

Central Somers Town CIP

Air Quality Assessment

DECEMBER 2015

Todd Longstaffe-Gowan Ltd.

atelier ten

STUDIO DEKKA

Turley



Intended for
London Borough of Camden

Date
December 2015

Project Number
UK11-22137


CENTRAL SOMERS TOWN, LONDON BOROUGH OF CAMDEN AIR QUALITY ASSESSMENT

**CENTRAL SOMERS TOWN, LONDON BOROUGH OF
CAMDEN
AIR QUALITY ASSESSMENT**

Project No. **UK1122137**
Issue No. **3**
Date **16/12/2015**
Made by **Lesley Vining / Myles Tatlock**
Checked by **Hannah Dalton**
Approved by **Lesley Vining**

Made by: Lesley Vining / Myles Tatlock

Checked/Approved by:



This report has been prepared by Ramboll Environ with all reasonable skill, care and diligence, and taking account of the Services and the Terms agreed between Ramboll Environ and the Client. This report is confidential to the Client, and Ramboll Environ accepts no responsibility whatsoever to third parties to whom this report, or any part thereof, is made known, unless formally agreed by Ramboll Environ beforehand. Any such party relies upon the report at their own risk.

Ramboll Environ disclaims any responsibility to the Client and others in respect of any matters outside the agreed scope of the Services.

Version Control Log

Revision	Date	Made by	Checked by	Approved by	Description
1	06/11/2015	MT/LV	LV	LV	Incomplete Draft
2	13/11/2015	MT/LV	HD	LV	Final Draft
3	16/12/2015	MT/LV	HD	LV	Final

Ramboll Environ
Aston Court
Pynes Hill
Exeter
Devon
EX2 5AZ
United Kingdom
T +44 139 244 0600
www.ramboll-environ.com

CONTENTS

EXECUTIVE SUMMARY	I
1. INTRODUCTION	1
1.1 Overview	1
1.2 Scope and Objectives	1
1.3 Consultations	1
2. SITE DESCRIPTION	2
2.1 Site Location	2
2.2 Site Description	3
2.3 Proposed Development	3
3. POLICY CONTEXT	6
3.1 International Legislation and Policy	6
3.2 Local Air Quality Management	6
3.3 Planning Policy	8
3.4 Other Guidance	12
4. METHODOLOGY	13
4.1 Introduction	13
4.2 Existing Background and Baseline Concentrations	13
4.3 Road Traffic Emissions	13
4.4 Railway Emissions from St Pancras Station	15
4.5 Energy Centre Plant Emissions from Phoenix Court DHP and the FCI	16
4.6 Odour, emergency generator and other emissions from the FCI	21
4.7 Demolition and Construction Impacts	24
4.8 Air Quality Neutral Assessment	24
4.9 Significance Criteria	24
5. EXISTING AIR QUALITY	27
5.1 Air Quality Monitoring	27
5.2 Analysis of Data	28
5.3 Defra Predicted Background Maps	29
5.4 Air Quality at the Proposed Development	29
6. CONSTRUCTION PHASE IMPACTS	31
6.1 Introduction	31
6.2 Assessment of Impacts	31
6.3 Mitigation of Construction Impacts	32
6.4 Residual Effects	34
7. OPERATIONAL IMPACTS PLOTS 1 TO 6	35
7.1 Introduction	35
7.2 Predicted Concentrations	35
7.3 Analysis of Results	37
8. OPERATIONAL IMPACTS PLOT 7	38
8.1 Introduction	38
8.2 Energy Centre Emissions	38
8.3 FCI Emergency Generators	43

8.4	FCI Biological Research Facility Sources	59
8.5	FCI Chemical Exhausts	62
8.6	Summary of Potential Impacts at Plot 7, the Tower	63
9.	MITIGATION	64
9.1	Plots 1 to 6	64
9.2	Plot 7	64
10.	AIR QUALITY NEUTRAL ASSESSMENT	65
10.1	Introduction	65
10.2	Building Emissions	65
10.3	Transport Emissions	65
10.4	Analysis of Results	66
11.	ASSESSMENT OF SIGNIFICANCE	67
12.	SUMMARY AND CONCLUSIONS	68

TABLES

Table 3-1: Objectives included in the Air Quality Regulations (England) 2000 for the Purpose of Local Air Quality Management.....	7
Table 3-2: Locations Where Air Quality Objectives Apply	7
Table 4-1: Road Traffic Data	13
Table 4-2: Model Verification	15
Table 4-3: CHP and Boiler Emissions from Phoenix Court DHP	16
Table 4-4: CHP and Boiler Emissions from FCI	16
Table 4-5: Modelled Building Dimensions	18
Table 4-6: Backup Diesel Generator Emissions from the FCI	22
Table 4-7: Biological Research Facility Emissions from the FCI	23
Table 4-8: Chemical Exhaust Emissions from the FCI	23
Table 4-9: Impact Descriptors for Individual Receptors	24
Table 4-10: Formaldehyde Assessment Levels	25
Table 4-11: Benzene Assessment Levels	25
Table 4-12: Thiol Assessment Levels	25
Table 5-1: Automatic Monitoring Annual Mean NO ₂ Concentrations (µg/m ³) ..	27
Table 5-2: Automatic Monitoring Number of Exceedances of the NO ₂ 1 Hour Mean Target	27
Table 5-3: Diffusion Tube Annual Mean NO ₂ Concentrations	27
Table 5-4: Automatic Monitoring Annual Mean PM ₁₀ Concentrations (µg/m ³) ..	27
Table 5-5: Automatic Monitoring Number of Exceedances of the PM ₁₀ 24 Hour Mean Target	28
Table 5-6: Defra Predicted Annual Mean Background Concentrations 2014...	29
Table 6-1: Dust Emission Magnitude for Each Construction Phase	31
Table 6-2: Sensitivity of Area to Dust Impacts (taking into account distance to construction activity).....	31
Table 6-3: Risk of Dust Impacts in the absence of mitigation for each Construction Phase	32
Table 6-4: Recommended Dust Mitigation Measures for High Risk Sites	32
Table 7-1: Predicted Annual Mean NO ₂ Concentrations at Plots 1 to 6 and within Purchase Street Open Space and Polygon Road Park.....	35
Table 8-1: Predicted Annual Mean NO ₂ Concentrations at Plot 7 NE Facade ..	38
Table 8-2: Predicted Annual Mean NO ₂ Concentrations at Plot 7 SE Facade...	39
Table 8-3: Predicted Annual Mean NO ₂ Concentrations at Plot 7 SW Facade .	41
Table 8-4: Predicted Annual Mean NO ₂ Concentrations at Plot 7 NW Facade .	42
Table 8-5: Predicted Worst Case 99.8 th Percentile 1 Hour NO ₂ Concentrations from Black Start Operations of FCI Emergency Generators at Plot 7 NE Facade	44

Table 8-6: Predicted Worst Case 99.8 th Percentile 1 Hour NO ₂ Concentrations from Black Start Operations of FCI Emergency Generators at Plot 7 SE Facade	45
Table 8-7: Predicted Worst Case 99.8 th Percentile 1 Hour NO ₂ Concentrations from Black Start Operations of FCI Emergency Generators at Plot 7 SW Facade	46
Table 8-8: Predicted Worst Case 99.8 th Percentile 1 Hour NO ₂ Concentrations from Black Start Operations of FCI Emergency Generators at Plot 7 NW Facade	47
Table 8-9: Predicted 99.8 th Percentile 1 Hour NO ₂ Concentrations from Worst Case Maintenance Operations of FCI Emergency Generators at Plot 7 NE Facade.....	49
Table 8-10: Predicted 99.8 th Percentile 1 Hour NO ₂ Concentrations from Worst Case Maintenance Operations of FCI Emergency Generators at Plot 7 SE Facade.....	50
Table 8-11: Predicted 99.8 th Percentile 1 Hour NO ₂ Concentrations from Worst Case Maintenance Operations of FCI Emergency Generators at Plot 7 SW Facade.....	52
Table 8-12: Predicted 99.8 th Percentile 1 Hour NO ₂ Concentrations from Worst Case Maintenance Operations of FCI Emergency Generators at Plot 7 NW Facade.....	53
Table 8-13: Predicted 99.8 th Percentile 1 Hour NO ₂ Concentrations from Typical Maintenance Operations of FCI Emergency Generators at Plot 7 NE Facade ..	54
Table 8-14: Predicted 99.8 th Percentile 1 Hour NO ₂ Concentrations from Typical Maintenance Operations of FCI Emergency Generators at Plot 7 SE Facade ..	55
Table 8-15: Predicted 99.8 th Percentile 1 Hour NO ₂ Concentrations from Typical Maintenance Operations of FCI Emergency Generators at Plot 7 SW Façade .	57
Table 8-16: Predicted 99.8 th Percentile 1 Hour NO ₂ Concentrations from Typical Maintenance Operations of FCI Emergency Generators at Plot 7 NW Façade .	58
Table 8-17: Maximum 100 th Percentile 1 hour mean Formaldehyde Concentrations arising from room fumigation NE and SE Facades	60
Table 8-18: Maximum 100 th Percentile 1 hour mean Formaldehyde Concentrations arising from room fumigation, SW and NW Facades.....	61
Table 8-19: Maximum predicted concentrations of VOCs and Thiols arising from general operations at the FCI at all façade receptors on Plot 7.....	62
Table 8-20: Maximum predicted concentrations of VOCs and Thiols arising from a spillage the FCI at all façade receptors on Plot 7	62
Table 10-1: Air Quality Neutral Assessment - Building Emissions	65
Table 10-2: Air Quality Neutral Assessment - Transport Emissions Benchmark (TEB).....	65

FIGURES

Figure 2-1: Site Location	2
Figure 2-2: Site Redline Boundary Plan	3
Figure 2-3: Red Line Boundary	4
Figure 2-4 Plot Locations	5
Figure 4-1: Buildings Included in Modelling.....	18
Figure 4-2: Energy Centre Stack Locations	19
Figure 4-3: Ground Level Receptor Locations	20
Figure 4-4: Brill Place Tower Receptor Locations.....	20
Figure 4-5: Other Release Points at the FCI	21
Figure 5-1: Monitoring Site Locations	28

Air Quality Assessment

Central Somers Town, London Borough of Camden

EXECUTIVE SUMMARY

Ramboll Environ UK Ltd ('Ramboll Environ') has been commissioned by the London Borough of Camden ('the Applicant') to undertake an air quality assessment to support a planning application for a proposed residential led mixed use development comprising of seven plots to be built at Central Somers Town, Camden, London (the ('Proposed Development')). The development site ('the Site') which covers some 2.2 hectares is located to the west of St Pancras Station, is currently occupied by a range of uses including a school, community facilities, residential units and greenspace. The Proposed Development would renew the majority of these facilities, whilst increasing the number of residential units and improving the connectivity of the greenspace.

The Proposed Development is located with an AQMA due to predicted high concentrations of existing pollutants. The main source of pollutants is road traffic, but may also be being impacted from emissions associated with St Pancras Station. A review of local monitoring data, together with modelling of the existing situation has indicated that existing air quality is expected to just meet all relevant air quality objectives across the Proposed Development Site at ground level locations with the exception of Brill Place Tower, where existing concentrations may exceed the annual NO₂ objective.

The assessment of potential impacts to air quality during the demolition and construction phase has identified that the activities, together with the location of nearby sensitive receptors results in a high risk of impacts in the absence of suitable mitigation. Mitigation would be provided through a series of measures set out in a detailed dust management plan secured as part of the wider Construction Environmental Management Plan. On this basis the potential for residual effects would be reduced to at worst temporary slight adverse and for the most part would be expected to be negligible.

The Proposed Development would not be expected to result in an increase in local air pollutant concentrations. No car parking would be provided for any of the elements within the Proposed Development and therefore emissions from road vehicle movements would be negligible. Heating and hot water requirements would be provided through connection to an off-Site district heating scheme, therefore emissions of combustion gases associated with on-Site energy plant would also be negligible.

Existing air quality at the proposed residential Plots 1, 2, 3, 5 and 6 is predicted to meet relevant air quality objectives and thus the plots can be developed for residential use without the need for mitigation in the form of mechanical ventilation. Similarly, the air dispersion modelling has predicted that the redevelopment proposals for the school on its current site, would also not require additional mitigation.

The Proposed Development would introduce new residential units into a 25 storey tower block, adjacent to Brill Place. The assessment has indicated that these residential units would be potentially impacted from existing poor air quality from Midland Road and from energy centre and other emissions from the off-Site sources of the Phoenix Court DHP and the FCI. Annual NO₂ concentrations are predicted in excess of the objective at all façade receptors.

The potential for short term impacts arising from the operation of the emergency generators associated with FCI cannot be entirely ruled out. In the event that black start or maintenance operations of the emergency generators coincides with poor dispersion conditions there is the potential that high concentrations of NO₂ would arise at the façade of the Tower. However, black start events would only arise during total power outages and thus would be expected to be both rare and to not persist for prolonged periods. Similarly maintenance operations would only occur for 48 hours per year. On this basis the potential for exceedance of relevant short term air quality objectives is considered minimal.

Each residential unit within the Tower would be provided with mechanical ventilation to provide an alternative source of make-up air to opening windows. The system would rely on sourcing make up air from the façade passed through filters to remove NO_x and particulates. This would provide residents with a clean source of air in the event of a high pollution episode and would provide effective mitigation against potential impacts arising from the Phoenix Court DHP and the FCI.

The Air Quality Neutral Assessment has indicated that the Proposed Development can be considered Air Quality Neutral.

The EPUK/IAQM guidance has been used to assess the overall significance with regard to air quality. The Proposed Development would not increase emissions from either road traffic or on-site energy plant. However, Brill Place Tower would introduce residential receptors into a location where air quality is impacted both by existing traffic emissions and from emissions associated with the FCI and Phoenix Court DHP. Mitigation is proposed to reduce the concentrations of pollutants predicted at the façade and thus exceedance of relevant air quality objectives within Brill Place Tower are unlikely. The assessment therefore concludes that the Proposed Development would not result in a significant effect on air quality.

1. INTRODUCTION

1.1 Overview

Ramboll Environ UK Ltd ('Ramboll Environ') has been commissioned by the London Borough of Camden ('the Applicant') to undertake an air quality assessment to support a planning application for a proposed residential led mixed use development to be built at Central Somers Town, Camden, London (the 'Proposed Development'). The development site ('the Site') which covers some 2.2 hectares is located to the west of St Pancras Station, is currently occupied by a range of uses including a school, community facilities, residential units and greenspace. The Proposed Development would renew the majority of these facilities, whilst increasing the number of residential units and improving the connectivity of the greenspace.

The entirety of the London Borough of Camden (LBC) has been declared an Air Quality Management Area (AQMA). This report addresses the potential impacts arising from the Proposed Development on air quality and also considers the introduction of new residential receptors into a location which has been designated as an AQMA.

1.2 Scope and Objectives

The Site is located within an Air Quality Management Area (AQMA) which covers the entire borough due to potential exceedances of the nitrogen dioxide (NO₂) and particulate matter (PM₁₀) objectives.

The Proposed Development would be car free and would not introduce a significant number of new vehicle movements onto the local road network. Thus the need to quantify potential impacts from road traffic has been scoped out of the assessment.

Furthermore, all elements of the Proposed Development would link into the Phoenix Court District Heating Plant (DHP) for its heating and hot water requirements. Therefore potential emissions from on-site energy plant would be negligible.

However, the Proposed Development would introduce residential receptors into an AQMA. Additionally, there are a number of nearby developments which are currently under construction which have the potential to impact air quality, including the Francis Crick Institute (FCI) and the Phoenix Court DHP. The assessment has therefore assessed the resulting air quality at the Site to determine its suitability in relation to the proposed residential and school uses and the requirement for mitigation measures to ensure that future residents are not exposed to unacceptable levels of poor air.

An assessment has also been carried out to determine whether the Proposed Development would meet the air quality neutral emission benchmarks as provided in the Supplementary Planning Guidance (SPG)¹ provided by the Mayor of London on Sustainable Design and Construction.

Impacts to air quality can also arise during the construction phase. These have been assessed using the Mayor of London's² and the Institute of Air Quality Management Guidance³ for assessing impacts from construction and demolition works.

1.3 Consultations

The scope of the air quality assessment was discussed and agreed through discussion and e-mail correspondence with the Air Quality Officer at LBC, in September and October 2015.

¹ Greater London Authority, 2014. Sustainable Design and Construction Supplementary Planning Guidance

² Greater London Authority, 2014. The Control of Dust and Emissions During Construction and Demolition, Supplementary Planning Guidance

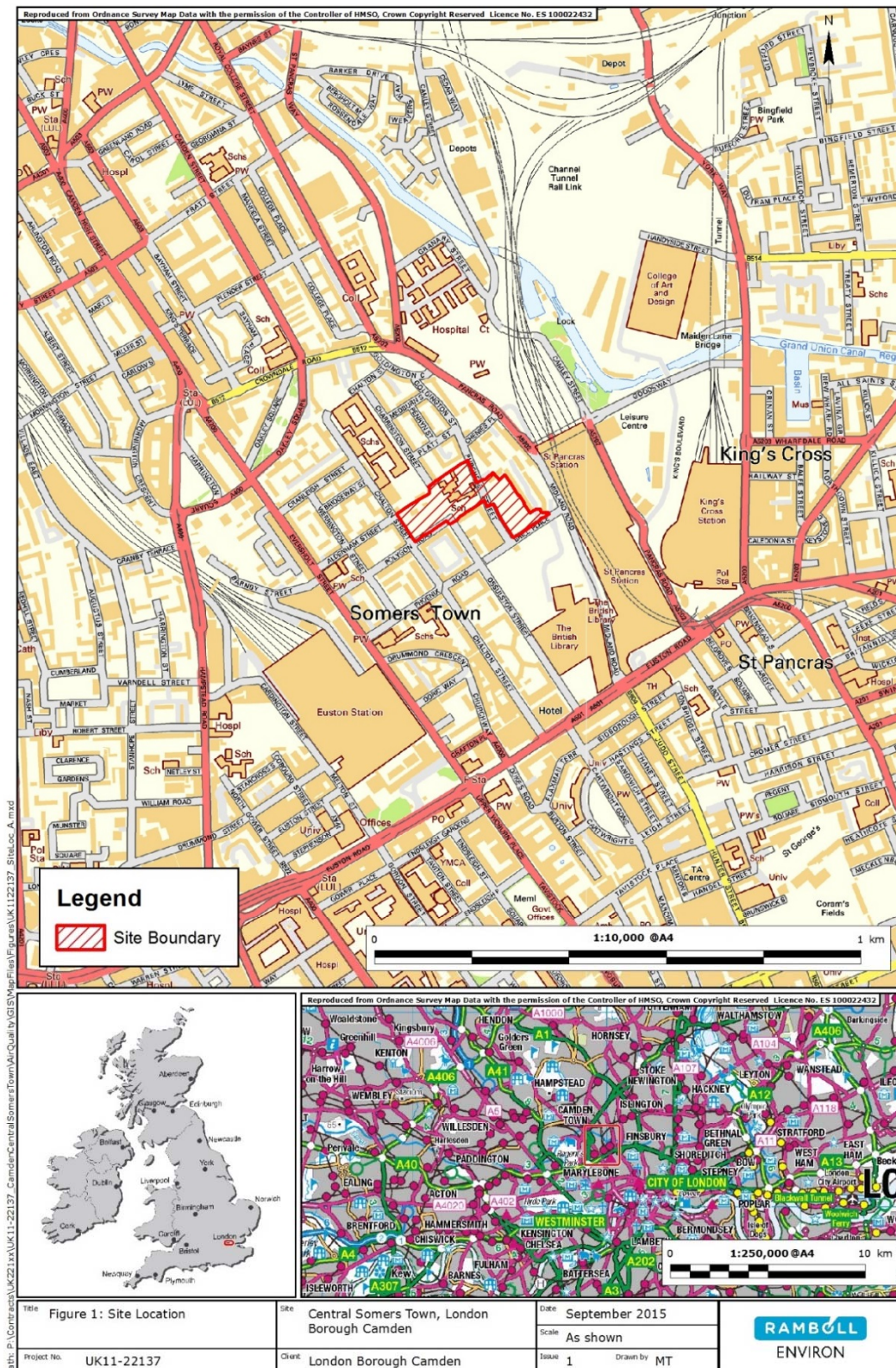
³ Institute of Air Quality Management, 2014, Guidance on the assessment of dust from demolition and construction

2. SITE DESCRIPTION

2.1 Site Location

As shown in Figure 2-1, the Site (at OS grid reference TQ297831) is located from Brill Place in the east over Purchase Street to Chalton Street in the west, approximately 60 m west of St Pancras International Station.

Figure 2-1: Site Location

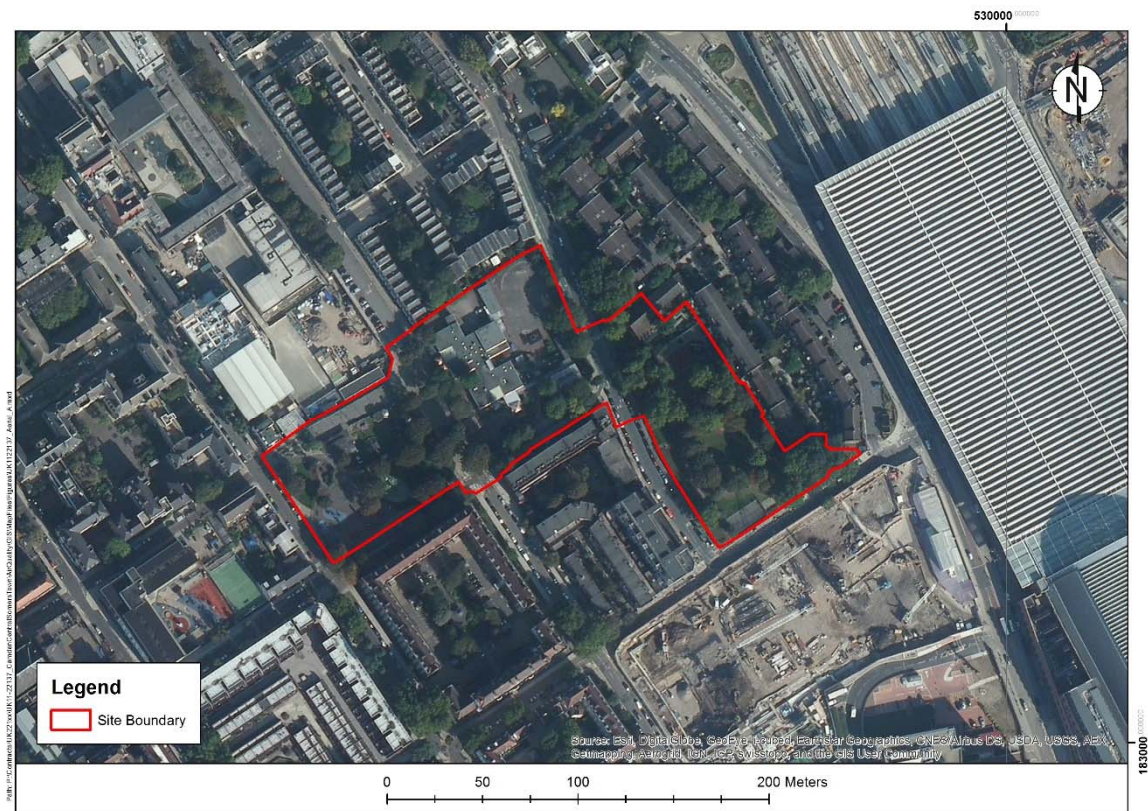


2.2 Site Description

The Site is located in a predominantly residential area. Surrounding land uses include:

- to the north Regent High School and residential properties off Charrington Street, Somers Close and Hamden Close;
- to the east by residential properties adjacent to Coopers Lane;
- to the south by Brill Place and the FCI immediately beyond; and
- to the west by residential properties at Phoenix Court, Walker House and Phyllis Hodges House.

Figure 2-2: Site Redline Boundary Plan



2.3 Proposed Development

The Proposed Development comprises the demolition of existing buildings and the provision of approximately 2,180sq.m replacement school (Use Class D1); approximately 1,765sq.m of community facilities (Use Class D1); approximately 207sq.m of flexible Use Class A1/A2/A3/D1 floorspace and 136 residential units (Use Class C3) over 7 buildings ranging from 3 to 25 storeys in height comprising:

- Plot 1: Community Hub and Housing - Community uses at ground floor (Use Class D1) (approximately 1,554sq.m) to include a children's nursery and community play facility with 10 no. residential units above;
- Plot 2: Charrington Street Apartments - 35 residential units over flexible A1/A2/A3/D1 floorspace at ground level (approximately 137sq.m);
- Plot 3: Charrington Street Terrace Housing - Extension of Grade II listed terrace to provide 3 no. dwellings;
- Plot 4: Edith Neville Primary School and Community Centre - Replacement school (Use Class D1);