

**Peel Park Avenue
Clitheroe**

**Flood risk assessment
for proposed housing**

NGR SD752 407

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INDEX .

1.0 Introduction

2.0 Executive summary

3.0 Existing site, flood risk, history, existing drainage mode

4.0 Proposals, new drainage, sustainable drainage

5.0 Strategic flood risk assessments

6.0 The effect of DEFRA surface water guidelines

7.0 National Planning Policy Framework and Technical Guidance and EA mapping.

8.0 Attachments

1.0 Introduction.

The Peel Park Avenue site is a field area close to the Little Moor area of Clitheroe and on the southeastern side of the town. The site is rough grass at present with a wet/dry ditch on the western side of the site, also the eastern side. New housing is proposed and this report covers flood risks from all sources and new drainage.

2.0 Executive summary

The field area for development is floodzone 1 above any local 1 in 1000 year risk levels. It is currently rough grass and 33 bungalows are proposed. The new hard areas of roads and roofs will generate much more surface water runoff and this will be collected and stored on site to enable the peak outflow rate to be limited to 28.8 l/sec in accord with DEFRA's SC030219 guidance document for new surface water flows from developments. This will improve the current situation of the existing field generating unlimited runoff flows towards Peel Park Avenue in storms and this will reduce and lessen runoff flows and downstream flood risk. A spring is marked on the OS maps as being next to no. 30- this cannot be found on site.

There is an existing surface water drain into Peel Park Avenue surface water sewer from a manhole inside the land belonging to 30 Peel Park Avenue. Applethwaite owns no. 30. This will be the point of outflow for the new development surface water drainage. Foul flows will connect to the existing public foul sewer network in Peel Park Avenue. The site is not at risk from other sources of flood risk as it is higher than the surrounding streams and development to housing will lessen local flood risk because of the on-site storage as required by DEFRA guidelines.

3.0 Existing site, flood risk, history, existing drainage mode.

The existing site is a field area of approx 2 hectares to the south of Peel Park Avenue and next to playing fields. The site has a level range of 97m to 102m AOD with the lowest level in the northwest corner close to Peel Park Avenue. A spring is marked on OS mapping and bases as being next to no. 30 - a site inspection showed this does not now exist. The general ground slope is downhill from 102 at the east side to 97 at the west side. The field is part drained by a ditch which is shown on the site survey but mainly drains onto Peel Park Avenue as the site slopes towards the field entrance. There is another ditch system to the east of the site which flows southwards and then to the south of the site and then southwards again and this joins up with the stream from under the A59 which flows through Higher Standen to join Mearley Brook which flows through Clitheroe. A Roman road is marked along the eastern part of the site.

The site itself is floodzone 1 above any local 1 in 1000 year risk levels and the Environment Agency flood map for planning shows this.

The existing drainage mode of the field is sheet overland flow westwards part to the local western ditch and most out onto Peel Park Avenue. The site is part of an area that drains southwards to eventually flow into the Ribble. A local nearby small catchment has an area of 0.61km² and an annual rainfall depth of 1250mm. DPSBAR the average bedslope is 90.1m /km and BFIHOST is 0.346 indicating on average less absorbent soils. The site itself is part of a similar larger catchment of area of 6.38km².

The small Clitheroe catchment has a response time of approx 2.1 hours. Peak rainfall rates are:

1 in 2.3 year storm (QBAR)- 17 mm/hr
1 in 30 year storm-38 mm/hr
1 in 100 year storm- 53 mm/hr

The local ditch and stream systems are at times unclear from general mapping. The www.gov.uk Jflow/LIDAR surface water mapping whilst approximate (see DEFRA guidance) is of assistance in this case as is a site walkover which has been very useful. The eastern wet/dry ditch starts next to 1 Dyke Nook and flows south- photo 18 shows the eastern stream and its field at a lower level than the site. The Jflow/LIDAR 1 in 1000 year mapping shows the site as not at risk.

4.0 Proposals, new drainage, sustainable drainage.

The proposals are to build 33 bungalows on the site. The new access will be from Peel Park Avenue. The overall site area is approx 2 ha and the developed area will be approx 1.75 ha with the Roman Road area on the eastern side being public open space. Foul drainage will connect to the public foul network and surface water will be stored on site in accord with current DEFRA guidance and discharged at the QBAR greenfield runoff rate of 28.8 l/sec or less to the surface water drain in the garden of no. 30.

An in principle surface water storage volume of 422m³ is shown by the HR Wallingford spreadsheet printout based on 30% climate change central allowance. In view of the site ground conditions being less absorbent (see below) this will be provided in oversize pipes under roads for up to 1 in 30 year volumes and cellular storage under private areas for volumes from 1 in 30 year to 1 in 100 year plus climate change. All house slab levels will be above back of footpath levels.

The BFIHOST catchment average figure of 0.349 indicates less permeable ground for the catchment. The Cranfield Soilscales mapping shows Soilscale 17- slowly permeable seasonally wet acid loamy and clayey soils. This is confirmed by the Geo-Environmental investigation report of August 2017 by Robert E Fry and Associates of Wigan. 12 trial pits were dug and the site is generally clay with no scope for soakage and sustainable drainage soakaway techniques. Trial pit logs are attached, and percolation tests were not carried out as the impermeable clay conditions applied to all the trial holes and therefore all of the site. However where feasible house driveway runoff will be collected in channel drains at the back of footpath and will then soak into planted beds either side of the back of footpath boundary, and all houses will be provided with water butts.

5.0 Strategic Flood Risk Assessments

The Lead Local Flood Authority is Lancashire CC and the 2014-2017 report 'Lancashire & Blackpool Local Flood Risk Management Strategy' lists surface water management and sustainable drainage as requirements for developments. In general terms the site is not in a 'Critical Drainage Area' -CDA -and there is no requirement to restrict flows further than as required by SC030219 which is the DEFRA guideline document for managing new surface water runoff from developments.

6.0 The effect of DEFRA surface water guidelines in SC030219

The basis of the former SR744 superseded by SC030219 is to restrict new surface water runoff rates from new developments to prevent an increase in flood risk to anyone or anything downstream. The DEFRA guidelines ensure that new surface water runoff is collected inside the site and stored and released at a specified low flow rate so that new developments lessen flood risk.

Greenfield sites which are developed for buildings or houses or new hard drained areas have to follow DEFRA guidelines and store the new surface water runoff and release it at a low 1 in 2.3 year existing greenfield runoff rate (QBAR) to the local sewers watercourses or rivers. The 2 hectare existing area as it stands (rough grass 42% runoff- SPRHOST) will at present produce an approx peak runoff rate during 2.1 hour length small local catchment storms as follows:-

1 in 2.3 year storm - peak rainfall rate 17mm/hr- 39 l/sec
1 in 30 year storm -38mm/hr- 88 l/sec
1 in 100 year storm -53mm/hr- 135 l/sec
1 in 100 year + climate change 20% central rain intensity allowance- 63.6 mm/hr- 162 l/sec

The above calculations are approx to simulate an overhead storm and use the peak rainfall rates from the ReFSR/FEH spreadsheet routine.

When development is complete and all the surface water storage is constructed plus the limiting flow controller on the site surface water outlet is installed the maximum new peak surface water flow rates to the local sewer system from the development area will be as follows

1 in 2.3 year storm 28.8 l/sec
1 in 30 year storm 28.8 l/sec
1 in 100 year storm 28.8 l/sec
1 in 100 year + climate change 28.8 l/sec

This is an improvement on existing present day unlimited greenfield flow rates and will lessen downstream flood risk because the existing field will no longer discharge unlimited flow rates onto Peel Park Avenue and into the gullies and surface water sewer. The limiting runoff rate will be the greenfield runoff rate or less subject to a flow figure to be agreed with United Utilities.

7.0 National Planning Policy Framework and Technical Guidance and EA mapping.

The proposed new housing is classed as 'more vulnerable' in Table 2 and is 'appropriate' in floodzone 1 as per Table 3. There is no need for the exception test, or the sequential test.

Types of flooding that could affect the site are:-

1. River- the site is floodzone 1 above any local 1 in 1000 year risk levels
2. Sea- no tidal influence
3. Land- undrained land slopes towards the eastern site boundary and any runoff will flow into the stream adjacent to the site which is lower than the site.
4. Groundwater- there is a spring shown on the OS maps which a site walkover has shown is not there. The site is generally clay as shown by the site investigation with perched water on top of the clay- see SI report.
5. Sewers* there are no local internet reports of sewer surcharge.
6. Reservoirs canals- none nearby.

Environment Agency mapping is as follows:-

Flood map for Planning- the site is floodzone 1

Risk of flooding from rivers and sea- this shows the effect of any flood defences.

Flood warning- this is not applicable to the site.

Groundwater- the site is not in a groundwater protection zone.

Risk of flooding from reservoirs- this shows reservoir risk- all utility company reservoirs are maintained to a 1 in 10,000 year risk standard under the Reservoirs legislation and this is a very rare and unlikely risk.

Risk of flooding from surface water- this mapping shows surface water flood risk. Pluvial mapping is the subject of a separate EA paper made public in November 2013 and is useful in locating possible ground low points and depressions. We quote- 'the conveyance effect of ordinary watercourses or drainage channels is not explicitly modelled'- so whilst the EA mapping shows pathways and confirms the stream paths the mapping generally takes little account of any existing drainage and in practice there is a very low risk. The mapping is based on Jflow software and the EA May 2013 notes '-National Scale Surface Water Flood Mapping Methodology'- state that the method does not take account of existing drainage systems except by subtracting an average rain depth from storm profiles.

Existing land to the east of the site slopes towards it and existing grassland runoff collects in the local ditch/ stream system at the eastern and southern boundaries. Jflow mapping is of use here as it shows no risk or spills onto the site under either 1 in 30 year, 1 in 100 year, or 1 in 1000 year simulated design storms.

8.0 Attachments

This report is a copyright email report and can be transmitted in an email series of attachments or it can be transmitted by dropbox or 'we transfer' with joined up pdf's.

Attachments.(fra02)

Location plans A4

OS plans A3

Site survey A3

Sewer records A3

Cranfield soils data A3

Proposals A3

REFA report extracts and trial pit logs A4

Flood Estimation Handbook CD3 data etc for local catchments A4

HR Wallingford limiting runoff report A4

Environment Agency flood risk mapping A4

Lancashire CC LFRMS extracts

Should you need further data such as survey drawings please email
floodriskengineer@gmail.com

Email files with FRA02

171207fra02

171207attach1-A4

171207attach2-A4

171207attach3-A3

171207attach4-A3

Fra03 additional attachments

A3

Proposed outfall

Jflow plans 1 in 30yr 1 in 100 yr 1 in 1000 yr

Site photos + index and plan

MICHAEL LAMBERT ASSOCIATES

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Director of Community Services
Lancashire CC
PO Box 100
County Hall
Preston PR1 0LD

B2030
19/6/18
FAO Alistair Graham, Flood risk Management-LLFA

Dear Sir

3/2018/0008- proposed housing at 30 Peel Park Avenue, Clitheroe- flood risk and drainage.

We refer to your comments and have walked the site and its local area. We will send the photos separately.

Comment a.

We provided Jflow/LIDAR mapping with our FRA on pages 12, 13, 14 of 171207attach2-A4 attachment and whilst this has limitations as per DEFRA guidance it does give a general assessment. For the avoidance of doubt we attach the same mapping at A3 size. A site walkover showed:-

1. Western boundary- there is no spring here and there is a specific natural channel flowing towards no. 30 which is owned by Applethwaite. We are advised that flow goes into a specific MH which connects to Peel Park Avenue SW sewer.
2. Eastern boundary- there is a specific natural channel here lower than the site as is the adjacent eastern field area and this flows into the southern stream which is itself lower than the site-see photos also the Jflow approx mapping.
3. The proposed site access shows no Jflow surface water risk at 1 in 30 year and as Jflow mapping does not accurately take account of existing drainage, the 1 in 100 year and 1 in 1000 year maps merely show that the roadway will shallow flood in severe storms. Please note that Peel Park Avenue slopes westwards at 1 in 20 average and even intense storms will not give much flow depth in the road gutters.
4. Section 6 of the FRA covered how the new site surface water storage flow rate limit will reduce local flood risk. Currently most of the field runoff will flow unchecked onto Peel Park Avenue roadway and this will cease up to 1 in 100 year plus climate change.

continued.....

CONSULTING CIVIL ENGINEERS

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Roads/rivers/river modelling/sustainable drainage/attenuation/ wetlands/ development infrastructure/feasibility

Workcentres at Winsford & Waterfoot

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Comment b.

We will send the walkover photos via 'we transfer', development with housing will capture and store the existing field runoff and there is no northwest corner spring. We attach a plan showing the new surface water connection and would point out that the current pattern of surface water runoff from the site flowing unchecked onto Peel Park Avenue and into the gullies will cease and a lesser flow rate into the sewer system to be agreed with United Utilities will apply.

Comment c.

The new surface water drainage system will store all volumes up to 1 in 100 year plus 30% climate change storms. All surface water volumes will stay underground and be released via a piped connection to the existing manhole in no 30 Peel Park Avenue. An A3 plan showing this is attached.

Yours faithfully

M.E.Lambert

M.E.Lambert

Attachments

Fra03

A3

Proposed outfall

Jflow plans 1 in 30 yr 1 in 1000 yr 1 in 1000 yr

Site photos in an email series

Phone: 0300-123-6780
Email: Suds@lancashire.gov.uk

Date: 20 February 2018

APPLICATION CONSULTATION RESPONSE

Application Number:	3/2018/0008
Location:	30 Peel Park Avenue, Clitheroe
Proposal:	Demolition of existing dwelling and erection of 34 bungalows for the over 55s with associated access, parking, landscaping and open space.

Thank you for inviting the Lead Local Flood Authority (LLFA) to comment on the above application. The Flood and Water Management Act (FWMA) 2010 introduces a range of new powers, duties and responsibilities and makes Lancashire County Council a Lead Local Flood Authority (LLFA). The Flood and Water Management Act 2010 sets out the requirement for LLFAs to manage 'local' flood risk within their area. 'Local' flood risk refers to flooding or flood risk from surface water, groundwater or from ordinary watercourses.

Comments provided in this representation, including conditions, are advisory and it is the decision of the Local Planning Authority (LPA) whether any such recommendations are acted upon. It is ultimately the responsibility of the Local Planning Authority to approve, or otherwise, any drainage strategy for the associated development proposal. The comments given have been composed based on the current extent of the knowledge of the LLFA and information provided at the time of this response.

Lead Local Flood Authority Position:

The Lead Local Flood Authority **objects** to the development proposal on the following basis:

Objection 1 - Inadequate FRA:

In the absence of an acceptable Flood Risk Assessment (FRA) we object to the grant of planning permission and recommend refusal on this basis for the following reason:

Reason:

The FRA submitted with this application does not fully comply with the requirements set out in paragraph 30 of the Planning Practice Guidance, and therefore paragraph 103 of the NPPF cannot be satisfied. The submitted FRA does not therefore provide a suitable basis for assessment to be made of the flood risks arising from the proposed development. In particular, the submitted FRA fails to:

- a) Adequately assess the risk of surface water flooding to the site; specifically in regards to the surface water flood risk along the eastern and western boundaries of the site and the surface water flood risk around the proposed site access (including impacts on access/egress). The FRA also fails to provide sufficient details relating to mitigation measures that may be required in order to manage the risk of surface water flooding post development.

Whilst it is claimed in section 7 of FRA version 02 dated 07/12/17 that the existing ditch along the eastern boundary will mitigate the risk of overland flooding from higher land, it is noted that no evidence has been provided to substantiate this claim.

- b) Adequately assess the risk of flooding from various sources that are known to be within or on the site boundary. This includes both open watercourses and the spring to the North West corner. The FRA also fails to provide sufficient details relating to mitigation measures that may be required in order to manage the risk of from these sources of flooding (including providing access for future maintenance).
- c) Sufficiently demonstrate that surface water can be safely managed for the lifetime of the development. It is noted that the applicant intends to dispose of surface water via an existing watercourse that is located along the western boundary of the site. Insufficient details have been provided regarding this watercourse and therefore it is unknown whether it is sufficiently sized and in a sufficient condition to accept the flows that will be generated from the site. The FRA should also provide an Indicative drainage plan which includes the location of the proposed outfalls.

Overcoming our objection:

You can overcome our objection by submitting an FRA which covers the deficiencies highlighted above and that demonstrates that the development will not increase flood risk elsewhere and where possible reduces flood risk overall. If this cannot be achieved then we are likely to maintain our objection to the application. Production of a revised FRA will not in itself result in the removal of an objection. The additional evidence requested will also need to be provided.

We ask to be re-consulted with the results of the FRA. We will provide you with bespoke comments within 21 days of receiving formal re-consultation. Our objection will be maintained until an adequate FRA has been submitted.

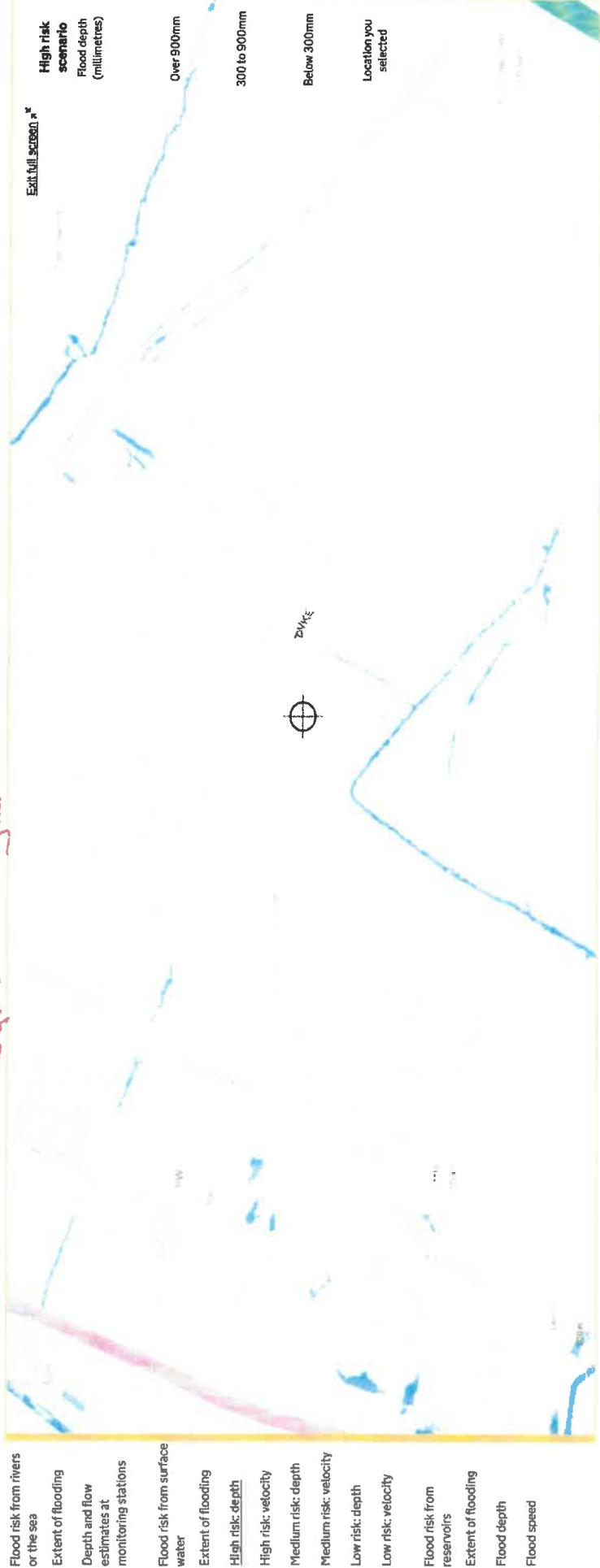
Yours faithfully,

Alistair Graham
Flood Risk Management



Flood 1:- 30 year

Location



- Flood risk from rivers or the sea
- Extent of flooding
- Depth and flow estimates at monitoring stations
- Flood risk from surface water
- Extent of flooding
- High risk: depth
- High risk: velocity
- Medium risk: depth
- Medium risk: velocity
- Low risk: depth
- Low risk: velocity
- Flood risk from reservoirs
- Extent of flooding
- Flood depth
- Flood speed

- Exit full screen
- High risk scenario
- Flood depth (millimetres)
- Over 900mm
- 300 to 900mm
- Below 300mm
- Location you selected

- Flood risk from rivers or the sea
- Extent of flooding
- Depth and flow estimates at monitoring stations
- Flood risk from surface water
- Extent of flooding
- High risk depth
- High risk velocity
- Medium risk: depth
- Medium risk: velocity
- Low risk: depth
- Low risk: velocity
- Flood risk from reservoirs
- Extent of flooding
- Flood depth
- Flood speed

Location

Enter a place or postcode in England

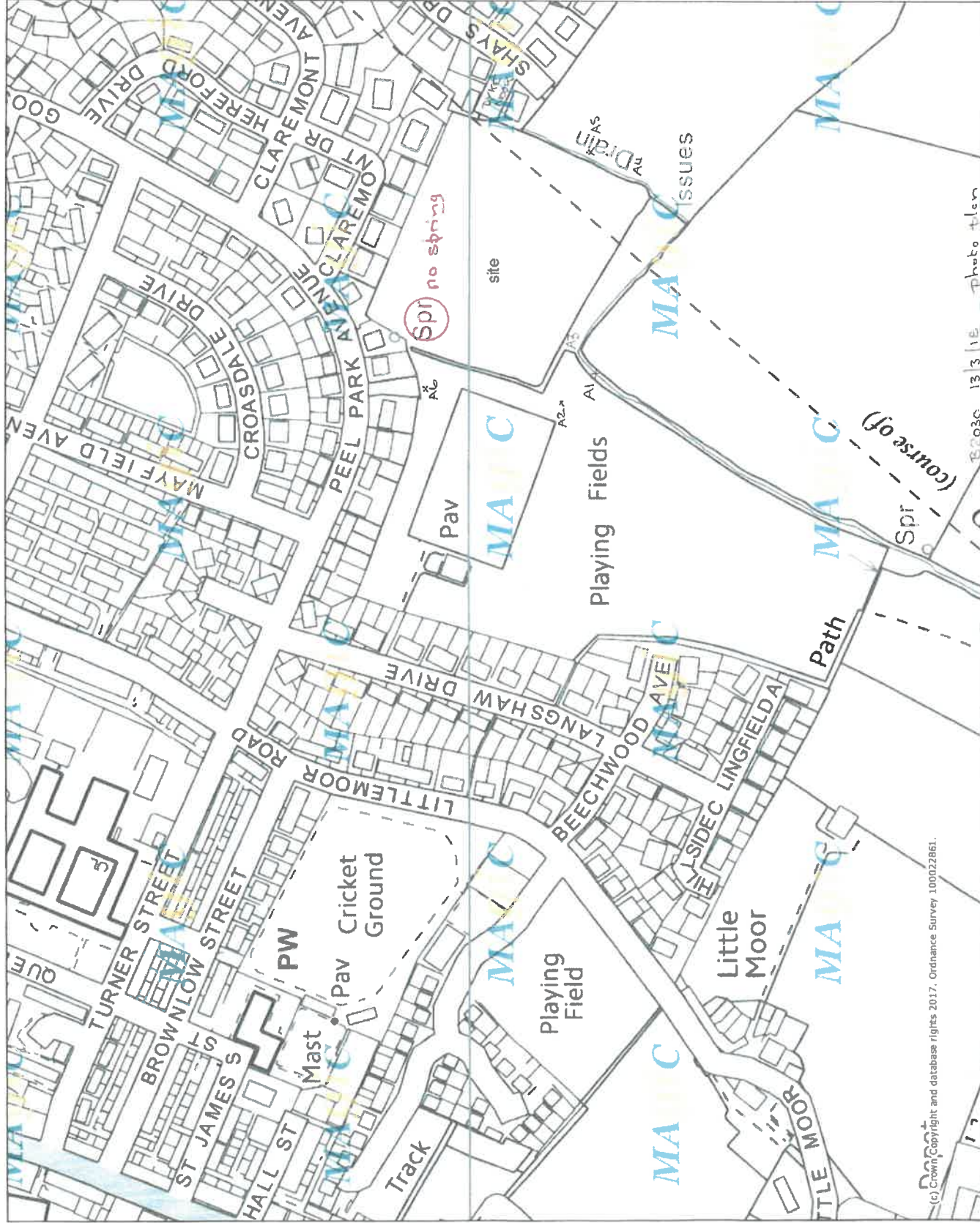


Location

T flow 1 in 1000 year



- Flood risk from rivers or the sea
- Extent of flooding
- Depth and flow estimates at monitoring stations
- Flood risk from surface water
- Extent of flooding
- High risk depth
- High risk velocity
- Medium risk depth
- Medium risk velocity
- Low risk depth
- Low risk velocity
- Flood risk from reservoirs
- Extent of flooding
- Flood depth
- Flood speed



Projection = OSGB36
xmin = 373900
ymin = 440700
xmax = 375200
ymax = 441300

Map produced by MAGiC on 23 August, 2017.
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