

Crawley Data Centre Campus – Non-Technical Report

Digital Realty (UK) Limited (EPR/UP3604MT/A001))



www.eco-act.com
Company registered in England. No 557 5619
Carbon Clear Limited trading as EcoAct
Registered Office: Second Floor, 80 Victoria Street, London, SW1E 5JL

Copyright and Non-Disclosure Notice

The contents and layout of this report are subject to copyright owned by © EcoAct 2024. To the extent that we own the copyright in this report, it may not be copied or used without our prior written agreement for any purpose other than the purpose indicated in this report.

The methodology (if any) contained in this report is provided to you in confidence and must not be disclosed or copied to third parties without the prior written agreement of EcoAct. Disclosure of that information may constitute an actionable breach of confidence or may otherwise prejudice our commercial interests. Any third party who obtains access to this report by any means will, in any event, be subject to the Third-Party Disclaimer set out below.

Third-Party Disclaimer

Any disclosure of this report to a third-party is subject to this disclaimer. The report was prepared by EcoAct at the instruction of, and for use by, our client named on the front of the report. It does not in any way constitute advice to any third-party who is able to access it by any means. EcoAct excludes to the fullest extent lawfully permitted all liability whatsoever for any loss or damage howsoever arising from reliance on the contents of this report. We do not however exclude our liability (if any) for personal injury or death resulting from our negligence, for fraud or any other matter in relation to which we cannot legally exclude liability.



Contents

Site Overview 4

 Site Qualification 4

 Site Location 6

 Environmental Setting 7

 Emissions to Air, Land and Water 8

Site Overview

The Crawley site consists of two adjacent data centres, Crawley (Unit 1 – LGW15) and Crawley North (Unit 2 – LGW16). Crawley Unit 1 and Crawley Unit 2 are owned and managed by Digital Realty (UK) Limited known as 'Digital Realty' and will form a combined permit application known as 'Crawley Data Centre Campus'. This site boundary also includes open land in the southeastern part of the site which is earmarked for future development.

The site is a data hosting facility located in an area approximately 10.29ha in size. The site was a former research laboratory site from the 1970s up to 2010 when it was redeveloped. Digital Realty has been operating the site and maintaining the site ever since.

Both Crawley Unit 1 and Crawley Unit 2 currently form the Crawley Data Centre Campus and are operational 24 hours/day, 7 days/week and each unit is powered by two 132kV high voltage electrical incomers. Both incomers (A and B feeds) supply each unit with electricity, but each unit can also be supported by either supply in isolation. The A and B HV feeds are supplied by different electrical substations, which provides a layer of power resilience to both units.

Diesel standby generators provide electricity generation capacity to power the data centre in the event of a mains power failure. Currently, Crawley Unit 1 has 10 standby generators of which 8 generators are located on the south side of the building and the 2 smaller landlord generators on the central west side of the building. At Crawley Unit 2, there are there are 7 standby generators all located on the south-east side of the building.

Digital Realty currently holds a company-wide ISO 140001 Environmental Management System which includes this site and is summarised in the management summary document.

Site Qualification

In total there are 17 generators located on site. At Crawley Unit 1, 10 generators have a total rated thermal input of 34.2 MW_{th}, two generators are 1.23 MW_{th} and 8 generators are 3.93 MW_{th} each. At Crawley Unit 2, the 7 generators have a total rated thermal input of 38.4MW_{th}, and all 7 generators are 5.49 MW_{th} each. The aggregated total combustion capacity for Crawley Data Centre Campus is 72.6 MW_{th}, which exceeds the 50 MW_{th} threshold, therefore the site is subject to the Environmental Permitting (England and Wales) (Amendment) Regulation 2018. Figure 1 below shows an example of a generator on-site.



Figure 1: Crawley Unit 1 data centre diesel shell and core (landlord) standby generator

Site Location

The Digital Realty Crawley campus has two units called Digital Realty – Crawley South – Crawley Unit 1 and Digital Realty – Crawley North – Crawley Unit 2. The Crawley campus is approximately 1 km south of Gatwick International Airport.

Site: Crawley Unit 1	Site: Crawley Unit 2
Address: Unit 1, Power Ave, Crawley RH10 9BE	Address: Unit 2, Connect Way, Manor Royal, Crawley RH10 9BD.

The National Grid Reference for Crawley Data Centre Campus is: TQ277380/TQ 276381.

The whole site is 10.29 hectares in area and is shown in Annex A, Figure 1. The application focuses on the main operation of the site, including the generators.

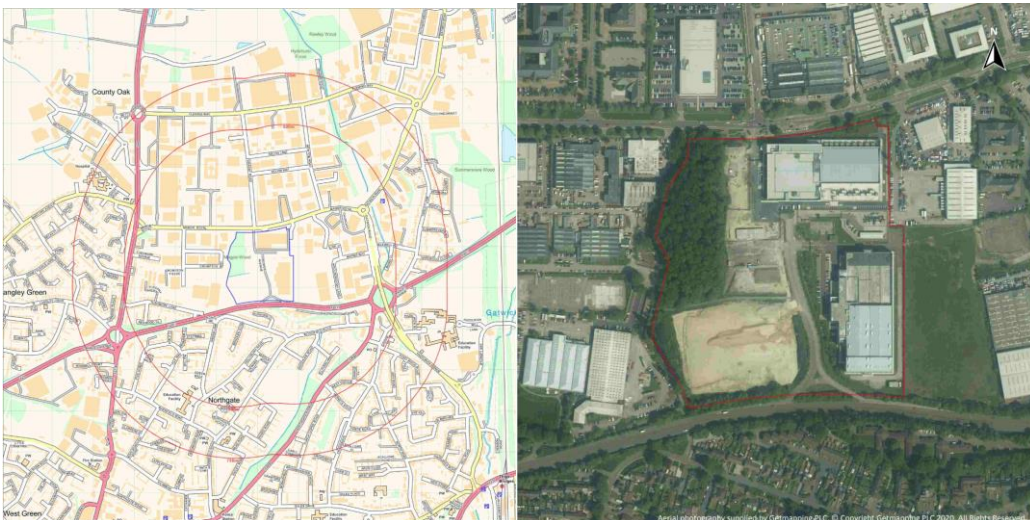


Figure 2: Site Location

The surrounding land use in the area is mix of industrial, commercial, and residential. Residential housing is located within 250m of the site to the south. While woodland is located within the site boundary to the west.

For further information on the site setting and history please see the Site Condition Report.

Environmental Setting

The site is located on superficial deposits of Alluvium (Clay, Silt, Sand and Gravel) overlaying bedrock deposits of Weald Clay formation and Upper Tunbridge Wells Sand. The superficial deposit is highly permeable. The overlaying Weald Clay formation sedimentary bedrock formed approximately 126 to 134 million years ago in the cretaceous period. The Upper Turnbridge Wells Sand formed approximately 132 to 139 years ago in the Valanginian period. The bedrock has low to high permeability.

The site is not located in a Radon Affected Area, as less than 1% of properties are above the action level, therefore no radon protective measures are required.

The eastern area of the site is located on Upper Turnbridge Wells Sand and the western area of the site is located on Weald Clay Formation. These sedimentary rocks are fluvial, palustrine and shallow-marine in origin. They are detrital, forming deposits reflecting the channels, floodplains, and deltas of a river in a coastal setting. The ground condition is a mixture of non-plastic, low plasticity, and medium plasticity.

The site is not located in an Environment Agency designated Flood Zone 2 and 3 and is not at risk of flooding from rivers and sea (RoFRaS).

There are 4 designated ancient woodlands around 1km from the site as well as a Local Nature Reserve. There are 2 more ancient woodlands within 500m of the site. There are a further 9 designated ancient woodlands within 2km of the site. There is one priority habitat inventory Habitats of principal importance as named under Natural Environment and Rural Communities Act (2006) on the northwest side of the site. This includes two deciduous woodland habitats.

For full details on the environmental setting of the site please see Section 3 of the Site Condition Report.

Designations that are present within 250m of the site are shown below in Figure 3.

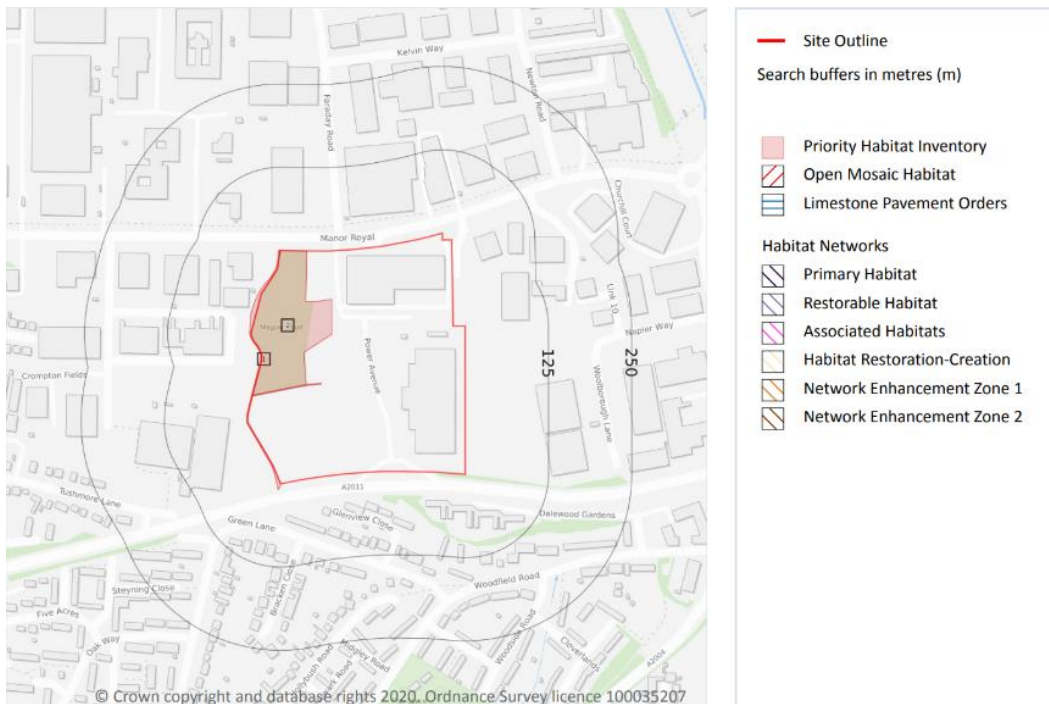


Figure 3: Environmentally Sensitive Site Designations Map

Emissions to Air, Land and Water

Emissions to Air

The standby generators are powered using diesel and fed from aboveground storage integrally banded day tanks.

Crawley Unit 1 has eight generators (1650kW standby output each) on the south side which are fed from four individual aboveground 13500-litre bulk tanks. There are 2 smaller landlord generators (440 output each) on the centre west side of the building which are fed from a 3050- litre tank. The total thermal combustion capacity onsite is 34.2MWth.

Crawley Unit 2 has seven standby generators onsite each with 2,200 kW electric output. Each generator is fed from a 2,000-litre day tank and all seven generators are fed from two aboveground bulk storage tanks with a capacity of 38,000 litres each. The generators provide standby electricity generation capacity to power the datacentre in the event of a power failure. The total thermal combustion capacity onsite is 38.42MWth.

Each generator has an exhaust which is the emission point into the atmosphere. Figures 1 & 11 show the example view the Crawley Unit 1 and Crawley Unit 2 generators' emission points. Figure 4 provides an aerial view of the emission points for both Crawley Unit 1 & Crawley Unit 2 are circled in red. In Crawley Unit 2, generator emission points are 6.8m above ground. In Crawley Unit 1, generator emission points for the data hall generators are approximately 16m and the smaller landlord generators' stack heights are 14.5m above ground from the roof of the building. There are no gas-fired boilers located on site for space heating and hot water requirements, this is done via electric.

The tanks are filled via fill points located in secure fill point cabinets with integral drip trays. Fill point overflow alarms are also located in the cabinets as shown in Figures 5 and 6.

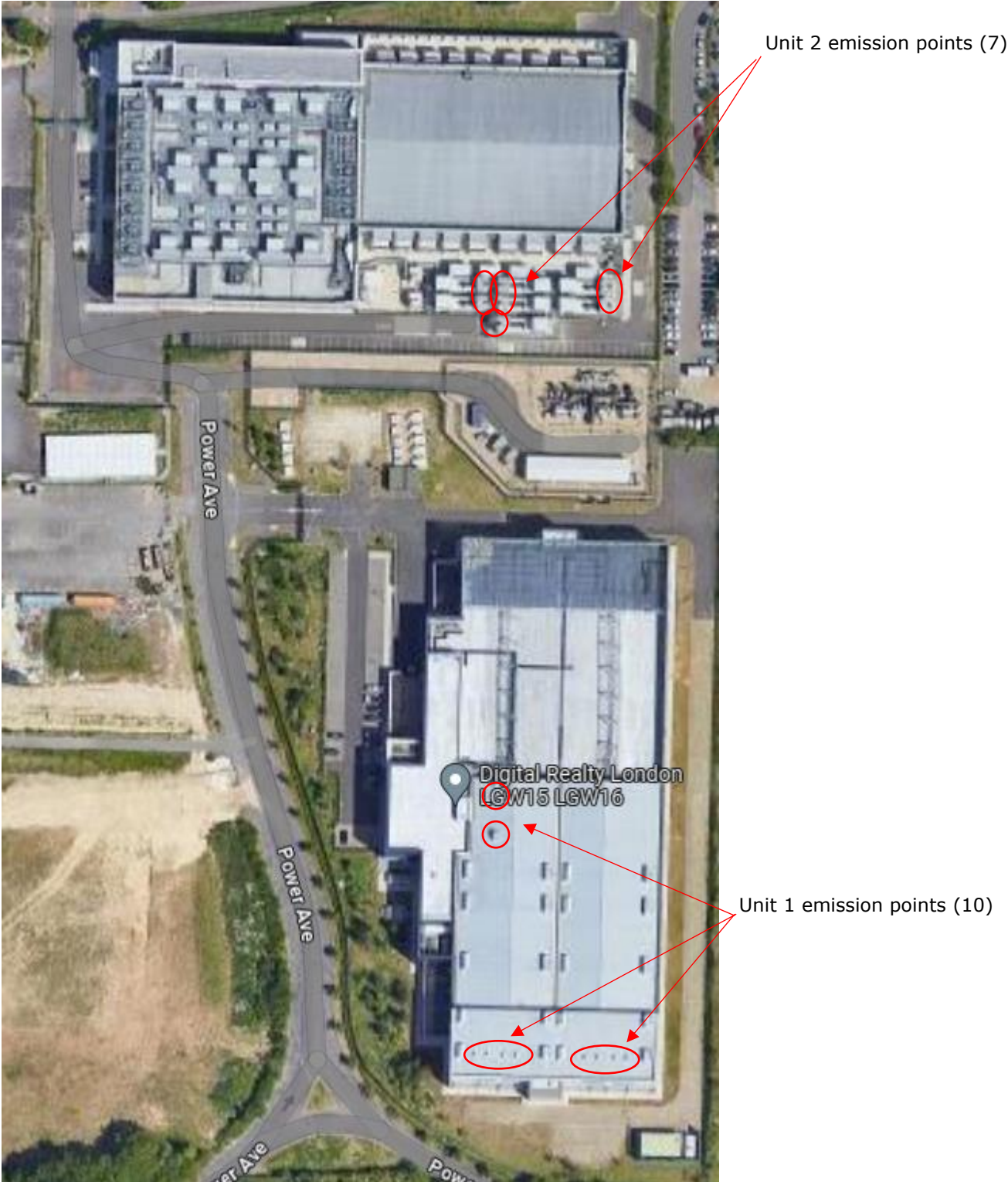


Figure 4: Aerial view of Crawley Unit 1 and Crawley Unit 2 generator emission points



Figure 5: Crawley Unit 1 aboveground tank fill points and alarms within fill point cabinet



Figure 6: Crawley Unit 1 aboveground tank fill points and alarms within fill point cabinet

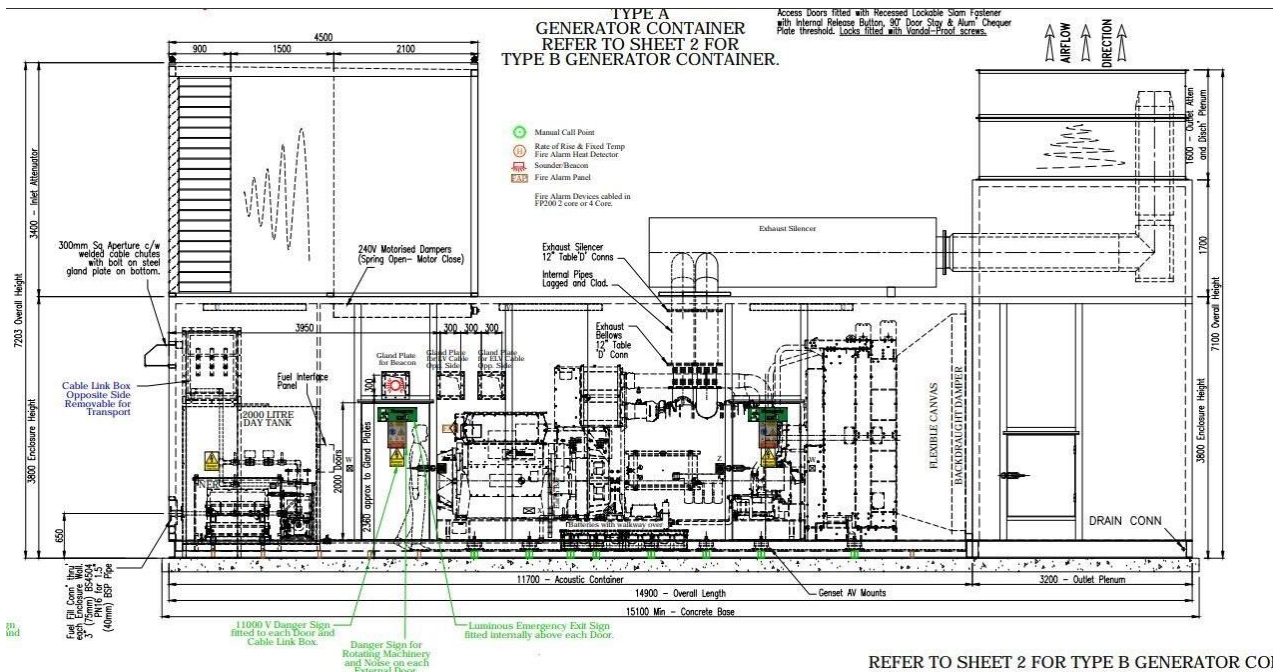


Figure 7: Crawley Unit 2 section plan of generator

The sulphur content of the diesel in Unit 1 generators ranges from 4ppm to 11ppm. In 2023, the generators were run for a combined total of 157.9 hours with a consumed volume of 49999.3 litres (excluding fire sprinkler diesel pump 952.64 litres and 22.90 run hours). The sulphur content in Unit 2 generators ranges from 9ppm to 11ppm. In 2023 the generators were run for a combined total of 16.60 hours with a consumed volume of 9030.4 litres.

All the generators are on a testing schedule. The summary the testing schedule is as follows:

Crawley Unit 1

- For Unit 1 monthly offload test for all generators – 30mins duration in total and the engine is run for 10mins.
- Quarterly testing - only one generator at a time approximately 3 hours.
- Load bank testing - normal conditions approximately 1-hour at various loads, only one generator at a time.
- Annual black building testing - timing varies as testing regime and training alters. 5 generators start and run at same time on first test and then all 10 start and run on second test. Maximum time allowed is 8-hour window, albeit historically generators run for around 4 hours.)
- Emergency scenario – all 10 generators start, and all continue to run.
- There is no 6 monthly start-up test.

Crawley Unit 2

- Monthly offload test for all generators – 30mins duration in total and the engine is run for 10mins.
- 6 monthly start-up test – 10mins in duration, each generator tested sequentially.
- Quarterly on load test – 10mins in duration – simulate that there is a power failure and all generators run at the same time.
- Load bank test – Occurs every 2 years - each generator is run at full load for 2 hours. The generators are run separately and sequentially.
- Emergency scenario – all 7 generators start and then auto ramp down to 2 generators to meet the site load (as 2 generators fulfil the total load demand) It is only 2 generators at the moment but will be as many as required to take the site load.

A detailed operational air quality dispersion model has been undertaken modelling each testing scenario, On Load Testing, Load Bank Testing, and the Emergency Scenarios. Emissions of the following pollutants were considered:

- Sulphur dioxide (SO₂),
- Nitrogen oxides (NO_x),
- Carbon monoxide (CO),
- Particulate matter (PM₁₀ and PM₂₅)

Emissions to Land: Diesel

Both Crawley Unit 1 and Crawley Unit 2 are covered in good quality hardstanding and surface water gullies drain which drain into an oil interceptor prior to discharge from the site. There are spill kits located around the site. Tanks have integral bunding to prevent leakages.

A third-party provider maintains and services the generators. As part of their six monthly and annual checks, they check for any fuel leakage from the generators/fuel tanks. There are fill point high level and leakage alarms in the bulk tanks and these are linked to the site's Building Management System (BMS). If any of these alarms are activated on the BMS, the site team carry out an initial investigation then call the third-party provider to interrogate the issue.

Waste

The site generates several waste streams from its operations. This includes hazardous waste (waste oil and lighting tubes) and non-hazardous waste (paper, cardboard, and general waste). Hazardous waste is removed by a third-party provider and waste from the oil interceptor is removed by another third-party provider.

Emissions to Water

The car parks have oil interceptors installed which are inspected on a regular basis, are believed to run onwards to a combined sewer managed by the local water company. Slot drains observed in yards marked with blue "surface water" indicators which drain to the surface water drainage network. A network of foul drainage systems is shown in Figures 8 and 9. At Crawley Unit 2,

there is a buried Surface Water Attenuation Tank in the Southwest corner of site with a capacity of 64,000 litres.

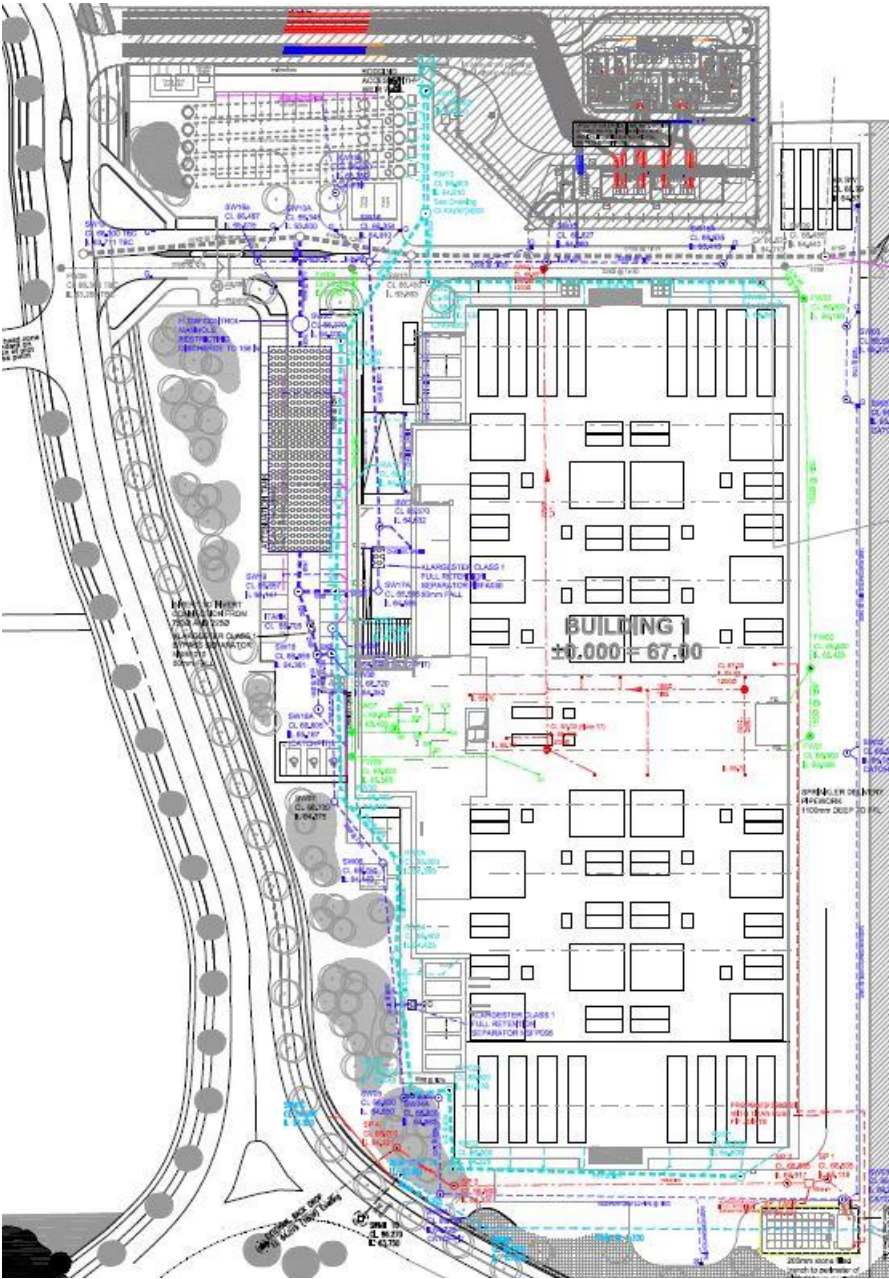


Figure 8: Crawley Unit 1 Drainage Plan

EXTERNAL DRAINAGE

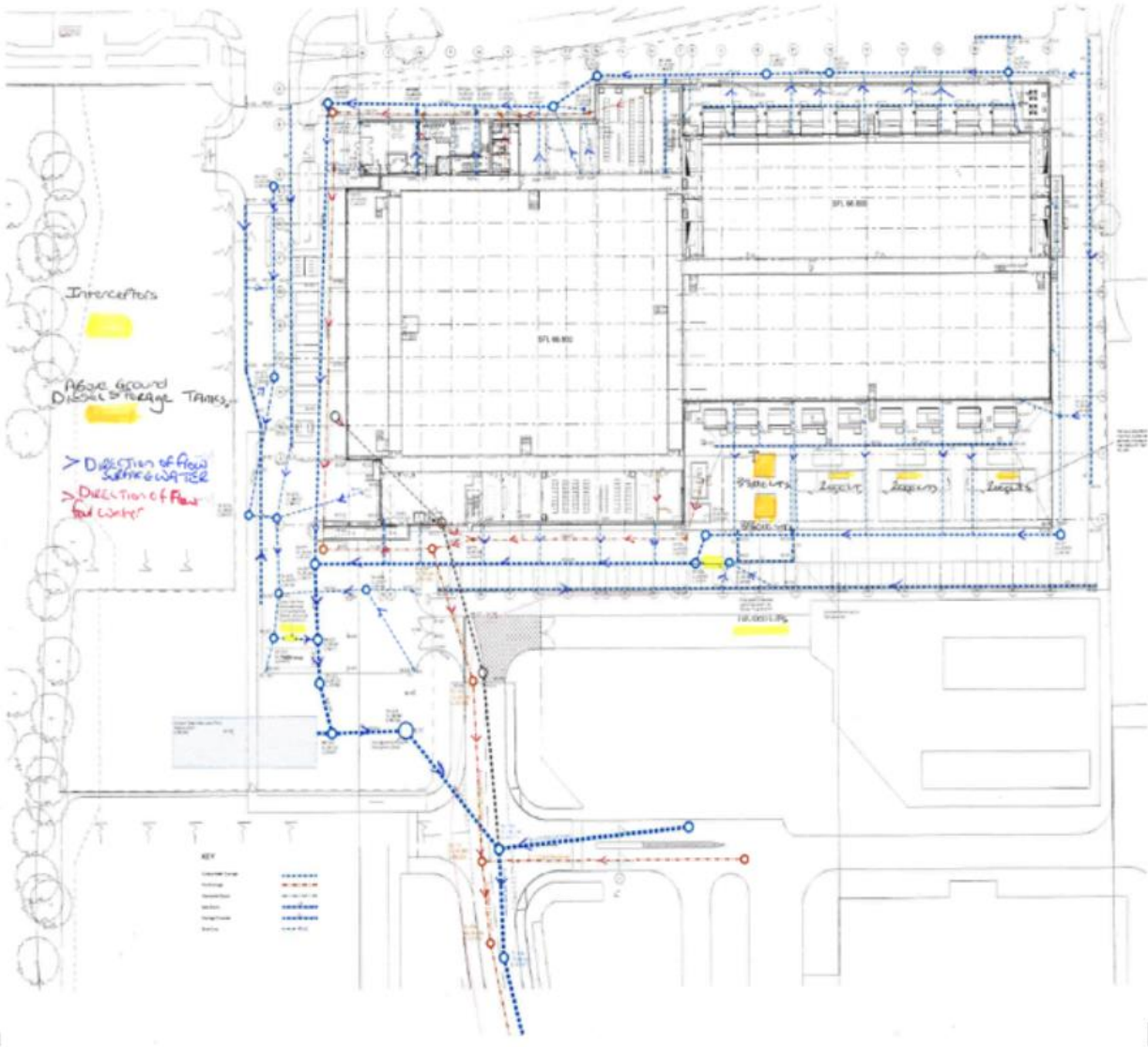


Figure 9: Crawley Unit 2 Drainage Plan



Figure 10: Crawley Unit 1 diesel Data Hall Standby Generator



Figure 11: Crawley Unit 2 diesel Standby Generator



Figure 12: Crawley Unit 2 diesel Standby Generator stack height



About EcoAct

Together with our clients, we act to put climate and nature centre stage to drive sustainable corporate transformation within planetary boundaries.

EcoAct is an international sustainability consultancy and project developer with 18+ years of industry experience and 360+ climate experts globally. Founded in France in 2005, the company now spans three continents with offices in Paris, London, Barcelona, New York, Montreal, Munich, Milan and Kenya.

EcoAct's core purpose is to lead the way in developing sustainable business solutions that deliver true value for both climate and client. Data is the cornerstone of our consulting practice, supported by our dedicated Climate Data Analytics and Research & Innovation teams.

At EcoAct we are driven by a shared purpose to make a difference. To help businesses implement positive change in response to climate and environmental sustainability challenges, whilst also driving commercial performance.

EcoAct UK

+44 (0) 203 635 0001 ukoffice@eco-act.com

EcoAct France

+33 (0)1 83 64 08 70 contact@eco-act.com

EcoAct North America

+1 917 744 9660
NAoffice@eco-act.com

EcoAct Spain

+34 935 851 122 contacta@eco-act.com

EcoAct Central Europe

+4921139990999
netzerotransformation@atos.net

EcoAct Italy

+39- 334-603 1139
nzt.italia@atos.net

EcoAct Kenya

+254 708 066 725
info@climatepal.com