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STRUCTURAL, CIVIL AND BUILDING CONSULTANTS

LONG ACRE
THE STREET
WALBERTON
ARUNDEL
WEST SUSSEX
BN18 0PY

FLOOD RISK ASSESSMENT REPORT

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1. Introduction

Instructions were received on February 7th 2025 to carry out a Flood Risk Assessment (FRA) report for this site. It is understood that the site is within West Sussex County Council (WSCC) under Lidsey Surface Water Management Plan (LSWMP).

According to LSWMP report, October 2014, the proposed development site is within a Local Flood Risk Zone (LFRZ), with reference LFRZ_003 Walberton Village. It is understood that this report aims to support a planning application for the development of this site.

In order to understand flood risk implications on site and wider adjacent areas the FRA report, herein, is to be included within the planning application and to be read in conjunction with the submitted Drainage Strategy Report, of reference *TB/466543/eg, dated 05 March 2025.*

This report aims to clarify the flood risk implications and strategies associated with the development of this site.

Following a desk study and research with local authorities and the Environment Agency (EA), this report has been prepared, using current recommendations given by the National Planning Policy Framework (NPPF).

This report assesses the overall risk of flooding on the site and provide recommendations to, as reasonably practicable, protect its built environment, users and surrounding areas from the likelihood of flood risk, through the evaluation of measures to improve water quality and introduction of sustainable urban drainage systems (SuDS) features that complement the existing natural habitat.

2. Existing Site and Surrounding Areas

The site development area is located at Longacre and forms part of the gardens attached to the existing bungalow, between the west section of The Street to the south and Field Close to the east, in Walberton, Arundel, West Sussex, at grid reference SU 96738 06183. Appendix A contains the site location and the existing site plan is shown in Appendix B.

The existing site is of approximately 0.4283 hectares (ha), mainly consisting of grass/agricultural land and enclosed by woodland buffer with some trees/hedges towards the north portion and most of its perimeter. Towards the south, is an existing access road into the site, which connects the site to the The Street. Within the site area, the existing Longacre bungalow, parking and main property rear garden is located between the existing access road Field Close. The existing site also has some outer

building areas and areas of hard and soft landscape, crossing through the central part of the north portion of the site, in line with the existing access road.

The north and north east portions of the existing site, are bordered by fields which are to be developed in the near future by Barratt Developments. The areas to the east, west and south of the site are residential areas, along The Street, the northbound portion of West Walberton Lane, Barnham Lane and artery roads connected to the The Street.

3. Site Geology

According to the British Geological Survey (BGS), 1:50,000 series, the geology of the grounds is expected to comprise of London Clay formation, formed approximately 56 to 47.8 million years ago during the Palaeogene Period, overlain by superficial River Terrace deposits comprising of clay, silt and sand.

Data within the site survey, Appendix C, indicate that the existing site is reasonably flat with a gradual slope towards the north-east. The existing levels on the northernmost section of the site vary from 14.88m Above Ordinance Datum (AOD) to the east and 14.22m AOD to the west. At the central section of the site the levels vary between 13.81m AOD on the eastern boundary and 13.20m AOD on the western. The levels on the top of the existing road, on centremost section of the site average 13.443m AOD sloping towards the entrance of the site where the existing levels are of 11.60m AOD.

The central eastmost portion of the site area, to the north of the existing Longacre bungalow garden will be partially used to accommodate SuDS features and amenity areas on site. The levels are expected to be regraded with spoils from the levelling of the main development site area to create a buffer zone to provide attenuation for exceedance flows.

Groundwater monitoring reports and soakaway testing carried out by Mate GeoTechnic Services (2023-2024), (refer to Appendix D of *466543 - Surface Water Drainage Strategy*) have shown that clay soils are present at about 0.4 metres below ground level (bgl) and that the infiltration rates onsite range between 4.561×10^{-5}m/s and 2.362×10^{-6}m/s. Ground water monitoring data, however, indicates that during peak winter months (January 2024) groundwater levels reached 0.149m bgl, making the use of permeable SuDS an impracticable solution for the management of storm water drainage of the site.

The geology and soils of the area surrounding the site are determined by the location of the site, between chalk hills and the base of the slope that leads to the sea, which is about 7 miles south of

Walberton Village. The superficial River Terrace deposits varying in proportions, overlay London Clay, underlaid by chalk, which in northern parts of Walberton is near the surface.

The areas surrounding the site are of relatively flat topography within, slopping south westerly (east-west), Figure 1. The site and surrounding areas are located to the south of South Downs National Park, and most of the landscape comprises of open pasture lands, woodlands and open farm lands within a network of tree belts, small copses and hedges.

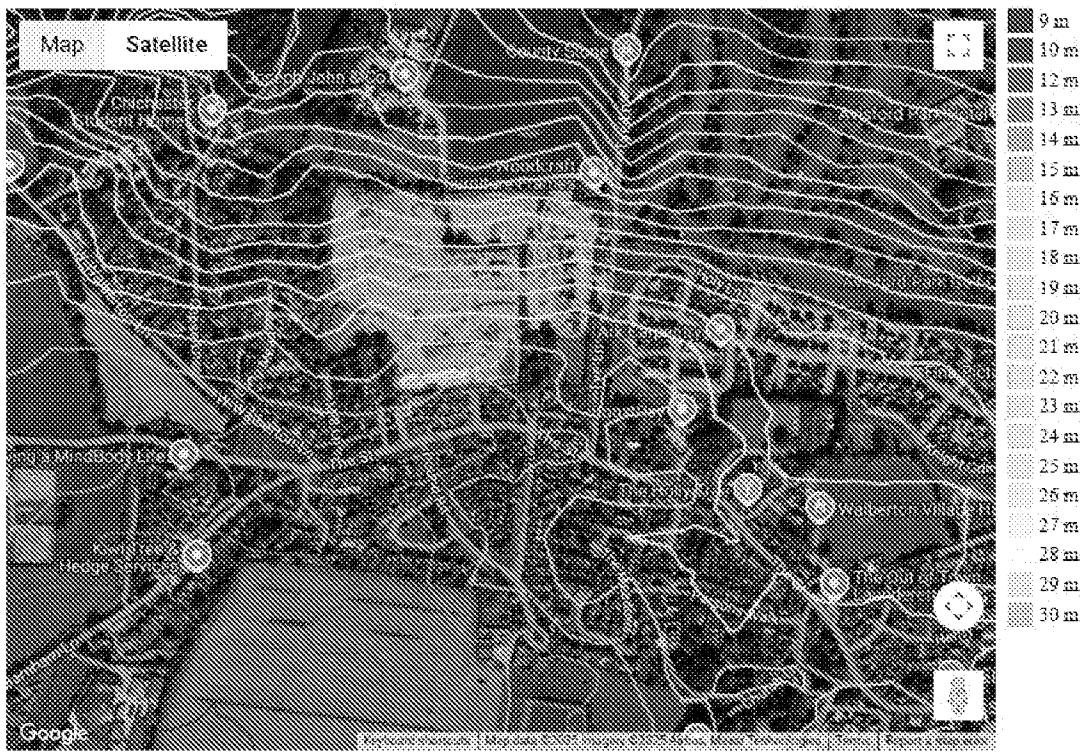


Figure 1: Walberton Village Topography surrounding Longacre site

(Image from Contour Map Creator, accessed on February 28th 2025)

4. Policy Background

The Government's sustainable development strategy (SDS) makes it a requirement to assess appropriate forms of developments in areas at risk of flooding. This is to avoid any unnecessary increase in requirements for flood defences and to ensure that flood risk taken into consideration at all stages in a planning process and not increased onsite or elsewhere.

The NPPF requires that developers making planning applications on sites that are potentially at risk from flooding to consult with the EA, and where appropriate, produce an FRA. The aim is to assess the potential risk for the development site and surrounding areas, establishing and demonstrating how flood risk will be managed and remain safe, both presently and during the lifetime, whilst taking

account climate change, the vulnerability of its users, and, where possible, the reduction of the overall flood risk. The EA flood matrix was consulted in conjunction with WSCC water management plan and exposed that a flood risk assessment is required for this site.

5. Proposed Development

The proposed development regards the area to the north of the site where few existing outer buildings and landscaped areas will be removed will be replaced by six dwellings, together with the associated access road, garages, amenity space, parking and soft landscaped areas.

The main development site area will also comprise the construction of low maintenance drainage systems which will control runoff flows at source, and convey them through systems that will allow for the detention and controlled discharge to the existing piped watercourse, along the southern boundary of the site. Proposed development plan is shown in Appendix D.

According to the NPPF different land uses are allocated a vulnerability classification based upon the impact of flooding and the resulting risk to occupants of the development. In this case the proposed development is for residential use in a flood zone 1, and therefore considered a "less vulnerable" land use in line with Table 2 of the NPPF. The vulnerability classification form part of the sequential test process to determine the suitability of the site and is shown on Figure 2.

Flood Risk Vulnerability Classification	Essential Infrastructure	Water Compatibility	Highly Vulnerable	More Vulnerable	Less Vulnerable
Flood Zone Type					
Zone 1	✓	✓	✓	✓	✓
Zone 2	✓	✓	⁙	✓	✓
Zone 3a	⁙	✓	✗	⁙	✓
Zone 3b (Functional floodplain)	⁙	✓	✗	✗	✗

KEY

✓ Development is appropriate

⁙ Exception Test Required

✗ Development should not be permitted

Figure 2: Proposed Site, NPPF Flood Risk Vulnerability and Flood Zone 'Compatibility'

The site has been identified as being within flood zone 1, considered as land having a 1 in 1000 years chance of river flooding each year (0.1% annual probabilities), and low risk from surface water flooding

equating to a chance of flooding of between 0.1% and 1% each year. Although the current site is less than 1ha, the site location is within a zone classified as at medium risk for pluvial flood and at high risk for groundwater and public sewer floods. As such, it must be supported with a FRA, particularly due to the vulnerability of flooding already identified on the LSWMP and the potential increase of flood risk elsewhere.

The proposed site is currently undeveloped with a few scattered outer buildings within the grass with trees/edges planting to the north portion of the site. Hence, any development deemed to increase the impermeable area, and as such increase surface water runoff rates.

Based on information gathered through WSCC water management plan, highlighted on page 72 of the LSWMP, Appendix E, it is understood that surface water flooding occurs on The Street, after prolonged and exceptionally heavy rainfall. This is owed to the fact that the topography of Walberton Village, coupled surface water runoff from fields to the north of the village, direct surface water flows from Copse Lane, Mill Lane, Field Close, North Pound and Tye Lane towards The Street where it ponds from the intersection of the main roads (Eastergate Lane, West Walberton Lane and Barnham Lane). This is also exacerbated due to the village pond, located between Eastergate Lane and Barnham Lane and the flat topography surrounding the area.

The fields south of Walberton are found to be at the base of the natural slope that flows water through Barnham and Yapton, via Barnham Rife out to the flood plain, discharging to the English Channel. Seeking to ensure that flood risk is not increased elsewhere, the NPPF requires local planning authorities to ensure that developers assess and manage risk associated with their proposed development by providing a site-specific FRA, for developments located within flood risk areas.

The proposed development site is within South Downs National Park Authority (SDNPA) local plan for Walberton Neighbourhood Development Plan (2015-2035). Although the site is not currently allocated for development, the site is within Walberton Village built up area, with the new Tye Lane development underway, circumscribing the north and north-east boundaries of the proposed development site site. The proposed site is also outside conservation areas boundaries, or areas of Sites of Special Scientific Interest (SSSI) and/or Sites of Nature Conservation Interest (SNCI).

Additional research information has indicated that the proposed site is over a Secondary A aquifer with low groundwater vulnerability and soluble rock risk. Although outside of Groundwater Source Protection Zon, the development site is within a Nitrate Vulnerable Zone (NVZ).

To that extent, by adopting an SDS, the main site area will incorporate green and blue roofs on garage buildings and, where appropriate, introduce rain gardens to cater for overflows from rainwater

harvesting systems (water buts), prior to their connection to the main site attenuation networks. The use of tanked pervious pavement and filter drains, such as ACO, will also be used on parking areas and access roads to intercept the runoff and provide initial treatment to floatables and contaminates. Small bioretention areas within tree pits and rain gardens will also be used as attenuation to accommodate roof runoff, up to 1 in 100 year's storm events, and exceedance flows.

6. Flood Risk Maps and Available Information

Appendix F and Appendix G contain a copy of the EA Flood Maps for this area. These maps show that the main site is within flood zone 1 for both the risk of flooding from river and sea and the risk of flooding from surface water. The same data also indicates that the areas surrounding the site, are at risk of flooding of both ground and from surface water. A wider contextual observation, Appendix G_2, in conjunction with Figures 1 and 3, indicates that this section of Walberton Village is on the path of overland flows, which appears to coincide with varied valley featuring winterbournes and series of drainage ditches and streams, flowing towards the flood plain at the base of the hills.

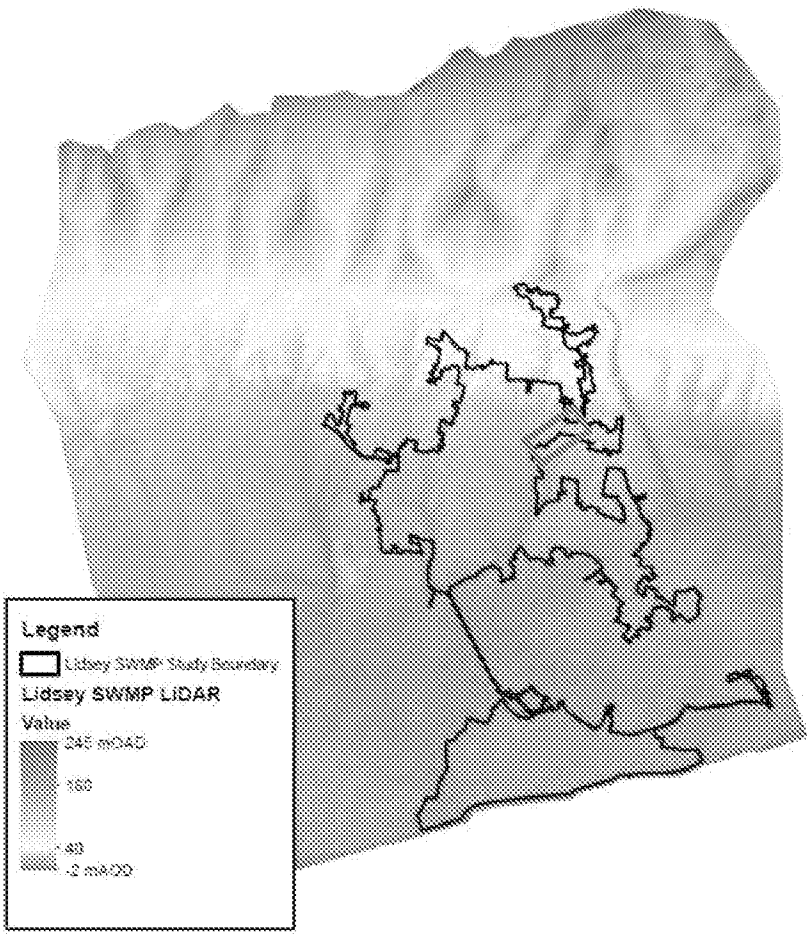


Figure 3: Wider Topographic context (Image retrieved from page 20 of Lidsey SWMP 3.0 (Oct.2014))

Similar information, contained within the LSWMP, also indicates that surface runoff from overland flows causes the flood generated along The Steet. The data contained in the report indicates that, after long periods of rainfall, groundwater flooding and/or fluvial flooding preclude the surface water runoff from entering the already overwhelmed system, resulting on an 'Hydraulic Overload' of the existing drainage infrastructure and sewers in this area and subsequently in flood. Additional information on the report also highlights the influence of high tides on the area and the impact on the Lidsey Rife in likelihood of a tide locking during a 1 in 100-year storm event.

Additional information received from consultations with Arun District Council (ADC), Appendix H_1, shows the location of the existing drainage infrastructure on site surroundings, which mainly comprises of interconnected drains and ordinary watercourses. Analysing the location of the existing infrastructure it is clear that it follows the same path of the overland flows, converging onto The Street. The Watercourse map for the site area, Appendix H_2, shows an ordinary watercourse with headwall upstream running adjacent to the north boundary of the site, and a culverted ordinary watercourse downstream running parallel to the south boundary of the site, along the site entrance.

7. Drainage Strategy

Drainage from the new developments must ensure that the impact of the new development does not increase flood risk onsite or elsewhere. Hence, new developments must account for flows from roads and overland as possible source for onsite flood, in order to manage, prevent and control runoff flow patterns, both in terms of quantity and peak runoff. NPPF guidance advises that both the rates and the volumes of runoff from new developments should be no greater than the rates prior to the proposed development.

Following the recommendations within the NPPF, the design of new developments should adopt measures to reduce the impact of surface water runoff through the use of sustainable drainage techniques, prioritising the SuDS Management Train, Figure 4. Government policy and strategy strongly also recommends the use of SuDS as approach to prevent the increase in flood risk with the introduction of systems that reduce the amount of surface runoff in the event of a peak rainfall. Similarly, NPPF also recommends a holistic approach to SuDS, established to manage the quality and control the quantity of water onsite by slowing down and reducing the quantity of surface water runoff as to manage and mitigate the risk of downstream flood whilst reducing the risk of pollution caused by such runoff.

Although the main site is located within Flood Zone 1 for both the risk of flooding from rivers and sea and the risk of flooding from surface water, the area surrounding the site is located within an area susceptible to fluvial, ground water and sewer flooding.

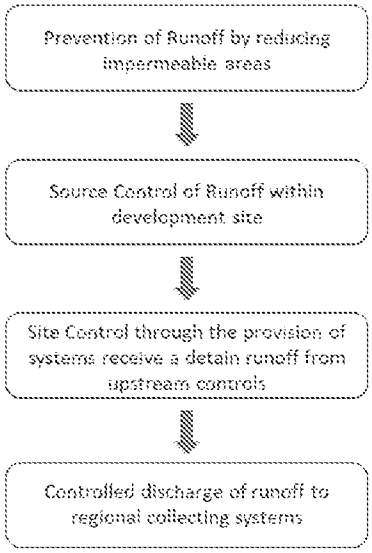


Figure 4: Proposed Site, SuDS Management Train

Following EA's approach to groundwater protection', the surface water drainage needs to meet EA's criteria and the NPPF and Planning Practice Guidance's without the risk of pollution. Thus, the proposed approach to surface water strategy for this site will follow CIRIA's C753 SuDS Manual guidance for water quality management.

Currently, the 0.4283ha site existing contains the Longacre bungalow with its parking and main property garden, located between the existing access road Field Close. The existing site also has some small outer building areas enclosed by areas of gravel on the central part of the north portion of the site that crosses through the central part of the north portion of the site, in line with the existing access road. The roofs and existing car park area corresponding to an impermeable area of 444.6m^2. The remainder of site comprises of grass landscaped areas with some trees and hedges planting.

The existing Longacre bungalow storm water drainage is currently collected by drainage pipes and discharge to soakaways, located at both, front garden and rear walled garden of the property, catering for 0.02682ha (268.15m^2) with the runoff of the existing car parking area (52m^2) flows discharging directly towards the front garden. The areas of the outer buildings outside the boundaries of the existing Longacre property corresponds to 124.5m^2 of impermeable area with the area of the existing gravel access road corresponding to 398.9m^2 of existing areas of hardstanding. This represents about 19.7% (0.08435ha) of the site areas positively drained and about 80.3% (0.34395ha) of grass/soft landscape area.

The proposed development will consist of: the existing Longacre bungalow remaining almost the same, part of the bungalow roof area is to be cut back to accommodate the slightly widening of the access road (231m^2) with its parking area (52m^2) and existing property gardens; and six new detached and semi-detached dwellings with garages, car parking spaces and the extension of the access road. The new proposed areas of hardstanding will consist of: 413.4m^2 of impermeable roof and footpath areas, 209m^2 of pervious driveways with no infiltration, 656m^2 of pervious access road with no infiltration, and 89.5m^2 of green/blue garage roofs, Appendix I.

Based on the premise that the existing Longacre bungalow, car parking area and gardens will continue to use the current drainage system, the total areas of hardstanding relevant for the proposed development will consist of 0.1368ha. Bearing in mind a SDS approach, the runoff flows for the proposed site development have also been assessed and compared to the existing site, based on current design proposals and are results are indicated on Appendices J and K respectively. The assessment data indicated that the proposed development represents 38.5% (0.1651ha) of the site area which will positively drained and about 61.5% (0.2632ha) will which remain with grass and soft landscape. This signifies an increase of 96% of the amount of area positively drained onsite, when compared to the existing site, corresponding to a change from 19.7% to 38.5%. Yet, if the areas allocated for green roof are considered, the proposed area positively drained is about 85% (0.1561ha) of the site area and about 63.6% will remain as area of grass and soft landscape.

Based on site investigation data, and as noted on the Drainage Strategy Report (*TB/466543/eg*), the discharge of the surface water via infiltration is not feasible due to the presence of high-water table which would render the proposed drainage system inoperable, adding the resulting malfunction strain to an already precarious risk area. This also means that during periods of high rain intensity and high ground water table, the existing site surface runoff contributes to the hydraulic overload and the flood along The Steet and adjacent roads.

Although there's an increase on the proposed area of hardstanding of about 18.8%, when compared with the existing site, the proposed development will provide a betterment of the existing site surface runoff, as it will control at source 31.9% of the site surface runoff flows, therefore reducing the amount of surface runoff water from site in the event of a peak rainfall. When compared with the existing site, the proposed development drainage system represents a betterment of 13.1%.

The proposed SuDS, will incorporate the used of green roofs over garages of plots 1,2 3 and 6 to help promote ecology and biodiversity by creating a small green belt corridor between the site surrounding trees and hedges and the proposed buildings. The flows from all roofs are to be connected to rainwater harvesting systems, which will overflow onto the proposed attenuation storage, at both

sub-base of driveways and access road. the proposed driveways and access road levels will mimic current levels of the site natural topography to allows surface water flows patterns to be maintained.

The pervious attenuation storage, described on the Drainage Strategy Report, will incorporate Aco channels at regular intervals, and strategically positioned to capture and reduce surface water flows, directing them to the subgrade conveyor system. The attenuation, which will comprise of permeable paving driveways and permeable tarmac, will be installed with check dams and piped diffusers to ensure the controlled discharge of the surface water through the various levels of the network system and manage the expected flows onsite, taking into consideration effects of exceedance flows.

Exceedance flows are to be directed the area of the site which will be allocated to ecology and SuDS area, which features is currently of grass and landscape use and making use of natural evapotranspiration. The levels of this area will be slightly raised on the south-western boundary, allowing the formation of a depression basin/bioretention area to detain and reduce excess runoff flows. Small gaps between the kerb line of the access road on the section of the site will ensure that the additional flows will be directed to this area, and naturally drained once the hydraulic flows and displaced water volumes are normalised. This will maximise the benefits of the proposed development with a green area that promotes biodiversity, contributes to local habitats and enhances the visual character of the site, providing resilience and adaptability for the future.

Currently, the preliminary assessment of peak runoff rates and volumes estimation indicates that the existing site runoff rates for a 6 hours event, for a 1 in 100 year-storm, represents a runoff of 4.74l/s with a total runoff volume of 102.3m^3. The assessment also indicates that, to maintain the current rates and volumes of runoff about 116.7m^3 of additional attenuation and treatment storage will be required. According to the information contained on the drainage strategy report, the HR Wallingford Greenfield Run-off calculations, Appendix L, the greenfield run-off rate Q_{BAR} for the existing site is of 2.44l/s, equating to 5.48l/s/ha. Transposing this value to the proposed areas of hardstanding, this will represent a discharge rate of 0.74 l/s. Yet, to avoid the risk of blockages it is recommended a minimum discharge rate of 1l/s.

With the exception of the existing Longacre bungalow and car parking area, which current drainage components are to remain as existing, the proposed development site will cater and manage for the surface water flows. Hence, to limit development site surface runoff water and to achieve flow rates similar to those prior to redevelopment, drainage elements described on the drainage strategy report will be incorporate check dams and flow control devices not only to ensure that the proposed runoff rates are not higher than existing, but also to create and sustain a space for both people and nature,

by reducing the amount of surface runoff in the event of a peak rainfall, prior to the connection of the stormwater flows to the piped watercourse.

Following the guidance provided in Chapter 26 of CIRIA's C753 SuDS Manual for water quality management, and assessment of the proposed development have been carried out and is also noted on the Drainage Strategy report to ensure the suitability of the proposed SuDS features. Based on the mitigation indices provided, the proposed SuDS components will provide the required mitigation indexes for the proposed site and provide required screening of pollutants and sediments.

With regards to foul water, the new development will have an impact on the foul water flow due to the increase in number of people using the network. Consultation with Southern Water will be required. Notwithstanding, the drainage strategy report indicates that there is an existing 150mm diameter public foul sewer in The Street. Any proposed drainage manhole or inspection chamber along The Street will have to be adequately sealed to ensure resilience in the event of sewerage flooding. Southern Water will also need to be contacted and permission obtained to connect and discharge into the infrastructure system.

8. Flood Water displacement

The proposed development is not expected to affect the volume water displaced, should a flooding event occur in the area. There is no flood plotted zones within the boundaries of the proposed development site. The EA mapping suggests that the only risk is outside site boundaries, which covers a main area of the immediate site surroundings, which has a high probability of flood and hydraulic overload but it will remain unchanged.

Taking into account the that the proposed design and ecology area, the drainage is designed to provide betterment and accommodate, as reasonably possible, exceedance runoff, allowing the predicted runoff water flows to be contained, minimising the likelihood of damage to people and property onsite or elsewhere.

9. Risk Assessment

Consultations have been held with the EA. The information from the EA depicts that the proposed main development site lies within Flood Zone 1 - an area where the chance of flooding from both rivers and the sea has been assessed as less than 0.1% in any year (1 chance in 1,000 in any year).

From a level survey undertaken on the site it has been established that the existing ground levels on the site vary between 14.88m and 13.20m AOD on the main area of the site to 11.60m AOD at site entrance. Simulation results of EA flood map, overlaid to the topographical map, have shown that there is no flood risk associated to the site, although additional considerations might be required on the ecology area, which is located within north of the existing Longacre property.

Notwithstanding, due to site and its surroundings topography and its nearness to flood risk area, measures are required as noted previously to ensure that a flood event will not adversely affect the site and nearby areas.

10. Sequential and Exception Test

Sequential and exception tests are required to prove that developments provide wider sustainability benefits to the community that outweigh flood risk. The NPPF classifies 'areas at risk of flooding' as land within Flood Zones 2 and 3, or land within Flood Zone 1 which have critical drainage problems and which have been notified as so to the local planning authority by the EA.

The aim of the sequential test is to steer developments towards flood zone 1 and avoid areas at risk. None of the parameters identified by the NPPF applies to the proposed development site. The information obtained from the EA states that main redevelopment site is within a flood zone 1, and no critical drainage problems have been identified or reported at this location.

Providing that the new development considers the flood risk strategies hereby provided, the proposed development site will account for the expected runoff flows, allowing for the potential 45% climate change allowance increase. At its worst, the proposed approach to the flood risk will allow flood water to be catered onsite, reducing the overall risk and providing a betterment to the current system.

Foul water drainage issues can be suitably detailed to avoid increasing or being affected by any flooding issues. Therefore, considering the previous points we believe that the site is suitable for development as long as the proposed measures noted on the drainage strategy report are implemented.

11. Conclusion and Recommendation

Investigation results have shown that according to the EA flood mapping and WSCC Lidsey report data, the proposed development site is within a flood zone 1, and outside a predicted flood plain. EA's data

also suggests low probability of surface water flood; however, the development site is within path of overland flows, which coincide with valleys featuring winterbournes flowing towards the flood plain at the base of the hills, crossing the site surroundings, which are to the located within predicted flood zone.

Comparing to the existing site, the proposed development site represents a 98% increase in areas hardstanding, an additional 18.8% increase in built up area. Notwithstanding, the proposed development site is expected to cater for the surface water runoff of 31.9% out of the 38.5% developed site, representing a betterment of about 13%, when compared to the existing site, with only 6.6% of the existing onsite drainage remaining as existing.

It is reasonable to state that the site attenuation storage and controlled discharge of flows to the piped watercourse will help to reduce/prevent flood, through the minimising, control, management of flows at source. Conversely, the existing site ground levels on the site varying between 14.88m and 13.20m AOD on the north portion of the site reducing to 11.60m AOD, which are expended to remain similar to existing levels will help maintain the natural topography, without altering the natural patterns of existing runoff flows. Thus, the proposed development site will make use of localised attenuation combined with natural and artificial conveyors to control the proposed development flows.

Due to the presence of high-water table on site, the proposed SuDS and drainage strategy are believed to enhance the existing characteristic of the site. The incorporation of attenuation/storage, combined to ensure a controlled flow discharge to the existing infrastructure network. The introduction on SuDS will also ensure the quality of the discharged water, safeguarding the aquifer below the site, ensuring the quality of the site runoff.

The new development will also increase foul water discharge into the existing drainage infrastructure. The discharge of foul drainage from site to the Southern Water infrastructure will be subjected to a connection application and consent permission prior to any connections

Thus, providing that the Drainage Strategy Report in conjunction with the information contained within this report is adopted and implemented, the surface water flows of the proposed development are not expected to alter or affect current runoff flows.

The proposed development is not expected to result in any increase in flood risk to the site users or surrounding areas, and is believed to provide betterment to current surface water flows. Once adopted, the proposed drainage strategy and SuDS are believed to complement the existing drainage infrastructure in the area whilst simultaneously maintaining and promoting biodiversity and wild life.

APPENDIX 1

A. Site Location Plan

B. Existing Site

C. Site Survey

D. Proposed Development Plan

E. EXTRACT of WSCC LSWMP: LFRZ_003 – Walberton Village Flood Map

F. EA's Flood Maps for River and Sea

G. EA's Flood Maps for Surface Water

H. Arun District Council Watercourse Map

I. Drainage Strategy Layout

J. Existing Site Runoff Estimation

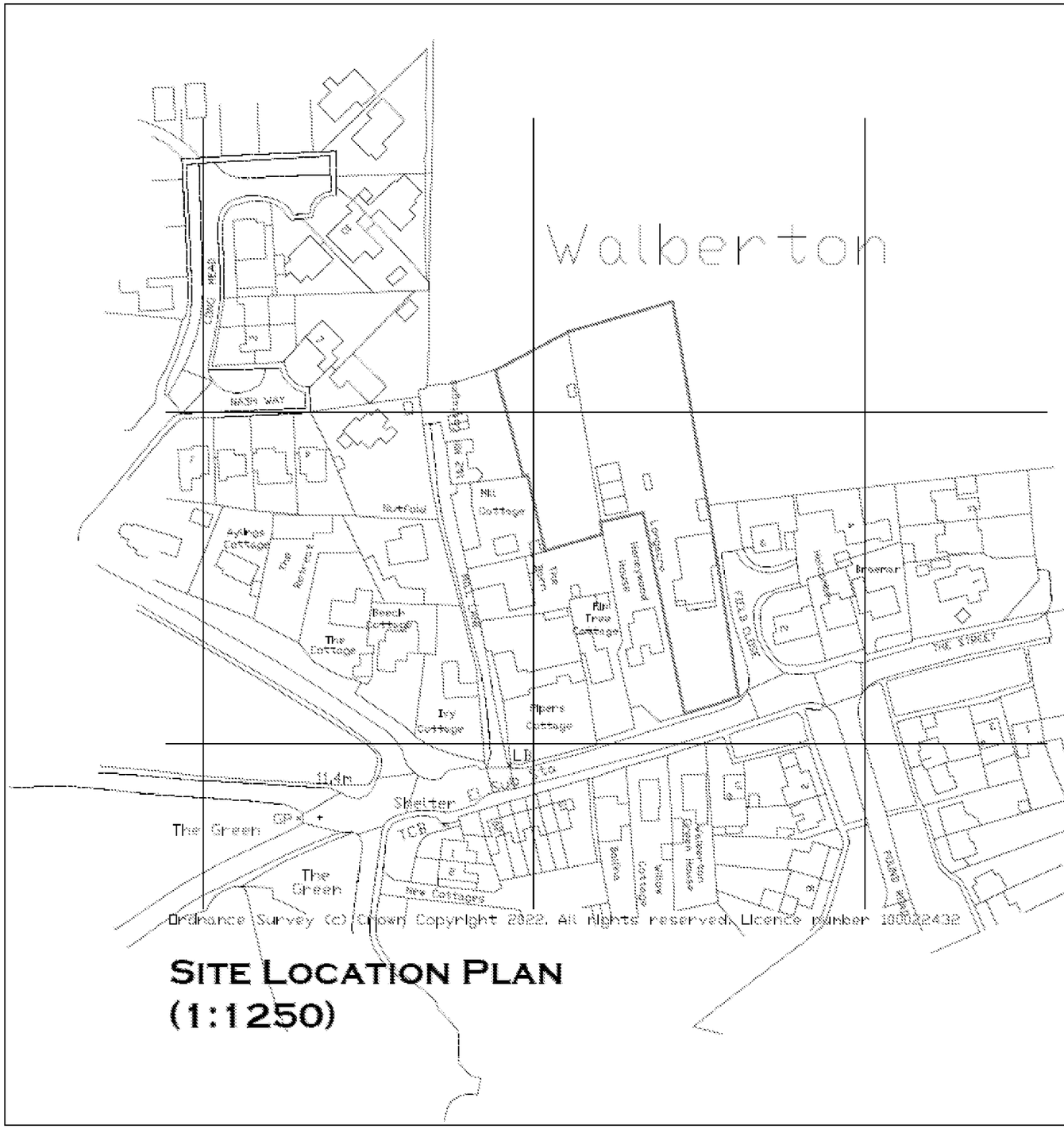
K. Proposed Site Runoff Estimation

L. HR Wallingford Greenfield Runoff

A. Site Location Plan

Image compiled from Google Maps GIS, accessed on February 28th 2025

B. Existing Site



SITE LOCATION PLAN
(1:1250)

Notes

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Project:
Proposed Residential Development
Longacre
The Street
Walberton
West Sussex

Title:
Site Location Plan

Client:
Maxwell Homes Winchester Ltd

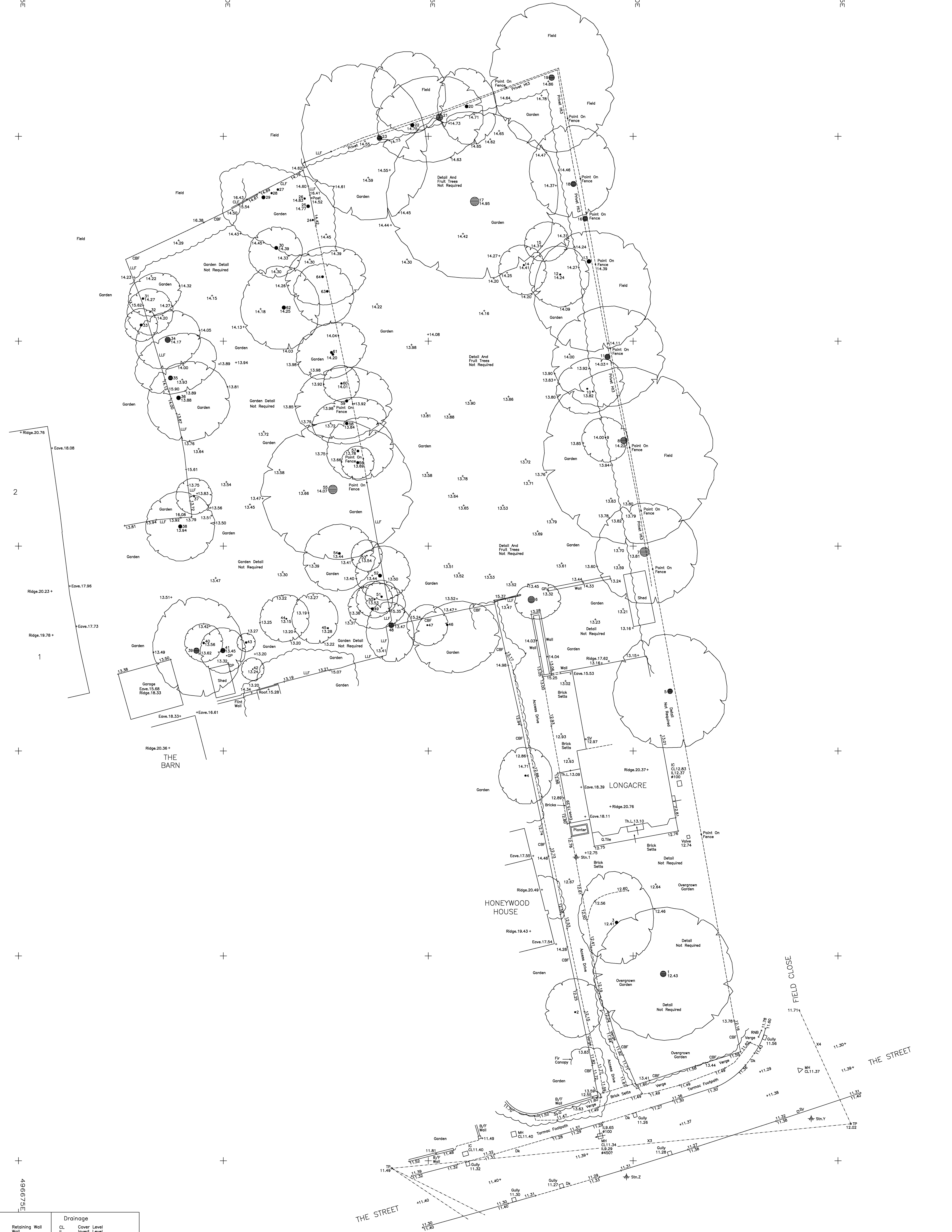
Scale:
1:1250 (@A3)

Drawn By: PJD Checked By:

Date: 16/05/24 Status:

Job No.: 220043 Drawing No.: SK10

C. Site Survey



CONTROL CO-ORDINATES				
STN	EAST	NORTH	LEVEL	DESC
1	496743.058	106137.049	12.758	RN
Z	496749.184	106098.036	11.427	RN
Y	496771.734	106105.139	11.443	RN

TREE SCHEDULE

TREE NO.	SPECIES	DIA.(m)	HT.(m)Estd
1	Copp.Beech	0.70	11
2	S.Birch	0.18	8
3	Magnolia	M/Bole	5
4	Maple	0.20	6
5	Chestnut	0.60	12
6	Bay	M/Bole	4
7	Chestnut	1.10	19
8	Ash	0.78	15
9	Cherry	0.13	5.5
10	Chestnut	0.18/0.16	7
11	Chestnut	0.63	13
12	Oak	0.19	7
13	Ash	0.48	16
14	S.Birch	0.19	10
15	Chestnut	0.11	5
16	Ash Stump	0.60	4
17	Oak	1.05	18
18	Chestnut	0.64	11
19	Oak	0.68	16
20	Chestnut	0.38	16
21	Ash	0.80	17
22	Ash	0.43	15(L)
23	Ash	0.60	17
24	Fir	0.20	11
25	Fir	0.37	11
26	Fir	0.21	11
27	Fir	0.24	11
28	Fir	0.21	11
29	Fir	0.41	11
30	Tree	M/Bole	6
31	V.Holly	0.24	7(L)
32	Holly	0.14	6.5
33	Pittosporum	M/Bole	5
34	Fir	M/Bole	10
35	Pine	0.52	13
36	Lime	0.48	9
37	Fir	0.17	7
38	Pine	0.43	10
39	Locust	0.67	13
40	Fir	0.23	8
41	Palm	M/Bole	5
42	Sycamore	0.11	8
43	Dead	0.23	5
44	Olive	0.15	5
45	Walnut	0.18	6
46	Cherry	0.24	11
47	Cherry	0.16	4
48	Hawthorn	M/Bole	7
49	Bay	M/Bole	6
50	Fir	0.14	4
51	Haw.Dead	0.22	4
52	Bay	M/Bole	9
53	Fir	0.12	5
54	Tulip	0.27	8
55	Eucalyptus	1.05	21
56	Haw.Dead	M/Bole	4
57	Red Sycamore	0.27	13
58	Indian Bean	0.35	14
59	Sycamore	0.31	13
60	Haw. Dead	0.22	5
61	Bay	0.28/0.26	9
62	Beech	0.43	10
63	Hawthorn	0.26	6
64	Oak	0.27	15
65	–	–	–
66	–	–	–
67	–	–	–
68	–	–	–
69	–	–	–
70	–	–	–

Basic Survey Requested:
All detail shown hereon was requested by the client at the time of survey

Legend

AV	Air Valve	FH	Fire Hydrant	LP	Lamp Post	St	Step
Boll	Bollard	FL	Floor Level	MH	Manhole	SV	Stop Valve
OSBM	Bench Mark	FL.P	Flag Pole	Mkr	Marker	TCB	Telephone Call Box
BS	Bus Stop	G	Gulley	MS	Mile Stone	TIC	Telecom IC
CATV	Cable TV Cover	GIC	Gas IC	NB	Notice Board	THL	Threshold Level
CL	Cover Level	GV	Gas Valve	P	Post	TL	Traffic Light
CP	Catch Plt	Ht	Height	RE	Rodding Eye	TP	Telegraph Pole
Cul	Culvert	Hyd	Hydrant	RH	Ridge Height	VP	Vent Pipe
D	Door	IC	Inspection Cover	RNB	Road Name Board	WM	Water Meter
Dr	Drain	IL	Invert Level	RWP	Rain Water Pipe	WO	Water Outlet
DP	Down Pipe	Irr/IC	Irrigation Valve	RP	Reflector Post	–	–
EH	Eave Height	JB	Junction Box	RS	Road Sign	ø	Diameter
EIC	Electricity IC	Kb	Kerb	S/A	Soakaway	▼	Level
EP	Electricity Pole	KO	Kerb Outlet	SL	Sump Level	2.34	Floor to Ceiling
ER	Earth Rod	LB	Letter Box	SP	Sign Post		Joist Direction

Fence & Wall Details

BA	Barrier	IRF	Iron Railings	PRF	Post & Rail	RW	Retaining Wall
BWF	Barbed Wire	INT	Interwoven	PRP	Post & Rope	W	Wall
CBF	Close Board	LLF	Larch lap	PTF	Post & Tube	–	–
CIF	Corrugated Iron	OL	Over-lap	PWF	Post & Wire	–	–
CLF	Chain Link	Pal	Paling	PWM	Post & Wire Mesh	–	–
CPF	Chestnut Paling	PCF	Post & Chain				

Slope — Bushes and Hedges — Gate

Drainage

CL	Cover Level
IL	Invert Level
ø	Diameter of Pipe
(SP)	Sealed Pipe Below
Depth	Depth to Silt

NOTES : Drainage Information has been gained by visual inspection only. All possible care has been taken to ensure correct information but TJK Land Surveyors can not accept responsibility for costs arising from errors or omissions.
All tree heights are estimated.

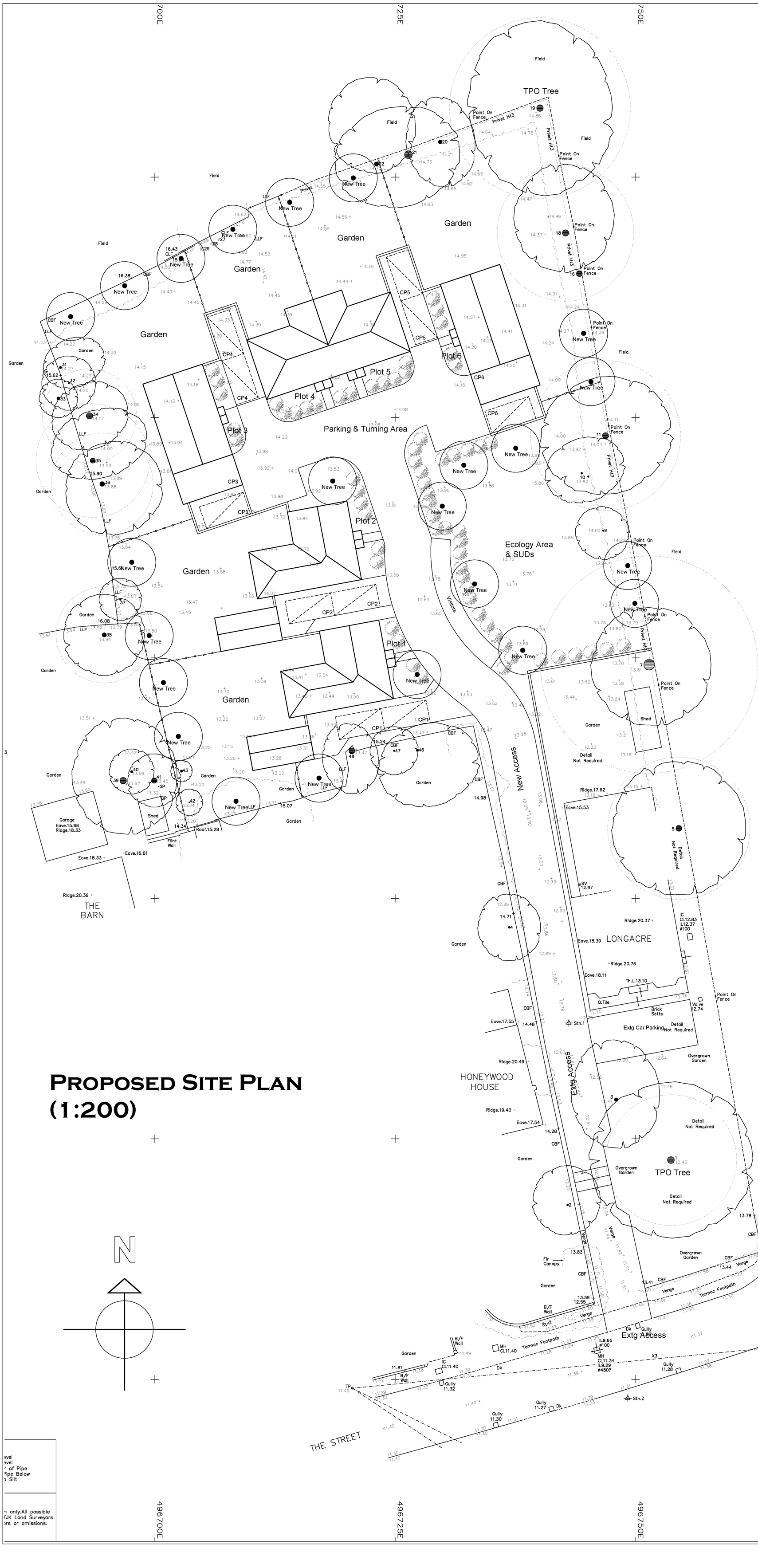
N / W / E / S — Indicative

T.J.K. LAND SURVEYORS
LAND, BUILDING AND ENGINEERING SURVEYS
9 HAWTHORNE ROAD,TOTTON,SOUTHAMPTON,SO40 3HH
MOBILE (07711)680769
E Mail: trevor@tjkland.freeserve.co.uk

CLIENT	MAXWELL HOMES LTD
TITLE	LAND AT LONGACRE–THE STREET WALBERTON–WEST SUSSEX–BN18 0PY
JOB NO.	TJK2078
SHEET	SHEET 1 OF 1
DATE	AUGUST 2023
DRAWN BY	T.J.K.
CHECKED BY	S.K.
SCALE	1:200 (A0) 1mm=0.2
LEVEL DATUM	OSBM Pillar– The Street– Value.12.422

D. Proposed Development Plan

700E 725E 750E 775E



Proposed Site Plan (1:200)

Notes

Rev:-	Description:-	Date:-	Chkd by:-
A	Layout amended	10/06/24	PJD
B	Reduced to 6 units	18/07/24	

Schedule of Areas

Total Site Area
= 4385sqm/0.44hectares/1.08acres

Long Acre
Existing House Retained

Plot 1&2
Four Bedroom Detached House
NFA = 124sqm/1335sqft
plus single garage & 2 car parking spaces

Plot 3&~~6~~
Three Bedroom Detached House
NFA = 102sqm/1130sqft
plus single garage & 1 car parking space

Plot 4&5
Three Bedroom Semi Detached House
NFA = 93sqm/1001sqft
plus 2 car parking spaces

Total Units 6
2x 4bed
4x 3bed

VIVID design studio

The Barn, Calcot Mount Business Park, Calcot Lane,
Curdridge, Southampton, Hampshire, SO32 2BN
Tel: 01489 786670
Email: info@vividdesignstudio.co.uk
Website: www.vividdesignstudio.co.uk

Project:-
Proposed Residential Development
Long Acre
The Street
Walberton
West Sussex

Title:-
Proposed Site Plan

Client:-
Maxwell Homes Winchester Ltd

Scale:-			
1:200 (@A1)			
Drawn By:- PJD		Checked By:- PJD	
Date:- 16/05/24		Date:- 16/05/24	
Job.No:- 220043	Drg.No:- SK12	Rev:- B	

N

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Pipe Below
Silt

n only.All possible
TJK Land Surveyors
ors or omissions.

496700E 496725E 496750E 496775E

ARUN DISTRICT COUNCIL WA/102/24/PL

E. EXTRACT of WSCC LSWMP: LFRZ_003 – Walberton Village Flood Map

LFRZ_003 – Walberton Village

Figure 7.7 - Flood Risk LFRZ_003 (1 in 100 year storm event)

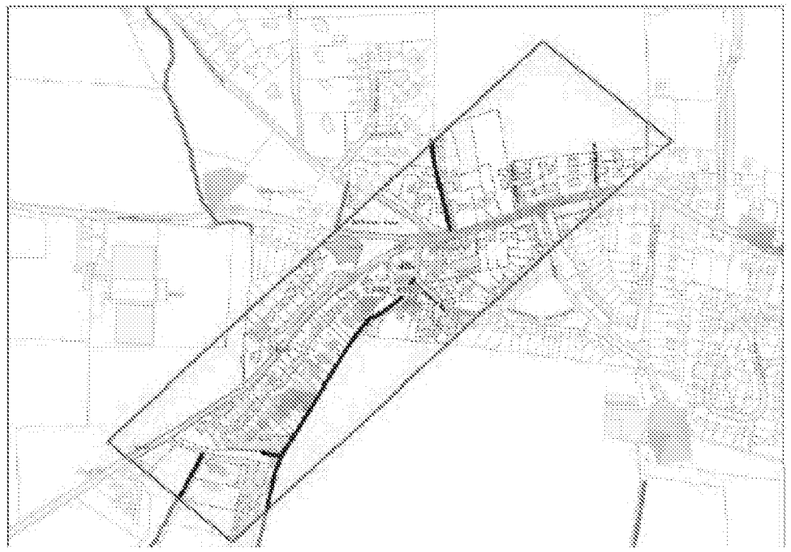


Figure 7.8 - Flood Hazard LFRZ_003 (1 in 100 year storm event)

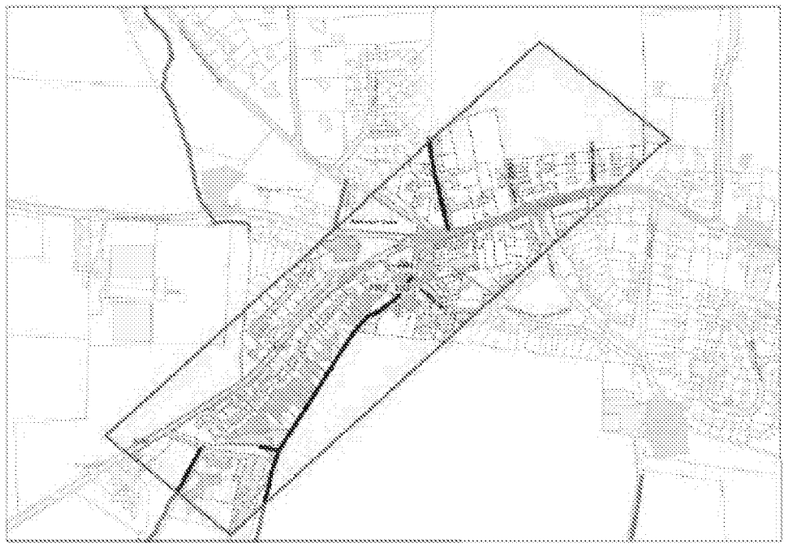


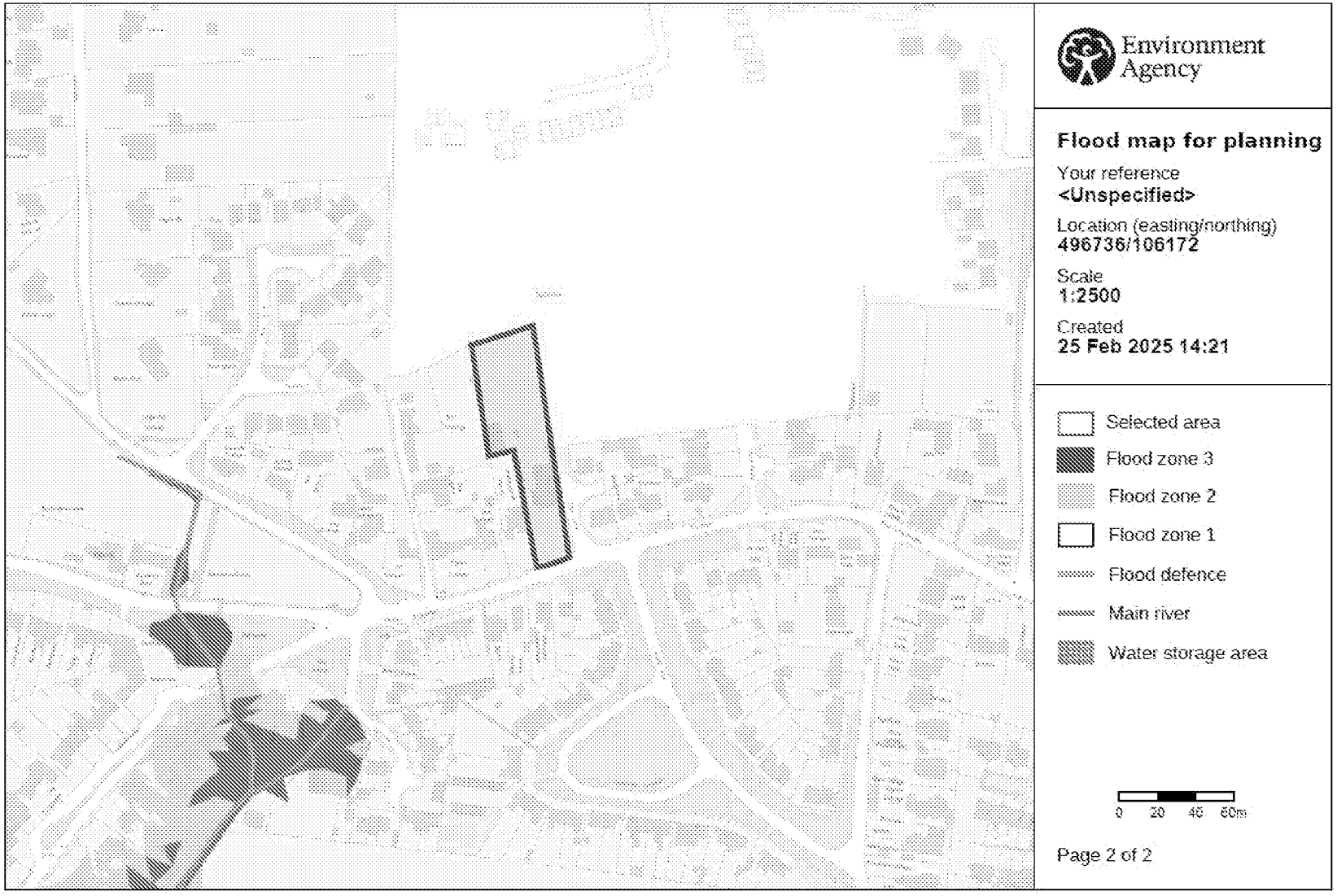
Table 7-6 - Predicted Residential and Commercial Property Flood Impact LFRZ_003

Rainfall Return Period	Predicted number of properties at risk of flooding	
	Residential	Commercial
1 in 30 Year	16	4
1 in 100 Year	27	4
1 in 100 Year + (Climate Change (2060's)	43	4

Table 7-7 - Summary of local flood risk within the LFRZ_003

Flood Risk Source			
Pluvial Flood Risk	Fluvial Flood Risk	Ground Water Flood Risk	Public Sewer Flood Risk
Medium			
Flood Mechanism			
Surface water flooding occurs due to runoff from surrounding fields from the north and north-east of Walberton Village. Surface water flow is conveyed along The Street where it ponds around the junction of The Street and Eastergate Lane. Flooding in highway from public foul sewer system occurs within Walberton village. Main river capacity exceeded and floods rear gardens in Barnham Lane. Ordinary watercourses and pond capacity exceeded. The ditches in Eastergate Lane on both the north and south are exceeded.			
Flood Risk Receptors			
Residential and commercial properties			
Flood Hazard			
A 'moderate' flood hazard is predicted for 1% annual chance storm event (1 in 100 year return period) in The Street and in rear gardens of properties along Barnham Lane.			
Validation			
Flooding has been reported on a regular basis as sourcing from the fields to the north of the village, and the village pond. A report written by the Walberton Parish Council Flood Task Force indicates that flooding is largely winterbourne, with the exceptions of the June 2012 extreme event, resulting from prolonged rainfall. Key areas of identified risk are; Barrack Row, Eastergate Lane, The bungalows, Burch Grove, Walberton Green and West Walberton Lane.			

F. EA's Flood Maps for River and Sea



G. EA's Flood Maps for Surface Water

G_1: Site location

Extent of flooding from surface water

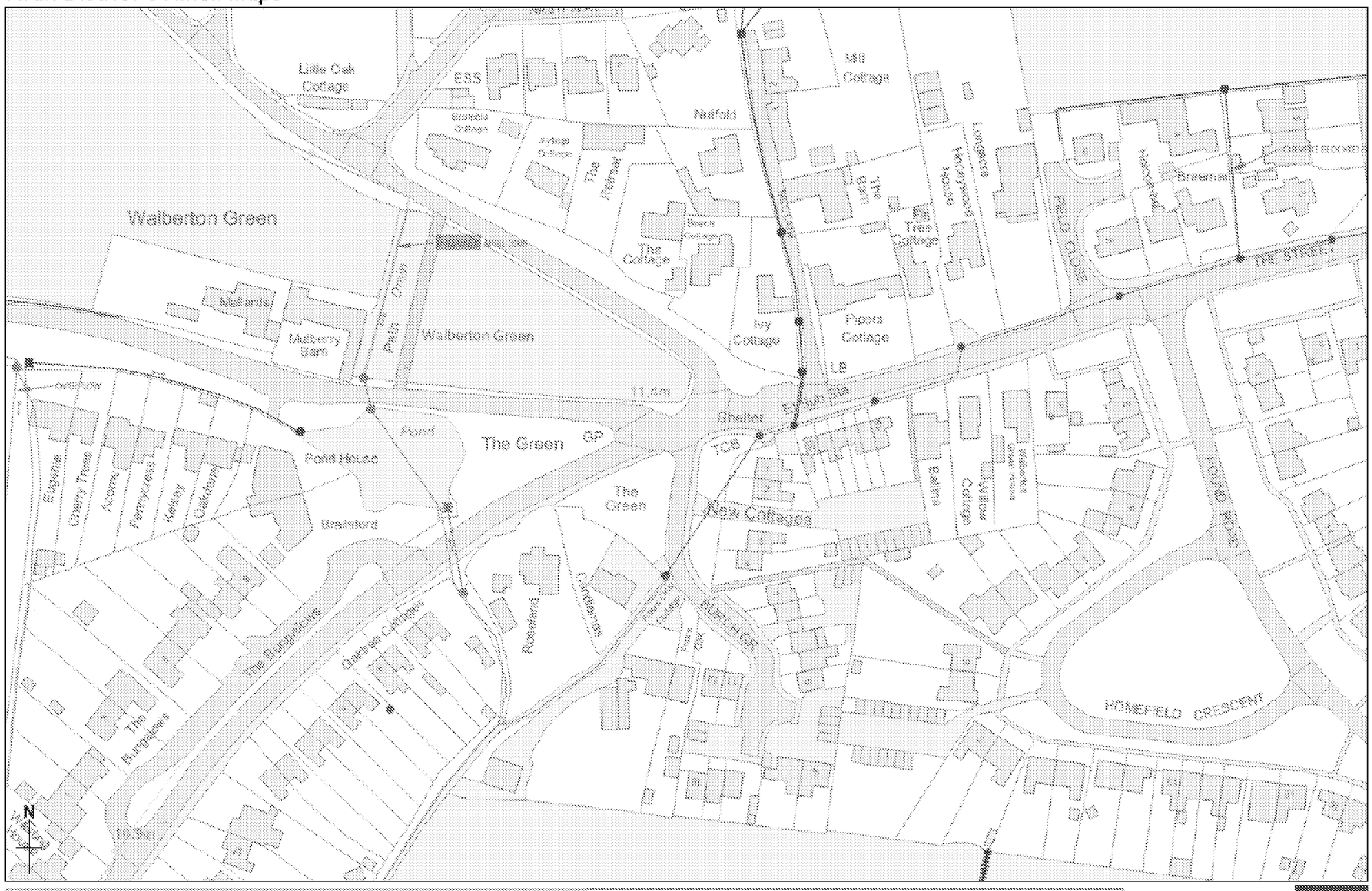
High Medium Low Very low Location you selected

G_2: Wider Context

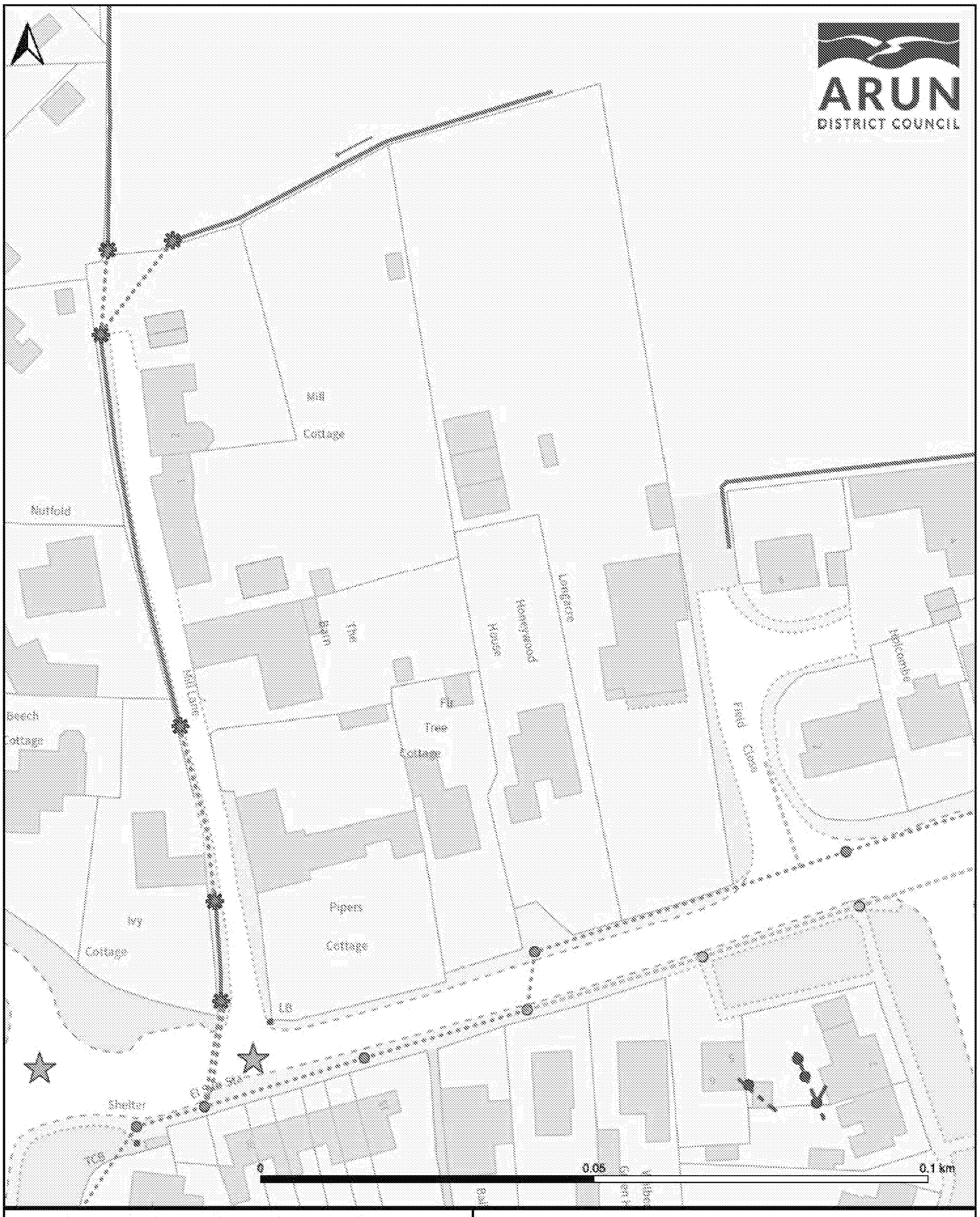
H. Arun District Council Watercourse Maps

H_1: Wider Context

Arun District Council Maps



H_2: Site location



Longacre, the Street, Walberton - Watercourse Mapping

Scale: 1:500 @ A3

Legend

ADC Engineers Mapping
Culverted Ordinary Watercourse
Ordinary Watercourse Nodes [8760]
Headwall [6454]
Manhole [1796]
Ordinary Watercourse
Foul Water Drain
Foul Water Drain Nodes
Manhole
Highway Drain
Highway Drain Nodes
Manhole
Drainage Cartography
Flow Direction
Historical Flooding

I. Drainage Strategy Layout

! CDM 2015 - RESIDUAL RISKS !

In preparing the designs illustrated by this drawing we have fulfilled our duties in the role of Designer as defined in the Construction Design and Management Regulations 2015. We have undertaken a full Hazard Identification and Risk Analysis and have designed out any special risks associated with the work, so that as far as possible there are no residual risks.

NOTE: Residual risks are defined as those risks arising from identified hazards which cannot be designed-out, and which a competent and experienced building contractor is unlikely to encounter during normal construction activities. Ordinary risks arising from normal construction operations have not been included.

Where hazards have been identified, the risks from which it has not been possible to eliminate during the design process, these are indicated on the drawing. It will be the responsibility of the Principal Contractor to develop Safe Systems of Work and/or Method Statements to minimise any risks associated with such hazards.

NOTES

1. This drawing has been prepared using a Topographical Survey Drawing supplied by the client in AutoCAD format.

2.This drawing is to be read in conjunction with all relevant Engineers' and Architects' drawings and specifications.

3. All dimensions are in millimetres unless noted otherwise. All levels are in metres.

4. The contractor is responsible for setting out and for checking dimensions.

5. In accordance with The Construction (Design and Management) Regulations 2015 (CDM 2015) the Principle Designer and Contractor are to:
   - Notify HSE of works.
   - Comply with the requirements of Health and Safety Plan (if applicable)
   - Provide risk assessments and method statements for all potential hazards relevant to this project.

6. The main contractor shall be responsible for the setting out and accuracy of all dimensions. The contractor shall be satisfied that the information given is correct and any discrepancies should be noted to the Engineer immediately.

7. Contractor to ensure that the existing sewers remain in service until the diversion works are completed.

8. The Contractor is responsible for specifying product and codes and ordering of drainage materials.

9. Contractor to ensure that new sewers are laid and installed in like for like basis.

10. New adoptable pipework to be vitrified clay type and to be constructed to the following specifications. Systems that are resistant to a jetting pressure of 4000psi. Systems that minimise the number of joints in the system, by using 3metre pipe length. Systems that do not have lip seal joints, hence preventing root ingress.

11. All non-uPVC (adoptable) pipe connection to manholes shall be provided with a 'rocker pipe' of 600mm effective length in accordance with Cl E6.6 of 'Sewers for Adoption'.

12.Precast concrete manhole units shall comply with the relevant provisions of BS EN 1917 and BS 5911-3.

13. The diameter of the pipes to be diverted are 300mm for storm and 150mm for foul. The new pipes are to of 300mm and 150mm for foul diameter respectively.
Any abandoned pipes or manholes are to be grubbed out or sealed up.

14. Cover grades are in accordance with BS497 Pt 1
Cover Grades : D400 - carriageways.
B125 - carriageways for slow traffic.
A15 - inaccessible to vehicles

15. All drainage pipes within development site to be 100mm dia unless shown otherwise.

16. All uPVC drainage to be installed to BS5955 Pt6 and in strict accordance with the manufacturers instructions.

17. All uPVC drainage products to conform to BS EN1401 & Kite mark certified in accordance with specification.

18. All adoptable drainage and associated works to comply with the latest Part E - Civil Engineering Specification of 'Sewer for Adoption'.

19. DO NOT SCALE. If discrepancy or query arises on dimensions consult Engineer.

20. Any works with tree RPA's are to be to the approval and under the supervision of the arborist.

21. Where existing / proposed trees are to be located within close proximity of drainage features then, side of drainage pipe trenches / sides of permeable paved build-ups to be lined with Green Tech gtRootbarrier 260 Permeable, to protect drainage features from tree root intrusion (refer to Green Tech Installation Guide)

3.0m easement to top of bank of watercourse whereby no structures (including fencing) and / or trees / planting, can be located

PLOT 1 FFL =13.900
PLOT 2 FFL =14.055
PLOT 3 FFL =14.300
PLOT 4 FFL =14.400
PLOT 5 FFL =14.400
PLOT 6 FFL =14.400

Exceedance Flow Bioretention Area

EXISTING DRAINAGE TO THE HOUSE AT LONG ACRE
Informed by the current property owners via email on 08.02.2025

"1982 Original Downpipe fed Garden Pond in front of House. Mid 80's Dug soakaways in front of garden and piped 2 no Downpipes to same. Mid to end of 1990's following Pitched Roof over Garages, Dug large Soakaway in centre of walled Garden and piped 2 no Downpipes into same."

This correspondence shows that none of the existing house drainage system will be disrupted by the new site.

DRAINAGE FEATURES WITHIN CLOSE PROXIMITY EXISTING / PROPOSED PLANTING
Where existing / proposed trees are to be located within close proximity of drainage features then, side of drainage pipe trenches / sides of permeable paved build-ups to be lined with Green Tech gtRootbarrier 260 Permeable, to protect drainage features from tree root intrusion (refer to Green Tech Installation Guide)

Hydro-Brake vortex flow control chamber. Flow to be limited to 1.0 l/s (CTL-SHE-0054-1000-0500-1000)

ASSUMED LOCATION OF EXISTING PIPED WATERCOURSE 375mm Ø PIPE

CONNECTION INTO EXISTING 375Ø PIPED WATERCOURSE. IL: 10.50m (tbc)

KEY

- Permeable tarmac Access Road & Parking areas with Type 3 Sub-base. Impermeable lined (SEE DETAIL 1)
- Pemeable paved driveway areas with a combination of Type 3 Sub-base and Polypipe Permavoid attenuation crates. Impermeable lined (SEE DETAIL 2)
- Green Roof areas to promote biodiversity and slow down water run-off, by controlling at source.
- ACO Multi-Drain M100D 10.0 constant depth (or similar approved) drainage channel laid with no fall (or to follow ground levels adjacent to the building) and incorporating a sump unit with silt bucket at each outlet
- Surface water drainage pipes
- Surface Water Inspection Chamber
- Concrete Baffle (See Detail)
- +14.100 (+13.500) (0.400) — Cover level / (formation level) / Type 3 Sub-base thickness (and / or attenuation crate)
- Diffuser Unit
- Existing overland flow routes
- Exceedance flow routes

SURFACE WATER DRAINAGE LAYOUT
1:150

DO NOT SCALE THIS DRAWING

ARUN DISTRICT COUNCIL WA/102/24/PL

Date	By	Revision	QA'D	Chk'd	Ref
04.03.25	TB	Revisions following Arun drainage engineer comments			P1

Status: PRELIMINARY

Cowan Consultancy
STRUCTURAL, CIVIL AND BUILDING CONSULTANTS
3 Turnberry House
4400 Parkway
Whiteley
Fareham
Hampshire
PO15 7FJ

Also at:
Landguard Manor
Landguard Manor Road
Shanklin
Isle of Wight
PO37 7JB

Tel: 01489 577488
Fax: 01489 579873
consultants@cowanconsult.co.uk
www.cowanconsult.co.uk

Client: MAXWELL HOMES LTD

Project: LONG ACRE, THE STREET, WALBERTON
ARUNDEL, WEST SUSSEX, BN18 0PY

Title: SURFACE WATER DRAINAGE LAYOUT

Date	SEP 2024	Scale	As Shown @ A1	Drg. No.
Drawn	TB	Chk'd EG	QA'D EG	466543–201P1

J. Existing Site Runoff Estimation

Cowan Consultancy
STRUCTURAL, CIVIL AND BUILDING CONSULTANTS

Cowan Consultancy Limited
3 Turnberry House
4400 Parkway
Whiteley
Fareham
Hampshire
PO15 7FJ

Tel: 01489 577488
Fax: 01489 579873

www.cowanconsult.co.uk
consultants@cowanconsult.co.uk

Also at:
Landguard Manor
Landguard Manor Road
Shanklin
Isle of Wight
PO37 7JB

Tel: 01983 868437
Fax: 01983 865781

Job No.	466543	Sheet	J	Date	Mar'25
Job	Long Acre	By	HS	Checked	

Climate Chage Allowance (CCA)

2015 - 2049	40%
2050 - 2069	45%
2070 - 2125	45%

Main Site Area =	**4283**	**m^2**	
Area Positively Drained =	**843.55**	**m^2**	19.7%
Main Site Landscaped Area =	**3439.45**	**m^2**	80.3%

Appendix J

Existing Site Peak Runoff Rates & Volume Estimation:

Longacre Bungalow

Roof Area	268.15	m^2
Footpath		m^2
Total		m^2
5 minutes Storm	incl. CCA	
Rainfall intensity (1 year)	0.0196	L/s/m^2
Rainfall intensity (10 yrs)	0.0305	L/s/m^2
Rainfall intensity (30 yrs)	0.0419	L/s/m^2
Rainfall intensity (100 yrs)	0.0554	L/s/m^2
Run off co-efficient	1.0	
Peak Flow Rate, Q_{1yr}	5.26	L/s
Peak Flow Rate, Q_{10yrs}	8.18	L/s
Peak Flow Rate, Q_{30yrs}	11.23	L/s
Peak Flow Rate, Q_{100yrs}	14.86	L/s

Longacre Car Parking

Area	52	m^2
Footpath		m^2
Total	52	m^2
5 minutes Storm	incl. CCA	
Rainfall intensity (1 year)	0.0196	L/s/m^2
Rainfall intensity (10 yrs)	0.0305	L/s/m^2
Rainfall intensity (30 yrs)	0.0419	L/s/m^2
Rainfall intensity (100 yrs)	0.0554	L/s/m^2
Run off co-efficient	1.0	
Peak Flow Rate, Q_{1yr}	1.02	L/s
Peak Flow Rate, Q_{10yrs}	1.59	L/s
Peak Flow Rate, Q_{30yrs}	2.18	L/s
Peak Flow Rate, Q_{100yrs}	2.88	L/s

Outer Buildings

Roof Area	124.5	m^2
Footpath		m^2
Total	124.5	m^2
5 minutes Storm	incl. CCA	
Rainfall intensity (1 year)	0.0196	L/s/m^2
Rainfall intensity (10 yrs)	0.0305	L/s/m^2
Rainfall intensity (30 yrs)	0.0419	L/s/m^2
Rainfall intensity (100 yrs)	0.0554	L/s/m^2
Run off co-efficient	1.0	
Peak Flow Rate, Q_{1yr}	2.44	L/s
Peak Flow Rate, Q_{10yrs}	3.80	L/s
Peak Flow Rate, Q_{30yrs}	5.22	L/s
Peak Flow Rate, Q_{100yrs}	6.90	L/s

Access Road

Area	398.9	m^2
Footpath		m^2
Total	398.9	m^2
5 minutes Storm	incl. CCA	
Rainfall intensity (1 year)	0.0196	L/s/m^2
Rainfall intensity (10 yrs)	0.0305	L/s/m^2
Rainfall intensity (30 yrs)	0.0419	L/s/m^2
Rainfall intensity (100 yrs)	0.0554	L/s/m^2
Run off co-efficient	1.0	
Peak Flow Rate, Q_{1yr}	7.82	L/s
Peak Flow Rate, Q_{10yrs}	12.16	L/s
Peak Flow Rate, Q_{30yrs}	16.71	L/s
Peak Flow Rate, Q_{100yrs}	22.11	L/s

Roof Area		m^2
Footpath		m^2
Total	0	m^2
5 minutes Storm	incl. CCA	
Rainfall intensity (1 year)	0.0196	L/s/m^2
Rainfall intensity (10 yrs)	0.0305	L/s/m^2
Rainfall intensity (30 yrs)	0.0419	L/s/m^2
Rainfall intensity (100 yrs)	0.0554	L/s/m^2
Run off co-efficient	1.0	
Peak Flow Rate, Q_{1yr}	0.00	L/s
Peak Flow Rate, Q_{10yrs}	0.00	L/s
Peak Flow Rate, Q_{30yrs}	0.00	L/s
Peak Flow Rate, Q_{100yrs}	0.00	L/s

Roof Area		m^2
Footpath		m^2
Total	0	m^2
5 minutes Storm	incl. CCA	
Rainfall intensity (1 year)	0.0196	L/s/m^2
Rainfall intensity (10 yrs)	0.0305	L/s/m^2
Rainfall intensity (30 yrs)	0.0419	L/s/m^2
Rainfall intensity (100 yrs)	0.0554	L/s/m^2
Run off co-efficient	1.0	
Peak Flow Rate, Q_{1yr}	0.00	L/s
Peak Flow Rate, Q_{10yrs}	0.00	L/s
Peak Flow Rate, Q_{30yrs}	0.00	L/s
Peak Flow Rate, Q_{100yrs}	0.00	L/s

Roof Area		m^2
Footpath		m^2
Total	0	m^2
5 minutes Storm	incl. CCA	
Rainfall intensity (1 year)	0.0196	L/s/m^2
Rainfall intensity (10 yrs)	0.0305	L/s/m^2
Rainfall intensity (30 yrs)	0.0419	L/s/m^2
Rainfall intensity (100 yrs)	0.0554	L/s/m^2
Run off co-efficient	1.0	
Peak Flow Rate, Q_{1yr}	0.00	L/s
Peak Flow Rate, Q_{10yrs}	0.00	L/s
Peak Flow Rate, Q_{30yrs}	0.00	L/s
Peak Flow Rate, Q_{100yrs}	0.00	L/s

Roof Area		m^2
Footpath		m^2
Total	0	m^2
5 minutes Storm	incl. CCA	
Rainfall intensity (1 year)	0.0196	L/s/m^2
Rainfall intensity (10 yrs)	0.0305	L/s/m^2
Rainfall intensity (30 yrs)	0.0419	L/s/m^2
Rainfall intensity (100 yrs)	0.0554	L/s/m^2
Run off co-efficient	1.0	
Peak Flow Rate, Q_{1yr}	0.00	L/s
Peak Flow Rate, Q_{10yrs}	0.00	L/s
Peak Flow Rate, Q_{30yrs}	0.00	L/s
Peak Flow Rate, Q_{100yrs}	0.00	L/s

Roof Area		m^2
Footpath		m^2
Total	0	m^2
5 minutes Storm	incl. CCA	
Rainfall intensity (1 year)	0.0196	L/s/m^2
Rainfall intensity (10 yrs)	0.0305	L/s/m^2
Rainfall intensity (30 yrs)	0.0419	L/s/m^2
Rainfall intensity (100 yrs)	0.0554	L/s/m^2
Run off co-efficient	1.0	
Peak Flow Rate, Q_{1yr}	0.00	L/s
Peak Flow Rate, Q_{10yrs}	0.00	L/s
Peak Flow Rate, Q_{30yrs}	0.00	L/s
Peak Flow Rate, Q_{100yrs}	0.00	L/s

Roof Area		m^2
Footpath		m^2
Total	0	m^2
5 minutes Storm	incl. CCA	
Rainfall intensity (1 year)	0.0196	L/s/m^2
Rainfall intensity (10 yrs)	0.0305	L/s/m^2
Rainfall intensity (30 yrs)	0.0419	L/s/m^2
Rainfall intensity (100 yrs)	0.0554	L/s/m^2
Run off co-efficient	1.0	
Peak Flow Rate, Q_{1yr}	0.00	L/s
Peak Flow Rate, Q_{10yrs}	0.00	L/s
Peak Flow Rate, Q_{30yrs}	0.00	L/s
Peak Flow Rate, Q_{100yrs}	0.00	L/s

Roof Area		m^2
Footpath		m^2
Total	0	m^2
5 minutes Storm	incl. CCA	
Rainfall intensity (1 year)	0.0196	L/s/m^2
Rainfall intensity (10 yrs)	0.0305	L/s/m^2
Rainfall intensity (30 yrs)	0.0419	L/s/m^2
Rainfall intensity (100 yrs)	0.0554	L/s/m^2
Run off co-efficient	0.3	
Peak Flow Rate, Q_{1yr}	0.00	L/s
Peak Flow Rate, Q_{10yrs}	0.00	L/s
Peak Flow Rate, Q_{30yrs}	0.00	L/s
Peak Flow Rate, Q_{100yrs}	0.00	L/s

Roof Area		m^2
Footpath		m^2
Total	0	m^2
5 minutes Storm	incl. CCA	
Rainfall intensity (1 year)	0.0196	L/s/m^2
Rainfall intensity (10 yrs)	0.0305	L/s/m^2
Rainfall intensity (30 yrs)	0.0419	L/s/m^2
Rainfall intensity (100 yrs)	0.0554	L/s/m^2
Run off co-efficient	1.0	
Peak Flow Rate, Q_{1yr}	0.00	L/s
Peak Flow Rate, Q_{10yrs}	0.00	L/s
Peak Flow Rate, Q_{30yrs}	0.00	L/s
Peak Flow Rate, Q_{100yrs}	0.00	L/s

Roof Area		m^2
Footpath		m^2
Total	0	m^2
5 minutes Storm	incl. CCA	
Rainfall intensity (1 year)	0.0196	L/s/m^2
Rainfall intensity (10 yrs)	0.0305	L/s/m^2
Rainfall intensity (30 yrs)	0.0419	L/s/m^2
Rainfall intensity (100 yrs)	0.0554	L/s/m^2
Run off co-efficient	1.0	
Peak Flow Rate, Q_{1yr}	0.00	L/s
Peak Flow Rate, Q_{10yrs}	0.00	L/s
Peak Flow Rate, Q_{30yrs}	0.00	L/s
Peak Flow Rate, Q_{100yrs}	0.00	L/s

Roof Area		m^2
Footpath		m^2
Total	0	m^2
5 minutes Storm	incl. CCA	
Rainfall intensity (1 year)	0.0196	L/s/m^2
Rainfall intensity (10 yrs)	0.0305	L/s/m^2
Rainfall intensity (30 yrs)	0.0419	L/s/m^2
Rainfall intensity (100 yrs)	0.0554	L/s/m^2
Run off co-efficient	1.0	
Peak Flow Rate, Q_{1yr}	0.00	L/s
Peak Flow Rate, Q_{10yrs}	0.00	L/s
Peak Flow Rate, Q_{30yrs}	0.00	L/s
Peak Flow Rate, Q_{100yrs}	0.00	L/s

Roof Area		m^2
Footpath		m^2
Total	0	m^2
5 minutes Storm	incl. CCA	
Rainfall intensity (1 year)	0.0196	L/s/m^2
Rainfall intensity (10 yrs)	0.0305	L/s/m^2
Rainfall intensity (30 yrs)	0.0419	L/s/m^2
Rainfall intensity (100 yrs)	0.0554	L/s/m^2
Run off co-efficient	1.0	
Peak Flow Rate, Q_{1yr}	0.00	L/s
Peak Flow Rate, Q_{10yrs}	0.00	L/s
Peak Flow Rate, Q_{30yrs}	0.00	L/s
Peak Flow Rate, Q_{100yrs}	0.00	L/s

Roof Area		m^2
Footpath		m^2
Total	0	m^2
5 minutes Storm	incl. CCA	
Rainfall intensity (1 year)	0.0196	L/s/m^2
Rainfall intensity (10 yrs)	0.0305	L/s/m^2
Rainfall intensity (30 yrs)	0.0419	L/s/m^2
Rainfall intensity (100 yrs)	0.0554	L/s/m^2
Run off co-efficient	0.3	Gravel
Peak Flow Rate, Q_{1yr}	0.00	L/s
Peak Flow Rate, Q_{10yrs}	0.00	L/s
Peak Flow Rate, Q_{30yrs}	0.00	L/s
Peak Flow Rate, Q_{100yrs}	0.00	L/s

Grass / soft landscaping

Roof Area	3439.45	m^2
Footpath		m^2
Total	3439.45	m^2
5 minutes Storm	incl. CCA	
Rainfall intensity (1 year)	0.0196	L/s/m^2
Rainfall intensity (10 yrs)	0.0305	L/s/m^2
Rainfall intensity (30 yrs)	0.0419	L/s/m^2
Rainfall intensity (100 yrs)	0.0554	L/s/m^2
Run off co-efficient	1.0	
Peak Flow Rate, Q_{1yr}	67.41	L/s
Peak Flow Rate, Q_{10yrs}	104.87	L/s
Peak Flow Rate, Q_{30yrs}	144.07	L/s
Peak Flow Rate, Q_{100yrs}	190.62	L/s

Estimated site flow Rates

Total Flow Rate, Q_{1yr}	83.95	L/s
Total Flow Rate, Q_{10yrs}	130.58	L/s
Total Flow Rate, Q_{30yrs}	179.41	L/s
Total Flow Rate, Q_{100yrs}	237.37	L/s

Total Roof Area	320.2	m^2	Area incl. 10% Urban Creep =	**352.2**	m^2
Total Gravel Area	398.9	m^2	Area incl. 10% Urban Creep =	**438.8**	m^2
Total Hardstanding Area	52.0	m^2	Area incl. 10% Urban Creep =	**57.2**	m^2
Total	771.1	m^2	Total	848.2	m^2

Bilhams formula r (mm) = (((1.25T)/N)^(1/3.55)) x25.4
T = storm duration in hours
N = No. of storms in 10 years

Runoff from site during a 6 hour event

Volume of total runoff

$I360_{1yr}$	24.80	m^3
$I360_{10yrs}$	50.19	m^3
$I360_{30yrs}$	69.48	m^3
$I360_{100yrs}$	102.28	m^3

	incl. CCA		Storm duration (M T	N	r		10 year return period		
R360	0.02924	m	360	6	10	0.02088	R360	0.04	m
R360	0.05917	m	360	6	1	**0.04227**	R360	0.04	m
R360	0.08192	m	360	6	0.33333	0.05852	R360	0.04	m
R360	0.12059	m	360	6	0.1	0.08317	R360	0.04	m

Flow in ltrs / second during event

$I360_{1yr}$	1.15	l/s
$I360_{10yrs}$	2.32	l/s
$I360_{30yrs}$	3.22	l/s
$I360_{100yrs}$	4.74	l/s

K. Proposed Site Runoff Estimation

Cowan Consultancy
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Job No.	466543	Sheet	K	Date	Mar'25
Job	Long Acre	By	HS	Checked	

Climate Chage Allowance (CCA)

2015 - 2049	40%
2050 - 2069	45%
2070 - 2125	45%

Main Site Area =	**4283 m²**	
Area Positively Drained =	**1650.5 m²**	38.5%
Main Site Landscaped Area =	**2632.5 m²**	61.5%
Area Positively Drained excluding Green Roofs =	**1560.9 m²**	36.4%
Main Site Landscaped Area Incl. Green Roofs =	**2722.1 m²**	63.5%
Percentage increase in built area =	**96% Increase**	
Percentage increase in built area excluding Green Roofs =	**85% Increase**	
Site Area Discharging to WSCC Infrastructure via flow Control=	**1367.5 m²**	31.9%

Appendix K

Proposed Site Peak Runoff Rates & Volume Estimation:

Longacre Bungalow

Roof Area	231	m²
Footpath		m²
Total	231	m²
5 minutes Storm	Incl. CCA	
Rainfall intensity (1 year)	0.0196	L/s/m²
Rainfall intensity (10 yrs)	0.0305	L/s/m²
Rainfall intensity (30 yrs)	0.0419	L/s/m²
Rainfall intensity (100 yrs)	0.0554	L/s/m²
Run off co-efficient	1.0	
Peak Flow Rate, Q_{1yr}	4.53	L/s
Peak Flow Rate, Q_{10yrs}	7.04	L/s
Peak Flow Rate, Q_{30yrs}	9.68	L/s
Peak Flow Rate, Q_{100yrs}	12.80	L/s

Longacre Car Parking

Area	52	m²
Footpath		m²
Total	52	m²
5 minutes Storm	Incl. CCA	
Rainfall intensity (1 year)	0.0196	L/s/m²
Rainfall intensity (10 yrs)	0.0305	L/s/m²
Rainfall intensity (30 yrs)	0.0419	L/s/m²
Rainfall intensity (100 yrs)	0.0554	L/s/m²
Run off co-efficient	1.0	
Peak Flow Rate, Q_{1yr}	1.02	L/s
Peak Flow Rate, Q_{10yrs}	1.59	L/s
Peak Flow Rate, Q_{30yrs}	2.18	L/s
Peak Flow Rate, Q_{100yrs}	2.88	L/s

Plot 1

Roof Area	77.26	m²
Footpath	1.9	m²
Total	79.16	m²
5 minutes Storm	Incl. CCA	
Rainfall intensity (1 year)	0.0196	L/s/m²
Rainfall intensity (10 yrs)	0.0305	L/s/m²
Rainfall intensity (30 yrs)	0.0419	L/s/m²
Rainfall intensity (100 yrs)	0.0554	L/s/m²
Run off co-efficient	1.0	
Peak Flow Rate, Q_{1yr}	1.55	L/s
Peak Flow Rate, Q_{10yrs}	2.41	L/s
Peak Flow Rate, Q_{30yrs}	3.32	L/s
Peak Flow Rate, Q_{100yrs}	4.38	L/s

Plot 2

Roof Area	77.26	m²
Footpath	1.82	m²
Total	79.08	m²
5 minutes Storm	Incl. CCA	
Rainfall intensity (1 year)	0.0196	L/s/m²
Rainfall intensity (10 yrs)	0.0305	L/s/m²
Rainfall intensity (30 yrs)	0.0419	L/s/m²
Rainfall intensity (100 yrs)	0.0554	L/s/m²
Run off co-efficient	1.0	
Peak Flow Rate, Q_{1yr}	1.55	L/s
Peak Flow Rate, Q_{10yrs}	2.41	L/s
Peak Flow Rate, Q_{30yrs}	3.31	L/s
Peak Flow Rate, Q_{100yrs}	4.38	L/s

Plot 3

Roof Area	65.61	m²
Footpath	1.22	m²
Total	66.83	m²
5 minutes Storm	Incl. CCA	
Rainfall intensity (1 year)	0.0196	L/s/m²
Rainfall intensity (10 yrs)	0.0305	L/s/m²
Rainfall intensity (30 yrs)	0.0419	L/s/m²
Rainfall intensity (100 yrs)	0.0554	L/s/m²
Run off co-efficient	1.0	
Peak Flow Rate, Q_{1yr}	1.31	L/s
Peak Flow Rate, Q_{10yrs}	2.04	L/s
Peak Flow Rate, Q_{30yrs}	2.80	L/s
Peak Flow Rate, Q_{100yrs}	3.70	L/s

Plots 4 & 5

Roof Area	117.1	m²
Footpath	3.8	m²
Total	120.9	m²
5 minutes Storm	Incl. CCA	
Rainfall intensity (1 year)	0.0196	L/s/m²
Rainfall intensity (10 yrs)	0.0305	L/s/m²
Rainfall intensity (30 yrs)	0.0419	L/s/m²
Rainfall intensity (100 yrs)	0.0554	L/s/m²
Run off co-efficient	1.0	
Peak Flow Rate, Q_{1yr}	2.37	L/s
Peak Flow Rate, Q_{10yrs}	3.69	L/s
Peak Flow Rate, Q_{30yrs}	5.06	L/s
Peak Flow Rate, Q_{100yrs}	6.70	L/s

Plot 6

Roof Area	65.61	m²
Footpath	1.22	m²
Total	66.83	m²
5 minutes Storm	Incl. CCA	
Rainfall intensity (1 year)	0.0196	L/s/m²
Rainfall intensity (10 yrs)	0.0305	L/s/m²
Rainfall intensity (30 yrs)	0.0419	L/s/m²
Rainfall intensity (100 yrs)	0.0554	L/s/m²
Run off co-efficient	1.0	
Peak Flow Rate, Q_{1yr}	1.31	L/s
Peak Flow Rate, Q_{10yrs}	2.04	L/s
Peak Flow Rate, Q_{30yrs}	2.80	L/s
Peak Flow Rate, Q_{100yrs}	3.70	L/s

Plot 1 Driveway

Area	56.04	m²
Footpath		m²
Total	56.04	m²
5 minutes Storm	Incl. CCA	
Rainfall intensity (1 year)	0.0196	L/s/m²
Rainfall intensity (10 yrs)	0.0305	L/s/m²
Rainfall intensity (30 yrs)	0.0419	L/s/m²
Rainfall intensity (100 yrs)	0.0554	L/s/m²
Run off co-efficient	1.0	
Peak Flow Rate, Q_{1yr}	1.10	L/s
Peak Flow Rate, Q_{10yrs}	1.71	L/s
Peak Flow Rate, Q_{30yrs}	2.35	L/s
Peak Flow Rate, Q_{100yrs}	3.11	L/s

Plot 2 Driveway

Area	52.86	m²
Footpath		m²
Total	52.86	m²
5 minutes Storm	Incl. CCA	
Rainfall intensity (1 year)	0.0196	L/s/m²
Rainfall intensity (10 yrs)	0.0305	L/s/m²
Rainfall intensity (30 yrs)	0.0419	L/s/m²
Rainfall intensity (100 yrs)	0.0554	L/s/m²
Run off co-efficient	1.0	
Peak Flow Rate, Q_{1yr}	1.04	L/s
Peak Flow Rate, Q_{10yrs}	1.61	L/s
Peak Flow Rate, Q_{30yrs}	2.21	L/s
Peak Flow Rate, Q_{100yrs}	2.93	L/s

Plot 3 Driveway

Area	18.49	m²
Footpath		m²
Total	18.49	m²
5 minutes Storm	Incl. CCA	
Rainfall intensity (1 year)	0.0196	L/s/m²
Rainfall intensity (10 yrs)	0.0305	L/s/m²
Rainfall intensity (30 yrs)	0.0419	L/s/m²
Rainfall intensity (100 yrs)	0.0554	L/s/m²
Run off co-efficient	1.0	
Peak Flow Rate, Q_{1yr}	0.36	L/s
Peak Flow Rate, Q_{10yrs}	0.56	L/s
Peak Flow Rate, Q_{30yrs}	0.77	L/s
Peak Flow Rate, Q_{100yrs}	1.02	L/s

Plot 4 Driveway

Area	31.62	m²
Footpath		m²
Total	31.62	m²
5 minutes Storm	Incl. CCA	
Rainfall intensity (1 year)	0.0196	L/s/m²
Rainfall intensity (10 yrs)	0.0305	L/s/m²
Rainfall intensity (30 yrs)	0.0419	L/s/m²
Rainfall intensity (100 yrs)	0.0554	L/s/m²
Run off co-efficient	1.0	
Peak Flow Rate, Q_{1yr}	0.62	L/s
Peak Flow Rate, Q_{10yrs}	0.96	L/s
Peak Flow Rate, Q_{30yrs}	1.32	L/s
Peak Flow Rate, Q_{100yrs}	1.75	L/s

Plot 5 Driveway

Area	31.62	m²
Footpath		m²
Total	31.62	m²
5 minutes Storm	Incl. CCA	
Rainfall intensity (1 year)	0.0196	L/s/m²
Rainfall intensity (10 yrs)	0.0305	L/s/m²
Rainfall intensity (30 yrs)	0.0419	L/s/m²
Rainfall intensity (100 yrs)	0.0554	L/s/m²
Run off co-efficient	1.0	
Peak Flow Rate, Q_{1yr}	0.62	L/s
Peak Flow Rate, Q_{10yrs}	0.96	L/s
Peak Flow Rate, Q_{30yrs}	1.32	L/s
Peak Flow Rate, Q_{100yrs}	1.75	L/s

Plot 6 Driveway

Area	18.49	m²
Footpath		m²
Total	18.49	m²
5 minutes Storm	Incl. CCA	
Rainfall intensity (1 year)	0.0196	L/s/m²
Rainfall intensity (10 yrs)	0.0305	L/s/m²
Rainfall intensity (30 yrs)	0.0419	L/s/m²
Rainfall intensity (100 yrs)	0.0554	L/s/m²
Run off co-efficient	1.0	
Peak Flow Rate, Q_{1yr}	0.36	L/s
Peak Flow Rate, Q_{10yrs}	0.56	L/s
Peak Flow Rate, Q_{30yrs}	0.77	L/s
Peak Flow Rate, Q_{100yrs}	1.02	L/s

Plot 1 Garage

Roof Area	23.07	m²
Footpath		m²
Total	23.07	m²
5 minutes Storm	Incl. CCA	
Rainfall intensity (1 year)	0.0196	L/s/m²
Rainfall intensity (10 yrs)	0.0305	L/s/m²
Rainfall intensity (30 yrs)	0.0419	L/s/m²
Rainfall intensity (100 yrs)	0.0554	L/s/m²
Run off co-efficient	0.8	Green Roof
Peak Flow Rate, Q_{1yr}	0.36	L/s
Peak Flow Rate, Q_{10yrs}	0.56	L/s
Peak Flow Rate, Q_{30yrs}	0.77	L/s
Peak Flow Rate, Q_{100yrs}	1.02	L/s

Plot 2 Garage

Roof Area	23.07	m²
Footpath		m²
Total	23.07	m²
5 minutes Storm	Incl. CCA	
Rainfall intensity (1 year)	0.0196	L/s/m²
Rainfall intensity (10 yrs)	0.0305	L/s/m²
Rainfall intensity (30 yrs)	0.0419	L/s/m²
Rainfall intensity (100 yrs)	0.0554	L/s/m²
Run off co-efficient	0.8	Green Roof
Peak Flow Rate, Q_{1yr}	0.36	L/s
Peak Flow Rate, Q_{10yrs}	0.56	L/s
Peak Flow Rate, Q_{30yrs}	0.77	L/s
Peak Flow Rate, Q_{100yrs}	1.02	L/s

Plot 3 Garage

Roof Area	21.7	m²
Footpath		m²
Total	21.7	m²
5 minutes Storm	Incl. CCA	
Rainfall intensity (1 year)	0.0196	L/s/m²
Rainfall intensity (10 yrs)	0.0305	L/s/m²
Rainfall intensity (30 yrs)	0.0419	L/s/m²
Rainfall intensity (100 yrs)	0.0554	L/s/m²
Run off co-efficient	0.8	Green Roof
Peak Flow Rate, Q_{1yr}	0.34	L/s
Peak Flow Rate, Q_{10yrs}	0.53	L/s
Peak Flow Rate, Q_{30yrs}	0.73	L/s
Peak Flow Rate, Q_{100yrs}	0.96	L/s

Plot 6 Garage

Roof Area	21.7	m²
Footpath		m²
Total	21.7	m²
5 minutes Storm	Incl. CCA	
Rainfall intensity (1 year)	0.0196	L/s/m²
Rainfall intensity (10 yrs)	0.0305	L/s/m²
Rainfall intensity (30 yrs)	0.0419	L/s/m²
Rainfall intensity (100 yrs)	0.0554	L/s/m²
Run off co-efficient	0.8	Green Roof
Peak Flow Rate, Q_{1yr}	0.34	L/s
Peak Flow Rate, Q_{10yrs}	0.53	L/s
Peak Flow Rate, Q_{30yrs}	0.73	L/s
Peak Flow Rate, Q_{100yrs}	0.96	L/s

Access Road

Area	656	m²
Footpath		m²
Total	656	m²
5 minutes Storm	Incl. CCA	
Rainfall intensity (1 year)	0.0196	L/s/m²
Rainfall intensity (10 yrs)	0.0305	L/s/m²
Rainfall intensity (30 yrs)	0.0419	L/s/m²
Rainfall intensity (100 yrs)	0.0554	L/s/m²
Run off co-efficient	1.0	
Peak Flow Rate, Q_{1yr}	13.88	L/s
Peak Flow Rate, Q_{10yrs}	20.06	L/s
Peak Flow Rate, Q_{30yrs}	27.65	L/s
Peak Flow Rate, Q_{100yrs}	36.56	L/s

Landscapped Area

Area	2632.5	m²
Footpath		m²
Total	2632.54	m²
5 minutes Storm	Incl. CCA	
Rainfall intensity (1 year)	0.0196	L/s/m²
Rainfall intensity (10 yrs)	0.0305	L/s/m²
Rainfall intensity (30 yrs)	0.0419	L/s/m²
Rainfall intensity (100 yrs)	0.0554	L/s/m²
Run off co-efficient	0.1	
Peak Flow Rate, Q_{1yr}	5.16	L/s
Peak Flow Rate, Q_{10yrs}	8.03	L/s
Peak Flow Rate, Q_{30yrs}	11.03	L/s
Peak Flow Rate, Q_{100yrs}	14.59	L/s

Area		m²
Footpath		m²
Total	0	m²
5 minutes Storm	Incl. CCA	
Rainfall intensity (1 year)	0.0196	L/s/m²
Rainfall intensity (10 yrs)	0.0305	L/s/m²
Rainfall intensity (30 yrs)	0.0419	L/s/m²
Rainfall intensity (100 yrs)	0.0554	L/s/m²
Run off co-efficient	1.0	
Peak Flow Rate, Q_{1yr}	0.00	L/s
Peak Flow Rate, Q_{10yrs}	0.00	L/s
Peak Flow Rate, Q_{30yrs}	0.00	L/s
Peak Flow Rate, Q_{100yrs}	0.00	L/s

Estimated site flow Rates

Total Flow Rate, Q_{1yr}	37.16 L/s
Total Flow Rate, Q_{10yrs}	57.80 L/s
Total Flow Rate, Q_{30yrs}	79.41 L/s
Total Flow Rate, Q_{100yrs}	105.07 L/s

Total Roof Area	723.4 m²	Area Incl. 10% Urban Creep =	**795.7** m²
Total Footpath Area	10.0 m²	Area Incl. 10% Urban Creep =	**11.0** m²
Total Parking Area	261.1 m²	Area Incl. 10% Urban Creep =	**287.2** m²
Total Road Area	656.0 m²	Area Incl. 10% Urban Creep =	**721.6** m²
Total	1650.46 m²	Total	1815.508 m²

Bilhams formula r (mm) = (((1.25T)/N)^(1/3.55)) x25.4
T = storm duration in hours
N = No. of storms in 10 years

Runoff from site during a 6 hour event

Volume of total runoff			Incl. CCA		Storm duration (M	T	N	r	10 year return period		
$I360_{1yr}$	53.08 m³	R360	0.02924	m	360	6	10	0.02088	R360	0.04	m
$I360_{10yrs}$	107.43 m³	R360	0.05917	m	360	6	1	**0.04227**	R360	0.04	m
$I360_{30yrs}$	148.73 m³	R360	0.08192	m	360	6	0.33333	0.05852	R360	0.04	m
$I360_{100yrs}$	218.94 m³	R360	0.12059	m	360	6	0.1	0.08317	R360	0.04	m

Flow in ltrs / second during event

$I360_{1yr}$	2.46 l/s
$I360_{10yrs}$	4.97 l/s
$I360_{30yrs}$	6.89 l/s
$I360_{100yrs}$	10.14 l/s

L. HR Wallingford Greenfield Runoff

Greenfield runoff rate estimation for sites

www.uksuds.com | Greenfield runoff tool

Calculated by:	Hedwilena Silva
Site name:	Long Acre
Site location:	The Street, Walberton

This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance "Rainfall runoff management for developments", SC030219 (2013) , the SuDS Manual C753 (Ciria, 2015) and the non-statutory standards for SuDS (Defra, 2015). This information on greenfield runoff rates may be the basis for setting consents for the drainage of surface water runoff from sites.

Site Details

Latitude:	50.84690° N
Longitude:	0.62721° W
Reference:	276655399
Date:	Aug 27 2024 15:22

Runoff estimation approach

IH124

Site characteristics

Total site area (ha): 0.445

Methodology

Q_{BAR} estimation method:	Calculate from SPR and SAAR
SPR estimation method:	Calculate from SOIL type

Soil characteristics

	Default	Edited
SOIL type:	1	4
HOST class:	N/A	N/A
SPR/SPRHOST:	0.1	0.47

Hydrological characteristics

	Default	Edited
SAAR (mm):	780	780
Hydrological region:	7	7
Growth curve factor 1 year:	0.85	0.85
Growth curve factor 30 years:	2.3	2.3
Growth curve factor 100 years:	3.19	3.19
Growth curve factor 200 years:	3.74	3.74

Notes

(1) Is Q_{BAR} < 2.0 l/s/ha?

When Q_{BAR} is < 2.0 l/s/ha then limiting discharge rates are set at 2.0 l/s/ha.

(2) Are flow rates < 5.0 l/s?

Where flow rates are less than 5.0 l/s consent for discharge is usually set at 5.0 l/s if blockage from vegetation and other materials is possible. Lower consent flow rates may be set where the blockage risk is addressed by using appropriate drainage elements.

(3) Is SPR/SPRHOST ≤ 0.3?

Where groundwater levels are low enough the use of soakaways to avoid discharge offsite would normally be preferred for disposal of surface water runoff.

Greenfield runoff rates

	Default	Edited
Q_{BAR} (l/s):	0.08	2.44
1 in 1 year (l/s):	0.07	2.07
1 in 30 years (l/s):	0.2	5.61
1 in 100 year (l/s):	0.27	7.78
1 in 200 years (l/s):	0.32	9.12