

FORMER LITTLEFOLD FAMILY RESOURCE CENTRE, WATERLOOVILLE

FLOOD RISK ASSESSMENT

June 2024

Kingfisher Property Group Ltd

**RESIDENTIAL
FORMER LITTLEFOLD FAMILY RESOURCE CENTRE
WATERLOOVILLE**

FLOOD RISK ASSESSMENT

CONTROLLED DOCUMENT

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1. EXECUTIVE SUMMARY

1.1 This Flood Risk Assessment (FRA) and Drainage Strategy has been prepared by Paul Basham Associates on behalf of Kingfisher Property Group Ltd to support a change of use planning application for a residential site. The land is located to east of Linnet Close, Waterloooville. The nearest postcode is PO8 9UY.

1.2 The development is in Flood Zone 1

1.3 Residual flood risk from:

- Fluvial and tidal flooding is considered to be very low
- Surface water flooding is considered to be very low
- Groundwater flooding is considered to be very low
- Reservoir flooding is considered to be very low



2. INTRODUCTION

- 2.1 This Flood Risk Assessment (FRA) and Drainage Strategy has been prepared by Paul Basham Associates on behalf of Kingfisher Property Group Ltd to support a change of use planning application for a residential site. The land is located to east of Linnet Close, Waterloooville. The nearest postcode is PO8 9UY. The site location plan is shown in Figure 1 below.
- 2.2 The plot size is approximately 0.133ha and the land is currently occupied by the derelict Former Littlefold Family Resource Centre, which relocated around 2017.



Figure 1: Site Location Plan

Development Proposals

- 2.3 The development aspirations are to redevelop the former resource centre to provide 10 new flats, and the reuse of the existing hardstanding area for a carpark, a bin store and a cycle store. The existing and proposed site layouts are included in Appendix A.

3. SITE DESCRIPTION

Topography

- 3.1 A topographic survey was not provided at the time of writing this report, however online contour mapping indicates that the site has a gentle fall towards the south-west. The levels range between 62m AOD in the north-east and 60m AOD in the south-west.

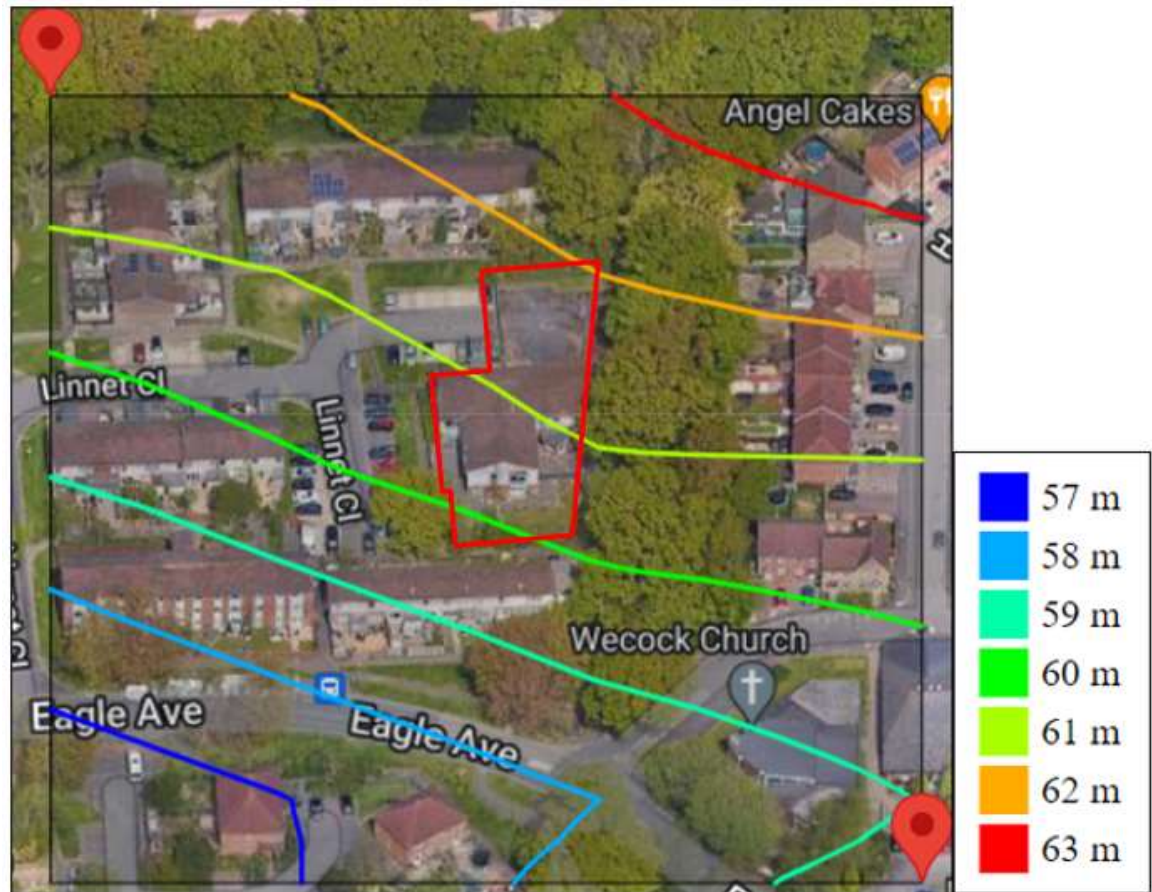


Figure 2: Approximate Site Contours (Source: Contour Map Generator)

Geology

- 3.2 A review of the British Geological Survey (BGS) mapping indicates that the bedrock geology beneath the entire site is Lambeth Group, comprising clay, silt and sand. Furthermore, the southern third of the site (shaded in pink) is recorded to have superficial deposits of Head- Clay and gravel. See **Figure 3** for the BGS map extract.



Figure 3: BGS bedrock mapping

- 3.3 A nearby borehole (Ref: SU61SE151) from the BGS website shows that below the topsoil layer is a 5.8m thick layer of clay that stiffens with depth. Strong chalk was encountered at 7.2m BGL where the borehole terminated. No ground water was encountered during boring, however records show that water was encountered in the trial pit. The borehole log is included in Appendix B.

Hydrology

- 3.4 The nearest watercourse is an unnamed stream, which is approximately 490m to the west of the site.

Hydrogeology

- 3.5 The DEFRA (Department for Environment, Food & Rural Affairs) Magic Map shows the location and classification of underlying aquifers. Figure 4 below shows an extract from the online map and indicates that the site's nearest postcode (marked in blue) lies within a Zone 1 – Inner Protection Zone.
- 3.6 The Environment Agency's Approach to Groundwater Protection (2018) sets the tightest controls on human activity in this zone.



Figure 4: DEFRA Mapping – Source Protection Zones

4. PLANNING POLICY

- 4.1 The planning policies and guidance that are relevant to the proposed Development with regard to flood risk and surface water management are outlined below.

National Planning policy

- 4.2 2023 updated National Planning Policy Framework (NPPF) and the associated 2022 updated Planning Practice Guidance (PPG) by the Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities & Local Government

- 2022 updated EA Standing Advice
- EA National Strategy for Flood and Coastal Erosion Risk Management 2020
- DEFRA Sustainable Drainage System: Non-Statutory Technical Standards 2015
- CIRIA C753 The SuDS Manual 2015
- Flood and Water Management Act 2010
- Flood Risk Regulations 2009
- Flood risk assessments: climate change allowances 2016 (updated in 2022).

Regional Planning Policy

- Partner for South Hampshire (PfSH) Strategic Flood Risk Assessment (SFRA) Part 1 (2024)*
* At the time of writing this report, Part 4 of the updated PfSH SFRA specific to Havant Borough Council had not been published
- Hampshire County Council Local Flood Risk Management Strategy (LFRMS)

Local Planning Policy

- Havant Borough Council Core strategy (2011), policy CS15
- Havant Borough Council Flood Risk Information for Applicants
- Havant Borough Council Sequential Test Guidance



4.3 Based on the above policies, the key requirements in relation to the surface water management and flood risk for the proposed Development are considered as to be follows:

- National Planning Policy Framework (2023): “A site-specific flood risk assessment should be provided for all development in Flood Zones 2 and 3. In Flood Zone 1, an assessment should accompany all proposals involving: sites of 1 hectare or more; land which has been identified by the Environment Agency as having critical drainage problems; land identified in a strategic flood risk assessment as being at increased flood risk in future; or land that may be subject to other sources of flooding, where its development would introduce a more vulnerable use.”
- Environment Agency Standing Advice: “The surface water management needs to meet requirements set out in either your local authority’s Surface Water Management Plan (SWMP), Strategic Flood Risk Assessment (SFRA) and Building Regulations Part H. Emergency escape plans for any parts of a building that are below the estimated flood level are required”
- CIRIA C753 The SuDS manual 2015: “Control the quantity of runoff to support the management of flood risk and maintain and protect the natural water cycle. To ensure that the surface water runoff from a developed site does not have a detrimental impact on people, property, and the environment, it is important to control how fast runoff is discharged from the site (i.e., the peak runoff rate) and how much runoff is discharged from the site (i.e., the runoff volume). Suds that are designed to manage water quantity in this way reduce the likelihood of flooding caused by the development. They can help protect natural water cycles by promoting the recharge of soil moisture levels, by maintaining stream and river baseflows and by replenishing groundwater”.



5. CLIMATE CHANGE

Peak Rainfall Intensity Allowance

- 5.1 The "Flood Risk Assessments: Climate Change Allowances Guidance" 2016 (updated in 2022) published by the EA indicates that climate change is currently expected to result in increased peak rainfall and rising sea levels.
- 5.2 Table 1 and Table 2 shows anticipated changes in peak rainfall intensity in small and urban catchments within the East Hampshire Management Catchment. The development is classed as more vulnerable, and the design life is approximately 100 years.
- 5.3 The peak rainfall intensity allowance is 40% during the 3.3% Annual Exceedance Probability (AEP) event.

Epoch	Central Allowance	Upper End Allowance
2050s	20%	35%
2070s	25%	40%

Table 1: Peak Rainfall Intensity allowance in small and urban catchments. 3.3%AEP Events*

- 5.4 The peak rainfall intensity allowance is 45% during the 1% Annual Exceedance Probability (AEP) event.

Epoch	Central Allowance	Upper End Allowance
2050s	20%	40%
2070s	25%	45%

Table 2: Peak Rainfall Intensity allowance in small and urban catchments. 1%AEP Events*

Peak River Flow Allowances

- 5.5 Table 3 shows the anticipated changes in the peak river flow allowances

Epoch	Central Allowance	Upper End Allowance
2050s	19%	37%
2070s	22%	51%
2080s	37%	88%

Table 3: Peak River Flow Allowances*

*Source: <https://environment.data.gov.uk/hydrology/climate-change-allowances/river-flow>

- 5.6 The development is classed as more vulnerable, and the design life is approximately 100 years. Therefore, the peak river flows allowance is 88% based on the upper end allowance.

National Planning Policy Framework (NPPF)

- 5.7 This report has been prepared considering the National Planning Policy Framework (NPPF) Technical Guidance and the Environment Agency's (EA) flood risk standing advice.
- 5.8 Table 2 from the Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities & Local Government Flood risk and coastal change guidance has been included as **Figure 5** below. This provides the classes of development (based on flood risk vulnerability) that are permitted within each of the flood zones. The Flood Risk Vulnerability Classification for the site is 'More Vulnerable' as it is a housing development, which is defined in Annexxe 3 of the NPPF.
- 5.9 The development is in Flood Zone 1; therefore no sequential test or exception test is required.

Flood Zones	Essential infrastructure	Highly vulnerable	More vulnerable	Less vulnerable	Water compatible
Zone 1	✓	✓	✓	✓	✓
Zone 2	✓	Exception Test required	✓	✓	✓
Zone 3a †	Exception Test required †	X	Exception Test required	✓	✓
Zone 3b *	Exception Test required *	X	X	X	✓*

Table 2 - Flood risk vulnerability and flood zone 'compatibility'

Key: ✓ Exception test not required X Development should not be permitted.

Notes to table 2:

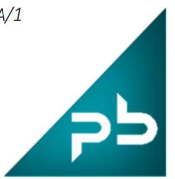
- This table does not show the application of the [Sequential Test](#) which should be applied first to guide development to Flood Zone 1, then Zone 2, and then Zone 3; nor does it reflect the need to avoid flood risk from sources other than rivers and the sea;
- The Sequential and [Exception Tests](#) do not need to be applied to [minor developments](#) and changes of use, except for a change of use to a caravan, camping or chalet site, or to a mobile home or park home site;
- Some developments may contain different elements of vulnerability and the highest vulnerability category should be used, unless the development is considered in its component parts.

† In Flood Zone 3a essential infrastructure should be designed and constructed to remain operational and safe in times of flood.

* "In Flood Zone 3b (functional floodplain) essential infrastructure that has passed the Exception Test, and water-compatible uses, should be designed and constructed to:

- remain operational and safe for users in times of flood;
- result in no net loss of floodplain storage;
- not impede water flows and not increase flood risk elsewhere.

Figure 5: NPPF Planning Practice Guidance Table – Flood Risk Vulnerability and Flood Zone Compatibility



6. FLOOD RISK

6.1 In line with the EA Standing Advice, the estimated flood level is considered to be the higher of:

- A river flood level with a 1 in 100 or greater annual probability plus an allowance for climate change; and
- A tidal flood level with a 1 in 200 or greater annual probability plus an allowance for climate change.

6.2 The following Flood Zone definitions ignoring flood defence, are set out in the Planning Practice Guidance:

- Zone 1 Low Probability - Land assessed as having a less than 1 in 1,000 annual probability of river or sea flooding (<0.1%);
- Zone 2 Medium Probability - Land assessed as having between a 1 in 100 and 1 in 1,000 annual probability of river flooding (1% – 0.1%), or between a 1 in 200 and 1 in 1,000 annual probability of sea flooding (0.5%– 0.1%) in any year; and
- Zone 3 High Probability - Land assessed as having a 1 in 100 or greater annual probability of river flooding (>1%), or a 1 in 200 or greater annual probability of flooding from the sea (>0.5%) in any year.



Fluvial / Tidal Flood Risk

- 6.3 Flood mapping obtained from the government's 'flood map for planning' website has identified that the site falls entirely within Flood Zone 1.

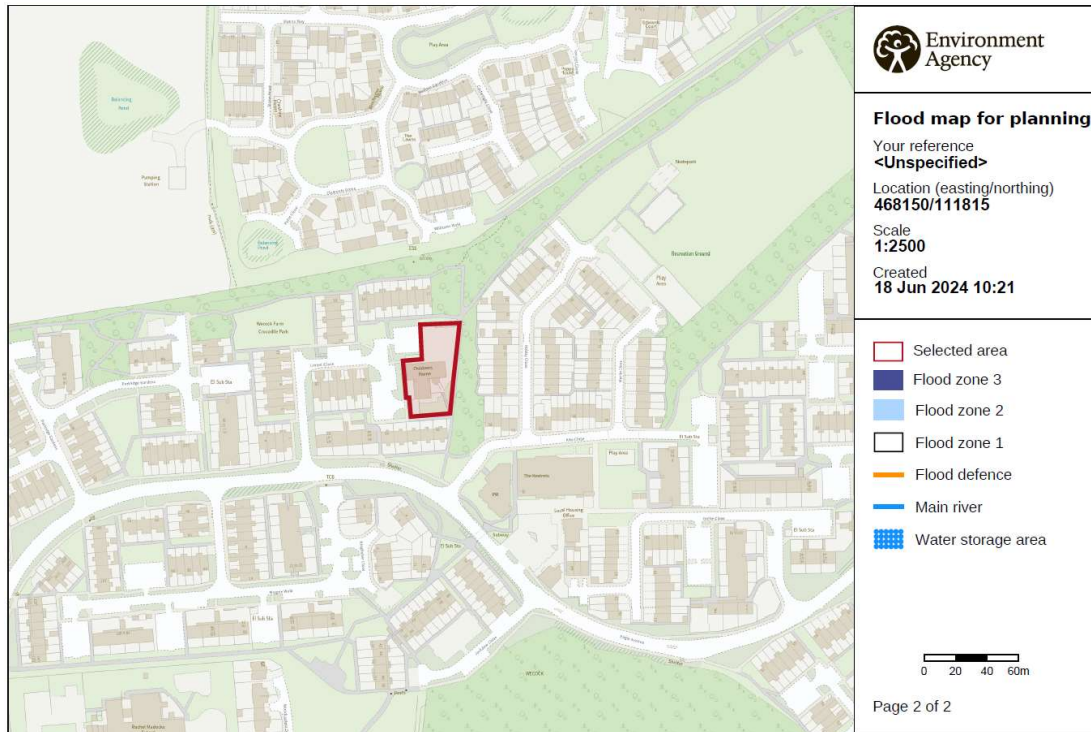


Figure 6: Flood Map for Rivers and Seas

- 6.4 The long-term flood risk and from rivers and seas mapping shows the site is considered to be at very low risk of flooding from rivers and seas.

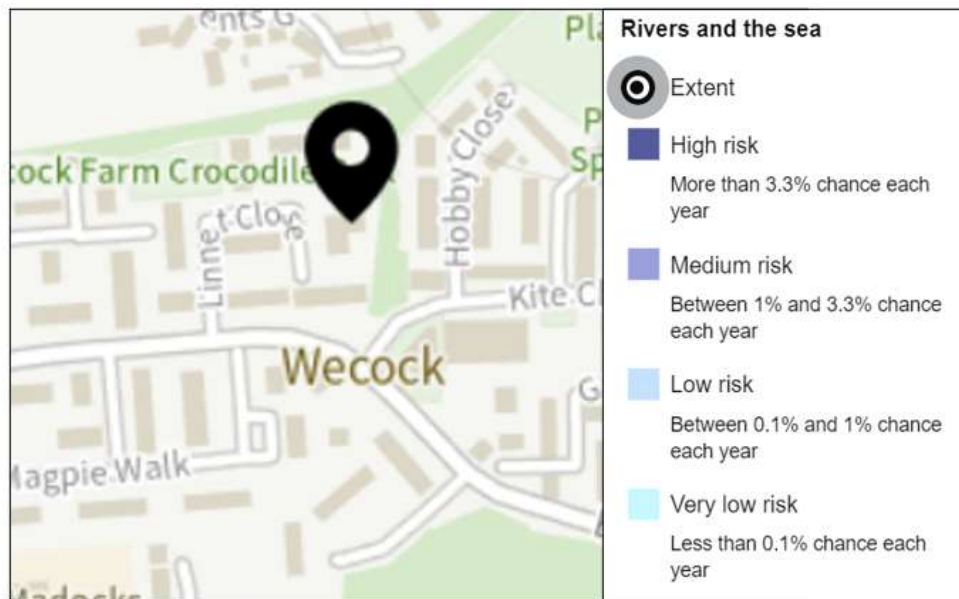


Figure 7: Long-term flood risk from rivers and seas map

Reservoirs Flood Risk

- 6.5 A reservoir is a large natural or artificial lake that is designed to collect and store water, reservoirs can also be underground storage features. Flooding from reservoirs is extremely low.
- 6.6 EA mapping in Figure 8 indicates that long-term flood risk from reservoirs is very low during both events, where conditions are dry and river levels are normal, and when local rivers have flooded.

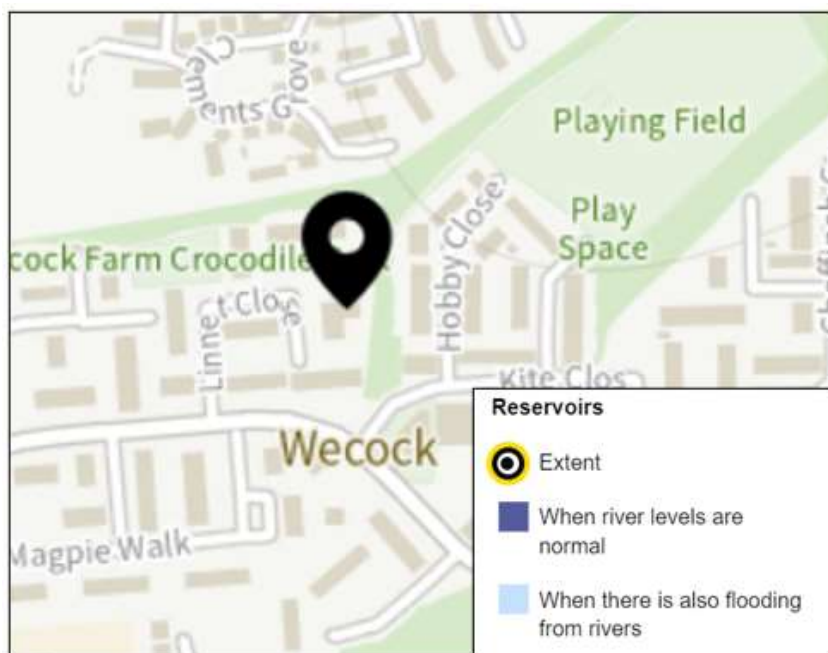


Figure 8: Long term flood risk from reservoirs map

Surface Water Flood Risk

- 6.7 Surface water or 'pluvial' flooding results from rainfall running over ground before eventually entering a watercourse or sewer. It is usually associated with high intensity rainfall events but can also occur with lower intensity rainfall or melting snow where the ground is already saturated, frozen, developed (for example in an urban setting), or otherwise has low permeability.
- 6.8 The surface water flood risk map is shown in Figure 9 and indicates that the site has very low risk of flooding from surface water.

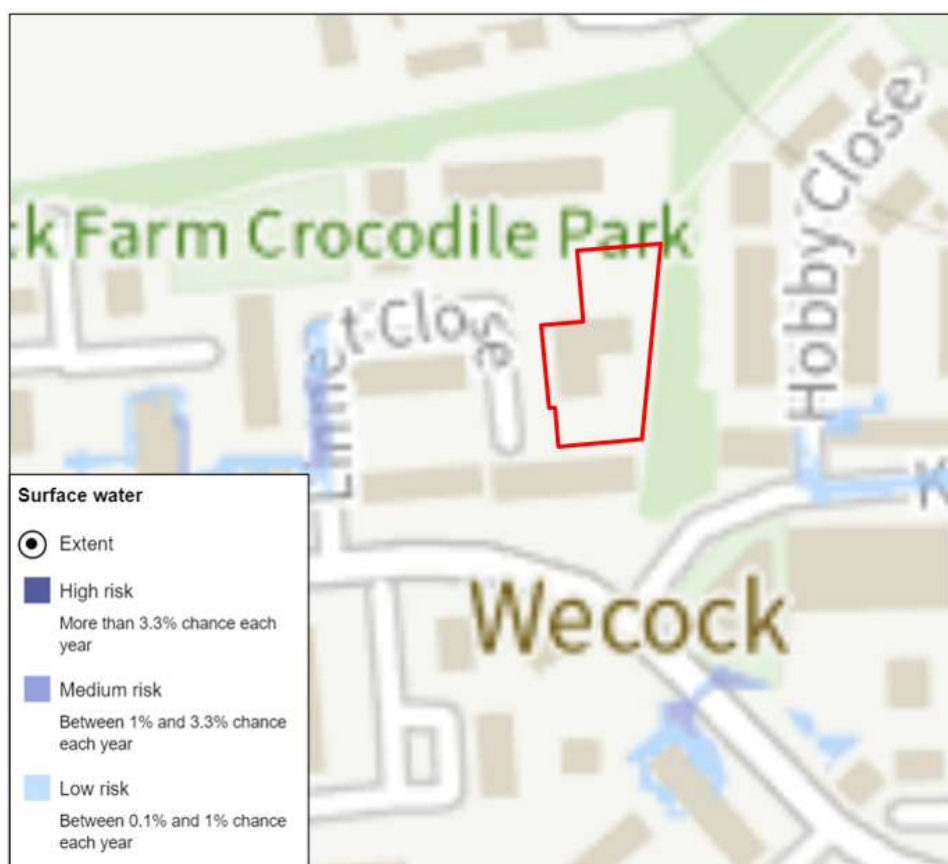


Figure 9: Long term flood risk from surface water

Groundwater Flood Risk

- 6.9 Groundwater flooding occurs when groundwater levels increase sufficiently for the water table to intersect the ground surface. Groundwater flooding can occur in a variety of geological settings including valleys and in areas underlain by chalk, and in river valleys with thick deposits of alluvium and river gravels.
- 6.10 The EA flood risk map Figure 10 indicates that groundwater flooding risk for the site is very low.

Other flood risks	
Groundwater	Flooding from groundwater is unlikely in this area.

Figure 10: EA Flood risk Map

- 6.11 Nearby borehole (Ref: SU61SE151) from the BGS website no ground water was encountered during boring, however records show that water was encountered in the trial pit, this likely to be caused by perched water within the clay, however site investigations should be undertaken to confirm this. The borehole log is included in Appendix B.

7. RESIDUAL FLOOD RISK

7.1 Table 4 outlines the initial qualitative assessment of risk posed by the potential sources of flooding, the mechanisms for flooding and the likely consequences. It also includes a review of possible mitigation measures and the effect that the proposed mitigation measures are likely to have on the residual risk posed by the potential flood source.

Flood Risk	Flood Mechanism and Possible Consequences	Existing Assessment of Risk	Mitigation Measures	Residual Risk
Fluvial / Tidal	Flooding from nearby rivers or seas due to climate change increasing river flows, sea level rises or breach of sea defences.	Very low	Not required as the site is not in vicinity of a river or sea.	Very Low
Reservoirs	Flooding from reservoir failure	Very Low	NA	Very Low
Surface Water (Pluvial)	Flooding from surface water runoff collected in localised low points due to limited positive drainage	Very Low	Surface water runoff can be managed through the use of on-site attenuation features. Drainage network should be designed for the 1%, 3.3% AEP events including climate change allowances.	Very Low
Groundwater	Underlying water table rising to the surface.	Very Low	The existing building does not include a basement, therefore mitigation from ground water flooding is not considered applicable for the site.	Very low

Table 4: Summary of Existing and Residual Flood Risk

7.2 It should be noted as the proposal is change of building use, and as the changes are only internal, there will be no increase of impermeable areas and therefore no increase of flood risk on site.



8. SUMMARY AND CONCLUSION

- 8.1 This Flood Risk Assessment (FRA) and Drainage Strategy has been prepared by Paul Basham Associates on behalf of Kingfisher Property Group Ltd to support a change of use planning application for a residential site. The development aspirations are to redevelop the former resource centre to provide 10 new flats.
- 8.2 This FRA has been prepared in accordance with the NPPF and Planning Practice Guidance, as well as the regional and local planning policies.
- 8.3 The site is located entirely within flood zone 1, and the development is categorised as “more vulnerable”. Therefore, in accordance with the NPPF the proposals are acceptable, and the site does not require a sequential or exception test.
- 8.4 Summary of residual flood risk
- Fluvial and tidal flooding is considered to be at **very low risk**
 - Surface water flooding is considered to be at **very low risk**
 - Groundwater flooding is considered to be at **very low risk**
 - Reservoirs flooding is considered to be at **very low risk**
- 8.5 As the changes are only internal, there will be no increase of impermeable areas and therefore no increase of flood risk on site.
- 8.6 Given that the proposal is to change the building use from a resource centre into 10 residential flats, it is anticipated that the new development will connect into the existing drainage provisions on site. It is therefore recommended that a topographic survey and CCTV survey are undertaken prior to detail design stage to inform the drainage strategy.



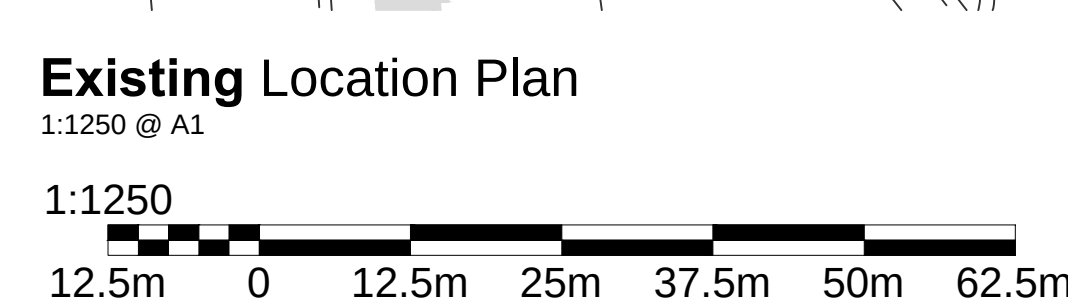
Appendix A



1:200



2m 0 2m 4m 6m 8m 10m



1:1250

12.5m 0 12.5m 25m 37.5m 50m 62.5m

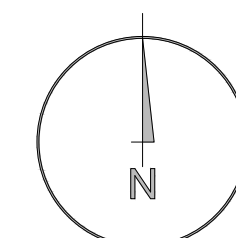
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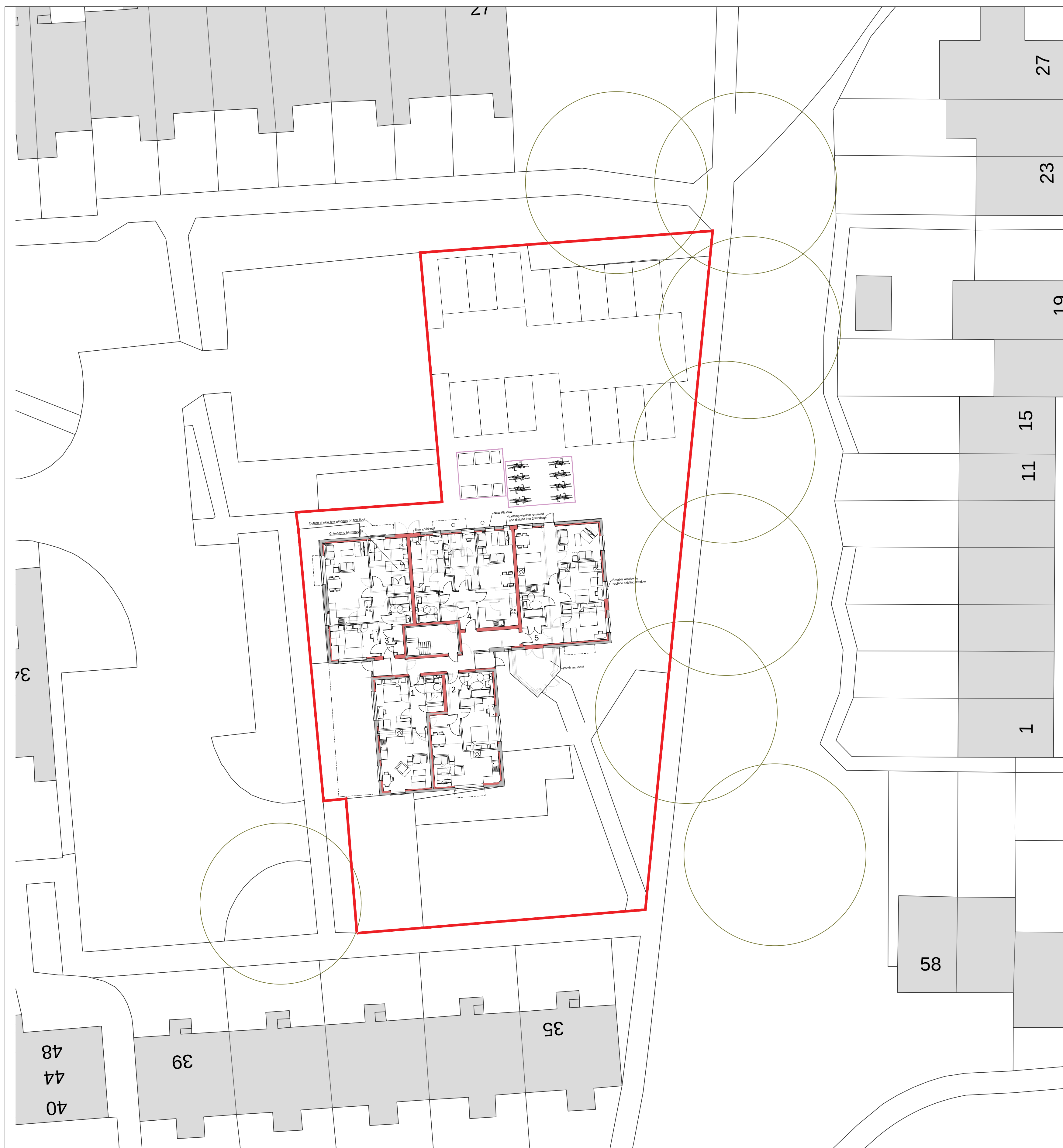
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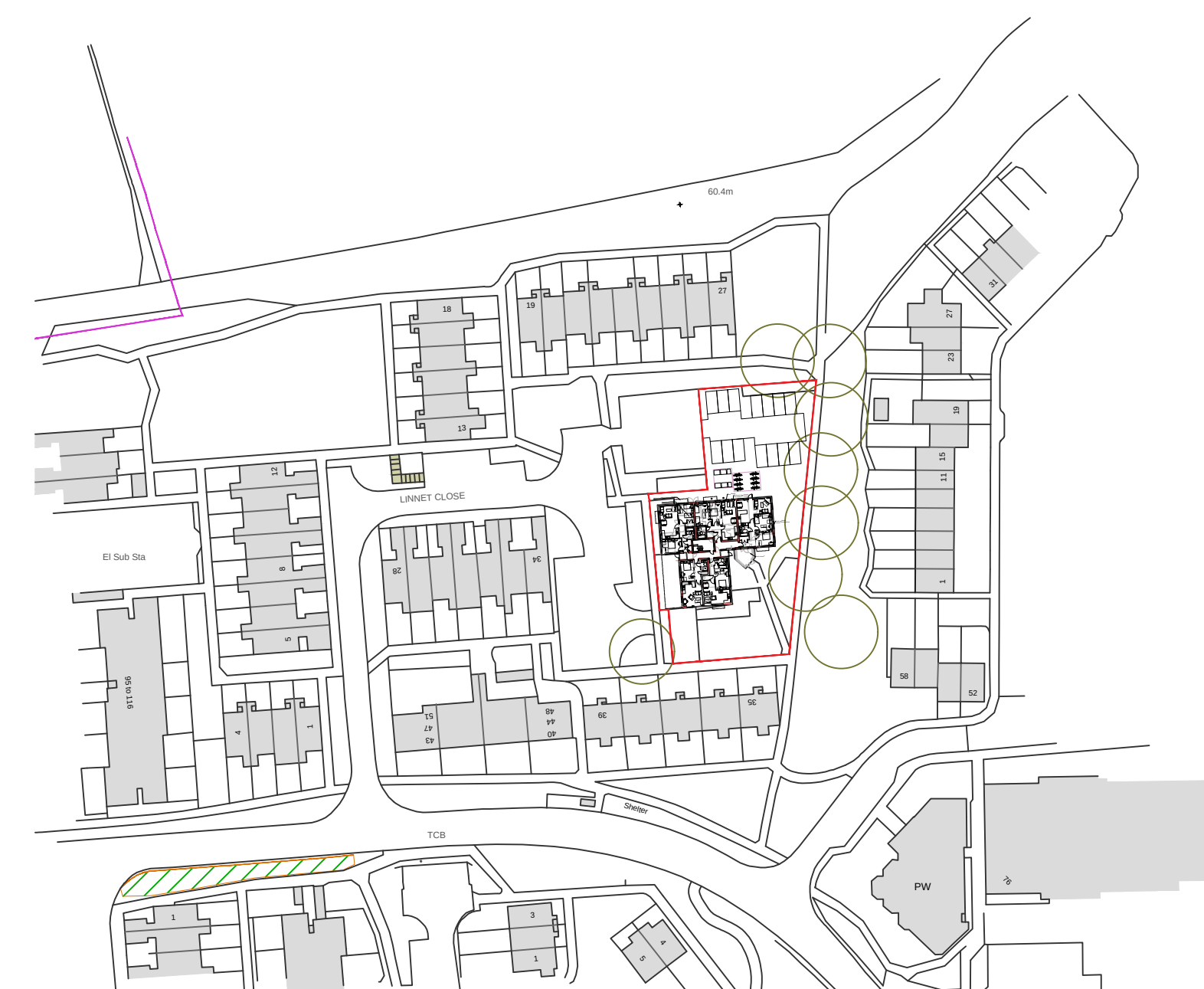
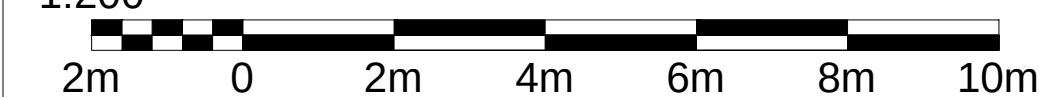




Proposed Site Plan

1:200 @ A1

1:200



Proposed Location Plan

1:1250 @ A1

1:1250



Schedule of Accommodation

Refurbishment

4 x 1B1P apartments

6 x 2B4P apartments

Total: 10 no. residential units

12no. unallocated parking spaces

2no. visitor spaces

Total: 14 no. car parking spaces

16 no. secure cycle spaces

4 no. short stay cycle spaces

TOTAL: 20 no. cycle spaces

notes

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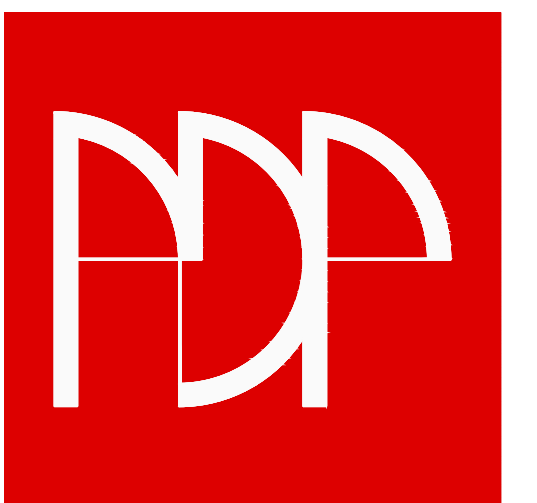
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revision	notes	date	drawn	checked
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client	



PRELIMINARY



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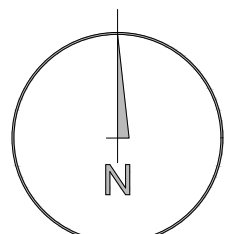
project	Former Link's Children's Centre, Linnet Close Waterlooville
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detail	Proposed Site & Location Plan
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drawn	checked
MP	HM

date	Jun '24	status	Planning
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a1 scale	a3 scale	18177-PD011	rev
1:200	1:400		



Appendix B



SITE 27 LINNET CLOSE, COWPLAIN

FIGURE 1

BOREHOLE 1 DIAMETER 150 mm DEPTH 7.2 m DATE 28/6/91

Scale: 1:100

Gravelly TOPSOIL
Soft/firm CLAY with some fill

Soft/firm near upper surface then
firm/stiff grey/red/brown
mottled fissured silty CLAY with
occasional tiny zones of sand.
Some rootlets in upper layers.
(Reading Beds)

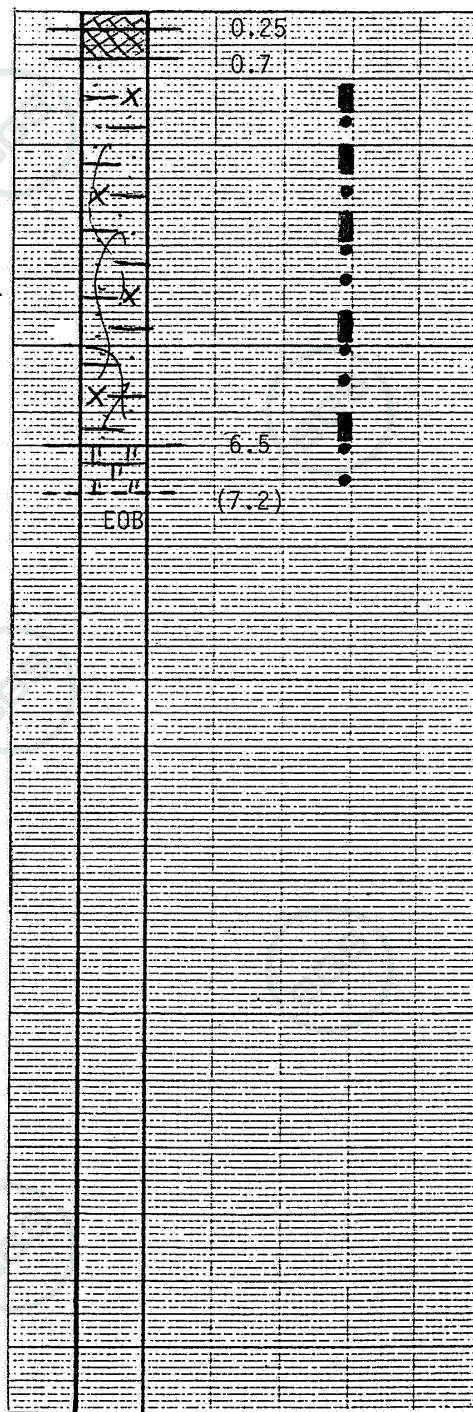
Strong white CHALK

Borehole cased to 1.5 m

No groundwater observed
during boring. *

Standpipe set to 3.0 m.

* Considerable water encountered
in the trial pit - 25 July.



100mm diameter core sample

• disturbed sample

I N (Test 19, BS 1377.1975)

NR ... non-recovery

•W ... water sample

•B ... bulk sample