Roefield Sports Pitches

Creation of new Artificial Grass Pitch (AGP) & refurbishment of existing multi use sports area with associated fencing, floodlighting and access pathways

Flood Risk Assessment

Site	Roefield Sports Pitches Edisford Rd Clitheroe Lancashire BB7 3LA		
Project	Creation of new Artificial Grass Pitch (AGP) & refurbishment of existing multi use sports area with associated fencing, floodlighting and access pathways		
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Introduction

Planning permission is sought to install a new Artificial Grass Pitch (AGP) & refurbishment of existing multi use sports area with associated fencing, floodlighting and access pathways.

This Flood Risk Assessment (FRA) demonstrates how flood risk will be managed, including the effects of climate change and identifies and assesses the risk of all forms of flooding to and from the development including, where appropriate, provision of features for flood resistance, and construction techniques for structures which are flood resilient.

The proposed development is located within an Environment Agency and Ribble Valley Borough Council identified Flood Zone 1 but is over 1 hectare and as such, should be accompanied by a site specific FRA in accordance with the National Planning Policy Framework (NPPF) and Article 34 of the Town and Country Planning (Development Management Procedure) Order 2015. However given that the existing artificial turf pitch is to be refurbished with the drainage for this area and location retained the actual new developments with new site wide drainage requirements shall only be covering 0.89 hectare and would then not require an FRA.

The proposed development is located at:

Roefield Sports Pitches
Edisford Rd
Clitheroe
Lancashire
BB7 3LA

This FRA explains how the development reduces flood risk by recharging groundwater through the use of Sustainable Urban Drainage Systems (SUDS) for the discharge of rainwater runoff or by ensuring that the rates and volumes of discharge are kept, or reduced, to those before development or redevelopment.

Policy Context

National Planning Policy Framework (2012)
Section 10 – Meeting the Challenge of Climate Change, Flooding and Coastal Change

Policy extract:

> *103. When determining planning applications, local planning authorities should ensure flood risk is not increased elsewhere and only consider development appropriate in areas at risk of flooding where, informed by a site-specific flood risk assessment following the Sequential Test, and if required the Exception Test, it can be demonstrated that:*
>
> - *within the site, the most vulnerable development is located in areas of lowest flood risk unless there are overriding reasons to prefer a different location; and*
> - *development is appropriately flood resilient and resistant, including safe access and escape routes where required, and that any residual risk can be safely managed, including by emergency planning; and it gives priority to the use of sustainable drainage systems.*
>
> *104. For individual developments on sites allocated in development plans through the Sequential Test, applicants need not apply the Sequential Test. Applications for minor development and changes of use should not be subject to the Sequential or Exception Tests but should still meet the requirements for site-specific flood risk assessments.*

Department for Environment, Food and Rural Affairs
Sustainable Drainage Systems
Non-statutory technical standards for sustainable drainage systems
March 2015

Policy extract:

> *The surface water drainage scheme must be in accordance with the Non-Statutory Technical Standards for Sustainable Drainage Systems (March 2015) or any subsequent replacement national standards and unless otherwise agreed in writing by the Local Planning Authority, no surface water shall discharge to the public sewerage system either directly or indirectly.*

Flood Risk Assessment (FRA) and Sustainable Urban Drainage System (SUDS) Details

Flood Probability

The Government websites confirm the proposed development area is located within a flood zone 1 as follows:

Flood Zone definitions are set out in the National Planning Policy Guidance as follows:

Zone 1 Low Probability:

- Land having a less than 1 in 1,000 (<0.1%) annual probability of river or sea flooding
- Shown as 'clear' on flood maps – all land outside Zones 2 and 3

Zone 2 Medium Probability:

- Land having between a 1 in 100 and 1 in 1,000 (1% – 0.1%) annual probability of river flooding; or land having between a 1 in 200 and 1 in 1,000 (0.5% – 0.1%) annual probability of sea flooding
- Land shown in light blue on flood maps

Zone 3a High Probability:

- Land having a 1 in 100 (>1%), or greater annual probability of river flooding; or Land having a 1 in 200 (>0.5%) or greater annual probability of sea flooding
- Land shown in dark blue on the flood maps

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Risk of Flooding from Rivers and Sea

The Government website confirms the proposed development area is at low risk of flooding from rivers or the sea.

Flood risk definitions are as follows:

Medium Risk:

- Coloured mid blue
- Means that each year this area has a chance of flooding of between 1% and 3.3%.

Low Risk:

- Coloured light blue
- Means that each year this area has a chance of flooding of between 0.1% and 1%.

Very Low Risk:

- Coloured very light blue
- Means that each year this area has a chance of flooding of less than 0.1%.

Each flood risk category takes into account the effect of any flood defenses in the area.

These defenses reduce but do not completely stop the chance of flooding as they can be overtopped or fail.

Risk of Flooding from Surface Water

The Government website confirms the proposed development area is generally at very low risk of flooding from surface water, which happens when rainwater does not drain away through the normal drainage systems or soak into the ground, but lies on or flows over the ground instead.

Very low risk is shown as 'clear' on the following flood maps.

Very low risk means that each year this area has a chance of flooding of less than 0.1%.

For this flood risk scenario, flooding from surface water is difficult to predict as rainfall location and volume are difficult to forecast.

In addition, local features can greatly affect the chance and severity of flooding.

Risk of Flooding from Reservoirs

The Government website confirms the proposed development area has no risk of reservoir flooding.

Development Proposals and Flood Risk Vulnerability

With the proposal situated within a flood zone 1 there is no risk or vulnerability to the site or surrounding areas.

With reference to Table 2 of Planning Practice Guidance to the National Planning Policy Framework, the proposed development for an outdoor sports facility would be classified as Water Compatible Development.

An extract from Table 2 of the PPG for Flood Risk and Coastal Change is replicated below in Table 2.4 with the proposed development type highlighted:

Flood Risk Vulnerability Classification	
Vulnerability	**Development types**

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Water Compatible Development	Flood control infrastructure Water transmission infrastructure and pumping stations Sewage transmission infrastructure and pumping stations Sand and gravel working Docks, marinas and wharves Navigation facilities Ministry of Defense installations Ship building, repairing and dismantling, dockside fish processing and refrigeration and compatible activities requiring a waterside location Water-based recreation (excluding sleeping accommodation) Lifeguard and coastguard stations Amenity open space, nature conservation and biodiversity, **outdoor sports and recreation and essential facilities** such as changing rooms Essential ancillary sleeping or residential accommodation for staff required by uses in this category, subject to a specific warning and evacuation plan
Source: Planning Practice Guidance - 2014	

Flood Risk Vulnerability and Flood Zone Compatibility

Based on the above assessment of the site being located within a flood zone 1 and classified as a 'water compatible development' and with reference to Planning Practice Guidance for 'Flood Risk and Coastal Change' to the National Planning Policy Framework (Table 3), the proposed development of this site would be considered "**appropriate**".

A copy of Table 3 is presented below to confirm the assessment above.

No exception test is required.

Flood risk vulnerability and flood zone compatibility					
Flood risk vulnerability classification	**Essential infrastructure**	**Water compatible**	**Highly vulnerable**	**More vulnerable**	**Less vulnerable**
Zone 1	✓	✓	✓	✓	✓
Zone 2	✓	✓	Exception Test required	✓	✓
Zone 3A	Exception Test required	✓	×	Exception Test required	✓
Zone 3B	Exception Test required	✓	×	×	×
Key: ✓Development is appropriate ×Development should not be permitted					
Source: Technical Guide to the National Planning Policy Framework, March 2012					

Sequential Test

As the site exceeds one hectare, a sequential test is required; however, as the area is used (and historically designated) as a sports field the development can be deemed to have passed the sequential test.

Current Conditions

The development site is a part like for like replacement of an artificial turf pitch and part grassed playing field.

Surface Water Disposal Requirements

In accordance with the National Planning Policy Framework (NPPF) and the National Planning Practice Guidance (NPPG), the site should be drained on a separate system with foul water draining to the public sewer and surface water draining in the most sustainable way.

The NPPG clearly outlines the hierarchy to be investigated by the developer when considering a surface water drainage strategy. As such, the developer must consider the following drainage options in the following order of priority:

A. Into the ground (infiltration);

B. To a surface water body;

C. To a surface water sewer, highway drain, or another drainage system;

D. To a combined sewer.

This is necessary to promote sustainable development, secure proper drainage and to manage the risk of flooding and pollution. This condition is imposed in light of policies within the NPPF and NPPG.

Surface Water Disposal Solution

Infiltration Systems:

Infiltration techniques are unlikely to be viable due to the underlying geology.

Watercourses / Main River:

There is a watercourse (River Ribble) located along the site's Northern boundary.

Surface water from the proposed development will drain to this watercourse via underground piped drainage connecting to a similar piped drainage system supporting a new Artificial Grass Pitch (AGP).

The proposed development and associated surface drainage strategy from this site is such that the surface water will be managed and disposed of at the corner of the development into the site drainage that indirectly connects into the river ribble, thus complying with the Technical Guidance to the National Planning Policy Framework.

Surface water management and disposal performance will be achieved by the following physical implications to the development (the Artificial Grass Pitches):

1. Adequate attenuation (water storage) within pitch bases (comprising a permeable granular sub-base) to ensure that excess volumes, which would be experienced during a critical storm event, does not bypass the control system;

2. Restricted flow rate equivalent to a Greenfield runoff rate to the agreed storm water drainage outfall, connecting into a local culverted watercourse routed through the development site; via a Hydro-brake® Flow Control or similar approved product.

Sewers:

Draining the site to an existing watercourse is a viable option therefore the use of surface water sewers will not be considered further.

Surface Water Drainage Strategy

Surface water discharge rates will be restricted to greenfield equivalent runoff rates to ensure that the rate of surface water runoff from the site does not increase as a result of the proposed development.

The proposed drainage strategy will comprise a piped network with attenuation provided within the subbase of the sports pitch.

Surface water will outfall to the watercourse located adjacent the sites northern boundary.

Surface Drainage Maintenance

The drainage system will be designed to minimise maintenance requirements; however, a full maintenance scheme will be established for those elements not being offered for adoption.

Maintenance operations will be carried out by Lancaster Foundation/ Ribble Valley Community Sports Trust in perpetuity post development.

Existing Runoff Rates

To reflect the changes in the near surface geology across the site the greenfield runoff rates have been calculated as 5l/s for the new development locations with the existing area retaining its current drainage system and just above ground surfacing being improved.

Attenuation Requirements

Surface water will discharge into the underlying culverted watercourse surface sewer at an agreed and restricted flow, equivalent to a Greenfield runoff rate.

The granular substrate to all AGPs (typically consisting of Type 3 unbound (SHW 800 Series) to comply with BSEN 13285) is intended to provide onsite containment and attenuation within the granular sub-base, before surface water enters the outfall.

The designed surface water drainage solution should be based upon the following criteria, to maintain satisfactory system performance:

- Provide adequate functionality over a period of twenty years.
- Ensure that surface water is removed from the surface area at a rate necessary to prevent surface flooding experienced during acute rain storms and to ensure the facility will not be lost through rain at the highest intensity which may be expected to occur either once every five years or through continuous rainfall of 50mm over a 24 hour period.
- Ensure that surface water is effectively removed from the facility construction to ensure that load bearing capacity of the substrate is not weakened by an increase in moisture content or becomes more susceptible to frost damage.
- Protect the installation from influences of groundwater or surface water from surrounding areas.
- Prevent the risk of uncontrolled flooding elsewhere (to land adjacent to the development).
- Comply with all applicable Sustainable Urban Drainage System (SUDS) requirements with attenuated flows (containment within the granular pitch sub-base) incorporated wherever necessary, without affecting the performance of the pitch.

Overland Flows

Proposals are to design surface water drainage to accommodate the 1 in 30 year storm event.

Foul Water Drainage Strategy

There is no foul water drainage strategy associated with this development.

Flood Risk Assessment (FRA) and Drainage Proposals Conclusions

Conclusions and Flood Risk from Site Drainage Proposals

- The proposed development includes the creation of a new external sports pitches (artificial grass pitches) with perimeter ball-stop fencing, floodlights (artificial lighting) and clean accesses with retention and improvement of an existing artificial turf area that shall retain its current drainage system.
- The proposed development area will occupy land and replace an existing grassed playing field along with retaining an existing artificial turf area.
- Surface water will be attenuated to Greenfield equivalent rates and discharge to existing site surface water drainage that indirectly connects to the adjacent watercourse.
- Onsite attenuation is provided by the granular pitch substrate (typically consisting of Type 3 unbound (SHW 800 Series) to comply with BSEN 13285) offering onsite containment and attenuation within the granular sub-base, before surface water enters the outfall.
- Proposals are to design surface water drainage to accommodate the 1 in 30 year storm event.
- Based on the above, providing the above strategies are implemented, the developed site will improve flood risk status to the development area thus satisfying the principles of the National Planning Policy Framework.

End of document

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