

FLOOD RISK ASSESSMENT
and
DRAINAGE STRATEGY

for
ALCHEMIE TECHNOLOGY

PROPOSED DEVELOPMENT

at

BLUE BELL FARM

HIGHER RD, LONGRIDGE, PRESTON, PR3 2YX

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A	Location plan
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1. INTRODUCTION

- 1.1 This flood risk assessment has been produced on behalf of Alchemie Technology in support of a planning application for a development at Blue Bell Farm, Higher Road, Longridge, Preston, PR3 2YX. A location plan is included within Appendix A.
- 1.2 The Flood Risk Assessment (FRA) is compliant with the requirements set out in the National Planning Policy Framework (NPPF) published in March 2012 and the Planning Practice Guidance (PPG) in relation to Flood Risk and Coastal Change, dated April 2015, and describes the existing site conditions and proposed development. It assesses the potential sources of flooding to the site from tidal, fluvial, groundwater, surface water and other sources, taking a risk based approach in accordance with National Policy.
- 1.3 The preliminary drainage strategy describes the existing site conditions and proposed development. It assesses the potential impact of proposals on existing sewers and includes a proposed strategy for the provision of new drainage to serve the proposed development.

Site summary

Site Name	Blue Bell Farm
Location	Higher Road, Longridge
NGR (approx.)	SD630389
Application site area	1.9 ha approx.
Development type	Residential
Vulnerability	More Vulnerable
Indicative Flood Zone	Flood Zone 1
Local Planning Authority	Preston City Council

2. DESCRIPTION OF THE SITE

Existing site

- 2.1 The proposal relates to land (1.9 ha approx.) that lies at Blue Bell Farm, Higher Road, Longridge, Preston, PR3 2YX.
- 2.2 The site is situated on Higher Road, to the northeast of Longridge. Higher Road forms the southern boundary of the site. Surrounding the site are green fields. Farm buildings lie on the southern side of Higher Road directly opposite the development site.
- 2.3 The site comprises a green field and in its southwestern corner is an existing building. The access to the building and the field is from Higher Road and is also in the development site's south-western corner.
- 2.4 A surface water drain in open channel lies approx. 75m to the east of the site. The drain flows to the east and then south under Higher Road to become the Cowley Brook to ultimately discharge into the River Ribble at Ribchester.
- 2.5 Surface water runoff from the development site and the surrounding area discharges into this drain.

Proposed development

- 2.6 It is proposed that the development will comprise a single residential property and minor extensions to the existing building in the southwest corner of the site. The indicative site layout plan is shown on drawing 2982.03 accompanying the planning application.
- 2.7 It is proposed that the access into the developed site will be from the existing access from Higher Road.

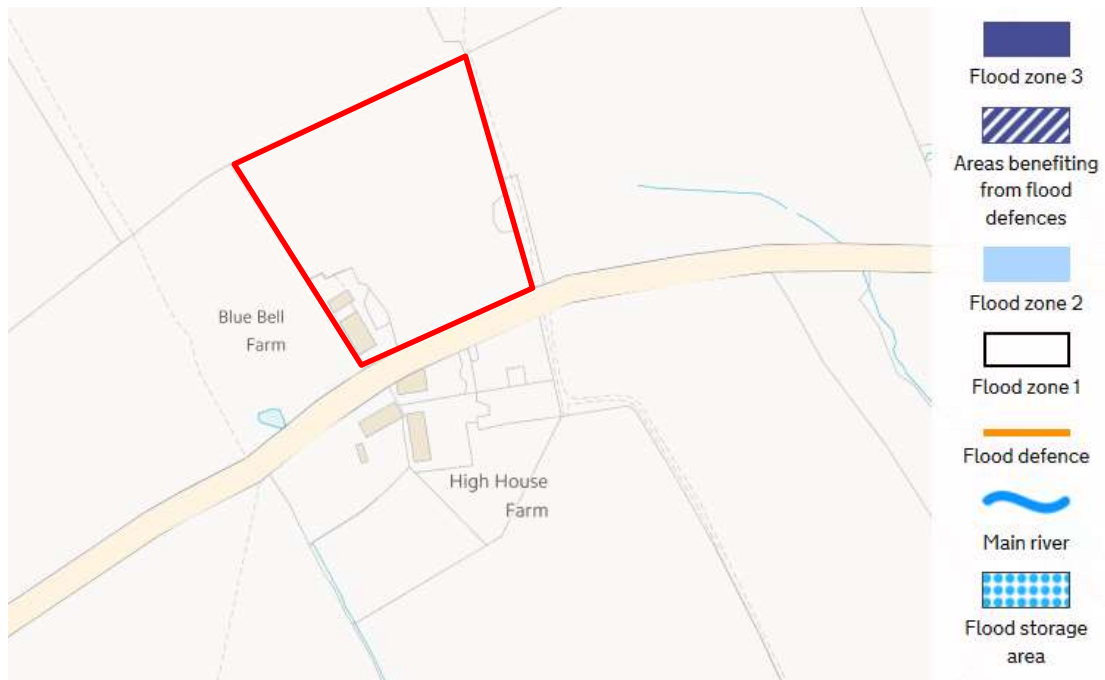
3. SCOPE OF THE ASSESSMENT

Flood risk planning policy

- 3.1 The National Planning Policy Framework (NPPF) sets out the Government's national policies on different aspects of land use planning in England in relation to flood risk. Supporting Planning Practice Guidance (PPG) is also available.
- 3.2 The NPPF sets out the vulnerability to flooding of different land uses. It encourages development to be located in areas of lower flood risk where possible, and stresses the importance of preventing increases in flood risk off site to the wider catchment area.
- 3.3 The NPPF also states that alternative sources of flooding, other than fluvial (river flooding), should also be considered when preparing a Flood Risk Assessment.
- 3.4 As set out in NPPF, local planning authorities should only consider development in flood risk areas appropriate where informed by a site specific Flood Risk Assessment. This document will identify and assess the risk associated with all forms of flooding to and from the development. Where necessary it will demonstrate how these flood risks will be managed so that the development remains safe throughout its lifetime, taking climate change into account.
- 3.5 This Flood Risk Assessment is written in accordance with the NPPF and the Planning Practice Guidance in relation to Flood Risk and Coastal Change.

Flood zones

- 3.6 In investigating the flood risk relating to the site, the Environment Agency flood zone mapping identifies the proposed development site lies within Flood Zone 1. Flood Zone 1 is the lowest risk and is identified as land assessed as having a less than 1 in 1000 annual probability of river or sea flooding (<0.1%).
- 3.7 An extract from the Environment Agency's Flood Zone Map for Planning is shown below.



Strategic Flood Risk Assessment

- 3.8 The site is within the area covered by the Ribble Valley Borough Council, Strategic Flood Risk Assessment, Level 1, Adoption Report, May 2010.
- 3.9 No reference is made to any flood risk issues with regards the site within the SFRA.

Sequential Test

- 3.10 A requirement of NPPF is that developers considering submitting a planning application should consult with the Local Planning Authority at all stages of development to ensure that the Sequential Test is applied at all stages of the planning process. The purpose of the test is to direct new development to areas with the lowest probability of flooding.
- 3.11 Strategic Flood Risk Assessments (SFRA) refine information on the probability of flooding, taking other sources of flooding and the impacts of climate change into account. They provide the basis for applying the Sequential Test, on the basis of the flood zones in the PPG Table 1.
- 3.12 The flood zones are the starting point for this sequential approach. As already stated, the Environment Agency's flood mapping identifies the site as lying within Flood Zone 1, the lowest risk.

- 3.13 With reference to NPPF, Environment Agency Flood Maps and the SFRA, the site lies within an area identified as being potentially developable and following the sequential approach, all of the development is located within Flood Zone 1.
- 3.14 The current development proposals are classified as “More Vulnerable” for residential development. Table 3 within the PPG indicates Flood Risk Vulnerability and Flood Zone ‘compatibility’. Using Zone 1 and the “More Vulnerable” classification for residential use, the PPG considers that a development of this type would be deemed appropriate for development within Flood Zone 1.
- 3.15 Subject to the suitable assessment of flood risk, the development would be considered sequentially preferable in this location.

4. CONSULTATIONS AND DATA ACQUISITIONS

Environment Agency

- 4.1 The Environment Agency's flood zone mapping confirms that the site lies within an area of Flood Zone 1, the lowest risk. There is no record of any historic fluvial flooding occurring at the site.

United Utilities

- 4.2 There are no public sewers within the vicinity of the site.

Private drainage

- 4.3 A private surface water drainage system takes surface water runoff from the existing building into a pond that lies on the eastern boundary of the site. Infiltration occurs at the pond. The pond provides attenuation and its outfall drains to the surface water drain that is in open channel and lies approx. 75m to the east of the site.
- 4.4 Foul water discharges from the site are treated by an onsite septic tank.

Topographical Survey

- 4.5 A topographical survey has been carried out for this site. The site levels fall towards the pond on the eastern boundary of the site.

Site Investigation

- 4.6 The online Soilsmap Viewer has identified the site lying in a region characterised by freely draining slightly acid loamy soils.
- 4.7 This is supported by infiltration tests that have been carried out within the locality of the site.

Site Inspections

- 4.8 A site visit was made to examine site conditions and levels as well as any significant visible features that would affect the flood characteristics of the site. Such inspections are limited to areas that could readily and safely be accessed and no intrusive investigations or drainage surveys were carried out.

5. SOURCES OF FLOOD RISK

Potential Sources of Flood Risk

- 5.1 Potential sources of flood risk to the site are identified below. The significance of these sources is investigated further into Section 6.

Fluvial flooding

- 5.2 The site to be developed is identified as lying within Flood Zone 1 on the Environment Agency's flood maps, land assessed as having an annual probability of flooding of less than 1 in 1000 (<0.1%).
- 5.3 A surface water drain in open channel lies approx. 75m to the east of the site. The drain flows to the east and then south under Higher Road to become the Cowley Brook to ultimately discharge into the River Ribble at Ribchester.

Tidal flooding

- 5.4 The site is a significant distance from the nearest tidal estuary and is, therefore, not at risk of flooding from the sea. The site is not identified as being at risk of flooding from the sea by any Environment Agency Flood Zone maps or within the SFRA for the area. As such, coastal and tidal flooding is not considered further within this assessment.

Canals, reservoirs and other artificial sources

- 5.5 There are no canals or other artificial sources local to the site.
- 5.6 The Environment Agency risk of flooding from reservoirs map identifies the site is not at risk.

Groundwater

- 5.7 Groundwater flooding tends to occur after much longer periods of sustained high rainfall. The areas that are at risk tend to be those low-lying areas where the water table is shallow. Flooding tends to occur in areas that are underlain by major aquifers,

although groundwater flooding is also noted in localised floodplain sands and gravels.

The main causes of groundwater flooding are:

- Natural groundwater rising due to tidal influence, or exceptionally wet periods leading to rapid recharge;
- Groundwater rebound due to cessation of abstraction and mine dewatering;
- Existence of confined aquifers and springs.

- 5.8 There are no recorded incidents of flooding associated with groundwater levels within the site.

Sewers

- 5.9 Flooding from a drainage system occurs when flow entering a system exceeds its discharge capacity, the system becomes blocked or, in the case of surface water sewers, it cannot discharge due to high water level in the receiving watercourse. Sewer flooding is often caused by surface water discharging into the combined sewerage system, sewer capacity is exceeded in large rainfall events causing backing up of flood waters within properties or discharging through manholes.

- 5.10 There are no public sewers within the vicinity of the site.

Pluvial runoff

- 5.11 The Environment Agency Risk of Flooding from Surface Water map indicates the site is at a very low risk of surface water flooding. A very low risk means that each year, this area has a chance of flooding of less than 1 in 1000 (0.1%). A low risk means that each year, this area has a chance of flooding of between 1 in 1000 (0.1%) and 1 in 100 (1%).

- 5.12 It should be noted that surface water flooding can be difficult to predict, much more so than river or sea flooding as it is hard to forecast exactly where or how much rain will fall in any storm. In addition, local features can greatly affect the chance and severity of flooding.

Development drainage

- 5.13 Surface water (including the risk of sewers and culverted watercourses surcharging) poses the highest risk of more frequent flooding. Surface water drainage from new developments is critical in reducing the risk of localised flooding.
- 5.14 If surface water runoff is not managed appropriately, there may be an increased risk presented elsewhere from development drainage, and the aim should be to implement appropriate sustainable drainage systems (SuDS) to treat and contain flows and mimic the existing conditions.
- 5.15 Where possible the preference for dealing with surface water runoff from the developed site is for it to infiltrate back into the ground or alternatively to a waterbody or watercourse. Only if it is not possible for either of these options is surface water from the development to be allowed into public sewers.
- 5.16 The development of the site will introduce no additional impermeable areas on the site as the roof of the proposed residential dwelling is to be grassed such that it blends into the landscape and the small extensions to the existing building will be erected on existing hardstanding areas.
- 5.17 The surface water runoff regime of the site will therefore not be altered and will not have an adverse effect on flood risk elsewhere in the wider catchment.

6. FLOOD RISK ASSESSMENT

- 6.1 This section of the Flood Risk Assessment looks at the flood risk to the site before any mitigation measures are put into place and hence identifies where mitigation will be required. Section 7 continues to explain the mitigation measures proposed and the residual risk following implementation of any proposed mitigation.

Risk of Flooding to Proposed Development

Fluvial Flood Risk

- 6.2 The site to be developed is identified as lying within Flood Zone 1 on the Environment Agency's flood maps, the lowest risk.
- 6.3 There is no fluvial flood risk to the site.
- 6.4 The risk of fluvial flooding to the proposed development is therefore very low.

Canals, reservoirs and other artificial sources

- 6.5 There are no canals or artificial sources that are local to or affect the site.
- 6.6 The Environment Agency risk of flooding from reservoirs map identifies the site is not at risk.
- 6.7 As such the risk of flooding from canals, reservoirs and other artificial sources is low.

Groundwater

- 6.8 Groundwater flooding is not raised as a major issue in the Ribble Catchment Management Plan.
- 6.9 There are no recorded incidents of flooding associated with groundwater levels within the site. The flood risk from groundwater is therefore low.

Sewer Flooding and Pluvial Runoff

- 6.10 There are no public sewers within the vicinity of the site.

- 6.11 Pluvial runoff from heavy rainfall events on adjacent land flows towards the low lying land and a pond that lies on the eastern boundary of the site. The pond outfall drains to the surface water drain that is in open channel and lies approx. 75m to the east of the site.
- 6.12 As such the risk is low from sewer flooding and pluvial runoff.

Effect of the Development on the Wider Catchment

Development Drainage

- 6.13 The development of the site will introduce no additional impermeable areas on the site and the surface water runoff regime of the site will not be altered and will not have an adverse effect on flood risk elsewhere in the wider catchment.
- 6.14 Surface water runoff from the existing site either infiltrates into the ground or runs off into a pond that lies on the eastern boundary of the site. The pond provides attenuation and its outfall drains to the surface water drain that is in open channel and lies approx. 75m to the east of the site.
- 6.15 As such there will be no change to the flood risk upstream or downstream of this location.
- 6.16 Outline surface water requirements have been prepared and are discussed in Sections 7 and 8 of this document. As a result of the mitigation measures, the risk of flooding from the development drainage is low.

7. PREDICTED IMPACTS AND MITIGATION

- 7.1 This section of the FRA sets out the mitigation measures recommended to reduce the risk of flooding to the proposed development and outlines any residual impacts.

Site arrangements

Access / Egress

- 7.2 The access to the site during an extreme event will be from Higher Road, which lies within Flood Zone 1.

Upstream and downstream effects

- 7.3 There is no material effect on the floodplain due to the proposed development.
- 7.4 It is intended that surface water runoff from the site will continue to either infiltrate into the ground or run off into a pond that lies on the eastern boundary of the site. The pond provides attenuation and its outfall drains to the surface water drain that is in open channel and lies approx. 75m to the east of the site.
- 7.5 The landscaping concept for the developed site introduces an additional pond and connecting pools within the site, which will provide further attenuation and infiltration into the ground of surface water runoff from the developed site.
- 7.6 The proposals will be designed so as to mimic the existing situation and therefore there will be no additional risk to upstream or downstream properties.

8. DRAINAGE STRATEGY

Surface water drainage

- 8.1 Guidance for the disposal of surface water from a development site is for soakaways to be considered as the primary solution. If this is not practical, discharge to a waterbody or watercourse is to be considered as the next available alternative. Only if neither of these options is available, and other sustainable drainage methods not possible, should the use of the public sewerage system be considered.
- 8.2 The online Soilsmap Viewer has identified the site lying in a region characterised by freely draining slightly acid loamy soils.
- 8.3 A private surface water drainage system takes surface water runoff from the existing building into a pond that lies on the eastern boundary of the site. Infiltration occurs at the pond. The pond provides attenuation and its outfall drains to the surface water drain that is in open channel and lies approx. 75m to the east of the site.
- 8.4 The development of the site will introduce no additional impermeable areas on the site as the roof of the proposed residential dwelling is to be grassed such that it blends into the landscape and the small extensions to the existing building will be erected on existing hardstanding areas.
- 8.5 In line with common practice, it is proposed the surface water discharge from the proposed development should mimic those from the existing site. It is therefore intended that surface water runoff from the site will continue to either infiltrate into the ground or run off into a pond that lies on the eastern boundary of the site.
- 8.6 The landscaping concept for the developed site introduces an additional pond and connecting pools within the site, which will provide further attenuation and infiltration into the ground of surface water runoff from the developed site.

Foul water drainage

- 8.7 Foul water discharges from the existing site are treated by an onsite septic tank.
- 8.8 The septic tank is to be replaced with a packaged sewage treatment plant.

9. CONCLUSIONS

- 9.1 This flood risk assessment has been produced on behalf of Alchemie Technology in support of a planning application for a development at Blue Bell Farm, Higher Road, Longridge, Preston, PR3 2YX.

Flood risk assessment

- 9.2 The Site lies within Flood Zone 1, the lowest risk which is identified as land assessed as having a less than 1 in 1000 annual probability of river or sea flooding (<0.1%).
- 9.3 The Environment Agency Risk of Flooding from Surface Water map indicates the site is at a very low risk of surface water flooding.
- 9.4 The risk of fluvial flooding is very low.
- 9.5 The risk of flooding from canals, reservoirs and other artificial sources is low.
- 9.6 The flood risk from groundwater is low.
- 9.7 The risk from sewer flooding and pluvial runoff is low.
- 9.8 The risk of flooding from the development drainage is low.

Drainage strategy

- 9.9 The development of the site will introduce no additional impermeable areas. It is therefore intended that surface water runoff from the site will continue to either infiltrate into the ground or run off into a pond that lies on the eastern boundary of the site, supplemented by an additional pond and connecting pools within the site. This mimics the existing scenario.
- 9.10 The existing foul water septic tank is to be removed and replaced with a packaged sewage treatment plant.

APPENDIX A



BLUE BELL FARM – LOCATION PLAN