

- 6.32. With additional areas of proposed soft landscaping such as rain gardens, tree pits and informal usable space, the existing impermeable catchment contributing surface water runoff to the drainage network will be reduced post-development.
- 6.33. A summary of the design parameters and policy references can be found in Table 7 below.

Table 7 Summary of design and modelling parameters.

Parameter	Design Value	Related Guidance / Policy
Modelling Software	Autodesk InfoDrainage	Not applicable. Note, latest drainage modelling package which allows use of FEH2022.
Design rainfall input	FEH2022	CCoC LLFA Surface Water Planning Guidance (2024).
Design storm for attenuation requirements	1 in 100 years	CCoC LLFA Surface Water Planning Guidance (2024).
Additional allowance for climate change	40%	EA Climate Change Guidance CCoC LLFA Surface Water Planning Guidance (2024).
CV value	1.0	CCoC LLFA Surface Water Planning Guidance (2024). As shown in the Proposed Drainage Results in Appendix F, all 'Inflows' (catchments) are set to 1.0.
Maximum discharge rate	QBAR greenfield	CCoC LLFA Surface Water Planning Guidance (2024). A Simple Flow Control manhole is proposed to restrict the Site peak flow rate to equivalent greenfield QBAR.

6.34. An extract of the proposed surface water drainage layout is shown in Figure 17 and the full drawing 17469-WAT-OTT-XX-DR-C-920510-P02- Proposed Drainage Layout can be found in Appendix F. The Infodrainage summary of SuDS features (referred to as stormwater controls in the software) are presented in Table 8.

6.35. Note:

- Blue roofs assumed to have crated system with 95% void ratio and 100mm deep. As noted on Proposed Drainage Layout, hydraulic modelling based on blue roof providing flow restriction before entering sitewide network.
- Rain gardens utilise ponding storage and gravel attenuation layer (30% void ratio).
 Refer to InfoDrainage modelling for depths used in Appendix G Proposed Modelling and Calculations.
- Below ground attenuation tanks assumed to have crated system with 95% void ratio with minimum 1m cover to ground level.
- Permeable paving assumed to have 30% void ratio gravel and designed to be non-



infiltrating (lined with impermeable membrane).

- For full extents of surface finishes and soft landscaping refer to Landscape Statement and Design Access Statement.
- Design volumes subject to review at detailed design following development of final surface levels.

Figure 17: Extract of proposed surface water layout.



Table 8 Summary of stormwater controls (SuDS) and design volumes.

SuDS Feature		DESIGN VOLUMES	
(Stormwater Control)	Northern Catchment	Southern Catchment	Total Attenuation
Blue Roofs	284	870	1,154
Rain Gardens	3,423	3,675	7,098
Below Ground Attenuation Tanks	891	1,188	2,079
Permeable Paving	874	1,632	2,506
Detention Basin	464	-	464
	6,098	7,365	13,463



6.36. A network analysis was completed for the 1 in 2 year, 1 in 30 year plus 35% climate change and 1 in 100 year plus 40% climate change rainfall return periods, the Infodrainage summary report can be found in Appendix G. There was no flooding in any events with some surcharging in sewers in the 1 in 100 year plus 40% climate change event, however as noted in the results summary, all stormwater contols had additional capacity in all design events therefore able to accommodate exceedance events.

Outfall Details

- 6.37. As noted previously, the Site will have two catchments and each will have its respective outfall, one at the northern end of the Site, Coldham's Lane and one at the southern end at York Street.
- 6.38. The northern connection point to the Anglian Water surface water sewer is downstream of Manhole 6751. The cover level and invert level of the connection point are subject to further survey works and indicative levels have been interpolated from asset records.
- 6.39. The southern connection point to the Anglian Water surface water sewer is upstream of Manhole 3652. The cover level and invert level of the connection point are subject to further survey works and indicative levels have been interpolated from asset records.
- 6.40. Both connection points are subject to approval with Anglian Water Predevelopment Enquiry and Section 106 Sewer Connection Agreement.
- 6.41. A pre-development enquiry was submitted to Anglian Water 16th July 2024, they have confirmed there is capacity for the Proposed Development (approval given 5th August 2024 InFlow Reference PPE-021139). Refer to Appendix H for full correspondence.

Non-Technical Summary

- 6.42. The surface water drainage strategy developed by WIE can be summarised as follow:
 - Where demand and practical considerations allow, harvested water will be filtered, treated and
 re-used for WC flushing within the Site, and for irrigation of soft landscaping within the public
 realm. Note, the rainwater harvesting will provide a betterment to the site-drainage system
 providing additional storage however the surface water drainage strategy outlined in this report
 does not utilise the rainwater harvesting attenuation volume as a conservative approach.
 - Office blocks will have blue roofs to provide attenuation and restrict flows entering the sitewide network
 - External areas of public realm, and lightly trafficked areas will be formed from permeable paving
 with permeable subgrade allowing disposal of runoff to perforated pipes which will connect to the
 main surface water network. The permeable paving will be lined with an impermeable membrane
 to prevent any surface water entering the ground water system.
 - Flow control will be provided to ensure that excess surface water runoff is released in a managed and controlled manner for design storm events taking into account future climate change allowances.
 - Post-development surface water runoff rates and discharge volumes are considerably less than
 for the existing site in line with Local Plan Policy 32. BREEAM sustainability aspirations, provision
 of a suite of on-site SuDS measures within the landscape will seek to control flow to predevelopment 'greenfield' runoff rates, achieving a 98% betterment in flow rates post-development.



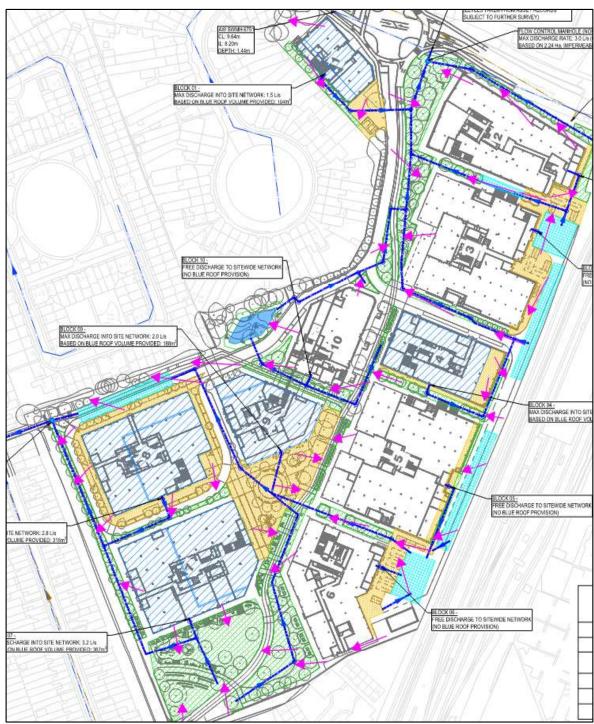
- Water quality benefits will be gained via integration of multiple treatment trains, including filter media, green roofs, rain gardens, and permeable paving. These are discussed in detail in the next Section.
- Autodesk Infodrainage was used for drainage calculations for hydraulic modelling. FEH22 rainfall
 data was procured and used in the model and design parameters for the Hydraulic Calculations
 were taken from the CCoC LLFA Surface Water Planning Guidance (2024).

Exceedance Routes

- 6.43. In the unlikely event of a severe blockage in the local drainage system or a storm greater than the 1 in 100 year plus 40% climate change design storm, the proposed drainage system could exceed its capacity and overflow. These exceedance flow routes, and flooded areas must be managed to minimise risks to the development and adjacent areas.
- 6.44. From the ground levels in the topographical survey and proposed cover levels of the drainage network manholes, flood water would flow towards the boundaries of the Site where there is extensive existing vegetation buffers, away from the building premises, whilst passing through the proposed soft landscaping areas.
- 6.45. There are also extensive planting areas across the plots therefore all flows that are directed towards these areas will increase the time of concentration for surface water runoff to the sewerage systems and minimise surface water runoff leaving the Site, as depicted in Figure 18.
- 6.46. It should also be noted, as demonstrated in hydraulic results, there is additional capacity in all the SuDS features proposed in each critical event, therefore the proposed surface water network will be able to withstand an event greater than the design event of 1 in 100 years plus 40% climate change.



Figure 18: Exceedance flow paths following topography of site and directed towards soft landscaping areas away from building premises.





7. Water Quality Management Train and Simple Index Assessment

- 7.1. The risk posed by surface water runoff to the receiving environment is a function of:
 - The pollution hazard at a particular site (i.e., the pollutant source)
 - The effectiveness of SuDS treatment components in reducing levels of pollutants to environmentally acceptable levels, (i.e., the pollutant pathway).
 - The sensitivity of the receiving environment (i.e., the environment receptor).
- 7.2. The CIRIA C753 SuDS Manual, Table 26.1 suggests a Simple Index Approach for low-risk developments, which follows a three-step process, namely:
 - Allocate suitable pollution hazard indices for the proposed land use.
 - Select SuDS with a total pollution mitigation index that equals or exceeds the pollution hazard index
 - Where the discharge is protected surface waters or groundwater, consider the need for a more precautionary approach.
- 7.3. To successfully deliver adequate treatment, the chosen SuDS components should have a total pollution mitigation index that equals or exceeds the pollution hazard index.
- 7.4. Where the mitigation index of an individual components is insufficient, two components (or more) in series will be required, where: Total SuDS mitigation index = mitigation index1 + 0.5(mitigation index)
- 7.5. The Simple Index Approach states that if the land use varies across the "runoff area", either:
 - Use the land use type with the highest pollution hazard index
 - Apply the approach for each of the land use types to determine whether the proposed SuDS design is sufficient for all.

Pollution Hazard Indices

7.6. Pollution hazard indices for the various land uses are summarised in Table 9, reproduced from Table 26.2 in CIRIA C753). The Proposed Development includes commercial (offices) roofs and non-residential roads / parking, therefore would have a medium pollution hazard level. However, as there may be delivery LGVs & HGVs, it is best practice to take the worst case hazard so *High* pollution hazard level for the Proposed Development.

Table 9: Pollution hazard indices for different land use classifications (CIRIA. 2015).

Land Use	Pollution Hazard Level	Total Suspended Solids (TSS)	Metals	Liquid Hydrocarbons (Free Floating Oils)
Residential roofs	Very Low	0.2	0.2	0.05
Other roofs (commercial / industrial roofs)	Low	0.3	0.2 - 0.8	0.05
Individual property driveways, residential car parks, low traffic roads (eg cul-de-sacs, homezones and general access roads) and non-residential car parking with infrequent change (eg schools, offices) ie < 300 traffic movements/day	Low	0.5	0.4	0.4



Land Use	Pollution Hazard Level	Total Suspended Solids (TSS)	Metals	Liquid Hydrocarbons (Free Floating Oils)
Commercial yard and delivery areas, non-residential car parking with frequent change (eg hospitals, retail), all roads except low traffic roads and trunk roads/motorways	Medium	0.7	0.6	0.7
Sites with heavy pollution (eg haulage yards, lorry parks, highly frequented lorry approaches to industrial estates, waste sites), sites where chemicals and fuels (other than domestic fuel oil) are to be delivered, handled, stored, used or manufactured; industrial sites; trunk roads and motorways	High	0.8	0.8	0.9

Pollution Mitigation Indices

- 7.7. The SuDS strategy for the proposed Development will include open SuDS and permeable paving to provide water quality uplift in accordance with the CIRIA C753 SuDS manual.
- 7.8. The pollution mitigation indices for different SuDS components are shown in Table 10 (reproduced from Table 26.3 in CIRIA C753).

Table 10: Indicative SuDS mitigation indices for discharge to surface water (CIRIA, 2015).

Type of SuDS Component	TSS	Metals	Liquid Hydrocarbons
Filter Strip	0.4	0.4	0.5
Filter Drain	0.4	0.4	0.4
Swale	0.5	0.6	0.6
Bioretention System	0.8	0.8	0.8
Permeable Pavement	0.7	0.6	0.7
Detention Basin	0.5	0.5	0.6
Pond	0.7	0.7	0.5
Wetland	0.8	0.8	0.8

Proprietary treatment systems

These must demonstrate that they can address each of the contaminant types to acceptable levels for frequent events up to approximately the 1 in 1 year return period event, for inflow concentrations relevant to the contributing drainage area.

Notes

- SuDS components only deliver these indices if they follow design guidance with respect to hydraulics and treatment set
 out in the relevant technical component chapters.
- Filter drains can remove coarse sediments, but their use for this purpose will have significant implications with respect to maintenance requirements, and this should be considered during the design of the maintenance plan.
- Ponds and wetlands can remove coarse sediments, but their use for this purpose will have significant implications with
 respect to the maintenance requirements and amenity value of the system. Sediment should normally be removed
 upstream, unless they are specifically designed to retain sediment in a separate part of the component, where it cannot
 easily migrate to the main body of water.

The Proposed Management Train

7.9. A SuDS Management Train is a robust pollutant removal strategy. Using a number of different SuDS components in series will help target a good range of particulate-bound and dissolved pollutants, will



deliver gradual improvement in water quality and will act as a buffer for accidental spills and intermittent high pollutant loads.

7.10. Where two components (or more) in series are utilised for the Site, the

Total SuDS mitigation index = mitigation index1 + 0.5(mitigation index)

Note, a factor of 0.5 is used to account for the reduced performance of secondary or tertiary components associated with already reduced inflow concentrations.

7.11. To successfully deliver adequate treatment, the chosen SuDS components should have a total pollution mitigation index that equals or exceeds the pollution hazard index for each contaminant type. As demonstrated in Table 11, the proposed management train is sufficient for the land uses proposed and the total SuDS mitigation index is greater than the hazard index for each contaminant type.

Table 11: Summary of simple index approach assessment for roofs and highway catchments.

<u> </u>			
Land was Classification	Pollution Hazard Indices		
Land-use Classification	TSS	Metals	Hydrocarbons
Commercial Roof Catchment			
Public Realm Catchment retail			
(Medium pollution hazard level)	0.7	0.6	0.7
Non-residential parking (retail / offices)	0.8	0.8	0.8
and delivery vehicles HGVS / Vans			
(High pollution hazard level)			
SuDS Components	Pollution Mitig	ation Indices	
Subs Components	TSS	Metals	Hydrocarbons
Permeable paving (not designed for	0.7	0.6	0.7
infiltration)		U.U	U.1
Bioretention System*	0.4	0.4	0.4
Total Mitigation	1.1	1.0	1.1
	1.1 > 0.7	1.0 > 0.6	1.1 > 0.7
	Sufficient for	Sufficient for	Sufficient for
	Medium	Medium	Medium Hazard
Sufficiency of Water Treatment	Hazard level	Hazard level	level
Sufficiency of Water Treatment	1.1 > 0.8	1.1 > 0.8	1.1 > 0.8
	Sufficient for	Sufficient for	Sufficient for
	High Hazard	High Hazard	High Hazard level
	level	level	-

^{*} Pollution mitigation index reduced by factor of 0.5

7.12. Sediment should be removed as far upstream in the drainage system as possible. Sediment control components that are located close to the runoff surface allow sediment build-up to occur gradually in dry features and at shallow depths, facilitating the breakdown and degradation of the organic particulates and straightforward and cost-effective sediment removal. Sediment trapping provides important removal of a range of contaminants that are adsorbed onto sediment surfaces and upstream sediment controls protect downstream components from damage or poor performance due to sediment build-up either on the surface or within subsurface media or soils. All road gullies will be specified to have silt traps to provide suitable measures against silt and sediment buildup downstream in the network of bioretention systems.



8. Proposed Foul Water Drainage Strategy

Design Principles

- 8.1. The proposed foul drainage would be designed in accordance with BS EN 752 Drain and Sewer Systems Outside Buildings, BS EN 12056 Gravity Drainage Systems Inside Buildings, and Approved Document H of Building Regulations.
- 8.2. Gravity discharge of foul flows towards the Coldham's Lane public foul sewer network is targeted as part of the Proposed Development, seeking to minimise the reliance upon pumping of flows to the Sleaford Street public sewer network. Localised 'sump pump' arrangements would be specified as part of the M&E strategy to serve localised lower ground floor areas, where appropriate.
- 8.3. An alternative option proposed is a discharge point at York Street, subject to final MEP design and outfall locations of each plot, the sitewide foul drainage can discharge to two locations similarly to the surface water strategy.

Capacity Existing Network

- 8.4. A pre-development enquiry was submitted to Anglian Water 16th July 2024, they have confirmed there is capacity for the Proposed Development (approval given 5th August 2024 InFlow Reference PPE-0211319). Refer to Appendix H for full correspondence.
- 8.5. New connections made to the public sewer system would be made through a Section 106 New Sewer Connection Agreement with Anglian Water, under the Water Industry Act 1991. This should be completed at the next stage of design post determination.
- 8.6. Note, consultations with Anglian Water highlighted trade effluent (waste from the lab blocks) would need to be discussed at a later stage, as to complete their capacity assessment they would require finalised tenant information (such as tenant name, lab use, waste type, quantities per day, and operating times) therefore for this Outline application, only *domestic* (office) waste was considered.



9. Phasing Plan

- 9.1. Figure 19 presents the indicative phasing plan for the Site at construction stage with some key programme dates below:
 - Detailed design stage commencing Q3 2025
 - Demolition of existing Site commencing Q3 2027
 - Construction works commencing Q1 2028
 - Works anticipated to finish Q4 2034
- 9.2. As shown below, all key infrastructure (sitewide roads and drainage) will be built as part of Phase 1, therefore all blocks will have their connection points ready to connect to and SuDS features will be able to receive the incoming flows from roof catchments.
- 9.3. It is envisaged the Proposed Development will retain the opportunity to relocate ASDA and other retailers to the nearby Cambridge Retail Park, Newmarket Road, which is also in the ownership of the Applicant.

Figure 19: Phasing plan





10. Drainage and SuDS Maintenance Plan

The ongoing management and maintenance of the proposed surface water drainage systems will fall under the responsibility of the landowner or their appointed agent. If the drainage network is adopted by the water authority under a Section 104 Agreement, then it will be their responsibility. It is likely, all surface water drainage onsite and SuDS features will remain under management of the Applicant whereas the connection points to the public drainage network run in the public highway will be adopted by Anglian Water.

Best practice maintenance information is provided within the CIRIA C753 SuDS Manual, extracts of which have been included below for the SuDS features proposed for the Development. The Tables below detail indicative plans for the maintenance of the proposed surface water drainage features including the type of activity and its frequency and who will be responsible for carrying out these tasks.

Piped Drainage and Manholes Maintenance

Drainage infrastructure covered in this section includes all privately-owned manholes, manhole fittings and surrounding pipework, gullies and kerb drainage. Correct operation of this drainage infrastructure allows collection and transportation of water but requires regular maintenance as outlined in Table 12.

Table 12: Maintenance schedule for piped drainage and manholes (CIRIA, 2015).

Maintenance Schedule	Required Action	Frequency
Before Start	Removal of any inappropriate material from within the chamber and dispose off-site to a suitable licenced site.	At Start
up	All pipelines to be flushed with water to remove silt and check for blockages	At Start
Regular Maintenance	Removal of debris (which could include leaves, rubbish, branches) from areas served by drainage (where it may cause risk to performance)	Monthly
Remedial	For blockages resulting in flooded manhole chambers, drain down manhole chamber and unblock.	As required
Actions	For pipe blockages, rod or jet clean between access points to unblock	As required
Monitoring	Lift covers and inspect chambers. Inspect covers, surrounding gullies and drainage channels for signs of damage and incorrect operation. If required, undertake remedial action.	As required

Flow Control Device

A flow control device is located at the discharge points of the drainage network to restrict the flow rate of surface water from the Proposed Development. Table 13 below shows a typical maintenance schedule for a flow control device. At detailed design, the civils specification will set out the suitable flow control device for the drainage network and therefore the manufacturer specific maintenance guidance should be adhered to.



Table 13: Flow control device maintenance schedule (CIRIA, 2015).

Maintenance Schedule	Required Action	Frequency
Before Start	Removal of any inappropriate material from within the chambers and dispose off-site	At Start
Regular Maintenance (as per manufacturer's requirements)	Removal of debris (which could include leaves, rubbish, and branches) from areas served by the drainage (where it may cause risk to performance)	Monthly
Remedial Actions	For blockages resulting in flooded manhole chambers, drain down manhole chamber and unblock	As required
Monitoring	Inspect unit and hose down is required	Monthly at the start for three months, then six monthly

Bioretention Systems (Rain Gardens)

Bioretention systems attenuate and treat the surface water runoff. They will require maintenance to ensure continuing operation to design performance standards. Table 14 shows the typical operation and maintenance requirements for bioretention systems.

Table 14: Maintenance schedule for bioretention systems (CIRIA, 2015).

Maintenance Schedule	Required Action	Frequency
	Inspect infiltration surfaces for silting and ponding, record de-watering time of the facility and assess standing water levels in underdrain (if appropriate) to determine if maintenance is necessary.	Quarterly
Regular inspections	Check operation of underdrains by inspection of flows after rain	Annually
	Assess plants for disease infection, poor growth, invasive species etc and replace as necessary	Quarterly
	Inspect inlets and outlets for blockage	Quarterly
Regular maintenance	Remove litter and surface debris and weeds	Quarterly (or more frequently for tidiness or aesthetic reasons)
Occasional maintenance	Infill any holes or scour in the filter medium, improve erosion protection if required.	As required
	Repair minor accumulations of silt by raking away surface mulch, scarifying surface of medium and replacing mulch	As required
Remedial actions	Remove and replace filter medium and vegetation above	As required but likely to be >20 years

Permeable Paving

Permeable paving underlain by a porous subbase can treat and attenuate surface water runoff from hardstanding areas including roads and parking. Table 15 shows a typical maintenance schedule for permeable paving storage system.



Table 15: Maintenance schedule for permeable paving systems (CIRIA, 2015).

Maintenance Schedule	Required Action	Frequency
Before Start	A pre-handover inspection should be carried out and the geocellular storage system cleaned prior to final handover	At Start
Regular Maintenance (as per	Remove litter and blockages as required; records of inspections and maintenance undertaken should be kept by the client	As required (after every major storm event)
manufacturer's requirements)	Inspect all chambers for silt and oil build up; sweep external surfaces	Every 12 months
	For system where rainfall infiltrates into the tank from above, check surface of filter for blockage by sediment, algae or other; remove and replace infiltration media as necessary or clean external surfaces	Annually
	Remove sediment from pre-treatment structures and / or internal forebays	Annually or as required
A spillage kit appropriate to the size of the road surfaces should be kept by the site caretaker. This should include absorbent pads, socks, and rain seals. As soon as a spillage is identified, the drain inlets in that area should be covered to prevent pollution entering the system. The pollution should then be cleared from the road surface. The local channel system and/or separator receiving the spillage should be emptied of all pollution that has entered. The Environment Agency should be informed of the spillage and the appropriate actions should be taken.		As required
Monitoring	Inspections of channels, road/yard gullies for signs of blockage and oil spillage	3 monthly

Green / Blue Roofs

The function of vegetated roofs is to provide pre-treatment to the surface water before it enters the below ground surface water system, whilst also providing attenuation at roof level. Table 16 shows a typical maintenance schedule for a green blue roof system.

Table 16: Maintenance schedule for green and blue roofs.

Maintenance Schedule	Required Action	Frequency
Before Start up – manufacturer to confirm exact requirements	Remove debris and litter to prevent blockage of the outlets with potential brown roof material.	At Start
	Check infiltration through to the outlet	At Start
Regular Maintenance – manufacturer to confirm exact	Remove debris and litter to prevent clogging of inlet drains	Six monthly/ annually or as required
requirements	Remove nuisance and invasive vegetation including weeds	Six month or as required



Remedial Actions – manufacturer to confirm exact requirements	If drain inlet has settled, cracked, or moved, investigate and repair as appropriate	As required
Monitoring – manufacturer to confirm exact requirements	Inspect all components including, drains, membranes and roof structure for proper operation, integrity of waterproofing and structural stability. Inspect drain outlets to ensure there are no blockages	Annually/ after severe storms
	Inspect underside of roof for evidence of leakage	
		Annually/ after severe storms
Monitoring – manufacturer to	Inspect all components including, drains, membranes and roof structure for proper operation, integrity of waterproofing and structural stability.	
confirm exact requirements	Inspect drain outlets to ensure there are no blockages Inspect underside of roof for evidence of leakage	Annually/after severe storms
		Annually/after severe storms



11. Statutory Consultations

Anglian Water Developer Services

- 11.1. A Pre-Development Enquiry was submitted to Anglian Water to seek to confirm the availability of capacity within the receiving public surface and foul water network, to identify preferred point(s) of connection, and to establish the cost and programme of any off-site reinforcement works (if required to facilitate the new connection). Anglian Water have responded, and confirmed both foul and surface water connection points are feasible and no infrastructure charges are required.
- 11.2. At detailed design stage future consultation should be initiated with Anglian Water regarding the Section 104 of the foul drainage network below the public highway and, Section 106 for the connections into the existing network.
- 11.3. A copy of the Predevelopment Enquiry report by Anglian Water is attached to Appendix H.

Cambridgeshire County Council (Lead Local Flood Authority)

- 11.4. The Applicant previously submitted an outline application (planning reference 23/03204/OUT) in 2023.
- 11.5. The Local Planning Authority consulted LLFA CCoC for a review of the submitted Flood Risk Assessment and Drainage Strategy on 24th August 2023.
- 11.6. Some of the key comments and feedback are summarised below in Table 14 (refer to the Appendix H for the full correspondence from CCoC). The comments from the previous application (23/03204/OUT), have formed the basis of the proposed surface water drainage strategy and all parameters / design requirements have been adhered to, ensuring all the latest guidance of CCoC (April 2024) is followed.

Table 17: Summary of LLFA response and design updates.

LLFA Response 2023	Updates 2024 Application
Hydraulic Calculations CV values and climate change allowance	The proposed modelling has been based on all catchment areas to have a CV of 1.0.
	Results are provided in Appendix G for 1 in 2 year, 1 in 30 year plus 35% climate change and 1 in 100 year plus 40% climate change rainfall return periods.
Exceedance Flow Paths	There is no flooding in any design events therefore no flood volumes can be provided. Events worse than the design event of 1 in 100 year plus 40% climate change are discussed in previous sections of this report.
Discharge Rates	As per the latest CCoC Surface Water Design Guidance (April 2024) discharge rates for the Site are greenfield QBAR.
Sewerage Undertaker Consent	Anglian Water confirmed on 05.08.24 there is capacity for the proposed discharge rates at the proposed connection points.



11.7. Furthermore, refer to Appendix I, for the SuDS Proforma and Surface Water Design checklist from the CCoC LLFA Surface Water Planning Guidance April 2024, detailing the requirements met for the Outline Application checklist and referring to each Section in this report where CCoC requirements have been discussed.



12. Conclusions

Waterman was commissioned by Railway Pension Nominees Limited to prepare a Flood Risk Assessment incorporating a Surface Water Drainage Strategy to support the proposed redevelopment of the Beehive Centre, Coldham's Lane, Cambridge, for a new local centre, open space and employment (office and laboratory) floorspace.

Flood risk has been assessed in line with BS8533 and best practice. In accordance with NPPF and its associated PPG, all potential sources of flooding to the Site have been considered.

Review of published material indicates that the Site has not been subject to historical flooding.

The Site lies remote from Main Rivers and Ordinary Watercourses and is categorised within an area at very low probability of flooding (Flood Zone 1) from Main Rivers and the Sea.

No significant risk of flooding at the Site from emergent groundwater, surface water, sewers, or reservoir breach has been established based upon published documents and consideration of the local topography and setting.

Localised areas at risk of flooding from surface water and overland flow can be adequately managed by maintaining level differentials between finished ground floor levels and adjacent external levels, and by careful management of surface water runoff across the Proposed Development.

The Site would be expected to remain at low risk of flooding in the future throughout the lifetime of the Proposed Development taking into account anticipated climate change effects.

Safe routes of vehicular and pedestrian access and egress would also be available via Coldham's Lane and adjacent footpaths over the lifetime of the Proposed Development.

Surface water runoff from the Proposed Development will be managed sustainably at source, utilising a suite of SuDS measures and water quality enhancements integrated within the hard and soft landscape.

Post-development, there is a material overall reduction in flow rates and flow volumes to the receiving sewer networks providing a nett betterment to the receiving systems in line with national and local policy objectives.

The FRA demonstrates that the residual flood risks are manageable over the lifetime of the Proposed Development. The proposals are deemed to be 'safe' and sustainable in flood risk terms and in line with the requirements of local and national policies and guidance.



13. References

ⁱ Ministry of Housing, Communities and Local Government, July 2021. *National Planning Policy Framework*

ii Ministry of Housing, Communities and Local Government, March 2014. *Planning Practice Guidance* (updated August 2022)

iii Department for Environment, Food and Rural Affairs, March 2015. *Non-statutory technical standards for sustainable drainage systems*

iv Stantec, July 2021. Greater Cambridge Integrated Water Management Strategy: Level 1 Strategic Flood Risk Assessment

^v Hyder Consulting (UK) Limited, March 2011. *Cambridgeshire Preliminary Flood Risk Assessment, Final Preliminary Assessment Report*

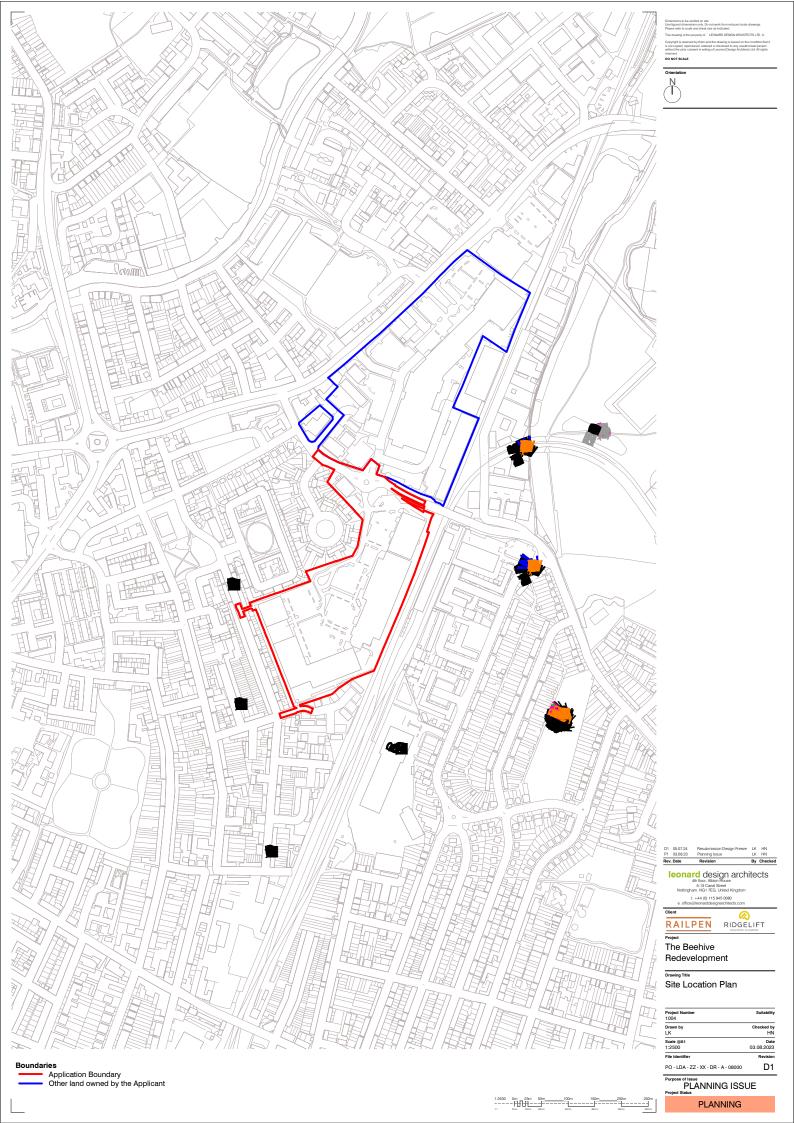
vi BS8533:2017, December 2017. Assessing and managing flood risk in development: Code of Practice

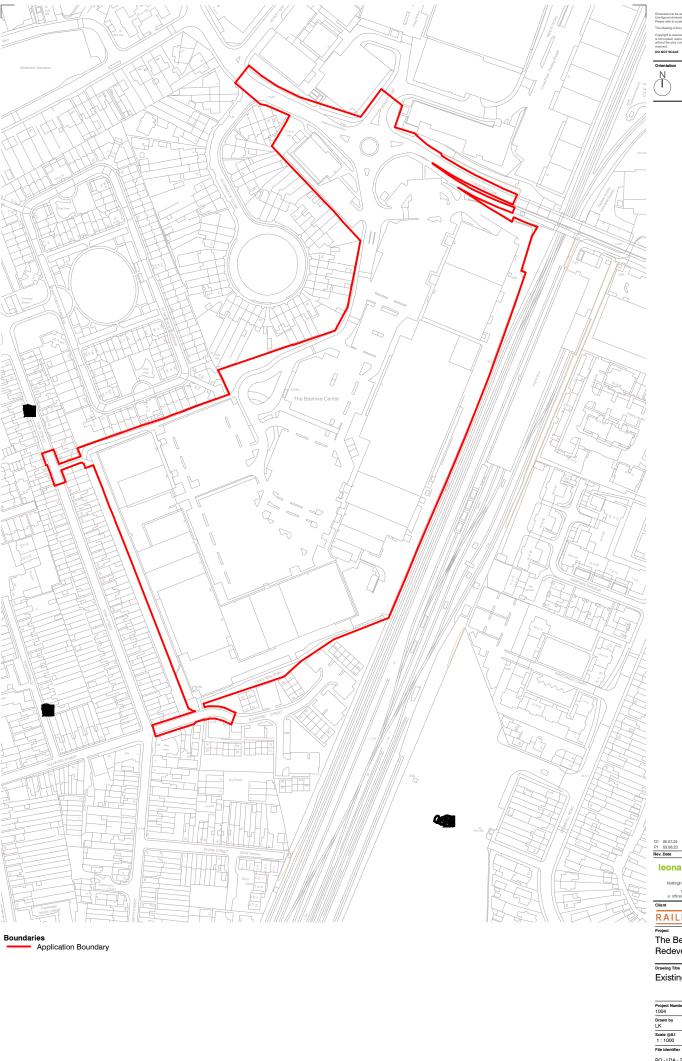


APPENDICES

A. Existing Site Plans

Appendices
Railway Pensions Nominees Limited
Project Number: WIE17469-110
Document Reference: WIE17469-110-R-1-4-FRADS_Project Otter





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RAILPEN RIDGELIFT

The Beehive Redevelopment

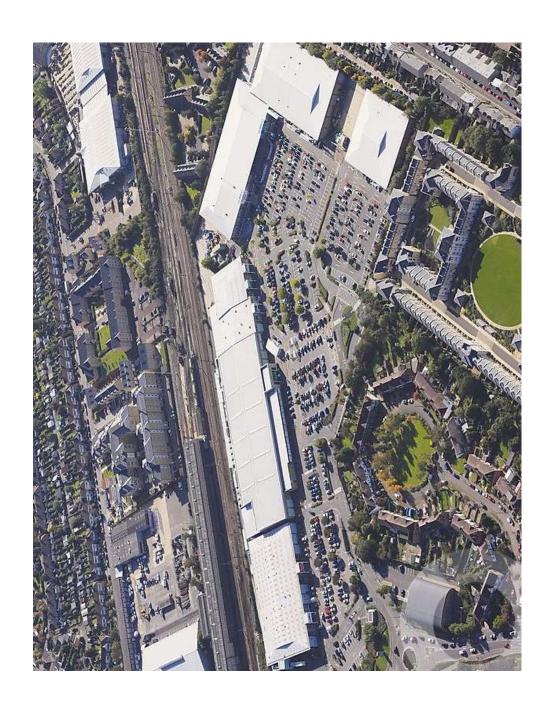
Drawing Title
Existing Site Plan

Purpose of Issue
PLANNING ISSUE
Project Status

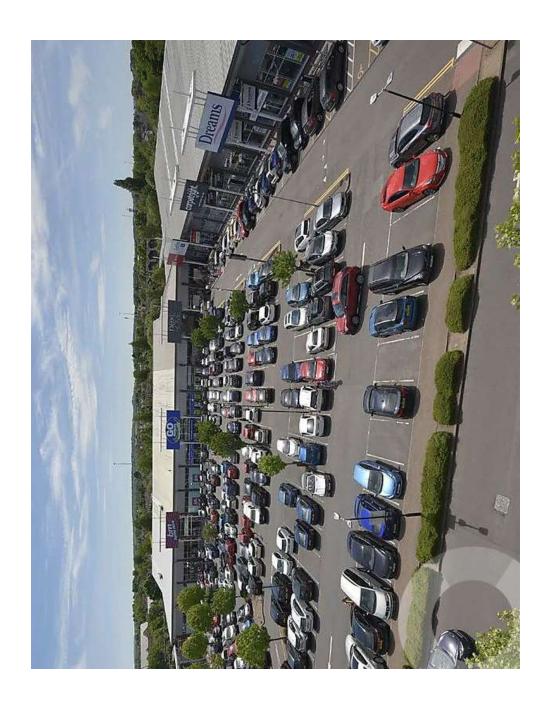
PLANNING

1:1000 Om 10m 20m 40m 60m 80m





Project Number: WIE17469-110
Document Reference: WIE17469-110-R-1-1-4-FRADS_Project Otter Appendices
Railway Pensions Nominees Limited



Appendices
Railway Pensions Nominees Limited
Project Number: WIE17469-110
Document Reference: WIE17469-110-R-1-4-FRADS_Project Otter



Appendices
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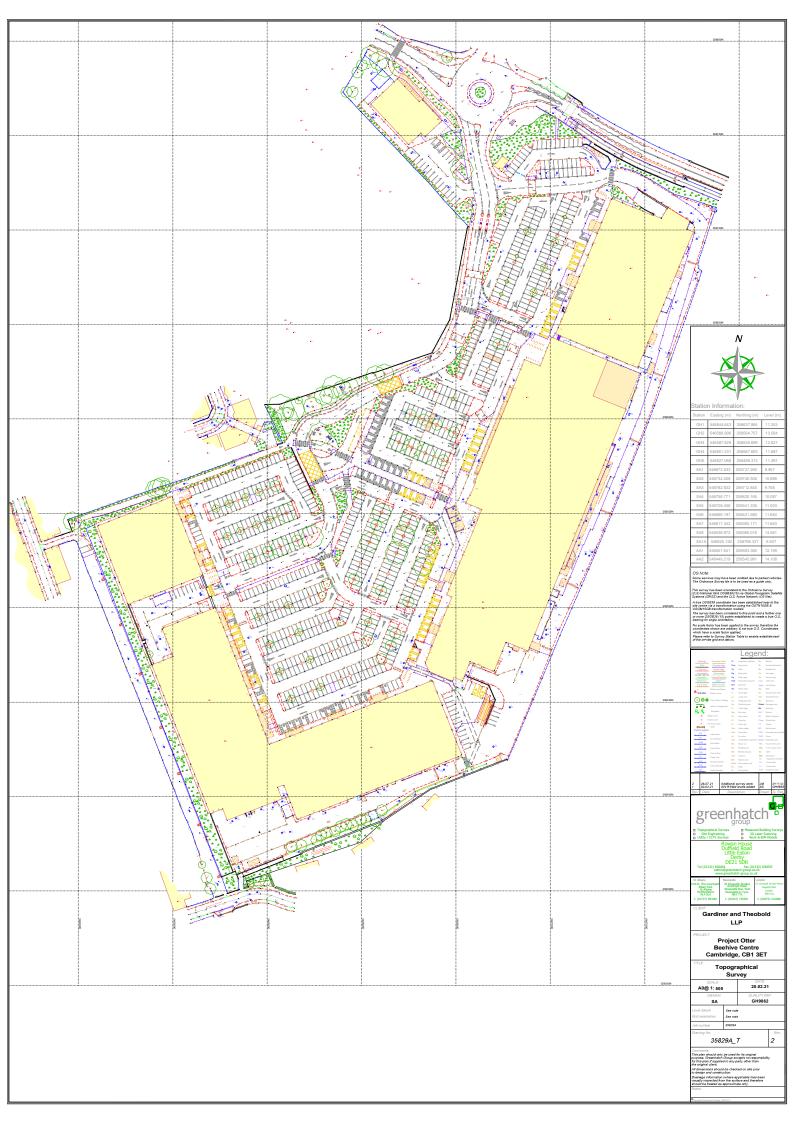


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Topographical Survey œ.

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Development Proposals ပ

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Masterplan 16 Ground Floor 030007

01/07/24