$ref": "date.schema.json" },
    "month": {
      "type": "string",
      "enum": [
        "January",
        "February",
        "March",
        "April",
        "May",
        "June",
        "July",
        "August",
        "September",
        "October",
        "November",
        "December"
      ]
    },
    "version": { "type": "integer" },
    "floodre_treaty_reference_number": { "type": "integer" },
    "insurer": {
      "type": "object",
      "properties": {
        "id": {
          "type": "string",
          "pattern": "[0-9]{5}"
        },
        "name": { "type": "string" },
        "fca_number": { "type": "integer" }
      },
      "required": ["id", "name", "fca_number"],
      "additionalProperties": false
    },
    "line_count": { "type": "integer" },
    "total_premium_payment": { "type": "number" },
    "underwriting": {
      "type": "array",
      "items": {
        "type": "object",
        "properties": {
          "insurer_reference": { "type": "string" },
          "insurer_brand": { "type": "string" },
          "policy_transaction_type": {
            "oneOf": [
              {
                "$ref": "mta-transaction-type.schema.json"
              }
            ]
          }
        }
      }
    }
  }
}
```

```

    {
      "$ref": "cancellation-transaction-type.schema.json"
    },
    {
      "$ref": "reinstatement-transaction-type.schema.json"
    },
    {
      "$ref": "simple-transaction-type.schema.json"
    }
  ],
  "cover_commences": {
    "$ref": "date.schema.json"
  },
  "total_premium_payable": {
    "$ref": "money.schema.json"
  },
  "term": {
    "type": "object",
    "properties": {
      "effective_start_date": {
        "$ref": "date.schema.json"
      },
      "effective_end_date": {
        "$ref": "date.schema.json"
      }
    },
    "required": [
      "effective_start_date",
      "effective_end_date"
    ],
    "additionalProperties": false
  },
  "transaction": {
    "type": "object",
    "properties": {
      "effective_start_date": {
        "$ref": "date.schema.json"
      },
      "sequence_number": {
        "type": "integer"
      }
    },
    "required": [
      "effective_start_date",
      "sequence_number"
    ],
    "additionalProperties": false
  },
  "property": {
    "type": "object",
    "properties": {
      "FRid": {
        "type": "string",
        "format": "uuid"
      },
      "tax_band_derivation": {
        "type": "string",
        "enum": [

```

```

    "Property Hub",
    "Insurer"
  ],
  },
  "type": {
    "type": "string",
    "enum": ["Detatched House",
"End Terrace House", "House", "Mid Terrace House", "Semi-Detatched House",
"Terraced House", "Basement Flat", "Flat", "Ground Floor Flat", "Other Floor
Flat", "Bungalow", "Mid Terraced Bungalow", "Detatched Bungalow", "End Terrace
Bungalow", "Semi-Detatched Bungalow", "Terraced Bungalow", "Maisonette", "Building
Under Construction", "Chalet", "Halls of Residence", "House Boat", "Mansion",
"Park Home", "Residential Caravan", "Rooms", "Service Flat Within Employers
Premises", "Show House", "Unknown"]
  },
  "country": {
    "type": "string",
    "enum": [
"England",
"Wales",
"Scotland",
"Northern Ireland"
    ]
  },
  },
  "use": {
    "type": "string",
    "enum": [
"Policyholder
Residence", "Second Home", "Multiple Residential Units", "Not Defined"
    ]
  },
  },
  "number_of_storeys": {
    "type": "integer"
  },
  },
  "number_of_bedrooms": {
    "type": "integer"
  },
  },
  "resilience_work": {
    "type": "boolean"
  },
  },
  "construction": {
    "type": "object",
    "properties": {
      "wall": {
        "type": "string",
        "enum":
["Aluminium", "Asbestos", "Brick", "Bungaroosh", "Clay-Lump/Adobe", "Clunch", "Cob
Construction", "Concrete", "Corrugated Iron", "Essex Construction", "Fibreglass
Construction", "Flint", "Glass", "Lathe And Plaster", "Metal", "Mundic Block",
"Plastic", "Prefabricated Building - Combustible Materials", "Prefabricated
Building - Non Combustible Materials", "Standard Construction", "Steel Frame",
"Steel Frame/Brick", "Steel Frame/Render Or Pebbledash", "Steel Frame/Tile",
"Steel Frame/Wood Shiplap", "Stone", "Stramit Construction", "Straw Bale",
"Structurally Insulated Panels (SIPs)", "Timber", "Timber Frame", "Timber
Frame/Brick", "Timber Frame/Lathe And Plaster", "Timber Frame/Stone", "Timber
Frame/Timber", "Timber/Plaster", "Wattle And Daub Construction", "Woodwall",
"Woodwork Construction", "Not Covered By Any Other Item On The List"]
      },
      "roof": {

```

```

    "string",
    [
      "Aluminium", "Asbestos", "Asphalt", "Concrete", "Copper", "Corrugated Iron",
      "Ethylene Propylene Diene Monomer EPDM", "Felt On Timber", "Fibreglass", "Glass",
      "Green Roofs", "Lead", "Metal", "Plastic", "Polycarbonate", "Reinforced PVC",
      "Shingle", "Shingle - Asphalt", "Shingle - Pine/Spruce/Cedar", "Slate", "Standard
      Construction", "Stramit", "Thatch - Fibre", "Thatch - Reed", "Tile", "Timber",
      "Turnerised", "Woodwork Construction", "Zinc", "Not Covered By Any Other Item On
      The List"
    ],
    {
      "type": "enum",
      "enum": [
        "Aluminium", "Asbestos", "Asphalt", "Concrete", "Copper", "Corrugated Iron",
        "Ethylene Propylene Diene Monomer EPDM", "Felt On Timber", "Fibreglass", "Glass",
        "Green Roofs", "Lead", "Metal", "Plastic", "Polycarbonate", "Reinforced PVC",
        "Shingle", "Shingle - Asphalt", "Shingle - Pine/Spruce/Cedar", "Slate", "Standard
        Construction", "Stramit", "Thatch - Fibre", "Thatch - Reed", "Tile", "Timber",
        "Turnerised", "Woodwork Construction", "Zinc", "Not Covered By Any Other Item On
        The List"
      ]
    },
    {
      "required": ["wall", "roof"],
      "additionalProperties": false
    },
    {
      "basement": {
        "type": "object",
        "properties": {
          "present": { "type": "boolean" },
          "usage": {
            "type": "enum",
            "enum": [
              "Dwelling", "Unknown"
            ]
          },
          "flood_protection": {
            "type": "enum",
            "enum": [
              "Undefined"
            ]
          }
        }
      },
      "required": ["present"],
      "additionalProperties": false
    },
    {
      "eligibility_criteria": { "type": "boolean" },
      "rebuilding": {
        "type": "object",
        "properties": {
          "cost": { "$ref": "money.schema.json" },
          "basis": { "type": "string" }
        }
      },
      "required": ["cost"],
      "additionalProperties": false
    },
    {
      "addresses": {
        "type": "array",
        "items": {
          "type": "object",

```

```
{ "type": "string" },
"type": "string" },
"type": "integer" },
"type": "string" },
"type": "string" },
"type": "string" },
"type": "string" },
"string",
```

```
"A", "B", "C", "D", "E", "F", "G", "H", "I"
```

```
"postcode", "tax_band"
```

```
false
```

```
"type", "use", "construction",
"rebuilding", "addresses"
```

```
"premium.schema.json" },
```

```
"premium.schema.json" },
```

```
"money.schema.json" }
```

```
"total_payable"],
```

```
"properties": {
  "house_number":
    "house_name": {
      "floor_level": {
        "line1": {
          "line2": {
            "line3": {
              "postcode": {
                "tax_band": {
                  "type":
                    "enum": [
                      ]
                }
              },
              "required": [
                "line1",
              ],
              "additionalProperties":
```

```
},
"minItems": 1,
"maxItems": 3,
"additionalItems": false
```

```
},
"required": [
  "FRid", "tax_band_derivation",
  "eligibility_criteria",
```

```
],
"additionalProperties": false
```

```
},
"premium": {
  "type": "object",
  "properties": {
    "building": { "$ref":
      "contents": { "$ref":
        "total_payable": { "$ref":
      },
      "required": ["building", "contents",
        "additionalProperties": false
```

```
},
"coverage": {
```

```

    "type": "object",
    "properties": {
      "building": {
        "type": "object",
        "properties": {
          "sum_blanket_limit": {
            "$ref": "money.schema.json" },
            "specific_sum_insured": {
              "$ref": "money.schema.json" },
              "rebuilding_cost": {
                "type": "number" },
                "rebuilding_cost_indicator": {
                  "type": "string",
                  "enum": [
                    "Insured",
                    "declared estimate",
                    "Calculated by Insurer", "Provided by Surveyor"
                  ]
                },
                "transaction_rating_date": { "$ref": "date.schema.json" },
                "excess_amount": { "$ref": "money.schema.json" },
                "alternative_accomodation_limit": { "$ref": "money.schema.json" }
              },
              "required": [
                "transaction_rating_date", "excess_amount",
                "alternative_accomodation_limit"
              ],
              "additionalProperties": false
            },
            "contents": {
              "type": "object",
              "properties": {
                "sum_blanket_limit": { "$ref": "money.schema.json" },
                "actual_sum_insured": { "$ref": "money.schema.json" },
                "transaction_rating_date": { "$ref": "date.schema.json" },
                "excess_amount": { "$ref": "money.schema.json" },
                "alternative_accommodation_limit": { "$ref": "money.schema.json" },
                "high_value_fine_art_items_insured": { "type": "boolean" }
              },
              "required": [
                "actual_sum_insured",
                "excess_amount",
                "alternative_accomodation_limit", "high_value_fine_art_items_insured"
              ],
              "additionalProperties": false
            }
          }
        }
      }
    }
  }

```

```
    }
    },
    "required": ["building", "contents"],
    "additionalProperties": false
  },
  "required": [
    "insurer_reference", "policy_transaction_type",
    "cover_commences", "total_premium_payable", "term", "transaction",
    "property", "premium", "coverage"
  ],
  "additionalProperties": false
},
"minItems": 1,
"additionalItems": false
}
},
"required": [
  "date", "month", "version", "floodre_treaty_reference_number",
  "total_premium_payment", "insurer", "line_count", "underwriting"
],
"additionalProperties": false
}
```


10.2 Underwriting Simple Transaction Type

```
{  
  "type": "string",  
  "enum": ["New Business", "Renewal", "Void From Inception"]  
}
```

10.3 Underwriting Cancellation Transaction Type

```
{
  "type": "object",
  "properties": {
    "type": {
      "type": "string",
      "pattern": "^Cancellation$"
    },
    "reason": {
      "type": "string",
      "enum": [
        "Cxl Sections Removed from Policy", "Cxl Complete",
        "Cal Cooling off Period",
        "Policy no longer valid for Flood Re reinsurance",
        "Mis Representation No Premium Due",
        "Mis Representation Full Premium Due",
        "No Premium Paid", "Not Defined"
      ]
    }
  },
  "required": ["type", "reason"],
  "additionalProperties": false
}
```

10.4 Underwriting Date

```
{  
  "type": "string",  
  "pattern": "^[0-9]{4}(-[0-9]{2}){2}$"  
}
```

10.5 Underwriting Money

```
{  
  "type": "string",  
  "pattern": "^£([1-9][0-9]*|0)(\\.[0-9]{2})?$$"  
}
```

10.6 Underwriting MTA Transaction Type

```
{
  "type": "object",
  "properties": {
    "type": {
      "type": "string",
      "pattern": "^Mid Term Adjustment$"
    },
    "reason": {
      "type": "string",
      "enum": [
        "New Address", "Addition or Deletion of Sections",
        "Change to AA Limit", "Change to Building Sum Insured",
        "Change to Contents Sum Insured",
        "Cancel - Reinstatement", "Not Defined"
      ]
    }
  },
  "required": ["type", "reason"],
  "additionalProperties": false
}
```

10.7 Underwriting Reinstatement Transaction Type

```
{
  "type": "object",
  "properties": {
    "type": {
      "type": "string",
      "pattern": "^Reinstatement$"
    },
    "reason": {
      "type": "string",
      "enum": [
        "Lapsed in Error",
        "Cancelled in Error",
        "Premium Received",
        "Not Defined"
      ]
    }
  },
  "required": ["type", "reason"],
  "additionalProperties": false
}
```

10.8 Underwriting Premium

```
{
  "type": "object",
  "properties": {
    "new_annual": { "$ref": "money.schema.json" },
    "transaction": { "$ref": "money.schema.json" },
    "rating_date": { "$ref": "date.schema.json" }
  },
  "required": ["new_annual", "transaction", "rating_date"],
  "additionalProperties": false
}
```

10.9 Claims

```
{
  "type": "object",
  "properties": {
    "date": { "type": "string" },
    "month": {
      "type": "string",
      "enum": [
        "January", "February", "March", "April", "May", "June",
        "July", "August", "September", "October", "November", "December"
      ]
    },
    "version": { "type": "integer" },
    "floodre_treaty_reference_no": { "type": "integer" },
    "insurer": {
      "type": "object",
      "properties": {
        "id": {
          "type": "string",
          "pattern": "[0-9]{5}"
        },
        "name": { "type": "string" },
        "fca_number": { "type": "integer" }
      },
      "required": ["id", "name", "fca_number"],
      "additionalProperties": false
    },
    "excess": {
      "type": "object",
      "properties": {
        "buildings": { "$ref": "excess.schema.json" },
        "contents": { "$ref": "excess.schema.json" }
      },
      "required": ["buildings", "contents"],
      "additionalProperties": false
    },
    "overall_total_requested_this_time": { "$ref": "money.schema.json"
  },
  "line_count": { "type": "integer" },
  "claims": {
    "type": "array",
    "items": {
      "type": "object",
      "properties": {
        "insurer_brand": { "type": "string" },
        "insurer_policy_reference": { "type": "string" },
        "FRid": { "type": "string" },
        "insurer_claim_number": { "type": "integer" },
        "insurer_latest_claim_movement_number": { "type":
"integer" },
        "date_of_loss": { "type": "string" },
        "time_of_loss": { "type": "string" },
        "date_of_notification": { "type": "string" },

```



```

    },
    "initial_reserve": { "$ref": "money.schema.json"
    },
    "initial_reserve_type": {
      "type": "string",
      "enum": [
        "Property Owner", "Insurer",
        "Surveyor", "Unknown"
      ]
    },
    "claim_status": { "type": "string" },
    "claim_reopened_reason_code": {
      "type": "string",
      "enum": [
        "More Information", "Not Defined"
      ]
    },
    "claim_repudiation_code": {
      "type": "string",
      "enum": [
        "Not Covered", "Misrepresentation",
        "Policy Not In Force", "Not Defined"
      ]
    },
    "claim_settlement_date": { "type": "string" },
    "claim_closed_date": { "type": "string" },
    "cat_event_code": { "type": "string" },
    "type_of_flooding": {
      "type": "string",
      "enum": [
        "River", "Coastal", "Run-off",
        "Ground Water", "Flood - Non-Coastal",
        "Flood - Backing up of Drains",
        "Reservoir"
      ]
    },
    "flood_height_at_property_ft": { "type":
    "integer" },
    "buildings": {
      "type": "object",
      "properties": {
        "excess_amount_applied": { "$ref":
        "money.schema.json" },
        "initial_reserve": { "$ref":
        "money.schema.json" },
        "current_reserve": { "$ref":
        "money.schema.json" },
        "indemnity": { "$ref":
        "statement.schema.json" },
        "alternative_accommodation": {
        "$ref": "statement.schema.json" },
        "loss_adjuster_fees": { "$ref":
        "statement.schema.json" },
        "specialist_fees": { "$ref":
        "statement.schema.json" },
        "third_party": { "$ref":
        "statement.schema.json" },
        "fos": { "$ref":

```

```

"recovery.schema.json" }

    },
    "required": [
      "excess_amount_applied",
      "initial_reserve", "current_reserve", "indemnity",
      "alternative_accommodation",
      "loss_adjuster_fees", "specialist_fees", "third_party", "fos", "recovery"
    ],
    "additionalProperties": false
  },
  "contents": {
    "type": "object",
    "properties": {
      "high_value_fine_art_item_excluded":
{ "type": "boolean" },
      "statement.schema.json" },
      "$ref": "statement.schema.json" },
      "statement.schema.json" },
      "statement.schema.json" },
      "recovery.schema.json" }

    },
    "required": [
      "high_value_fine_art_item_excluded",
      "indemnity", "alternative_accommodation", "loss_adjuster_fees",
      "specialist_fees", "recovery"
    ],
    "additionalProperties": false
  },
  "combined_excess_amount": { "$ref":
"money.schema.json" },
  "total_incurred": { "$ref": "money.schema.json"
},
  "total_request_this_time": { "$ref":
"money.schema.json" },
  "payment_final": { "type": "boolean" }
},
"required": [
  "insurer_brand", "insurer_policy_reference",
"FRid", "insurer_claim_number", "insurer_latest_claim_movement_number",
  "date_of_loss", "time_of_loss",
"date_of_notification", "initial_reserve", "initial_reserve_type", "claim_status",
  "claim_reopened_reason_code",
"claim_repudiation_code", "claim_settlement_date", "claim_closed_date",
"cat_event_code",
  "type_of_flooding",
"flood_height_at_property_ft", "buildings", "contents", "total_incurred",
  "total_request_this_time", "payment_final"
],
"additionalProperties": false
},
"minItems": 1,
"additionalItems": false
}

```

```
    },  
    "required": [  
        "date", "month", "version", "floodre_treaty_reference_no",  
"insurer", "excess",  
        "overall_total_requested_this_time", "line_count", "claims"  
    ],  
    "additionalProperties": false  
}
```

10.10 Claims Excess

```
{
  "type": "object",
  "properties": {
    "applied": { "type": "boolean" },
    "amount": { "$ref": "money.schema.json" }
  },
  "required": ["applied", "amount"],
  "additionalProperties": false
}
```

10.11 Claims Money

```
{  
  "type": "string",  
  "pattern": "^£([1-9][0-9]*|0)(\\.[0-9]{2})?$$"  
}
```

10.12 Claims Recovery

```
{
  "type": "object",
  "properties": {
    "type": { "type": "string" },
    "received": { "$ref": "money.schema.json" },
    "outstanding": { "$ref": "money.schema.json" }
  },
  "required": ["received", "outstanding"],
  "additionalProperties": false
}
```

10.13 Claims Statement

```
{  
  "type": "object",  
  "properties": {  
    "paid": { "$ref": "money.schema.json" },  
    "outstanding": { "$ref": "money.schema.json" }  
  },  
  "required": ["paid", "outstanding"],  
  "additionalProperties": false  
}
```

10.14 Errors

```
{
  "title": "Errors",
  "type": "array",
  "items": {
    "type": "object",
    "properties": {
      "field": { "type": "string" },
      "code": {
        "type": "string"
      },
      "message": { "type": "string" }
    },
    "required": ["message"],
    "additionalProperties": false
  },
  "minItems": 1,
  "additionalItems": false
}
```


10.15 Renewals

```
{
  "type": "array",
  "items": {
    "type": "object",
    "properties": {
      "floodre_property_id": { "type": "string", "format": "uuid" },
      "additional_ids": {
        "type": "object",
        "properties": {
          "paf": { "type": "string" },
          "address_base": { "type": "string" }
        },
        "additionalProperties": false
      },
      "house_number": { "type": "string" },
      "house_name": { "type": "string" },
      "line1": { "type": "string" },
      "line2": { "type": "string" },
      "line3": { "type": "string" },
      "postcode": { "type": "string" }
    },
    "additionalProperties": false
  }
}
```

10.16 Matched Address

```
{
  "title": "Matched Address",
  "type": "object",
  "properties": {
    "floodre_property_id": { "type": "string", "format": "uuid" },
    "additional_ids": {
      "type": "object",
      "properties": { "paf": { "type": "string" }, "address_base": { "type": "string" } },
      "additionalProperties": false
    },
    "house_number": { "type": "string" },
    "house_name": { "type": "string" },
    "line1": { "type": "string" },
    "line2": { "type": "string" },
    "line3": { "type": "string" },
    "postcode": { "type": "string" },
    "floodre_data": {
      "type": "object",
      "properties": {
        "tax_band": { "type": "string" },
        "built_before_2009": { "type": "boolean" }
      },
      "required": ["tax_band", "built_before_2009"],
      "additionalProperties": false
    }
  },
  "additionalProperties": false
}
```

10.17 Matched Addresses

```
{  
  "title": "Matched Addresses",  
  "type": "array",  
  "items": { "$ref": "http://www.floodre.co.uk/service/schema/matched-address.json" }  
}
```

11 APPENDIX 2: ATTACHMENTS

JSON files are plain text documents that can be opened with any text editor such as Notepad, VIM, or Sublime Text.

Schema Files
claims/claims.schema.json
claims/excess.schema.json
claims/money.schema.json
claims/recovery.schema.json
claims/statement.schema.json
errors/errors.schema.json
matched-addresses/matched-address.schema.json
matched-addresses/matched-addresses.schema.json
renewals/renewals.schema.json
underwriting/cancellation-transaction-type.schema.json
underwriting/date.schema.json
underwriting/money.schema.json
underwriting/mta-transaction-type.schema.json
underwriting/premium.schema.json
underwriting/reinstatement.schema.json
underwriting/simple-transaction-type.schema.json
underwriting/underwriting.schema.json

Example Resources
claims.json
errors.json
matched-address.json
matched-addresses.json
renewals.json
underwriting.json