



BROWN FISHER  
ENVIRONMENTAL  
REPORTS 4 PLANNING

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**Client:**

Halo Leisure  
Hereford Leisure Centre  
Holmer Road  
Hereford HR4 9UD

## FLOOD RISK ASSESSMENT UPDATE

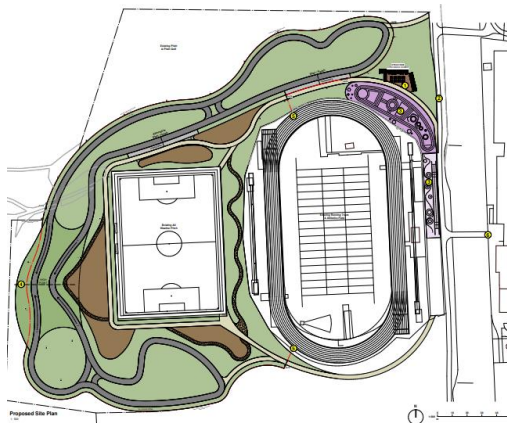
Hereford Cycling Circuit  
Hereford Leisure Centre  
Hereford

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**Report Ref:** 215729FRA

**Date:** 2<sup>nd</sup> March 2022



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## ABBREVIATIONS

AEP	Annual Exceedance Probability
EA	Environment Agency
FEH	Flood Estimation Handbook
FFL	Finished Floor Level
FRA	Flood Risk Assessment
LLFA	Lead Local Flood Authority
m AOD	Metres Above Ordnance Datum
NPPF	National Planning Policy Framework
SFRA	Strategic Flood Risk Assessment

# 1 SUMMARY

## 1.1 Purpose

This report provides an update to the flood risk assessment for the site produced by WYG<sup>1</sup> in April 2017 to support a planning application for a cycling circuit within Hereford Race Course.

That earlier planning permission that was granted but has now expired and a new submission, with some changes to design and location, is now being prepared.

This report is to accompany the new planning application.

Much of the WYG assessment is still valid and has not been repeated here.

## 1.2 Overview

Site characteristics	
<b>Location</b>	Hereford Leisure Centre, Holmer Road, Hereford HR4 9UD
<b>Development proposal</b>	Construction of cycling circuit within Hereford Racecourse

Flooding issues						
Source of flooding	Flood risk				Comments	Further investigation required?
	Very Low	Low	Medium	High		
Rivers			✓		The site is mostly in Flood Zone 3 and affected by Ayles Brook.	No
Sea	-				The site is not affected by tidal flooding.	No
Surface water				✓	There small areas of High – Low mapped risk of surface water flooding on the site. Flood depths are shallow.	No
Groundwater	✓				Groundwater flooding is considered unlikely	No
Artificial sources	✓				The site is not in an area of mapped risk from reservoir failure and no other water sources have been identified	No

Other Issues	
<b>Drainage</b>	A drainage strategy based on infiltration trenches allows the site to be drained without off-site flood risk.
<b>Mitigation</b>	Provided the track is not above ground level no mitigation is required. It is recommended that the EA flood warning service is used and the site closed if there is a flood warning
<b>Safe Access</b>	A restricted but flood-free access route is available via the local road network.

<sup>1</sup> Hereford Cycling Circuit, Flood Risk Assessment. WYG job no A100617, April 2017



### 3 PLANNING POLICY

#### 3.1 National Flood Policy

National policy on planning and flood risk is provided by the National Planning Policy Framework (NPPF) and supplementary guidance.

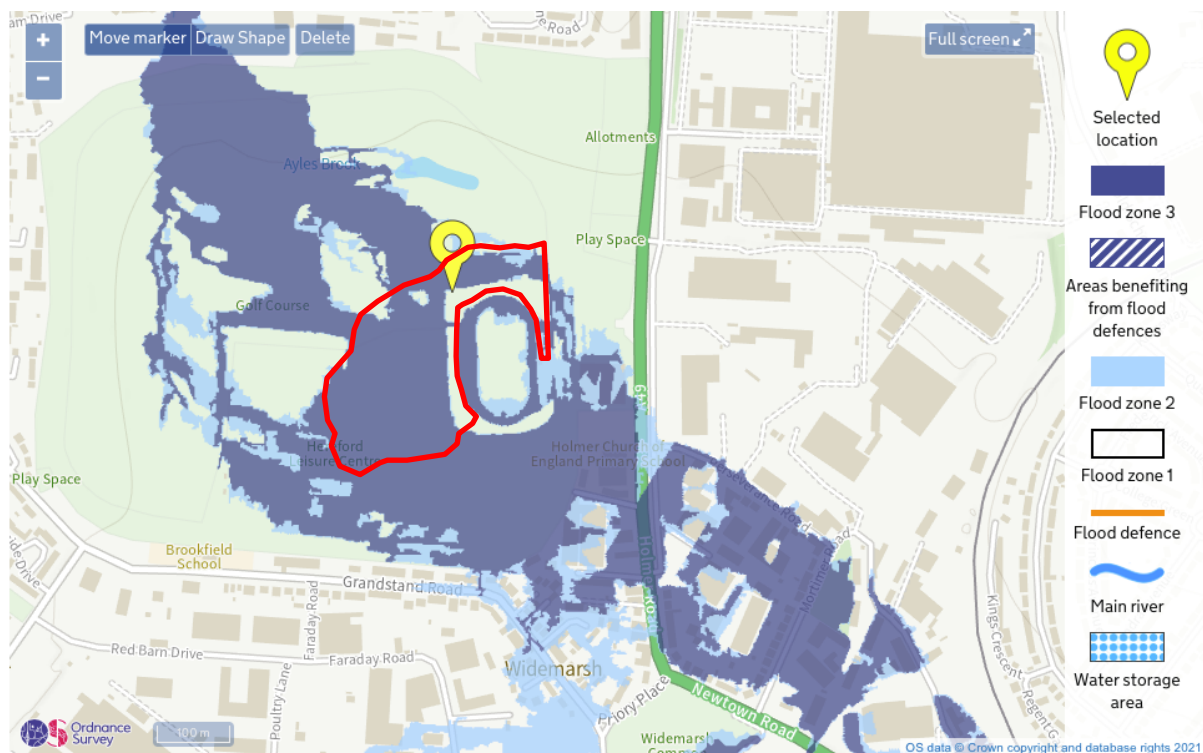
Outdoor sports and leisure is classified in technical guidance to the NPPF as “water compatible”.

Flood risk has been mapped nationally by the Environment Agency to show the flood zones used in the NPPF. Figure 3.1 shows the planning flood zones in the vicinity of the site and indicates that the site is in Flood Zone 3, which has an annual exceedance probability<sup>4</sup> (AEP) of more than 1%.

Water compatible development is acceptable in Flood zone 3 provided the risks are managed.

These estimated flood risks cover only flooding from main rivers and not from other flood sources. These other sources are considered in subsequent sections of this report.

**Figure 3.1 Planning Flood Zone**



<sup>4</sup> The annual exceedance probability is the risk of flooding within any one year. An AEP of 1% indicates an annual risk of flooding of 1%, or more loosely a 100 year return period.

## 4 DEFINITION OF FLOOD HAZARD

### 4.1 Historical records

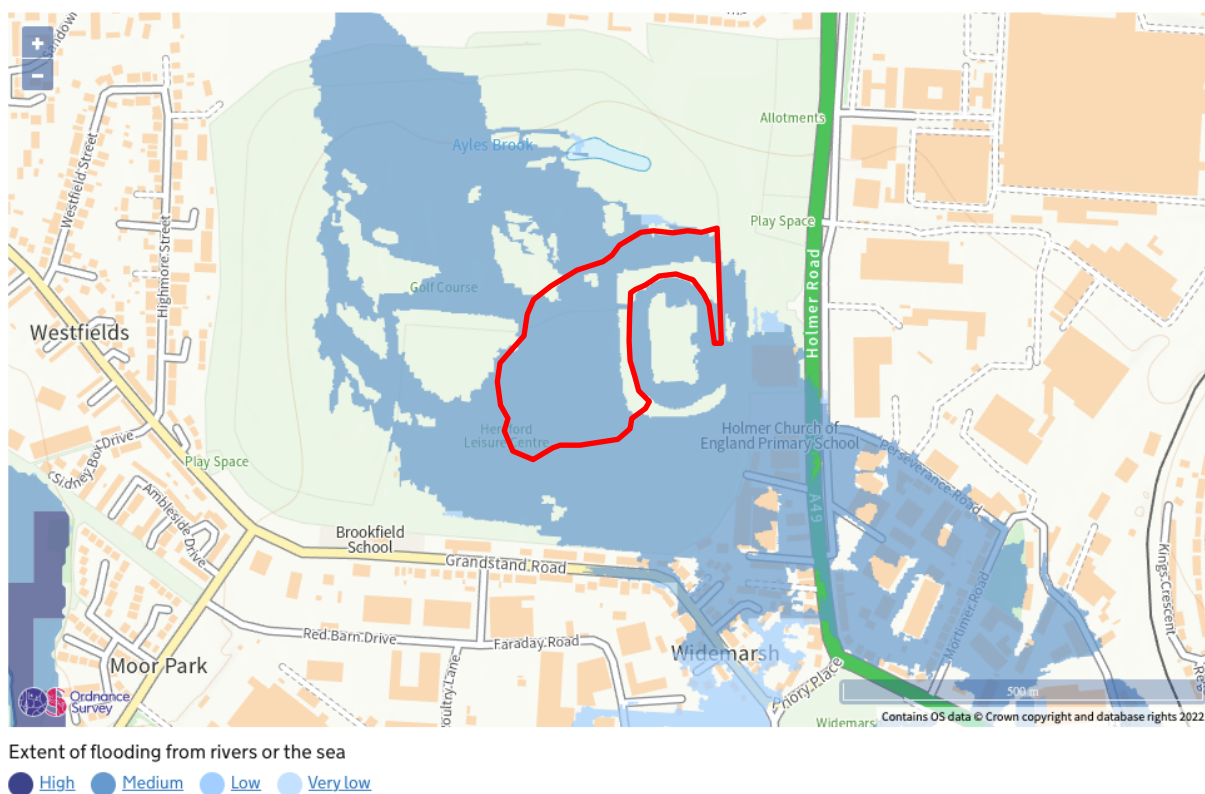
The Environment Agency have no mapped records of fluvial flooding at the site, however this may not mean that the site has not flooded in the past.

### 4.2 Sources of flooding

#### 4.2.1 Flooding from Rivers and the Sea

The flood risk arising from rivers is mapped nationally by the Environment Agency, and their online flood map is shown in Figure 4.1. This shows the site has a medium risk of fluvial flooding, meaning an AEP between 3.33% and 1%.

Figure 4.1 Flood Risk from Rivers and Sea



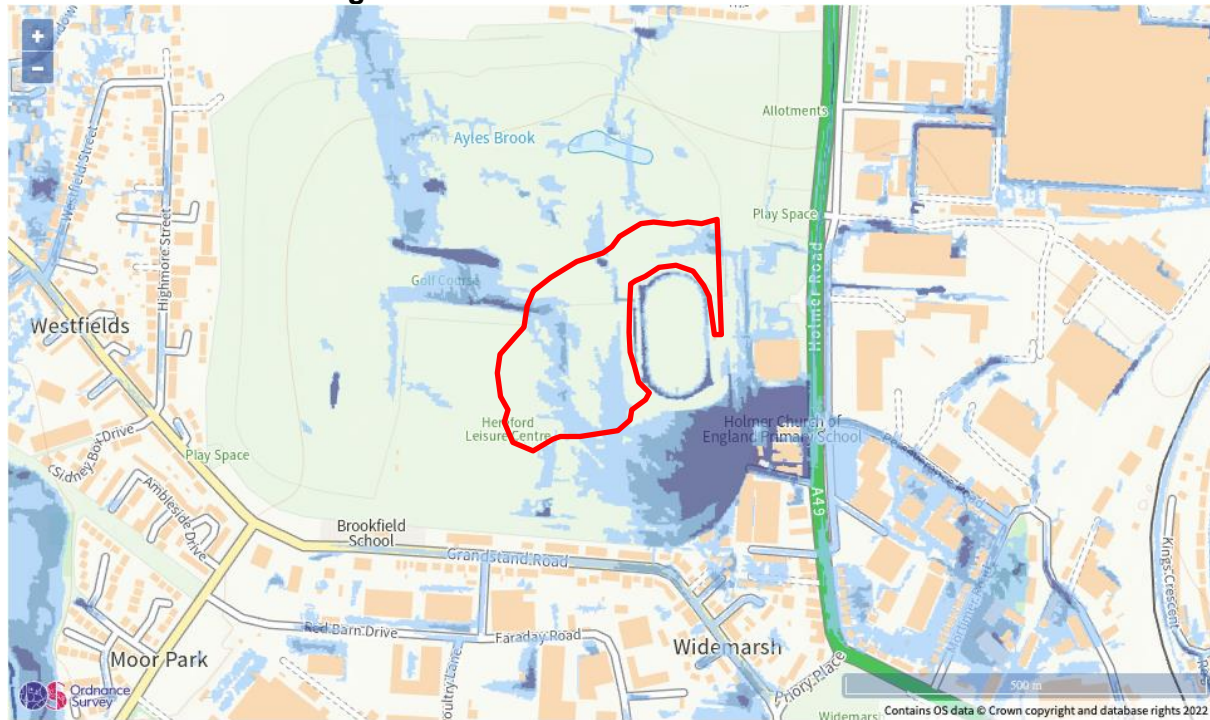
Climate change is likely to increase the risk of flooding and current guidance suggests that peak river flow in the Wye catchment area could increase by 37% “by the 2080s”. This is likely to increase the incidence of flooding on the site in coming years.

#### 4.2.2 Surface water flooding

Surface water modelling data has been downloaded from the government website and is shown in Figure 4.2. The risk of flooding from surface water is variable across the site, mostly very low but with small patches of high risk (annual flood risk greater than 3.3%).



**Figure 4.2 Flood Risk from Surface Water**



The surface water flooding is shallow however and the modelled depth of a medium risk event, with a AEP of 1%, is shown in Figure 4.3 and is between 0 and 300 mm on the site.

**Figure 4.3 Surface water flood depth for a 1% event**





#### **4.2.3 Groundwater flooding**

The risk of groundwater flooding is considered to be very low.

#### **4.2.4 Catastrophic flooding**

This source includes release of large volumes of stored water, such as in reservoirs and canals, due to catastrophic failure. The site is not in an area mapped as being at risk of reservoir failure.

There are no nearby canals which could cause flooding through breaching and no other known large volumes of stored water above the site. The risk of flooding from catastrophic sources is therefore very low.

#### **4.3 Flood Hazard at the Site**

The only significant flood risk is from the Ayles Brook if the culvert capacity is exceeded. This can be managed by closing the site to users on the rare occasions when flooding occurs.

## **5 FLOOD RISK MANAGEMENT MEASURES**

### **5.1 Mitigation**

No specific mitigation for flooding is likely to be required as the cycling circuit will be unaffected by flood events.

It is proposed that the track is at or slightly below ground level so it will not displace flood water or cause an obstruction to flood flows across the site so there will be no affect on off-site flood risk.

### **5.2 Flood warning**

It is recommended that the site operators sign up for flood warning provided by the Environment Agency. These would give time to clear the site and/or close it to users prior to flooding occurring.

Further details are provided here: <https://www.gov.uk/sign-up-for-flood-warnings>

### **5.3 Safe Access and Egress**

Safe access and exit are available via Holmer Road northwards. It is recommended that the site is closed when flooding is occurring, so evacuation during a flood event is unlikely.

### **5.4 Drainage**

The WYG report proposed a drainage strategy based on the use of infiltration trenches alongside the track and this approach is equally valid for the current proposed design. This will design is based on draining the 1% rainfall event with a 40% allowance for climate change without causing runoff, as is currently required. See the WYG report for details of infiltration testing and the proposed drainage design.

### **5.5 Off-site Flood Impacts**

The avoidance of flood storage displacement and a suitable drainage scheme will prevent off-site flood risk impacts.

## **6 REPORT LIMITATIONS**

This report has been prepared with all reasonable skill, care and diligence. The work undertaken to provide the basis of this report comprised a study of available documented information from a variety of sources.

The opinions given in this report have been dictated by the finite data on which are they based and are relevant only to the purpose for which the report was commissioned.

Information reviewed should not be considered exhaustive and has accepted in good faith as providing true and representative data with respect to site conditions. Should additional information become available which may influence the opinion expressed in this report, the right to review such information and, if warranted, to alter the opinions accordingly is reserved.

It should be noted that any risks identified in this report are perceived risks based on the information reviewed.

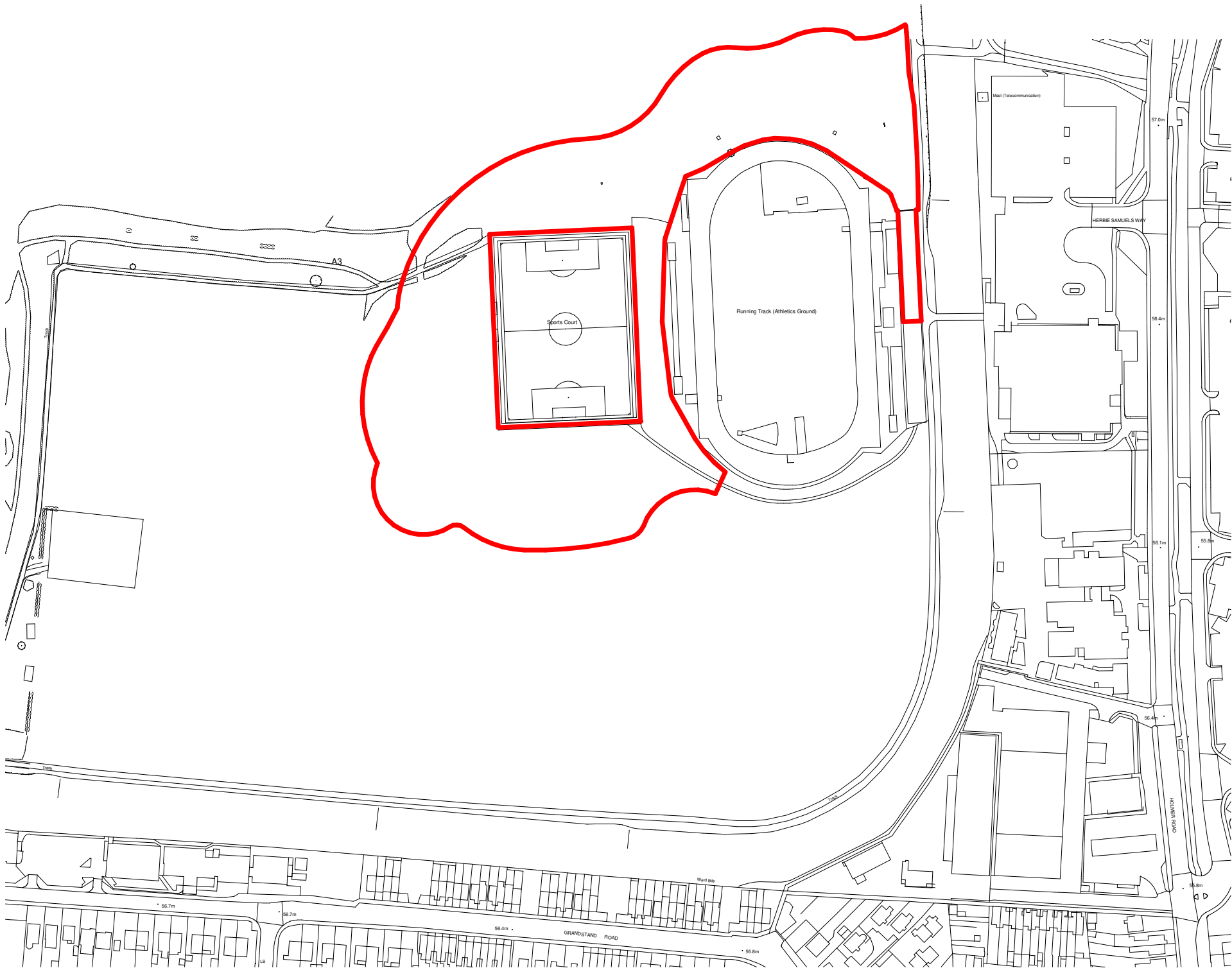
The recommendations contained in this report represent our professional opinions. These opinions were arrived at in accordance with currently accepted industry practices at this time and as such are not guarantee that the sites are free of hazardous conditions.

This report has been prepared solely for the use of the named client, and may not be relied upon by other parties without written consent.

## **7 APPENDICES**

## **APPENDIX 1 – LOCATION AND SITE PLAN**





# Location Plan

1 : 2500

Application Boundary

/	02.02.22	Planning Issue	GL	JM
Rev	Date	Description	By	Chk

## PLANNING ISSUE

DB3

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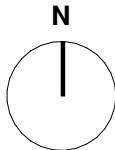
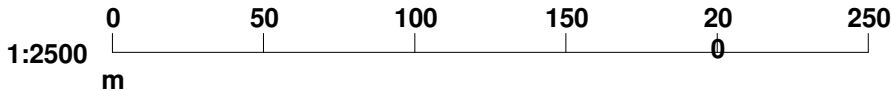
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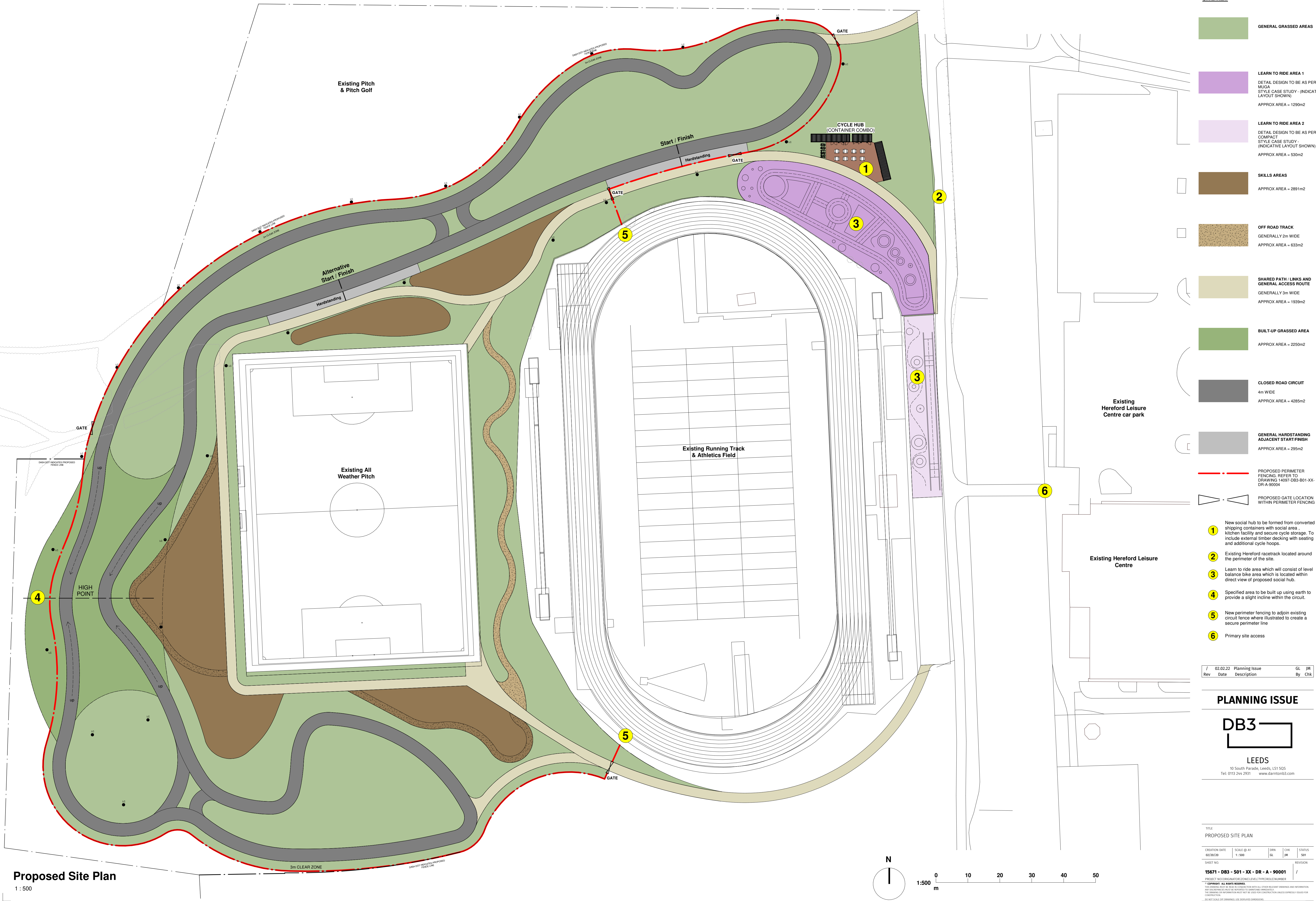
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01/25/22	1 : 2500	GL	JM	S01

SHEET NO.	REVISION
15671-DB3-S01-XX-DR-A-20000	/

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Proposed Site Plan

1 : 500

SITE KEY

- GENERAL GRASSED AREAS
- LEARN TO RIDE AREA 1  
DETAIL DESIGN TO BE AS PER MUGA STYLE CASE STUDY - (INDICATIVE LAYOUT SHOWN)  
APPROX AREA = 1290m<sup>2</sup>
- LEARN TO RIDE AREA 2  
DETAIL DESIGN TO BE AS PER COMPACT STYLE CASE STUDY - (INDICATIVE LAYOUT SHOWN)  
APPROX AREA = 530m<sup>2</sup>
- SKILLS AREAS  
APPROX AREA = 2891m<sup>2</sup>
- OFF ROAD TRACK  
GENERALLY 2m WIDE  
APPROX AREA = 633m<sup>2</sup>
- SHARED PATH / LINKS AND GENERAL ACCESS ROUTE  
GENERALLY 3m WIDE  
APPROX AREA = 1939m<sup>2</sup>
- BUILT-UP GRASSED AREA  
APPROX AREA = 2250m<sup>2</sup>
- CLOSED ROAD CIRCUIT  
4m WIDE  
APPROX AREA = 4285m<sup>2</sup>
- GENERAL HARDSTANDING ADJACENT START/FINISH  
APPROX AREA = 295m<sup>2</sup>
- PROPOSED PERIMETER FENCING. REFER TO DRAWING 14057-DB3-B01-XX-DR-A-90004
- PROPOSED GATE LOCATION WITHIN PERIMETER FENCING

- 1 New social hub to be formed from converted shipping containers with social area, kitchen facility and secure cycle storage. To include external timber decking with seating and additional cycle hoops.
- 2 Existing Hereford racetrack located around the perimeter of the site.
- 3 Learn to ride area which will consist of level balance bike area which is located within direct view of proposed social hub.
- 4 Specified area to be built up using earth to provide a slight incline within the circuit.
- 5 New perimeter fencing to adjoin existing circuit fence where illustrated to create a secure perimeter line
- 6 Primary site access

/	02.02.22	Planning Issue	GL	JM
Rev	Date	Description	By	Chk

**PLANNING ISSUE**

**DB3**

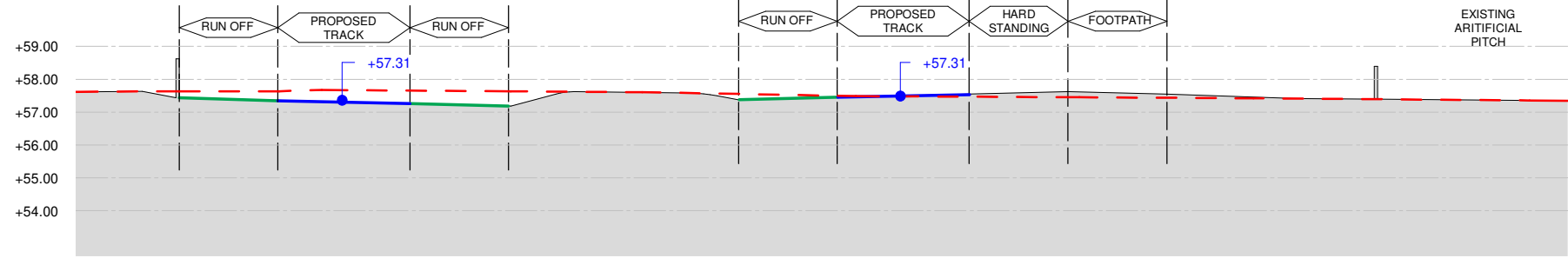
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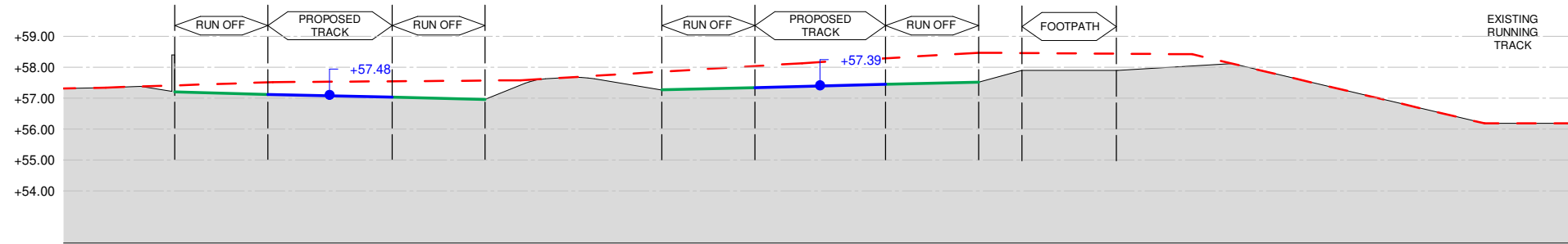
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CREATION DATE 02/20/20	SCALE @ A1 1:500	DRN GL	CHK JM	STATUS S01
SHEET NO.  15671 - DB3 - S01 - XX - DR - A - 90001	REVISION /			
PROJECT NO (ORIGINATOR/ZONE/LEVEL/TYPE/ROLE/NUMBER) 15671 - DB3 - S01 - XX - DR - A - 90001				
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## **APPENDIX 2 – DEVELOPMENT CROSS SECTIONS**

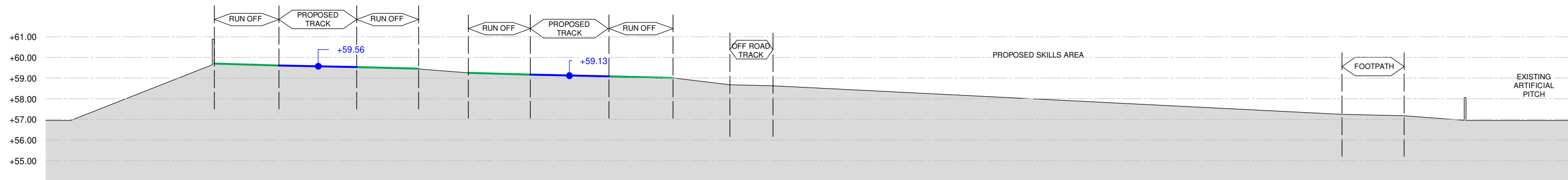




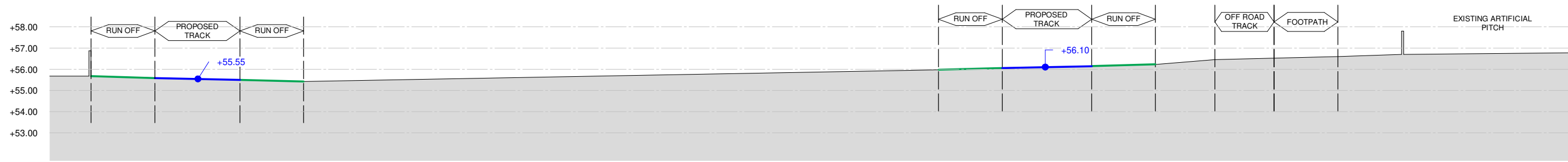
Site Section A  
1 : 200



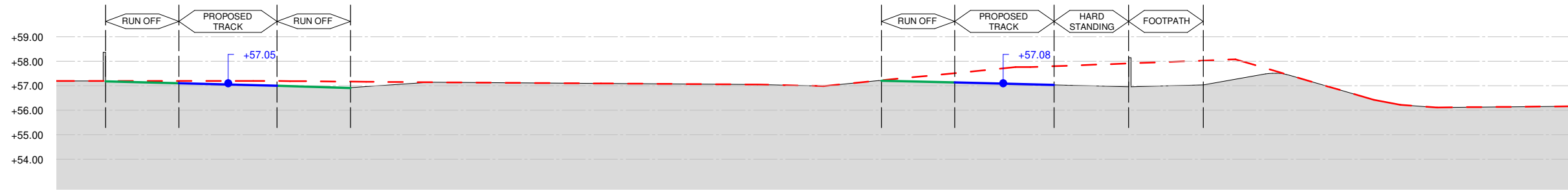
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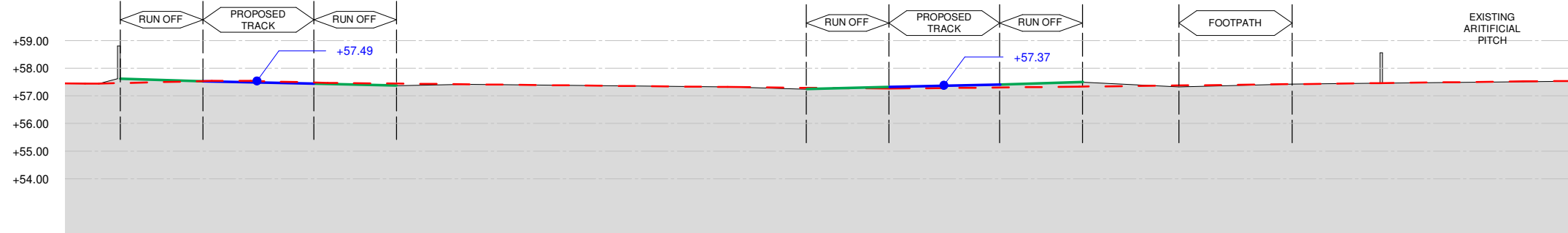
Site Section C  
1 : 200



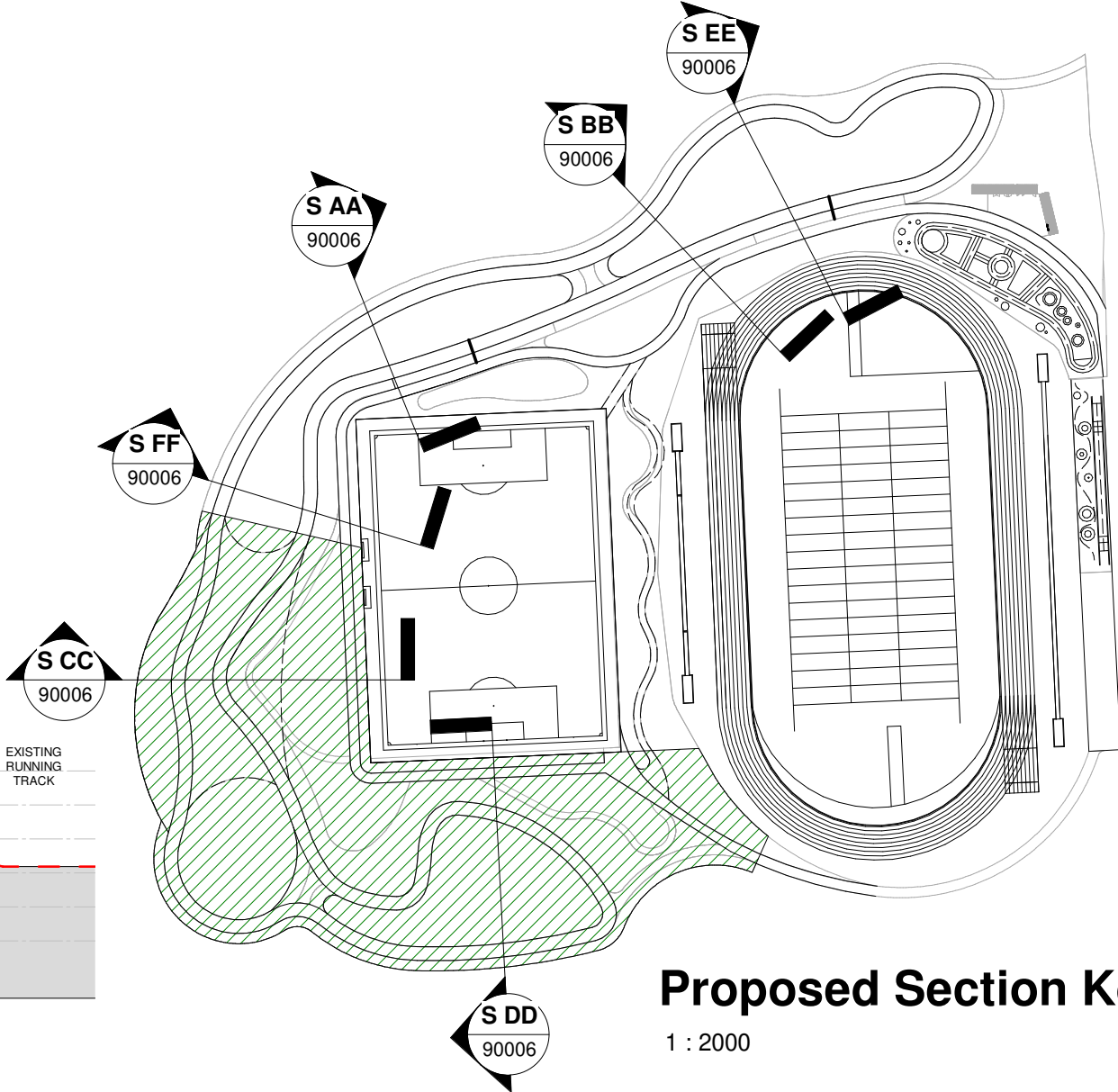
Site Section D  
1 : 200



Site Section E  
1 : 200



Site Section F  
1 : 200



Proposed Section Key  
1 : 2000

- Proposed Ground Line
- Proposed Asphalt Track
- Proposed 3m Grass Run Off
- Existing Ground Line
- Proposed Site Levels
- Indicates area requiring full topographical survey. Existing levels TBC

Rev	Date	Description	GL By	JM Chk
/	02.02.22	Planning Issue	GL	JM

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PROPOSED TRACK SECTIONS

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