ARUP

Colt Data Centre Services

HDP Masterplan

Delivery, Servicing and Waste Management Plan

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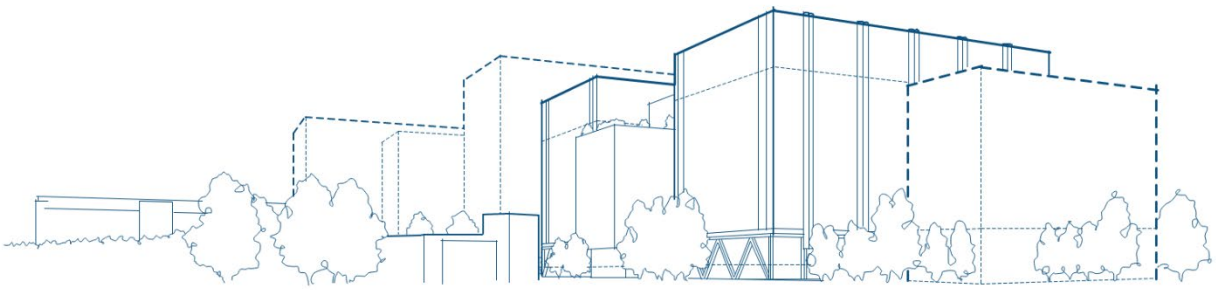

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1. Introduction

1.1 Site description and background

Arup has been appointed by Colt Data Centre Solutions to provide a Delivery, Servicing and Waste Management Plan (DSMP) for the development of a data centre at Beaconsfield Road in Hayes, London Borough of Hillingdon (LBH).

Colt secured planning permission from the London Borough of Hillingdon (LBH) in 2022 for the redevelopment of the former Trinity Data Centre, Veetec Building, and Tudor Works sites at Beaconsfield Road in Hayes to deliver two data centre buildings (alongside substation and tank rooms) which together provide more than 37,000sqm of floorspace (ref. 38421/APP/2021/4045).

Since the granting of planning permissions for Buildings 1 and 2 (ref. 38421/APP/2021/4045), Colt has acquired Heathrow Interchange and Hayes Bridge Retail Park. The southern boundary of Heathrow Interchange immediately abuts the northern boundary of the site that Colt is presently redeveloping.

The proposed site sits as part of a wider commercial area which is broadly bound to the north by Uxbridge Road, the west by Springfield Road (and Minet Country Park), to the east by the Yeading Brook, and to the south by Beaconsfield Road. The broader area comprises of a mix of commercial operations with retail uses located predominantly in the northern part and industrial, storage, and manufacturing operations across much of the central and southern areas.

The site consists of two distinct parts which together have a site area of approximately 4.4ha but are separated from each other by Bullsbrook Road, an adopted highways which serves other premises within the wider commercial area.

On the northern side of Bullsbrook Road is Hayes Bridge Retail Park. The Hayes Bridge Retail Park consists of a terrace of seven retail units and a standalone commercial bank (Metro Bank) set around a central surface car park which is accessed from the Uxbridge Road. The majority of these units are vacant. It is anticipated that demolition of units within the retail park (save for Metro Bank) will take place whilst this application is being considered in accordance with an application for prior notification of demolition.

To the south of Bullsbrook Road and Hayes Bridge Retail Park is Heathrow Interchange. Heathrow Interchange consists of a series of industrial units arranged into two parallel terraces which are orientated north-south and separated from each other by an open yard with parking and vehicle turning which is served by Bullsbrook Road. Each terrace is split into two units so that there are four units within Heathrow Interchange. Prior notification of demolition of Unit 1 (ref. 71554/APP/2024/2490) and it is envisaged that the unit will be demolished whilst this application is being considered. There is a live application for planning permission for a substation in this location (ref. 71554/APP/2025/47). Unit 2, the southern unit on the eastern terrace, is outside of Colt's ownership and is excluded from this application.

1.2 Overview of development

Colt is progressing an application for hybrid planning permission. This consists of full planning permission for a data centre building (to be known as LON6) and outline planning permission for two further data centre buildings (to be known as LON7 and LON8) and the Innovation Hub.

LON6, LON7, and the Innovation Hub are to be located on the site of Hayes Bridge Retail Park with LON8 (and the substation for which there is a separate application for full planning permission for) to be located on the site of Heathrow Interchange.

The Metro Bank building and use in the northeast corner of the site will be retained.
The proposed site plan is shown in Figure 1.

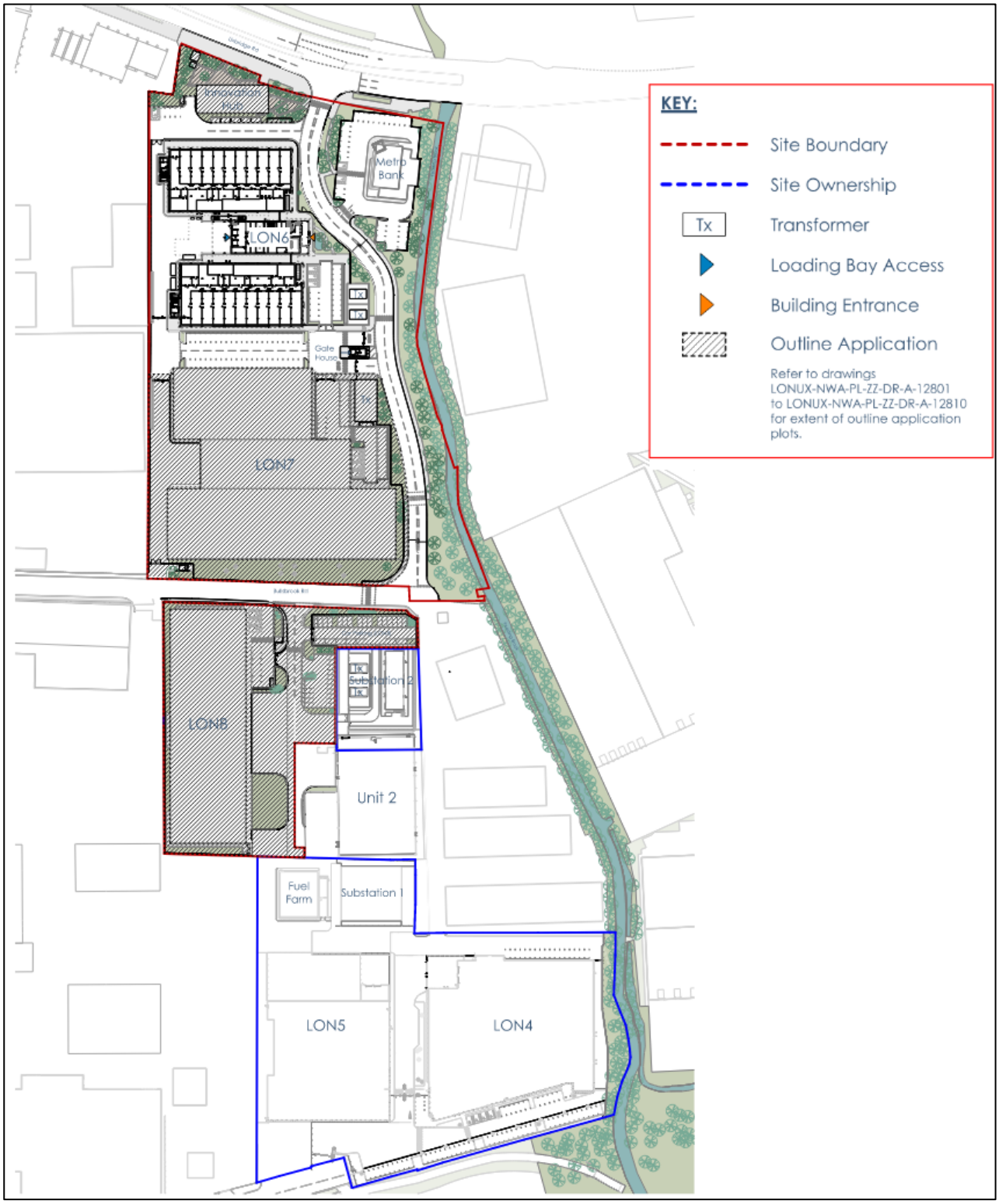


Figure 1 Proposed site plan

1.3 Description of development

Hybrid planning application for a four-phased redevelopment to deliver a data centre campus comprising of:

Phase 1 – Full planning permission for (a) a data centre building (b) energy, power, and water infrastructure (c) site access and internal roads including a vehicular and pedestrian link between Uxbridge Road and Bullsbrook Road (d) site security arrangements and security fencing (e) hard and soft, green and blue, infrastructure and (f) other ancillary and auxiliary forms of development;

Phase 2 – Outline planning permission for (a) an Innovation Hub (b) hard and soft, green and blue, infrastructure and (c) other ancillary and auxiliary forms of development;

Phase 3 - Outline planning permission for (a) a data centre building (b) energy, power, and water infrastructure (c) internal roads (d) site security arrangements and security fencing (e) hard and soft, green and blue, infrastructure and (f) other ancillary and auxiliary forms of development; and

Phase 4 - Outline planning permission for (a) a data centre building (b) energy, power, and water infrastructure (c) internal roads (d) site security arrangements and security fencing (e) hard and soft, green and blue, infrastructure and (f) other ancillary and auxiliary forms of development

1.4 Area schedule

1.4.1 Provided area schedule

The proposed areas within this DSMP are based upon the area schedule provided within the Hayes Digital Park Masterplan Hybrid Planning Application – Information Sheet, as per Table 1 below.

Building	Maximum Height	GEA	GIA	Application Type
LON6	41.600 m	25,235 sqm	24,114 sqm	Full
LON7	56.000 m	53,415 sqm	-	Outline
LON8	40.200 m	29,656 sqm	-	
Innovation Hub	28.000 m	2,000 sqm	-	

Table 1 Provided area schedule – (as per Hayes Digital Park Masterplan Hybrid Planning Application – Information Sheet)

1.4.2 Assumed area schedule

For this DSMP, GIA and NIA areas are required per Building. Therefore, the following standard assumptions apply as shown in Table 2:

- GIA is assumed to be 90% of GEA (where not already provided); and
- NIA is assumed to be 70% of GIA.

Building	GEA (m^2)	GIA (m^2)	NIA (m^2)
LON6	25,235	24,114	16,880
LON7	53,415	48,074	33,651
LON8	29,656	26,690	18,683
Innovation Hub	2,000	1,800	1,260
Total	**110,306**	**100,678**	**70,475**

Table 2 Assumed area schedule (Including GIA and NIA)

The GEA figures in the table above represent maximum floorspace parameters. The actual GIA and NIA will be determined through reserved matters applications made subsequently to the grant of this hybrid planning permission.

In line with this, potential to note that planning conditions can be used to require further details for LON07, LON08, and the Innovation Hub at RM stage.

1.5 Reference publications

The following planning policy and best practice guidance documents have been considered when developing this DSMP:

National policy documents:

- Revised National Planning Policy Framework, 2024;
- Designing for Deliveries, Freight Transport Association, 2016;
- The Waste (England and Wales) Regulations, 2011;
- DEFRA Government Review of Waste Policy in England, 2011; and
- BS5906 Waste Management in Buildings – Code of Practice, 2005.

Regional policy documents:

- The London Plan, 2021;
- The Freight and Servicing Action Plan, 2019;
- The Mayor's Transport Strategy, 2018;
- Fleet Operator Recognition Scheme (FORS); and
- TfL guidance for DSMPs.

Key local policy:

- Hillingdon Local Plan 2012.

1.6 DSMP objectives

This DSMP sets out to meet the following objectives:

- To identify the expected frequency and duration of delivery and servicing trips associated with the development and the size of the vehicles likely to be used;
- To identify the likely nature of the goods to be delivered;
- To demonstrate that goods and services can be delivered, and waste removed, in a safe and efficient manner with avoidance of vehicles arriving at the same time;
- To identify ways to reduce delivery numbers, employ out of hours deliveries and consolidate goods wherever possible;
- To ensure delivery activities do not hinder the flow of traffic on the public highway or obstruct pedestrian routes;
- To minimise vehicles waiting or parking at loading areas so that there is a continuous availability for approaching vehicles;
- To provide design guidance for accommodating service and delivery vehicles with suitable offloading areas; and
- To provide design guidance for waste storage and refuse collection vehicles.

On-going monitoring and review of the DSMP will be required to ensure that the listed objectives of this DSMP are achieved (further details in Section 6). If necessary, the DSMP will be reviewed and adapted to reflect continuous improvement of the delivery and servicing process.

1.7 Report structure

This report is divided into the following sections:

Section Two – sets out initiatives to reduce delivery vehicles and emissions through smart procurement and vehicle reduction measures;

Section Three – sets out the type, number and nature of daily delivery vehicles;

Section Four – sets out the delivery and servicing strategy for the movement of goods within the development;

Section Five – sets out the waste management strategy; and

Section Six – sets out a process for conducting an annual review of the DSMP.

2. Procurement and Sustainability

2.1 The Mayor's Transport Strategy

The Mayor's Transport Strategy (MTS) sets out the Mayor's transport strategy for London up to 2031 and the issues of freight and servicing is considered throughout.

- The MTS highlights the importance of the London Freight Plan, DSMPs, CLPs and FORS to encourage improved efficiency and provide a framework for incentivization and regulation.
- Proposal 99 states that the "the Mayor, through TfL and working with the London Boroughs, road freight operators and other stakeholders will:
- Adopt planning conditions that specify Delivery and Servicing Plans for major developments;
- Aim for 50% of HGVs and vans servicing London to be member of the FORS;
- Encourage, and where appropriate specify, improved freight movement efficiency through, for example greater consolidation, more off-peak freight movement and greater use of rail-based transport; and
- Support the freight industry and land requirements for locally focused consolidation and/or break-bulk facilities and access to waterways and railways."

Proposal 117 acknowledges the incorporation of DSMPs, CLPs and the FORS scheme:

"The Mayor, through TfL and working with the London boroughs, and other stakeholders in the public and private sectors, will improve the efficiency and effectiveness of freight operations through the promotion of delivery and servicing plans, construction logistics plans, the FORS and other efficiency measures across London."

The MTS sets out the importance of the London freight information portal which "will help London's public authorities (the GLA and boroughs, for example) and freight operators exchange information about:

- Improving operational efficiency;
- Encouraging better driver behavior, the use of alternative fuels and the uptake of low carbon vehicles;
- Reducing freight administration costs; and
- Enhancing freight journey planning.

2.2 Overview

The objective of the servicing strategy outlined below is to employ several initiatives that have reduced the number of weekly delivery and servicing trips in similar developments around London thereby achieving:

- Fewer commercial vehicle visits during the working day;
- Improved safety for pedestrians and cyclists through reducing vehicle movements;
- Improved air quality through reduced vehicle emissions; and
- Reduced noise from commercial vehicles.

All customers within the development will be required to implement the following measures to reduce vehicle trips and the impact of servicing on the local environment:

- Use a booking-in service to control the flow of vehicles, retime deliveries and for loading bay management;

- Provide a consolidated waste collection service; and
- Provide information to deliverers i.e. a delivery point assessment.

Additional measures that could be considered in order to reduce the number of daily deliveries include:

- Deploy stock optimisation techniques, such as the bunching of orders so that they arrive at the same time every week;
- Provide a list of preferred suppliers and ensure that customers only order through them to allow collective procurement; and
- For office staff, companies will consider promoting the collection of personal deliveries on the way home from work, as opposed to having packages delivered to the development.

The site has a specific focus on sustainability, with a corporate strategy consisting of three focus areas:

Decarbonising our business:

- Climate change
- Biodiversity & land management
- Energy
- Waste
- Water
- Sustainable design and construction
- Building materials.

Connecting people:

- Customer engagement
- Community engagement
- Equity, diversity & inclusion
- Talent development and engagement
- Wellbeing, health & safety.

Safeguarding our company:

- Responsible supply chain management
- ESG Governance
- Business ethics and compliance
- Reporting & transparency
- Data privacy and security.

The development management will also aim to promote the use of sustainable and safe freight through the use of various schemes.

2.3 Proposed measures

2.3.1 Delivery booking system

Deliveries will be managed by the facilities management (FM) team using a delivery management system. All delivery and servicing vehicles are registered on the system before they can enter the site. This will ensure all delivery and servicing vehicles are scheduled and prioritised accordingly. A booking system allows the FM team to actively manage the arrivals to the site during the day and will have the following benefits:

- Online appointment scheduling for carriers and suppliers to book loading bay;
- Appointments over the web, and monitoring;
- The ability for the site FM team to accept requests, prioritise shipments and refuse requests;
- Automated appointment scheduling with unload service time calculations taking into consideration trailer type, loading bay restrictions, special equipment, and product handling unit types;
- Appointment audit trail and reporting;
- Historical data analysis and compliance tracking;
- Improved visibility to the inbound supply chain by tying purchase orders to inventory and shipment data; and
- Improved resource planning and task allocation for the site FM team.

When a vehicle arrives at the site, they will access via security gates and the driver will be directed to the service yard in the building they are visiting where goods will be unloaded by the driver and distribution to the customers. This process flow is summarised in Figure 2.

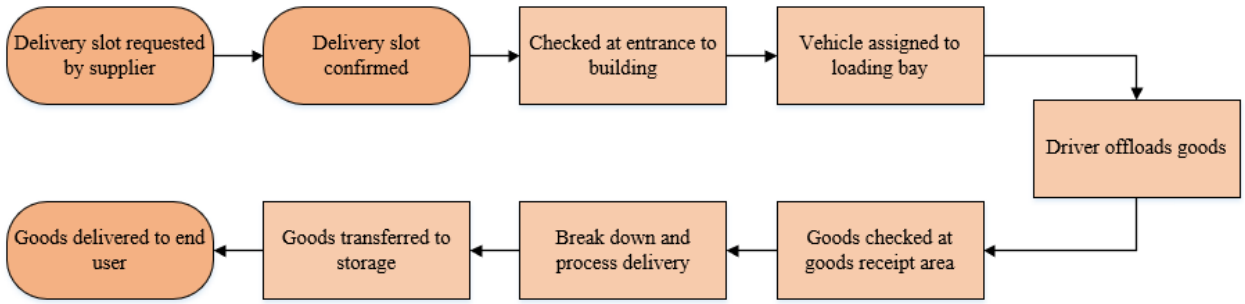


Figure 2 Goods-in process flow

2.3.2 Delivery Point Assessment (DPA)

To assist deliveries to the development, suppliers and their logistics providers will be given a DPA. This document provides drivers with clear instructions on where and how to access the development to avoid causing disruption to other road users and pedestrians. The content of these guidance notes will include the following:

- Provide the contact details for the FM team /security;
- Outline of the correct route to the delivery premises;
- Provision of a detailed parking map of the area, including restrictions;
- Risk rating for maneuvering;
- Risk rating for loading; and

- Health and safety risks to their employees and third parties.

2.3.3 Waste collection consolidation

To consolidate waste collections into as few vehicles as possible, the development will provide a communal waste room in each building and waste collections will be arranged by the on-site FM team.

2.4 Additional measures to be considered

2.4.1 Personal deliveries

At present, in London, it is estimated that almost 40% of all deliveries made to the workplace are personal[1]. This is having a significant impact on congestion, safety for vulnerable road users and air quality. Two ways this could be addressed by customers would be to either ban or discourage employees receiving their online purchases at work. Firstly, a ban on employees receiving deliveries will significantly reduce the vehicles visiting the area and ease the pressure on post rooms and loading bays. However, based on our experience in this field some organisations are opposed to enforcing a total ban on their employees.

An alternative option is to discourage employees and promote alternative ways to receive their online purchases. The building owner and customers could choose to promote a click and collect scheme for their customers (i.e. Doddle, collect +, Hub Box, Parcelly). This will allow employees to divert their personal deliveries to a specialised click and collect location.

2.4.2 Preferred supplier

Customers within the development will have access to a preferred supplier scheme supervised by the FM team. Customers will be encouraged to engage in collective procurement for consumables such as office supplies and food/drinks etc. Customers will agree to purchase goods and services from a small, carefully selected choice of suppliers. Each customer will have an account with the supplier, but their orders will be combined so that deliveries will arrive together, on a single vehicle.

The development benefits from reducing the number of supplier vehicles on the street. Customers benefit from volume discounts and reduced delivery costs. It has been shown that collective procurement by individual groups or businesses within a building, such as Transport for London's (TfL) Palestra operating centre, reduced stationery deliveries from twice daily to only three deliveries a week.

Customers will be encouraged to order goods and materials to fully utilise their storage capability. This will result in less frequent deliveries throughout the week.

2.5 Safe & sustainable freight

Customers will be encouraged to work with suppliers that are aiming to raise the level of quality within fleet operations, and to demonstrate best practice in safety, efficiency, and environmental protection.

2.5.1 Fleet Operators Recognition Scheme (FORS)

FORS is a unique, industry-led, free membership (bronze, silver, gold) scheme to help van and lorry operators in the Capital become safer, more efficient and more environmentally friendly.

For bronze level membership a number of requirements under the following headings need to be met:

- Drivers and vehicle management;
- Vehicle maintenance and fleet management;
- Transport operations; and

[1] This figure is based on a large-scale survey of 1,200 offices conducted by TfL in 2016

- Assessing the performance of company policies.

For silver and gold level, members need to provide data to enable benchmarked values to be produced per million kilometers for each type of vehicle for:

- Fuel use;
- CO2 and emissions;
- Vehicle incidents; and
- Penalty Charge Notices and fines.

2.5.2 Safe Urban Driving (SUD)

SUD is essential training for all commercial drivers operating heavy goods vehicles (HGVs) regularly in the urban environment and where there are high volumes of vulnerable road users, such as cyclists and pedestrians.

The course is aligned to meet the requirements of:

- Work Related Road Risk (WRRR);
- Fleet Operator Recognition Scheme (FORS); and
- Construction Logistics and Cyclist Safety (CLOCS).

2.6 Alternative fuelled vehicles

Logistics providers and courier companies are increasingly using electric vehicles and cycles for making last mile deliveries. For example, Clipper Logistics, UPS and Gnewt provide electric powered goods vehicles, courier vans and electric powered cycles.

In terms of measures which could be implemented by management to encourage the use of alternatively fuelled vehicles, the following would be considered as part of the retail and procurement strategy:

- Choosing retail partners that operate a supply chain including alternatively fueled delivery vehicles;
- Choosing a courier company for outgoing mail that use alternatively fuelled vehicles;
- Using the procurement system within the development to encourage purchasing managers to buy from suppliers actively using alternatively fuelled vehicles in their supply chain; and
- Using the vehicle management system to offer optimum delivery (i.e. early morning) slots to retail operators with alternatively fuelled vehicles.

3. Delivery and Servicing Vehicles

3.1 Overview

The following section details the strategy for the delivery and servicing of the development. The objective of the servicing strategy outlined below is to employ initiatives that have reduced the number of weekly delivery and servicing trips in similar developments around London. It also includes the following:

- The size of delivery vehicles permitted within the loading bay;
- The number, frequency, and nature of deliveries; and
- The service yard design requirements.

3.2 Assumptions

Key assumptions used to calculate the servicing requirements for the project are:

- The Innovation Hub is assumed to be considered an Office land use regarding servicing requirements;
- Office deliveries are calculated by the application of a trip rate of 0.20 trips per 100 m^2 GIA to the total office floor area;
- LON6, LON7 and LON8 buildings are assumed to be considered a Support land use regarding servicing requirements; and
- Deliveries and servicing trips to Support land uses on site are calculated by the application of a trip rate of 0.05 trips per 100m^2 GIA to the total data centre and switchroom floor area.

3.3 Size of servicing vehicles

As a mixed-use development, the majority of the servicing trips will be made by 8m transit vans, with the remainder of the deliveries by 16.5m, 10m and 6m vehicles. There may also be cycle courier deliveries throughout the day.

Table 3 shows the likely service vehicle type including typical turnaround times.

Vehicle type	Vehicle	Characteristics	Turnaround time (mins)
Cycle couriers		1T, vehicle length 2m	15
Motorcycle couriers		1T, vehicle length 1.5m	15
A1 Cars		1.5T, vehicle length 5m	15
A2 &B Small Transit Van		2T, vehicle length 5m	15
C Transit Van / Light Goods Vehicle (LGV)		3.5 T, vehicle length 6m	15

Vehicle type	Vehicle	Characteristics	Turnaround time (mins)
D / Medium Goods Vehicle (MGV)		7.5 T – 17T, vehicle length 8m	25
E1 / Heavy Goods Vehicle (HGV)		17 T, vehicle length 10m	30
F1 & F2 Articulated vehicle		44 T, vehicle length 16.5m	30-60
C Transit Van / Service engineer		3.5 T, vehicle length 6m	45 – half day
Refuse collection vehicle		26 T, vehicle length 10m	15-20

Table 3 Size of servicing vehicles

3.4 Vehicle generation

The estimated daily delivery and servicing trips to the site were calculated using an Arup in-house vehicle generation tool developed to utilise Arup research. The generation tool applies a delivery and servicing vehicle trip rate for each of the building uses to the relevant gross internal area (GIA) for that building. The trip rates, which are expressed as vehicles per 100m^2 per day, have been derived from survey data at office, retail, residential and other facilities around London, as well as relevant design guidelines and local authority regulations. The surveys recorded vehicle arrival and departure times, vehicle type and size of goods vehicle use to make the delivery.

The generation rates used to determine the daily number of delivery trips are shown below:

- 0.20 vehicles/100m²/day for Office uses; and
- 0.05 vehicles/100m²/day for Support uses.

The proposed buildings are assigned the following Use Class':

- LON6, LON7, LON8: defined as Class B8, regarding vehicle generation classed as 'Support'
- Innovation Hub: defined as 'Sui Generis', regarding vehicle generation classed as 'Office'

3.5 Servicing trips

The anticipated number of delivery and servicing trips for the development is shown in Table 4 and shows a breakdown of site-wide deliveries by loading bay.

Building	Use Class	GIA (m^2)	Average Daily Trip Rate per 100 m^2 GIA	Number of Daily Deliveries	Peak Hour
Innovation Hub	Office	1,800	0.20	4	1 (0900 – 1000)
LON6	Support	24,114	0.05	13	2 (0700 - 1000 & 1500 – 1800)
LON7	Support	48,074	0.05	25	3 (0700 - 1000 & 1500 – 1800)
LON8	Support	26,690	0.05	14	2, (0700 - 1000 & 1500 – 1800)
Total		**100,678**	**-**	**56**	**6,** **(0900-1000)**

Table 4 Sitewide daily servicing trips

The sitewide daily delivery profile is shown in Figure 3.

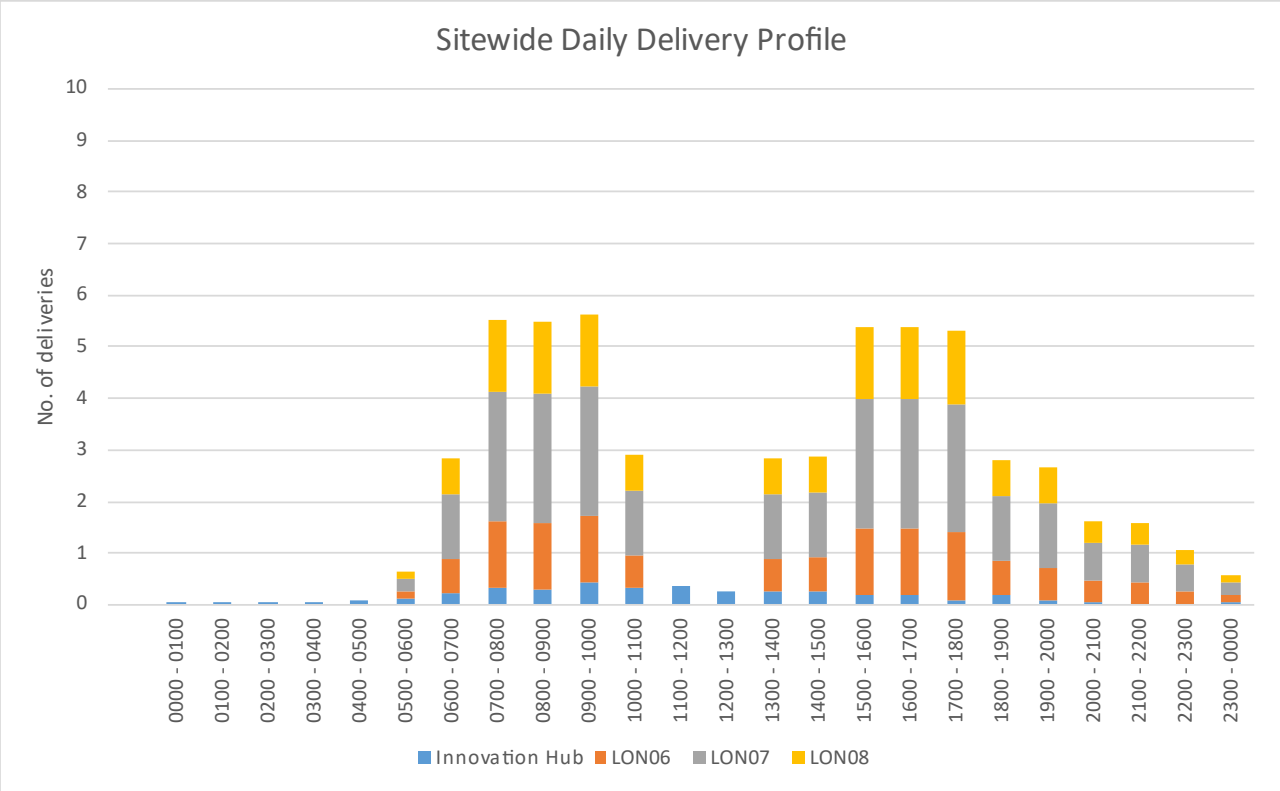


Figure 3 Sitewide daily delivery profile

The development is estimated to require 5 loading bays to accommodate the generated 56 daily deliveries, as shown in Table 5.

Building	16.5m	10m	8m	6m	Total
Innovation Hub	-	1	-	-	**1**
LON6	1	-	-	-	**1**
LON7	1	-	-	1	**2**
LON8	1	-	-	-	**1**
Total	**3**	**1**	**0**	**1**	**5**

Table 5 Sitewide loading bay requirement

The loading bays are sized as follows:

- 16.5m: 16.5m x 4m;
- 10m: 10m x 4m;
- 6m: 6m x 4m;

A 3m offloading area behind each loading bay is required.

3.6 Typical deliveries

Palletized goods and heavy or large crates are handled using a hand pallet truck. Roll cages are pushed. Examples of the types of containers which are used for general goods deliveries are shown in Table 6.

Roll Container	Pallet	Plastic or Wooden Crate
		
Overall width: 7800mm Overall length: 6800mm Overall height: 1340mm Capacity: 600kg	Width: 1200mm Length: 800mm Height: 166mm Capacity: 1000kg	Overall width: 1000mm Overall length: 1200mm Overall height: 400mm

Table 6 Typical goods containers

4. Internal Distribution

4.1 Loading bays

The site is proposed to include 5 loading bays as detailed in Table 5, the indicative loading bay locations are shown in Figure 4 – Figure 7. Note that the Innovation Hub, LON7 and LON8 are outline planning only and subject to change.

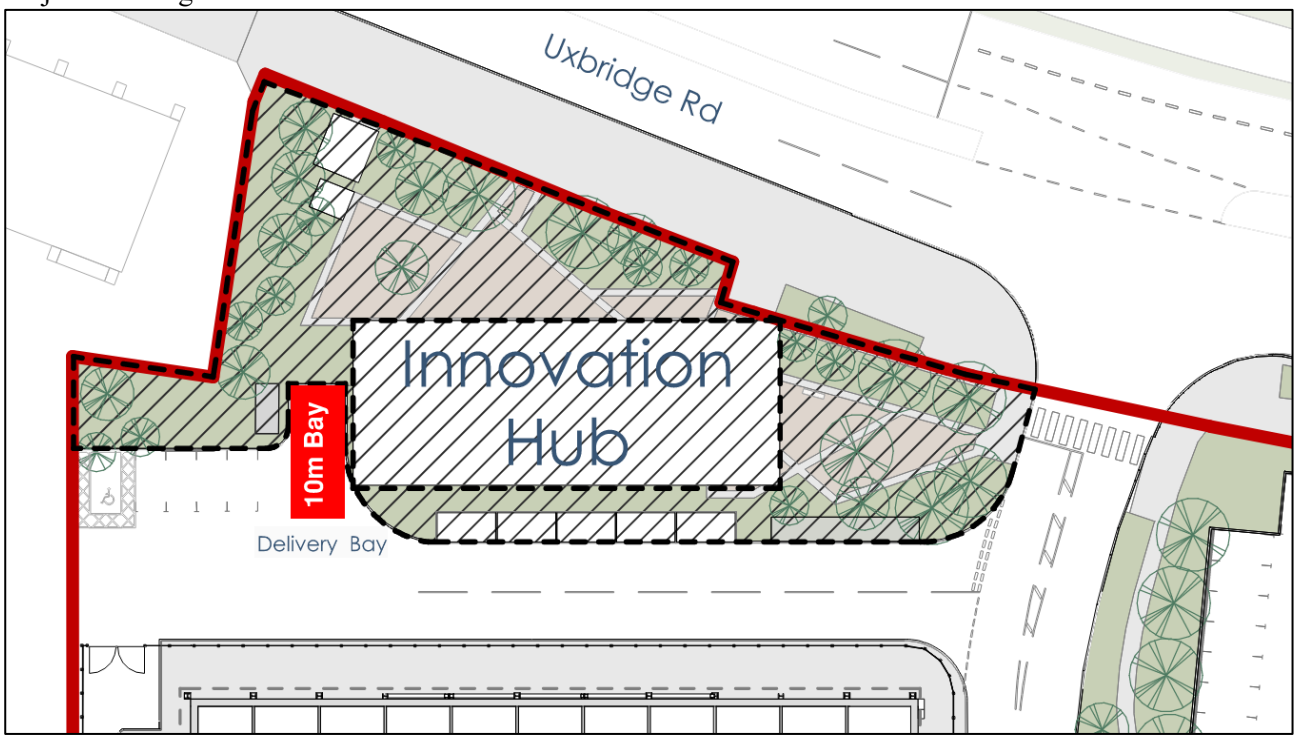


Figure 4 Indicative Innovation Hub loading bay location

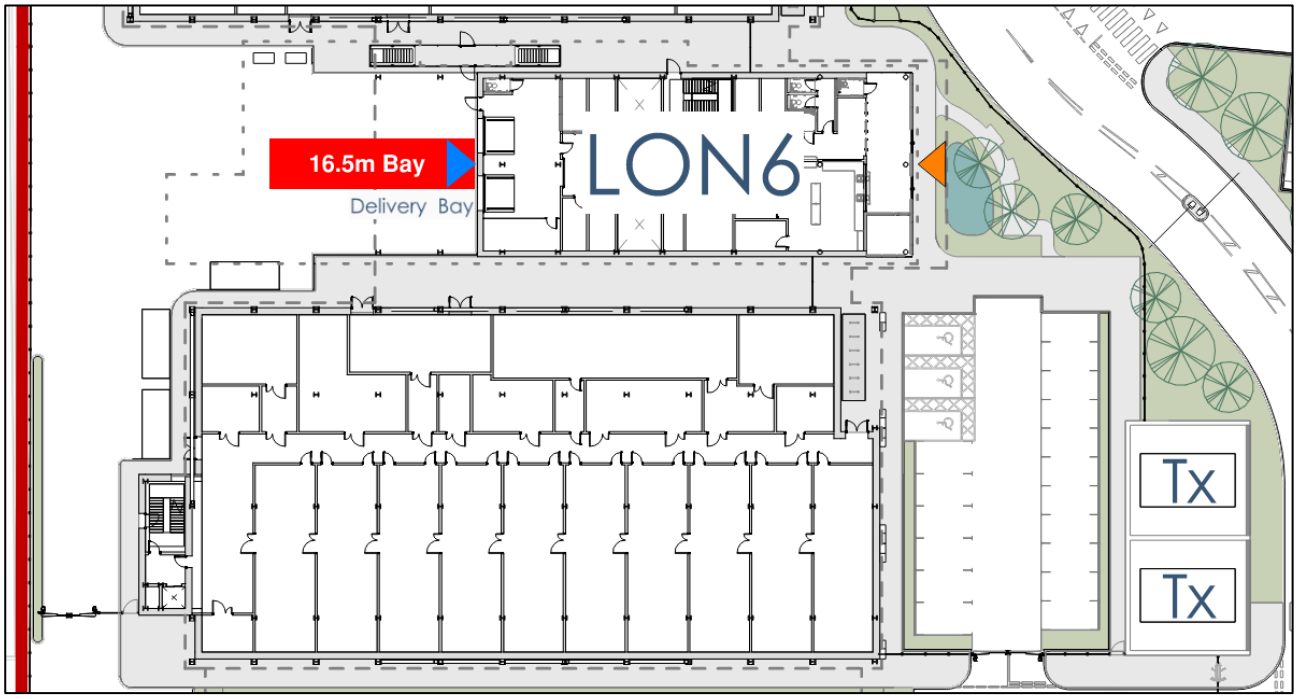


Figure 5 Indicative LON6 loading bay location

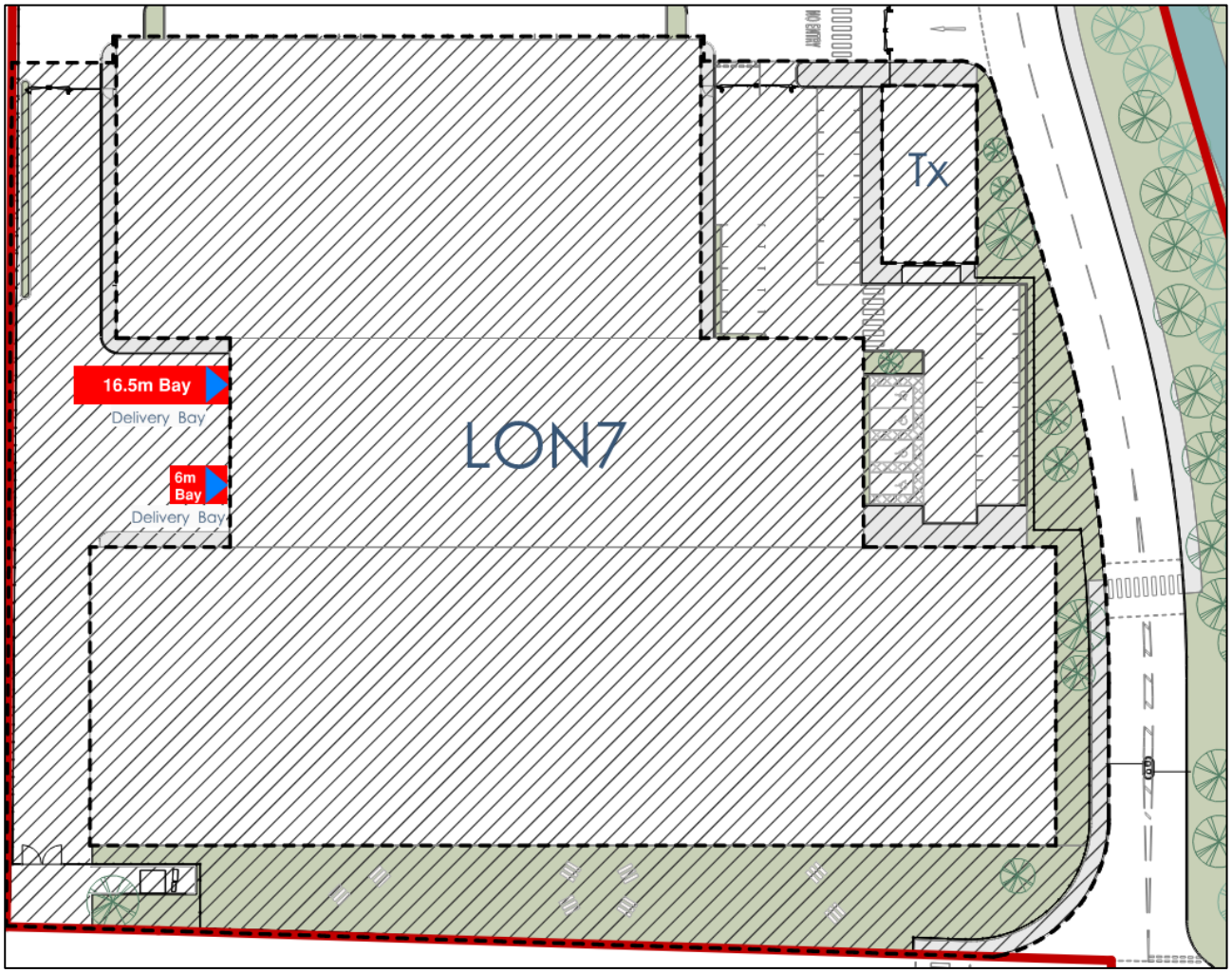


Figure 6 Indicative LON7 loading bay location

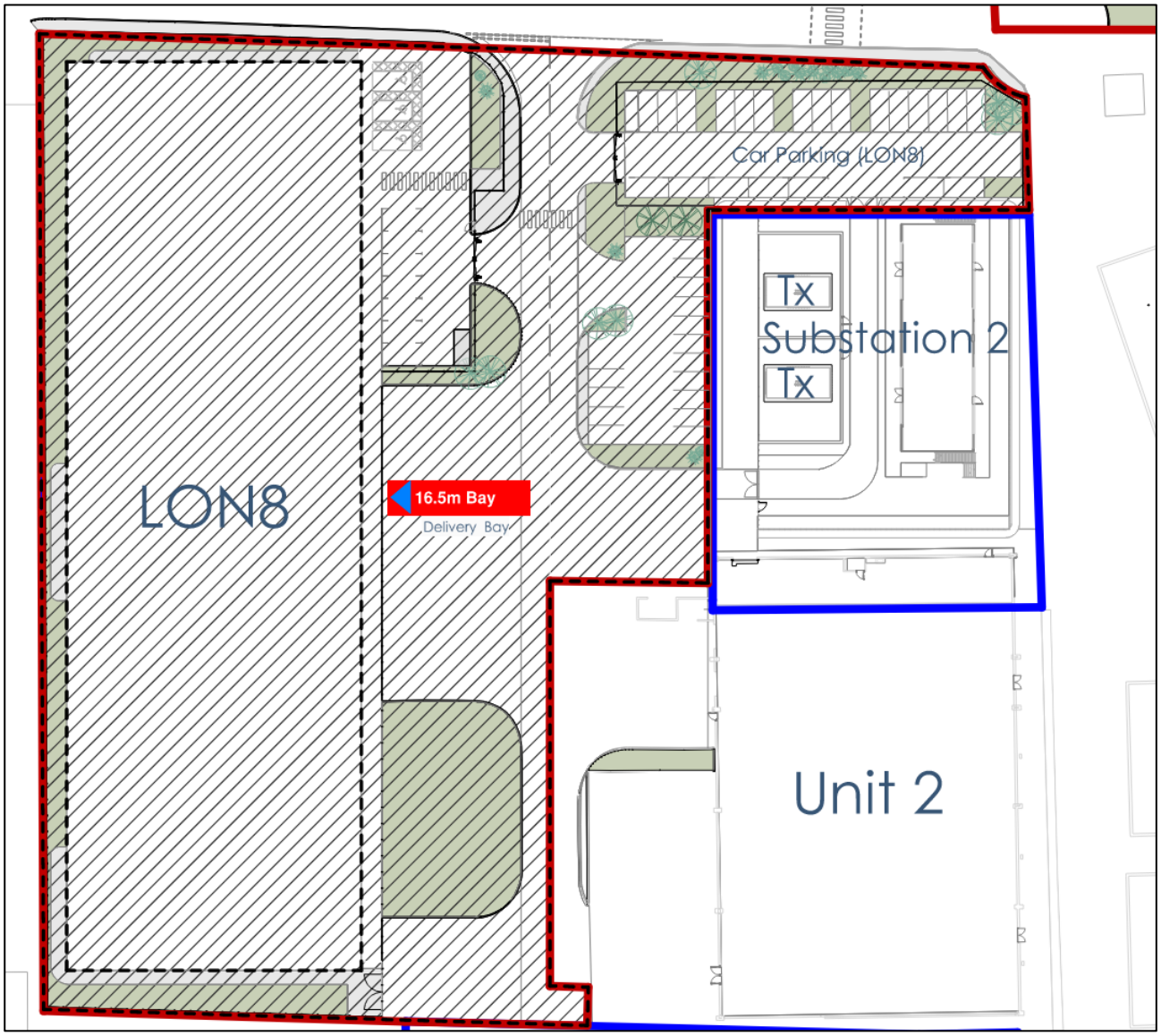


Figure 7 Indicative LON8 loading bay location

A dedicated banksperson is recommended to be available to assist with manoeuvring accessing and egressing the loading bays.

4.2 Loading bay access routes and swept path analysis

Delivery vehicles are proposed to enter the loading bays in reverse gear and exit in forward gear.

The loading bays at Innovation Hub, LON6 and LON7 are accessed from an internal service road, which is entered from either Uxbridge Road to the north or Bullsbrook Road to the south.

The loading bay at LON8 is accessed from an internal service road, which is entered from the north by Bullsbrook Road.

The described access and egress routes are shown indicatively in Figure 8 and Figure 9 below.

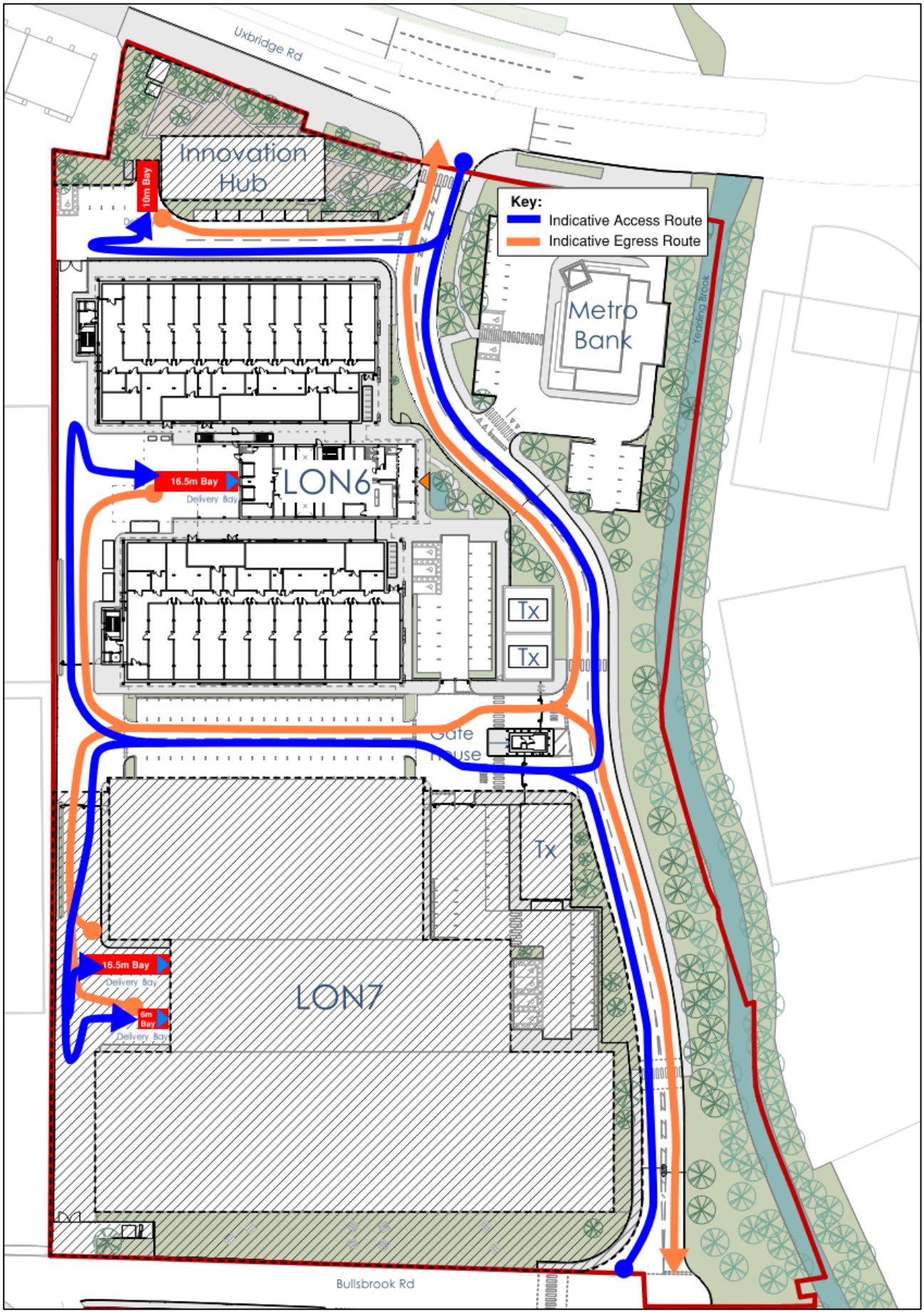


Figure 8 Indicative loading bay access routes - North site

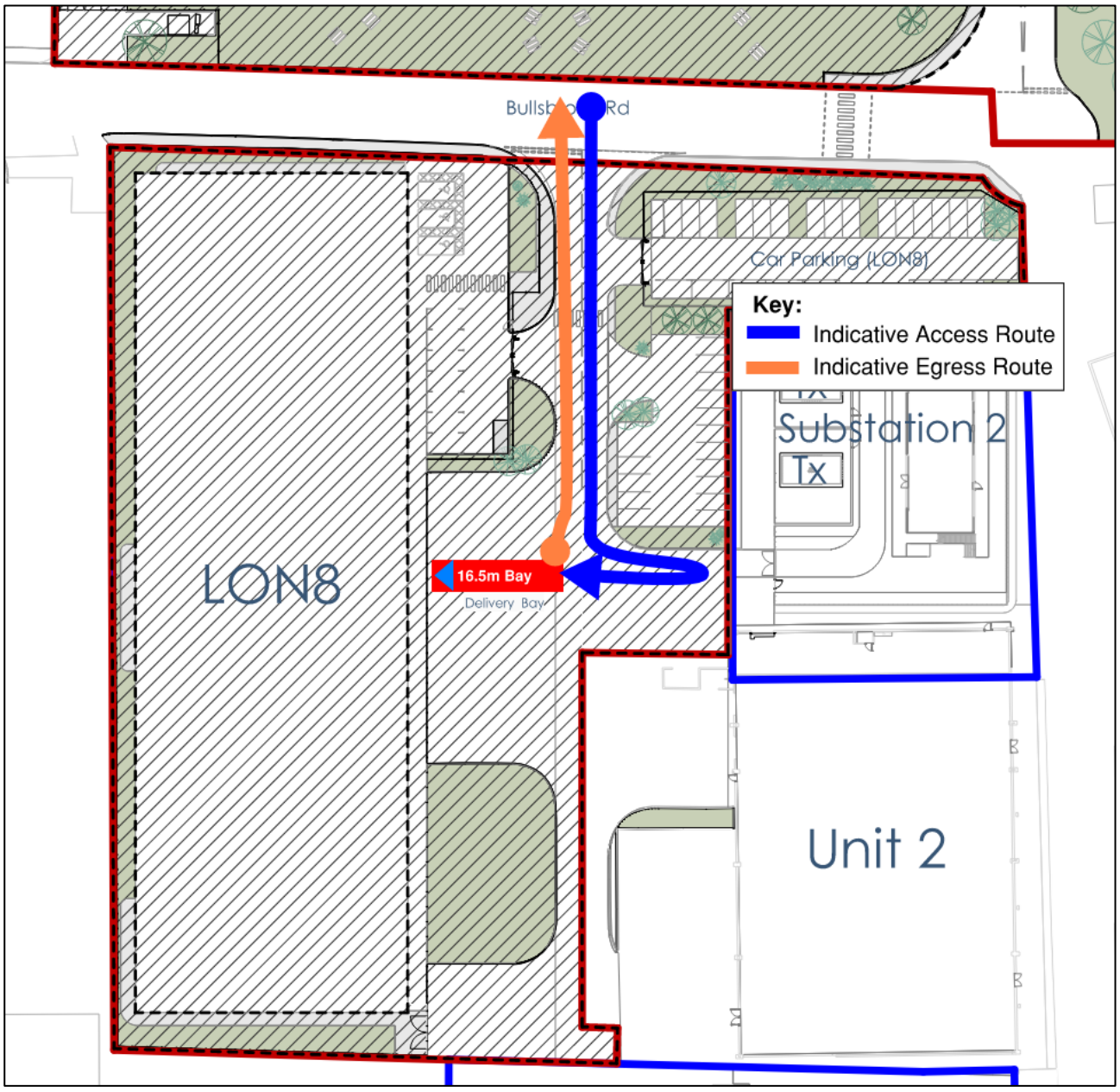


Figure 9 Indicative loading bay access routes - South site

Swept path analysis of indicative loading bay manoeuvres are included in Appendix A.1.

4.3 Goods receipt and distribution

4.3.1 Pre-delivery process

Servicing and delivery vehicles will be able to access the loading bays at the development for 24 hours a day.

A pre-booked delivery system will be used. This will ensure an even arrival profile of service vehicles to optimise the use of the loading facilities.

When booking a delivery slot, the logistics provider will be allocated a slot for their delivery to be completed. Slots will be timed according to the size of the vehicle as per Table 3, with 6-metre-long vehicles (3.6/4.5T transit and box vans) being allocated 15 minutes, 8-metre-long vehicles (7.5T box vans) being allocated 25 minutes, 10-metre long vehicles (17T box van) being allocated 30 minutes and 16.5 metre long vehicles being allocated 45 minutes.

For heavy and large deliveries an agreement must be reached in advance for the delivery and storage of any equipment requiring special handling or storage. However, it is anticipated that not every delivery can be

booked in advance. Deliveries arriving without a booking-in slot will be processed at the discretion of the site security and building FM team.

There will be a procedure for periodic reviews between the site FM team and the customers to ensure the system utilised is operating to the benefit of all concerned. It will also be able to respond to any unexpected issues that may arise that are beyond the control of the team.

4.3.2 Delivery receipt and distribution process

Servicing operation will be 24 hours a day. Delivery vehicles will be able to reverse into their allocated loading bay. A banksperson will assist with manoeuvring. A dockmaster will assist with indicating the correct bay to use and co-ordinating the delivery receipt process.

Customers should be aware of the bookings their suppliers have made. The dockmaster will inform the customer when their delivery has arrived.

The driver will be responsible for the unloading/loading of goods from the vehicle and transferring to the customer space within the data centre and office spaces.

5. Waste Management

5.1 Overview

This section sets out the Waste Management Plan (WMP) for the development.

- This WMP will include the following key elements:
- Details of the person responsible for this WMP;
- The segregation of waste streams and how to dispose of them;
- Expected waste generation and storage requirements;
- Collection points and frequency;
- The various responsibilities of FM team and future occupants;
- Programme of document monitoring and review; and
- Documentation of any amendments.

5.2 Assumptions

Guidance in the following documents has been applied when defining the WMP:

- BS 5906:2005 Waste management in buildings – a code of practice.

This assessment has been based on a number of key assumptions:

- The office space (Innovation Hub) generates 50 litres of waste per employee per week;
- One employee per 10m² of floor area;
- The data centres (LON6, LON7 & LON 08) generate 5 litres of waste per m² of floor area per week;
- The Innovation Hub is assumed to operate 5 days per week;
- The Data Centre is assumed to operate 7 days per week;
- A minimum clear headroom of 2.4m is required to accommodate a 100kg baler and 1,100 litre Eurobin compactor; and
- Waste is to be collected every day, but for resilience storage space is provided for two-days' worth of waste.

5.3 Commercial waste generation & storage

5.3.1 Innovation Hub

5.3.1.1 Waste generation and storage

Based on the area schedule in Table 2, the estimated two-day waste generation for the Innovation hub building is 2.52m³ as shown in Table 7 below.

Innovation Hub two-day waste generation and storage			
Waste type	**Waste Generated (m^3)**	**Waste Storage (rounded)**	
		Container	**Number**
Residual	0.50	1,100 litre Eurobins	1
Paper	1.64	1,100 litre Eurobins	2
Cardboard	0.18	360 litre Eurobin	1
Plastic	0.15	360 litre Eurobin	1
Aluminium	0.05	360 litre Eurobin	1
Glass	0.00		0
Food Waste	0.00		0
Total	**2.52**	-	6

Table 7 Innovation Hub two-day waste generation and storage

A waste store sized at a minimum of $16m^2$ is required and will be provided to hold the following containers:

- 3 No. 1,100 litre Eurobins for residual waste;
- 2 No. 1,100 litre Eurobins for paper waste;
- 1 No. 360 litre Eurobins for cardboard waste;
- 1 No. 360 litre Eurobins for plastic waste;
- 1 No. 360 litre Eurobins for aluminium waste;

The waste store will provide 2.4m clear headroom and the Facilities Management (FM) team will be responsible for the wash-down and cleaning of the waste store, providing spill kits where necessary.

5.3.2 LON6

5.3.2.1 Waste generation and storage

Based on the area schedule in Table 2, the estimated compacted two-day waste generation for the LON6 building is $9.24m^3$ as shown in Table 8 below.

LON6 two-day waste generation and storage				
Waste type	**Uncompacted Waste Generated (m^3)**	**Compacted Waste Generated (m^3)**	**Waste Storage (rounded)**	
			Container	**Number**
Residual	7.23	2.41	1,100 litre bin	3
Paper	9.65	4.82	100 kg bale	5
Cardboard	4.82	1.21	100 kg bale	7
Plastic	2.41	0.80	100 kg bale	2
Aluminium	0.00	0.00	-	0
Glass	0.00	0.00	-	0
Food Waste	0.00	0.00	-	0
Total	24.11	9.24	-	17

Innovation Hub two-day waste generation and storage			
Waste type	**Waste Generated (m^3)**	**Waste Storage (rounded)**	
		Container	**Number**
Residual	0.50	1,100 litre Eurobins	1
Paper	1.64	1,100 litre Eurobins	2
Cardboard	0.18	360 litre Eurobin	1
Plastic	0.15	360 litre Eurobin	1
Aluminium	0.05	360 litre Eurobin	1
Glass	0.00	360 litre Eurobin	0
Food Waste	0.00	240 litre Eurobin	0
Total	**2.52**	-	6

Table 8 LON6 and Innovation Centre two-day waste generation and storage

A waste store sized at a minimum of $30m^2$ is required and will be provided to hold the following containers:

- 1 No. 100kg baler;
- 1 No. 1,100 litre in-bin compactor;
- 1 No. Hand pallet truck;
- 3 No. 1,100 litre eurobins for residual waste;
- 5 No. 100kg bales (2 per pallet) of paper waste;
- 7 No. 100kg bales (2 per pallet) of cardboard waste; and
- 2 No. 100kg bales (2 per pallet) of plastic waste.

The waste store will provide 2.4m clear headroom to accommodate the baler and compactor. The FM team will be responsible for the wash-down and cleaning of the waste store, providing spill kits where necessary.

5.3.3 LON7

5.3.3.1 Waste generation and storage

Based on the area schedule in Table 2, the estimated compacted two-day waste generation for the LON7 building is $18.43m^3$ as shown in Table 9 below.

LON7 two-day waste generation and storage				
Waste type	**Uncompacted Waste Generated (m^3)**	**Compacted Waste Generated (m^3)**	**Waste Storage (rounded)**	
			Container	**Number**
Residual	14.42	4.81	1,100 litre bin	5
Paper	19.23	9.61	100 kg bale	10
Cardboard	9.61	2.40	100 kg bale	13
Plastic	4.81	1.60	100 kg bale	3
Aluminium	0.00	0.00	-	0
Glass	0.00	0.00	-	0

Food Waste	0.00	0.00	-	0
Total	48.07	18.43	-	31

Table 9 LON7 two-day waste generation and storage

A waste store sized at a minimum of 50m^2 is required and will be provided to hold the following containers:

- 1 No. 100kg baler;
- 1 No. 1,100 litre in-bin compactor;
- 1 No. Hand pallet truck;
- 5 No. 1,100 litre eurobins for residual waste;
- 10 No. 100kg bales (2 per pallet) of paper waste;
- 13 No. 100kg bales (2 per pallet) of cardboard waste; and
- 3 No. 100kg bales (2 per pallet) of plastic waste.

The waste store will provide 2.4m clear headroom to accommodate the baler and compactor. The FM team will be responsible for the wash-down and cleaning of the waste store, providing spill kits where necessary.

5.3.4 LON8

5.3.4.1 Waste generation and storage

Based on the area schedule in Table 2, the estimated compacted two-day waste generation for the LON8 building is 10.23m^3 as shown in Table 10 below.

LON8 two-day waste generation and storage				
Waste type	**Uncompacted Waste Generated (m^3)**	**Compacted Waste Generated (m^3)**	**Waste Storage (rounded)**	
			Container	**Number**
Residual	8.01	2.67	1,100 litre bin	3
Paper	10.68	5.34	100 kg bale	6
Cardboard	5.34	1.33	100 kg bale	7
Plastic	2.67	0.89	100 kg bale	2
Aluminium	0.00	0.00	360 litre bin	0
Glass	0.00	0.00	360 litre bin	0
Food Waste	0.00	0.00	240 litre bin	0
Total	26.69	10.23	-	18

Table 10 LON8 two-day waste generation and storage

A waste store sized at a minimum of 30m^2 is required and will be provided to hold the following containers:

- 1 No. 100kg baler;
- 1 No. 1,100 litre in-bin compactor;
- 1 No. Hand pallet truck;
- 3 No. 1,100 litre eurobins for residual waste;
- 6 No. 100kg bales (2 per pallet) of paper waste;
- 7 No. 100kg bales (2 per pallet) of cardboard waste; and

- 2 No. 100kg bales (2 per pallet) of plastic waste.

The waste store will provide 2.4m clear headroom to accommodate the baler and compactor. The FM team will be responsible for the wash-down and cleaning of the waste store, providing spill kits where necessary.

5.4 Internal waste disposal

Within each building, waste will be stored at recycling points distributed throughout each floor. Waste streams will be segregated using colour-coded polythene sacks.

Waste will be taken by each of the customers to the waste store periodically throughout the day using the goods lifts in the cores.

The FM team will then bring the waste from each waste store to the loading bay at the end of each day immediately prior to collection. In the event of a missed collection, full waste bins will be returned to the waste store. Storage has been provided to accommodate two days' waste generation, therefore, missing a single waste collection will not have a detrimental impact on waste storage.

5.4.1 General waste

Non-recoverable waste streams will be placed in bags and clearly labelled to help waste producers and the team responsible for transferring the waste to the waste room to ensure that they place waste in the grey general waste bins. General waste will be placed into bins and the FM team will compact this waste using an in-bin compactor.

5.4.2 Paper

Within the Innovation Hub, waste will be taken to the waste store where paper waste will be stored in the provided waste storage container.

Within LON6, LON7 and LON8 buildings, paper waste will be taken to the waste store where it will be baled into 100kg bales and placed on pallets; with two 100kg bales per pallet.

5.4.3 Cardboard

Within the Innovation Hub, large pieces of carboard will be flattened and waste will be taken to the waste store where cardboard waste will be stored in the provided waste storage container.

Within LON6, LON7 and LON8 buildings, large pieces of cardboard will be flattened and separated from other waste and taken to the waste store where it will be baled into 100kg bales and placed on pallets; with two 100kg bales per pallet.

5.4.4 Plastic

Within the Innovation Hub, waste will be taken to the waste store where plastic waste will be stored in the provided waste storage container.

Within LON6, LON7 and LON8 buildings, recyclable plastic waste will be separated from other waste and taken to the waste store where it will be baled into 100kg bales and placed on pallets; with two 100kg bales per pallet.

5.4.5 Aluminium/metal

Metal waste will be segregated from other waste in all areas, collected in bags and placed into the metal bins in the waste store

5.4.6 Specialist waste stream disposal

Waste Electrical and Electronic Equipment (WEEE)

WEEE and other specialist waste are to be stored within the customers demise and will be brought for collection directly to the loading bay immediately prior to collection by a waste contractor.

Confidential paper waste

Confidential waste must be collected in secure bins located around the buildings. To be fully compliant with the Data Protection Act, a written contract with a certified confidential waste company is required. This waste stream will be collected from the customers' demise in situ by a specialist contractor and shredded and disposed of off-site.

Hazardous waste

Waste streams such as florescent tubes, batteries, asbestos and chemicals will be required to be collected by a licensed specialist contractor as they are designated as hazardous waste. The FM team will be required to register the site for a Hazardous Waste Licence to permit this waste to be collected safely and reprocessed.

A specific request should be sent to the FM team for the collection of hazardous waste. Waste will then be taken directly from the customer's demise to the loading bay immediately prior to collection.

Construction and demolition materials

Construction and demolition waste is excluded and managed under the Construction Management Plan (CMP) or by any contractors. No communal space will be provided for the storage of construction waste and this will need to be managed within the customer's demise.

Batteries

Batteries will be collected in pots (separate for lithium and alkaline types) located by the photocopiers in the offices, which will be periodically collected by the FM team for storage in the general waste store prior to collection by a waste contractor.

The terminals of lithium batteries will require covering with an insulating, non-conductive material e.g. using electrical tape, to prevent the risk of fire. The FM team will ensure this is completed, though staff disposing of the batteries will be expected to complete this where possible.

Photocopier cartridges

Photocopier and printer cartridges will be collected in boxes located by the photocopiers, which will be periodically collected by the FM team for storage prior to collection by a waste contractor.

Fluorescent tubes and light bulbs

Arup recommend that light fittings are specified with long-lasting LED bulbs to minimise the amount of light fitting waste created. A specific request should be sent to the FM team for the collection of fluorescent tubes and light bulb waste. Upon collection, the FM team will take it to the general waste store prior to collection by a waste contractor.

Waste streams such as florescent tubes and batteries will be required to be collected by a licensed specialist contractor as they are designated as hazardous waste. The FM team will be required to register the site for a Hazardous Waste Licence to permit this waste to be collected safely and reprocessed.

Sanitary waste

Sanitary waste from the washrooms will be collected and disposed of by the cleaning contractor and will be dealt with separately from the rest of the building waste. Like all other types of waste materials collected from site a Waste Transfer Note (WTN) must be held on file for auditing purposes.

Landscape maintenance waste

Any waste generated during maintenance of the landscaping will be removed by the landscape contractors and will not be stored on site.

5.5 Waste reduction interventions

This section presents initiatives to encourage environmental thinking to reuse, recycle and reduce waste through the building's supply chain.

When considering waste reduction methods, the waste hierarchy pyramid provides a useful guide to the order in which waste reduction measures should be considered, from most effective to the least effective as shown in Figure 10.

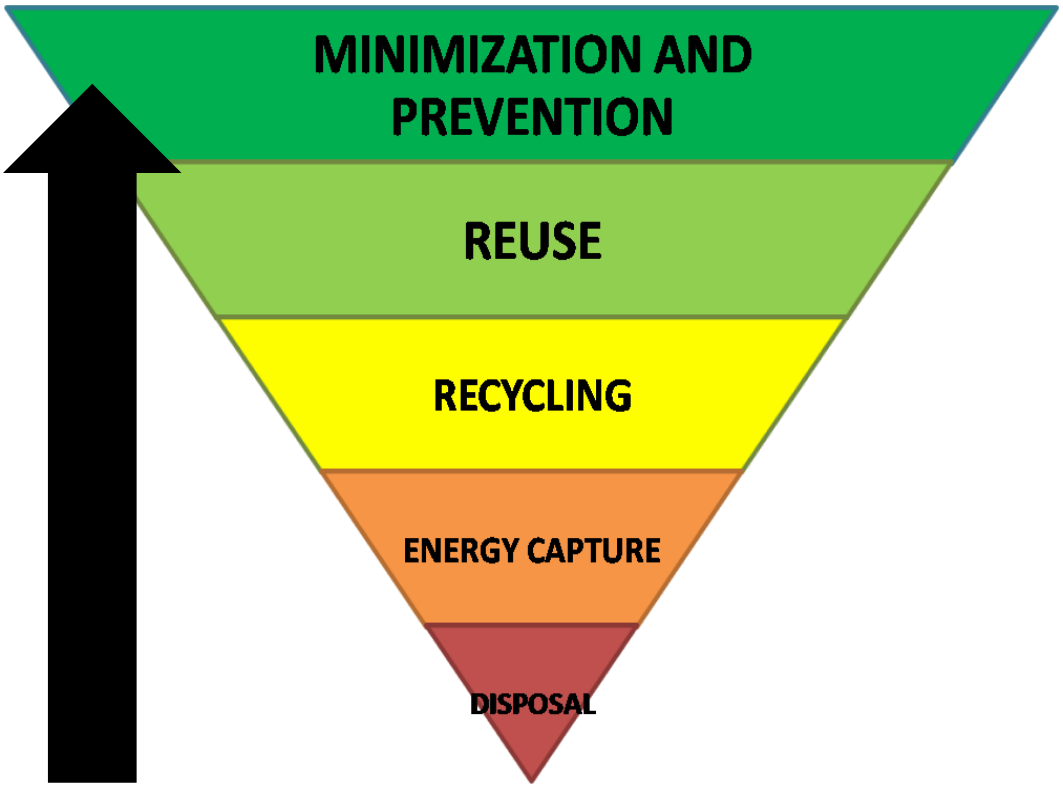


Figure 10 Waste hierarchy

Preventing the generation of waste is considered the most effective way of improving recycling rates, followed by reuse of materials and then moving into recycling, recover and, eventually, disposal in landfill.

5.5.1 Packaging

The building management team will endeavour to collaborate with suppliers that display green initiatives when packing items including:

- Downsizing packaging;
- Using "green" packaging materials;
- Promoting recycling and reuse programs;
- Cooperating with vendor to standardize packaging;
- Encouraging and adopting returnable packaging methods;
- Minimising material uses and time to unpack;
- Using a recyclable pallet system; and
- Saving energy in warehouses throughout the supply chain.

5.5.2 Supply chain

The building management should provide a purchasing strategy that encourages green logistics, including:

- Using alternative fuelled vehicles;
- Grouping orders together, rather than in smaller batches;
- Collaborating with other customers to consolidate loads; and
- Optimising reverse logistics to collect used products and packaging from customers for recycling, returning packaging and products to suppliers for reuse, and requiring suppliers to collect their packaging materials.

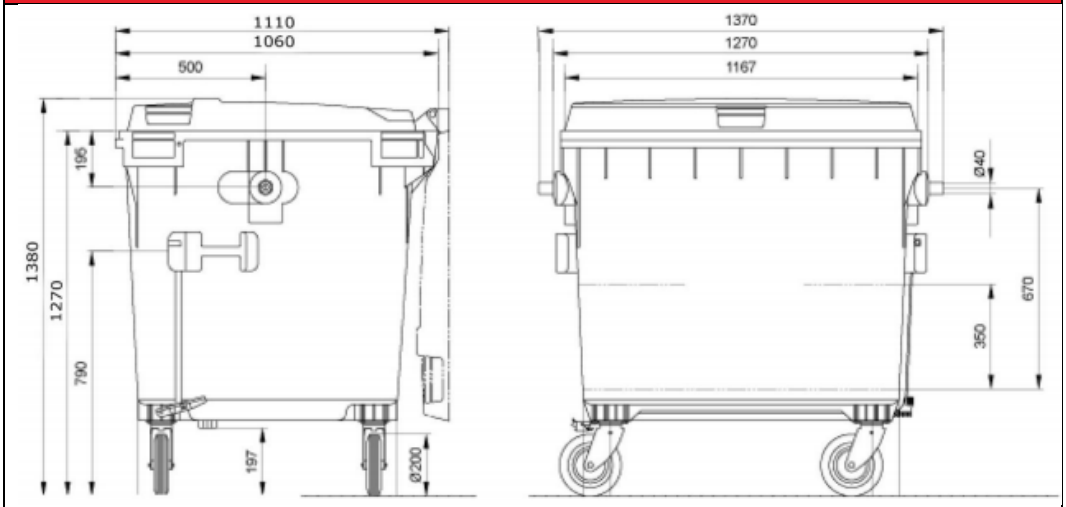
5.5.3 Behaviour change

People often attach a low priority to pro-environmental behaviour. To encourage such behaviour and drive environmental performance, customers should address both the physical and the psychological environment. The goal should be to create an environment that guides decision making, and helps people act out those decisions. Some examples on how this could be achieved are as follows:

- Collect data to understand customers experience of waste infrastructure and its effect on their behaviour;
- Reduce the amount of packaging, and increase the percentage of recyclable packaging;
- Redesign signage to make bins for different streams distinct;
- Update labelling to be uniform;
- Locate bins for different streams where they are most needed (e.g. on walking routes); and
- Remove bins not consistent with design.

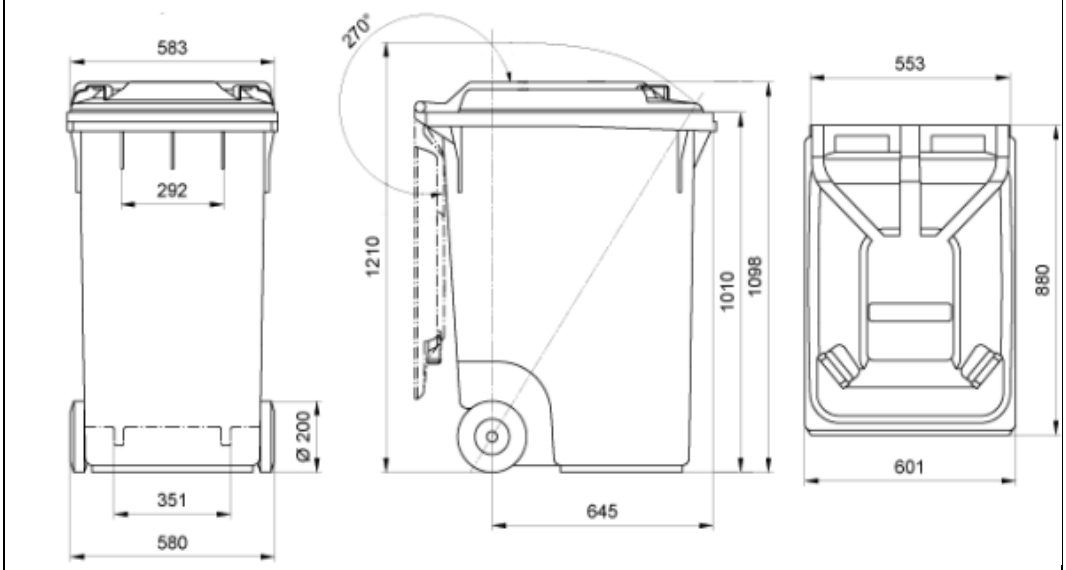
5.5.4 Example equipment specification

1,100 Litre Eurobin



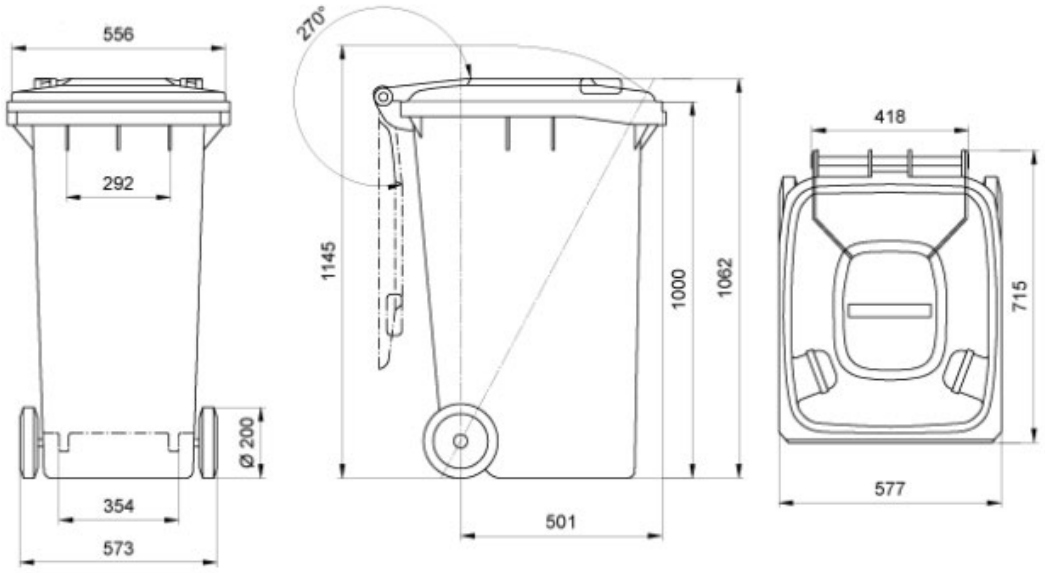
Length: 1.37m	Width: 1.11m	Height: 1.38m

360 Litre Wheelie Bin



Length: 0.88m	Width: 0.53m	Height: 1.21m

240 Litre Wheelie Bin



Length: 0.72m	Width: 0.55m	Height: 1.15m

In-bin compactor

Length: 1.15m	Width: 1.15m	Height: 2.1m

Baler		
		
Length: 1.03m	Width: 1.56m	Height: 2.63m

5.6 Waste management plan review

The success of the strategy as detailed above will be closely monitored by the FM team.

Feedback will be provided as a minimum on a monthly basis and as and when required where immediate action is required and dealt with in accordance to this strategy.

The strategy will be updated and amended as appropriate to ensure the development is within the perimeters of what is deemed necessary to maintain a clean and safe environment all year round.

An annual review will be provided to the local authority at their written request to confirm the success of the strategy and any amendments that may have been required to the original document based on lessons learned.

6. DSMP review process

This DSMP is intended to be updated frequently. The following sub-sections set out how the document will be reviewed and maintained.

6.1 Facilities management (FM) team

In terms of the day-to-day management of incoming goods and consignments, it is proposed that the site FM team be responsible for the following:

- Communication and liaison with each customer;
- Assisting with the receipt, sorting and moving of goods through the building to their destination;
- Monitoring misuse, unsafe or illegal use of the loading areas by the suppliers and taking action if necessary;
- Using the information provided by the booking-in system, collating delivery information into an overall delivery profile; and
- Reducing or consolidating the number of suppliers by identifying opportunities to share the same supplier base among the different customers of the development.

6.2 Delivery monitoring

The FM team will be responsible for keeping a record of servicing activity, monitoring the effectiveness of the scheduling strategy and making amendments to the plan. Key data to be captured are as follows:

- Date booked;
- Type and volume of carried goods; and
- Company details.

An initial survey of servicing activity will be undertaken within 12 months of occupation.

6.3 DSMP review process

The on-site FM team will use information and feedback from customers, suppliers and residents to conduct an annual review of this DSMP. This review will assess the efficiency of the DSMP to meet the objectives of minimising the environmental impact on the surrounding area and providing servicing arrangements for the building which meet road management and safety requirements.

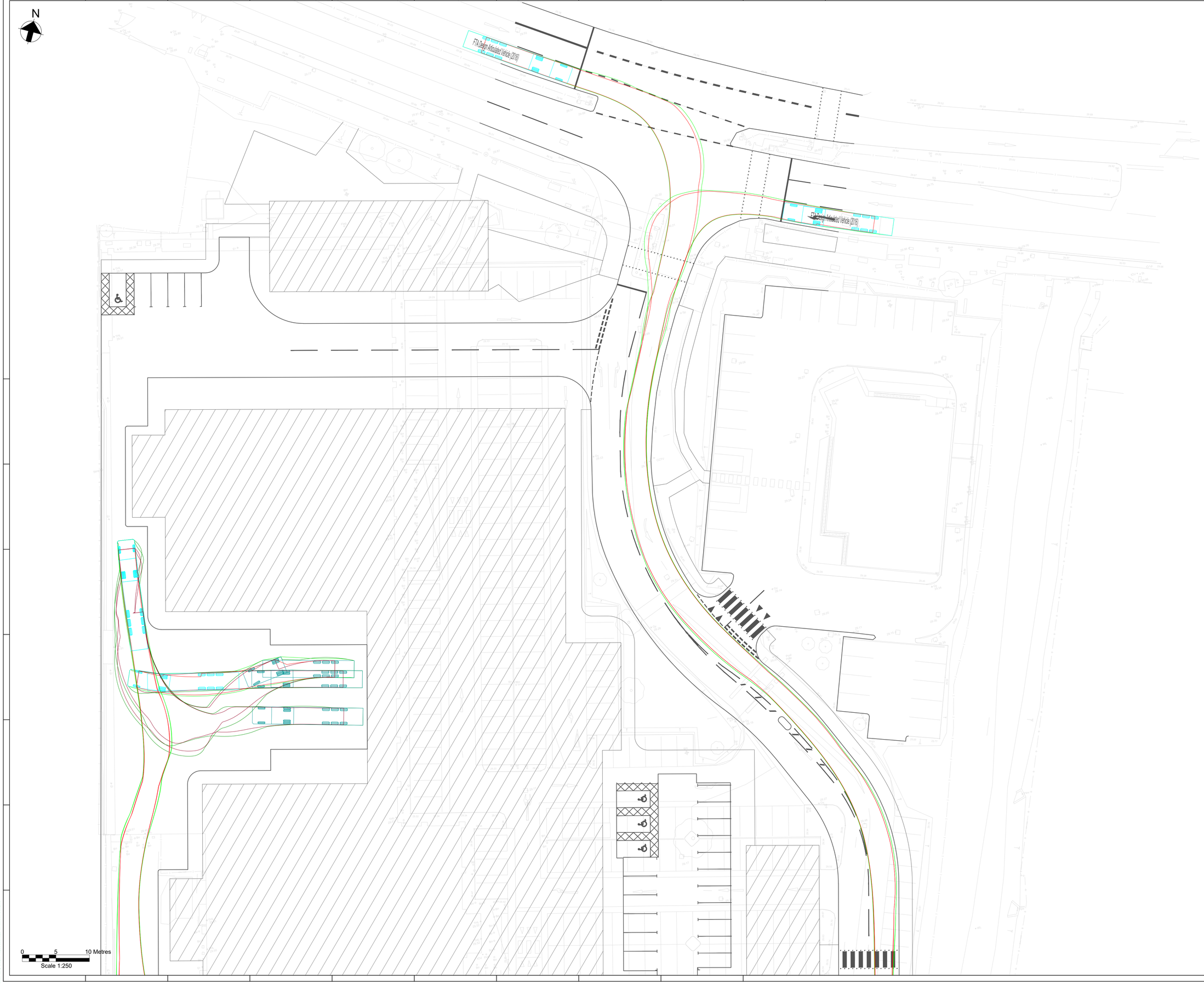
The FM team (on behalf of the building owner) will conduct the first review within 12 months after occupation and reviews will be conducted as necessary thereafter on an annual basis. Where necessary, changes to the DSMP will be made to reflect the findings of any review. A daily record of the service traffic movements will be conducted during a typical week to obtain the details.

The Owner shall notify the local authority of any change the occupancy of the Development that may have a material change to the approved DSMP as soon as is reasonably practicable and in any event one month prior to the commencement of such occupancy.

Any amendments that the Owner may wish to make to the DSMP shall be submitted to the local authority for approval and no amendments shall come into force until they have been approved.

A.1 Appendix

Swept Path Analysis - Indicative loading bay manoeuvres



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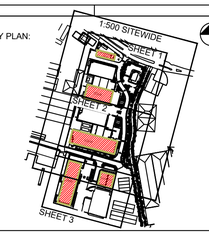

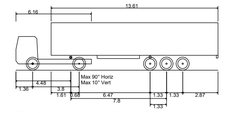

FTA Design Articulated Vehicle (2016)

Overall Length	16.480m
Overall Width	2.550m
Overall Body Height	3.870m
Min Body Ground Clearance	0.515m
Max Track Width	2.470m
Lock to lock time	3.00s
Kerb to Kerb Turning Radius	6.600m

Notes

1. External works / layout indicative at RIBA Stage 2 and all subject to change.
2. Layout based on NWA layout, received 21st February 2025.
3. Vehicle used for tracking indicative only. Vehicle, including type, size and load is to be confirmed by the client.
4. Vehicle has been tracked with a forward speed of 5mph and reverse speed of 2.5mph.

REV.	DATE	DESCRIPTION	ISSUED BY	ISSUED TO
P01	14/03/25	Issue For Planning	ARUP	COLT
P01.01	28/02/25	WIP For Planning	Arup	COLT

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PROJECT NAME:
HDP Masterplan

DRAWING TITLE:
LON6 Loading Bay - HGV Vehicle Tracking

STATUS:
S3 - COLT STAGE 2 - FOR PLANNING

DESIGNED:	DRAWN:	CHECKED:	SCALE:	SIZE:	STATUS:
ARUP	DC	JT	1:250	A1	S3

DRAWING NUMBER: LONUX-ARUP-SW-ZZ-DR-C-98106
REVISION: P01

N

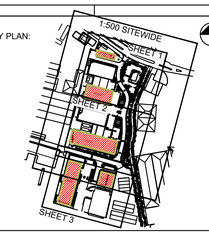
NO ENTRY

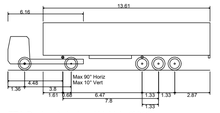
NO ENTRY

0 5 10 Metres

Scale 1:250

KEY PLAN:





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PROJECT NAME:

HDP Masterplan

DRAWING TITLE:

LON7 Loading Bay - HGV Vehicle Tracking

STATUS:

S3 - COLT STAGE 2 - FOR PLANNING

DESIGNED:	DRAWN:	CHECKED:	SCALE:	SIZE:	STATUS:
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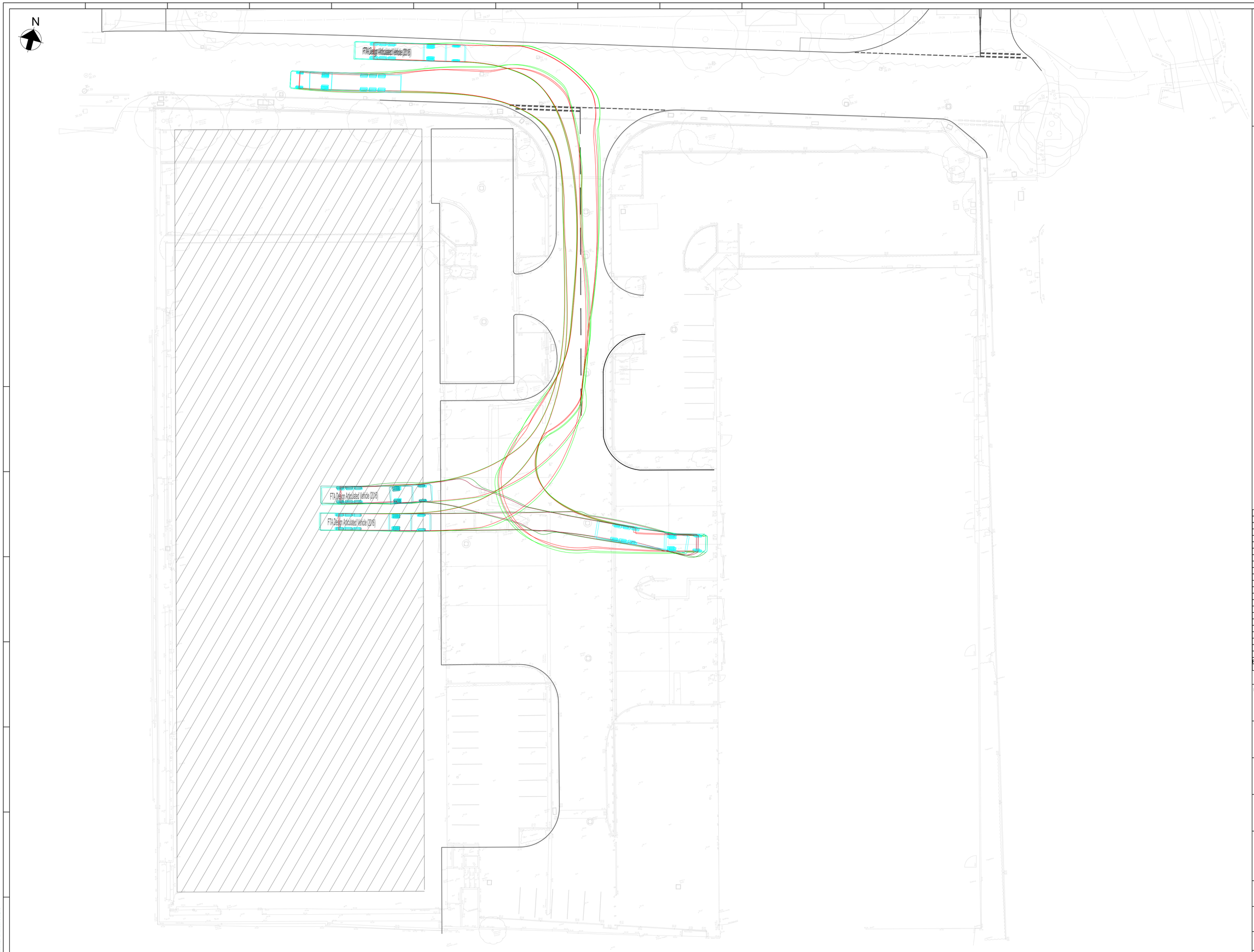
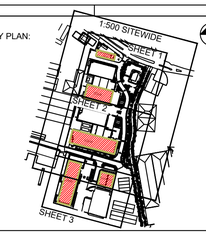
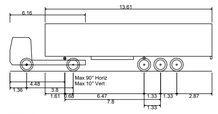
DRAWING NUMBER: LONUX-ARUP-SW-ZZ-DR-C-98107

REVISION: P01



KEY PLAN:





FTA Design Articulated Vehicle (2016)

Overall Length	16.480m
Overall Width	2.550m
Overall Body Height	3.870m
Min Body Ground Clearance	0.515m
Max Track Width	2.470m
Lock to lock time	3.00s
Kerb to Kerb Turning Radius	6.600m

Notes

1. External works / layout indicative at RIBA Stage 2 and all subject to change.
2. Layout based on NWA layout, received 21st February 2025.
3. Vehicle used for tracking indicative only. Vehicle, including type, size and load is to be confirmed by the client.
4. Vehicle has been tracked with a forward speed of 5mph and reverse speed of 2.5mph.

REV.	DATE	DESCRIPTION	ISSUED BY	ISSUED TO
P01	14/03/25	Issue For Planning	ARUP	COLT

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PROJECT NAME:
HDP Masterplan

DRAWING TITLE:
LON8 Loading Bay - HGV Vehicle Tracking

STATUS:
S3 - COLT STAGE 2 - FOR PLANNING

DESIGNED:	DRAWN:	CHECKED:	SCALE:	SIZE:	STATUS:
ARUP	DC	JT	1:250	A1	S3

DRAWING NUMBER: LONUX-ARUP-SW-ZZ-DR-C-98108
REVISION: P01