Flood Risk Assessment &

Surface water Drainage Strategy

Welling United Football Club - Welling

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Non-Technical Summary

What is Proposed?	It is understood that current proposals involve the clearance of the site and construction of a new ground for Welling United Football Club (with space for around 4,000 spectators), commercial / retail space and 104 new residential properties. The residential apartments on site will have balconies / terraces, roof gardens and / or soft landscaped amenity space. Some soft verges, parking, access, and a new artificial football pitch are also proposed.
What is the Problem?	The proposed development will result in the following: ▶ Increase in impermeable surfacing across the site. ▶ Potential to block surface water flow routes. ▶ A more vulnerable' development with increased users on the site. Without mitigation, development on the site will increase the flood risk.
What is the Result?	The proposed development has been designed to ensure the development is safe throughout its lifespan. The following have been recommended: ▶ Flood resilient design is recommended to 42.9 m AOD ▶ Thresholds to basement and substation to be raised as high as is possible ▶ Surface water runoff from the site to be limited to 2 l/s where infiltration is not viable.
What are the Next Steps?	This report should be submitted to the local planning authority to support the planning application. To mitigate the above identified risks, the following elements are expected to be conditioned by the Local Planning Authority to be implemented or considered further at detailed design stage: ▶ Survey of the existing drainage system and connectivity to the public sewers. ▶ Ground investigation to determine suitability for the infiltration of surface water beneath the football pitch. ▶ Detailed drainage design will need to be undertaken based upon the recommendations as set out within this Flood Risk Assessment. This includes blue and green roof design.

Report Record

Project Name	Welling United Football Club - Welling
Client	Woolwich Road Ltd
Report Type	Flood Risk Assessment
Report Ref	R203-FRA-01.0_4765
Issue Date	November 2023
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Report Revisions

Revision Ref	Date	Author	Details

Contents

Figures

Tables

Appendices

APPENDIX A: Policy & Guidance

APPENDIX B: Plans

APPENDIX C: Flood Risk Management

APPENDIX D: SuDS

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1.0 Introduction

1.1 This report presents the findings of a Flood Risk Assessment - a report which considers the likelihood for flooding to occur and identifies any suitable mitigation measures. This report has been prepared in line with best practice guidance and planning policy.

What is a Flood Risk Assessment?

1.2 A Flood Risk Assessment (FRA) identifies and quantifies the flood risk at a site from a number of sources and demonstrate how flood risk will be managed now and over the development's lifetime, taking climate change into account, and with regard to the vulnerability of its users. A site-specific FRA should be appropriate to the scale, nature and location of the development.

1.3 A Flood Risk Assessment is required by regulators to support a planning application or remove objections if a new development (including extensions) or change-of-use proposal (to a more vulnerable use) is in an area that is at risk of flooding by rivers, the sea, surface water or groundwater (or a combination). As a minimum, the National Planning Policy Framework (NPPF) states that a Flood Risk Assessment must be submitted.

1.4 The Environment Agency provides detailed guidance on what they would expect to see in a Flood Risk Assessment for different development scenarios, depending on the size of the development, which Flood Zone the development is located in and the vulnerability. In addition, the Lead Local Flood Authority (LLFA) are statutory consultees for any new major development consisting of 10 dwellings or more. Find out more about Flood Risk Assessments here.

The Subject Site

Table 1 **Site Details**

Address	Park View Road Football Stadium and 1-3 Park View Road, Welling DA16 1SY
Eastings, Northings	547130, 175610
Area	1.23ha

1.5 The site is roughly rectangular in plan and currently comprises the home ground of the semi-professional football team, Welling United Football Club. The team play in the National League South and reportedly moved to Park View Road in 1977. The existing ground has a capacity of 4,000 (including 1,000 seated spectators). The site is also used as the home ground of Erith & Belvedere Football Club, a smaller non-league football side.

1.6 The site also comprises 1-3 Park View Road, a part-three, part-two storey brick building along Park View Road. The building is primarily in commercial use, with some residential apartments to the rear/above. A public house known as Guy Earl of Warwick lies directly to the west of the site, adjacent to Roseacre Road.

1.7 The site lies in an urban area, located on the southern side of Park View Road (the A207 road) within the town of Welling, located within the London Borough of Bexley. The site lies adjacent to Bexleyheath Sports Club and Cricket Ground and directly to the north of Danson Park. A Hyundai car dealership is present directly north of the site. Alsford Timber and Builder´s Merchant is present directly north-east of the site, on the northern side of Park View Road. The site area is shown in Figure 1.

1.8 The wider area around the site is generally residential in nature. The site lies approximately 800m to the south-east of Welling railway station and approximately 1km to the west of Bexleyheath Town Centre.

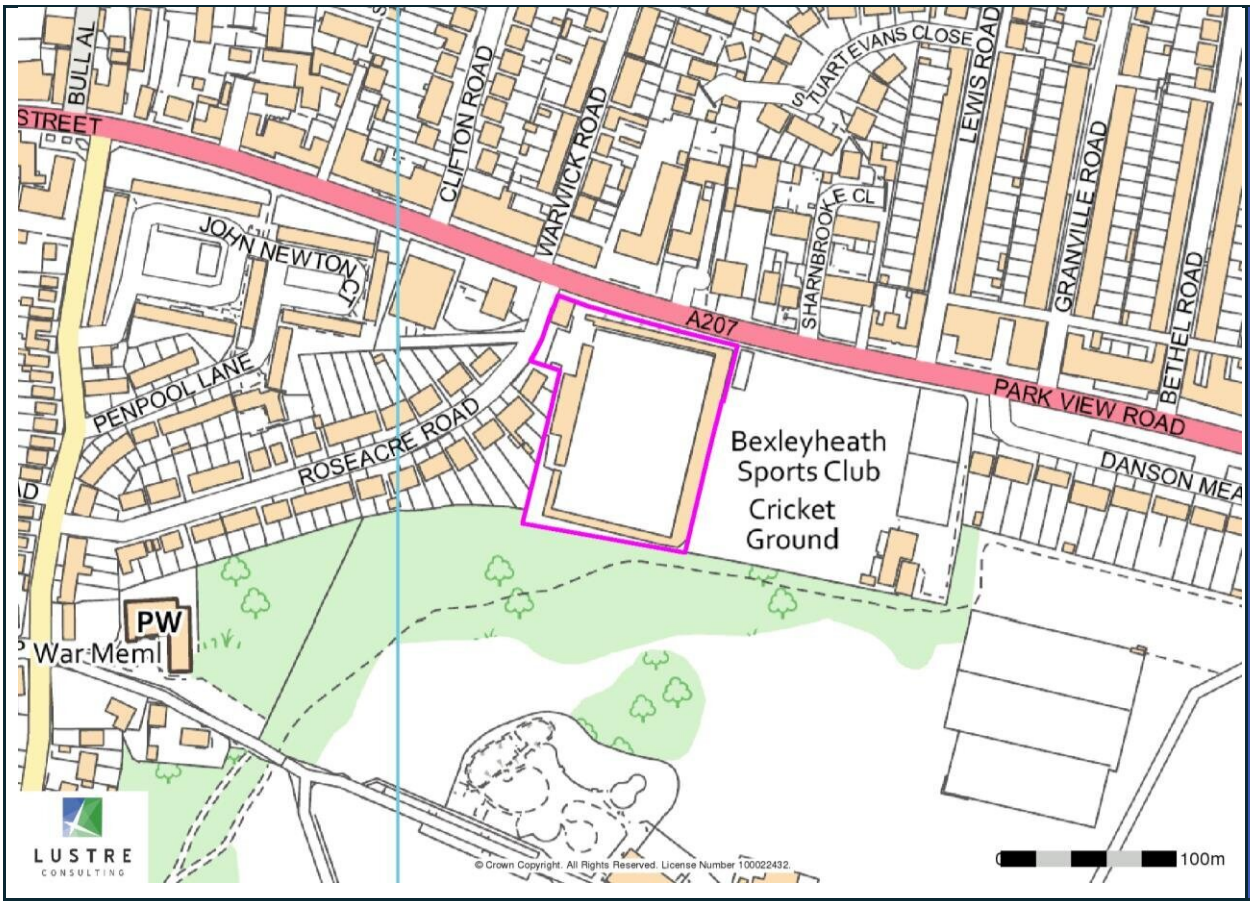


Figure 1 Site Location Plan

The Proposed Development

1.9 The site is proposed to be redeveloped to provide the community of Welling and Welling United Football Club with a fit for purpose, multi-use sports facility[1]. Current proposals indicate that this will consist of a new 3G playing surface, new training classrooms and hospitality areas, management and admin areas, new changing, physio and first aid rooms, with some street level commercial / retail space, aiming to provide a better street presence. A new club café and bar is also proposed. The new ground will have a capacity of approximately 4,000 spectators (both seated and standing) and will include minimal disabled parking spaces only. No public parking will be provided as part of the scheme. Residential accommodation is proposed as part of the development and will comprise 104 new homes (ground floor and seven-storey residential accommodation). The residential apartments on site will have balconies / terraces and / or roof gardens and soft landscaped

[1] Welling United Football Club and Community Scheme Pre-Application Meeting Document dated 2nd February 2023.

amenity space will be provided. Some soft verges, parking, access, and a new 3G artificial pitch are proposed. Proposed visuals for the scheme are presented in Figure 2.

1.10 A partial basement level is proposed within the central area of the building. No undercroft car parking or other underground structures are anticipated.

1.11 Enabling works to permit the development are understood to involve the full clearance of the site. It is understood that, with the exception of the basement area, site levels will remain relatively similar to those currently present.

Front Elevation

Rear Elevation

Figure 2 Proposed Development Plan

The Stakes & Objectives

1.12 Flooding from any source has the potential to disrupt lives, communities and businesses. This risk is exacerbated when flood events occur suddenly with little or no warning.

1.13 It is generally agreed that climate change is resulting in more extremes of weather and rising sea levels[2]. This means that the risk of flooding will increase throughout the lifespan of the development.

1.14 Based on the requirements of both national and local level policy and guidance, this FRA will seek to determine if the proposed development is likely to:

- be affected by current or future flooding from any source over the lifetime of the development
- increase the risk of flooding elsewhere
- be safe for future occupants throughout the lifespan of the development

1.15 Where required, this FRA will present appropriate mitigation measures manage any risks identified.

Report Structure, Limitations & Changes

1.16 Chapter 2 of the report provides information relating to the site setting and details on flood risk from all sources is set out in Chapter 3. Chapter 4 presents the FRA summary with mitigation and management measures for controlling flooding and drainage detailed in Chapter 5. Conclusions and recommendations are presented in Chapter 6.

1.17 This assessment has been undertaken in accordance with our Terms & Conditions. Full details on limitations and reliance are provided in those Terms. Third party information which has been reviewed and used to inform the assessments presented herein, including public records held by various regulatory authorities and environmental database data has been assumed to be true and accurate.

This assessment has been carried out to determine the potential risks posed to future end users, along with other key receptors, based on the current development. Should revisions in the development proposals result in a change any assessment parameters detailed in this report, a re-assessment of the risk should be carried out.

[2] https://www.gov.uk/guidance/climate-change-explained

2.0 Site Setting

2.1 This chapter details the topology, geological, hydrogeological and hydrological site setting.

Topography

2.2 A site-specific topographical survey was undertaken in November 2022 by Sumo Services Ltd. Site levels are generally flat, with a general fall from south to the north. Elevated areas of the site are embankments on the northern and southern boundary against which have been constructed to form terraces.

2.3 The lowest elevations within the site are located within the north-west of the site, with the lowest recorded level shown to be at 42.05 m AOD. By contract, the highest elevation, 45.75 m AOD, is recorded in the south-west of the site.

2.4 Figure 3 shows the topography on and surrounding the site based upon 1 m resolution DTM LiDAR data.

Figure 3 Site Topography (LiDAR data)

2.5 Spot levels along the north boundary show a fall towards Park View Road (A207), with the lowest recorded level shown to be at 41.95 m AOD.

2.6 The Western site boundary falls gently from 42.21 m AOD to 42.18 m AOD in the centre of the Highway (Roseacre Road) and rises to 45.83 m AOD in the south-west corner of the site.

2.7 Figure 4 presents the site within its wider topographical context. This shows the site is situated upon higher ground between the River Thames (north) and the River Shuttle (south). ground levels within this part of the catchment generally fall towards the south, albeit with some undulations such as the higher spot 200 m to the south of the site.

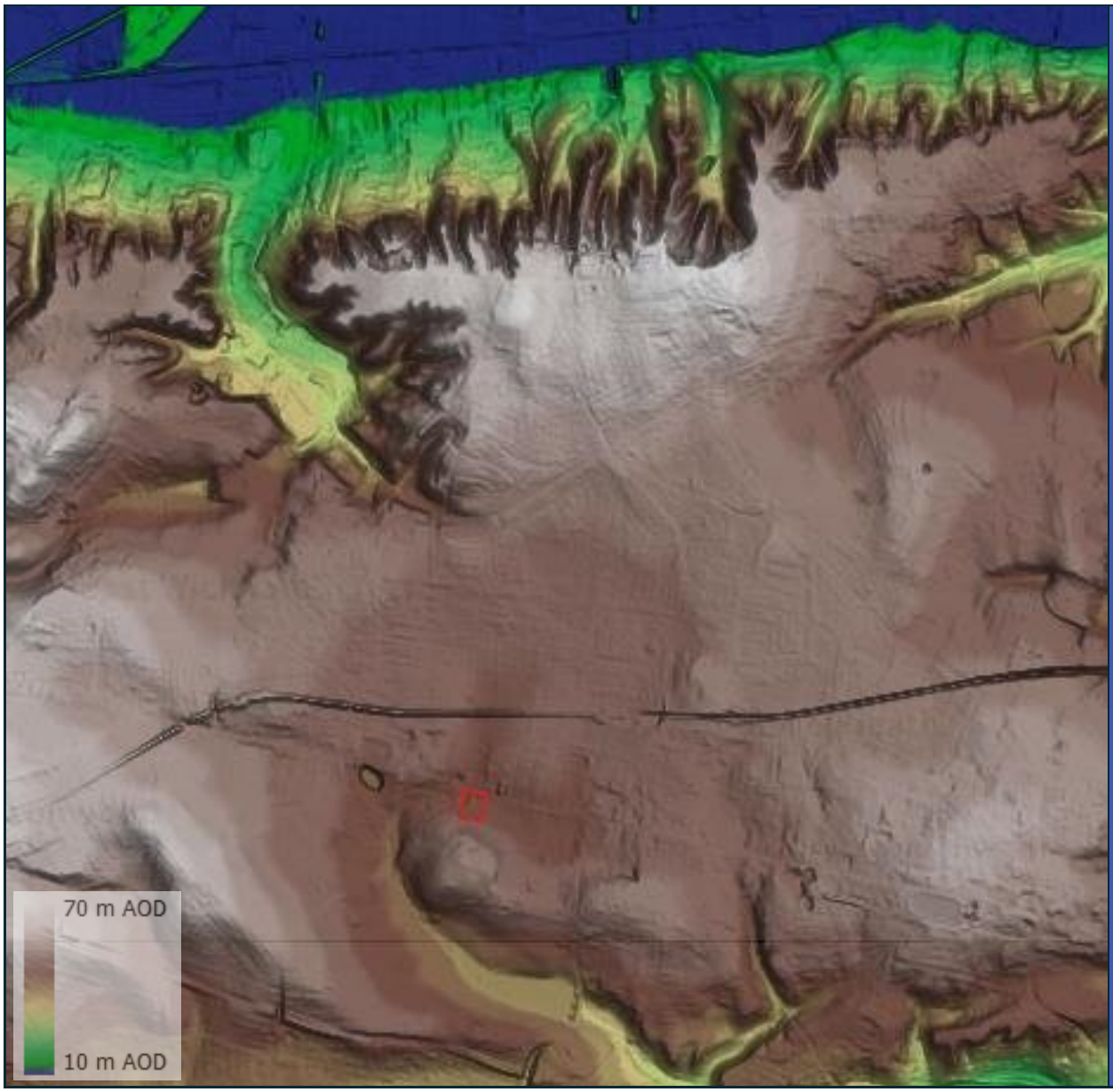


Figure 4 Catchment Topography (LiDAR Data)

Geology

2.8 The 1:50,000 British Geological Survey (BGS) map (Sheet 271 for Dartford)[3] and the BGS website (National Geoscience Information Service)[4] show most of the site to be directly underlain by bedrock geology of the Harwich Formation, which comprising glauconitic silty or sandy clays, silts and fine to coarse grained glauconitic sands varying to flint gravel beds.

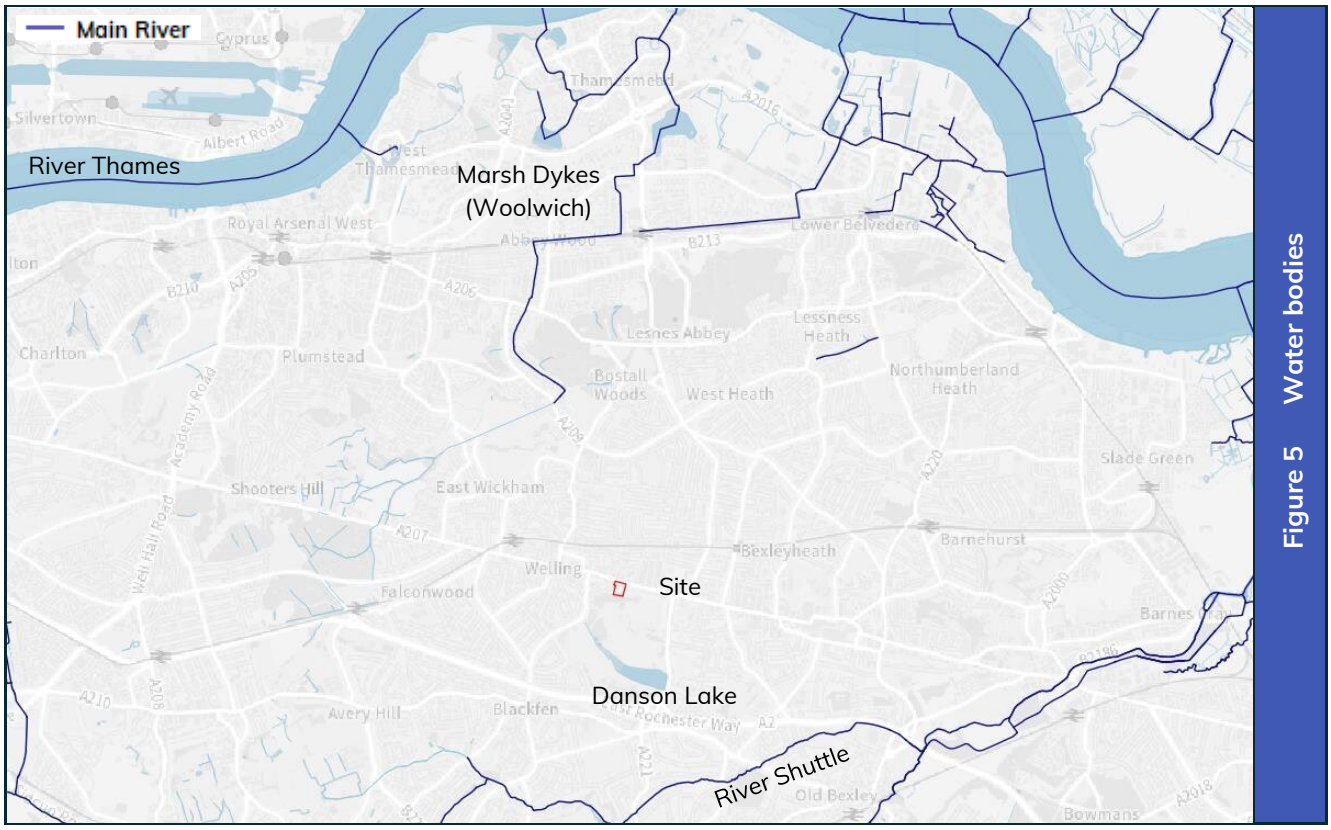
2.9 It is noted that the Harwich Formation is overlain locally by the London Clay Formation within the surrounding area with the nearest boundary located adjacent to the south of the site. The London Clay Formation may therefore be encountered beneath the site although it would not be expected to exceed 2m to 3m in thickness. The London Clay Formation typically comprises bioturbated or poorly laminated, blue-grey and grey-brown, slightly calcareous, silty to very silty clay, clayey silt, and sometime silt with some layers of sandy clay. These strata were formed approximately 47.8 to 56 million years ago during the Paleogene period.

2.10 No superficial deposits are shown to underlie the site, and none are recorded to be present within a 1km radius of the site boundary.

[3] BGS Solid and Drift Map Sheet 271 for Dartford (1:50,000)
[4] Information from BGS website: www.bgs.ac.uk consulted in October 2023.

Hydrology

2.11 In order to understand the hydrology within the vicinity of the site, Ordnance Survey and Environment Agency data has been reviewed. This is presented in Figure 5.



2.12 The nearest water body to the site is Danson Lake (a 'Boating Pool') located from approximately 278 m south of the site. It is assumed that surface water from the site would naturally flow to this location.

2.13 The closest main river is located approximately 2.1 km south of the site named River Shuttle. 'Main Rivers' are usually larger rivers and streams. The Environment Agency carries out maintenance, improvement or construction work on 'main rivers' to manage flood risk.

2.14 It is understood from FEH mapping (Figure 6) that the site is on the line of a historic topographic low which drains towards Danson Lake Drains to the River Shuttle.

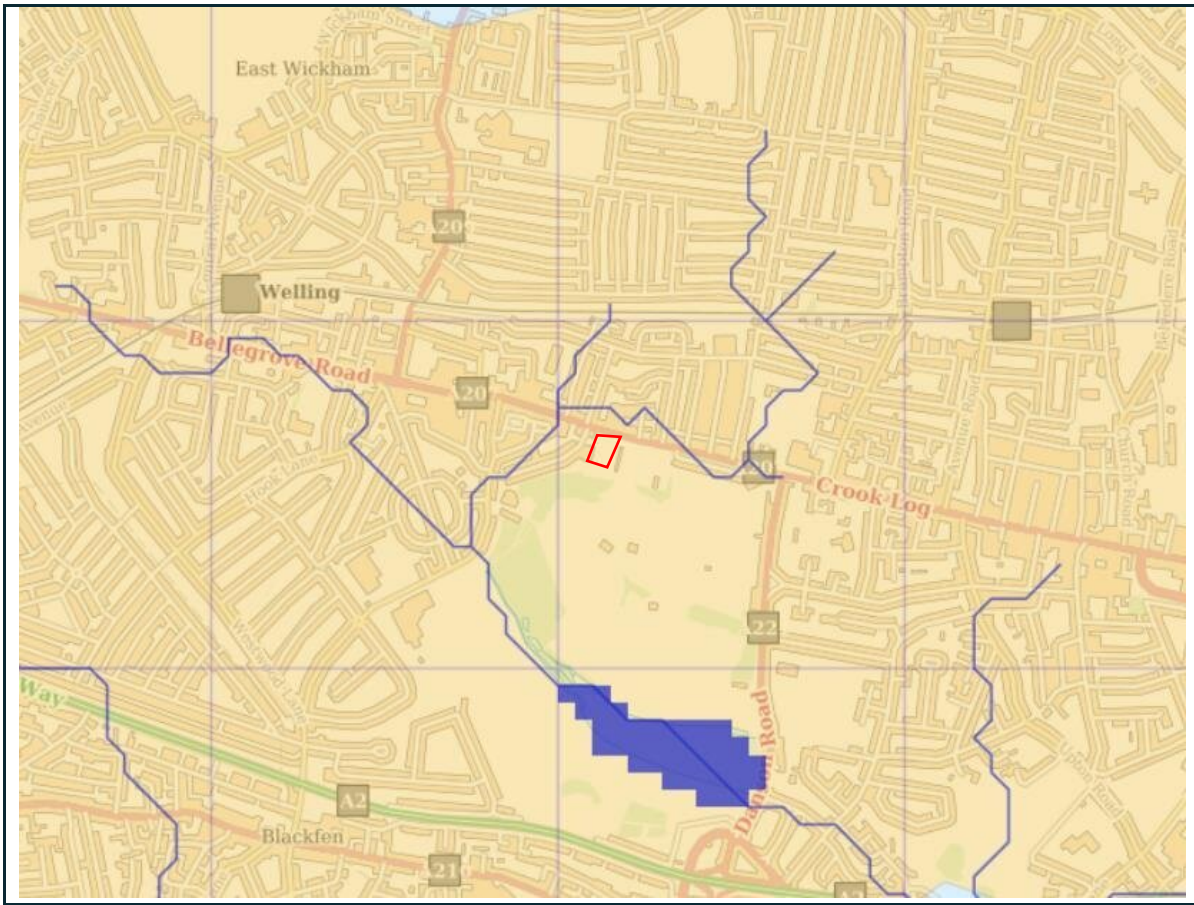


Figure 6 Extract of FEH data

2.15 Ordinary watercourses refer to all other rivers, streams and ditches not designated as 'main river'. The Lead Local Flood Authority, district councils and internal drainage boards carry out flood risk management works on ordinary watercourses.

Existing Drainage

2.16 The site (approximately 12,379 m^2) is 38% hard landscaped. This includes the roof of the various buildings, circulation areas, stands and the car park. Soft landscaping area includes the football pitch and a raised vegetated bank along the northern boundary.

2.17 Based on site photos taken by Lustre Consulting during a site walkover, a review of the drainage records and survey drawings the following assumptions are made about the existing drainage:

- The roof and building drainage from the Victorian property on the junction of Roseacre Road and Park View Road drain via an assumed combined outfall to the foul sewer in Roseacre Road;
- The hardstanding areas (car park, west stand, ticket shop and club house, office and paved circulation areas) and western part of the northern terrace, drain to the public sewer network in Park View Road, via an assumed outfall(s) located in the north east of the site;
- The hardstanding areas (east stand, changing rooms and paved circulation areas on the east side) and part of the northern terrace, drain to the public sewer network in Park View Road, via an assumed outfall(s) located in the north west of the site (east of the Victorian building);
- Some of the hardstanding areas appear to runoff direct to the pitch, including the southern terrace.
- The football pitch is soft landscaped/free draining.

3.0 Flood Risk

3.1 This Chapter assesses the risk of flooding from fluvial, tidal, sewer, reservoir and groundwater sources.

Fluvial & Tidal Flooding

3.2 A review of flood information in the form of Flood Maps and historical flood events (typically fluvial) are presented below.

Flood Maps (Rivers and Sea)

3.3 The Environment Agency flood risk mapping for planning, shows the site to be situated within Flood zone 1. Figure 5 provides an extract of the flood map.

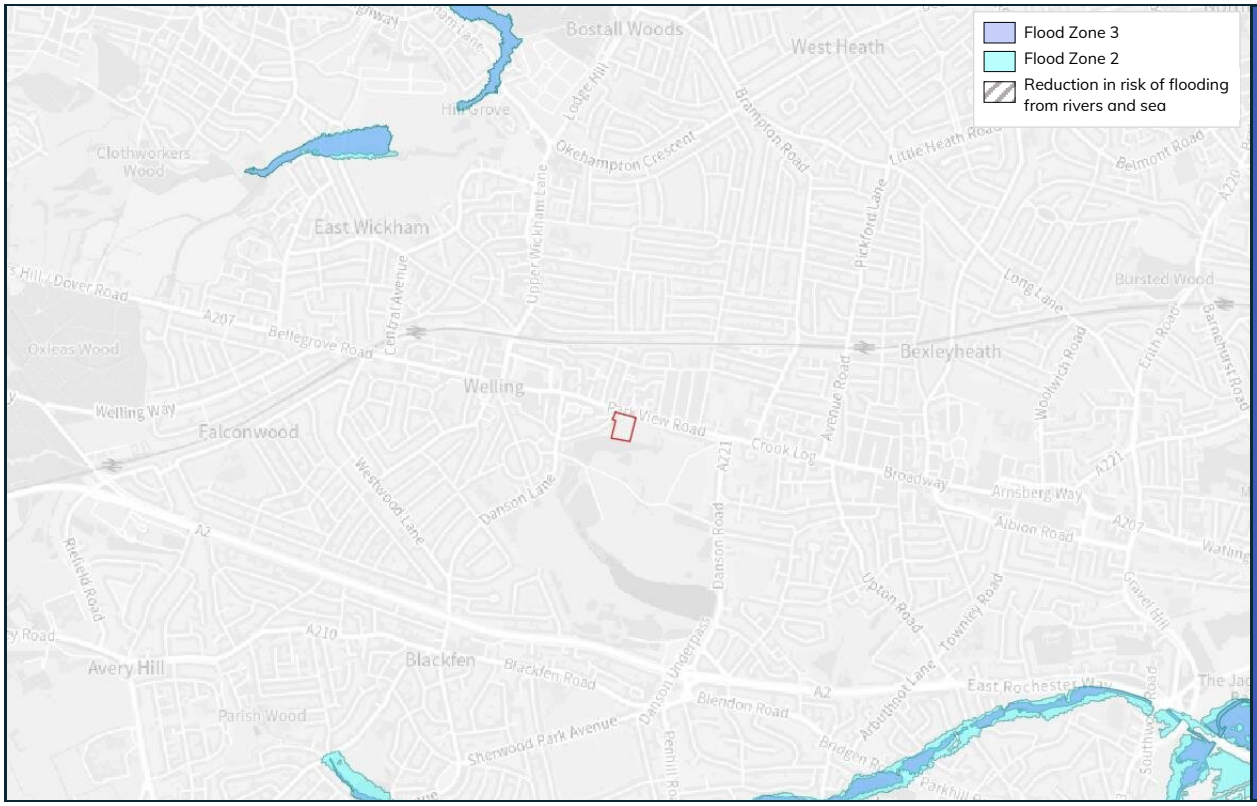


Figure 7 Flood Zones from fluvial and tidal sources

3.4 Flood zone definitions are provided below:

- Flood Zone 1 comprises land assessed as having less than a 0.1% Annual Exceedance Probability (AEP), the probability of flood occurring in any given year, when ignoring the presence of defences from fluvial or tidal sources.

- Flood Zone 2 is defined as having a probability of flooding of between 0.5% and 0.1% in any given year.
- Flood Zone 3 is defined as having a 1% or greater probability of flooding in any given year. As the predominate source of flooding during the extreme scenarios is from tidal sources.

Historical tidal and fluvial flooding

3.5 Information gathered from the Environment Agency's *'Recorded Flood Outlines'* and reproduced in Figure 9, shows all the Environment Agency's records of historic flooding from rivers, the sea, groundwater and surface water in the general vicinity of the site.

3.6 The site is not shown to have been affected by flooding based on Environment Agency's 'Recorded Flood Outlines' Dataset. The closest record is recorded from approximately 2.08 km south relating to a tidal/fluvial flooding event in 1968 from the River Shuttle.

Groundwater Flooding

3.7 Groundwater is caused by groundwater rising and escaping due to sustained periods of higher than average rainfall or a reduction in abstraction for water supply.'

3.8 Groundwater flooding can result in a prolonged period of flooding, especially where the topography prevents floodwater from flowing over the surface.

3.9 The SFRA (2020) includes mapping which shows the approximate depth of groundwater across the borough. The mapping is course and does not include any clear base mapping to confirm the location of the site, though the approximate location of the site is shown to lie within an area in which the depth of the groundwater is between 20 m - 25 m below ground level, shown in Figure 8.

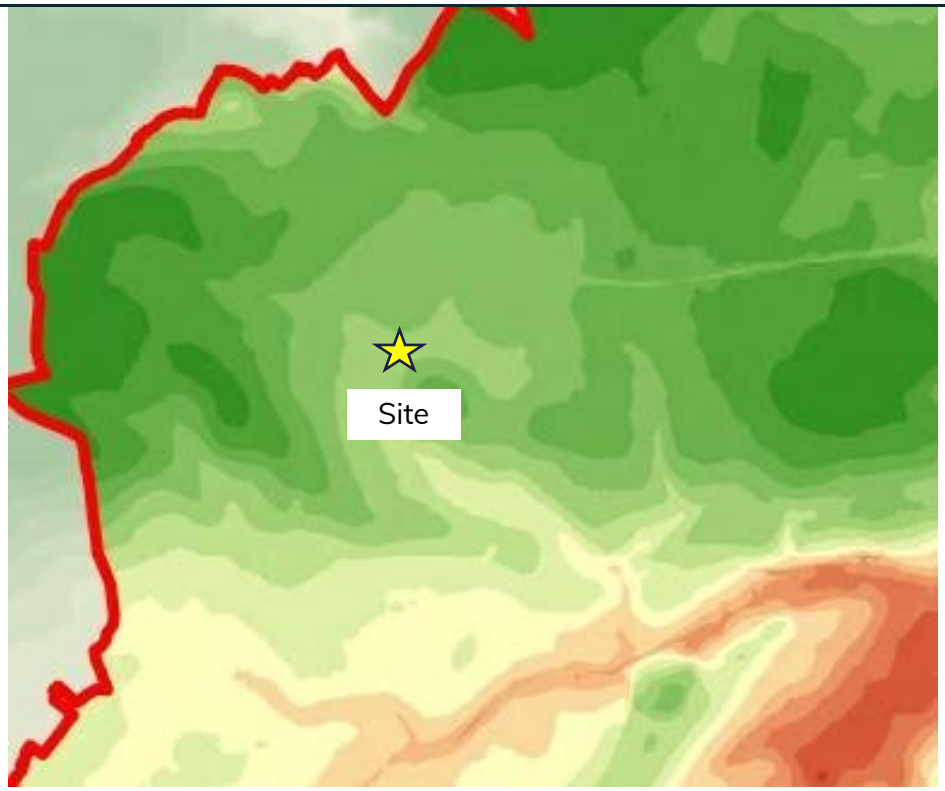


Figure 8 Depth to Groundwater

3.10 Additionally, the SFRA (2020) summarises the historical flood risk from groundwater as follows:

> *"Historic groundwater flooding is reported in the PFRA at Thamesmead only, where issues with standing water are thought to be caused by the interaction of high groundwater levels and limited capacity sewers. Where, groundwater flooding occurs it can also reduce the capacity in sewers as such exacerbating flooding."*

3.11 Local factors may affect the risk of groundwater flooding, which cannot be picked up by broadscale modelling.

3.12 No evidence of ground water flooding within the vicinity of the site has been provided by the SFRA.

3.13 Based on the BGS historical borehole records on and within close proximity of the site no groundwater was encountered within the 6 m deep boreholes.

3.14 In accordance with Figure A23 of the SFRA, the site is located in an area with 'medium' potential for infiltration SuDS'.

Surface Water Flooding

3.15 The extent of flooding shown within the EA's *'Risk of Flooding from Surface Water'* mapping has been reviewed, as shown in Figure 8.

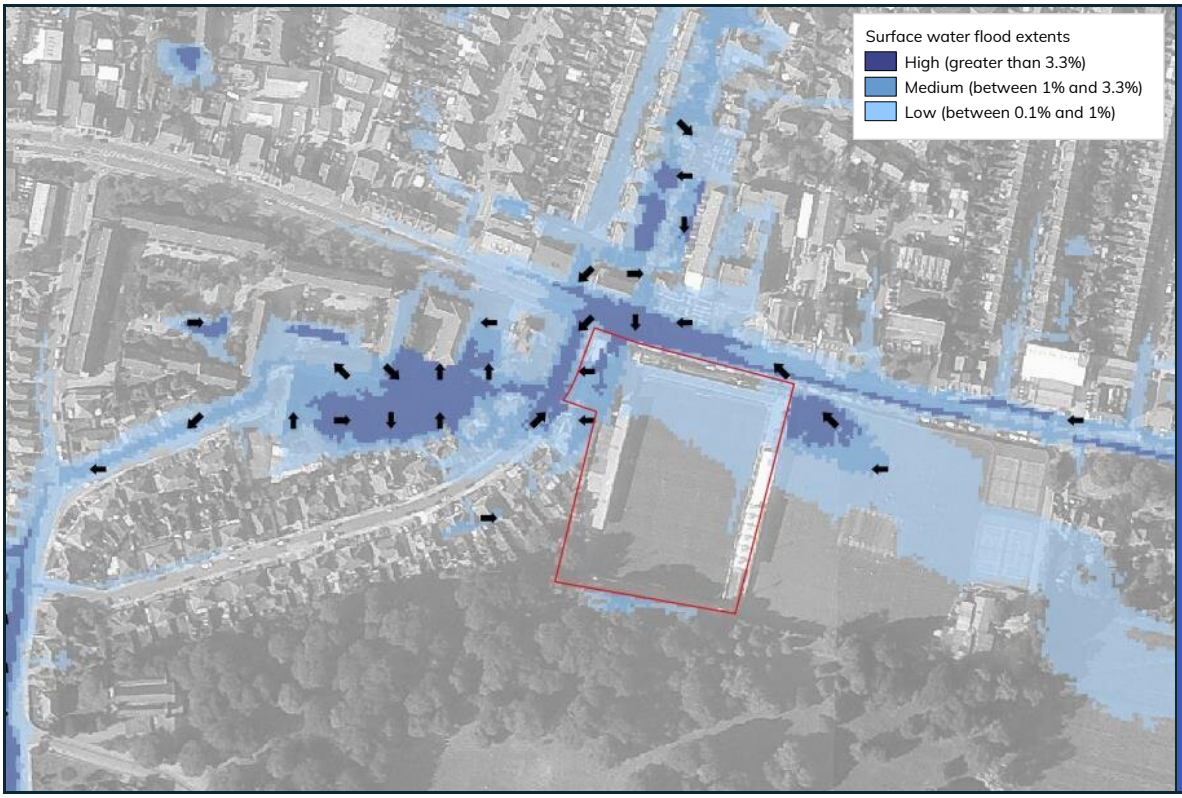


Figure 9 Extents of Surface Water Flooding

3.16 The mapping shows that Park View Road adjacent to the site is at a high risk of surface water flooding (greater than 3.3% probability of flooding in any given year) with the site itself to be situated within an area predominantly at 'very low risk' from surface water flooding (<0.1%, though the northern third of the site is shown to be at risk of flooding during the low risk flood extent (probability of surface water flooding of between 0.1% and 1% in any given year).

3.17 A surface water flow path is shown to pass the site from east to west pass the site and from the north with ponding occurring more extensively immediately to the west of the site in the rear gardens of Roseacre Road during this scenario.

3.18 Additionally, during the medium and low scenarios, water is shown to pond on the north east of the site falling to Roseacre Road.

3.19 Flood depths are shown to be generally <300mm deep during the high risk, 300-900mm deep during the medium risk, and over 900mm deep during the low risk scenarios.

3.20 Velocity is shown to be <0.25m/s during the high and medium risk scenarios, but >0.25m/s during the low risk scenario.

3.21 Surface water flood extents within close proximity of the site appear to follow topographical lows and ultimately flow towards the west, and then south and east towards the lake in Danson Park.

3.22 In accordance with the Charlton to Bexley Riverside Integrated Water Management Strategy (April 2017), the site is not located within a Critical Drainage Area.

3.23 In accordance with *'Figure A18 Areas potentially vulnerable to pluvial climate change'* of the Level 1 SFRA, the north of the site is identified as an area potentially vulnerable to climate change.

Reservoir Flooding

3.24 According to the Environment Agency's indicative maps and Figure A15 of the SFRA, the site is not located within an area that could be affected by a failure of a reservoir. The nearest modelled output is a 'wet day' scenario, shown to be located from approximately 885 m to the south-east.

3.25 The datasets include three main scenarios, which are defined as follows:

- Dry day scenario is the reasonable worst-case flooding that would result from an uncontrolled escape of water from a reservoir is full and when the river downstream is at a normal level.
- Wet day scenario indicates the reasonable worst-case flooding that would result from an uncontrolled release of water if the reservoir is full and the downstream river is in extreme flood. It is understood that the presence of flood defences along watercourses have been excluded from this analysis.

- Fluvial Contributions shows the extent of river flooding added to the reservoir model to determine the impacts of failure on a wet-day.

3.26 Reservoirs in England are regulated by the Reservoir Act 1975, which sets out stringent conditions for the operation of reservoirs to ensure high levels of safety. They are designed and operated in a way to ensure the likelihood of failure is low.

Sewer Flooding

3.27 Sewer flooding is typically defined as occurring when intense rainfall overloads the sewer system capacity (surface water, foul or combined), and / or when sewers cannot discharge properly to watercourses due to high water levels.

3.28 Sewer flooding can also be caused when problems such as blockages, collapses or equipment failure occur in the sewerage system. Sewer flooding can be exacerbated during times of high river or tide levels which prevents surface water from leaving the drainage network.

3.29 Table 3-1 within the SFRA states that within the 'DA16 1' postcode area there has been 1 recorded flood incidents. This data was obtained from Thames Water. The majority of flood events are external flooding events, so flooding that does not enter the property.

3.30 According to the SFRA a sewer incident has been recorded at/or close to the site (See Figure 7). No further detail on the incident has been provided at the time of writing.

3.31 Thames Water's asset plan shows a separated foul sewer and surface water sewer network in vicinity of the site. The asset plan from Thames Water is included in Appendix D.

3.32 The site is located adjacent to a large 1575 mm surface water sewer which flows west (approximate depth of 3 m) beneath the centre of Park View Road past the site. It is possible that this forms part of a historically culverted watercourse. The sewer then turns south (and then south west) down Roseacre Road. This is joined on the junction of Park View Road and Roseacre Road by a 750mm surface water sewer from the north west. This matches the records shown on the FEH data (Figure 6). An overflow surface water sewer (750mm diameter) runs in the gardens to the rear of 23-45 Roseacre Road, west of the site.

3.33 A second surface water sewer network is present in the surrounding streets (225 mm) running east to west on the near side of Park View Road in front of the site, down Roseacre Road past the site before running west in the gardens to the rear of numbers 23-45 Roseacre Road.

3.34 The foul sewer network adjacent to the site flowing north up Roseacre Road (175 mm diameter), then running east along Park View Road in a 450 mm diameter pipe at a depth of approximately 2 m).

3.35 The public sewer records also show a foul sewer (unknown diameter and depth) within the curtilage of the site (north west corner) is shown to connect to the foul sewer running along Roseacre Road. Within the site boundary, foul manhole ID 061M, 061R and 061S are noted.

3.36 No surface water connection is noted from the on the records, but connections are shown to the 450 mm foul from the north-west of the site (east of no. 3 Park View Road) to the foul sewer running along Park View Road (downstream of manhole ID 061B) – no depth or diameter is noted.

3.37 One historic record of flooding from sewers has been recorded at or close to the site, but risks from sewer flooding would most likely be a result of a failure or surcharge of the sewer system on Roseacre Road or Park View Road. Flood depths could be considerable in the event of a significant blockage/collapse of the surface water sewer (possible culverted watercourse as it passes the site.

3.38 Floodwater within these areas would be able to follow a route similar to the surface water flood risk mapping, resulting in flooding on Roseacre Road and Park View Road. Significant depths could be expected in this scenario. Although there is a risk of sewer flooding, this source is considered to be a residual risk.

Historical Flood Events

3.39 Information gathered from Bexley Borough Council's *'Recorded Flood Events'* and reproduced in Figure 7, shows Bexley Council's records of historic flooding from rivers, the sea, groundwater, sewers and surface water. The site is shown to have been affected by flooding based on Bexley Council's *'Recorded Flood Events'* dataset. There are records of flooding from both sewers and surface water (pluvial) flooding at or very close to the site.

Further details have been requested from Bexley Council but no further details received at the time of writing.

3.40 A Thames Water sewer flood history search for the site (dated September 23) indicates that:

'The flooding records held by Thames Water indicate that there have been no incidents of flooding in the requested area as a result of surcharging public sewers".

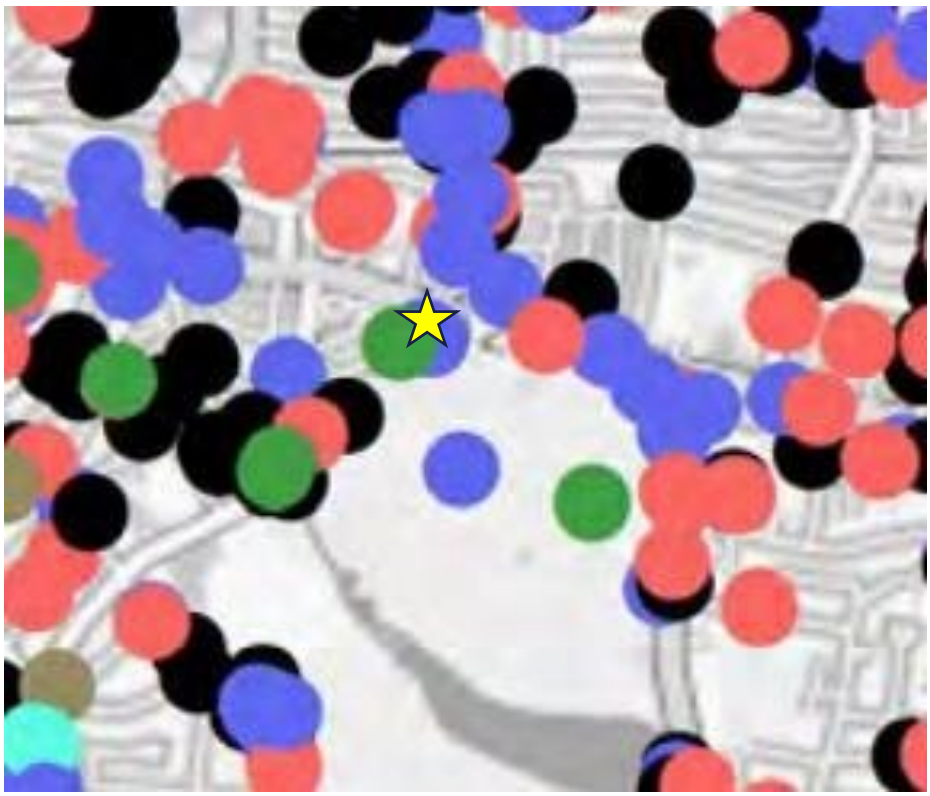


Figure 10 Historical Flood Events

Flood Risk Summary

3.41 This section summarises the likelihood of flooding to the subject site irrespective of the proposed development, i.e. the risk posed to the parcel of land in its current state and setting. The Table below summarises the findings of the FRA.

Table 2 Flooding Assessment Summary

Flood Risk Category		Possible Issue Identified?	Comment
Fluvial and Tidal	No		Fluvial – Flood Zone 1
Surface Water	Yes		High, moderate and low risk from surface water in Park View Road and east of the site in Roseacre Road. Low risk on site. Historic record of flooding at/close to the site according to SFRA records.
Sewer	Yes		Historic record of flooding at/close to the site according to SFRA records. Flood from sewers remains a residual risk.
Reservoir	No		Closest flood extent located 885 m south-east
Groundwater	No		Low- No evidence of ground water flooding within the vicinity of the site

3.42 This FRA has determined that mitigation measures will be required to address the flood risk (sewer flooding and surface water flooding). A surface water drainage strategy will need to be developed in accordance with the flood risk policies and guidance. A drainage strategy has been set out in Chapter 6.

4.0 Suitability For Development

4.1 This section considers the above summary but in the context of the proposed development, i.e. determining if the proposed development is likely to be appropriate in the flood risk setting.

Sequential Test

4.2 A sequential test is required to promote new development in areas at lower risk of flooding.

4.3 The sequential test will need to be undertaken in accordance with paragraphs 162 to 163 of the NPPF and the sequential approach to the location of development.[5]

4.4 As the site is located in Flood Zone 1, a sequential test is not required.

Vulnerability of Proposed Development

4.5 The proposed development is deemed to have a Flood Risk Vulnerability Classification of 'More Vulnerable', when considering Table 2 within the NPPF Guidance[6]. The compatibility of the proposed development within its respective flood zone, is set out within the NPPF Guidance[7] Table 3 and replicated here as Table 3.

Table 3 **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	✓	×	×	×
✓	Development is appropriate				
×	Development should not be permitted				

[5] https://www.gov.uk/guidance/flood-risk-and-coastal-change#the-sequential-approach-to-the-location-of-development
[6] https://www.gov.uk/guidance/flood-risk-and-coastal-change#Table-2-Flood-Risk-Vulnerability-Classification
[7] https://www.gov.uk/guidance/flood-risk-and-coastal-change#Table-3

4.6 In accordance with Table 3, the 'More Vulnerable' development is appropriate within Flood Zone 1.

Concluding Remarks

4.7 The proposed development is shown to be appropriate within its flood zone based upon its vulnerability.

4.8 Advice on ensuring the development remains safe over its lifetime has been set out and discussed in Chapter 5.

5.0 Management of Flood Risk

5.1 This section addresses the flood risk posed by the relevant sources of flooding identified in Table 2. Surface water flooding presents the greatest risk to the site. A management plan has been included in Appendix C.

Finished Floor Levels

5.2 The Finished Flood Level (FFL) of the proposed buildings on the northern side of the site are to be set as high as is practically possible to minimise the residual risk of surface water/sewer flooding.

5.3 It is understood that level access will be required from Park View and Roseacre Road which will mean that a raised FFL (42.9mAOD should be targeted) for the more vulnerable ground floor plant rooms, commercial space, residential entrance lobbies and stairwells to the basement.

5.4 This will be achieved through the introduction of a series of internal ramps (rising by between 400-750mm) within the entrance lobbies of the residential areas, lift/stairwells to the basement, commercial areas and plant rooms.

5.5 Plant could be raised on plinths where raising of floor levels in plant spaces is not possible.

Flood Resilience and Resistance

5.6 The following flood resilience measures have been proposed for the proposals which should be incorporated into the scheme detailed design of the site.

► The basement will also be designed to be fully watertight to at least 42.9mAOD. The only access to the Basement will be from the raised ground floor level. Slab penetrations will be from the raised ground floor level or will be suitably sealed and watertight where this is not possible.

► To protect the basement areas, and where ramps cannot be designed to mitigate the risk, demountable flood barriers may need to be included as well as the inclusion of upstands to protect the entrance lobbies (lift and stairs). The basement areas will not be accessible when

flooding occurs or is imminent, and site management will need to evacuate and prevent access to the basement in the event of flooding.

- Electrical services will run from the ceiling and be raised a minimum of 450 mm (ideally above raised ground floor level (nominally above 42.9mAOD).

- The construction and fittings must ensure quality workmanship at all stages of construction. This will ensure the proposals remain as resilient to flooding as possible.

- Where ground levels cannot be raised above 42.9mAOD, flood resilient design should be considered such as flood resilient surface finishes, resilient plaster or plasterboard laid horizontally. This will include the refuse stores, and the covered external areas, parking and turnstyles.

5.7 These measures have been recommended and will incorporated into the design of the scheme to help reduce the risk of flooding to the property. However, a risk remains which is hard to quantify due to the complex flood risk interactions within this urban environment.

5.8 These resilience measures will help reduce the risk to future occupants on the site but also to allow a swift clean-up and repair operation if internal flooding were to ever occur.

Protection, inspection and maintenance of drainage assets

5.9 The position of the sewers should be noted by the contractor and protected during the works

5.10 The site drainage, highway drainage and public sewers should be regularly inspected and maintained by site management, Bexley Council Highways Team and Thames Water respectively.

5.11 Flooding in the surrounding streets should be reported to Thames Water and Highways department and Flood risk Team at Bexley Council (Lead Local Authority).

Flood response

5.12 A flood response plan will be prepared by the site management.

5.13 Site management company will ensure that the flood response strategy is incorporated into the site management procedures, and that the building management team and

tenants/residents are prepared to act upon the flood response strategy upon warning of extreme rainfall.

5.14 Unless directed by the emergency services, it is not safe to walk through any depth of floodwater.

6.0 Surface Water Drainage Strategy

Existing Surface Water Runoff

6.1 Based on the topographical survey undertaken in June 2022 the whole site is noted to comprise of a mixture of impermeable and permeable surfaces including grass, unmade ground, tarmac, concrete, paving and building footprints. Some localised drainage has also been noted on the topographical survey however, connectivity has not been confirmed. Due to climate change, surface water runoff will increase due to more intense rainfall events.

6.2 To mitigate against increasing the flood risk and to reduce surface water runoff, it will be necessary to manage surface water runoff to mimic natural processes as closely as possible.

6.3 SuDS will need to be implemented to manage surface water generated onsite. This will need to adhere to the latest national and local policies and guidance.

6.4 During the Phase 1 walkover undertaken by Lustre the site area was noted to comprise approximately 60% hardstanding (impermeable surfaces).

Greenfield Runoff Rates

6.5 The IoH124 greenfield runoff methodology has been used to calculate the existing greenfield runoff rates over the 1.23 ha site as shown within Table 4. A soil index of 1 has been used, which reflects the permeability of the Harwich Formation, which is the predominant bedrock. The London Clay formation is shown to cover the southern part of the site, which will have a soil index of around 4 due to its impermeable nature. This would result in much higher greenfield runoff rates.

Table 4 Greenfield Runoff Rates (IoH124)

Scenario	Growth factor	Runoff rates (l/s)
2-year	0.88	0.2
Q_{BAR}	1.00	0.2
30-year	2.40	0.4
100-year	3.19	0.6

Brownfield Runoff

6.6 It has been estimated that 23% (0.28 ha) of the site currently drains to public sewers. The vast majority of the site 77% consists of the undrained football pitch or soft landscaped areas. The Modified Rational Method with a time of concentration of 60 minutes (to be conservative) has been used based upon FEH22 rainfall depths.

Table 5 **Brownfield Runoff Rates**

Scenario	Runoff rates (l/s) 15 minute duration	Runoff rates (l/s) 60 minute duration
1-year	25.2	9.8
2-year	31.8	12.3
30-year	93.5	36.6
100-year	120.1	47.8

6.7 The existing onsite drainage system has yet to be surveyed. The layout, sizing and condition of the existing drainage will affect the capacity of the system. Confirmation of any existing drainage system on the site would allow for the existing rates to be more accurately assessed and specific to the existing network. It is unlikely the existing system would be able to adequately manage storm scenarios beyond the 30-year event.

Drainage Hierarchy

6.8 Any surface water drainage strategy will need to follow the drainage hierarchy. This surface water drainage strategy follows the drainage hierarchy as set out in the London Plan (Policy SI 13). This states that surface water runoff is managed as close to its source as possible in line with the following drainage hierarchy:

- Rainwater use as a resource
- Rainwater infiltration to ground at or close to source
- Rainwater attenuation in green infrastructure features for gradual release
- Rainwater discharge direct to a watercourse
- Controlled rainwater discharge to a surface water sewer or drain
- Controlled rainwater discharge to a combined sewer

6.9 Drainage should be designed and implemented in ways that deliver other policy objectives of the London Plan, including water use efficiency and quality, biodiversity, amenity and recreation.

6.10 The following paragraphs provide site specific details pertaining to the drainage hierarchy which is further summarised in Table 6.

Infiltration

6.11 Infiltration of surface water may be possible on this site as the majority of the site is underlain by the Harwich bedrock formation.

6.12 The Harwich formation is shown on Figure A23 of the SFRA to have a 'medium' infiltration potential.

6.13 Spatially any infiltration systems will need to be positioned at least five metres away from any road or foundation. On this site, the only area infiltration would therefore be viable is beneath the football pitch.

6.14 The proximity of the London Clay formation to the Harwich formation would impact on the ability for surface water to be disposed of through infiltration. Due to the active use of the football pitch, intrusive site investigations have yet to be undertaken. Prior to finalising any drainage design, a site investigation will need to be undertaken assessing the geology across the site, including depth to London Clay, recording any presence of groundwater and undertaking infiltration testing in accordance with the guidance of BRE365.

6.15 The Phase 1 site investigation report has also recommended a Phase 2 site investigation to determine the risk of contaminates on the site. As the site is located within Source Protection Zone 3, any infiltration system will need to ensure surface water is clean and contaminates are not mobilised.

Above ground attenuation

6.16 The spatially constrained site does not lead itself to being able to offer above ground attenuation.

Rainwater discharge to watercourse

6.17 There are no open water features on or within the close proximity of the site. Therefore, a connection to a watercourse is impractical.

Discharge location

6.18 A few drainage features have been identified onsite from the topographical survey. It is therefore believed the site is currently served by onsite drainage connecting to public sewers via a few connection locations.

6.19 A survey of the existing onsite drainage will need to be undertaken to prove connectivity condition of the existing drains up to the point of connection with the public sewer. Where possible existing, connections will be reused. Where reusing an existing connection is not possible then a new connection into the public sewer will need to be agreed with Thames Water.

Drainage Hierarchy Summary

6.20 Table 6 summarises the above site specific information in relation to the drainage hierarchy.

Table 6 Drainage Hierarchy

Options	Feasible?	Details
Rainwater re-use	Yes	Blue roofs are being proposed with green roofs above. The blue roofs will provide a reservoir of water which will allow for passive irrigation above. Greywater harvesting systems are being considered for the changing rooms toilets and to slicken the pitch surface before use.
Infiltration systems	Potentially	The Harwich Formation is likely to have infiltration potential to dispose of surface water runoff. However this will need to be ascertained through a site investigation and BRE365 testing.
Discharge location	Yes	No open water features on or within close proximity of the site. The hard standing areas of the site are believed to be currently served by onsite drainage, where possible existing connections will be reused. Connection consent will need to be acquired.

Attenuation Requirements

Proposed Runoff Rates

6.21 The overall principle of this surface water drainage strategy is to limit the surface water runoff rate from the site to as close to greenfield runoff rates as is practically possible for all scenarios. Sustainable drainage features will be incorporated within this development in line with the requirements of the London Local Plan.

6.22 Due to the small nature of the site, the greenfield runoff rates as shown within Table 4 are low and would be difficult to manage onsite without risking blockages within the system.

6.23 Therefore, this report proposes that surface water runoff from this site is restricted to a maximum flow rate of 2 l/s under all the storm scenarios considered. This flow rate is considered a trade-off between limiting the risk of blockages and maintaining low surface water runoff rates.

Attenuation Volumes

6.24 If infiltration is deemed suitable for the site once site investigations have been completed, then the drainage design will need to reflect these findings subject being able to infiltrate beneath the football pitch.

6.25 Calculations have been undertaken using the Causeway Flow+ software, using the FEH22 rainfall data. To provide indicative attenuation requirements an area take-off assessment has been undertaken.

6.26 Taking the whole site and deducting the area of the proposed football pitch leaves an area of 0.51 ha, which will need its surface water managed.

6.27 The proposed football pitch will be an artificial 3G pitch. This surface is designed to be permeable and will allow for direct infiltration below. The design, construction and maintenance of the football pitch will need to ensure the surface water falling directly onto the pitch will be adequately managed.

6.28 Preliminary volume requirements for attenuation for the whole site, limiting the peak outflow rate to 2 l/s have been calculated based upon a C_v of 1 for the whole 0.51 ha area.

Table 7 **Attenuation Volume Requirements**

Return period	Attenuation volume (m³)	Peak outflow rate (l/s)
2-year	108	1.9
30-year	268	2.0
100-year	376	2.0
100-year + 40%	550	2.0

6.29 These calculations show that attenuation storage volume of approximately 550 m³ will be needed on the site in order to limit the discharge rate for a 100-year + 40% rainfall event to 2 l/s. It also assumes once single tank and 100% runoff from all areas.

SuDS Strategy

6.30 Across the site there is approximately 1450 m² of green roof proposed. Combined with 150 mm blue roofs, these can provide attenuation volume of approximately 205 m³. Blue roofs can be situated beneath the green roofs. It is possible through design to have solar panels fixed above the blue roofs.

6.31 In addition, roof level amenity spaces are being proposed for two roofs totalling approximately 350 m². These spaces have the potential to store a further 50 m³ at roof level if blue roofs are incorporated into their design.

6.32 Therefore there is the potential to store up to 255 m³ at roof level. However due to the varied roof heights fronting Park View Road, the effectiveness reduces as multiple units and flow controls will be required.

6.33 The largest proposed green roof on the site will be associated with the western development. By incorporating a blue roof, there is the potential to provide approximately 100 m³ covering a contributing area of almost 900 m².

6.34 Green roofs will also typically remove the first 5 mm of a rainfall event through capture, absorption and evaporation.

6.35 By incorporating blue roofs on the other areas indicated with green roofs or recreational areas will help reduce the overall volume at ground level further. However, at this stage and

to urge on the conservative side, these have been excluded from the calculations and will need to be determined at detailed design stage.

6.36 For the purpose of this planning application the drainage strategy calculations incorporates a blue / green roofs on the western building and an external cellular tank, which due to spatial constraints will need to be situated beneath the football pitch.

6.37 This below ground tank, will need to be positioned with a minimum cover of 1 m in order to ensure football pitch drainage is unaffected, which is assumed to be self draining.

Table 8 **Attenuation Volume Requirements for the 100-year + 40% Return Period**

Component	Attenuation volume (m^3)	Peak outflow rate (l/s)
Western blue roof	99	0.4
Below ground tank	457	2.0

6.38 These volumes are considered to be conservative. It is anticipated that during detailed design and through the green / blue roof design, the overall volume of the below ground tank can be reduced.

6.39 All external hard standing areas should consist of pervious paving with a porous sub-base. This will help clean surface water runoff.

6.40 A drainage strategy has been presented in Appendix D.

Drainage Requirements Summary

6.41 Based upon the information above surface water runoff will be reduced to a peak flow of 2 l/s. To achieve this an attenuation volume of approximately 550 m^3 will be required across the site which will be dictated by the blue roof designs at detailed design stage.

6.42 The SuDS strategy presented within this chapter is designed to achieve the above requirements whilst also helping to contribute to the 'four pillars of SuDS design' which include providing benefits for water quality, water quantity, amenity and biodiversity.

Discharge location

6.43 Opportunities for infiltrating the surface water to ground should be the primary choice for disposing of surface water, so long as the site investigations results support this approach.

6.44 Where infiltration is not viable, it is proposed that the surface water runoff will be directed to the public surface water sewer system. This would need to be within the deeper surface water sewer, with a potential connection point to the east of the site at chamber 0603 or 0605. Invert levels on the public sewers at these manholes are 38.77 and 38.6 m AOD respectively.

6.45 Existing ground levels are approximately 42.8 m AOD on the northern part of the football pitch, which is expected to be similar within the proposed development. The tank invert level would be approximately 40.6 m AOD, therefore allowing a connection via gravity to be made to the public surface water sewer.

6.46 At this stage it is unclear as to whether there is an existing connection to either of these chambers. This should be surveyed and where a connection is retained this should have a CCTV survey to check its condition.

6.47 Consent will need to be obtained from Thames Water for any new surface water connection and new foul water connections as part of this application.

Ownership and maintenance

5.15 Ownership and maintenance consideration will need to be determined to ensure that all SuDS components including flow controls are regularly maintained and manged to ensure they operate efficiently.

5.16 It is understood that a maintenance company will be responsible for the maintenance of all SuDS features on the site. Maintenance responsibilities are set out in Appendix D.

7.0 Conclusions & Next Steps

7.1 This report has identified and quantified the flood risk at the subject site from all known sources as detailed in Chapters 3 and 4. The report has then demonstrated how the flood risk and surface water can be managed. In addition, the vulnerability of the site and the proposed use, as well as climate change factors have been taken into account.

Flood Risk Summary

7.2 The site lies within Flood Zone 1. Low risks were identified from most flood sources, with higher risks noted as follows:

- High, moderate and low risk from surface water flooding – A surface water flow route runs along the north of the site from east to west down Park View Road, and west of Roseacre Road. Flood depths could be significant according to the EA mapping (0.3-0.9m during the design flood level), with flood depths in excess of 0.9m possible in a very extreme scenario. However public sewers have significant capacity and highway drainage is present in the site surroundings which are not fully accounted for in the surface water flood maps.
- A residual risk of sewer flooding (possible culverted watercourse) in the event of surcharge or blockage/collapse in the culvert.

7.3 The Finished Flood Level (FFL) of the proposed buildings on the northern side of the site are to be set as high as is practically possible to minimise the residual risk of surface water/sewer flooding.

7.4 To protect the basement, waterproofing, raised thresholds and demountable barriers will be used to protect the basement.

7.5 Flood resilience measures will be designed into the ground floor of the building to ensure the building can be resilient to flooding during a very extreme scenarios where the building cannot be raised.

7.6 Additional measures relating to floor levels, flood resilience, flood response, and protection of Thames Water Assets are set out in Section 5.

7.7 This report has determined that the site may be affected by current or future flooding from over the lifetime of the development. However, with suitable mitigation the risks are considered to be acceptably low. Through suitable design of flood mitigation and drainage measures, the proposed development should not increase the risk of flooding elsewhere and be safe for future occupants throughout the lifespan of the development.

7.8 It is important to remember that the qualitative nature of the risk assessment is not absolute. Even if very low and low risks have been assigned, the risk cannot be eliminated (i.e. “no risk”) at this stage of the assessment. Residual risks will remain and should not be disregarded on the basis that the risk is low.

Drainage Summary

7.9 The impermeable area of the site will be increased as a result of the proposed development.

7.10 Infiltration techniques should be considered as soon as it is possible to undertake site investigations to determine geology, infiltration rates, groundwater and contamination risk.

7.11 Where infiltration is not viable, this report has set out an attenuation strategy, limiting the surface water runoff to 2 l/s, with an outfall to the public surface water sewer.

7.12 Green roofs have been widely used over the proposed buildings on the site. By incorporating blue roofs, surface water attenuation can be managed further at roof level.

7.13 The attenuation tank will need to be constructed partially beneath the football pitch with access openings and vents to the side. There must be at least 1 m cover above the top of the tank to allow the football pitch to natural drain.

7.14 Consent from Thames Water will need to be obtained. Where existing connections are proposed to be re-used then a CCTV survey will need to be undertaken.

Planning Considerations & Next Steps

7.15 The flood mitigation and drainage requirements will need to be incorporated into the overall design of the scheme.

7.16 Site investigations will need to be undertaken to determine infiltration rates, ground conditions and groundwater levels to determine if infiltration is a viable option to disposing of the surface water sewer.

7.17 It is understood that this report will be submitted to the local planning authority to support the planning application.

APPENDIX A: Policy & Guidance

National Planning Policy Framework

Paragraph 159 of the National Planning Policy Framework (NPPF) states that "Inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk (whether existing or future). Where development is necessary in such areas, the development should be made safe for its lifetime without increasing flood risk elsewhere."

The National Planning Policy Framework (NPPF) seeks to avoid inappropriate development in areas at risk of flooding, through the use of the Sequential Test. The NPPF – Technical Guidance determines the compatibility of the proposed development within its respective flood zone.

Paragraph 169 of the NPPF states that Major developments should incorporate sustainable drainage systems.

National Climate Change Guidance

River flow allowances

Peak river allowances show the anticipated changes to peak flow by management catchment. Within Flood Zones 2 or 3a, 'more vulnerable' development should use the central allowance.

London Management Catchment Peak River Flow Allowances

	Central	Higher	Upper
2020s	10%	14%	26%
2050s	7%	14%	30%
2080s	17%	27%	54%

Sea level rise

The Table below provides the sea level allowance provided with the NPPF guidance. The allowances account for slow land movement. This is due to 'glacial isostatic adjustment' from the release of pressure at the end of the last ice age.

Area of England	Allowance	2000 to 2035 (mm)	2036 to 2065 (mm)	2066 to 2095 (mm)	2096 to 2125 (mm)	Cumulative rise 2000 to 2125 (m)
South East	Higher Central	5.7 (200)	8.7 (261)	11.6 (348)	13.1 (393)	1.20
South East	Upper end	6.9 (242)	11.3 (339)	15.8 (474)	18.2 (546)	1.60

Local Guidance

This section considers local guidance at both county and borough levels.

London Plan

The London Plan was released in March 2021, setting out the spatial development strategy for greater London.

The policies most relevant to this assessment are Policy SI 12 sets out the requirements for flood risk management and Policy SI 13 which describes the requirements for sustainable drainage within London.

London Borough of Bexley Level 1 Strategic Flood Risk Assessment (November 2020)

London Borough of Bexley (LBB) have produced an updated Level 1 Strategic Flood Risk Assessment (SFRA)[8]. It states that this SFRA is required by the LBB to "support the production of a new Local Plan, and to inform planning decisions."

The SFRA states that it is "intended to inform the development of policies related to flood risk management and the allocation of land for future development. This is achieved through a thorough analysis of flood risk within the Borough, enabling a more informed response to development proposals and planning, and helping to identify strategic solutions to flood risk."

London Borough of Bexley Level 2 Strategic Flood Risk Assessment (March 2021)

The Level 2 SFRA states that it is "intended to inform the development of the new Local Plan related to flood risk management and the allocation of land for future development. This is

[8] London Borough of Bexley Level 1 Strategic Flood Risk Assessment (November 2020)

achieved through a thorough analysis of flood risk within the Borough (see SFRA Level 1 report), enabling a more informed response to development proposals and planning, and helping to identify strategic solutions to flood risk. The SFRA takes account of all sources of flooding, incorporating the latest information on climate change and how this may change the pattern of flood risk in the future.

This Level 2 report provides analyses of the sites being considered for allocation and enables the application of the Sequential and Exception tests. It also includes guidance for developers on how to use the Level 1 report to inform site-specific flood risk assessments."

Bexley Local Plan 2023

The Bexley Local Plan was adopted on 26th April 2023 by the London Borough of Bexley. Bexley Local Plan and Policies Map replaces the Bexley Core Strategy 2012, the remaining extant policies of the Bexley Unitary Development Plan 2004, and the Unitary Development Plan Proposals Map 2004.

Based on the Bexley Local Plan Policies Map the site lies within a Primarily Residential Area where the following relevant policies apply:

- ReDP2 Residential development on backland and infill sites
- DP11 Achieving high-quality design

The south western area of the site also lies in a Sustainable Development Location as identified in the Bexley Local Plan Policies Map. The Sustainable Development Location is named Slade Green and the following relevant policies apply:

- SP1 Achieving sustainable growth – the spatial strategy
- SP2 Meeting Bexley's housing requirements
- DP2 Residential development on backland and infill sites
- DP12 Tall buildings and building heights
- SP7 Social and community services and facilities

- DP23 Parking management
- SP13 Protecting and enhancing water supply and wastewater infrastructure
- DP32 Flood risk management

The following polices provide details on manging flood risk and drainage in the borough.

DP32: Flood risk management

"Planning for flood risk

1. In areas at risk of flooding, as identified in the Bexley Strategic Flood Risk Assessment (SFRA), development proposals must:

   a. be within a Sustainable Development Location, designated industrial location or the Thamesmead and Abbey Wood Opportunity Area if the site is within Flood Zones 2 and 3a, except for householder development above defined flood levels, and the development type is acceptable within the flood zone, as only these locations have passed the Local Plan sequential test;

   b. apply the exception test, where required, to sites within Flood Zones 2 and 3a that have met the requirements of part 1a;

   c. comply with the guidance and recommendations set out in the Bexley SFRA Level 1 and Level 2;

   d. apply the sequential approach advocated in the NPPF to all sources of flooding, not just tidal and fluvial;

   e. be used as an opportunity to reduce the causes and impact of flooding;

   f. make as much use as possible of natural flood management techniques as part of an integrated approach to flood risk management); and,

   g. provide floodplain storage capacity as close to the development as possible, where the proposed development will reduce this capacity.

Tidal and fluvial flooding

2. Habitable rooms in residential development within the fluvial flood zones, should be set 300mm above the predicted 1 in 100 year plus climate change peak flood water level, and within the tidal flood zones, should be set at the predicted 1 in 200 year annual probability.

3. Development in areas designated as Functional Floodplain (as identified in the SFRA Level 1 and the Policies Map) will not be permitted outside of water-compatible development, as defined in the NPPF.

4. All proposals for development in Flood Zones 2 and 3, and all proposals on sites of 0.25 hectares or larger regardless of what flood zone the site is in, must include a site-specific flood risk assessment (FRA), including a drainage impact assessment.

5. New developments in riverside locations are required to help reduce flood risk now and into the future.

6. Development proposals located within 100 metres of the Thames tidal flood defences should demonstrate consideration of and act on the recommendations of the TE2100 Plan and be designed in such a way as to easily facilitate the raising and re-engineering of the tidal flood defences.

7. Basements will not be permitted in Flood Zones 2 or 3.

Surface water, groundwater and sewer flooding

8. Development must not increase flood risk on-site or off-site, and exceedance flows must be considered and appropriately managed.

9. All basement developments should include, within their proposal, protection to the property by installing, for example, a non-return valve or other suitable device to avoid the risk of backflow at a later date, on the assumption that the sewerage network may surcharge to ground level during storm conditions.

Safe refuge, access and egress in, to and from development

10. New developments below the predicted flood water level should include a detailed evacuation plan that clearly outlines how people can easily leave to safety or move upwards from the lower floors to safety.

11. Site design in floodplains must facilitate safe escape, access and egress. Only in exceptional circumstances where this cannot be demonstrated should the emergency plan be to reside in situ and escape upwards in a building.

12. All development that is intended to be occupied below the predicted flood water level must provide internal safe refuge above the design flood level."

DP33: Sustainable drainage systems

1. "All development proposals, whether increasing or decreasing the impermeable area of the site, will be required to manage surface water through sustainable drainage systems (SuDS) in line with all national, regional and local policies and related guidance, in order to minimise flood risk, improve water quality and enhance biodiversity and amenity.

2. In addition, all development proposals will be required to demonstrate that:

    a. the drainage for the site achieves greenfield runoff rates for flood events up to and including 1 in 100 years plus 40% climate change;

    b. surface water run-off has been reduced by sustainably managing run-off on site;

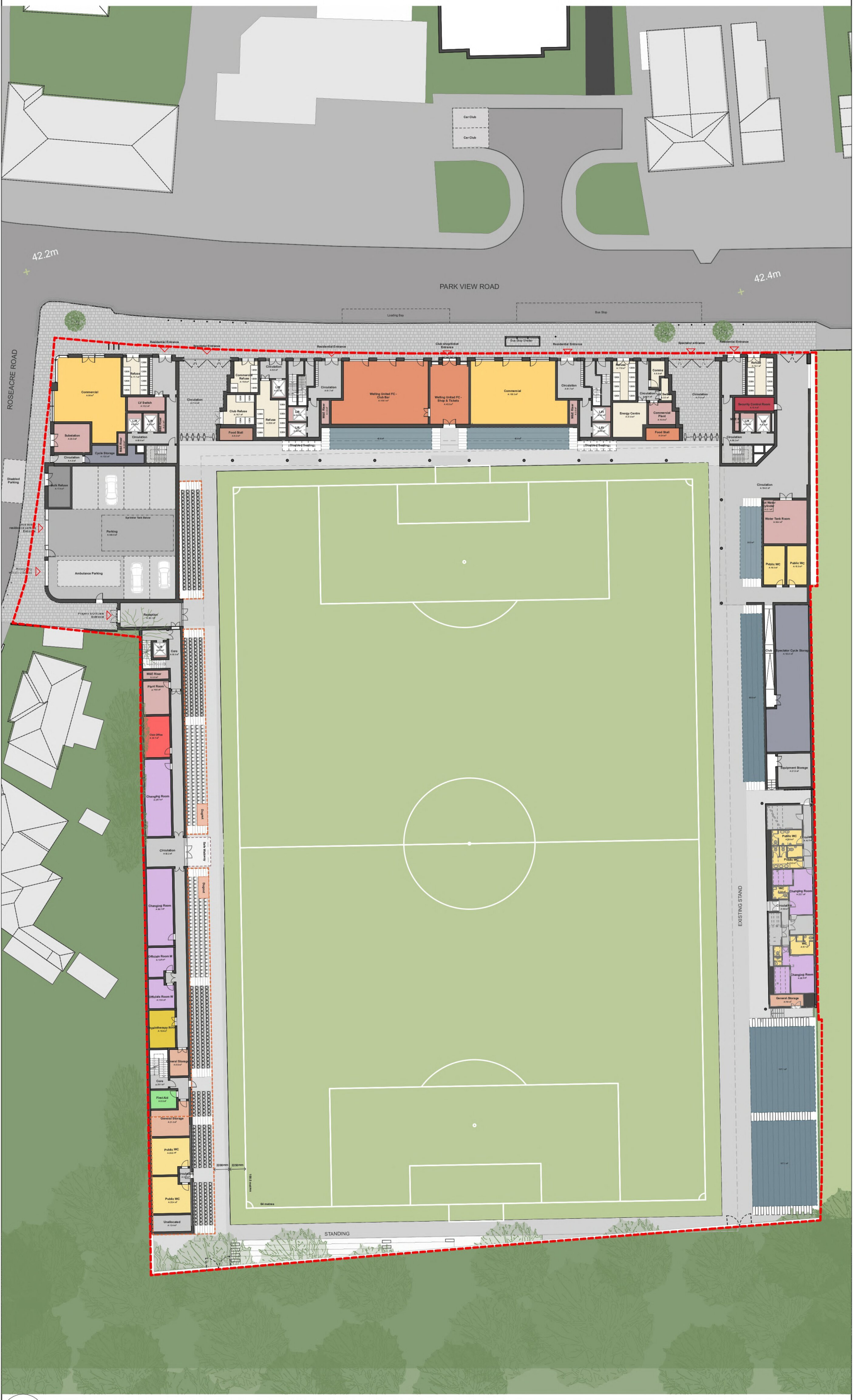
    c. permeable paving has been used for hardstanding areas (e.g. car parks);

    d. the nature of water flow (both surface water and groundwater) across a steeply sloping site has been considered in order to provide suitable SuDS; and,

    e. water reuse mechanisms have been included for either indoor or outdoor purposes.

Development proposals on sites of 0.25 hectares or greater require a drainage strategy, which must be accompanied by a suitable maintenance management plan."

APPENDIX B: Plans



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Ground Floor Plan

1:500

Rev	Description	Drawn	Checked	Date

CREATE
DESIGN + ARCHITECTURE

Wigglesworth House 69 Southwark Bridge Road London SE1 9HH
+44 207 021 0267 info@createdesign.org www.createdesign.org

WELLING UNITED FC

DA16 1SY

Client

LITA HOMES & WELLING UNITED FC

CONCEPT

PROPOSED PLANS

SITE/GROUND FLOOR PLAN

CDA Ref	Scale(s)	Original Paper Size
694	1:500	A3

Drawing Number

Project	Originator	Volume	Level	Type	Role	Class	Number
694	CDA	ZZ	00	DR	A	05	0100

Revision Revision Description

0 **Ground Floor Plan**
1:500

Revision	Description	Drawn	Checked	Date

CREATE
DESIGN + ARCHITECTURE

Wigglesworth House 69 Southwark Bridge Road London SE1 9HH
+44 207 021 0267 info@createdesign.org www.createdesign.org

WELLING UNITED FC

DA16 1SY

Client

LITA HOMES & WELLING UNITED FC

CONCEPT

PROPOSED PLANS

SITE PLAN

CDA Ref	Scale(s)	Original Paper Size
694	1:500	A1

Drawing Number

Project	Originator	Volume	Level	Type	Role	Class	Number
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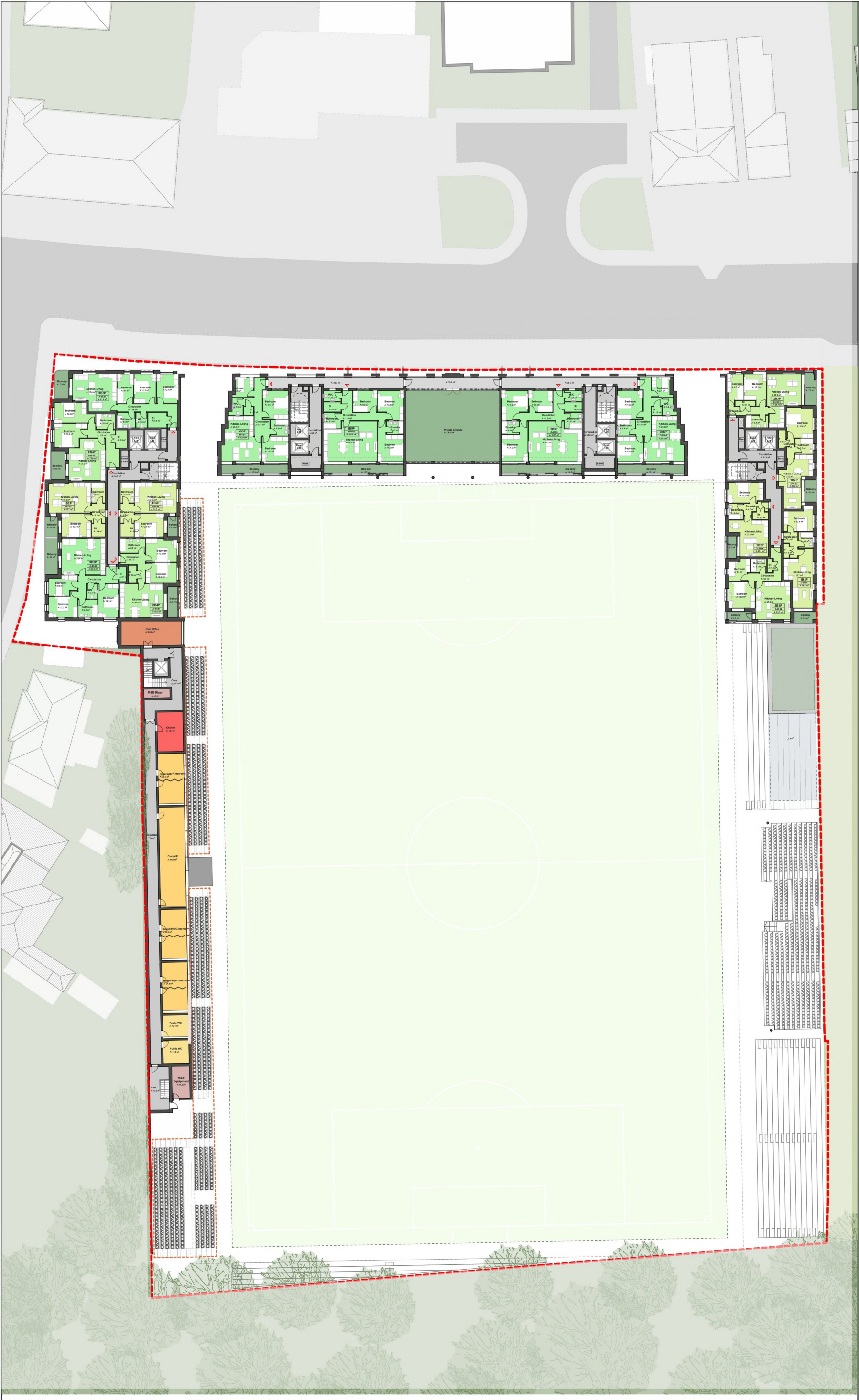
Revision

Revision Description



1

Level 01 Floor Plan

1:500

Rev	Description	Drawn	Checked	Date

CREATE
DESIGN + ARCHITECTURE
Wigglesworth House 69 Southwark Bridge Road London SE1 9HH
+44 207 021 0267 info@createdesign.org www.createdesign.org

WELLING UNITED FC

DA16 1SY

Client

LITA HOMES & WELLING UNITED FC

CONCEPT

PROPOSED PLANS

FIRST FLOOR PLAN

CDA Ref	Scale(s)	Original Paper Size
694	1:500	A3

Drawing Number

Project	Originator	Volume	Level	Type	Role	Class	Number
694	CDA	ZZ	01	DR	A	05	0101

Revision Revision Description