

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 up	Removal of any inappropriate material from within the chamber and dispose off-site to a suitable licenced site.	At Start
	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 manufacturer's requirements)	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)
	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
Remedial Actions	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.	As required
	The Environment Agency should be informed of the spillage and the appropriate actions should be taken.	
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 requirements	Remove debris and litter to prevent clogging of inlet drains	Six monthly/ annually or as required
	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
	The proposed modelling has been based on all catchment areas to have a CV of 1.0.
Hydraulic Calculations CV values and climate change allowance	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

[∨] 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

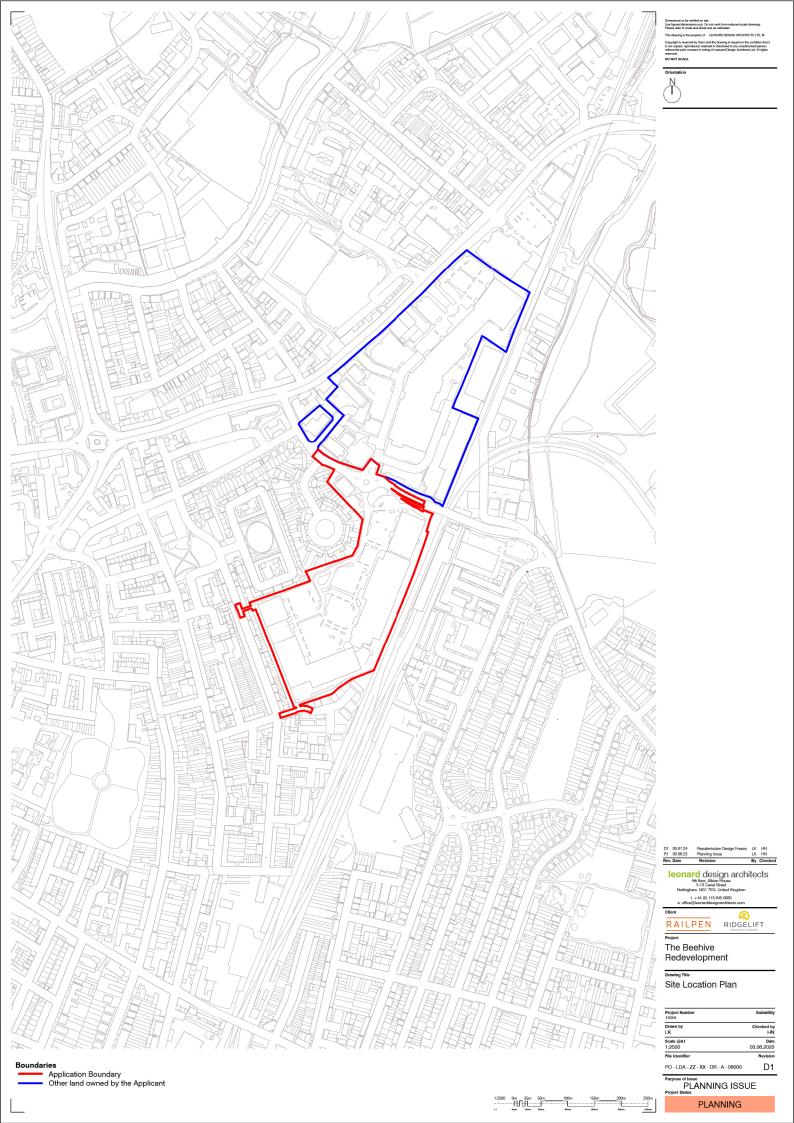


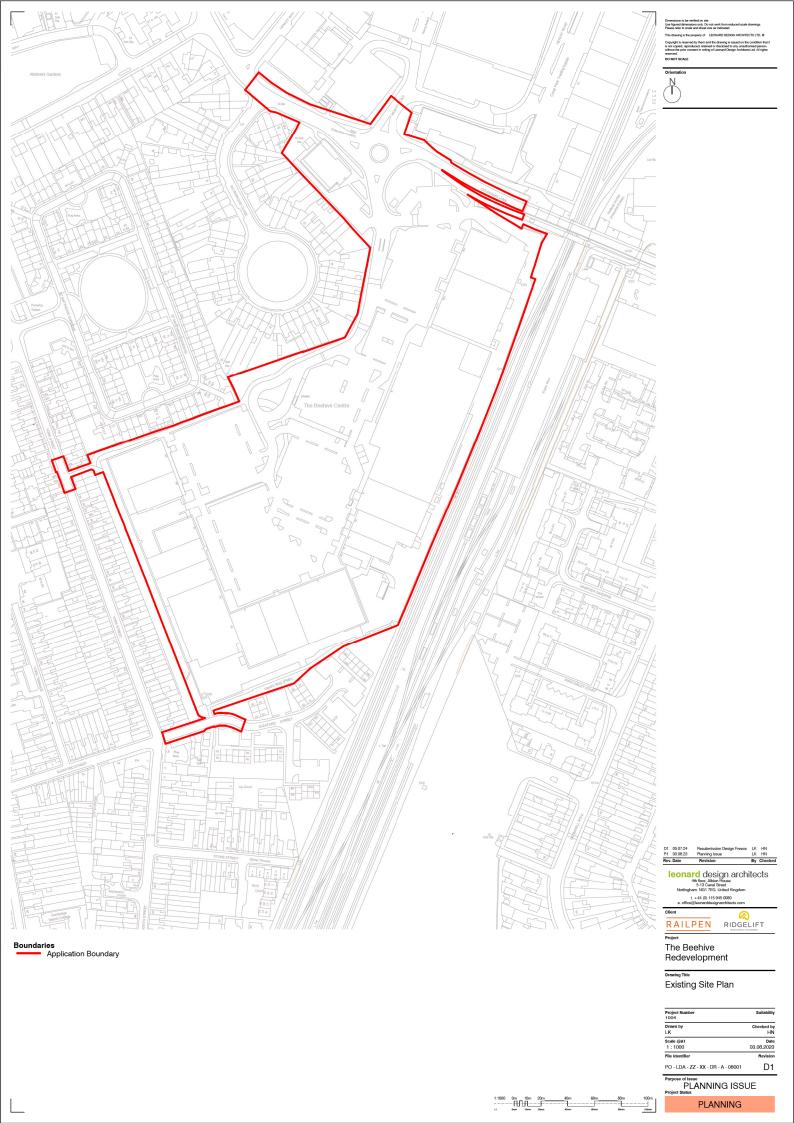
APPENDICES

A. Existing Site Plans

Appendices
Railway Pensions Nominees Limited
Project Number: WIE17469-110

Document Reference: WIE17469-110-R-1-1-4-FRADS_Project Otter



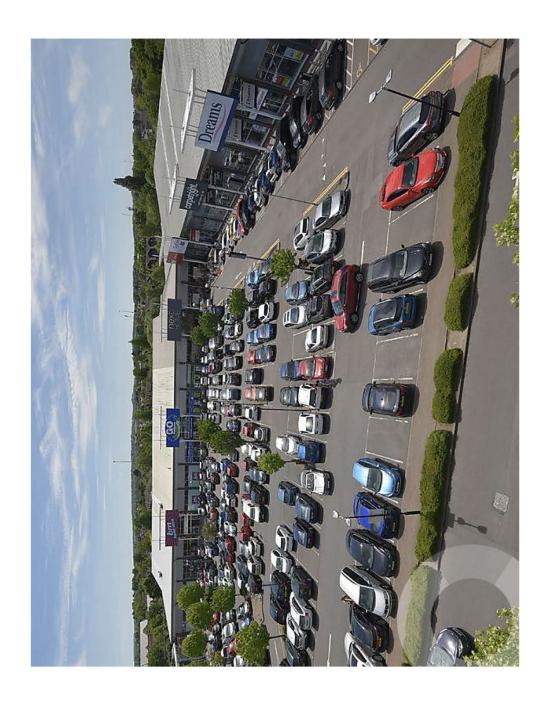






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Topographical Survey œ.

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