Stag Brewery, Mortlake

Air Quality Positive Statement

March 2023

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Client Name:	Reselton Properties Limited
Document Reference:	WIE18671-R-15-4-2-AQPS
Project Number:	WIE18671

Quality Assurance – Approval Status

This document has been prepared and checked in accordance with Waterman Group's IMS (BS EN ISO 9001: 2015, BS EN ISO 14001: 2015 and BS EN ISO 45001:2018)

Issue	Date	Prepared by	Checked by	Approved by
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Comments

Comments

Disclaimer

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We disclaim any responsibility to the client and others in respect of any matters outside the scope of the above.

This report is confidential to the client and we accept no responsibility of whatsoever nature to third parties to whom this report, or any part thereof, is made known. Any such party relies on the report at its own risk.

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1. Introduction

1.1. This Air Quality Positive Statement (AQPS) has been prepared following the adoption of the Mayor of London's Air Quality Positive Guidance (AQPG)[1] on 8th February 2023.

1.2. This AQPS has been prepared following the structure below, in line with the AQPG:

- Introduction
- Constraints and opportunities
- Measures adopted
- Implementation and monitoring

1.3. The purpose of the statement is to demonstrate how the Development (as summarised below) has considered ways to improve air quality and minimise exposure to sources of air pollution as part of an air quality approach, across all aspects of the Development including the buildings, public spaces, landscaping and infrastructure.

1.4. An air quality assessment has been undertaken to determine baseline conditions at the Site, assess its suitability for the proposed land uses, and consider the effects of the Development given its location, size and nature in accordance with the requirements of the National Planning Policy Framework[2]. The air quality assessment is detailed in Chapter 10: Air Quality and associated technical appendices contained within the Environmental Statement submitted in March 2022 (the 'March 2022 ES') as part of Application A (planning ref: 22/0900/OUT) and Application B (planning ref: 22/0902/FUL).

1.5. This AQPS is a direct substitution of Appendix 10.4 of the March 2022 ES.

The Application Site and Development

1.6. The 'Site' for which the Applications correspond to comprises the former Stag Brewery, located in Mortlake, south-west London within the within the administrative boundary of the London Borough of Richmond upon Thames ('LBRuT'). The Site is indicated within **Figure A1**.

1.7. The Applications seek planning permission for:

1.8. Application A (planning ref: 22/0900/OUT):

"*Hybrid application to include the demolition of existing buildings to allow for comprehensive phased redevelopment of the site:*

Planning permission is sought in detail for works to the east side of Ship Lane which comprise:

a) Demolition of existing buildings (except the Maltings and the façade of the Bottling Plant and former Hotel), walls, associated structures, site clearance and groundworks

b) Alterations and extensions to existing buildings and erection of buildings varying in height from 3 to 9 storeys plus a basement of one to two storeys below ground

c) Residential apartments

d) Flexible use floorspace for:

[1] Greater London Authority. 2023. London Plan Guidance – Air Quality Positive. February 2023. Available at: https://www.london.gov.uk/sites/default/files/2023-02/Air%20Quality%20Positive%20LPG.pdf
[2] Ministry of Housing, Communities & Local Government. 2021. National Planning Policy Framework.

i. *Retail, financial and professional services, café/restaurant and drinking establishment uses*

ii. *Offices*

iii. *Non-residential institutions and community use*

iv. *Boathouse*

e) *Hotel / public house with accommodation*

f) *Cinema*

g) *Offices*

h) *New pedestrian, vehicle and cycle accesses and internal routes, and associated highway works*

i) *Provision of on-site cycle, vehicle and servicing parking at surface and basement level*

j) *Provision of public open space, amenity and play space and landscaping*

k) *Flood defence and towpath works*

l) *Installation of plant and energy equipment*

Planning permission is also sought in outline with all matters reserved for works to the west of Ship Lane which comprise:

a) *The erection of a single storey basement and buildings varying in height from 3 to 8 storeys*

b) *Residential development*

c) *Provision of on-site cycle, vehicle and servicing parking*

d) *Provision of public open space, amenity and play space and landscaping*

e) *New pedestrian, vehicle and cycle accesses and internal routes, and associated highways works*"

Application B (planning ref: 22/0902/FUL):

"*Detailed planning permission for the erection of a three-storey building to provide a new secondary school with sixth form; sports pitch with floodlighting, external MUGA and play space; and associated external works including landscaping, car and cycle parking, new access routes and other associated works*"

1.9. Being hybrid, Application A is subdivided into Development Area 1 and Development Area 2.

1.10. Together, Applications A and B described above, along with the Section 278 highways works comprise the 'Development'.

Air Quality Neutral Calculations

1.11. As detailed above, the Development comprises Applications A and B and the Section 278 highways works. Assessed as a whole, the Development would be air quality neutral in

accordance with the Mayor of London's Air Quality Neutral Guidance, published on 8th February 2023.

1.12. However, LBRuT have undertaken their own assessment of Applications A and B separately. Assessed in isolation, LBRuT calculated that Application A would not meet the transport emission benchmark and mitigation measures would be required to meet London Plan policy.

1.13. Consultation was undertaken with LBRuT in February 2023 and agreement that the inclusion of the following measures to Application A of the Development would make it air quality neutral.

- Provision of 40% (200 car parking spaces) active electric charging infrastructure for Application A;
  - Including the provision of fast charging points for 5% (10 car parking spaces);
- Provision of 20 car club spaces within the Development and for use by residents of the Development (Application A). Financial contributions would be provided to car clubs to provide free membership for the users of the Development for two years;
- Provision of a cycle club scheme (Application A)
  - To include cycle training; and
  - To include equipment and training for cycle maintenance.

1.14. These measures have therefore not been considered further for Application A within this AQPS.

Method Statement

1.15. Waterman Infrastructure & Environment Limited (Waterman) have been engaged by the Applicant and their consultant team throughout the Development design evolution and planning process to maximise the potential benefits to local air quality. This engagement has also included consultation with LBRuT. As the specialist air quality consultants, Waterman have undertaken monitoring and modelling of numerous reconfigurations to the Chalkers Corner junction to alleviate the air quality, transport and traffic implications associated with the operation of the Development.

1.16. The following supporting technical documents submitted with the aforementioned Applications been referenced within this AQPS, to illustrate the design process and how air quality has helped to influence the Development:

- Chapter 4: Alternatives of the March 2022 ES;
- Chapter 8: Transport and Access of the March 2022 ES;
- Chapter 10: Air Quality of the March 2022 ES;
- March 2022 Transport Assessment; and
- March 2022 Arboricultural Impact Assessment.

1.17. LBRuT requested proposed measures to be specific and explicit and include as a bare minimum an indication of how much emission reductions are expected to be achieved and the expected benefits to air quality to be backed up by reasonable evidence. LBRuT's request has been completed where possible, however, this was not possible for all measures. This is supported by the AQPG which states '*It is not always possible to fully quantify the impact of a development on*

air quality, nor to numerically describe likely patterns or determinants of exposure. Nor is it realistic to expect every possible design iteration to be subject to detailed air quality modelling'.

1.18. An AQPS would be submitted to the Council for its written approval at least 6 months prior to implementation for the outline element (Development Area 2) of Application A.

2. Constraints and Opportunities

Constraints

Construction

Dust Emissions

2.1. Potential Air Quality effects likely to arise because of the Development during the construction phase include:

- Temporary increases in dust deposition at sensitive receptors;
- Temporary increases in air pollutant concentrations near the local road network due to emissions from construction traffic; and
- Temporary increases in air pollutant concentrations near the Development due to emissions from non-road mobile machinery and plant.

2.2. During the construction phase, general construction activities and processes may cause dust and particulate matter to be emitted to the atmosphere, which could have an adverse impact on local air quality at nearby sensitive receptors unless suitable mitigation measures are applied. Through the implementation of mitigation measures to be detailed in the Construction Environmental Management Plan (CEMP) during the construction phase, it is unlikely that the effect of dust and particulate matter generation and deposition will be significant.

Construction Vehicle Exhaust Emissions

2.3. Construction traffic associated with the proposals will contribute to existing traffic levels on the surrounding road network. The greatest potential for effects on air quality from traffic associated with this phase of the proposals will be in the areas immediately adjacent to the construction works and the route construction vehicles take to access the Site. The atmospheric emissions from construction vehicles will primarily be NO_2 and PM_{10}.

2.4. Exhaust emissions from construction vehicles could have an impact on local air quality both on-site and adjacent to the routes used by these vehicles to access the construction sites. However, this is not considered to pose a constraint to the Development given the fact that any change will be temporary.

Complete and Operational Development

Impacts of Traffic Emissions on Local Air Quality

2.5. LBRuT has declared an Air Quality Management Area (AQMA) for the entire Borough for annual mean NO_2 and annual mean and 24-hour mean PM_{10}. The Development is located within the LBRuT AQMA.

2.6. The Greater London Authority has identified 187 Air Quality Focus Areas (AQFA) in London that exceed the EU annual mean limit value for NO_2 and have high levels of human exposure. The

Site is located approximately 160m east of the Chalkers Corner / Clifford Avenue / A205 / Upper Richmond Rd / Millstone Green AQFA – see **Figure A2**.

2.7. Detailed dispersion modelling has been undertaken as part of the air quality assessment for the Development to determine the air quality impacts on the surrounding sensitive locations.

2.8. Potential Air Quality effects likely to arise once the Development is operational include increased NO_2, PM_{10} and $PM_{2.5}$ concentrations along local roads due to additional traffic movements and heating plant emissions generated by the Development.

Exposure of Future Residents to Poor Air Quality

2.9. The Development is located within the LBRuT AQMA. The Development would introduce new human exposure into an area of potentially poor existing air quality.

2.10. Further information on the baseline air quality conditions, refer to Chapter 10: Air Quality of the March 2022 ES.

Opportunities

2.11. There are opportunities to go beyond best practice with the use of mitigation measures at the Site.

Complete and Operational Development

2.12. There are opportunities to ensure the design is both Air Quality Neutral and Air Quality Positive by introducing measures such as:

- Sustainable Transport Plans: A sustainable travel plan which will ensure that traffic generation is minimized, and the Development will provide excellent routes and connectivity for cycling and walking;
- Increasing site permeability;
- Promotion of ultra-low and zero local emission local energy generation;
- Promotion of awareness of local air quality and actions that can be taken to reduce emissions;
- Green Infrastructure; and
- Sustainable Energy.

3. Measures Adopted

3.1. Details of adopted measures, including the rationale for adoption measures and technical evaluations and assessments that have informed the measures adopted are provided within the matrix below in **Table A1** for Application A (Development Area 1), **Table A2** for Application A (Development Area 2) and **Table A3** for Application B.

3.2. As technology advances, the developer would look to make use of new technologies to incorporate into the operation of the Development to improve local air quality where possible.

Table A1: Air Quality Positive Matrix – Application A (Development Area 1)

Measure	Summary of the measure	Reason for undertaking measure	Expected benefits	Assessment and reporting			How this measure will be secured
				Methods	Quantitative	Qualitative	
Better design and reducing exposure							
Best practice construction – emissions	The Site construction logistics will be designed to reduce exposure for existing residents nearby and to reduce exposure for the workforce. Non-Road Mobile Machinery (NRMM) will meet and where possible exceed the Greater London Authority (GLA) requirements.	Reducing emissions from the construction phase.	Reduced emissions from the construction phase.	Reported via commitment from contractors.	N	Y	Agreed through the CEMP.
Building Design	Development Area 1 has been designed set back from roads with commercial elements generally on the ground floor to keep future residents away from the main sources of road pollution.	Reducing NO_2, PM_{10} and $PM_{2.5}$ exposure to future users.	Reduced exposure from poor air quality.	Air quality assessment, detailed dispersion modelling.	Y	N	Secured through approved plans.

Table A1: Air Quality Positive Matrix – Application A (Development Area 1)

Measure	Summary of the measure	Reason for undertaking measure	Expected benefits	Assessment and reporting			How this measure will be secured
				Methods	Quantitative	Qualitative	
	The Development has been designed to avoid creating any street canyons and include building forms that aid dispersion.	Reduce the potential to increase pollutant concentrations on surrounding roads.	Reduced exposure from poor air quality.	Air quality assessment, detailed dispersion modelling.	Y	N	Secured through approved plans.
Ventilation strategy	Passive ventilation strategy on all habitable rooms.	Acceptable air quality is provided to future residents without requirement for mechanical ventilation.	Future residents will experience acceptable air quality without recourse to energy-intensive ventilation systems. Natural ventilation dilutes and control sources of contamination within a building, thus improving indoor air quality.	Air quality assessment shows air quality acceptable for future residents.	Y	N	Secured through approved plans.

Table A1: Air Quality Positive Matrix – Application A (Development Area 1)

Measure	Summary of the measure	Reason for undertaking measure	Expected benefits	Assessment and reporting			How this measure will be secured
				Methods	Quantitative	Qualitative	
Non-toxic building materials	Non-toxic building materials to be used during construction and refit. To protect internal air quality, developers should specify environmentally sensitive (non-toxic) building materials and the use of materials or products that produce VOC (volatile organic compounds) and formaldehyde which can affect human health should be avoided.	The use of 'healthy' material options can contribute towards attaining the BREEAM/Building Regulation credits, but a clear audit trail will need to be provided to gain these credits.	Ensures better indoor air quality and protects health of residents and other users of the Development Area 1.	BREEAM assessment.	Y	N	Secured through approved plans and condition.

Landscape Strategy	Green infrastructure incorporated into design of Development Area 1. Increase in trees planted within Development Area 1. Integration of a mix of trees including species selected to benefit air quality, mass planting and lawn areas would be incorporated into the design. Green and brown roofs would be incorporated. Provision of public park and Green Link between Mortlake Green via the Site to the riverside. Pedestrianised High Street within the Development Area 1.	In line with the Sustainable Design and Construction SPG.	Green infrastructure provides a comparatively large surface area for pollutant dispersion, with the rough surface of different heights increasing mixing and pollution dispersal. Hedges will form a barrier to street-level air pollution. Urban greening has been identified as a measure to help adapt London to future climates. Green infrastructure can have numerous benefits including: urban cooling, through shading and evapotranspiration; reduced runoff, through the absorption of rainfall; reduced energy demand, through insulation of the property; improved air quality; improved biodiversity; enhanced amenity and visual interest, including in neighbourhoods and high streets and helping to create a sense of place; better quality of life for residents and workers; and for health and well-being, including tackling obesity and mental health by offering pleasant opportunities for exercise.	Landscape assessment.	N	Y	Secured through approved plans.
Building Emissions							
Energy Strategy	The heat demand for Development Area 1 of Application A will be met	The Energy Strategy sets out the rationale for the measure and	The selected option will meet the carbon emission targets but will also deliver a 95% reduction in on-site.	Energy Strategy	N	Y	Secured through approved

Table A1: Air Quality Positive Matrix – Application A (Development Area 1)

Measure	Summary of the measure	Reason for undertaking measure	Expected benefits	Assessment and reporting			How this measure will be secured
				Methods	Quantitative	Qualitative	
	using communal air source heat pumps.	quantifies the impact on NO_x emissions. compared with other options such as CHP.	NO_x emissions as compared to connection to a standalone energy centre with CHP/boilers.				plans and by condition.
Transport emissions							
Low-emission construction vehicles	Use of low-emission construction plant and construction vehicles during the construction phase. Euro VI Heavy Goods Vehicles (HGVs) will be used.	In line with the Dust and Emissions, and Sustainable Design and Construction SPGs.	Reduced contribution of emissions to background concentrations and pollution hotspots. Reduce permitted emissions of NOx from 180mg/km (Euro 5) to 80mg/km.	Transport Assessment	N	Y	Secured through approved plans. Subject to S106 agreement.
				Air Quality Assessment	N	Y	
Cycle Parking	Cycle parking will exceed London Plan standards. Development Area 1 proposes a minimum of 1,204 long stay cycle parking spaces. Short stay cycle parking spaces would exceed demand.	To encourage active travel and reduce transport-related emissions. Significantly reduce the number of car trips under 5 miles.	Reduced contribution of vehicle emissions to background concentrations and pollution hotspots.	Transport Assessment/ Travel Plan	N	Y	Secured through part condition / part section 106 agreement.

Table A1: Air Quality Positive Matrix – Application A (Development Area 1)

Measure	Summary of the measure	Reason for undertaking measure	Expected benefits	Assessment and reporting			How this measure will be secured
				Methods	Quantitative	Qualitative	
EV charging points	Review (with the aim of increasing) the provision of EV charging infrastructure - five years post completion of Development Area 1.	To further reduce transport related NO_2 emissions once Development Area 1 is operational.	Reduced contribution of emissions to background concentrations and pollution hotspots.	Delivered through updated Travel Plans	N	Y	Secured through condition.
Low Car Scheme	Limited car parking spaces. A parking ratio of 0.39 car parking spaces per residential unit is well within the London Plan standards for a development in Outer London, which has a maximum permitted parking ratio of 0.75 for a PTAL of 2-4.	To reduce transport related NO_2, PM_{10} and $PM_{2.5}$ emissions once the Development Area 1 is operational.	Reduced emissions of NO_2, PM_{10} and $PM_{2.5}$ in the local area. The emissions could be reduced by 48% when compared to the same Development with a parking ratio of 0.75.	Transport Assessment / Travel Plan	N	Y	Secured through part condition / part section 106 agreement.
	Review (with the aim of reducing) the number of carparking spaces - five years post completion of Development Area 1.			Delivered through updated Travel Plans	N	Y	Secured through condition.

Table A1: Air Quality Positive Matrix – Application A (Development Area 1)

Measure	Summary of the measure	Reason for undertaking measure	Expected benefits	Assessment and reporting			How this measure will be secured
				Methods	Quantitative	Qualitative	
Sustainable Travel Plan	Travel Plan prepared for the Development's residential and non-residential land uses to encourage the use of sustainable transport and realise the benefits of walking and cycling to and from the Development Area 1. The Travel Plan will be updated to be target driven, including specific emission reductions. The Travel Plan will include details on smarter delivery practices that will be adopted and further detail on cycle infrastructure.	To reduce transport related NO_2, PM_{10} and $PM_{2.5}$ emissions once Development Area 1 is operational.	Increased use of sustainable transport, walking and cycling. Reduced contribution of emissions to background concentrations and pollution hotspots. If 41% of short car trips were instead undertaken by walking or cycling, carbon emissions from car travel could reduce by 4.5%, or 1.15 kgCO2e per person per week[3].	Transport Assessment/ Travel Plan	N	Y	Secured through part condition / part section 106 agreement.

[3] Neves (Transport for London) and Brand (Environmental Change Institute). May 2019. Assessing the potential for carbon emissions savings from replacing short car trips with walking and cycling using a mixed GPS-travel diary approach. Elsevier, London.

Table A1: Air Quality Positive Matrix – Application A (Development Area 1)

Measure	Summary of the measure	Reason for undertaking measure	Expected benefits	Assessment and reporting			How this measure will be secured
				Methods	Quantitative	Qualitative	
Delivery and Servicing	Leases would only be granted subject to ensuring deliveries would be made by sustainable transport modes, such as electric vehicles or cargo bikes.	To reduce transport related NO_2, PM_{10} and $PM_{2.5}$ emissions once Development Area 1 is operational.	Reduced emissions of NO_2, PM_{10} and $PM_{2.5}$ in the local area.	Delivered through updated Delivery and Servicing Management Plan	N	Y	Secured through condition.
Innovation and Futureproofing							
Future Resilience	Ensure that the buildings and spaces built are suitable for occupation and use for their anticipated lifetime.	In line with the Sustainable Design and Construction SPG.	The Development lasts its anticipated lifetime.	Design and Access Statement	N	Y	Secured through approved plans.

Table A2: Air Quality Positive Matrix – Application A (Development Area 2)

Measure	Summary of the measure	Reason for undertaking measure	Expected benefits	Assessment and reporting			How this measure will be secured
				Methods	Quantitative	Qualitative	
Better design and reducing exposure							
Best practice construction –emissions	The Site construction logistics will be designed to reduce exposure for existing residents nearby and to reduce exposure for the workforce. NRMM will meet and where possible exceed the GLA requirements.	Reducing emissions from the construction phase.	Reduced emissions from the construction phase.	Reported via commitment from contractors.	N	Y	Agreed through the CEMP.
Building Design	Development Area 2 has been designed set back from roads with commercial elements generally on the ground floor to keep future residents away from the main sources of road pollution.	Reducing NO_2, PM_{10} and $PM_{2.5}$ exposure to future users.	Reduced exposure from poor air quality.	Air quality assessment, detailed dispersion modelling.	Y	N	Secured through approved plans.

Table A2: Air Quality Positive Matrix – Application A (Development Area 2)

Measure	Summary of the measure	Reason for undertaking measure	Expected benefits	Assessment and reporting			How this measure will be secured
				Methods	Quantitative	Qualitative	
	The Development has been designed to avoid creating any street canyons and include building forms that aid dispersion.	Reduce the potential to increase pollutant concentrations on surrounding roads.	Reduced exposure from poor air quality.	Air quality assessment, detailed dispersion modelling.	Y	N	Secured through approved plans.
Ventilation strategy	Passive ventilation strategy on all habitable rooms.	Acceptable air quality is provided to future residents without requirement for mechanical ventilation.	Future residents will experience acceptable air quality without recourse to energy-intensive ventilation systems. Natural ventilation dilutes and control sources of contamination within a building, thus improving indoor air quality.	Air quality assessment shows air quality acceptable for future residents.	Y	N	Secured through approved plans.

Table A2: Air Quality Positive Matrix – Application A (Development Area 2)

Measure	Summary of the measure	Reason for undertaking measure	Expected benefits	Assessment and reporting			How this measure will be secured
				Methods	Quantitative	Qualitative	
Non-toxic building materials	Non-toxic building materials to be used during construction and refit. To protect internal air quality, developers should specify environmentally sensitive (non-toxic) building materials and the use of materials or products that produce VOC (volatile organic compounds) and formaldehyde which can affect human health should be avoided.	The use of 'healthy' material options can contribute towards attaining the BREEAM/Building Regulation credits, but a clear audit trail will need to be provided to gain these credits.	Ensures better indoor air quality and protects health of residents and other users of the Development Area 2.	BREEAM assessment.	Y	N	Secured through approved plans and condition.

Landscape Strategy	Green infrastructure incorporated into design of the Development Area 2. Increase in trees planted within Development Area 2. Integration of a mix of trees including species selected to benefit air quality, mass planting and lawn areas would be incorporated into the design. Green or brown roofs to be considered as part of the Development Area 2.	In line with the Sustainable Design and Construction SPG.	Green infrastructure provides a comparatively large surface area for pollutant dispersion, with the rough surface of different heights increasing mixing and pollution dispersal. Hedges will form a barrier to street-level air pollution. Urban greening has been identified as a measure to help adapt London to future climates. Green infrastructure can have numerous benefits including: urban cooling, through shading and evapotranspiration; reduced runoff, through the absorption of rainfall; reduced energy demand, through insulation of the property; improved air quality; improved biodiversity; enhanced amenity and visual interest, including in neighbourhoods and high streets and helping to create a sense of place; better quality of life for residents and workers; and for health and well-being, including tackling obesity and mental health by offering pleasant opportunities for exercise.	Landscape assessment.	N	Y	Secured through approved plans.
Building Emissions							
Energy Strategy	The heat demand for Development Area 2 of Application A will be met	The Energy Strategy sets out the rationale for the measure and	The selected option will meet the carbon emission targets but will also deliver a 95% reduction in on-	Energy Strategy	N	Y	Secured through approved plans and by condition.

Table A2: Air Quality Positive Matrix – Application A (Development Area 2)

Measure	Summary of the measure	Reason for undertaking measure	Expected benefits	Assessment and reporting			How this measure will be secured
				Methods	Quantitative	Qualitative	
	using communal air source heat pumps.	quantifies the impact on NO_x emissions. compared with other options such as CHP.	site NO_x emissions as compared to connection to a standalone energy centre with CHP/boilers.				
Transport emissions							
Low-emission construction vehicles	Use of low-emission construction plant and construction vehicles during the construction phase. Euro VI Heavy Goods Vehicles (HGVs) will be used.	In line with the Dust and Emissions, and Sustainable Design and Construction SPGs.	Reduced contribution of emissions to background concentrations and pollution hotspots. Reduce permitted emissions of NOx from 180mg/km (Euro 5) to 80mg/km.	Transport Assessment	N	Y	Secured through approved plans. Subject to S106 agreement.
				Air Quality Assessment	N	Y	
Cycle Parking	Cycle parking will exceed London Plan standards. Development Area 2 proposes a minimum of 1,044 long stay cycle parking spaces. Short stay cycle parking spaces would exceed demand.	To encourage active travel and reduce transport-related emissions. Significantly reduce the number of car trips under 5 miles.	Reduced contribution of vehicle emissions to background concentrations and pollution hotspots.	Transport Assessment/ Travel Plan	N	Y	Secured through part condition / part section 106 agreement.

Table A2: Air Quality Positive Matrix – Application A (Development Area 2)

Measure	Summary of the measure	Reason for undertaking measure	Expected benefits	Assessment and reporting			How this measure will be secured
				Methods	Quantitative	Qualitative	
EV charging points	Review (with the aim of increasing) the provision of EV charging infrastructure - five years post completion of Development Area 2.	To further reduce transport related NO_2 emissions once Development Area 2 is operational.	Reduced contribution of emissions to background pollution and pollution hotspots.	Delivered through updated Travel Plans	N	Y	Secured through condition.
Low Car Scheme	Limited car parking spaces. A parking ratio of 0.39 car parking spaces per residential unit is well within the London Plan standards for a development in Outer London, which has a maximum permitted parking ratio of 0.75 for a PTAL of 2-4.	To reduce transport related NO_2, PM_{10} and $PM_{2.5}$ emissions once the Development Area 2 is operational.	Reduced emissions of NO_2, PM_{10} and $PM_{2.5}$ in the local area. The emissions could be reduced by 48% when compared to the same Development with a parking ratio of 0.75.	Transport Assessment / Travel Plan	N	Y	Secured through part condition / part section 106 agreement.
	Review (with the aim of reducing) the number of carparking spaces - five years post completion of Development Area 2.			Delivered through updated Travel Plans	N	Y	Secured through condition.

Table A2: Air Quality Positive Matrix – Application A (Development Area 2)

Measure	Summary of the measure	Reason for undertaking measure	Expected benefits	Assessment and reporting			How this measure will be secured
				Methods	Quantitative	Qualitative	
Sustainable Travel Plan	Travel Plan prepared for the Development's residential and non-residential land uses to encourage the use of sustainable transport and realise the benefits of walking and cycling to and from the Development Area 1. The Travel Plan will be updated to be target driven, including specific emission reductions. The Travel Plan will include details on smarter delivery practices that will be adopted and further detail on cycle infrastructure.	To reduce transport related NO_2, PM_{10} and $PM_{2.5}$ emissions once Development Area 2 is operational.	Increased use of sustainable transport, walking and cycling. Reduced contribution of emissions to background concentrations and pollution hotspots. If 41% of short car trips were instead undertaken by walking or cycling, carbon emissions from car travel could reduce by 4.5%, or 1.15 kgCO2e per person per week[4].	Transport Assessment/ Travel Plan	N	Y	Secured through part condition / part section 106 agreement.

[4] Neves (Transport for London) and Brand Environmental Change Institute. May 2019. Assessing the potential for carbon emissions savings from replacing short car trips with walking and cycling using a mixed GPS-travel diary approach. Elsevier, London.

Table A2: Air Quality Positive Matrix – Application A (Development Area 2)

Measure	Summary of the measure	Reason for undertaking measure	Expected benefits	Assessment and reporting			How this measure will be secured
				Methods	Quantitative	Qualitative	
Delivery and Servicing	Leases would only be granted subject to ensuring deliveries would be made by sustainable transport modes, such as electric vehicles or cargo bikes.	To reduce transport related NO_2, PM_{10} and $PM_{2.5}$ emissions once Development Area 2 is operational.	Reduced emissions of NO_2, PM_{10} and $PM_{2.5}$ in the local area.	Delivered through updated Delivery and Servicing Management Plan	N	Y	Secured through condition.
Innovation and Futureproofing							
Future Resilience	Ensure that the buildings and spaces built are suitable for occupation and use for their anticipated lifetime.	In line with the Sustainable Design and Construction SPG.	The Development lasts its anticipated lifetime.	Design and Access Statement	N	Y	Secured through approved plans.

Table A3: Air Quality Positive Matrix – Application B

Measure	Summary of the measure	Reason for undertaking measure	Expected benefits	Assessment and reporting			How this measure will be secured
				Methods	Quantitative	Qualitative	
Better design and reducing exposure							
Best practice construction –emissions	The Site construction logistics will be designed to reduce exposure for existing residents nearby and to reduce exposure for the workforce. NRMM will meet and where possible exceed the GLA requirements.	Reducing emissions from the construction phase.	Reduced emissions from the construction phase.	Reported via commitment from contractors.	N	Y	Agreed through the CEMP.
Building Design	Application B has been designed set back from roads with commercial elements generally on the ground floor to keep future school users away from the main sources of road pollution.	Reducing NO_2, PM_{10} and $PM_{2.5}$ exposure to future users.	Reduced exposure from poor air quality.	Air quality assessment, detailed dispersion modelling.	Y	N	Secured through approved plans.

Table A3: Air Quality Positive Matrix – Application B

Measure	Summary of the measure	Reason for undertaking measure	Expected benefits	Assessment and reporting			How this measure will be secured
				Methods	Quantitative	Qualitative	
	The Development has been designed to avoid creating any street canyons and include building forms that aid dispersion.	Reduce the potential to increase pollutant concentrations on surrounding roads.	Reduced exposure from poor air quality.	Air quality assessment, detailed dispersion modelling.	Y	N	Secured through approved plans.
Ventilation strategy	Passive ventilation strategy on all habitable rooms.	Acceptable air quality is provided to future residents without requirement for mechanical ventilation.	Future residents will experience acceptable air quality without recourse to energy-intensive ventilation systems. Natural ventilation dilutes and control sources of contamination within a building, thus improving indoor air quality.	Air quality assessment shows air quality acceptable for future residents.	Y	N	Secured through approved plans.

Table A3: Air Quality Positive Matrix – Application B

Measure	Summary of the measure	Reason for undertaking measure	Expected benefits	Assessment and reporting			How this measure will be secured
				Methods	Quantitative	Qualitative	
Non-toxic building materials	Non-toxic building materials to be used during construction and refit. To protect internal air quality, developers should specify environmentally sensitive (non-toxic) building materials and the use of materials or products that produce VOC (volatile organic compounds) and formaldehyde which can affect human health should be avoided.	The use of 'healthy' material options can contribute towards attaining the BREEAM/Building Regulation credits, but a clear audit trail will need to be provided to gain these credits.	Ensures better indoor air quality and protects health of school users.	BREEAM assessment.	Y	N	Secured through approved plans and condition.

Landscape Strategy	Green infrastructure incorporated into design of the Application B. Increase in trees planted within Application B. Integration of a mix of trees including species selected to benefit air quality, mass planting and lawn areas would be incorporated into the design. Integration of a mix of trees including species selected to benefit air quality, mass planting and lawn areas would be incorporated into the design.	In line with the Sustainable Design and Construction SPG.	Green infrastructure provides a comparatively large surface area for pollutant dispersion, with the rough surface of different heights increasing mixing and pollution dispersal. Hedges will form a barrier to street-level air pollution. Urban greening has been identified as a measure to help adapt London to future climates. Green infrastructure can have numerous benefits including: urban cooling, through shading and evapotranspiration; reduced runoff, through the absorption of rainfall; reduced energy demand, through insulation of the property; improved air quality; improved biodiversity; enhanced amenity and visual interest, including in neighbourhoods and high streets and helping to create a sense of place; better quality of life for residents and workers; and for health and well-being, including tackling obesity and mental health by offering pleasant opportunities for exercise.	Landscape assessment.	N	Y	Secured through approved plans.
Building Emissions							
Energy Strategy	The heat demand for Application B will be met	The Energy Strategy sets out the rationale for the measure and	The selected option will meet the carbon emission targets but will also deliver a 95% reduction in on-	Energy Strategy	N	Y	Secured through approved plans and by condition.

Table A3: Air Quality Positive Matrix – Application B

Measure	Summary of the measure	Reason for undertaking measure	Expected benefits	Assessment and reporting			How this measure will be secured
				Methods	Quantitative	Qualitative	
	using communal air source heat pumps.	quantifies the impact on NO_x emissions. compared with other options such as CHP.	site NO_x emissions as compared to connection to a standalone energy centre with CHP/boilers.				
Transport emissions							
Low-emission construction vehicles	Use of low-emission construction plant and construction vehicles during the construction phase. Euro VI Heavy Goods Vehicles (HGVs) will be used.	In line with the Dust and Emissions, and Sustainable Design and Construction SPGs.	Reduced contribution of emissions to background concentrations and pollution hotspots. Reduce permitted emissions of NOx from 180mg/km (Euro 5) to 80mg/km.	Transport Assessment	N	Y	Secured through approved plans. Subject to S106 agreement.
				Air Quality Assessment	N	Y	
Cycle Parking	Cycle parking will exceed London Plan standards. Application B proposes 165 long stay 14 short stay cycle parking spaces.	To encourage active travel and reduce transport-related emissions. Significantly reduce the number of car trips under 5 miles.	Reduced contribution of vehicle emissions to background concentrations and pollution hotspots.	Transport Assessment/ Travel Plan	N	Y	Secured through part condition / part section 106 agreement.

Table A3: Air Quality Positive Matrix – Application B

Measure	Summary of the measure	Reason for undertaking measure	Expected benefits	Assessment and reporting			How this measure will be secured
				Methods	Quantitative	Qualitative	
EV charging points	Electric vehicle charging points will meet London Plan standards (20% of all parking spaces would be provided with active electric charging infrastructure.	To reduce transport related NO_2 emissions once the school is operational by 20%.	Reduced contribution of emissions to background pollution and pollution hotspots.	Transport Assessment/ Travel Plan	N	Y	Secured through part condition / part section 106 agreement.
	Review (with the aim of increasing) the provision of EV charging infrastructure - five years post completion of the school.	To further reduce transport related NO_2 emissions once the school is operational.		Delivered through updated Travel Plans	N	Y	Secured through condition.
Low Car Scheme	Limited car parking spaces with 15 car parking spaces.	To reduce transport related NO_2, PM_{10} and $PM_{2.5}$ emissions once the school is operational.	Reduced emissions of NO_2, PM_{10} and $PM_{2.5}$ in the local area.	Transport Assessment / School Travel Plan	N	Y	Secured through part condition / part section 106 agreement.

Table A3: Air Quality Positive Matrix – Application B

Measure	Summary of the measure	Reason for undertaking measure	Expected benefits	Assessment and reporting			How this measure will be secured
				Methods	Quantitative	Qualitative	
	Review (with the aim of reducing) the number of carparking spaces - five years post completion of the school.			Delivered through updated Travel Plans	N	Y	Secured through condition.
Sustainable Travel Plan	The school Travel Plan prepared for the school to encourage the use of sustainable transport and realise the benefits of walking and cycling to and from the school. The Travel Plan will be updated to be target driven, including specific emission reductions. The Travel Plan will include details on smarter delivery practices that will be adopted and further detail on cycle infrastructure.	To reduce transport related NO_2, PM_{10} and $PM_{2.5}$ emissions once the school is operational.	Increased use of sustainable transport, walking and cycling. Reduced contribution of emissions to background concentrations and pollution hotspots. If 41% of short car trips were instead undertaken by walking or cycling, carbon emissions from car travel could reduce by 4.5%, or 1.15 kgCO2e per person per week[5].	Transport Assessment/ Travel Plan Delivered through updated Travel Plans	N	Y	Secured through part condition / part section 106 agreement.

Table A3: Air Quality Positive Matrix – Application B

Measure	Summary of the measure	Reason for undertaking measure	Expected benefits	Assessment and reporting			How this measure will be secured
				Methods	Quantitative	Qualitative	
Innovation and Futureproofing							
Future Resilience	Ensure that the buildings and spaces built are suitable for occupation and use for their anticipated lifetime.	In line with the Sustainable Design and Construction SPG.	The Development lasts its anticipated lifetime.	Design and Access Statement	N	Y	Secured through approved plans.

[5] Neves (Transport for London) and Brand Environmental Change Institute. May 2019. Assessing the potential for carbon emissions savings from replacing short car trips with walking and cycling using a mixed GPS-travel diary approach. Elsevier, London.

4. Implementation and Monitoring

4.1. The Air Quality Positive Measures detailed within the above matrix will be secured as part of the planning applications and implemented via part condition and part Section 106 agreements.

Consultation

4.2. Air quality positive measures were not directly consulted on with relevant stakeholders owing to time constraints from publication of the Air Quality Positive Draft Guidance in November 2021 to submission of the planning applications (March 2022). However, stakeholder consultation has been undertaken throughout the planning application process, and post submission following adoption of the AQPG on 8th February 2023.

LBRuT

4.3. LBRuT's Air Quality Supplementary Planning Document (SPD)[6] and Air Quality Action Plan (AQAP)[7] were reviewed when preparing the AQPS, however neither made reference to any air quality positive measures.

Transport for London (TfL)

4.4. Chapter 8: Transport and Access of the March 2022 ES states that TfL were consulted regarding public transport improvements, and agreement of a low residential parking ratio of approximately 0.39 spaces per residential unit.

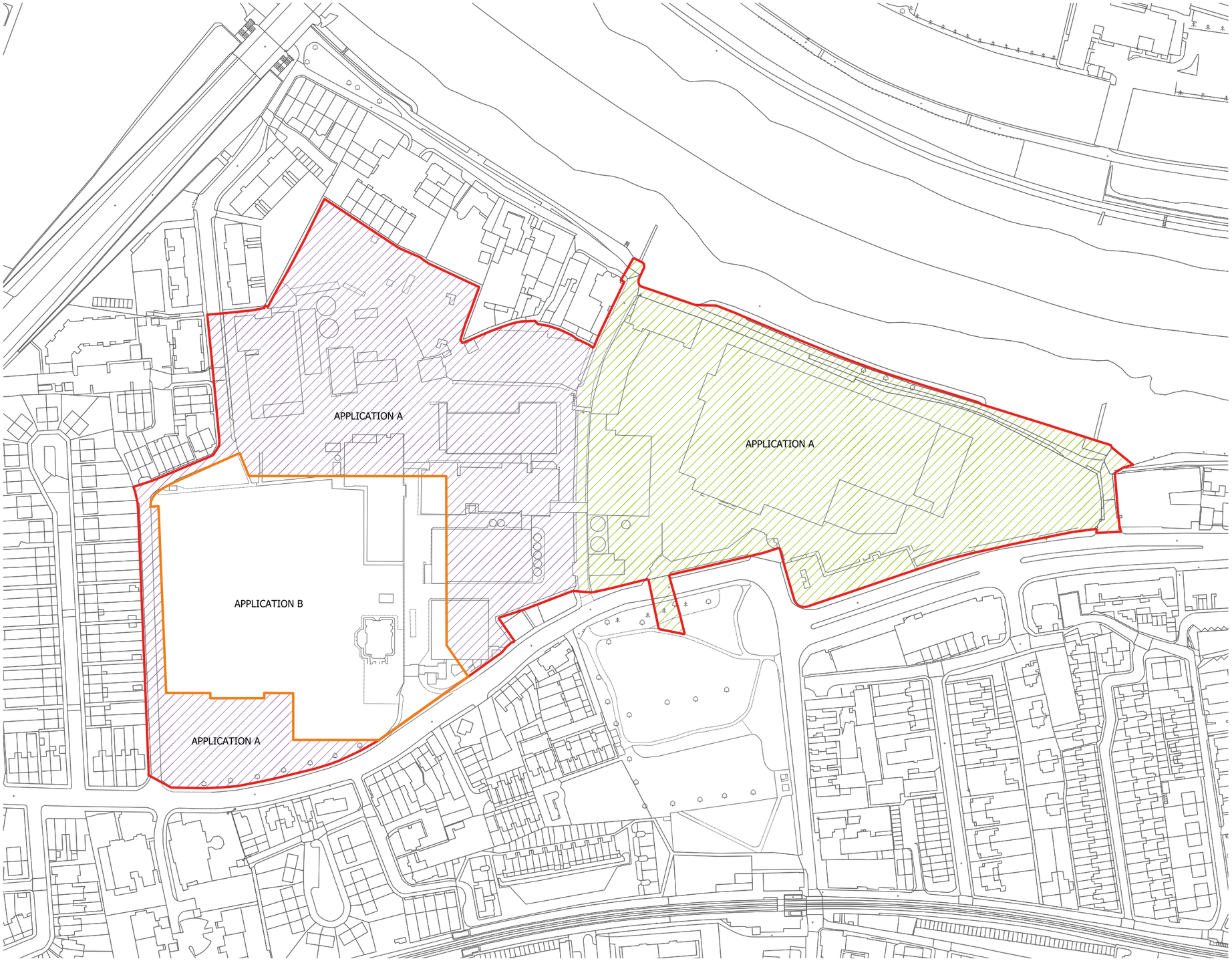
Implementation Plan

Table A4: Implementation Plan

Air Quality Positive Measures	How will the measure be secured?	Method of reporting	Monitoring
Better design and reducing exposure			
Best practice construction – emissions	Planning Condition	CEMP	On-site updates and information on local air quality monitoring where necessary to be provided to the local authority. If exceedences of site action levels are recorded, further investigation or action would be instigated by the principal contractor. This may involve a more detailed assessment of the monitoring data to determine the likely contribution of the construction site activities to the threshold exceedance, investigation of site activities and mitigation, or if appropriate cessation of the work.
Building Design	Planning Condition / Reserved Matters	Detailed design plans	None required
Ventilation strategy	Planning Condition	Detailed design plans	None required

[6] London Borough of Richmond upon Thames Supplementary Planning Document - Air Quality, June 2020
[7] London Borough Of Richmond Upon Thames Air Quality Action Plan 2019-2024

Air Quality Positive Measures	How will the measure be secured?	Method of reporting	Monitoring
Non-toxic building materials	BREEAM Approval	BREEAM	Indoor air quality testing, if required, should be carried out prior to occupation but once the Pre-Occupancy Flush-Out has been completed.
Landscape Strategy	Planning Condition / Reserved Matters	Detailed design plans	None required
Building Emissions			
Energy Strategy	Detailed design plans	Energy Strategy	Energy Strategy.
Transport emissions			
Low-emission construction plant and construction vehicles	Planning Condition	CEMP	Air quality monitoring would be undertaken by LBRuT through their local monitoring programme. The cost of the monitoring and any associated reporting would be secured through a s106 agreement and would be the responsibility of LBRuT to undertake. The monitoring would be undertaken for a three-year period. The target of the monitoring would be to ascertain if local air quality concentrations exceed the UK Air Quality Strategy Objectives (AQS) or not. If exceedences of the UK AQS objectives are recorded, further detailed monitoring would need to be undertaken by LBRuT to ascertain where and why air quality concentrations have increased.
Cycle Parking	Planning Condition	Transport Assessment / Travel Plans	
EV charging points	Planning Condition	Transport Assessment/ Travel Plans	
Low Car Scheme	Planning Condition	Transport Assessment / Travel Plans	
Sustainable Travel Plans	Planning Condition	Travel Plans	
Delivery and Servicing	Planning Condition	Updated Delivery and Servicing Management Plans	
Innovation and Futureproofing			
Future Resilience	Through Planning Approval	DAS	None required.



Application A Boundary

Application B Boundary

Development Area 1

Development Area 2

N

Project Details	WIE18671-100: Stag Brewery
Figure Title	Figure A1: Planning Application Boundaries (Applications A and B)
Figure Ref	WIE18671-100_GR_AQ_A1A
Date	2023
File Location	\\h-lncs\wiel\projects\wie18671\100\graphics\aq\issued figures

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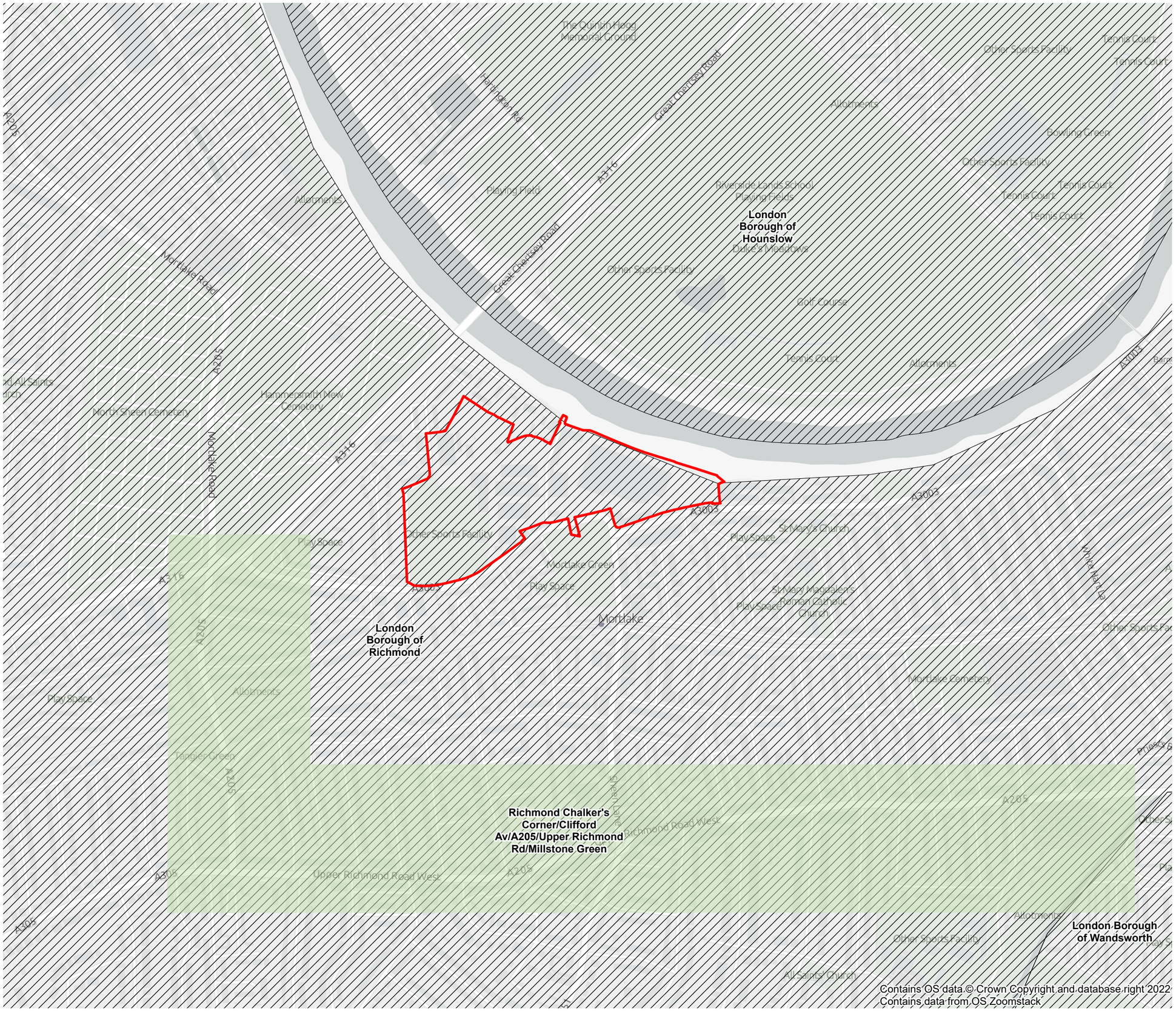

Planning Application Boundary

AQFA

AQMA

N

0 75 150 300 m

Project Details	WIE18671-100: Stag Brewery
Figure Title	Figure A2: Constraints Map
Figure Ref	WIE18671-100-GIS-AQ-APP10.4-A2A
Date	February 2023
File Location	\\s-lncs\wiel\projects\wie18671\100\gis\aq

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Pragmatic by nature and dedicated to getting the job done to the highest possible standard.

Professional

Operating at pace with integrity to deliver technical and robust solutions.

Environmentally aware

We understand our responsibility to the environment, it shapes our decision making and informs our practice.

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