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Beechy Bottom Parkland Reserve: Flood Risk Assessment

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Beechy Bottom Parkland Reserve: Flood Risk Assessment

Client

Fairfax Acquisitions Ltd,
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RH17 5RE



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1. Introduction

Aqua Terra Consultants Ltd (Aqua Terra) was instructed by Fairfax Acquisition Ltd (the Client) to provide a Flood Risk Assessment (FRA) for a proposed parkland reserve spanning several parcels of land near Ansty, Mid-Sussex (the Site). Instruction to proceed was provided by email on the 19th July 2022.

1.1. Background

The Client is seeking to obtain planning permission for a residential led strategic development on an adjacent parcel of land this application includes a greenfield area to the north which will be utilised as a Parkland Reserve. Further details of the proposed development are provided in Section 3.

This report constitutes a FRA for the proposed Parkland Reserve “Beechy Bottom Parkland Reserve” development which is required for the planning application. A separate FRA and Outline Sustainable Drainage Strategy have been produced for the proposed housing development “Ansty Garden Community” (ref: P25035_R2, May 2025).

1.2. Scope

The scope of this assessment is as follows:

- Preparation of a FRA, written in line with the National Planning Policy Framework (NPPF) and supporting Planning Practice Guidance (PPG) to satisfy the Mid Sussex District Council (MSDC) and the Lead Local Flood Authority (LLFA, West Sussex County Council) that all potential flood risks to and from the proposed development have been considered and that the proposed development is appropriate, as defined in the NPPF; and,
- Consideration of appropriate Site-specific flood risk mitigation measures (if required).

1.3. Data Sources

The main sources of data utilised in this assessment are summarised below:

- The proposed Site plans as provided by the Client;
- LiDAR Digital Terrain Model (DTM) data obtained through data.gov.uk;
- Ordnance Survey data;
- Environment Agency (EA) flood risk data;
- The Mid Sussex District Council Level 1 Strategic Flood Risk Assessment (Mid Sussex District Council, 2024);
- The West Sussex LLFA Policy for the Management of Surface Water (West Sussex County Council, 2018);
- Soilsclapes soil mapping; and,
- British Geological Survey (BGS) mapping and borehole logs.

1.4. Limitations

This report is written strictly for the benefit of the Client and bound by the conditions presented in Appendix A.

2. Site setting

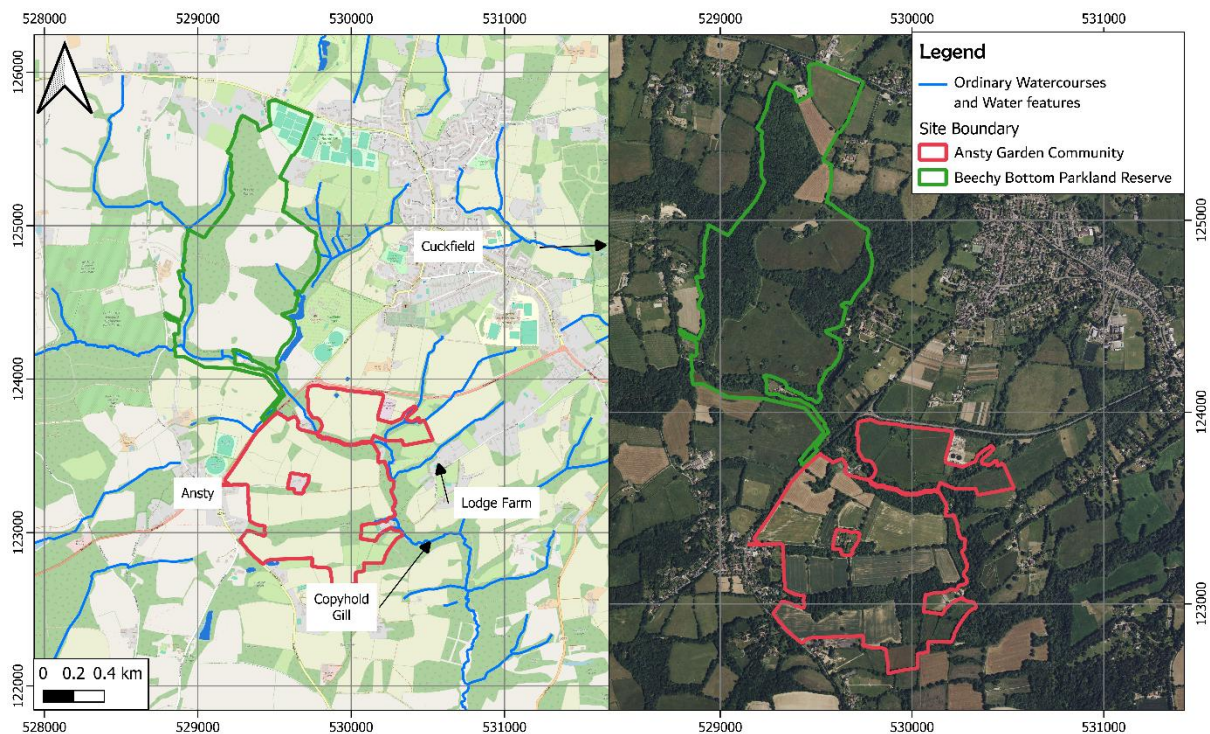
The following section collates and presents available information pertinent to the Site and its local environs.

2.1. Site location and description

The Site is located to the north of Ansty Village, and west of Cuckfield in the District of Mid Sussex, closest postcode is RH17 5AG (see Figure 2-1) The National Grid Reference for the approximate centre of the Site is TQ 29653 23438. The Beechy Bottom Parkland Reserve (shown in green) covers an approximate area of 87Ha.

The Beechy Bottom Parkland Reserve area is a mixture of mature woodland and fields and Copyhold Gill flows eastwards through the southern end of this area. The Beechy Bottom Parkland Reserve is separated from Ansty Garden Community by the A272.

Figure 2-1 Site location

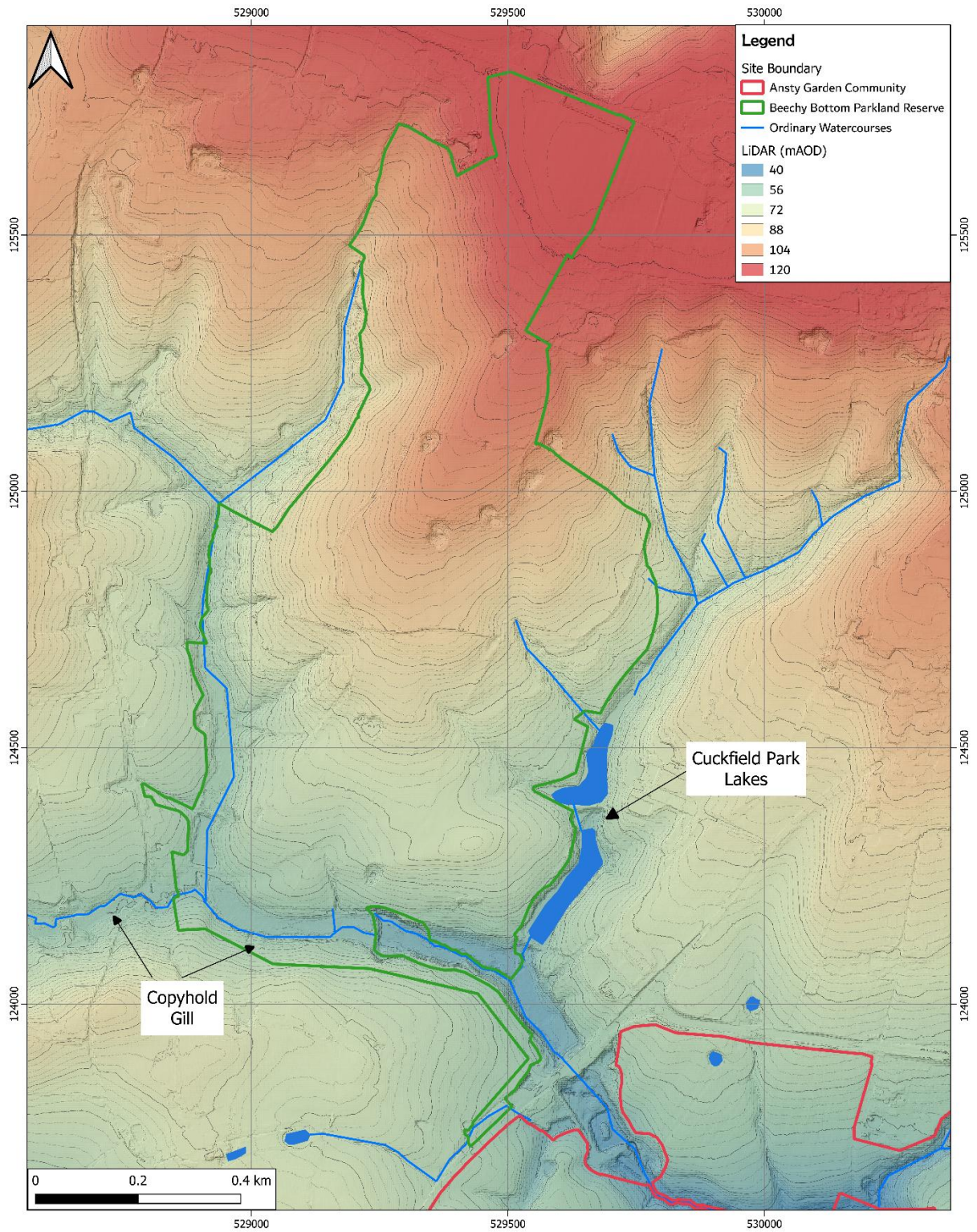


Contains Open Street Map data © OpenStreetMap

2.2. Topography

Topographical data (from LiDAR) is provided in Figure 2-2. Ground levels at the Site range between approximately 52m and 123m above Ordnance Datum (m aOD). The Site is bounded on the west and eastern sides by tributaries of Copyhold Gill, which confluence with Copyhold Gill along the southern boundary of the Site. The topography of the Parkland Reserve falls from an elevated point to the north of the Site towards the valleys along the eastern, western and southern boundaries.

Figure 2-2 Site topography



Contains Open Street Map data © OpenStreetMap

2.3. Geology and hydrogeology

2.3.1. Published geology and soils

The following information has been compiled Soilscales and British Geological Survey (BGS) 1:50,000 scale mapping. The geological sequence underlying the Site is as follows (see Figure 2-3 and Figure 2-4 for spatial distribution of referenced formations/ features).

2.3.1.1. Soil

Soilscales provides high level information on natural soil characteristics across the UK. Soilscales classifies the soil type at the Site as: 'Slightly acid loamy and clayey soils with impeded drainage' in the northern part of the Site, and 'Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils' towards the south. (Cranfield Soil and AgriFood Institute, 2025).

2.3.1.2. Superficial deposits

Superficial deposits are largely absent over the Site area, with the exception of a small area of Alluvium Deposits (silt, sand and gravel) along the course of Copyhold Stream.

2.3.1.3. Solid geology

The Site is underlain by a mixture of Cuckfield Stone Bed, Lower Grinstead Clay, Ardingly Sandstone Member, Lower Tunbridge Wells Sands and Wadhurst Clay Formation.

Much of the Site is underlain by the Upper Tunbridge Wells Sand (interbedded sandstone and siltstone). The northern and southern parts of the Site are also underlain by the Lower Tunbridge Wells Sand (sandstone, siltstone and mudstone), the Lower Grinstead Clay (mudstone) and the Cuckfield Stone Bed (calcareous sandstone)

2.3.2. Hydrogeology

The Ardingly Sandstone Member, Cuckfield Stone Bed and Lower Tunbridge Wells Sand are classified by the EA as Secondary A aquifers. These are described by the EA as permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers. The Groundwater vulnerability in this areas is classified as being 'high'. The Site is not located within a groundwater source protection zone (SPZ).

2.4. Hydrology

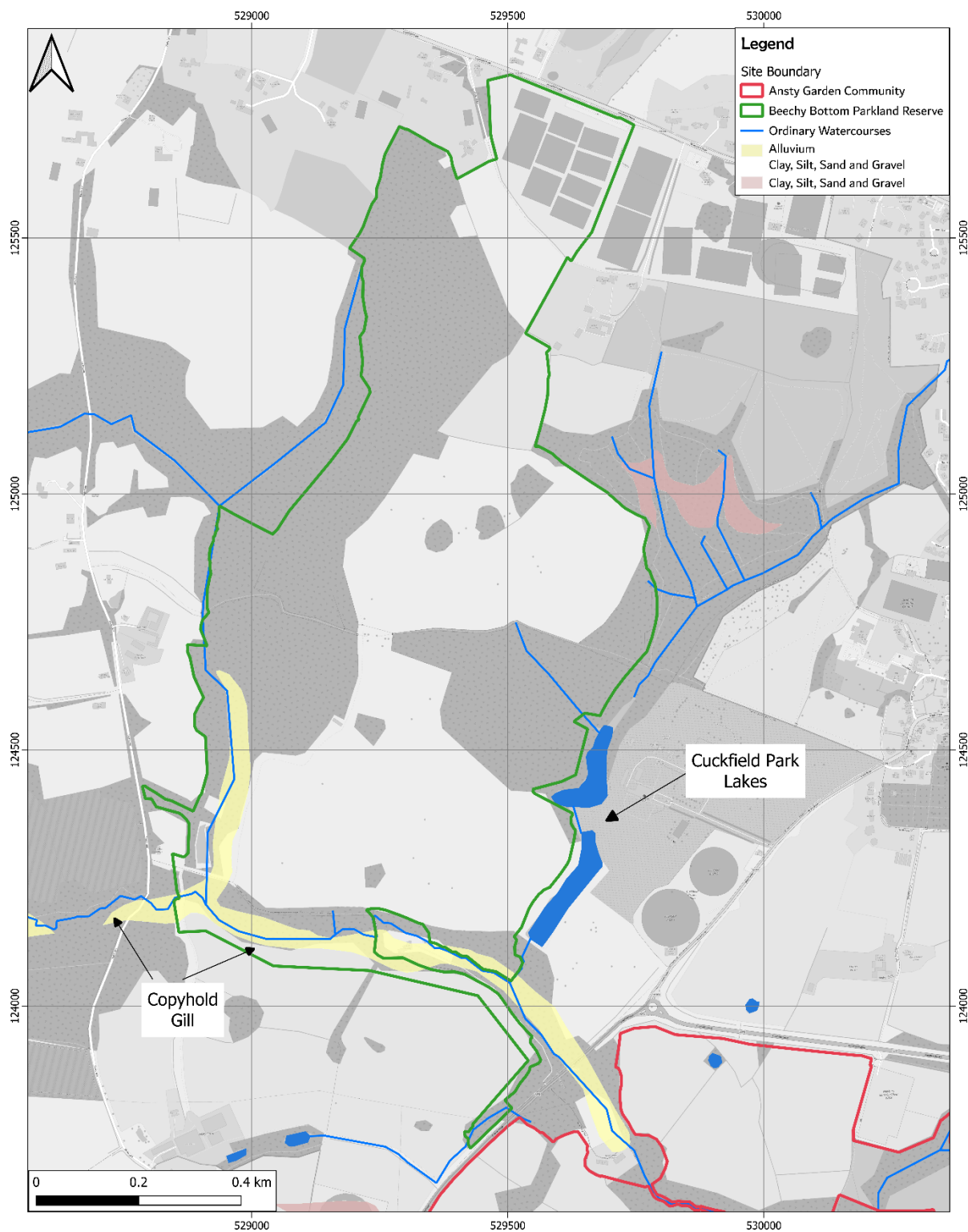
The valley of Copyhold Gill runs along the southern boundary of the Parkland Reserve. Copyhold Gill is a relatively minor watercourse with a catchment area of around 8.7km² at this location – it is designated as an Ordinary Watercourse.

Two tributaries to Copyhold Gill flow north to south along the western and eastern boundaries of the Site, to their confluence with Copyhold Gill along the southern boundary. The eastern tributary feeds two lakes within Cuckfield Park just off-site.

2.5. Climate

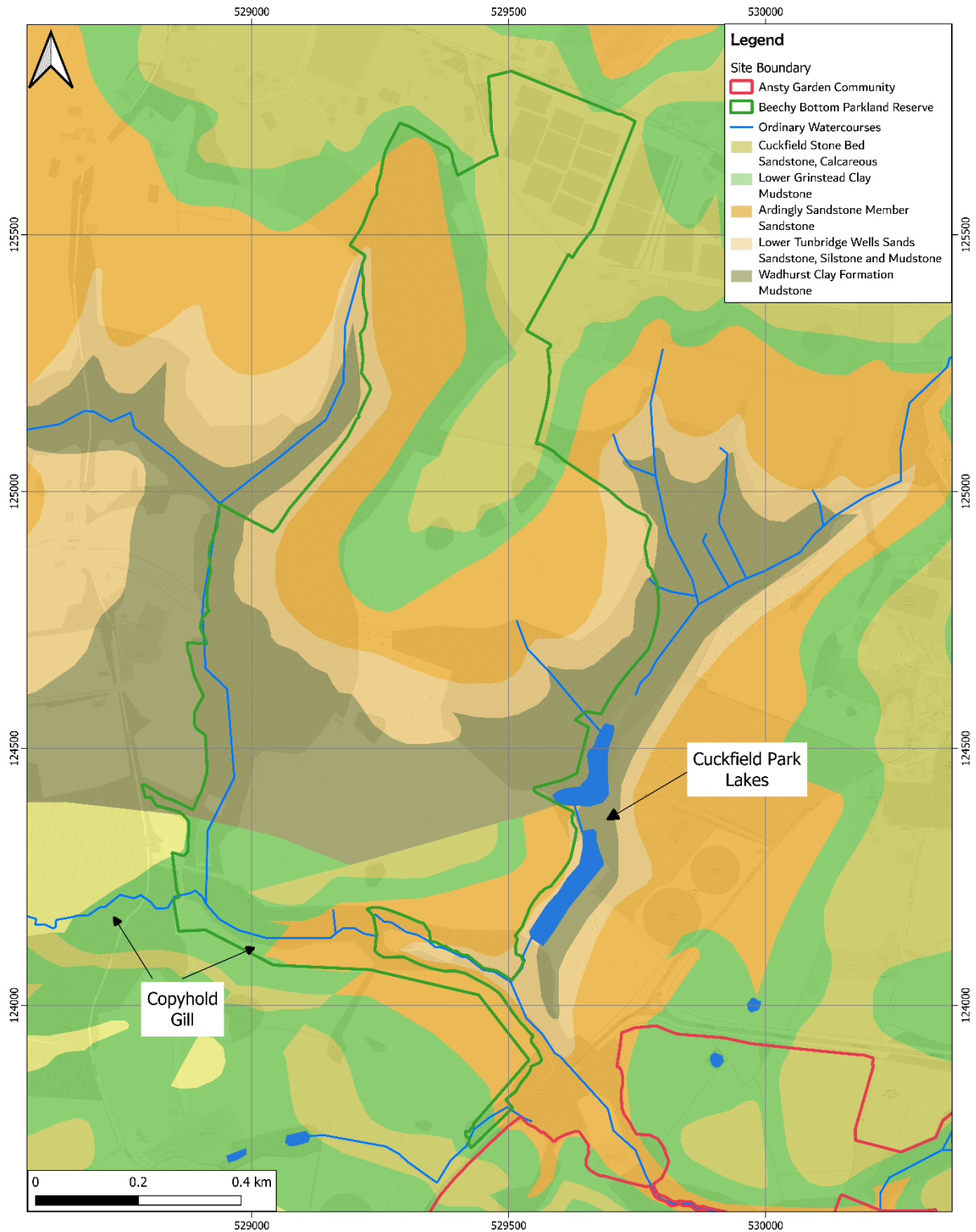
The Standard Average Annual Rainfall (SAAR) for the Site area is 813mm per annum (mm/a).

Figure 2-3 Superficial geology (1:50,000)



Contains Open Street Map data © OpenStreetMap

Figure 2-4 Bedrock geology (1:50,000)



Contains Open Street Map data © OpenStreetMap

2.6. Current drainage arrangements

The Site is not currently served by a formal drainage system and rainfall runoff primarily drains to Copyhold Gill (either directly or via one of the smaller tributaries).

There are a number of incised valleys identifiable on the LiDAR data which may have minor watercourses within them, draining the upper slopes of the Site to the two tributaries to the west and east of the Site.

Due to the rural location of the Site, and proposed purpose as a Parkland Reserve, no public sewer asset plans for the Site have been sourced.

3. Proposed development

The proposed Beechy Bottom Parkland Reserve covers an area of approximately 87Ha of land currently comprising of approximately 80Ha of agricultural land and 7Ha of private recreation grassland. The Proposed Development will comprise a change of use from farmland and woodland to parkland reserve to include public access and instigation of long-term management and rewilding regime, including the establishment of pedestrian and cycle tracks, with new pedestrian and cycle access points off Cuckfield Road to the south and Staplefield Road to the north. Proposals also include the addition of two wooden viewing platforms. Sports pitches at Beech Farm Field will remain for sports use.

A proposed indicative layout plan is presented in Appendix B.

4. Flood risk to the proposed development

4.1. Fluvial and tidal

The EA Flood Map for Planning for the Site area is presented in Figure 4-1. The definitions of each flood zone are presented within Table 4-1.

The Site is principally located within Flood Zone 1. Part of the Site, along the boundary adjacent to Copyhold Gill, is classed as Flood Zone 2.

The EA were contacted to request fluvial flood model data. None currently exists for Copyhold Gill

Table 4-1 EA Flood Zone Definitions

Flood zone	Definition
Zone 1 Low Probability	Land having a less than 1 in 1,000 annual probability of river or sea flooding. (Shown as 'clear' on the Flood Map – all land outside Zones 2 and 3)
Zone 2 Medium Probability	Land having between a 1 in 100 and 1 in 1,000 annual probability of river flooding; or land having between a 1 in 200 and 1 in 1,000 annual probability of sea flooding. (Land shown in light blue on the Flood Map)
Zone 3a High Probability	Land having a 1 in 100 or greater annual probability of river flooding; or Land having a 1 in 200 or greater annual probability of sea flooding. (Land shown in dark blue on the Flood Map)
Zone 3b The Functional Floodplain	This zone comprises land where water has to flow or be stored in times of flood. Local planning authorities should identify in their Strategic Flood Risk Assessments areas of functional floodplain and its boundaries accordingly, in agreement with the Environment Agency. (Not separately distinguished from Zone 3a on the Flood Map). Mid Sussex Level 1 SFRA defines this as having a 1 in 20 or greater annual probability of flooding.

Source: Environment Agency: Flood risk and coastal change guidance, accessed 07/11/2023

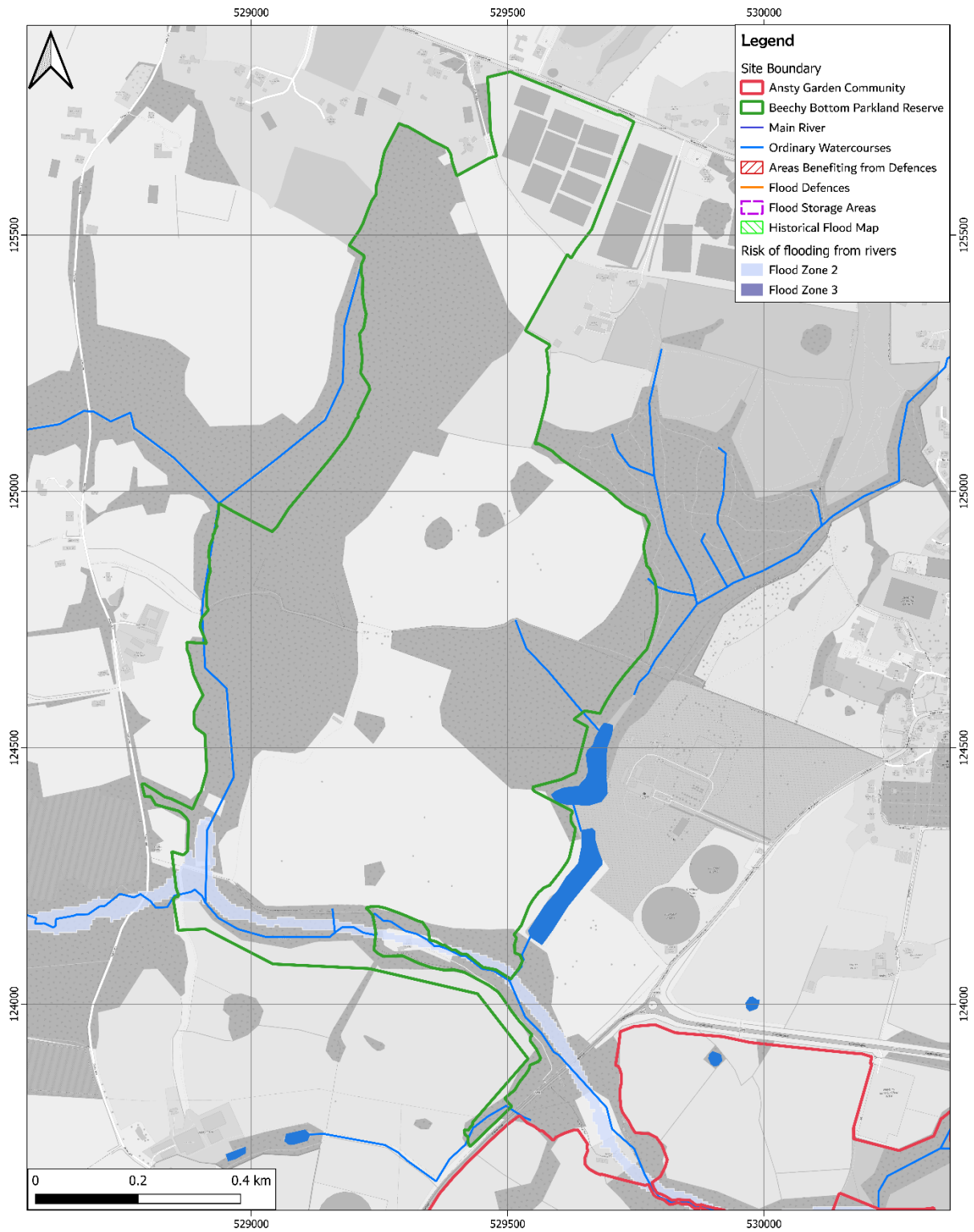
4.2. Surface water

Surface water (pluvial) flooding is usually associated with extreme rainfall events but may also occur when rain falls on land that is already saturated or has a low permeability. Rainfall that is unable to infiltrate into the ground generates overland flow which can lead to flooding or 'ponding' in localised topographical depressions before the runoff is able to enter local drainage systems and watercourses.

A map of surface water flood risk is shown in Figure 4-2. The majority of the Site is at negligible risk of surface water flooding, owing to its elevated position relative to the local watercourses. Linear areas of elevated risk (low to high probability) are present along the bottom of the valleys of Copyhold Gill and its tributaries on the eastern and western boundaries of the Site. There are also some linear flow paths leading from the centre of the Site towards the tributaries following the incised valleys identifiable on the LiDAR data, draining the centre of the Site.

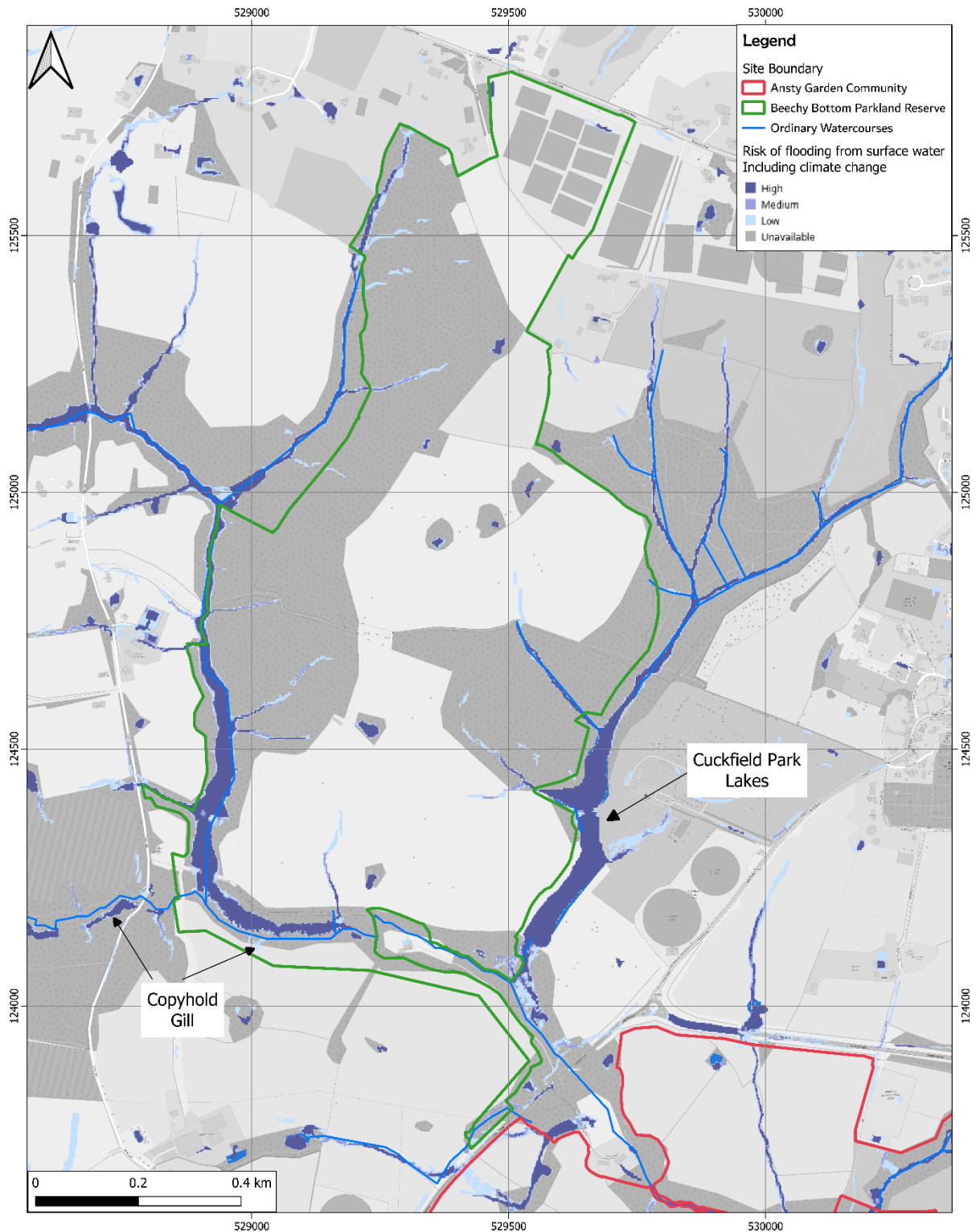
There are no identified critical drainage areas (CDA) within proximity of the Site according to the SFRA (Mid Sussex District Council, 2024).

Figure 4-1 Flood map for planning



Contains Open Street Map data © OpenStreetMap

Figure 4-2 Surface water flood risk zones (including climate change)



Contains Open Street Map data © OpenStreetMap

4.3. Groundwater

Groundwater flooding occurs when the water table rises above the surface elevation (or the floor of sub-surface structures). The Mid Sussex District Council Strategic Flood Risk Assessment (2024) provide mapping based on the Geosmart Groundwater Flood Risk Map which indicates that the Site has low potential for groundwater flooding as a result of the underlying geology.

4.4. Sewer flooding

Sewer flooding can occur during periods of intense rainfall and/ or if a sewer becomes blocked with debris. The Site is not currently served by a sewer system but is adjacent to some residential streets which would be.

Due to the rural location of the Site, it is unlikely that there are any sewers in the vicinity. In addition the Mid Sussex District Council Strategic Flood Risk Assessment (2024) has only identified a total of 11 incidents within the RH17 5 postcode, which includes the urban area of Cuckfield.

4.5. Catastrophic failures

This section considers catastrophic failures of water bearing infrastructure in the area of interest.

The risk of reservoir flooding is related to the failure of a large water storage reservoir. The maximum expected extent of flooding from reservoir failures does not encroach on the Site area according to EA data.

4.6. Historical flooding

The EA database of historical flooding contains no evidence of flooding having occurred in this area. The Mid Sussex SFRA contains no references of historical flooding occurring at the Site area.

5. Suitability of the proposed development

The National Planning Policy Framework requires that “the sequential test is used in areas known to be at risk now or in the future from any form of flooding, except in situations where a site-specific flood risk assessment demonstrates that no built development within the site boundary, including access or escape routes, land raising or other potential vulnerable elements, would be located on an area that would be at risk of flooding from any source, now and in the future”.

The Planning Practice Guidance note on Flood risk and coastal change provides a Flood risk vulnerability and flood zone ‘incompatibility’ table (see Table 5-1) indicating where proposed development should be allowed with respect to the fluvial and tidal flood zones. The Site is mostly located within Flood Zone 1 (see Figure 4-1), and therefore should be acceptable for all types of development without the requirement of an Exception test. This assessment however only accounts for the fluvial and tidal flood risk to the Site, and not the surface water flood risk which is known to exist across the Site.

Table 5-1 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	✓	✗	✗	✗

Source: PPG for Flood Risk and Coastal Change

The proposed Parkland Reserve will consist entirely of Water Compatible uses under the definition of ‘Amenity open space, nature conservation and biodiversity, outdoor sports and recreation and essential facilities such as changing rooms’.

The proposed Parkland Reserve is therefore compatible within all flood zone categories and suitable for the Site. There is therefore no need for a sequential test or exception test for the Site.

5.1. Remaining safe in times of flooding

There are no extensive areas at risk of flooding within the proposed Parkland Reserve, and as such there is easy access (along the proposed footpaths and cycle routes) to areas outside of the flood risk zones should any visitors be in the Parkland Reserve during a flood event.

5.2. No increase to flood risk elsewhere

The proposed Parkland Reserve will not increase flood risk elsewhere as no changes to land profiles are proposed within flood zone areas. Any pathways / cycle tracks will be constructed of pervious material maintaining the existing natural runoff pathways, volumes and flow rates. Where any pathways / cycle tracks are required to cross watercourses, ordinary watercourse consent will be obtained, and the crossing designed to maintain the existing capacity of the watercourse, and morphology of the bed (i.e. by laying culverts into the natural bed material).

6. Conclusions

The proposed Beechy Bottom Parkland Reserve is located within an existing area of mature woodland and fields, bounded by watercourses to the west and the east, which confluence with Copyhold Gill, flowing along the southern boundary. The Site includes areas within Flood Zone 2 of the fluvial flood zones (associated with Copyhold Gill) and areas of high to low risk of surface water flooding (associated with the tributaries on either side of the Site, and drainage paths draining the higher land in the centre of the Site).

The proposed Parkland Reserve will consist entirely of water compatible land use types, featuring paths and cycleways, and retaining the existing sports pitches at Beech Farm Field. The proposed use of the land is therefore acceptable for the level of risk to the Site. The Site will also not increase flood risk elsewhere as the proposed footpaths and cycle ways will be constructed of pervious material to maintain the existing flow paths, volumes and rates.

The proposed development is therefore considered to be appropriate for the Site, without causing flood risk to the users of the Site, or increasing flood risk elsewhere.

Appendix A Report conditions



Report Conditions

This report has been prepared by Aqua Terra Consultants Ltd. (Aqua Terra) in its professional capacity as soil and groundwater specialists, with reasonable skill, care and diligence within the agreed scope and terms of contract and taking account of the manpower and resources devoted to it by agreement with its client and is provided by Aqua Terra solely for the internal use of its client.

The advice and opinions in this report should be read and relied on only in the context of the report, taking account of the terms of reference agreed with the client. The findings are based on the information made available to Aqua Terra at the date of the report (and will have been assumed to be correct) and on current UK standards, codes, technology, and practices as at that time. They do not purport to include any manner of legal advice or opinion. New information or changes in conditions and regulatory requirements may occur in future, which will change the conclusions presented here.

Where necessary and appropriate, the report represents and relies on published information from third party, publicly and commercially available sources which is used in good faith of its accuracy and efficacy. Aqua Terra cannot accept responsibility for the work of others.

Site investigation results necessarily rely on tests and observations within exploratory holes only. The inherent variation in ground conditions mean that the results may not be representative of ground conditions between exploratory holes. Aqua Terra take no responsibility for variation in ground conditions between exploratory positions.

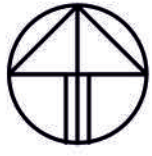
This report is confidential to the client. The client may submit the report to regulatory bodies, where appropriate. Should the client wish to release this report to any other third party for that party's reliance, Aqua Terra may, by prior written agreement, agree to such release, if it is acknowledged that Aqua Terra accepts no responsibility of any nature to any third party to whom this report or any part thereof is made known. Aqua Terra accepts no responsibility for any loss or damage incurred as a result, and the third party does not acquire any rights whatsoever, contractual, or otherwise, against Aqua Terra except as expressly agreed with Aqua Terra in writing. Aqua Terra reserves the right to withhold and/ or negotiate the transference of reliance on this report, subject to legal and commercial review.

Appendix B Proposed layout



DAVIES LANDSCAPE
ARCHITECTS

Office 1C, 1 King Street, Stroud, Gloucestershire, GL5 3BS
w. www.d-la.co.uk e. info@d-la.co.uk t. 01453 760380



0m 50m 250m

- Parkland Reserve
- Existing footpaths
- Existing bridleways
- Proposed footpath
- Proposed 3m hoggin cycle path (see technical detail)
- Proposed dog walking path
- Viewing platform (see technical detail)
- Hides (see technical detail)
- Potential wayfinding signs/information boards (see technical detail)
- Stock Fencing
- Deer Fencing

- (A) Pedestrian/cycle stile (see technical detail)
- (B) Pedestrian stile (see technical detail)
- (C) Bridleway gate (see technical detail)
- (D) Dog/pedestrian gate (see technical detail)
- (E) Field gate (see technical detail)
- (F) Pedestrian gate
- (G) Gate system and step access
- (H) Deer proof pedestrian/cycle gate
- (I) Deer proof field gate
- (Lockable gate)



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P07	14.05.2025	Cyclepath amend	HB	NP
Rev	Date	Details	By	QA

CLIENT
PROJECT
TITLE
STATUS
NUMBER

Fairfax

Beechy Bottom Parkland Reserve

Detailed Masterplan

Planning

Project	Origin	Volume	Level	Type	Discip	Number	Rev
2131	DLA	XXX	XXX	DR	L	21	P07
Job Number	2131	Scale	1:2500	Size	AO		