Elephant Park H1 Development

Draft Delivery and Servicing Management Plan

May 2021

Prepared by Buro Happold

lendlease

Application documents

Affordable Workspace Strategy

Application Form and Ownership Certificate

Arboricultural Method Statement

Archaeological Desk-Based Assessment

Basement Impact Assessment

CIL Additional Information Form

Construction Environmental Management Plan

Daylight and Sunlight Report

Development Consultation Charter Engagement Summary

▶ **Draft Delivery and Servicing Management Plan**

Design and Access Statement

Detailed Circular Economy Statement

Drainage Strategy

Energy Statement

Environmental Statement

Existing and Proposed Drawings

Fire Statement

Flood Risk Assessment

Health Impact Assessment

Marketing Strategy

Phase 1 Geo-Environmental Assessment

Planning Statement

Reconciliation and Comparison Statement

Statement of Community Involvement

Sustainability Statement

Transport Assessment (inc. Travel Plan)

Television and Radio Reception Impact Assessment

Utilities and Infrastructure Statement

Whole Life-Cycle Carbon Assessment

Contents

Glossary

Term	Definition
EMC	Estate Management Company
F&B	Food and beverage
FORS	Freight Operator Recognition Scheme
HGV	Heavy Goods Vehicles
LGV	Light Goods Vehicle
MEWP	Mobile Elevating Work Platform
MGV	Medium Goods Vehicle
OPP	Outline Planning Application
PMC	Plot Management Company
RMA	Reserved Matters Application
SMS	(Site-wide) Servicing Management Strategy
TA	Transport Assessment
TfL	Transport for London

1. INTRODUCTION

1.1. Introduction to Planning Application

1.1.1. This Draft Delivery and Servicing Management Plan has been prepared by Buro Happold on behalf of Lendlease (Elephant & Castle) Limited ("Lendlease") to support an application for full planning permission ("the Application") for the redevelopment of land comprising Plot H1 ("the Site") within the Elephant Park Masterplan, Elephant and Castle, London, SE1 ("the Elephant Park Masterplan"). This standalone development proposal is referred to as "the H1 Development".

1.1.2. Plot H1 currently forms Phase MP5b within the Outline Planning Permission ("OPP") granted on 23 March 2013 for the Elephant Park Masterplan (LBS Ref: 12/AP/1092). Outline planning permission was granted under the OPP for development of Plot H1 for a mix of land uses, with matters of scale, appearance and landscaping reserved. The approved development on Plot H1 under the OPP is referred to as "the OPP Plot H1 Parameters".

1.1.3. The Application for Plot H1 seeks full planning permission to develop an office-led building (Class E) on the Site. It is being sought through a standalone planning application because it takes a form which is not capable of being approved in detail through the submission of reserved matters pursuant to the OPP. However, the H1 Development has been designed with the intention that it is to be delivered alongside the adjacent plots that have been and are being delivered under the OPP and will complete the Elephant Park Masterplan. In addition to the Application for the H1 Development, a non-material amendment application will be submitted in parallel to amend the Reserved Matters Application (RMA) approval for Plot H2, alongside a revised RMA for the Park, in order to align the public realm proposals hereby submitted with those approved on the neighbouring plots. This is explained further in Section 3.

1.1.4. The Elephant and Castle Town Centre has evolved significantly over the past decade and the Application for Plot H1 has been prepared to respond to the emerging context. Additionally, the New Southwark Plan and London Plan set ambitious targets for increasing employment space in the Borough within the Elephant and Castle Opportunity Area. The establishment of a new landmark commercial building in this location will provide new employment and business opportunities for local people and add to the vibrant mix of land uses at Elephant Park and the new Town Centre.

1.2. Introduction to the Draft Delivery and Servicing Management Plan

1.2.1. The 2012 Outline Planning Application included the following documents that set the scene for the derivation of the Servicing Management Plan for the Elephant Park Masterplan and its individual phases.

- Estate Management Strategy – sets the basis for an Estate Management Company (EMC) to oversee the delivery of high quality services to Elephant Park, creating a first class environment for all which will be a major factor in creating the place, and delivering the regeneration objectives of the OPP. The strategy set the principle of Plot Management Companies (PMCs) for each set of plots which will be controlled by the lease holders of the buildings and will co-ordinate with the EMC through the established central Estate Management Office. The EMC and PMCs will seek the centralised procurement of services to ensure development-wide efficiencies but also to help reduce vehicle trips to the development.
- Waste Strategy – sets out the policy and legal basis on which waste will be managed at Elephant Park; how a reduction in waste will be achieved and the different approaches adopted for both residential and commercial waste. The Waste Strategy sets the headlines of how the EMC and PMCs will be involved in the management of waste and waste collections.

- Transport Assessment (TA) – Section 12 of the TA report considered the headlines of servicing for Elephant Park and estimated the number of servicing movements for the commercial and residential development. It was estimated that approximately 370 movements per day could be generated across the wider development. The report further considered the servicing bay requirements for each plot.
- Travel Plan – This document considers how the travel implications of the development will be minimised and reduced, where possible. The site-wide principles have been set in the OPP and will be refined through the individual RMAs. A Site-wide Travel Plan Framework has been approved by Southwark Council ("the Council") to form the basis from which Plot Travel Plans will be developed.

1.3. Aim of this Draft Delivery and Servicing Management Plan

1.3.1. The operation of the H1 Development is expected to generate various types of servicing requirement/demands over the course of each day, and it is proposed that a Plot Management Company (PMC) team appointed on behalf of the Applicant would be responsible for co-ordinating these as part of a facilities management (FM) role.

1.3.2. The aim of this draft DSMP is to ensure that servicing taking place within the Site is managed properly so there is minimal disruption to the neighbouring environment. The objectives of this DSMP are to:

- Ensure delivery activities do not obstruct the flow of traffic on the public highway;
- Manage deliveries to reduce the number of trips, particularly during highway peak periods;
- Minimise the time vehicles wait or park in vehicle servicing areas so there is continuous availability for other service vehicles; and
- Encourage the use of greener vehicles.

1.3.3. The DSMP is a 'live document' which requires on-going monitoring and review to ensure that the objectives are achieved. The DSMP will therefore be refined and adapted to ensure continuous improvement towards achieving its aims.

1.4. Structure of the Draft Delivery and Servicing Management Plan

1.4.1. Section 2 outlines the Site and its surroundings, and a description of the H1 Development is provided at Section 3. The remainder of this document is split into a brief overview of the Site-wide Servicing Management Strategy, the specific servicing provision for the H1 Development and management measures and action plan.

1.4.2. A separate Site-wide Servicing Management Strategy pursuant to Paragraph 30.1 of the Section 106 Agreement for the OPP was approved by the Council on 7 December 2016, setting out principles to be adopted for each Plot within Elephant Park. An updated Site-wide Servicing Management Strategy was submitted to the Council in September 2020 and is currently being determined.

1.4.3. A full Plot Delivery and Servicing Management Plan will be submitted ahead of implementation and approved ahead of occupation.

2. SITE AND SURROUNDINGS

This section provides details of the Elephant Park planning permissions and the Site in its existing context.

2.1. Elephant Park

2.1.1. Elephant Park is located in Elephant and Castle, within the administrative boundary of Southwark Council ("the Council"). The Masterplan occupies an area of 9.71 hectares, and is bounded by:

- New Kent Road (A201) to the north,
- Rodney Place and Rodney Road to the east,
- Wansey Street to the south; and
- Walworth Road (A215) and Elephant Road to the west.

2.1.2. Heygate Street bisects Elephant Park with junctions to Walworth Road to the west and Rodney Place and Rodney Road to the east.

2.2. The Outline Planning Permission

2.2.1. The Council granted two planning permissions for Elephant Park on 27 March 2013: the OPP and the Demolition Planning Permission (ref: 12/AP/3203).

2.2.2. In summary, the OPP granted consent for up to 254,400 sqm of residential floorspace, up to 16,750 sqm of retail floorspace, up to 5,000 sqm of business floorspace and up to 10,000 sqm of community, culture and leisure floorspace, alongside a new energy centre, a new park ("The Park"), and public realm.

2.2.3. The OPP reserved the detailed design elements of Elephant Park for future approval at the Reserved Matters stage but did establish a series of approved parameters and principles for the Development within three approved application documents: the Parameter Plans, the Development Specification and the Design Strategy Document ("DSD"), as well as being accompanied by a section 106 agreement that was entered into on the same date that the OPP was granted.

2.2.4. The OPP introduced five specific character areas within Elephant Park which were established to create a variety of experience and richness to the development: 1 - The Park; 2 - Walworth Road; 3- New Kent Road; 4- Walworth Local and 5- Rodney Neighbourhood. These are shown on Figure 1 below.

Figure 1 - Extract of character areas from the consolidated Design Strategy Document (Feb 2013)

2.2.5. Elephant Park was further sub-divided into 12 individual development plots (H1 to H7, H10, H11a, H11b, H12, and H13) plus a Pavilion to be located in the new park at the centre of the scheme (known as plot 'PAV1'), refer to Figure 2 below. The individual development plots comprise a mix of residential and/or other land uses and included varying heights and massing to fit into the specific character areas in which they are located and the surrounding urban context. In particular, the height and massing of all tall buildings within Elephant Park was informed by a townscape assessment that takes into account both local and strategic London views. The plots are delivered within five phases, which are defined on the Phasing Plan (the most recent version of which is provided in Figure 2 below).

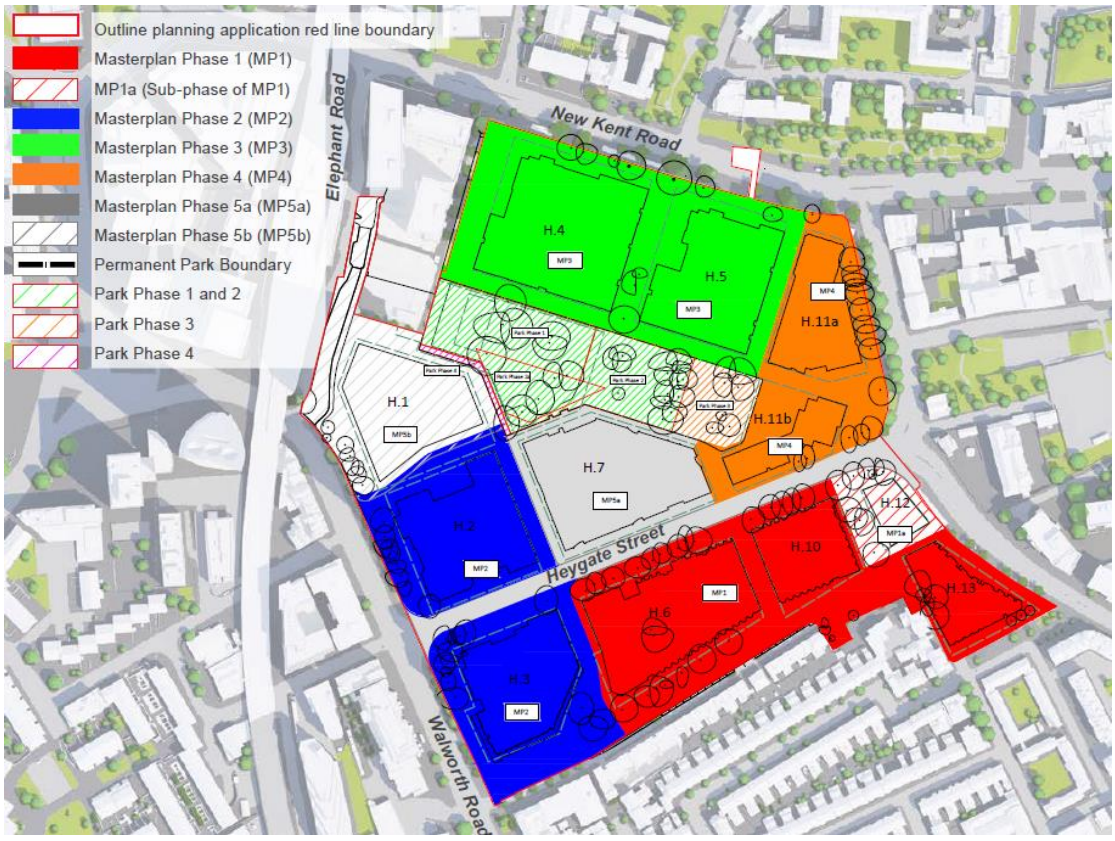


Figure 2 – Elephant Park phasing plan identifying the individual development plots

2.2.6. In addition to the built floorspace, the OPP provides significant areas of open space, including The Park, gateway spaces, pocket parks and new streets. Mature trees have been retained where possible and will be complemented with new landscape and new trees, which will ensure that there will be no net loss of trees on the Elephant Park site.

2.2.7. In March 2021, the Council approved a Detailed Phasing Plan for Elephant Park (Figure 2) setting out the current proposed sequence of construction works in respect of all phases and plots in the development. This Detailed Phasing Plan identified that Plot H1 would form part of the final phase MP5, sub-phase MP5b, of the Masterplan.

2.2.8. The Council approved the RMAs for the first phase of Elephant Park comprising Plots H6, H10 and H13 and associated public realm in February 2014. In December 2014, the Council approved the Reserved Matters Application for the second phase comprising Plots H2 and H3 and associated public realm. In October 2015, the Reserved Matters for the Energy Hub (Plot H12) and associated public realm were approved by the Council. RMAs for the third phase comprising Plot H4 and associated public realm, were approved by the Council in May 2017, and for Plot H5 and associated public realm in September 2017. RMAs for the fourth phase, comprising Plots H11a and H11b and associated public realm, were approved by the Council in September 2018. Most recently, the RMA for Plot H7 within Phase MP5a was approved by the Council in March 2020, and Reserved Matters for the Pavilion (Plot PAV1) were approved

in October 2020. Plot H1 is the only plot within the Masterplan that does not have Reserved Matters Approval.

2.2.9. In response to the increased employment targets of the Council and in the context of the evolving Town Centre, the H1 Development is being brought forward as an office, further enhancing the mixed use nature of the Elephant Park Masterplan. The H1 Development and the OPP have been designed to interface and co-exist to deliver the Elephant Park Masterplan, and it is the intention that H1 will be delivered alongside the development that has been constructed and/or approved under the OPP. The Application has been structured to interface with the OPP so that the OPP and the H1 Development can be developed out harmoniously and without either prejudicing the other. It is intended that a planning obligation will accompany the H1 Development and will secure that, upon commencement of the H1 Development, no further development will be undertaken pursuant to the OPP within the areas of the OPP that also benefit from the permission granted pursuant to the Application. In this way, it will be clear that the H1 Development supersedes the OPP in this area of the Elephant Park Masterplan. The H1 Development is brought forward without prejudice to the lawfulness, deliverability and acceptability of what has gone before under the OPP, and is capable of implementation alongside the OPP.

2.2.10. The Planning Statement submitted in support of the Application describes how this planning application has been structured in relation to the OPP. In order to explain the relationship between the H1 Development and the OPP more generally, a Reconciliation and Comparison Statement is included in Appendix 1. The Reconciliation and Comparison Statement provides a technical overview of the H1 Development in comparison with the OPP Plot H1 Parameters and a reconciliation of the Elephant Park Masterplan to show how the H1 Development and the composite RMA approvals for all other Plots granted under the OPP come together to provide a final reconciliation against the development controls of the OPP.

2.3. Plot H1

2.3.1. The Site is bounded by:

- Castle Square and Sayer Street to the north,
- Sayer Street, the Pavilion and The Park to the east,
- Walworth Road and Elephant Road to the west; and
- Deacon Street and Plot H2 to the south.

2.3.2. As shown in Figure 3 below, the Site is largely surrounded by other elements of Elephant Park and sits at the confluence of The Park and Walworth Road Character Areas, marking the westernmost plot within the Masterplan. The Site is largely vacant however, at present, it contains a temporary modular building providing staff welfare in relation to the ongoing construction of the Elephant Park Masterplan along with accommodating the meanwhile use of the Urban Farm, as consented by Southwark (20/AP/2612) in November 2020.

2.3.3. The land uses surrounding the Site, particularly within the Elephant Park Masterplan, are primarily residential in character with commercial uses at ground level. To the east of the Site is The Park, the main public open space within the Elephant Park Masterplan. The southern boundary is characterised by Plots H2 and H7 which comprise mixed residential and commercial land uses. The area to the north and west is more varied and is characterised by the commercial uses within Castle Square and along Walworth Road, one of the main arterial routes in the Borough. There are no designated heritage assets (Conservation Areas or Listed Buildings) in close proximity to the Site.

2.3.4. The Site is situated within close proximity to the significant transport infrastructure around Elephant and Castle, with the Underground Railway Station to the north-west, and mainline Railway Station on the west side of Elephant Road. Further details are provided in the Design and Access Statement, prepared by Acme, that accompanies the Application.

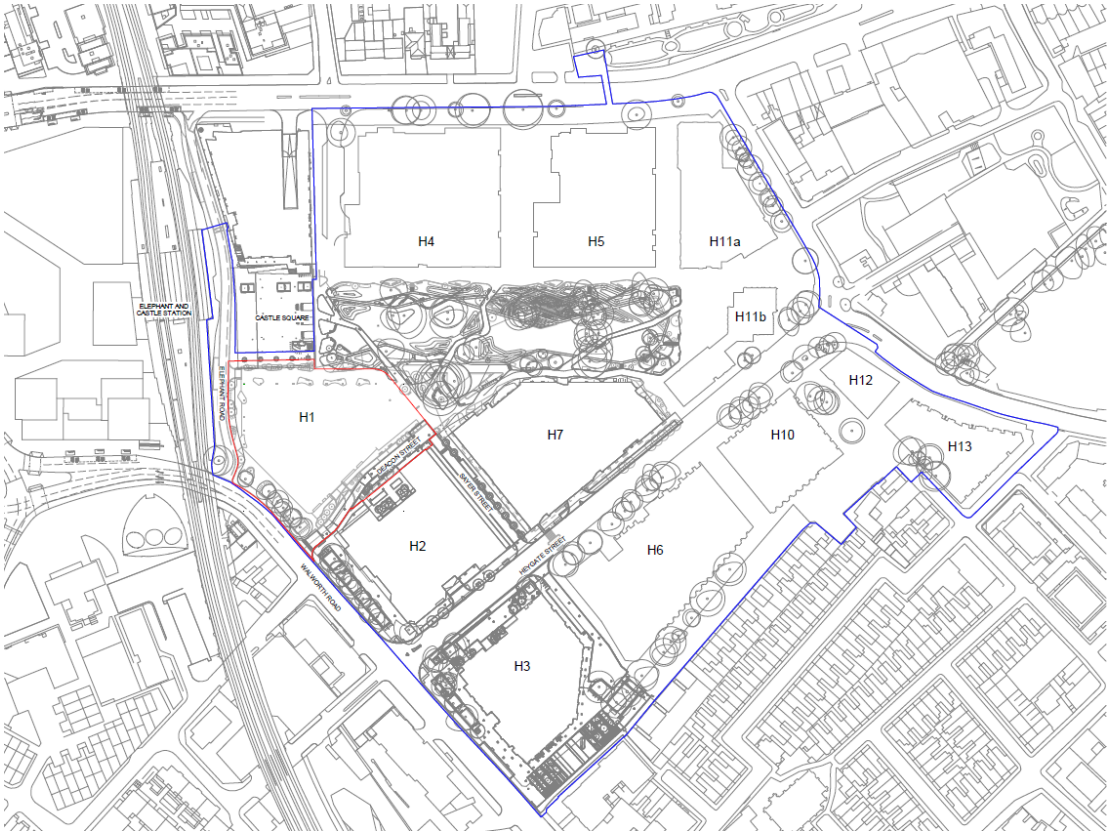


Figure 3 - Application Site boundary shown in red. OPP boundary line shown in blue.

3. DESCRIPTION OF DEVELOPMENT

This section describes what is being applied for in the Application for the H1 Development, explains why it is coming forward as a standalone planning application and how it relates to the Elephant Park Outline Planning Permission (OPP).

3.1. Description of Development

3.1.1. This section should be read in conjunction with the Design and Access Statement which is submitted in support of the Application and describes the principal components of the H1 Development.

3.1.2. This Application seeks full planning permission for the H1 Development. Specifically, the Application seeks approval for:

'Redevelopment of the site to provide a building of ground plus 17-storeys (including a mezzanine floor) with basement and rooftop plant providing office floorspace (Class E) and areas of flexible floorspace for the following uses; office/retail/services/food and drink/medical or health floorspace (Class E), including ancillary cycle parking, accessible car parking, servicing, landscaping, public realm improvements and other associated works incidental to the development.'

3.2. The Proposed Development

3.2.1. Working in partnership with Southwark Council, Lendlease is delivering a £2.5 billion regeneration programme on 28 acres of land in the centre of Elephant and Castle creating one of the capital's most exciting places to live, work and visit. The vision for Elephant Park is to breathe new life into this special part of Central London, building on Elephant and Castle's heritage to create thousands of high-quality new homes, jobs, business opportunities and green space for locals and Londoners.

3.2.2. The H1 Development will contribute to this vision by delivering an employment led development with an emphasis on health and wellbeing which maximises the connection with The Park. The vision for the Site is a direct response to its location, which will complement the transformation of Elephant and Castle Town Centre by diversifying the mix of uses in the neighbourhood and providing local employment and business opportunities to the area, whilst strengthening the connection between Elephant and Castle Town Centre and Walworth.

3.2.3. The H1 Development comprises ground plus 17 storeys (including mezzanine) with a basement level and rooftop plant, extending to a maximum height of 85.730 m AOD (including rooftop plant). The building will serve as a key focal point within Elephant Park and along Walworth Road, with the tallest element situated adjacent to the railway line and stepping down towards the neighbouring residential buildings.

3.2.4. The Application proposes 63,599 sqm (GIA) of floorspace, comprising 49,351 sqm (GIA) of offices, 8,681 sqm (GIA) of flexible of floorspace at ground floor, mezzanine and first floor level suitable for office, retail, food and drink, medical and health uses, alongside 5,566 sqm of shared plant, servicing and cycle parking facilities. All proposed uses fall within Use Class E of The Town and Country Planning (Use Classes) Order 1987 (as amended). A full breakdown of the proposed floorspace is provided in Table 3.1.

Table 3.1: Total Development Floorspace

Land Use (All Class E)	Floor Level	NIA (sqm)	GIA (sqm)	GEA (sqm)
Offices	02 - 16	40,783	49,351	49,565
Offices / medical or health	Mezzanine - 01	4,300	6,728	6,795
Offices / retail / services / medical or health	GF	259	264	277
Offices / retail / services / food and drink	GF	1,683	1,689	1,728
Ancillary (loading bay, plant, cycle facilities and other BOH space)	GF / Roof / Basement	-	5,566	6,258
Total	**All**	**47,025**	**63,599**	**64,624**

3.2.5. The H1 Development also proposes to provide 10% (GIA equivalent) of the office floorspace in the H1 Development as affordable workspace in line with emerging policy. As an alternative to the proposed affordable workspace, there is also a possibility that a new health hub to serve the local area could be provided within the H1 Development. Further information is provided in the supporting Affordable Workspace Strategy.

3.2.6. A key ambition of the H1 Development is to be open and accessible, evident through the provision of the active lobby - an extensive, publicly accessible ground floor space serving both future office occupants and the wider public. The ground floor frontages around the building will reflect the hierarchy of the adjacent streets and routes, with the frontages along Sayer Street North, Elephant Road and Walworth Road providing the main active frontages. This will enhance the surrounding streetscape and the relationship between the H1 Development and The Park, whilst also helping to strengthen the relationship between Elephant and Castle Town Centre and Walworth. The main office entrance is situated along the north elevation fronting Sayer Street North as it turns to meet Elephant Road, ensuring maximum visibility and accessibility for workers and visitors accessing the building from Elephant and Castle Railway and Underground Stations (through the viaduct archway pedestrian routes to be delivered as part of Delancey's Elephant and Castle Town Centre development).

3.2.7. The proposed H1 Development building will be complemented by the enhancement of the surrounding public realm, including Sayer Street North, which will be a pedestrian priority route and cycle route, along with improvements to Deacon Street and completion of the Elephant Road and Walworth Road landscape. The H1 Development public realm proposals have been developed in response to the key landscape Character Areas identified in the OPP, which define Elephant Park. The stepped approach to the massing facilitates the provision of external amenity space serving the office accommodation in the form of roof terraces, which will also allow for a strong visual connection between The Park and the building, whilst responding positively to the Site's prominent position on Walworth Road. The outdoor terraces and integration of public realm in the design of the H1 Development is also increasingly important in supporting occupier health and wellbeing in a post-Covid-19 workplace environment.

3.2.8. All servicing will be carried out from an internal loading dock, accessed from Deacon Street, with vehicles both entering and exiting Deacon Street from Walworth Road to minimise disruption to the wider street network within the Masterplan. The H1 Development will be car free other than allocated accessible spaces located on Deacon Street. Long stay cycle parking is proposed within the basement of the H1 Development, accessed from Walworth Road with further short stay cycle parking in the surrounding public realm.

4. ELEPHANT PARK SITE-WIDE SERVICING MANAGEMENT STRATEGY

4.1. Introduction

4.1.1. The regeneration of Elephant Park is being delivered in several phases over a number of years. A series of Site-wide strategy documents were developed in relation to the OPP for the Elephant Park Masterplan. These strategies were intended to act as a framework, providing key principles and objectives for the individual plots to follow as proposals were developed for each phase in turn.

4.1.2. The approach for servicing management is set out in the Site-wide Servicing Management Strategy (SMS). Due to the number of phases and overall programme for the Elephant Park Masterplan, the framework was intended to be robust and flexible, responding to changes over time.

4.1.3. The SMS set out a number of key principles for the servicing strategy across Elephant Park, including the following:

- Provide a supportive management system that will address the needs of both commercial and residential requirements for the completed development;
- Ensure residents can live in a well-balanced, safe and well managed urban environment that accommodates the current and emerging needs of modern living;
- Provide a robust system of plot and public realm servicing and management that allows business occupiers to trade effectively, reflecting the changing demands on their commercial markets; and
- Facilitate effective delivery, servicing and refuse collection arrangements within the development which do not adversely impact on the adjoining public spaces and road network.

4.1.4. The SMS was intended to act as a framework for the development of plot-specific strategies; as the Elephant Park Masterplan progresses, individual Servicing Management Plans are to be submitted for each for each phase to ensure that the principles and framework set out by the Site-wide Servicing Management Strategy are being adopted and adapted to meet the emerging requirements of each plot.

4.1.5. Despite the H1 Development coming forward as a standalone Application, the principles of the SMS are still considered to be applicable and have been considered throughout the development of the proposals for the plot.

4.2. Vehicles Routes and Approach to Servicing

4.2.1. Elephant Park is bordered by New Kent Road (part of the TfL Road Network) in the north; by Walworth Road (part of the Strategic Road Network) in the west; and by Rodney Road/Rodney Place in the east. The west and southern boundaries are Elephant Road and Wansey Street respectively, and Heygate Street runs through the centre of the development.

4.2.2. Service vehicle routes have been identified within the development to provide local access: Sayer Street, formerly known as Central Shopping Street (north and south of Heygate Street); Deacon Street, formerly known as Park Street West (between Plots H1 and H2); and Lion Way, serving H4 and H5.

4.2.3. The Site-wide SMS and Site-wide Highways Strategy contains further details outlining the access points and routes. The specific access arrangements for the H1 Development are considered in this site-specific Servicing Management Plan.

4.2.4. The Site-wide SMS also provides an overview of the anticipated vehicle types in relation to the proposed land-uses and a summary of the general high-level strategies in relation to deliveries and refuse/recycling collection, including the following:

- Anticipated demands for servicing bays for each plot will be reviewed as each phase of development is progressed, informing the detailed design.
- Site-wide, an appropriate provision of in-plot service yards and on-street loading bays will serve the deliveries to businesses and residences and the collection of refuse.
- The EMC/PMCs will maintain and manage the in-plot service yards and monitor the use of on-street loading bays and, where practical, they will seek to accommodate as many of the delivery vehicles within the service yards as possible.
- In-plot servicing yards across the Elephant Park Masterplan will generally be used for residential and commercial waste collection as well as retail deliveries to larger stores.
- Residential deliveries will generally be accommodated through coordination with the EMC/PMCs through in-plot service yards or via on-street loading bays (or a combination).

4.2.5. This plot-specific Servicing Management Plan provides further refinement for the servicing strategy for the H1 Development following discussion with the Council.

5. H1 DEVELOPMENT DELIVERY AND SERVICING STRATEGY

5.1. DSMP Objectives and Key Principles

5.1.1. The objectives of this H1 Development draft Delivery and Servicing Management Plan replicate those for the wider Elephant Park Masterplan, including:

- Ensure a well-balanced, safe and well managed urban environment that accommodates the current and emerging needs of modern living;
- Provide a robust system of plot and public realm servicing and management that allows business occupiers to trade effectively, reflecting the changing demands on their commercial markets;
- Facilitate effective delivery, servicing and refuse collection arrangements within the H1 Development which do not adversely impact on the public spaces and road network and reduces the number of aborted or failed deliveries and to reduce the number of trips to the H1 Development;
- Encourage the use of low emission vehicles through contracts and service agreements – including Site maintenance contracts; and
- Ensure the H1 Development is meeting requirements set out in planning policy (see Appendix 1).

5.1.2. The principles for the H1 Development will reflect those stipulated for the wider Elephant Park Masterplan. The H1 Development will:

- Provide Site-specific servicing management through a management company and seek co-ordination between plots;
- Seek to reduce numbers and frequency of deliveries where practicable, avoiding peak times when possible and encouraging fast turn-around of deliveries;
- Ensure that service charges are cost effective for occupiers;
- Work with service companies to seek refinement of delivery and waste collection processes;
- Work with retailers and commercial occupiers to investigate and implement methods which can reduce the impacts of servicing needs – aligning deliveries and suppliers;
- Encourage all occupiers and retailers to adopt best practice methods, for example using FORS registered suppliers and transport operators, whilst recognising that some occupiers will already have multiple location agreements in place with specific companies;
- Stipulate to all retail/commercial occupiers that all deliveries to the service yard must be booked with the PMC by 16:00 the preceding day and that, where possible, they will limit deliveries and collections during the morning and evening peak traffic periods; and
- Ensure the size of vehicles complies with site-specific restrictions as set out in tenancy agreements.

5.2. Delivery and Servicing Access

5.2.1. The Site will be serviced by an in-plot service yard, accessed from Deacon Street, to enable all routine servicing activity to take place off-street. The majority of servicing activity will approach the Site from the Walworth Road/Deacon Street junction and depart via the same route, accessing the service yard in a left-in, right-out manner, as illustrated in the schematic below.

5.2.2. Access will also be possible from Heygate Street, via Sayer Street Central and Deacon Street, but the intention is to limit servicing activity on Sayer Street as far as practical due to the high pedestrian footfall associated with a concentration of retail outlets.

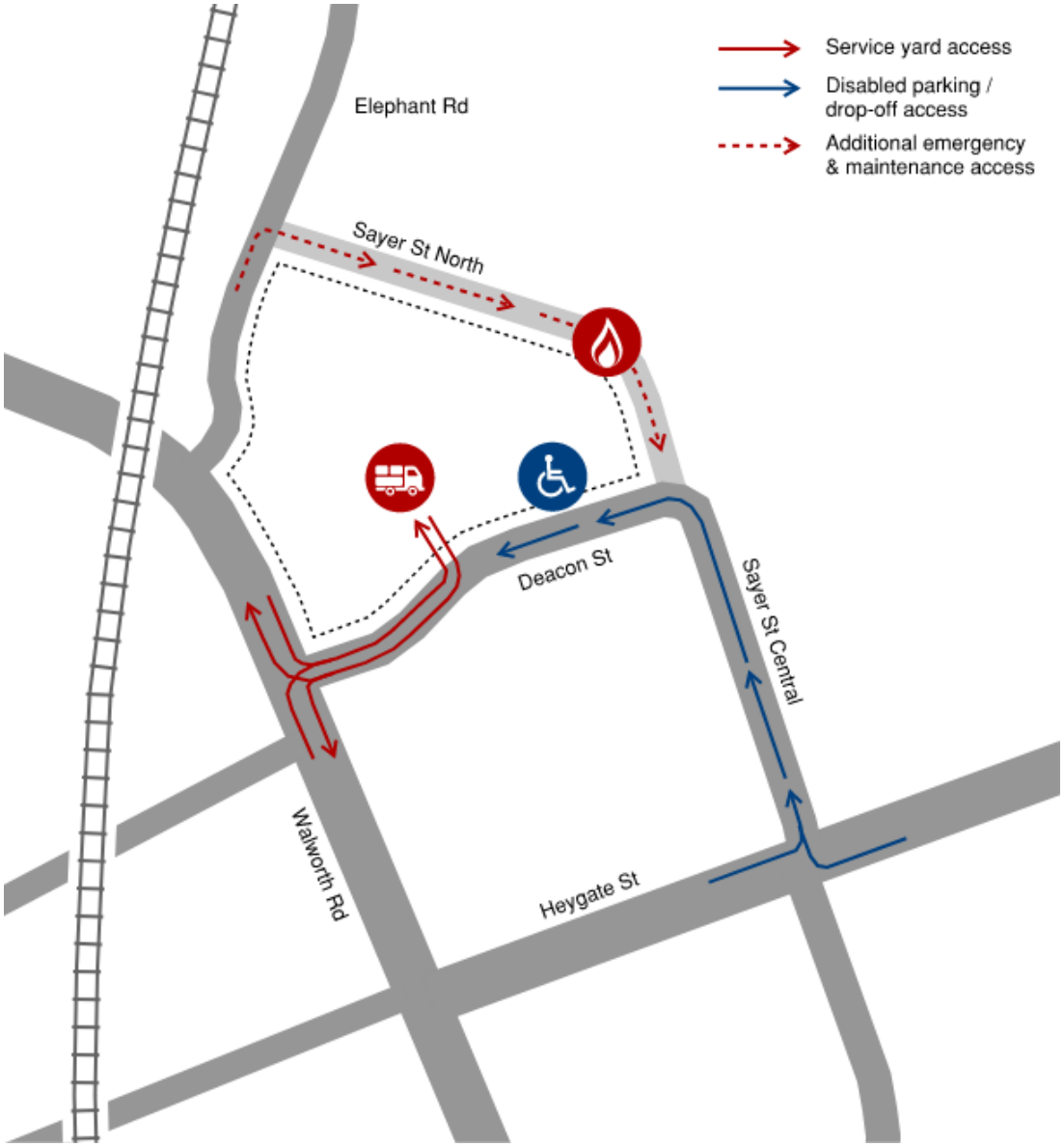


Figure 4 - Servicing access schematic

5.2.3. This route will also provide access to disabled parking and drop-off facilities on Deacon Street, along with the on-street loading bay associated with Plot H2 to the south of Deacon Street. An entry to the building is provided on the southern side of the Site for people using the disabled parking and drop-off, providing an opportunity for convenient, direct access close to the parking facilities.

5.2.4. Emergency service access is provided primarily via Deacon Street, though Elephant Road and Walworth Road are also open to all traffic. Sayer Street North provides an additional route to the north/north-east of the building for use by emergency services (fire engines and ambulances) as required, and occasional maintenance vehicles e.g. for planned building maintenance operations (see Section 5.8 and Appendix 6).

5.2.5. The public realm contains short-stay cycle parking at a range of locations around the building perimeter. These racks can be used by cycle couriers making deliveries. Several racks are included on Deacon Street close to the loading bay office, which can be accessed directly from the street by couriers or individuals delivering on foot, avoiding the need to enter the main service yard. Couriers will also be able to deliver directly to the main office reception on the northern side of the building or to individual retail units.

5.3. Internal Service Yard

5.3.1. The H1 Development service yard contains three marked vehicle bays. One is designed to cater for refuse vehicles and rigid trucks of up to c.18 tonnes gross vehicle weight (GVW). The southern bay is smaller and caters for vans and small trucks up to and including 7.5 tonne trucks. The third (central) bay is intended for cars and smaller vans (panel and box vans) only. It is recommended that bays are visually identified through signage/road markings to ensure that drivers can be easily directed to the appropriate bay by the concierge/PMC team.

Figure 5 – Illustrative plan showing location of service yard within the development

5.3.2. Up to three service vehicles can therefore be accommodated on the Site at any one time and can manoeuvre around each other. The demand analysis described below shows that the service yard typically needs to accommodate up to eight vehicles per hour. This demand could potentially be satisfied with two bays, which could realistically accommodate up to eight vehicles per hour if 15 minutes were allowed for vehicle turnover. However, provision of a third bay allows greater flexibility in scheduling and a level of robustness that allows longer-dwell activity (such as refuse collection) to be accommodated without compromising routine servicing activity. As discussed below (paragraph 5.4.32), 20-minute delivery slots are proposed for flexibility, allowing three bays to accommodate up to nine vehicles per hour.

5.3.3. A management system will be established for the Site to control access to the service bays through a delivery booking system (DBS) – ensuring sufficient time for deliveries and co-ordinating with refuse collections (see Section 6.2 for further details). In co-ordination with the concierge staff, the PMC will monitor the use of bays and guide businesses to the use of times where there is lower demand. The PMC and service bay operators will seek to minimise turnaround times to maximise the use of the service yard bays.

5.3.4. It is recommended that lease agreements will stipulate that the maximum vehicle standard size is 8m in length. Access for longer vehicles can be accommodated but would need to be specifically organised with the EMC with slots pre-booked to ensure only one vehicle of this size needs to be accommodated at any time.

5.3.5. The service yard will have at least 4.3m clear headroom throughout (to accommodate refuse truck 'bin lifting' operations) and a minimum of 5.0m clear over the skip compactor and bay in front of it, for skip-lifting operations.

5.3.6. The service yard is provided with a loading bay office adjacent to the vehicle gates, where a 'dockmaster' (an appropriately trained member of the plot management team) will be based to control access to the Site and supervise the service yard. Vehicular gates are full-height bi-fold metal gates (or equivalent). A dockmaster would generally be expected to be located within the loading bay office during normal day-time hours to supervise servicing activity, direct arriving drivers and coordinate with occupiers where required.

5.3.7. It is proposed that perimeter non-vehicular areas are clearly defined through coloured surface markings and symbols as appropriate, to provide contrast to the vehicular areas. For flexibility of transferring goods/bins between vehicles and the distribution route, it is proposed that an upstand kerb will generally not be provided to define these areas, as this would require ramps or frequent drop kerbs. Instead, it is proposed that bollards are used to supplement the visual markings in defining a segregated walkway and provide protection to pedestrians.

5.3.8. The main no-vehicular area, behind the parking bays, will be used for in the internal transfer of goods from delivery vehicles to the back-of-house corridor network and service lift core. Refer to Sections 5.9 and 5.12 for further details. These corridors provide step free circulation within the Site. In the same way, the walkway and corridors allow transfer of waste to the bin area within the loading bay for collection by refuse vehicles.

Figure 6 - Illustrative layout of the service yard

5.3.9. Through a system of traffic signals and the access gate, priority will generally be given to vehicles arriving, with departing service vehicles held in the service yard until their exit is clear. Smaller trucks and vans can pass each other when entering/exiting the service yard. It is not expected that larger vehicles would need to pass each other, but should this occur on a rare occasion, assistance would be available through a management strategy to avoid conflict.

5.3.10. In the unlikely event that a delivery vehicle arrives that has not pre-booked, it is assumed that the driver will be required to contact the PMC service yard staff, via the loading bay office, to gain access. The service yard will be actively controlled by the PMC and they will manage the un-booked vehicles, either requiring them to enter the service yard where they will be permitted to deliver or collect their goods or, if they are not in the correct location, they will be required to turn within the Site and return to Deacon Street.

5.3.11. As described above (Section 5.2), vehicles will access the service yard from Deacon Street. On departure, vehicles will be required to turn right on to Deacon Street and onwards to the all-movements junction with Walworth Road; this will be enforced through the design of the yard access junction and line markings as shown illustratively in Figure 6.

5.3.12. Appendix 2 illustrates the layout of the service yard and the swept path testing undertaken.

5.4. Service Vehicle Trip Generation

Introduction

5.4.1. The primary sources of regular servicing trips to the H1 Development are expected to include post/couriers, refuse collections, deliveries of office supplies/IT etc to the offices, goods for sale at the non-food retail outlets and food/drinks etc to the cafés/restaurants. Less regular activities will include maintenance operations, external cleaning, plant repair and replacement and fit-out works associated with new occupiers.

5.4.2. Recent experience of several other large commercial developments has demonstrated the ‘economies of scale’ that would typically apply – servicing activity does not generally rise in a linear manner with development size, as an increasing level of delivery consolidation typically occurs.

5.4.3. Accordingly, a variety of methods for predicting servicing/delivery activity have been considered. Office servicing was the main focus, due to its high proportion of the H1 Development, but retail serving has also been investigated. Further detail is provided in Appendix 3 and a brief summary is provided below.

Office Servicing/Deliveries

5.4.4. The main avenues of research are summarised briefly as follows:

- **TRICS** - For most areas of vehicular travel behaviour, the TRICS database is used as an initial source of data. This amalgamates and averages survey data by land-use and is generally considered a moderately reliable source for forecasting trips. When considered together, the trip rates for LGVs and OGVs can be summed to give a representation of the majority of servicing by motor vehicle (excluding bicycles and motorcycles). For an appropriate site selection in Greater London, a servicing trip rate of 0.18 vehicles per 100sqm (GIA) per day is derived. However, filtering the site selection based on development size, a marked reduction in servicing was observed for larger sites – with just 0.106 vehicles per 100sqm per day for sites over 10,000sqm and 0.088 per 100sqm per day for sites greater than 15,000sqm. Similar reductions for large-scale developments were evident for an expanded site selection encompassing other UK cities.
- **Reference projects** – the assessments from a selection of office-led projects submitted over the last few years in Southwark have been reviewed. These adopt a wide range of office servicing rates, from as low as 0.037 vehicles per 100sqm per day for the Southwark Station OSD development (ref. 20/AP/1189, from surveys at TfL’s Palestra building) to 0.12

vehicles per 100sqm per day for the nearby Skipton House development (ref. 18/AP/4194) to 0.20 vehicles per 100sqm per day at the Vinegar Yard development (ref. 18/AP/4171).

- **WSP servicing study** - as part of a peer-review study, WSP provided a summary of servicing trip rates from eight further operational developments in central London. The survey dates and scale of each development was not provided; surveyed vehicle rates ranged from 0.09 to 0.23 vehicles per 100sqm per day, with an average of 0.15 vehicles per 100sqm GIA per day.
- **Other survey data** – data from several further substantial operational projects were considered where data has been provided to Buro Happold, including GLA City Hall (data provided indicates a servicing trip rate of c. 0.03 vehicles per 100sqm per day) and International Quarter London, Stratford City, Newham Plot S5 (c.50,000sqm) where servicing recorded equates to c. 0.10 vehicles per 100sqm GIA per day.
- **Unit/tenant-based approach** – metrics obtained for previous plot Servicing Management Plans from the Elephant Park Masterplan were also considered against the above methods.

5.4.5. Evidence from the Palestra building (occupied by TfL) and the GLA headquarters indicates that a rate of less than 0.05 vehicles per 100sqm GIA per day is potentially feasible and servicing rates around this level have been proposed for a number of developments referred to (including Southwark OSD).

5.4.6. The nearby Skipton House project proposed a rate of 0.12 vehicles per 100sqm per day and this correlates quite closely to the TRICS average (0.106 veh/100sqm/day) for larger London sites (over 10,000sqm).

5.4.7. The table below summarises the forecast servicing activity for the different trip rates considered, based on the c.62,000sqm office GIA proposed.

Table 1 - Comparison of servicing trip rates from variety of sources

Arrivals trip rate (veh/100sqm GIA/day, unless noted otherwise)	Sources Include	Forecast H1 Development Servicing Vehicles Per Day
0.022	TRICS UK cities for sites >15,000sqm	14
0.03-0.04	GLA City Hall; Palestra	19-25
0.05-0.06	Blackfriars Crown Court redevelopment; Loman Street development; City Place House	31-37
0.10-0.12	IQL Plot S5; Portman Mews; Skipton House; TRICS London-wide for sites >10,000sqm	62-74
0.15	**WSP surveys average; 240 Blackfriars Road**	**93**
0.18	TRICS London-wide for sites > 2,000sqm	112
0.20	Vinegar Yard development	124
1-2 per unit per day	MP1/MP2 small commercial unit research	20-60

5.4.8. It is therefore proposed to adopt a trip rate of **0.15 vehicles per 100sqm GIA per day** for the H1 Development, equating to **93 vehicles per day**.

5.4.9. This is significantly higher than the level observed at Palestra and the GLA, and equivalent to the average from surveys conducted by WSP and those conducted by TPP, including the 240 Blackfriars Road survey It is also significantly higher than the TRICS results for other sites above 10,000sqm and the 'per tenant' approach considered.

5.4.10. Additionally, smart procurement and management of deliveries will be promoted through the DSMP as a means to encourage more efficient servicing and reduction of vehicle numbers associated with servicing as well as a modal shift towards greener logistics methods. There is also like to be some 'overlap' with retail servicing, so a lower trip rate would be appropriate to reduce the likelihood of double-counting servicing activity.

Retail Servicing

5.4.11. The H1 Development includes two main types of retail provision, clustered in two zones; an area of non-food retail is proposed along the Walworth Road frontage and may consist of between one and three units depending on occupier interest. The 'active lobby' element of the ground floor is expected to include two moderately sized food and beverage (F&B) outlets.

5.4.12. Whilst the proportion of retail floorspace within the H1 Development as whole is very small, retail servicing is typically somewhat higher than for typical offices, and generally significantly higher in the case of F&B retail. As a result, the retail floorspace can potentially be expected to lead to a disproportionately high percentage of the total servicing activity.

5.4.13. Several forecasting methods were considered in order to ensure a robust but not excessively conservative forecast could be adopted for the purposes of design.

- **Unit-Based Approach** - Research referenced during development of the Servicing Management Plans for South Gardens and West Grove drew from a number of surveys of deliveries to commercial premises, establishing typical levels of servicing activity on a per-unit basis. On the basis that the Walworth Road retail could comprise up to three units, this method would predict 11-16 vehicles per day.
- **Reference Projects** - A selection of office-led developments with some retail elements were considered when benchmarking the H1 Development proposals. Many of these made no specific provision for retail, but a variety of methods were adopted where retail servicing was estimated; across the projects referenced, the retail servicing would be forecast at between 10 and 23 vehicles per day.

5.4.14. The sources reviewed provide a range of forecast servicing activity for the retail element of the development from 11-23 vehicles per day.

5.4.15. To ensure a robust assessment, a forecast of **15-25 vehicles per day** will be assumed for the combined demand, though it is likely that there will be some degree of overlap between office and retail servicing.

Combined Daily Servicing

5.4.16. The table below summarises the combined servicing forecast, taking account of the methodology review.

5.4.17. It is noted that the flexible use-classes considered within the ground floor/mezzanine space include possible medical/health uses for the likes of a GP surgery or local health centre in place of office or retail uses. There is limited detail available at this stage on what form this use might take but at this stage, this use is considered to be broadly equivalent to office in terms of servicing and deliveries, though allowance would potentially be required for additional specialist waste collections (clinical waste, sharps etc) in addition to standard waste streams. However, this would be unlikely to add more than 1-2 additional vehicles per day.

Table 2 - Combined servicing forecast

Land use	Vehicles per day
Office (and medical/health*)	93
Retail	15-25
Total	**108-118**

* possible 'flexible' medical /health use servicing assumed to be analogous to office

Timing of Deliveries/Servicing

5.4.18. Typical unmanaged servicing activity for offices tends to predominantly take place during working hours, with a pronounced peak in activity in mid-to-late morning. Activity during the afternoon is generally much lower and out-of-hours activity is typically very limited.

5.4.19. The survey of servicing activity at the Palestra building occupied by TfL (as featured within the Southwark OSD development application, ref. 20/AP/1189) is an example of this type of pattern, as illustrated below.

Table 3 - Surveyed servicing profile from Palestra (source – Southwark OSD Transport Assessment, ref. 20/AP/1189)

Time range	Arrival profile	Time range	Arrival profile
00:00-01:00	1%	12:00-13:00	8%
01:00-02:00	5%	13:00-14:00	5%
02:00-03:00	2%	14:00-15:00	3%
03:00-04:00	0%	15:00-16:00	2%
04:00-05:00	2%	16:00-17:00	1%
05:00-06:00	9%	17:00-18:00	0%
06:00-07:00	11%	18:00-19:00	0%
07:00-08:00	5%	19:00-20:00	0%
08:00-09:00	7%	20:00-21:00	0%
09:00-10:00	11%	21:00-22:00	1%
10:00-11:00	13%	22:00-23:00	1%
11:00-12:00	9%	23:00-24:00	0%

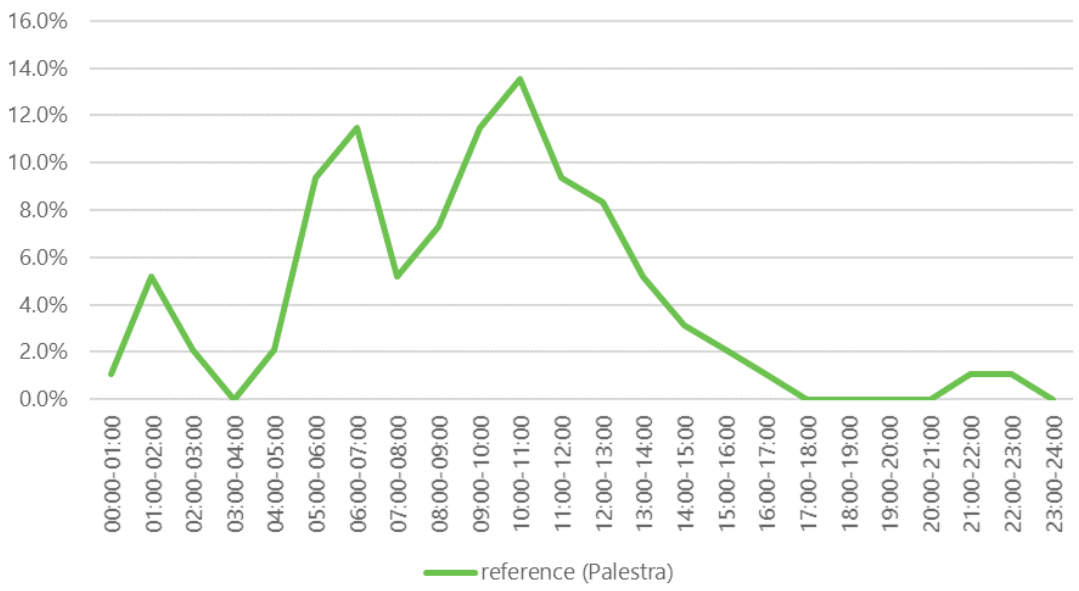


Figure 7 - Reference office servicing arrival profile (from Palestra)

5.4.20. Such a servicing/delivery profile results in a very inefficient use of any on-plot service yard facilities, resulting in a high demand for just a short period of the day and being largely unused for a significant proportion of the time. With a high peak demand, it is necessary to either provide sufficient capacity to meet this peak demand (which is then largely redundant for the rest of the day and thus a poor use of space) or to design for a more balanced demand and turn vehicles away when demand cannot be accommodated.

5.4.21. Most central London authorities now expect the inclusion of some form of delivery booking system (DBS) on larger developments to manage and regulate delivery and servicing activity. This approach seeks to somewhat regulate servicing activity, distributing it more evenly across the day and allowing more efficient use of on-plot or on-street capacity as appropriate.

5.4.22. This also allows restriction of activity during key times (e.g. 'rush hour' or school drop-off/pickup in some locations) and better use of out-of-hours servicing in line with the Mayor's Transport Strategy recommendations on retiming of servicing.

5.4.23. A modified servicing time-profile is illustrated below, showing how managing demand can reduce the pronounced peak activity and better spread activity across the day, without adding any significant burden to peak network traffic and with limited out-of-hours servicing. In some situations, the out-of-hours servicing could be further developed/expanded to reduce day-time activity further.

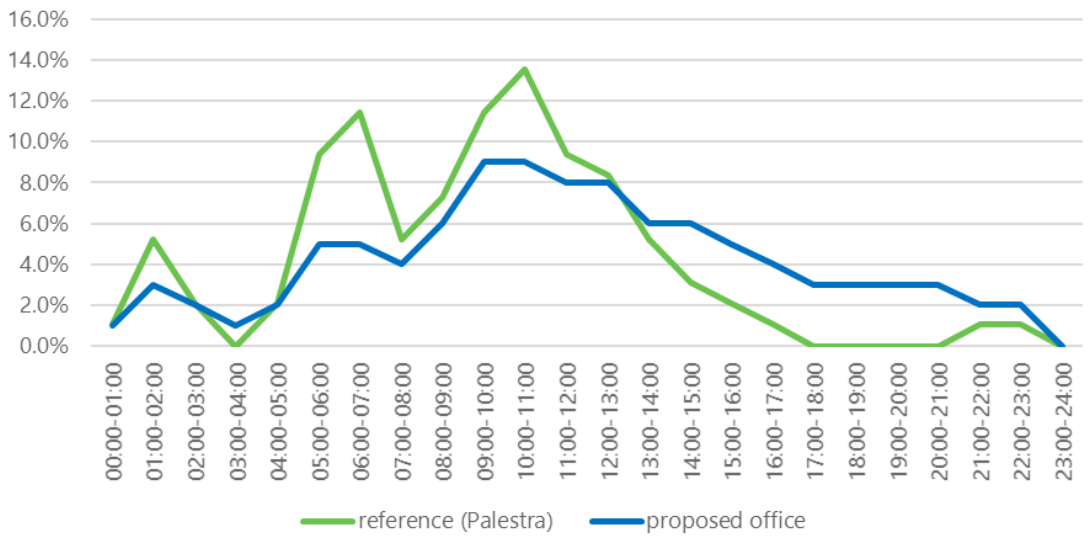


Figure 8 - Proposed 'smoothing' of office servicing profile through managed servicing including booking system

5.4.24. Retail servicing is typically less uniform, and more dependent on the nature of the retail type. A significant proportion of servicing activity might be expected prior to opening or after closing; for F&B retail, deliveries would mainly be expected before lunch and in the afternoon ahead of the evening dining period.

5.4.25. In addition to the mixture of land-uses, each with different delivery characteristics, the availability of the plot management team to oversee the service yard and scheduling of deliveries allows a more managed approach to be taken. In particular, retail deliveries and commercial waste collection can be scheduled to take place within carefully controlled time windows.

5.4.26. On the basis of the above, a simple time profile has been compiled for each of the land-uses by period of the day, as summarised in the table below. A degree of variability has been accounted for through provision of a range of possible values, in particular to allow for a range of servicing activity for different retail typologies. If taken in their entirety, these profiles would over-estimate total servicing, but they allow the potential simultaneous activity across each time-band to be considered robustly.

Table 4 - Proposed servicing profile – percentage of delivery/servicing arrivals by time band

Land use	00.00-05.00	05.00-09.00	09.00-13.00	13.00-18.00	18.00-24.00
Office	5-15%	15-20%	25-30%	15-25%	10-15%
Retail	0-5%	20-40%	0-5%	10-30%	40-50%

5.4.27. If these temporal profiles are applied to the forecasts for the various commercial scenarios, the predicted maximum level of servicing activity for each time band can be forecast, along with the maximum likely hourly activity, accounting for some variability across each time band.

Table 5 - Predicted servicing arrivals by land-use/time band and resultant hourly activity

Land use	00.00-05.00	05.00-09.00	09.00-13.00	13.00-18.00	18.00-24.00
Office	5-14	14-19	24-28	14-24	9-14
Retail	0-2	3-10	0-2	2-8	6-12
Total arrivals in time band	5-16 (in 5 hours)	17-29 (in 4 hours)	24-30 (in 4 hours)	16-32 (in 5 hours)	15-26 (in 6 hours)
Vehicle arrivals per hour	1-3	5-8	6-8	5-7	3-5

5.4.28. For the scenario shown, the forecast predicts up to eight servicing/delivery vehicles per hour arriving at the Site. An illustrative representation of the combined servicing profile, based on the numbers above, is shown in below.

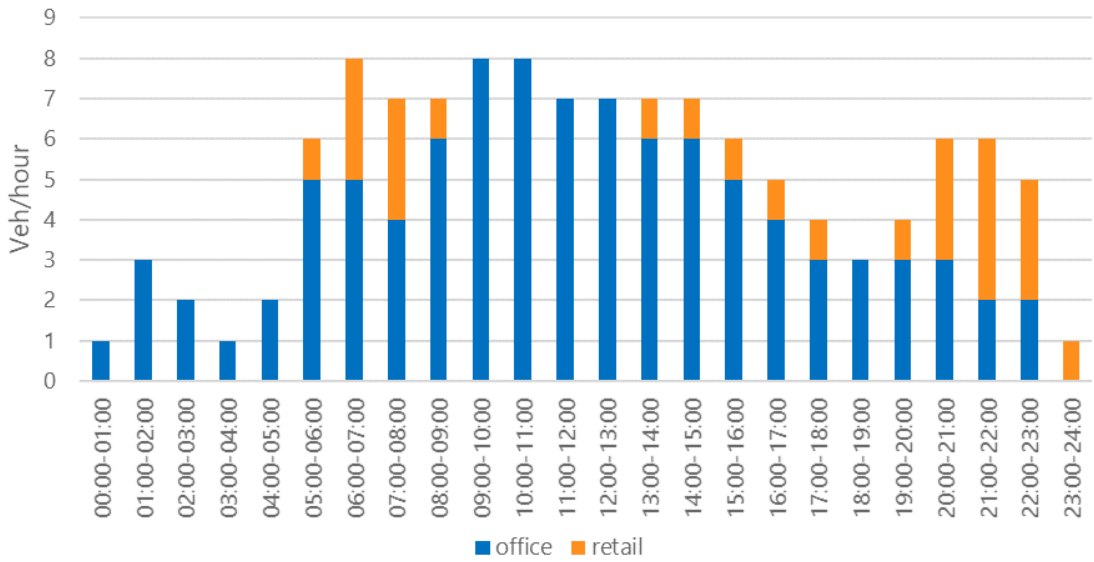


Figure 9 - Proposed combined office/retail servicing arrivals with managed approach

Service Bay Capacity

5.4.29. In the case of retail/commercial deliveries, these are expected to have a maximum dwell time of up to 15-20 minutes, but the majority would be expected to take 5-10 minutes as occupiers will be expected to be present to receive the delivery, rather than the delivery driver having to make their way through the building to the occupier. Consideration is also needed of 'buffer' time between vehicles using any parking bay as it cannot be assumed that consecutive vehicles will arrive immediately as a bay is vacated.

5.4.30. Assuming an average of 15 minutes per vehicle across all land-uses, a loading bay for one vehicle could realistically accommodate four vehicles per hour. Higher turnover may be achieved in some hours but cannot always be relied upon to ensure vehicles can be accommodated. Assuming nominal 20-minute time slots to include for a buffer allowance, a loading bay for one vehicle would accommodate **three vehicles** per hour. On this basis, provision would be needed for a minimum of three vehicles to be parked for loading/unloading simultaneously to satisfy a demand of eight vehicles per hour, to allow for some overlap in arrivals/departures.

5.4.31. Consequently, it is considered likely that the demand can be managed within the capacity proposed (three bays), provided an appropriate booking system is adopted for the commercial occupiers to ensure that commercial servicing and deliveries are suitably distributed across the day.

5.4.32. In order to control day-time vehicle activity, out-of-hours deliveries will be encouraged as far as practical, with occupiers provided with details of TfL's guidance on out-of-hours servicing. The EMC/PMC representatives will be able to advise further on current best practice.

5.4.33. Delivery timings will be reviewed at least annually by the EMC/PMC and through monitoring of Site Travel Plans, until businesses are comfortable with the arrangements and are able to trade effectively and flexibly. Additionally, the EMC and PMC will work with occupiers to encourage consolidation and collaboration across the H1 Development as far as practical, reducing the number of deliveries made to each commercial occupier and to explore opportunities to co-ordinate delivery companies.

Sensitivity Test

5.4.34. If a higher office servicing rate of **0.20 vehicles per 100sqm GIA per day** were adopted, the total number of office servicing/deliveries would increase from 93 to 124. For this scenario, with a similar profile of activity across the day, the peak service yard activity would be **10-11 vehicle arrivals per hour**.

5.4.35. A three-bay configuration would still be operable in this scenario but would need to be operated on the basis of 15-minute time slots, and this would need to be proactively enforced by the dockmaster/plot management team to ensure turnover is maintained.

5.4.36. Alternatively, more use of out-of-hours servicing could be adopted to spread the activity more evenly to reduce pressure at peak times. However this would require a degree of coordination between plot management, suppliers and occupiers, as it is likely that more deliveries would need to be stored in the loading bay or back-of-house areas during hours where an occupier would not be on-site to receive a delivery.

5.4.37. It is considered highly unlikely that this level of activity will be observed, and the plot management team will endeavour to ensure that the smart procurement measures and coordination between occupiers can reduce servicing activity significantly. Restrictions on personal deliveries (e.g. Amazon) for staff is also an effective way to significantly reduce the number of delivery vehicles and is increasingly being adopted in central London projects.

5.5. Vehicle Types

5.5.1. It is anticipated that servicing trips to the H1 Development will be made using a combination of heavy and light goods vehicles with 75% comprising Light Goods Vehicles and 25% comprising Medium and Heavy Goods Vehicles (MGVs and HGVs). For the purpose of this simplification, HGVs are considered to generally comprise vehicles in excess of 7.5 tonnes gross vehicle weight (GVW) and MGVs are considered to be those vehicles between 7.5t and 3.5t (generally 6-8 metres in length). HGVs will encompass refuse vehicles and larger delivery vehicles.

5.5.2. LGVs would typically include vehicles up to 3.5 tonnes GVW such as a 3.5 tonne panel van (often referred to generically as 'transit vans'). These vary widely in size from car-derived vans up to 'jumbo vans' of around 7m long. It is noted that some larger vans are officially rated at 4.6 tonnes GVW but would still typically be considered in the LGV grouping for simplicity.

5.5.3. The images below (Figure 10 to Figure 14) show the types of service vehicles that could be typically used, together with their vehicle specifications. The service yard has been designed to accommodate these vehicles (refer to vehicle swept path analysis in Appendix 2).

Light Goods Vehicles (LGVs)

5.5.4. The large majority of servicing activity on the Site is expected to take the form of small car-derived vans, panel vans and box vans, generally classified at 3.5t.

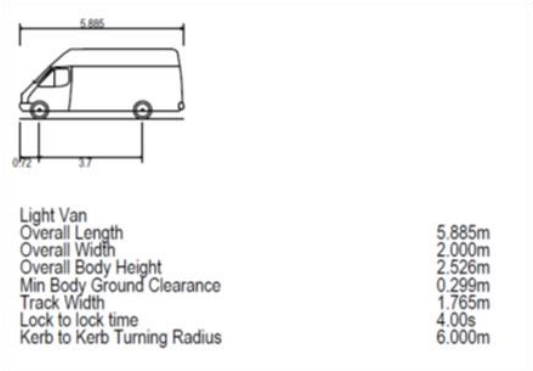


Figure 10 - Light van (LGV) profile and example

Medium Goods Vehicles (MGVs)

5.5.5. A small proportion of servicing is expected to use small box trucks, up to 7.5tonne GVW. This category of vehicle is available in a wide range of sizes, typically 6 to 8m length.

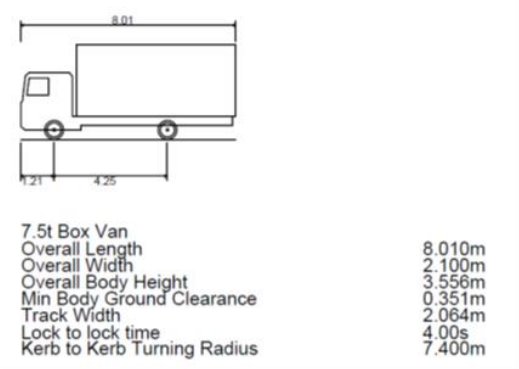


Figure 11 – 7.5t box truck (MGV) profile and example

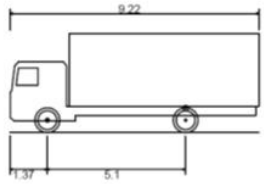
Heavy Goods Vehicles (HGVs)

5.5.6. A very small proportion of servicing activity might use a larger rigid truck, up to 15-18tonne GVW, but these are expected to be rare/infrequent on the H1 Development.

5.5.7. Refuse will be collected by a private commercial contractor arranged by the Applicant, using a combination of skip trucks for the portable compactor and a 'standard' rear end loader (REL) truck for collecting bins.

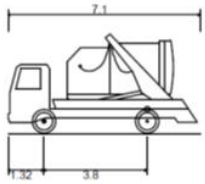
5.5.8. It is noted that the vehicle swept path analysis has been undertaken based on a large refuse vehicle (c.9.9m in length, with 'widebody' and without rear steer, as detailed below); however, a smaller (two-axle) vehicle is more likely and appropriate for an internal service yard and will be discussed with potential commercial contractors for convenience of operations.

5.5.9. As the building is a substantial commercial development and requires compactor collection, the Council's waste contractors will not be utilised and therefore their refuse vehicle is not specifically considered (see Section 5.7).



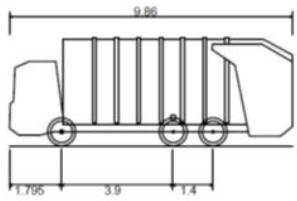
18t Rigid Vehicle (30')	
Overall Length	9.220m
Overall Width	2.500m
Overall Body Height	3.700m
Min Body Ground Clearance	0.440m
Track Width	2.490m
Lock to lock time	3.00s
Kerb to Kerb Turning Radius	8.735m

Figure 12 – Rigid box truck (HGV) profile and example



Swing Arm Skip Compactor Truck	
Overall Length	7.100m
Overall Width	2.480m
Overall Body Height	3.664m
Min Body Ground Clearance	0.410m
Track Width	2.480m
Lock to lock time	6.00s
Kerb to Kerb Turning Radius	7.000m

Figure 13 – Skip compactor truck (HGV) profile and example



Large Refuse Vehicle (3 axle)	
Overall Length	9.860m
Overall Width	2.450m
Overall Body Height	3.814m
Min Body Ground Clearance	0.366m
Track Width	2.450m
Lock to lock time	4.00s
Kerb to Kerb Turning Radius	9.500m

Figure 14 – Refuse truck (HGV) profile and example

Emergency/Maintenance

5.5.10. It is noted that maintenance/emergency access has also been considered within the public realm design, including provision for fire tenders, ambulances and access machinery including MEWPS and mobile cranes. These do not need to be accommodated within the internal service yard.

5.6. Deliveries

5.6.1. Deliveries will be made via the in-plot service yard – there is no on-street servicing. Most servicing activity expected to be of short duration (dwell time), typically 10-20 minutes or less.

5.6.2. Access to the service yard will be granted by the dockmaster. The dockmaster will then direct the driver to the relevant parking bay. Once parked, goods can be unloaded into the holding space behind the vehicle bays and transported via the designated walkway to the back-of-house corridor network. Occupiers would be expected to collect their deliveries from the service yard, to avoid delivery drivers being on site any longer than necessary and thus keeping their turnover time as short as possible.

5.6.3. From the corridor network, goods can be transported to the service lift for distribution throughout the upper levels of the building. The service yard and back-of-house corridors will include relevant signage to assist in this process.

5.6.4. A small proportion of deliveries, principally those made by bicycle or on foot (e.g. mail, couriers), will be accommodated via the loading bay office, which can be accessed via the Deacon Street elevation, next to the service yard gates. Any such goods can be transferred to the adjacent mail room for collection by occupiers, via the back-of-house corridors.

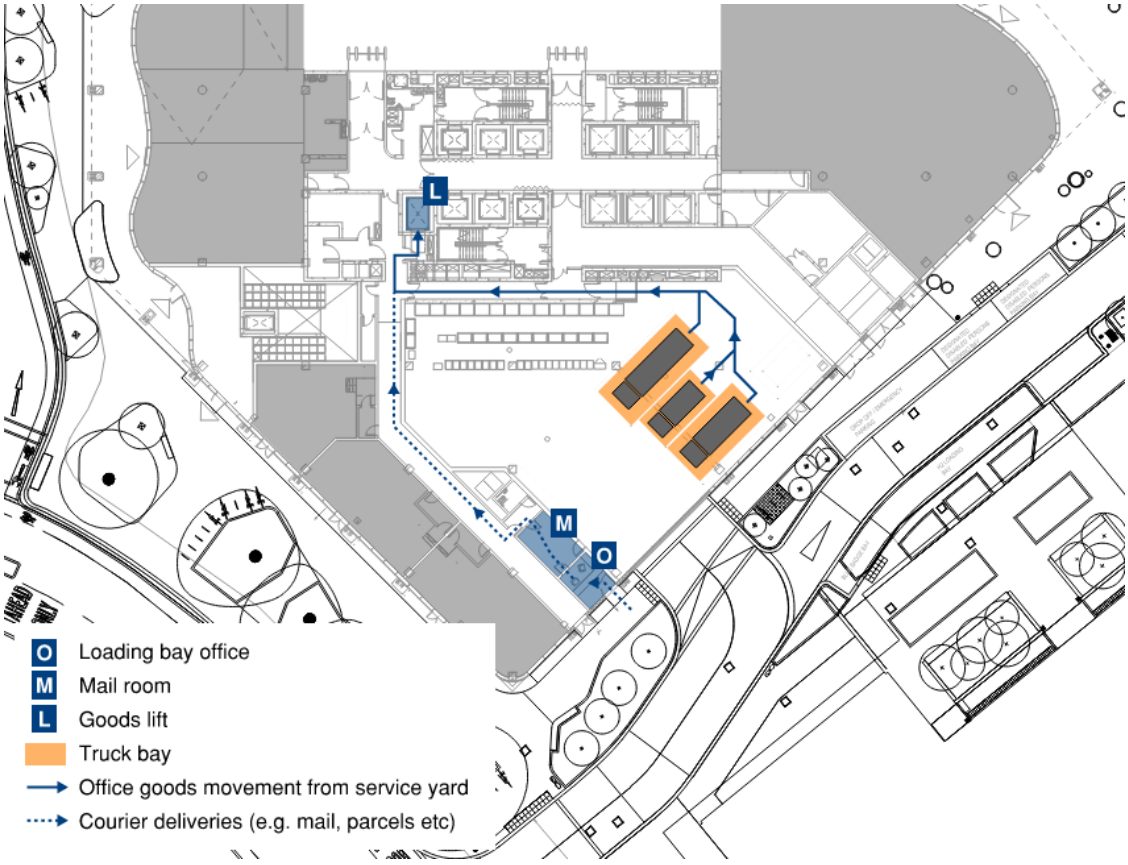


Figure 15 - Goods-in strategy for offices

5.6.5. Deliveries for retail occupiers will function in much the same way as those for office occupiers; goods will be unloaded from vehicles and collected from the service yard by retailers, transferring the goods via the back-of-house corridors to each retail unit. Due to the level differences across the Site, step-free access is not practical between the corridors and the Walworth Road retail units, but each has space allocated for a platform lift should this be required.

5.6.6. As with the offices, mail/courier deliveries can be accommodated via the loading bay office and mail room.

5.6.7. Storage of goods within the back-of-house corridor spaces will not be permitted, as these function as fire escape routes.

Figure 16 - Goods-in strategy for retail units

5.7. Waste Management Strategy

Introduction

5.7.1. A centralised waste storage area within the service yard is proposed that will be shared by all office and retail occupiers. This maximises efficiency of waste storage and collection.

5.7.2. The intention is to arrange all commercial waste collections under a single contract, managed by the plot operator PMC. The occupiers will be required to sign up to an agreement based on in-plot servicing. It is an aspiration that the PMCs will arrange for a single supplier to collect the commercial waste and recycling across the commercial premises of the Elephant Park Masterplan.

5.7.3. Waste generation from all the units will be monitored with the results used to tailor the frequency of waste collection. As such, it is proposed that occupiers also share bins for the storage of waste. This will bring a number of benefits such as a reduced number of refuse vehicles accessing the Site, and reduced number of bins required, which translates into shorter collection times / dwell times for refuse vehicles.

5.7.4. Due to the significant volume of waste generated by the H1 Development, a portable 'skip' compactor is also proposed as a key element of the waste strategy, for the office residual waste.

Figure 17 - Example of portable skip compactor and collection via skip truck

5.7.5. The centralised waste area has been sized to provide adequate space for the office and retail bins. In addition, space has been allowed for the operation of a cardboard baler, the storage of a number of bales, and a hazardous waste cabinet.

5.7.6. Trapped gullies have been incorporated in the waste store and the service yard area. These will allow management staff to wash down bins regularly.

Office Waste Management

5.7.7. It is proposed that waste generated at the office premises will be disposed of by occupiers on every floor. The following waste streams are proposed to be segregated:

- Cardboard;
- Mixed recyclables (e.g. plastic bottles, cans, plastic trays, etc.);
- Paper;
- Organics (from canteen / catering premises only);
- Glass (from canteen / catering premises only);
- General waste; and
- Other specialist waste such as bulky, hazardous (e.g. expired cleaning chemicals).

5.7.8. A number of receptacles will be available on every floor to allow for the segregation and disposal of waste. It is proposed that every floor incorporates an intermediate waste store, which can take the form of a small room (e.g. cleaners' cupboard or store) in close proximity to the cores. The intention is for future occupiers to incorporate this space as part of their fit-out designs.

5.7.9. A facilities management or cleaning team will remove waste from the office bins regularly and move that to the on-floor intermediate waste store. Waste can be stored in bags, within dedicated waste trolleys, or small wheeled bins. From here, bins or trolleys will be moved to the ground floor service yard via a dedicated service lift, where a centralised waste store area has been incorporated. The frequency of waste movements from the different floors to the centralised waste stores at ground floor will ultimately be determined by the storage capacity of the intermediate waste stores on each level, and the size of the office premises on that floor. A high-level estimation has been carried out, which suggests this operation would need to be carried out between one and two / three times per day.

5.7.10. Due to the relatively high volumes of waste anticipated, it is proposed that general ('residual') waste is stored and collected in a portable skip-type compactor. This will allow for efficiencies around storage and the number of collections needed. The cleaning team will move general waste bags to the service yard area, and deposit them into the portable skip compactor.

5.7.11. For all other waste streams, the cleaning team will move waste bags to the centralised waste storage area via back-of-house routes. The routes have been designed so that corridor sizes and service lift sizes are adequate for the movement of waste trolleys and receptacles. On collection times and days, it is proposed that contractors access the bin store area and wheel the required bins to the rear of the refuse truck; the portable compactor will be collected directly via skip truck and returned when empty.

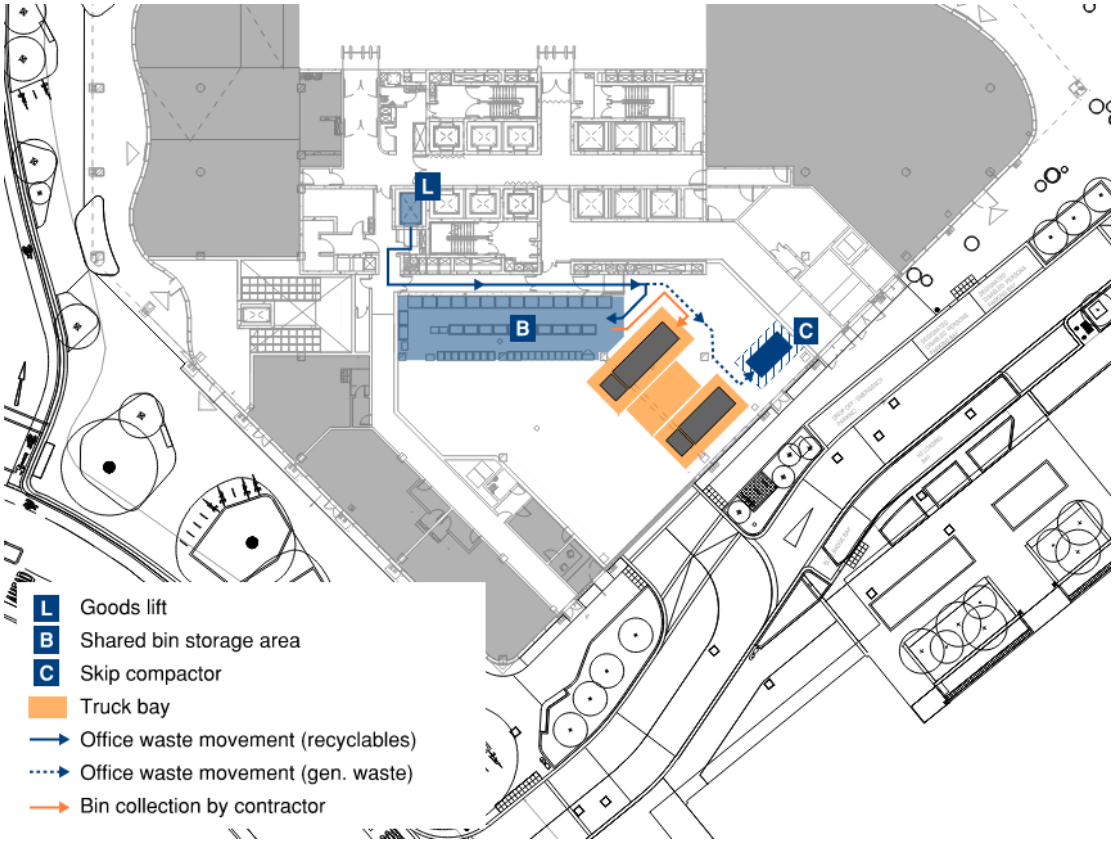


Figure 18 - Ground floor back-of-house areas showing the office centralised bin store and waste movement routes

5.7.12. The office uses of the H1 Development are forecast to generate c. 188,000 litres of waste per week; the detailed waste calculation methodology is included within Appendix 4.

5.7.13. The requirements for number of bins/receptacles across each of the waste streams is summarised below.

Table 6 - Summary of estimated office bin, compactor and bale numbers

Storage system and number of units required						
Waste streams	Mixed recyclables	General waste	Organics	Paper / cardboard	Glass	Paper
Collection frequency	3 times / week	2 times / week	3 times / week	3 times / week	3 times / week	3 times / week
Number of units / receptacles	11 x 1,100L bins	1 x portable skip compactor	5 x 240L bins	1 x baler + 9 x bales	2 x 240L bins	10 x 660L bins

Retail Waste Management

5.7.14. It is proposed that waste generated at the retail units is segregated at source by occupiers. Different stream segregation strategies are proposed, depending on the final use of the unit. The main waste streams proposed are:

- Paper and cardboard;
- Mixed recyclables (e.g. plastic bottles, cans, plastic trays, etc.);
- Organics (only from food and beverage units);
- Glass (only from food and beverage units);
- General waste; and
- Other specialist waste such as bulky, hazardous (e.g. expired cleaning chemicals).

5.7.15. The retail units will have access to the back-of-house areas within the ground floor. It is proposed that bagged, segregated waste is moved regularly throughout the day to the waste storage area by retailers.

5.7.16. On collection days, it is proposed that waste contractors access the bin storage area and move all bins to the designated loading bay. This will be carried out in the same manner as the office bins.

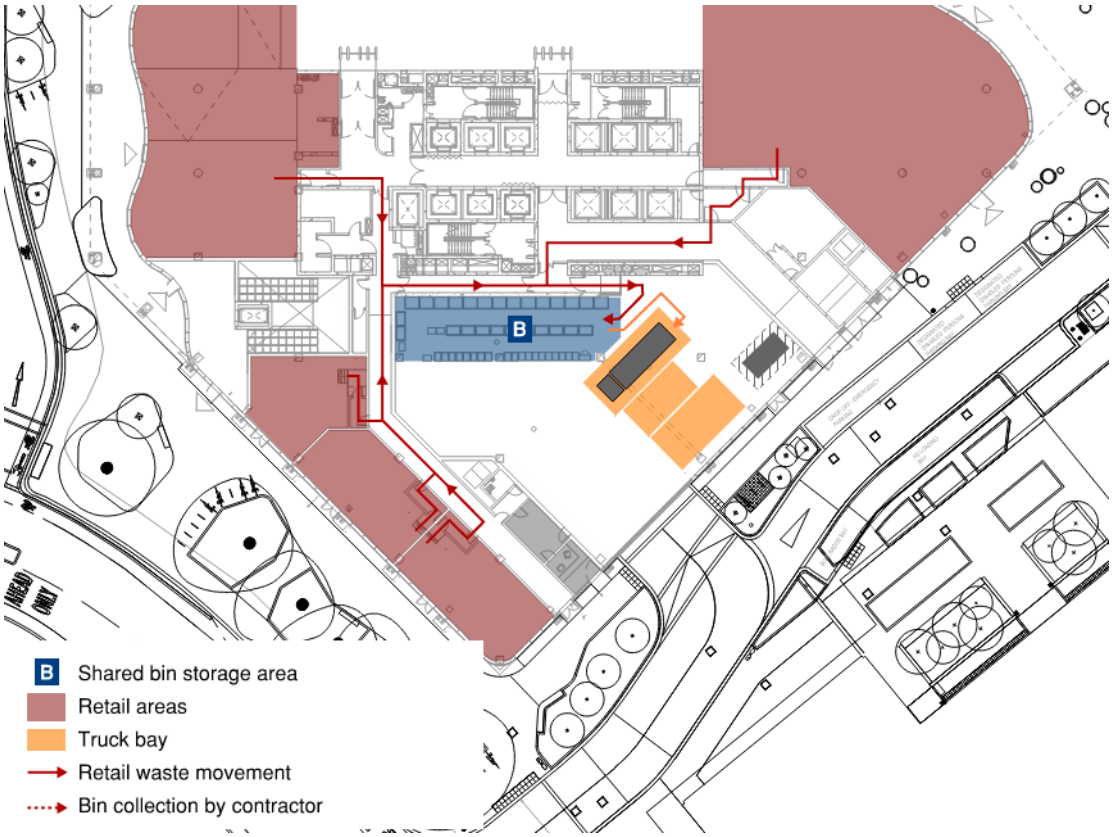


Figure 19 - Ground floor back-of-house areas showing the retail centralised bin stores and waste movement routes

5.7.17. The waste generation calculations are set out in Appendix 4. Across the non-food units on Walworth Road and the larger food and beverage units on the northern side of the building, the calculations forecast c. 23,000 litres per week.

5.7.18. The proposed bin provision to cater for the forecast volume of waste and appropriate segregation is summarised below.

Table 7 - Summary of estimated retail bin numbers

Waste streams	Mixed recyclables	General waste	Organics	Paper / cardboard	Glass
Number of units / receptacles	1 x 1,100L bins	2 x 1,100L bins	8 x 240L bins	4 x 660L bins	3 x 240L bins

Total Waste Storage Provision

5.7.19. The summary table below indicates the total waste storage requirements across the land-uses. It is provisionally assumed that the office and retail uses do not share bins, though this could yield further spatial efficiencies.

Table 8 - Summary of estimated office and retail bin numbers

Storage system and number of units required						
Waste streams	Mixed recyclables	General waste	Organics	Paper / cardboard	Glass	Paper
Office waste	11 x 1,100L bins	1 x portable skip compactor	5 x 240L bins	1 x baler + 9 x bales	2 x 240L bins	10 x 660L bins
Retail waste	1 x 1,100L bins	2 x 1,100L bins	8 x 240L bins	4 x 660L bins	3 x 240L bins	-
Total	**12 x 1,100L bins**	**1 skip compactor + 2 x 1,100L bins**	**13 x 240L bins**	**1 baler + 9 x bales + 4 x 660L bins**	**5 x 240L bins**	**10 x 660L bins**

5.8. Drop-Off and Pick-Up

5.8.1. As those with mobility issues do not necessarily own a vehicle (especially in Zone 1) and parking is to be restricted within the Site, it is considered important that suitable arrangements are in place for disabled staff and visitors to be dropped off by taxi or other appropriate vehicle (private hire, dial-a-ride, etc) within a reasonable distance of the various entrances to either the commercial lobby or the ground floor retail units.

5.8.2. Whilst the use of taxis should not generally be encouraged, they provide an essential means of transport for those with mobility issues as licenced taxis are all required to be wheelchair accessible. As the Walworth Road frontage is a busy bus route and Sayer Street North is to be closed to most traffic, opportunities for a vehicle to pick up or set down are constrained.

5.8.3. It is not considered appropriate, safe or practical to direct disabled drop-off to the on-plot service yard. Whilst the service yard can accommodate a range of vehicles, it would not be appropriate to use these spaces to drop-off disabled staff/visitors who do not have their own transportation. Furthermore, it is not possible to stop a vehicle within the service yard for passenger loading/unloading without obstructing servicing movements; there is insufficient space to turn a vehicle without resorting to a three-point turn and there are no upstand kerbs to deploy a wheelchair ramp onto.

5.8.4. Therefore, a dedicated facility is provided on the north side of Deacon Street, adjacent to the disabled parking and as close as practical to the secondary building access at the south-eastern corner (refer to the 'servicing matrix' in Appendix 5) where this activity can occur safely and without conflict with the various servicing activities.

5.8.5. The ‘pull in/drop-off’ bay is proposed to provide the following key benefits:

- Improved highway safety to reduce the potential of cars pulling up in the highway;
- To suggest/ indicate a safe place for pick up, to focus this activity away from junctions etc;
- To facilitate taxi drop off close to the building for late night/disabled access; and
- To provide a location where a fire engine can also pull up to service the building in an emergency.

5.8.6. Allowing drop-off from the street frontage is consistent with the position established in the Site-wide strategy.

5.8.7. It is noted that bays provided for drop-off could also provide a convenient means of accommodating ambulance access in an emergency, without obstruction of the carriageway.

5.9. Fit-Out and Removals

5.9.1. When occupiers first move into the H1 Development, a high demand for delivery vehicles is expected. This first occupation will be managed through an occupation strategy agreed with the PMCs.

5.9.2. The management company will endeavour to move occupiers into the H1 Development in a staggered manner to minimise disruption to the in-plot servicing bays, on the surrounding streets and highway network.

5.9.3. First occupation deliveries and subsequent removals will generally be made via the in-plot service yard. It is anticipated that the majority of removals/moving in would utilise panel or Luton vans, with only occasional need for a vehicle up to 7.5t size. All three bays of the service yard are able to cater for panel/Luton vans.

5.10. Tradespersons

5.10.1. On-street loading bays will not be available for delivery to the H1 Development, and this extends to those in the servicing trades (such as decorators, plumbers and electricians). This is common practice across London where many trades’ people have adapted their practices.

5.10.2. Bulky equipment and materials are delivered straight to Site as required with the tradesperson then making their own way to site on public transport or using publicly available parking. Materials and supplies for tradespeople would be made in line with other deliveries sent to the service yard.

5.10.3. On-street bay suspension requests would be applied for in line with established standard practice with the Council.

5.11. Buildings and Landscape Maintenance

5.11.1. A draft Access and Maintenance Strategy has been prepared for the Site (refer to Appendix 6). This sets out the methodology of maintenance and inspection processes for the H1 Development. This include a BMU unit mounted on the roof level to provide access to all elevations with the exception of a limited extent on the east side of the building. For these areas, a Mobile Elevating Work Platform (MEWP) system operating at ground floor will provide access.

5.11.2. The public realm design has considered the need to provide MEWP access and also occasional crane access for larger jobs such as glass replacement.

5.11.3. Whilst the H1 Development will be accessible via Deacon Street and Elephant Road, it is noted that Sayer Street North, which borders the Site on the northern and eastern elevations, is a pedestrianised route that will provide for occasional maintenance access as well.

6. MANAGEMENT MEASURES

6.1. Introduction

6.1.1. Facilities management (FM) responsibilities will sit with the PMC team, who will put in place a series of measures to mitigate the impact of delivery and servicing trips associated with the H1 Development. The aim is to reduce the number of vehicle trips, which would have the following benefits:

- Increase in safety for vulnerable road users, such as pedestrians and cyclists; and
- Improvement in environmental conditions, including noise and air quality.

6.1.2. The PMC team will implement the following measures to achieve these aims:

- Use best practice to achieve an efficient delivery system;
- Use a booking-in system for service bay management;
- Staff training;
- Co-ordination and collaboration with occupiers at the Site; and,
- Review of supply chain operations.

6.2. Delivery Booking System

6.2.1. In order to avoid congestion in the service area and/or congestion on the surrounding roads, a booking-in system will be employed.

6.2.2. A Delivery Booking System (DBS) would enable the PMC team to control, and where appropriate, limit the amount of delivery and servicing activity to avoid congestion in the service yard and surrounding highways. The DBS can also be used to incentivise deliveries outside highway peak periods and as a means to prevent unexpected deliveries.

6.2.3. The DBS will monitor and record vehicles arriving and departing at the Site as well as give an understanding of how long they stay in the service area; this would potentially highlight where improvements could be made.

6.2.4. Suppliers will book a 15-minute delivery window (or several consecutive slots where required for a more substantial activity); if the driver fails to arrive within this period, they would be instructed to leave and re-book at another time. The following data would be collected as part of the DBS:

- Date and delivery time (15-minute intervals);
- Vehicle type, goods being delivered, tenant/destination;
- Arrival and departure time (hour/minute); and
- Supplier and driver details.

6.2.5. An initial survey of servicing activity will be undertaken by the PMC team within 12 months of occupation.

6.3. Coordination and Collaboration with Building Occupiers

6.3.1. Working with other occupiers in the same building to better manage deliveries can deliver cost savings. There may be opportunities for organisations to co-ordinate and collaborate on the following:

- Working together on delivery slots for the same suppliers;
- Identifying and procuring the same suppliers for the same products (e.g. stationery, courier collections, vending, cleaning, catering, waste, servicing and maintenance); and
- Agreeing the same time for waste and business postal collections.

6.4. Supply Chain Management and Efficiency

6.4.1. It will be the responsibility of occupying occupiers and the PMC team to review supply chains to see where efficiencies can be found. Less frequent visits by companies delivering to the Site can result in fewer journeys, less mileage and therefore reduced emissions associated with the Site.

6.4.2. Some commercial deliveries may attract a delivery charge, particularly if the value of the goods being delivered is small. These charges could potentially be waived if deliveries are consolidated and greater volumes are ordered. Simplifying the H1 Development's supplier base could also deliver cost benefits, as well as improved efficiency because of reduced ordering and invoice processing.

6.4.3. Occupiers at the Site would be encouraged to contract suppliers registered with a best practice scheme such as FORS. Suppliers should be encouraged to adopt measures that promote safety and sustainability, for example using smaller vehicles or motorcycles where possible; switching to hybrid and/or electric vehicles; and seeking to ensure safe, efficient and considerate operations, such as switching off engines when making deliveries.

6.4.4. A centralised ordering system can reduce the likelihood of different suppliers being used for the same products, or of numerous orders being made to the same company. As a result, there could be savings by negotiating with suppliers due to economies of scale. Also, invoicing and processing costs could be reduced.

6.5. Couriers and Parcel Deliveries/Collections

6.5.1. Couriers or specialist delivery companies are known to account for a large proportion of visits to commercial/office sites each day. In most cases this is due to staff requesting that orders are delivered at specific times.

6.5.2. To encourage changes in behaviour, only work-related deliveries should be encouraged. Guidance could be issued to staff to discourage personal deliveries. Also, a staff member could be nominated to monitor procurement and ensure that staff are only requesting special delivery outside peak periods unless very necessary.

6.5.3. The use of cargo bikes should be encouraged where suitable.

6.6. Facilities Management Staff Training

6.6.1. The PMC team will be required to undertake appropriate training so they can implement the requirements of this DSMP efficiently.

6.7. Management and Monitoring

6.7.1. The DSMP is intended to be a live document that is updated based on operational feedback.

6.7.2. Following full occupation of the H1 Development, there will be an initial delivery and servicing survey undertaken within 12 months of full occupation, and annually thereafter for a period of five years.

6.7.3. As well as conducting vehicle surveys, feedback from building occupiers and suppliers will also be used by the PMC team to periodically review the DSMP in discussion with the Council to ensure that the document is being complied with. Any changes to the management strategy would be agreed with the Council in advance and all occupiers would be expected to comply.

6.7.4. It is also proposed that the implementation of this DSMP and the Travel Plan are bought together where possible as the two are interlinked. The management of the DSMP will be the responsibility of the PMC team.

7. ACTION PLAN

7.1.1. In support of the overarching principles of this draft DSMP, specific objectives have been identified as part of this exercise and action plans developed with a view to ensuring that the H1 Development can meet the requirements. These plans will need to be reviewed periodically as operations evolve but they represent a statement of intent.

7.1.2. The Action Plan is summarised below in Table 9.

Table 9 - DSMP action plan

Objective	Measure	Timescale
To ensure that goods and services can be delivered and waste removed in a safe, efficient and environmentally friendly way	Appoint Plot Management Company (PMC)	Prior to occupation
	Develop guidance to be shared with occupants on the delivery and servicing plan	Prior to occupation
	Investigate whether specifying suppliers' use of delivery companies committed to sustainable freight distribution schemes (such as Freight Operator Recognition Scheme FORS or ECOStars) is feasible without distorting or preventing competition	Prior to occupation
	Recommend procedures for the onsite management of deliveries	Work to be completed as part of the facilities management review
	Identify core processes that can be managed centrally in order to control the impact on the number of delivery and servicing events	Upon occupation
	Develop a delivery schedule or booking system to regulate, control and monitor the servicing and deliveries of the Site	Prior to occupation
	Ensure that retailers are aware of the constraints around timing of deliveries and that they are required to manage deliveries in accordance with these requirements. Ensure occupiers have a system by which they can report concerns to the PMC	Prior to occupation
	Reduce impact on the environment and costs by following best practice and improving the efficiency of freight movement (using the procurement process)	Following occupation
	Discourage personal deliveries and specialised deliveries during peak hours (educating staff and providing guidance)	Following occupation

8. PROPOSED TARGETS AND MONITORING

8.1.1. Reflecting the objectives of this draft DSMP, the following initial targets are proposed. These will be monitored and reviewed with appropriate bodies such as the Council and TfL to ensure that the H1 Development continues to operate efficiently and does not cause undue impact on the surrounding area.

8.1.2. Target 1: Do not exceed service bay capacities and have no aborted refuse collections.

- Monitor:
  - Through a booking system which records service bay usage on a quarterly basis for the first year of operations – to understand peak periods and seek improved profiling over time. Review every six months the following year.
- Resolve through:
  - Improved profiling to reduce demands at peak servicing times; and
  - PMC working in coordination with the EMC and with occupiers.

8.1.3. Target 2: Provide a coordinated service which meets the demands of commercial and retail occupiers through efficient management of servicing.

- Monitor:
  - Commercial and retail occupiers satisfaction through questionnaires and regular engagement. On a quarterly basis for the first year and then every six months for the following year; and
  - Total servicing vehicle numbers, with a view to reducing movements at peak times. Linked to Target 1 (managing peak time demands) and Target 3 (in relation to safety of pedestrians, cyclists, etc).
- Resolve through:
  - Providing a coordinated booking system that maximises use of service bays; and
  - Regularly reviewing service management provision to ensure it meets the changing needs of occupiers.

8.1.4. Target 3: Deliver an incident and injury free approach to servicing management.

- Monitor:
  - Through ensuring that employees of the PMC are inducted into the incident and injury free approach.
- Resolve through:
  - Recording incidents and adopting practices to address issues where they arise; and
  - Ongoing awareness-raising and incident and injury free communications.

9. SUMMARY AND CONCLUSIONS

9.1.1. The purpose of this draft Delivery and Servicing Management Plan (DSMP) is to set out the proposed arrangement by which vehicles carrying out deliveries, servicing and refuse collections to business premises and residential properties will access the H1 Development.

9.1.2. Details have been given of the location of servicing bays within the Site.

9.1.3. The demand on this space has been estimated using research and knowledge of other similar uses. Commitments are made to manage and control the systems that will be put in place.

9.1.4. Over time, the operations of the H1 Development may be amended and co-ordinated with other phases of the Elephant Park Masterplan to achieve a successful and exemplar development.

9.1.5. The draft DSMP for the H1 Development demonstrates that deliveries, servicing and waste can be safely managed on-plot. The analysis documented in this report has shown that, through management, the daily demands for servicing and waste collection can be accommodated within the service yard.

9.1.6. The document will be regularly monitored and reviewed to ensure that it reflects the changing requirements of the development and is up-to-date with servicing/delivery options available.

APPENDIX 1

Policy and Guidance Context

APPENDIX 1 – POLICY AND GUIDANCE CONTEXT

The following summarises the policy and guidance context relevant to the DSMP.

National Policy

BS:5906 Waste Management in Buildings - Code of Practice (2005)

This document sets out the practice and methodology for waste management, including storage, collection and segregation.

Designing for Deliveries, Freight Transport Association (2016)

Designing for Deliveries is a guide for planners, designers and engineers to aid with the design of service areas and approach roads.

Regional Policy

The Mayor's Transport Strategy (2018)

The Mayor's Transport Strategy (MTS) for London recognises that 'London's continued success relies on the safe, reliable, sustainable and efficient goods delivery and servicing' and that 'it is vital that freight and servicing trips are accommodated properly on London's streets'.

It also states the Mayor's intention to work with TfL, the twelve London boroughs, local businesses and freight and servicing industry to improve the efficiency of deliveries and servicing.

The proposals below set out the aims, ambitions and approach of the new MTS to deliveries and servicing.

Proposal 15 of the MTS seeks to 'reduce the adverse impacts of freight and service vehicles on the street network… [by reducing] … the number of lorries and vans entering central London in the morning peak by 10 per cent by 2026.'

Proposal 16 of the MTS seeks to 'improve the efficiency of freight and servicing trips on London's strategic transport network by;

- Identifying opportunities for moving freight on to the rail network;
- Increasing the proportion of freight moved on London's waterways; and
- Reviewing the potential benefits of a regional freight consolidation and distribution network and completing the network of construction consolidation centres in London'.

Proposal 17 of the MTS seeks to 'to improve the efficiency of last mile deliveries and servicing' by:

- Supporting BIDs and other clusters of businesses to jointly procure goods and services;
- Establishing a network of micro-distribution services and facilities served by zero emission vehicles and walking and cycling deliveries;
- Re-timing goods and services to the times where they will have least impact on streets;
- Using local access and loading restrictions to support more efficient freight practices;
- Improving the design and management of loading and servicing activities at the kerbside and off-street; and,
- Developing an online tool, incorporating a 'London lorry standard', to simplify the regulatory environment for HGVs operating in London'.

The London Plan (2021)

The New London Plan was adopted on 2nd March 2021.

'Policy T7 – Deliveries, Servicing and Construction', highlights that development proposals should facilitate sustainable deliveries and servicing. This includes the provision of adequate space for servicing, storage and deliveries off-street. The policy identifies that DSPs are required to support new

development noting that 'Delivery and Servicing Plans should be developed in accordance with Transport for London guidance and in a way which reflects the scale and complexities of developments.'

Action plans have been prepared detailing how the MTS proposals will be achieved. This includes the Vision Zero' Action Plan (2018) and Freight Servicing Action Plan (2019) described blow.

Vision Zero Action Plan (2019)

The Vision Zero Action Plan focuses on reducing the dominance of motor vehicles on our streets and ensuring that road danger reduction is central to all transport-related activity.

TfL's Vison Zero Action Plan seeks to implement a Direct Vision Standard for Heavy Goods Vehicles (HGVs), which uses a star system, rating HGVs from zero (lowest) to five (highest), based on how much an HGV driver can see directly through their cab windows. The Direct Vision Standard forms part of a proposed HGV Safety Standard Permit Scheme, which will require all HGVs of more than 12 tonnes to hold a safety permit when entering or operating in London (from 2021; month to be confirmed).

HGVs rated one-star and above would automatically be granted a permit, while those rated zero-star (lowest) would have to meet a safe system, which could include cameras and sensors. By 2024 only HGVs rated three-star and above, or those with a progressive safe system, would be allowed on London's streets.

Freight Servicing Action Plan (2019)

As part of the Mayor's Vision Zero ambition, the Freight Servicing Action Plan seeks to transform how deliveries are made in London, reducing road danger and helping to clean up London's toxic air.

The Mayor aims to work with boroughs to better coordinate the control of freight movements on London's roads, including supporting London Councils' review of the London Lorry Control Scheme, which helps manage noise nuisance from the largest lorries during unsocial hours and allow more deliveries where appropriate to take place during off-peak hours.

The Freight Servicing Action Plan seeks to increase the use of water and rail by protecting and reactivating wharves and working with Network Rail to take advantage of opportunities to grow rail freight where possible.

It also aims to reduce harmful vehicle emissions and clean up London's air. The Ultra-Low Emission Zone (ULEZ) was launched in central London in 2019 and it is proposed to implement a Zero Emission Zone by 2040 and London-wide by 2050. This will bring in stricter exhaust emission standards for most vehicles, including vans and lorries.

It seeks to make freight vehicles safer by launching the HGV Safety Permit Scheme, which incorporates a Direct Vision Standard for HGVs (as discussed above as part of the Vision Zero Action Plan).

The Freight Servicing Action Plan also strives to improve skills training and education on how to avoid danger posed by freight vehicles.

Freight Operator Recognition Scheme (FORS)

The Fleet Operator Recognition Scheme (FORS) is a voluntary accreditation scheme, which aims to raise the level of quality within fleet operations, and to demonstrate which operators are achieving exemplary levels of best practice in safety, efficiency, and environmental protection.

FORS is a unique, industry-led, membership (bronze, silver, gold) scheme to help van and lorry operators in London become safer, more efficient and more environmentally friendly. The scheme offers a number of benefits including advice, training and discounted breakdown assistance.

Bronze accreditation confirms that you employ good practice and comply with the requirements laid out by the FORS Standard. This includes demonstrating dedication to driver and vehicle safety, combined with improving operating practices through effective monitoring of fuel and tyre usage.

By achieving FORS Silver accreditation the vehicle fleet will be compliant with the Construction Logistics Community Safety (CLOCS) Standard and with TfL's WRRR (Work Related Road Risk), which is a freight safety initiative aligned with the Mayor's Vision Zero approach to road danger reduction.

FORS Gold accreditation is only awarded to exceptional operators who have met challenging targets. FORS Gold operators will actively promote the FORS Standard to their supply chain and produce a case study documenting their progression through to the top level of accreditation.

Delivery and Servicing Plans: Making Freight Work for You

This TfL guidance on preparing and implementing DSPs seeks to help developers better manage deliveries, highlighting the financial benefits of doing so as well as efficiencies in operation and a reduction in emissions, congestion and collisions.

The document contains best practice for methods to understand the current situation and proposes numerous tools and techniques with which to develop a DSP, including:

- How to apply the guidance to differing organisations;
- Techniques for managing deliveries;
- Reviewing supply chain operations; and
- Working closely with suppliers.

The London Low Emission Zone and Ultra Low Emission Zone

The Low Emission Zone (LEZ) was introduced in 2008 to encourage the most polluting heavy diesel vehicles driving in London to become cleaner. The LEZ covers most of Greater London. To drive within it without paying a daily charge, these vehicles must meet certain emissions standards that limit the amount of particulate matter coming from their exhausts.

All roads within Greater London are included within the LEZ (except the M25) and it operates 24 hours a day, every day of the year including weekends and public holidays. There are no barriers or tollbooths within the LEZ. Instead cameras read each registration plate of vehicles driving within the LEZ and check it against a database of registered vehicles. This automatically identifies whether a vehicle meets the LEZ emissions standards, is exempt, is registered for a discount or if the daily charge has already been paid.

The central London Ultra Low Emission Zone (ULEZ) was launched in April 2019 with the objective of reducing harmful emissions caused by lorry and van movements, to bring in stricter exhaust emission standards for most vehicles, including vans and lorries, and supporting boroughs in introducing local zero emission zones. TfL guidance will set out a clear process to boroughs for introducing zones to tackle pollution hot spots across the capital.

The ULEZ is set to expand in October 2021 to cover the entire area within the North Circular Road (A406) and South Circular Road (A205), including the area of Docklands that the Site is located within. Consequently, the ULEZ is likely to affect the vast majority of servicing to the Site after this date.

Local Policy

Southwark Plan (2007)

The Southwark Plan is due to be replaced by the New Southwark Plan and consists of the 'saved' Southwark Plan policies (2007) and the Core Strategy (2011). It is a set of borough-wide planning policy documents that contain the regeneration strategy for the borough, policies that are used to make decision on planning applications, key development sites and visions for each neighbourhood within the borough.

The Draft New Southwark Plan (2020)

The Draft New Local Plan sets out the vision, objective and detailed spatial strategy for future development and regeneration in the borough up to 2028 along with specific strategic policies and targets, development management policies and site allocations. This includes the Saved Southwark Plan Policies from the Southwark Plan 2007. The Council submitted NSP to the Secretary of State on 16 January 2020; following comments from the Inspectors, the Proposed Changes to the Submitted New Southwark Plan have been prepared along with the additional supporting information/evidence, which went to consultation between 27 August and 2 November 2020. Consultation/Examination is ongoing.

Policy P47 within the Local Plan focuses upon 'Highways Impacts' and sets out the following criteria to ensure that highways impacts of a development are reduced:

- Ensure safe and efficient delivery and servicing that minimises the number of motor vehicle journeys.

Policy 3.11 entitled 'Efficient Use of Land' states a development should be 'making adequate provision for servicing, circulation and access to, from and through the site'.

Sustainable Transport Supplementary Planning Document (2010)

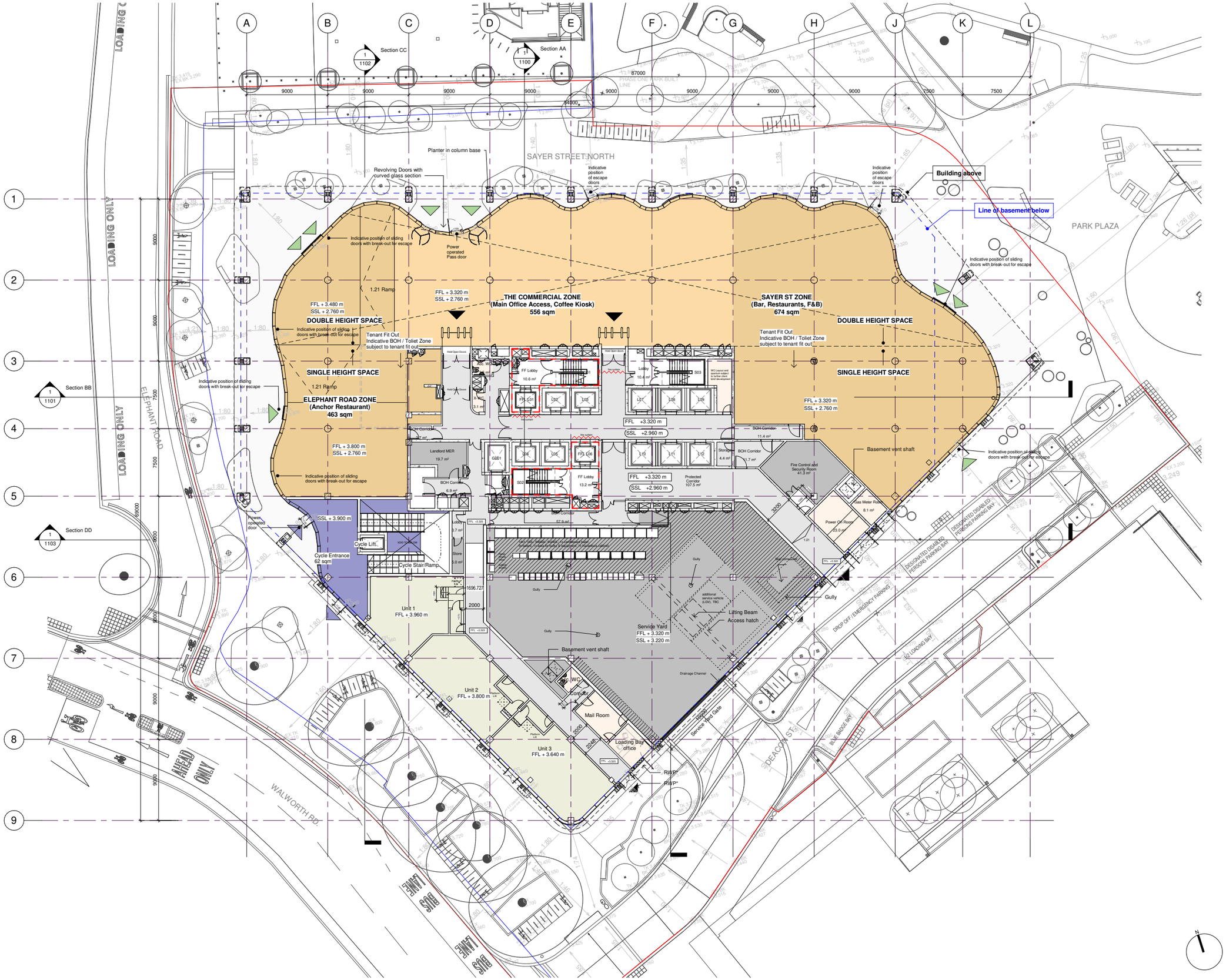
The Sustainable Transport SPD re-emphasises policies set out in the Southwark Plan and requires that developments involving the collection and delivery of goods will need to demonstrate that there are no impacts on safety.

Developments likely to attract a large number of vehicles for loading/unloading are required to produce a Servicing Management Plan as part of the Transport Assessment, with the aim of the Plan to minimise the impact of loading/unloading vehicle operations within the development and on surrounding roads.

The SPD lists space requirements for servicing circulation and access to, from and through the site and includes design guidelines to adhere to, provision of suitable facilities for loading/unloading, safe access and egress for refuse collection, delivery and emergency vehicles, space for refuse storage and collection, strategic routes for service vehicles, and separation of loading/unloading from walking and cycling.

APPENDIX 2

Drawings and Swept Path Analysis



NOTES:

1. For public realm design refer to landscape architect's drawings.
2. For external levels refer to landscape architect's drawings. All falls to be away from ground floor facades.
3. Facade doors to lobby and retail subject to further design development.
4. Column planting subject to design development.

KEY:

- CYCLE FACILITIES
- RETAIL
- ACTIVE LOBBY
- FACILITIES
- PLANT/SERVICES
- OFFICES
- CIRCULATION
- FIRE FIGHTING SHAFT

KEY:

- LINE OF SITE BOUNDARY
- LINE OF BUILDING ABOVE
- LINE OF BASEMENT BELOW

in abeyance schedule

P04	-	Updated landscape socks on Deacon St & Lobby Columns
P03	-	Updated GF Level, Public Realm update
P02	-	Refer to revision tracker list.
P01	-	Project faraday general revision
P00	-	Refer to revision tracker list.
E	-	Refer to revision tracker list.
D	-	Refer to revision tracker list.
C	-	Core layout amended to accord with client comments.
B	-	Building realignment, Public realm subject to Gillespies layout, Revised levels retail units.
A	-	Core layout updated to coordinate with consultants. Levels updated. Fire escape strategy incorporated to consultant input. Service yard layout updated.

revision schedule

rev	date	issue description	dw	ch
P04	21.01.2021	Design Freeze Issue + Landscape changes incorp	AC	PS
P03	17.12.2020	Design Freeze Issue for Reserved Matters Application + Levels	AC	PS
P02	20.11.2020	Design Freeze Issue for Reserved Matters Application.	AC	PS
	23.07.2020	Areas clarified	KY	PS
P01	05.06.2020	Stage 2 - Project Faraday	LM	PS
P00	19.12.2019	Stage 2 Drawing Submission	JT	PS
E	16.12.2019	Preliminary Stage 2 GA Issue	KY	PS
D	13.12.2019	Preliminary Stage 2 GA Issue	KY	PS

revision

note

Dimensions govern. Do not scale drawings.
All dimensions are in millimeters unless noted otherwise.
All dimensions shall be verified on site before proceeding.
All discrepancies to be notified in writing to ACME.
This drawing is to be read in conjunction with all relevant architectural and engineers information.

Area measurements must not be taken to represent contractual documentation.

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location

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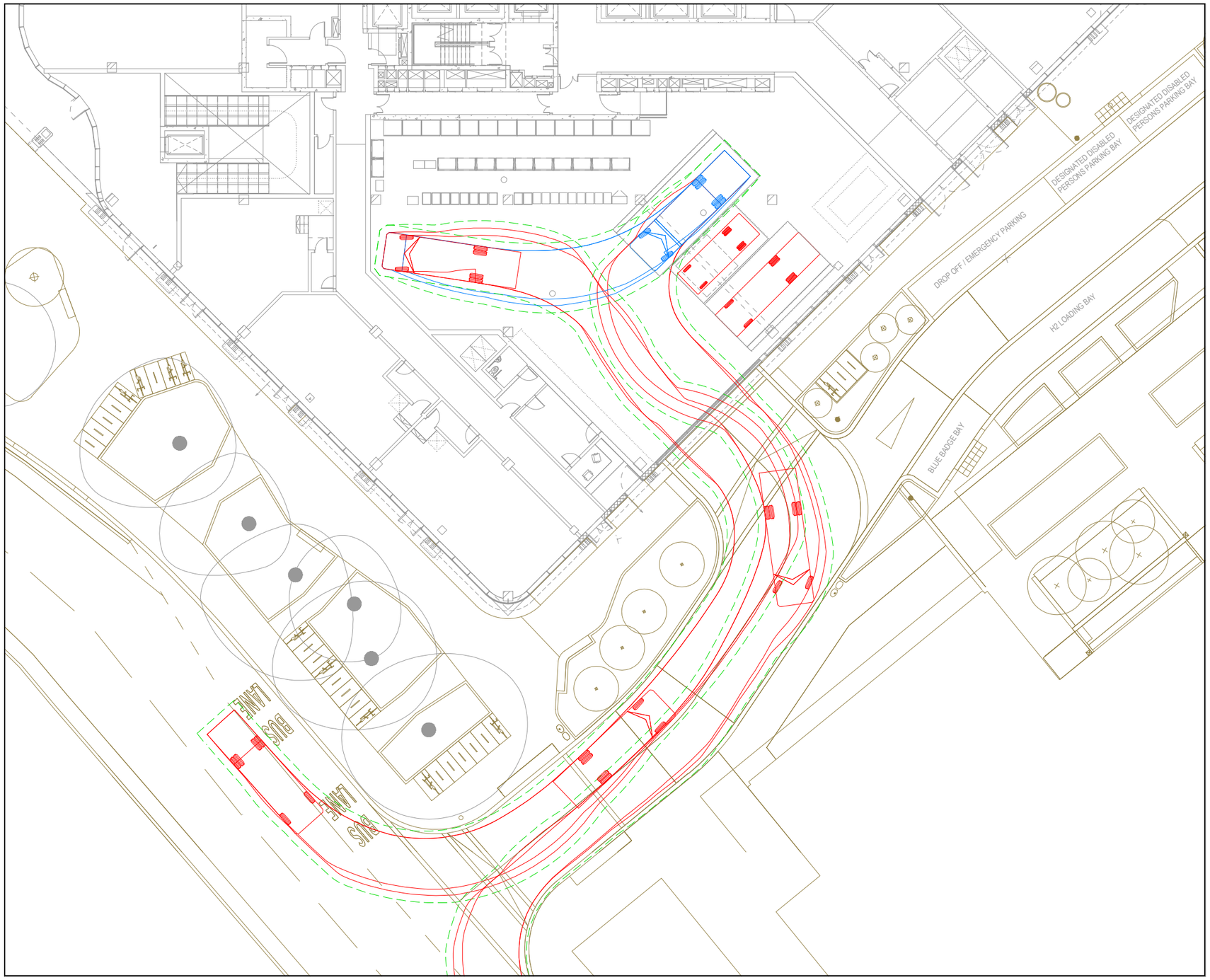
project	ELEPHANT H1
number	168
drawing	**Floor Plan-Level 00**
scale	1 : 200 @ A1 (1:400@A3)
status	STAGE 2 - PROJECT FARADAY
date	11.10.2019
drawn by	JT
checked	HS
drawing no	259639-A100-H01-20-PL-00-1004
rev no	**P04**



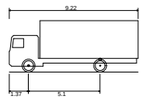
NOTES

Not to scale (do not attempt to scale from drawing)

Drawing orientation not shown to true north

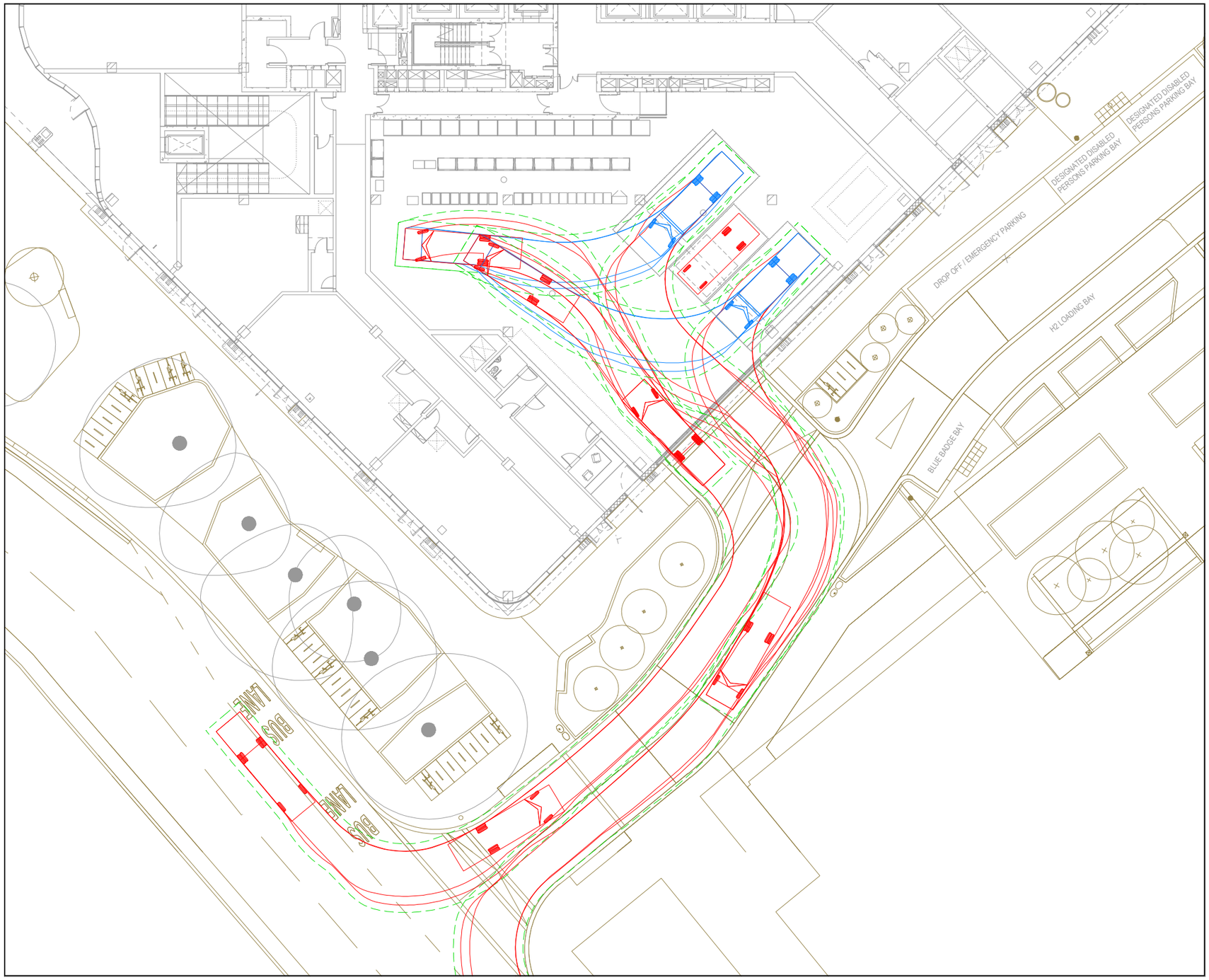
Highway works to Walworth Rd shown illustratively only - being developed separately under Elephant Park OPP masterplan

VEHICLE PROFILE



18t Rigid Vehicle (30')	
Overall Length	9.220m
Overall Width	2.500m
Overall Body Height	3.700m
Min Body Ground Clearance	0.440m
Track Width	2.490m
Lock to lock time	3.00s
Kerb to Kerb Turning Radius	8.735m

BURO HAPPOLD	Project: Elephant Park Plot H1	Project Number: 0034778	Status: For information		
	Sketch Title: Swept path analysis - 18t truck	Sketch Number: 0034778-2318-TRK-SK0010	Date: 10/12/20	Initials: NJH	Revision: P01



NOTES

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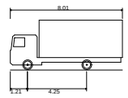
Drawing orientation not shown to true north

Highway works to Walworth Rd shown illustratively only - being developed separately under Elephant Park OPP masterplan

VEHICLE PROFILE



7.5t Box Van	
Overall Length	8.010m
Overall Width	2.100m
Overall Body Height	3.556m
Min Body Ground Clearance	0.351m
Track Width	2.064m
Lock to lock time	4.00s
Kerb to Kerb Turning Radius	7.400m

BURO HAPPOLD	Project: Elephant Park Plot H1	Project Number: 0034778	Status: For information		
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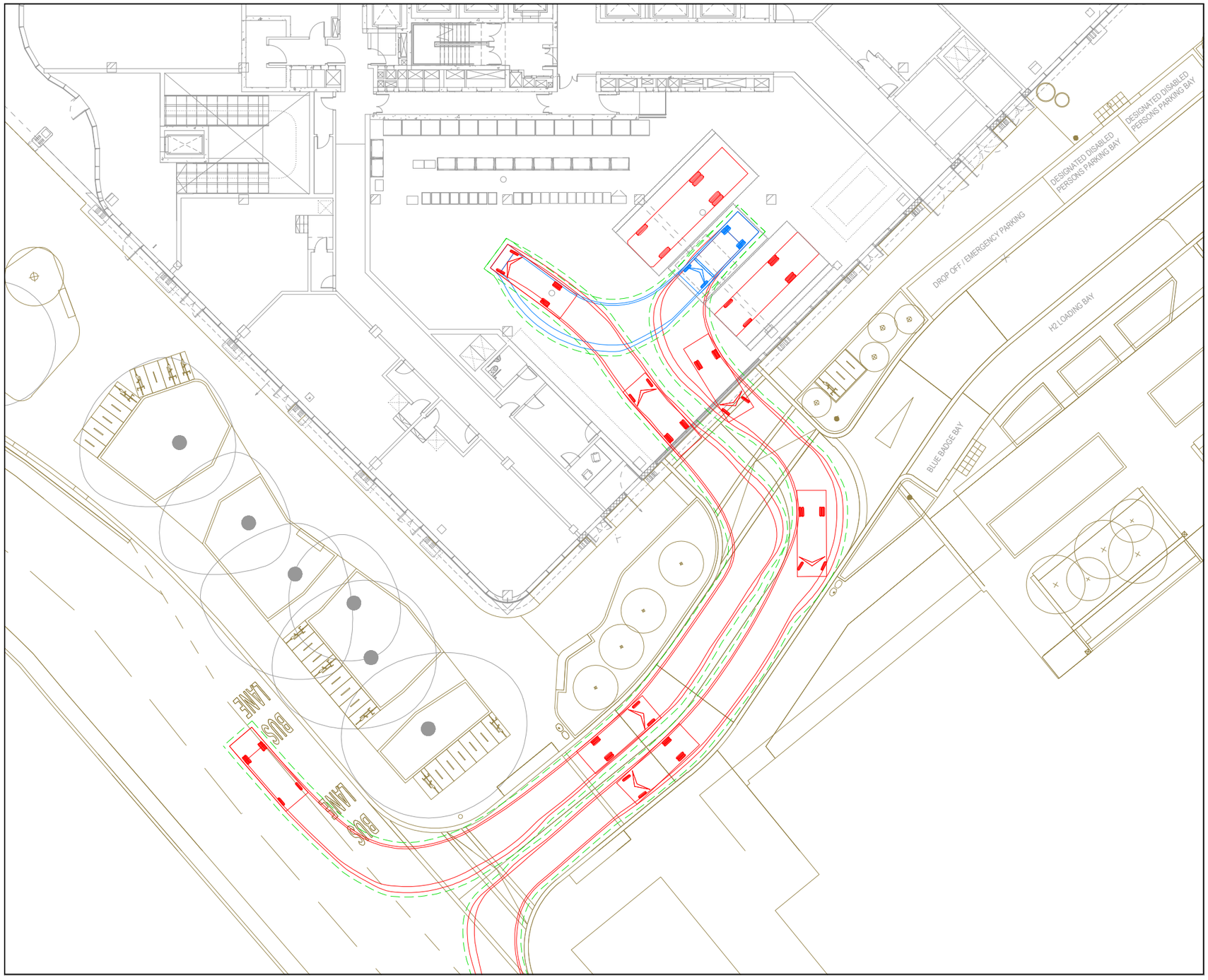

NOTES

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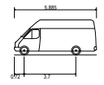
Drawing orientation not shown to true north

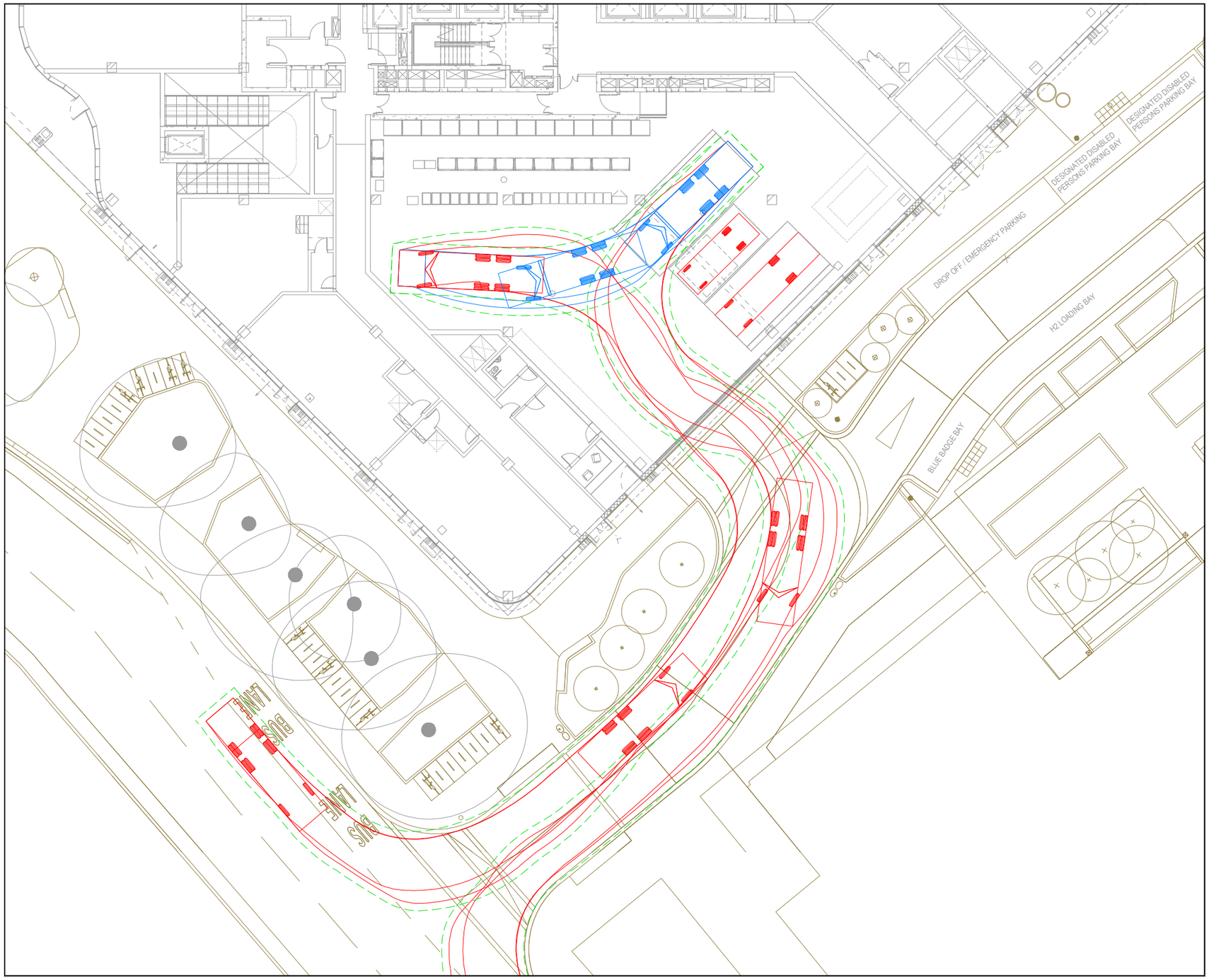
Highway works to Walworth Rd shown illustratively only - being developed separately under Elephant Park OPP masterplan

VEHICLE PROFILE



Light Van	
Overall Length	5.885m
Overall Width	2.000m
Overall Body Height	2.526m
Min Body Ground Clearance	0.299m
Track Width	1.765m
Lock to lock time	4.00s
Kerb to Kerb Turning Radius	6.000m

BURO HAPPOLD	Project: Elephant Park Plot H1	Project Number: 0034778	Status: For information		
	Sketch Title: Swept path analysis - light van	Sketch Number: 0034778-2318-TRK-SK0030	Date: 10/12/20	Initials: NJH	Revision: P01



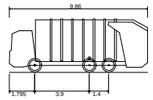
NOTES

Not to scale (do not attempt to scale from drawing)

Drawing orientation not shown to true north

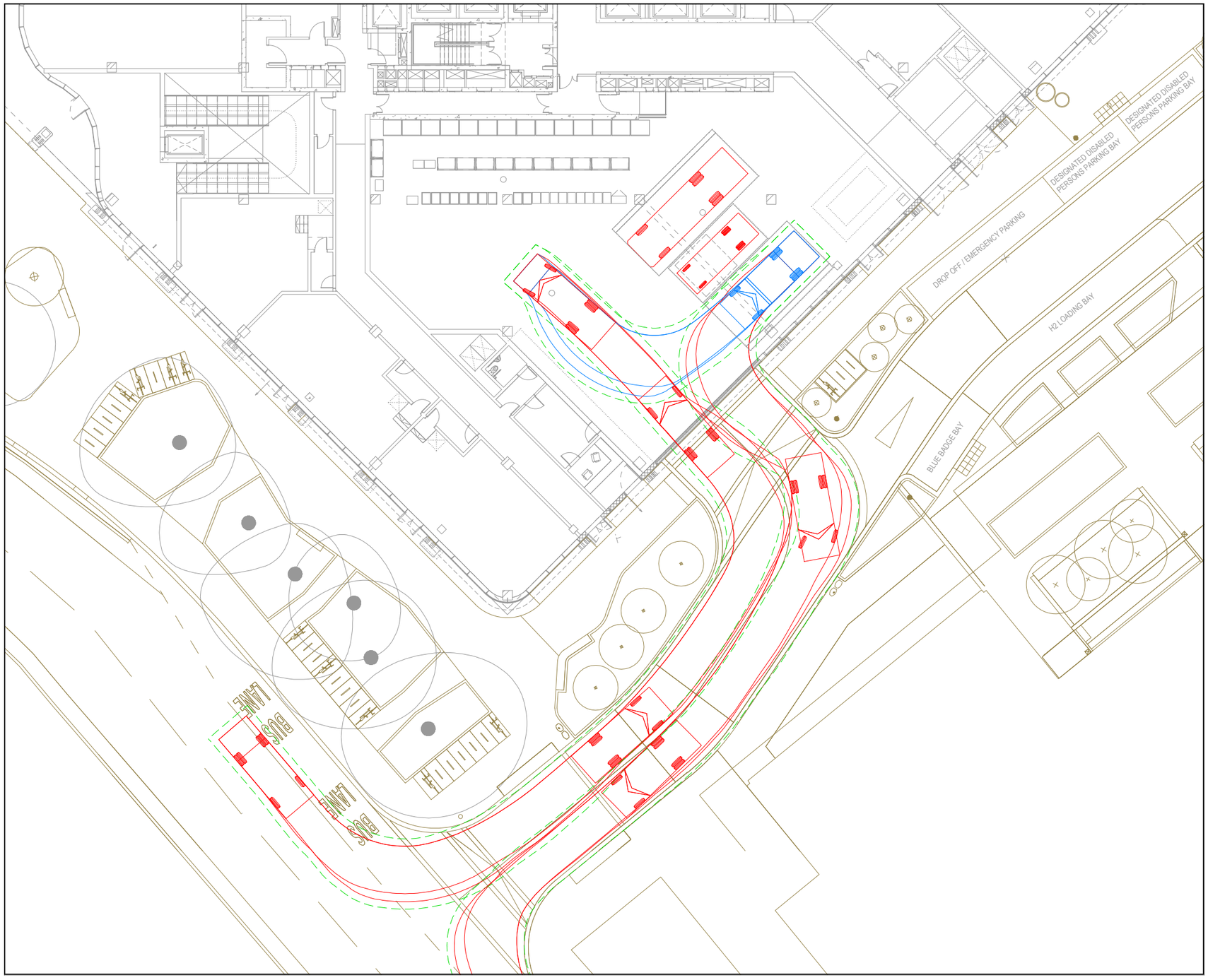
Highway works to Walworth Rd shown illustratively only - being developed separately under Elephant Park OPP masterplan

VEHICLE PROFILE



Large Refuse Vehicle (3 axle)	
Overall Length	9.860m
Overall Width	2.450m
Overall Body Height	3.814m
Min Body Ground Clearance	0.366m
Track Width	2.450m
Lock to lock time	4.00s
Kerb to Kerb Turning Radius	9.500m

BURO HAPPOLD	Project: Elephant Park Plot H1	Project Number: 0034778	Status: For information		
	Sketch Title: Swept path analysis - refuse truck	Sketch Number: 0034778-2318-TRK-SK0040	Date: 10/12/20	Initials: NJH	Revision: P01



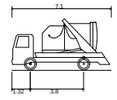
NOTES

Not to scale (do not attempt to scale from drawing)

Drawing orientation not shown to true north

Highway works to Walworth Rd shown illustratively only - being developed separately under Elephant Park OPP masterplan

VEHICLE PROFILE



Swing Arm Skip Compactor Truck

Overall Length	7.100m
Overall Width	2.480m
Overall Body Height	3.664m
Min Body Ground Clearance	0.410m
Track Width	2.480m
Lock to lock time	6.00s
Kerb to Kerb Turning Radius	7.000m

BURO HAPPOLD	Project: Elephant Park Plot H1	Project Number: 0034778	Status: For information		
	Sketch Title: Swept path analysis - skip truck (portable compactor)	Sketch Number: 0034778-2318-TRK-SK0050	Date: 10/12/20	Initials: NJH	Revision: P01

APPENDIX 3

Trip Generation

APPENDIX 3 - TRIP GENERATION

Servicing Trip Generation - Introduction

A variety of methods for predicting servicing/delivery activity have been considered. Office servicing was the main focus, due to high proportion of the H1 Development, but retail serving has also been investigated.

Office Servicing/Deliveries

TRICS – London Only and UK-Wide

For most areas of vehicular travel behaviour, the TRICS database is used as an initial source of data. This amalgamates and averages survey data by land-use and is generally considered a moderately reliable source for forecasting trips. Filtering is used to select survey sites based on a range of parameters to enable the best possible comparison with a proposed development.

It is, however, recognised that the number of relevant comparable surveys sites for larger office developments in London is quite limited. Filtering the database for sites in Greater London with a PTAL of 4 or above, and a gross floor area of more than 2,000sqm to remove the smallest sites which are not likely to be a good comparison, only nine locations remain (with one location having several surveys over a number of years).

Table 10 - TRICS London office survey site selection

Reference	Description	Town/City	Area	GFA	PTAL Rating
BT-02-A-04	OFFICES	WEMBLEY	BRENT	10,584	5 Very Good
CI-02-A-02	OFFICES	CITY OF LONDON	CITY OF LONDON	7,567	6b (High) Excellent
CN-02-A-03	PLANNING & ENGINEERING	FITZROVIA	CAMDEN	26,639	6b (High) Excellent
HD-02-A-08	DATA CENTRE	HAYES	HILLINGDON	15,000	4 Good
HD-02-A-09	DATA CENTRE	HAYES	HILLINGDON	12,100	4 Good
HM-02-A-01	REGUS OFFICES	HAMMERSMITH	HAMMERSMITH AND FULHAM	2,036	6b (High) Excellent
KN-02-A-01	FRUIT DRINKS COMPANY	KENSAL GREEN	KENSINGTON AND CHELSEA	2,255	5 Very Good
LB-02-A-01	START UP OFFICES & STUDIOS	VAUXHALL	LAMBETH	9,700	6b (High) Excellent
LB-02-A-02	MUSIC COMPANY	STREATHAM	LAMBETH	2,667	6a Excellent
TH-02-A-01	OFFICE SPACE FOR RENT	BETHNAL GREEN	TOWER HAMLETS	3,549	6b (High) Excellent

When considered together, the trip rates for LGVs and OGVs can be summed to give a representation of the majority of servicing by motor vehicle (excluding bicycles and motorcycles).

When all nine sites are considered, a servicing trip rate of **0.18** vehicles per 100sqm per day is derived.

However, with servicing/delivery activity, there is generally an ‘economies of scale’ factor where larger developments do not simply attract more servicing/delivery activity in a linear fashion; larger developments will attract more deliveries but some of these will be consolidated into a larger delivery rather than multiple separate deliveries. As the proposed H1 Development includes in excess of 60,000sqm GIA office floor-space, these factors are potentially significant. On this basis, it is important to consider/evaluate these scale factors.

Accordingly, the TRCIS LGV/OGV trip rates were also examined in terms of a series of area thresholds, as summarised below. This exercise shows that for the larger sites, a significantly lower servicing trip rate was observed, as expected, reducing by approximately 50% to **0.088** vehicles per 100sqm GIA per day for developments of more than 15,000sqm.

Table 11 - TRICS London sites servicing vehicle activity (relative to site size)

Area threshold (GIA)	No. sites	Vehicle Rate (Arrivals per 100sqm)		
		LGV	OGV	Total
2,000sqm +	9 sites	0.161	0.019	**0.180**
5,000sqm +	5 sites	0.162	0.026	**0.188**
10,000sqm +	3 sites	0.086	0.020	**0.106**
15,000sqm +	2 sites	0.066	0.022	**0.088**

Notes: for 15,000sqm + older version of Hayes data centre survey used

As the number of sites involved is very limited, a similar exercise was carried out for TRICS sites across the UK. These results were filtered to assume only highly urbanised areas, by applying the 'town centre/edge of town centre' filters and a 'population >20,000 within one mile' filter, to ensure a reasonable comparison to London. This expanded site selection included 17 sites including those in London, with additional locations in Peterborough, Dundee, Edinburgh, Southend, Manchester, St Albans, Swansea and Worcester.

Table 12 - TRICS UK city offices survey site selection

Reference	Description	Town/City	Area	GFA	PTAL Rating
CA-02-A-05	OFFICES	PETERBOROUGH	CAMBRIDGESHIRE	8,793	
CI-02-A-02	OFFICES	CITY OF LONDON	CITY OF LONDON	7,567	6b (High) Excellent
CN-02-A-03	PLANNING & ENGINEERING	FITZROVIA	CAMDEN	26,639	6b (High) Excellent
DU-02-A-01	OFFICES	DUNDEE	DUNDEE CITY	2,400	
EB-02-A-06	REGUS OFFICES	EDINBURGH	CITY OF EDINBURGH	4,500	
EX-02-A-03	HMRC	SOUTHEND-ON-SEA	ESSEX	40,000	
GM-02-A-08	REGUS	MANCHESTER	GREATER MANCHESTER	3,960	
GM-02-A-09	LEASED OFFICES	MANCHESTER	GREATER MANCHESTER	2,500	
HD-02-A-09	DATA CENTRE	HAYES	HILLINGDON	12,100	4 Good
HF-02-A-04	OFFICES	ST ALBANS	HERTFORDSHIRE	5,000	
HM-02-A-01	REGUS OFFICES	HAMMERSMITH	HAMMERSMITH AND FULHAM	2,036	6b (High) Excellent
LB-02-A-01	START UP OFFICES & STUDIOS	VAUXHALL	LAMBETH	9,700	6b (High) Excellent
LB-02-A-02	MUSIC COMPANY	STREATHAM	LAMBETH	2,667	6a Excellent
SW-02-A-01	OFFICES	SWANSEA	SWANSEA	6,630	
SW-02-A-02	OFFICE	SWANSEA	SWANSEA	2,225	
WO-02-A-01	OFFICES	WORCESTER	WORCESTERSHIRE	21,911	
WO-02-A-02	OFFICE	WORCESTER	WORCESTERSHIRE	2,000	

When taken together, these sites result in an average servicing trip rate of **0.111** vehicles per 100sqm GIA per day; a pronounced scaling effect can again be observed for larger developments, with the rate reducing to **0.022** vehicles per 100sqm per day for sites in excess of 15,000sqm.

Table 13 - TRICS UK sites servicing vehicle activity (relative to site size)

Area threshold (GIA)	No. sites	Vehicle Rate (Arrivals per 100sqm)		
		LGV	OGV	Total
2,000sqm +	17 sites	0.099	0.012	0.111
5,000sqm +	9 sites	0.097	0.010	0.107
10,000sqm +	4 sites	0.030	0.007	0.037
15,000sqm +	3 sites	0.015	0.007	0.022

As the number of sites included is greater than for the London-only selection, this assessment provides a greater degree of confidence in the scale-effects, but the trip rates are lower and therefore potentially less robust.

Reference Projects

Servicing trip rates were reviewed from a selection of submitted projects in Southwark, as summarised briefly below:

- The Blackfriars Crown Court redevelopment (ref. 20/AP/1537) and the 32-36 Loman Street development (ref. 19/AP/1404) both cite the TRICS database for servicing trip rate, and quote trip rates of **0.05** and **0.056** vehicles per 100sqm per day respectively. It is also noteworthy that the Blackfriars Crown Court redevelopment includes more than 30,000sqm of office floor-space, making it one of the larger projects referenced.
- The Skipton House redevelopment (ref. 18/AP/4194) also references the TRICS database and cites a trip rate of **0.12** vehicles per 100sqm per day.
- The Southwark OSD development (ref. 20/AP/1189) referred to a servicing survey carried out at the adjacent Palestra building occupied by TfL. Palestra was cited as receiving 14 deliveries per day; for the given gross floor area of 37,400sqm, this equates to a trip rate of **0.037** vehicles per 100sqm per day. This is what was observed at Palaestra and applied to the Southwark OSD development proposals.
- The New City Court Development (ref. 18/AP/4039) includes results from a number of surveys, on the cited basis of limited relevant data from TRICS. The existing pre-development site was recorded as attracting nine service vehicles per day, equating to a trip rate of approximately **0.07** vehicles per 100sqm per day. The transport consultant also reviewed surveys they had carried out or commissioned at a number of other sites, as follows:
  - 240 Blackfriars Road survey: 0.192 vehicles per 100sqm per day when including motorcycles, or **0.15** vehicles per 100sqm per day when motorcycles are not included (note this survey subsequently formed the basis of the proposed New City Court development methodology)
  - City Place House survey: 0.073 vehicles per 100sqm per day when including motorcycles, or **0.055** vehicles per 100sqm per day when motorcycles are not included.
  - Portman Mews survey: **0.103** vehicles per 100sqm per day.
  - Livonia Street survey: **0.085** vehicles per 100sqm per day.
  - St James Street survey: 0.213 vehicles per 100sqm per day when including motorcycles, or **0.205** vehicles per 100sqm per day when motorcycles are not included.
- The Vinegar Yard development (ref. 18/AP/4171) assessment refers to the City of London Servicing Proposal Assessment and cites a servicing trip rate of **0.20** vehicles per 100sqm per day. This figure is also adopted in the Becket House development proposals (ref. 20/AP/0944) but no source is given.

WSP Servicing Study

As part of a peer-review study, WSP provided a summary of servicing trip rates from eight further operational developments in central London. The survey dates and scale of each development was not provided, but the average servicing trip rate was determined as **0.15** vehicles per 100sqm per day.

Table 14 - WSP survey of operational sites

Site	Vehicle rate (veh/100sqm/day)
10 Exchange	0.09
135 Bishopsgate	0.10
20 Gresham	0.12
155 Bishopsgate	0.12
175 Bishopsgate	0.13
Lion Plaza	0.18
199 Bishopsgate	0.22
127 Kensington High Street	0.23
Average (mean)	0.15

It is noted that the majority of these sites fall within the City of London, where guidance would recommend the use of a 0.20 per 100sqm trip rate, but the surveys show that this rate would be excessive in many cases.

Other Survey Data

Several other data sources were considered from substantial operational projects where data has been provided to Buro Happold:

- GLA City Hall. During discussions in relation to this building in October 2020, the GLA reported this building receiving approximately 15-20 vehicles per week, or about 4 per day. Total area advised by GLA as c. 13,000sqm, equating to a servicing trip rate of c. **0.03** vehicles per 100sqm per day. It is noted that personal deliveries are not permitted.
- International Quarter London, Stratford City, Newham plot S5 (c.50,000sqm): feedback from operator is that c.50 vehicles per day (excluding retail), equating to c. **0.10** vehicles per 100sqm GIA per day.

Unit-Based Approach

Research conducted by PBA during development for the Servicing Management Plans for South Gardens and West Grove drew from a number of surveys of deliveries to commercial premises, establishing typical levels of servicing activity on a per-unit basis. Typical weekly delivery figures are summarised below, with an indicative conversion to typical daily deliveries.

Table 15 - Per-unit servicing trips rates established in MP1/MP2 research

	Deliveries per week	Deliveries per day
Business	7 to 10	1-2

Given the scale of the building, it is conceivable that there could be as many as 20-30 office occupier, though the number is likely to be lower than this. This could nominally result in anywhere between 20-60 deliveries per day, though it is highly probable that some degree of consolidation would result in terms of a single supplier/delivery agent delivering to more than one tenant in a single vehicle/trip.

Summary

Evidence from the Paletsra building (occupied by TfL) and the GLA headquarters indicates that a rate of less than 0.05 vehicles per 100sqm per day is potentially feasible and servicing rates around this level have been proposed for a number of developments referred to (including Southwark OSD).

The nearby Skipton House project proposed a rate of 0.12 vehicles per 100sqm per day and this correlates quite closely to the TRICS average (0.106 veh/100sqm/day) for larger London sites (over 10,000sqm).

The table below summarises the forecast servicing activity for the different trip rates considered, based on the c.62,000sqm office GIA proposed.

Table 16 - Comparison of servicing trip rates from variety of sources

Arrivals trip rate (veh/100sqm GIA/day, unless noted otherwise)	Sources Include	Forecast H1 Servicing Vehicles Per Day
0.022	TRICS UK cities for sites >15,000sqm	14
0.03-0.04	GLA City Hall; Palestra	19-25
0.05-0.06	Blackfriars Crown Court redevelopment; Loman Street development; City Place House	31-37
0.10-0.12	IQL Plot S5; Portman Mews; Skipton House; TRICS London-wide for sites >10,000sqm	62-74
0.15	**WSP surveys average; 240 Blackfriars Road**	**93**
0.18	TRICS London-wide for sites > 2,000sqm	112
0.20	Vinegar Yard development	124
1-2 per unit per day	MP1/MP2 small commercial unit research	20-60

It is therefore proposed to adopt a trip rate of **0.15 vehicles per 100sqm GIA per day** for the H1 Development, equating to **93 vehicles per day**.

This is significantly higher than the level observed at Palestra and the GLA, and equivalent to the average from surveys conducted by WSP and those conducted by TPP, including the 240 Blackfriars Road survey. NB this is for vans/trucks and excludes any additional activity by motorcycle or bicycle. It is also significantly higher than the TRICS results for other sites above 10,000sqm and the 'per tenant' approach considered.

This is considered reasonable in the context of the survey data reviewed and the expectation of 'economies of scale' for a development of this size, where multiple office and retail occupiers can be expected to receive deliveries via the same vehicle. Additionally, smart procurement and management of deliveries will be promoted through the DSMP as a means to encourage more efficient servicing and reduction of vehicle numbers associated with servicing as well as a modal shift towards greener logistics methods. There is also like to be some 'overlap' with retail servicing, so a lower trip rate would be appropriate to reduce the likelihood of double-counting servicing activity.

Retail Servicing

The H1 Development includes two main types of retail provision, clustered in two zones; an area of non-food retail is proposed along the Walworth Road frontage and may consist of between one and three units depending on tenant interest. The 'active lobby' element of the ground floor is expected to include two moderately sized food and beverage (F&B) outlets.

Table 17 - Approximate retail areas assumed

Use type	GIA (sqm)
Non-food retail (Walworth Road units)	295
Food and beverage (F&B) units	1,270
Total	**1,565**

Whilst the proportion of retail floorspace within the H1 Development as a whole is very small, retail servicing is typically somewhat higher than for typical offices, and generally significantly higher in the case of F&B retail. As a result, the retail floorspace can potentially be expected to lead to a disproportionately high percentage of the total servicing activity.

Several forecasting methods were considered in order to ensure a robust but not accessible conservative forecast could be adopted for the purposes of design.

Unit-Based Approach

Research referenced during development for the Servicing Management Plans for South Gardens and West Grove drew from a number of surveys of deliveries to commercial premises, establishing typical levels of servicing activity on a per-unit basis. Particularly in the case of small commercial units, this may often represent a more robust assessment than area-based trip rates which may be better suited to larger commercial developments.

Typical weekly delivery figures are summarised below, with an indicative conversion to typical daily deliveries; it is noted that most commercial premises may expect deliveries six days per week, but an average has been assumed based on a fifth of the total weekly deliveries to allow for variation across the week.

Table 18 - Per-unit servicing trips rates established in MP1/MP2 research

Unit type	Deliveries per week	Deliveries per day
Retail units	4 to 7	1-2
Supermarkets	7 to 10	1-2
Café / restaurant	20 to 25	4-5

On the basis that the Walworth Road retail could comprise of up to three units, this method would predict **11-16 vehicles per day**.

Reference Projects

A selection of office-led developments with some retail elements were considered when benchmarking the H1 Development proposals. Many of these made no specific provision for retail, but a variety of methods were adopted where retail servicing was estimated, including the following:

- The Blackfriars Crown Court redevelopment (ref. 20/AP/1537) quotes trip rates of 1-2 vehicles per day per unit. Applied to the H1 Development, this would result in a forecast of up to 10 vehicles per day, assuming five distinct units.
- The Vinegar Yard development (ref. 18/AP/4171) assessment refers to the City of London Servicing Proposal Assessment) and cites a servicing trip rate of 1.35 vehicles per 100sqm per day. Applied to the H1 Development, this would result in a forecast of up to 21 vehicles per day.
- The Southwark OSD development (ref. 20/AP/1189) referred to retail servicing at a rate of 1.45 vehicles per 100sqm per day. Applied to the H1 Development, this would result in a forecast of up to 23 vehicles per day.

Summary

The sources reviewed provide a range of forecast servicing activity for the retail element of the H1 Development from 11-23 vehicles per day.

To ensure a robust assessment, a forecast of **15-25 vehicles per day** will be assumed for the combined demand, though it is likely that there will be some degree of overlap between office and retail servicing.

Combined Daily Servicing

The table below summarised the combined servicing forecast, taking account of the methodology review.

It is noted that the flexible use-classes considered within the ground floor/mezzanine space include possible medical/health uses for the likes of a GP surgery or local health centre in place of office or retail uses. There is limited detail available at this stage on what form this use might take but at this stage, this use is considered to be broadly equivalent to office in terms of servicing and deliveries, though allowance would potentially be required for additional specialist waste collections (clinical waste, sharps etc) in addition to standard waste streams. However, this would be unlikely to add more than 1-2 additional vehicles per day.

Land use	Vehicles per day
Office (and medical / health) *	93
Retail	15-25
Total	**108-118**

* possible 'flexible' medical /health use servicing assumed to be analogous to office

Timing of Deliveries/Servicing

Typical unmanaged servicing activity for offices tends to predominantly take place during working hours, with a pronounced peak in activity in mid-to-late morning. Activity during the afternoon is generally much lower and out-of-hours activity is typically very limited.

The survey of servicing activity at the Palestra building occupied TfL (as featured within the Southwark OSD development application, ref. 20/AP/1189) is an example of this type of pattern, as illustrated below.

Table 19 - Surveyed servicing profile from Palestra (source – Southwark OSD Transport Assessment, ref. 20/AP/1189)

Time range	Arrival profile
00:00-01:00	1%
01:00-02:00	5%
02:00-03:00	2%
03:00-04:00	0%
04:00-05:00	2%
05:00-06:00	9%
06:00-07:00	11%
07:00-08:00	5%
08:00-09:00	7%
09:00-10:00	11%
10:00-11:00	13%
11:00-12:00	9%

Time range	Arrival profile
12:00-13:00	8%
13:00-14:00	5%
14:00-15:00	3%
15:00-16:00	2%
16:00-17:00	1%
17:00-18:00	0%
18:00-19:00	0%
19:00-20:00	0%
20:00-21:00	0%
21:00-22:00	1%
22:00-23:00	1%
23:00-24:00	0%

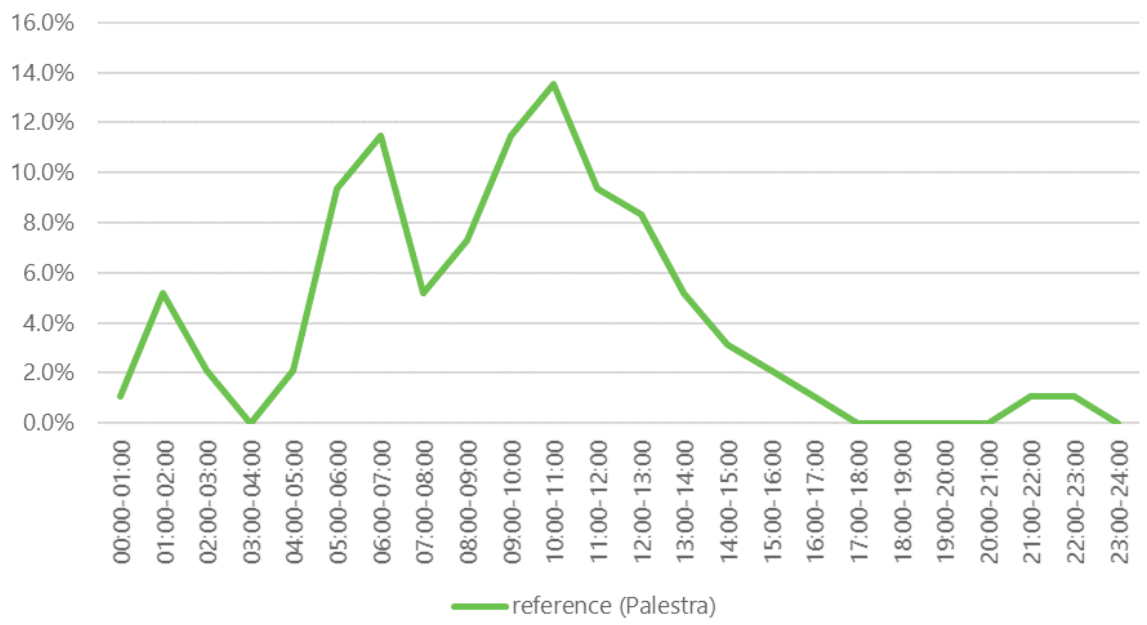


Figure 20 - Reference office servicing arrival profile (from Palestra)

Such a servicing/delivery profile results in a very inefficient use of any on-plot service yard facilities, resulting in a high demand for just a short period of the day and being largely unused for a significant proportion of the time. With a high peak demand, it is necessary to either provide sufficient capacity to meet this peak demand (which is then largely redundant for the rest of the day and thus a poor use of space) or to design for a more balanced demand and turn vehicles away when demand cannot be accommodated.

Most central-London authorities now expect the inclusion of some form of delivery booking system (DBS) on larger developments to manage and regulate delivery and servicing activity. This approach seeks to somewhat regulate servicing activity, distributing it more evenly across the day and allowing more efficient use of on-plot or on-street capacity as appropriate.

This also allows restriction of activity during key times (e.g. 'rush hour' or school drop-off/pickup in some locations) and better use of out-of-hours servicing in line with the Mayor's Transport Strategy recommendations on retiming of servicing.

A modified servicing time-profile is illustrated below (Figure 21), showing how managing demand can reduce the pronounced peak activity and better spread activity across the day, without adding any significant burden to peak network traffic and with limited out-of-hours servicing. In some situations, the out-of-hours servicing could be further developed/expanded to reduce day-time activity further.

Retail servicing is typically less uniform, and more dependent on the nature of the retail type. A significant proportion of servicing activity might be expected prior to opening or after closing; for F&B retail, deliveries would mainly be expected before lunch and in the afternoon ahead of the evening dining period.

In addition to the mixture of land-uses, each with different delivery characteristics, the availability of the plot management team to oversee the service yard and scheduling of deliveries allows a more managed approach to be taken. In particular, retail deliveries and commercial waste collection can be scheduled to take place within carefully controlled time windows.

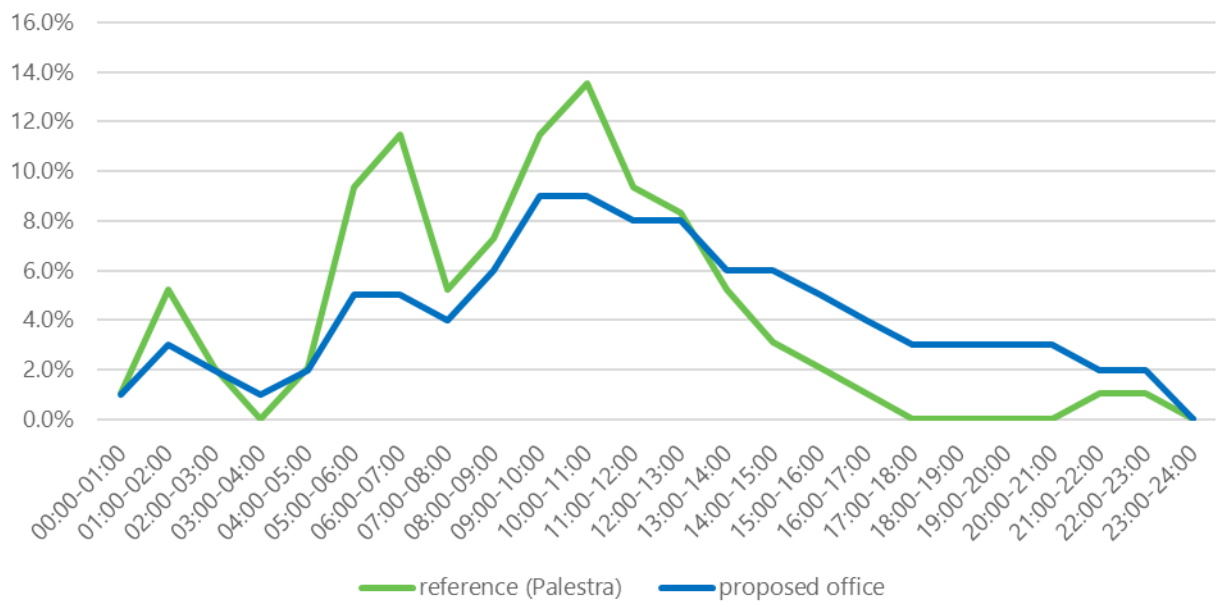


Figure 21 - Proposed 'smoothing' of office servicing profile through managed servicing including booking system

On the basis of the above, a simple time profile has been compiled for each of the land-uses by period of the day, as summarised in the table below. A degree of variability has been accounted for through provision of a range of possible values, in particular to allow for a range of servicing activity for different retail typologies. If taken in their entirety, these profiles would over-estimate total servicing, but they allow the potential simultaneous activity across each time-band to be considered robustly.

Table 20 - Proposed servicing profile – percentage of delivery/servicing arrivals by time band

Land use	00.00-05.00	05.00-09.00	09.00-13.00	13.00-18.00	18.00-24.00
Office	5-15%	15-20%	25-30%	15-25%	10-15%
Retail	0-5%	20-40%	0-5%	10-30%	40-50%

If these temporal profiles are applied to the forecasts for the various commercial scenarios, the predicted maximum level of servicing activity for each time band can be forecast, along with the maximum likely hourly activity, accounting for some variability across each time band.

Table 21 - Predicted servicing arrivals by land-use/time band and resultant hourly activity

Land use	00.00-05.00	05.00-09.00	09.00-13.00	13.00-18.00	18.00-24.00
Office	5-14	14-19	24-28	14-24	9-14
Retail	0-2	3-10	0-2	2-8	6-12
Total arrivals in time band	5-16 (in 5 hours)	17-29 (in 4 hours)	24-30 (in 4 hours)	16-32 (in 5 hours)	15-26 (in 6 hours)
Vehicle arrivals per hour	1-3	5-8	6-8	5-7	3-5

For the scenario shown, the forecast predicts up to eight servicing/delivery vehicles per hour arriving at the Site. An illustrative representation of the combined servicing profile, based on the numbers above, is shown in below.

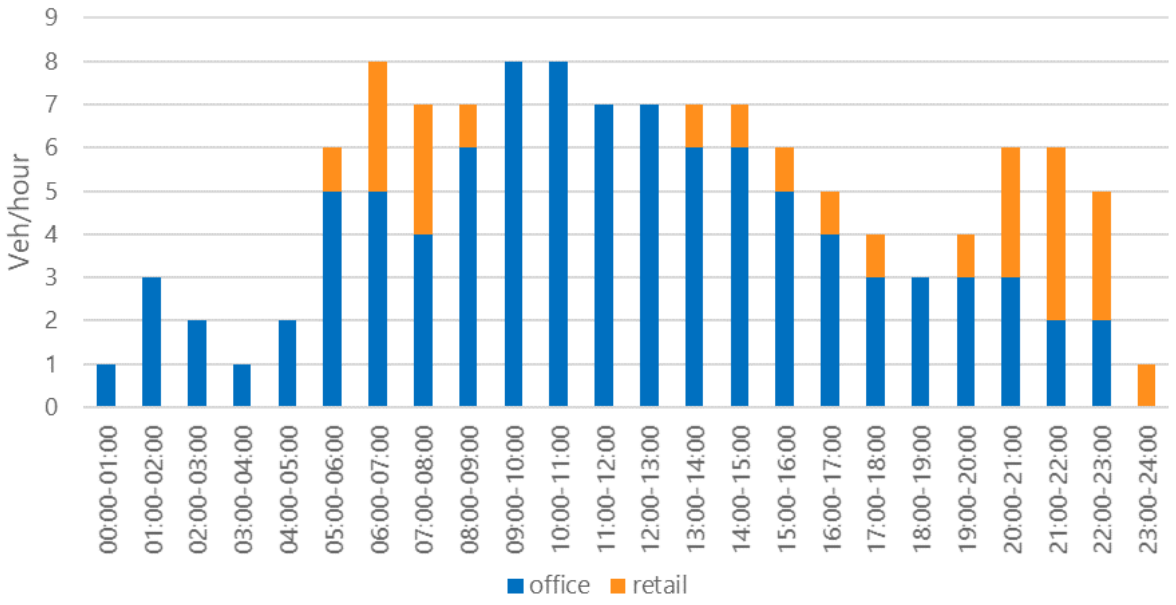


Figure 22 - Proposed combined office/retail servicing arrivals with managed approach

Service Bay Capacity

In the case of retail/commercial deliveries, these are expected to have a maximum dwell time of up to 15-20 minutes, but the majority would be expected to take 5-10 minutes as occupiers will be expected to be present to receive the delivery, rather than the delivery driver having to make their way through the building to the tenant.

Consideration is also needed of 'buffer' time between vehicles using any parking bay as it cannot be assumed that consecutive vehicles will arrive immediately as a bay is vacated.

Assuming an average of 15 minutes per vehicle across all land-uses, a loading bay for one vehicle could realistically accommodate four vehicles per hour. Higher turnover may be achieved in some hours but cannot always be relied upon to ensure vehicles can be accommodated. Assuming nominal 20-minute time slots to include for a buffer allowance, a loading bay for one vehicle would accommodate **three vehicles** per hour. On this basis, provision would be needed for a minimum of three vehicles to be parked for loading/unloading simultaneously to satisfy a demand of eight vehicles per hour, to allow for some overlap in arrivals/departures.

Consequently, it is considered likely that the demand can be managed within the capacity proposed (three bays), provided an appropriate booking system is adopted for the commercial occupiers to ensure that commercial servicing and deliveries are suitably distributed across the day.

Sensitivity Test

If a higher office servicing rate of **0.20 vehicles per 100sqm per day** were adopted, the total number of office servicing/deliveries would increase from 93 to 124. For this scenario, with a similar profile of activity across the day, the peak service yard activity would be **10-11 vehicle arrivals per hour**.

A three-bay configuration would still be operable in this scenario but would need to be operated on the basis of 15-minute time slots, and this would need to be proactively enforced by the dockmaster/plot management team to ensure turnover is maintained.

Alternatively, more use of out-of-hours servicing could be adopted to spread the activity more evenly to reduce pressure at peak times. However this would require a degree of coordination between plot management, suppliers and occupiers, as it is likely that more deliveries would need to be stored in the loading bay or back-of-house areas during hors where an occupier would not be on-site to receive a delivery.

It is considered highly unlikely that this level of activity will be observed, and the plot management team will endeavour to ensure that the smart procurement measures and coordination between occupiers can reduce servicing activity significantly. Restrictions on personal deliveries (e.g. Amazon) for staff is also an effective way to significantly reduce the number of delivery vehicles and is increasingly being adopted in central London projects.

APPENDIX 4

Waste Calculation Methodology

APPENDIX 4 - WASTE CALCULATION METHODOLOGY

Introduction

The following sections outline the methodology followed to forecast waste generation from the proposed H1 Development and estimate the required number of waste receptacles for the storage of all wastes from the activities taking place in the premises.

Office Waste

Office Waste Benchmarking

A benchmarking exercise has been carried out to establish an appropriate and robust generation rate figure for the offices uses within the proposed development. This exercise looked at office waste generation rates from a number of publications, and also generation rates derived from surveys conducted by BuroHappold Engineering in central London.

The publications consulted (e.g. British Standard, Local Authority Planning Design Guidance documents etc.), quoted generation rate figures of circa 6-7 litres per m² of floor area per week for offices uses. This was found to be higher than the figures obtained from the BuroHappold surveys / studies conducted in existing office developments in central London.

The surveys carried out across seven office developments revealed that waste generation can vary significantly. The generation rates ranged from 1.5 litres per m² of floor area per week, to over 5 litres per m² of floor area per week. The variation observed in generation rates is influenced by a number of factors. Key factors include employee density, multitenancy vs single-tenant occupancy, the presence of canteen / restaurant facilities for employees and meal uptake levels. The average generation rate obtained from the study is 3 litres per m² of floor area per week, and the different figures are shown in the scatter graph below, plotted against each office's employee density.

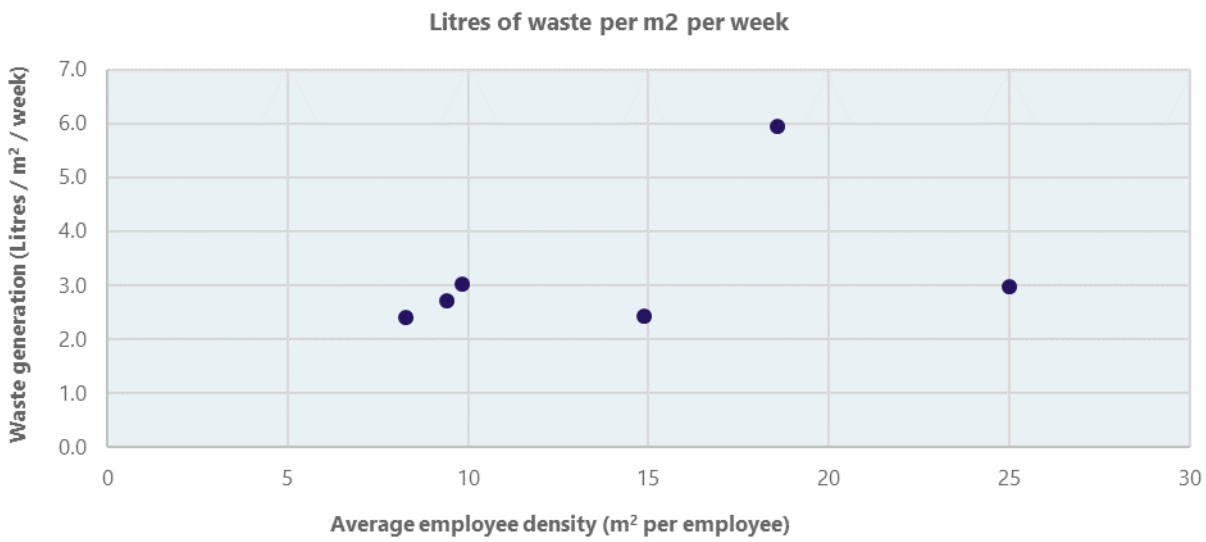


Figure 23 - Summary of waste generation rates from Buro Happold's survey

For the proposed H1 Development, the design team has advised that a density of c. 8 m² per employee should be considered for space planning purposes. As it can be seen from the above graph, sites that had a density closer to 8 m² per employee had a prevalence of waste generation rates close to the average figure of 3 litres per m² of floor area per week. Thus, this generation rate has been deemed appropriate for the estimation of office waste within the Development.

However, it is understood that the office spaces might accommodate a canteen to service the employees. It is unknown at this stage whether this service will be provided entirely by a restaurant in the lobby area, or whether a separate canteen space will be accommodated in one of the office floors.

For the purposes of robust space planning, and to provide resilience should a separate canteen be incorporated in the upper floors, the average generation rate figure has been increased by c. 30%, to 4 litres per m² of floor area per week. A summary of the waste generation rate and compositional breakdown is summarised in the table below.

Table 22 - Summary of assumed benchmarks

Land-use	Generation Rate	Waste composition assumed	Source
Office	4 litres / m² / week	20% Mixed recyclables 38% General waste 2 % Organics 30% Cardboard 0% Glass 10% paper	Various Sources: BuroHappold surveys (2016). Composition derived from average composition observed in offices and canteens.

Office Waste Generation

By applying the office generation rates and compositional breakdown to the proposed office areas, the total weekly waste generation and per-stream waste volumes can be derived. These are summarised below.

Table 23 - Summary of estimated office waste generation

Assumed Land-use	Assumed total floor area (m² NIA)	Waste generation (litres per week)	Waste generation (litres per week)					
			Mixed recyclables	General waste	Organics	Cardboard	Glass	Paper
Office	47,025	188,100	36,738	71,713	3,527	56,430	882	18,810

Office Waste Storage Requirements

The estimated weekly waste volumes have been utilised to determine the number of waste receptacles that would be required to hold all wastes from the office occupiers on-site. Different systems are available for the storage of waste and determining the most adequate efficient storage system for a particular waste stream is often dependent on the nature of waste stream and the anticipated quantities. For example, large volumes of waste would be better suited for systems that offer higher capacities such as portable compactors.

In light of this, different storage systems are proposed for different waste streams. These are summarised as follows:

- General wastes will be stored in a portable skip-type waste compactor (circa 10 m³ capacity);
- Cardboard will be baled in a cardboard baler and stored in the form of bales. This would allow for improved storage space efficiencies, and also allow the proposed development's operators the opportunity to stock sufficient quantities to sell the cardboard for a small revenue stream;
- Mixed recyclables and paper will be stored in 1,100 litre Eurobins and 660 litre Eurobins respectively; and
- Organics and glass will be stored in 240 litre wheelie bins. This will ensure full bin weights are not excessive and mitigate any health and safety concerns associated with the movement of bins by staff.

The number of bins required is influenced also by the collection frequency of these. To allow for sufficient resilience and spatial planning robustness, it has been assumed that all waste streams, with the exception of general waste, will be collected at a frequency of three times per week.

The estimated collection frequency for the proposed general waste compactor is two times per week. The number of bins, compactor, bales and their collection frequencies are summarised in the table below.

Table 24 - Summary of estimated office bin, compactor and bale numbers

Storage system and number of units required						
Waste streams	Mixed recyclables	General waste	Organics	Paper / cardboard	Glass	Paper
Collection frequency	3 times / week	2 times / week	3 times / week	3 times / week	3 times / week	3 times / week
Number of units / receptacles	11 x 1,100L bins	1 x portable skip compactor	5 x 240L bins	1 x baler + 9 x bales	2 x 240L bins	10 x 660L bins

Retail Waste

The design team has advised that the proposed H1 Development will incorporate circa 1,390 m² of lettable retail space. The final use mix is still under development; however, the design team has provisionally advised that these are likely to incorporate a combination of non-food and F&B uses, at a ratio of c. 1:4 respectively.

Retail Waste Benchmarking

Commercial waste arisings are dependent on the type of activities taking place within a certain space. A direct correlation is observed between those activities that are more intense (e.g. catering activities) and the quantities of solid waste generated. Similarly, waste generation increases proportional to the size of the commercial unit.

In general, F&B uses (e.g. catering, restaurant, café) tend to produce the highest waste volumes. Additionally, the waste produced tends to be more heterogeneous, thus leading to the segregation and capture of more waste streams when compared to other land-uses.

As such, the approach to estimate waste quantities is based on assigning a generation rate (typically litres per m² of net lettable area) to the type of activity (or land-use) of the commercial space and applying that to the total net lettable area projected. The generation rates used are shown in below.

Table 25 - Summary of assumed benchmarks

Land-use	Sub-category assumed	Generation Rate	Waste composition assumed	Source
Food & beverage	Full restauration services (e.g. full operating kitchen). Medium to high intensity cooking / food preparation	19.2 litres / m² / week	15% Mixed recyclables 20% General waste 25% Organics 30% Cardboard 10% Glass	Various Sources: Waste Disposal and Diversion Findings for Selected Industry Groups. Cascadia report 2006. BuroHappold surveys (2016)
	Standard for food-chain restaurant and cafeterias. Large quantities of product already prepared / cooked off-site.	10 litres / m² / week	30% Mixed recyclables 30% General waste 10% Organics 30% Cardboard	Food & beverage: Adept - Making Space for Waste (2010), split from CIWM report - Audits in restaurants and bars in Hampshire 2007. In Line with Other Local Authority Benchmarks

Land-use	Sub-category assumed	Generation Rate	Waste composition assumed	Source
Non-food retail)	High sales-type retail (e.g. coffee shop)	10 litres / m² / week	10% Mixed recyclables 50% General waste 40% cardboard	British Standard 2005 and Northern Ireland Building Control Guidance
	Non-high street retail	5 litres / m² / week	20% Mixed recyclables 40% General waste 40% cardboard	Retail: Adept - making space for waste (2010
Bar/Pub	N/A	10 litres / m² / week	10% Mixed recyclables 15% General waste 10% Organics 20% cardboard 45% Glass	Academic Journal: Identification of Key Resource Streams in Commercial & Industrial Waste from Small Businesses in the Food Sector

Retail Waste Generation

Following previous guidance from the design team, the waste generation estimations had been based on a ratio of 1:4 for non-food and F&B uses. This translates into circa 260 m² and 1,130 m² of floor space allocated to A1 and A3 uses respectively. Two scenarios have been tested from a waste generation perspective to provide a degree of sensitivity testing. For clarity, these are summarised as follows:

- Scenario 1: Assumes c. 260 m² of NIA for non-food retail uses, and c. 1,130 m² of NIA for restaurant uses (two distinct units); and
- Scenario 2: Assumes c. 260 m² of NIA for non-food retail uses, and c. 1,130 m² of NIA for restaurant and pub/bar uses.

In addition, the following assumptions have been considered:

- As instructed by the client team, it has been assumed that all retail occupiers will share bins, and thus total combined waste volumes have been calculated. This approach brings a number of advantages such as better spatial efficiencies due to a reduced number of bins, and lesser number of collection vehicles accessing the Site;
- For the purposes of design robustness, a waste generation rate corresponding to 'full restauration services' has been used for the units incorporating café/restaurant uses; and
- For the non-food retail uses, these area assumed to be categorised as 'non-high street retail using the above classification, as these will not include coffee-shop type uses (and may be used as affordable office space, which would have a waste generation rate comparable to this retail type).

The above assumptions, applied to the provisional retail areas for both scenarios, yield the estimated weekly waste volumes that are summarised in the tables below.

Table 26 - Summary of estimated retail waste generation (Scenario 1)

Assumed Land-use	Assumed total floor area (m² NIA)	Waste generation (litres per week)	Waste generation (litres per week)				
			Mixed recyclables	General waste	Organics	Paper / cardboard	Glass
Non-food	259	1,295	259	518	0	518	0
F&B 1	460	8,826	1,324	1,765	2,207	2,648	883
F&B 2	670	12,860	1,929	2,572	3,215	3,858	1,286

Table 27 - Summary of estimated retail waste generation (Scenario 2)

Assumed Land-use	Assumed total floor area (m² NIA)	Waste generation (litres per week)	Waste generation (litres per week)				
			Mixed recyclables	General waste	Organics	Paper / cardboard	Glass
Non-food	259	1,295	259	518	0	518	0
F&B 1	460	8,826	1,324	1,765	2,207	2,648	883
F&B 2	670	12,860	1,929	2,572	3,215	3,858	1,286

As it can be seen, Scenario 1 yields higher waste generation volumes across the majority of waste streams, but Scenario 2 results in a substantially higher glass waste stream. As Scenario 1 represents the more conservative position, it will be adopted for the purpose of determining storage requirements.

Retail Waste Storage Requirements

The estimated weekly waste volumes have been utilised to determine the number of waste receptacles that would be required to hold all wastes from retail activities on-site. The number of bins required is influenced also by the collection frequency of these, and the size of receptacles used.

As indicated previously, Scenario 1 represents a more conservative position for design purposes.

In estimating the bin requirements, the following has also been assumed:

- Mixed recyclables and general waste will be stored in 1,100 litre Eurobins;
- Paper / cardboard will be stored in 660 litre Eurobins;
- Organics and glass will be stored in 240 litre Eurobins; and
- All waste streams will be collected at a frequency of three times per week.

It should be noted that the different bin sizes assumed for different waste streams are based on a combination of achieving sensible storage efficiencies, and also ensuring that bins are not excessively heavy.

For example, smaller bin sizes have been assumed for the organics and glass fractions, since these tend to have high densities and utilising larger bins would result in excessive bin weights. This in turn, might have negative health and safety implications for operatives that will be moving receptacles regularly. A summary of the number of bins required is shown the table below.

Table 28 - Summary of estimated retail bin numbers

Waste streams	Mixed recyclables	General waste	Organics	Paper / cardboard	Glass
Number of units / receptacles	1 x 1,100L bins	2 x 1,100L bins	8 x 240L bins	4 x 660L bins	3 x 240L bins

It is noted that the spatial requirements for Scenario 2 were also checked but were found to be lower overall across all bin sizes, as the higher number of bins for glass was offset by reduced numbers of bins for other waste streams.

Total Waste Storage Provision

The summary table below indicates the total waste storage requirements across the land-uses. It is provisionally assumed that the office and retail uses do not share bins, though this could yield further spatial efficiencies.

Table 29 - Summary of estimated office and retail bin numbers

Storage system and number of units required						
Waste streams	Mixed recyclables	General waste	Organics	Paper / cardboard	Glass	Paper
Office waste	11 x 1,100L bins	1 x portable skip compactor	5 x 240L bins	1 x baler + 9 x bales	2 x 240L bins	10 x 660L bins
Retail waste	1 x 1,100L bins	2 x 1,100L bins	8 x 240L bins	4 x 660L bins	3 x 240L bins	-
Total	**12 x 1,100L bins**	**1 skip compactor + 2 x 1,100L bins**	**13 x 240L bins**	**1 baler + 9 x bales + 4 x 660L bins**	**5 x 240L bins**	**10 x 660L bins**

APPENDIX 5

Servicing Matrix

APPENDIX 5 - SERVICING MATRIX

Table 30 - Summary of 'servicing matrix'

Land-use	Activity	Provision
Commercial offices and retail	Taxi drop-off	Layby on Deacon Street
	Deliveries (dry goods)	In-plot service yard (to tenant)
	Deliveries (bulky items)	In-plot service yard (to tenant)
	Cycle couriers	Via service yard office on Deacon Street (cycle parking close to entrance)
	Refuse & recycling	In-plot service yard (private contractor to collect)
	Removals / fit-out	In-plot service yard (managed by PMC)
	Emergency services	Primarily via Deacon St/drop-off bay but access also provided via Sayer Street North (restricted access)
	Maintenance	Primarily via in-plot service yard but access also provided via Sayer Street North (restricted access)

APPENDIX 6

Draft Access and Maintenance Strategy

APPENDIX 6 - DRAFT ACCESS AND MAINTENANCE STRATEGY

HOARE LEA (H.)

Elephant Park - H1.
London.
Lendlease.

FAÇADE ACCESS
STAGE 2 REPORT - 259639-MC00-H01-GN-RD-ZZ-001

REVISION 02 – 17 DECEMBER 2019

STAGE 2

Audit sheet.

Rev.	Date	Description of change / purpose of issue	Prepared	Reviewed	Authorised
00	2019-10-11	Stage 2 - WIP	TR	JB	-
01	2019-11-11	Stage 2 – 80% - Restraints - Soft roping - Revised roof plans	TR	JB	PK
02	2019-12-17	Stage 2 - 100% - Revised roof plans - Access elevations added - MEWP operational plans added - BMU hoist capacity	TR	JB	PK

Project number: 22/22413
Document reference: 259639-MC00-H01-GN-RD-ZZ-001

Contents.

Executive summary.

The content of this report outlines the proposed façade access strategy for cleaning and maintenance to the Elephant Park H1 development, located in London.

The objective of the strategy is to provide the most practicable and robust methods of safe access to the entirety of the building facades for all cleaning and maintenance tasks that are to be expected to occur over the lifetime of the building.

Figure 1: Elephant Park H1 - renders

The proposed scheme is a ground floor, mezzanine plus 16-storey and roof level office block, inclusive of:

- Multiple stepped terraces on levels 03-16 for tenant use
- Substantial greening on the stepped terraces
- Full height terrace balustrades integrated into the landscape design
- A large plant area on roof level behind a plant screen
- A set-back colonnade at Ground Floor level along Elephant Road and Sayer Street

The proposed access for cleaning and maintenance can be summarised as:

- BMU operating on the roof level to provide access to all elevations, with the exception of the elevations off the L05 terrace on the east of the building
- A MEWP system operating at ground floor to access the elevations up to the L05 terrace on the east of the building
- Alternatively, elevations up to 1 level in height above any terrace, plus the full height balustrade above can be access using an extendible aluminium pole (level of clean may become diminished above 6m)
- Long pole access to facades less than 6m in height from the location of works
- AWP access to the inner side of the terrace elevations and the horizontal wire trellis

The BMU is to be designed to operate over the 6m plant screen at roof level, and to park behind the screen on the south east side of the building. The parked height is not to exceed the screen when not in operation to minimise the aesthetic impact on the building.

Due to the complex geometry of the building, the BMU will require a soft rope system to safely access the facades.

A minimum 1500mm clear space projected from the façade for each elevation accessed by the BMU must be provided for the platform to land in the event of an emergency. Suitable clear space must also be provided for any elevation accessed using a long handle tool to maintain an optimal 75 degree working angle. These clear zones have been coordinated with the landscape designs in document 8304-SK09 provided by the landscape architect to ensure the planters and colonnades do not intrude into the clear areas.

The MEWP will be required to operate at ground floor level at the east corner of the building to provide access to the elevations beyond the reach of the BMU.

The design team currently assume external replacement of the glass panels. Glass is to be hoisted to the location of works using the auxiliary hoist of the BMU system. Where elevations are not within reach of the BMU, a suitably sized mobile crane is to be used, operating from the paving at ground floor to the east of the building.

Replacement glass panels on the vertical elevations are to be fitted in place from outside the building by operators in the BMU suspended platform or from a MEWP.

Any external fins on the façade are to be removed prior to undertaking the glass replacement procedure. The façade engineer has recommended that the fins are to be removed by tethering to the BMU auxiliary hoist. This is to be further coordinated with the façade engineer at the next stage.

1. Introduction.

This report describes the proposed façade access and maintenance strategy for building H1 at the Elephant Park development in London. The planned development is to reach over 85m vertically from ground floor level, with numerous stepped terraces inclusive of substantial greening from Levels 03 to L16.

1.1 Strategy Objectives.

The development will require a safe and efficient façade access strategy to ensure the external appearance of the elevations remains suitably clean for an exceptional new mixed-use building of the highest quality.

The primary objective of the strategy is to grant suitable access to the entirety of the building façades. Good practice solutions consider all the tasks to be undertaken over the life-cycle of the building to achieve a holistic solution and minimise risk to maintenance contractors. The primary tasks are summarised as follows:

- Routine cleaning of the building fabric externally
- Long term inspection & maintenance of the façade such as the replacement of cladding panels

Key considerations in the evaluation of the proposed strategy have been:

- Scheme constraints
- Compliance with all legislation and codes of practice
- Minimising time and cost of cleaning the façade

The strategy has been benchmarked against the following standards, legislation and industry guidance:

- BS EN 8560: Code of practice for the design of buildings incorporating safe work at height
- EN 1808: Safety Requirements on Suspended Access Equipment
- CDM Regulations 2015
- The Work at Height Regulations 2005
- CWCT Technical note 75: Impact performance of building envelopes

1.2 Designing for the Safety if Operative Working at Height.

Under Section 9 of the CDM Regulations 2015, designers must avoid foreseeable risks to the health and safety of any persons involved in the cleaning and maintenance of external facades. The Principles of Preventions that appear in CDM 2015 Appendix 1 follow a hierarchical approach, stating that the primary method of prevention is risk avoidance, followed by the elimination of hazards which may give rise to risk (where practicable) and then to reduce the risk from any remaining hazard

The Work at Height Regulations 2005 (Regulation 7) states;

"Every employer, in selecting work equipment for use in work at height, shall give collective fall protection measures priority over personal protection measures".

The choice of access equipment will be determined by;

- the height negotiated
- the site conditions
- the building form and features
- the duration and extent of work
- the frequency of access required

As with typical modern architecture, the design of the building does not make it possible to propose strategies that avoid the need to work at height.

In the absence of avoidance of working from height, the access strategies must therefore prioritise safety by selecting methods of work that reduce the risk of a fall or personal injury to an acceptable level.

It is important to recognise that passive measures (measures requiring no action on the part of those protected) offer greater safety benefits than active measures (measures which require action on the part of the user to become effective.)

BS 8560, The Work at Height Regulations, The Construction (Design and Management) and The Health and Safety Executive all advise that work at height risk is address in accordance with the points below and Table 1

- Avoidance: where possible the design should avoid the need to work at height.
- Prevention: where avoidance is impractical, the design should incorporate measures that prevent falls or that prevent operatives accessing a position from which a fall could occur. The design should select permanent, collective and passive measures ahead of temporary, personal and active measures.

Table 1: Work at Height Control Measures Hierarchy

Control Measures	Example Control Measures	Desirability
Avoid the need to work at height	– Ground / floor level-based maintenance – Internal Access methods	Most
Collective fall protection	– Building Maintenance Unit – Temporary Suspended Platforms – Davits – Mobile Elevating Work Platform – Scaffold	↕
Personal fall protection	– Rope Access techniques – Anchors and anchor lines for work restraint	Least

For all work at height, the most intrinsically safe mean of access should always be the first consideration.

2. Access Strategy.

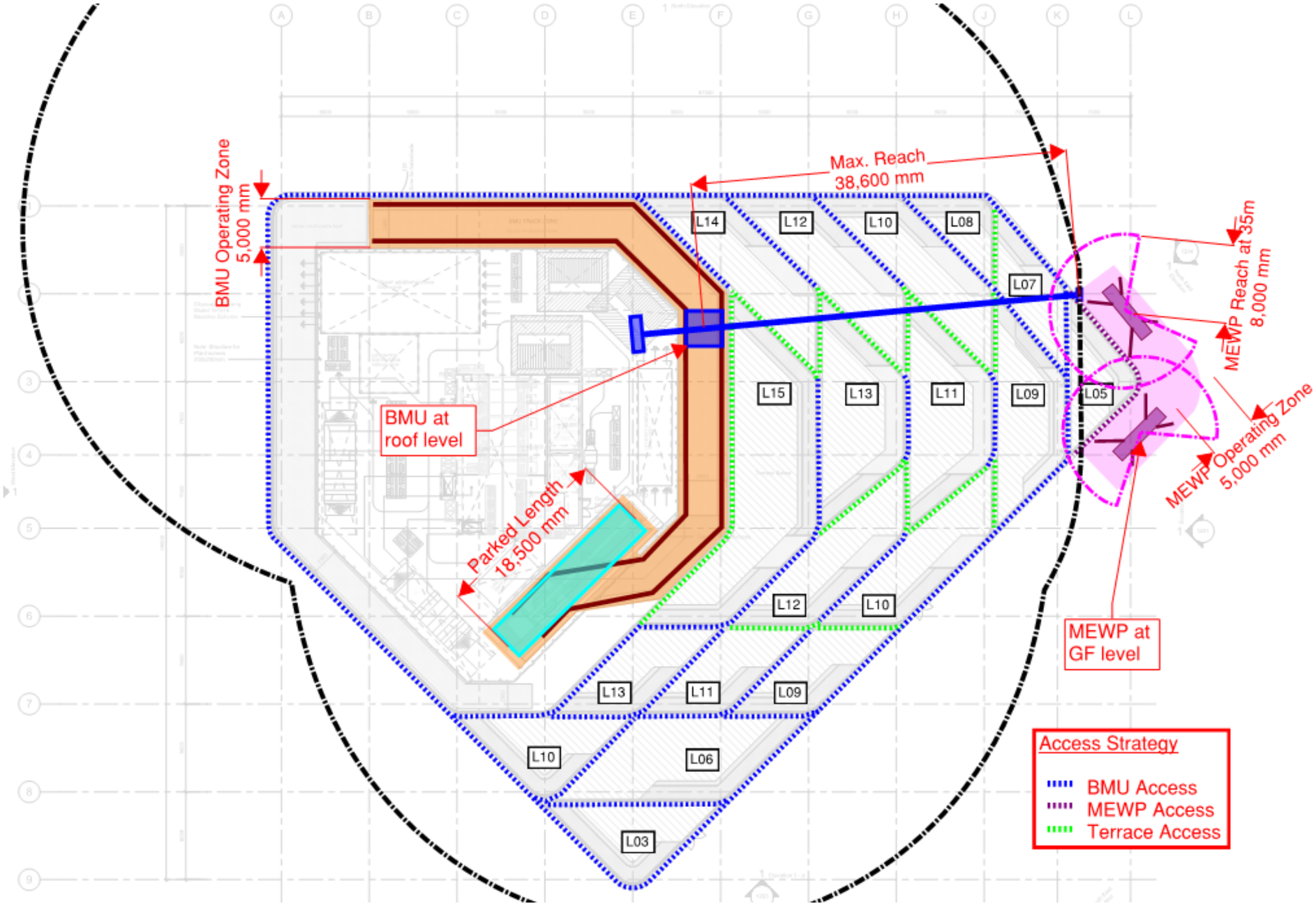
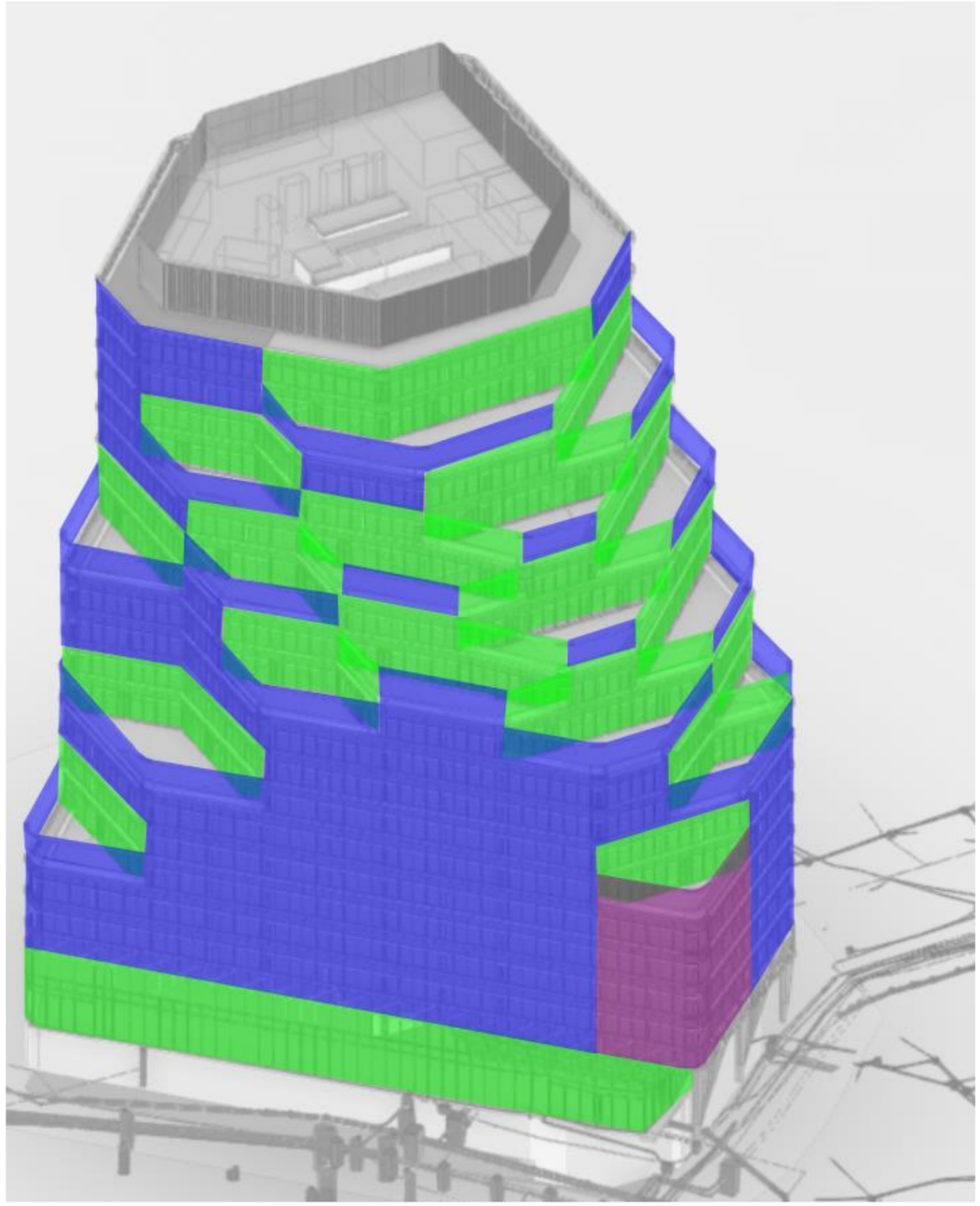


Figure 2: Park Modern – Access Strategy – Roof Plan



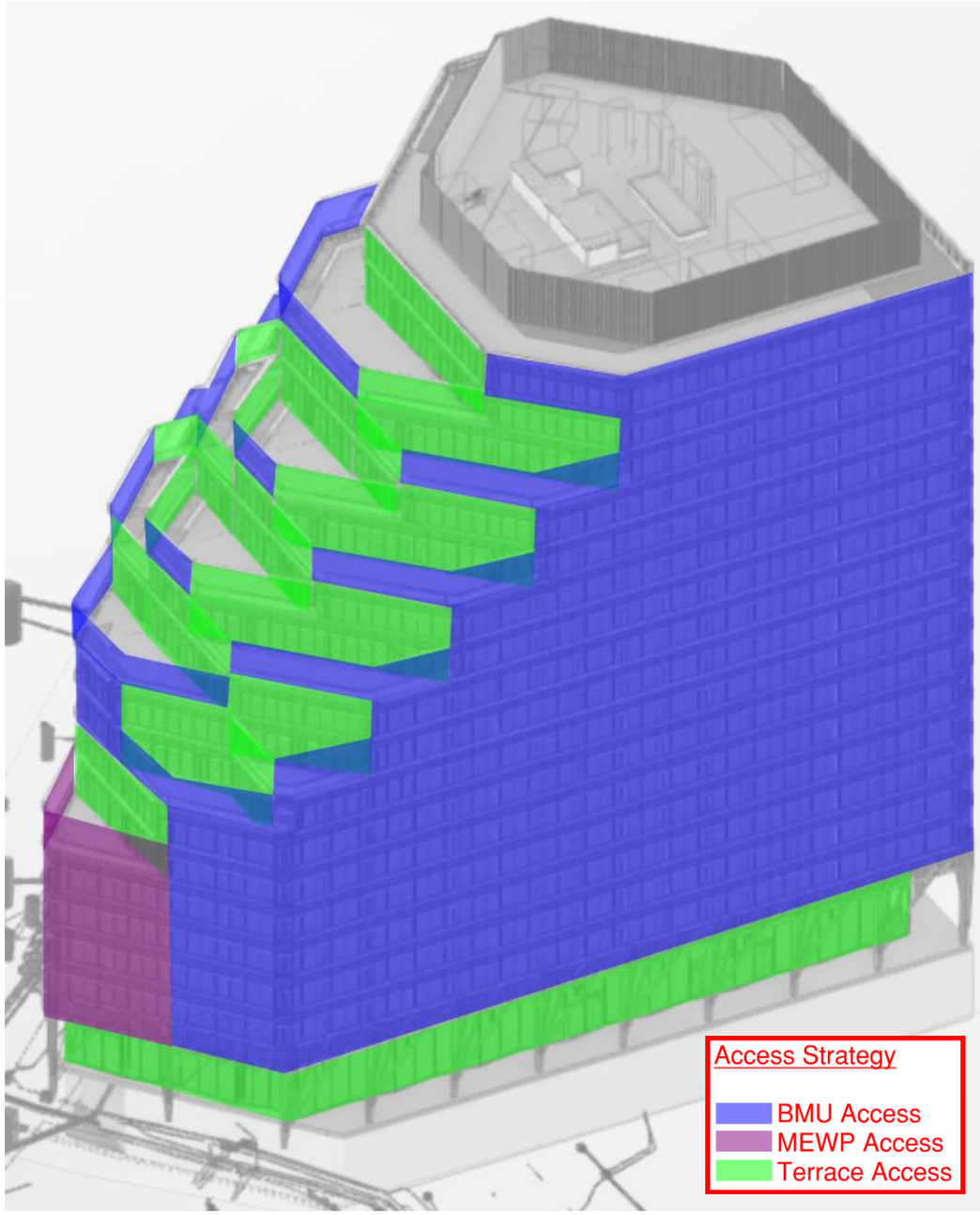


Figure 3: Access Strategy Renders – SE (left) SW (Right)

2.1 BMU Access.

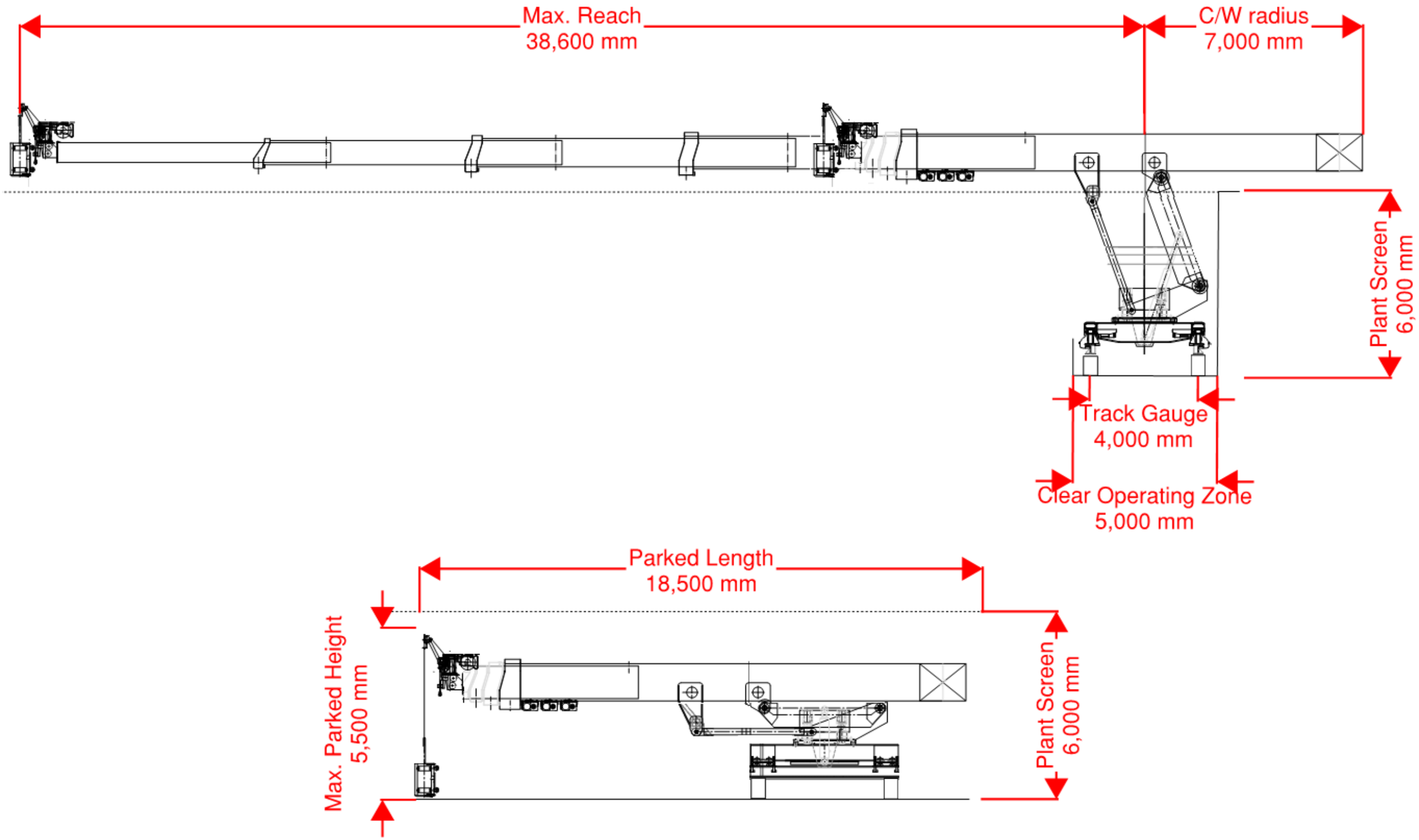
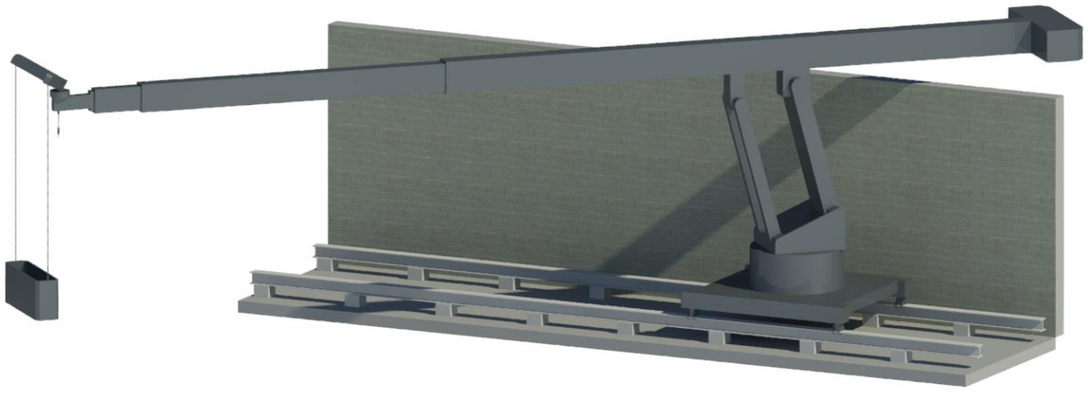


Figure 4: BMU Parameters

It is proposed that access to clean and maintain the building elevations is by means of a single, tracked Building Maintenance Unit (BMU) operating from roof level. The unit is to have a maximum reach of 38600mm and is used to access the main elevations. The unit is to have an integrated hoisting mechanism, commonly referred to as a z-luffing (or pantograph) system to allow the system jib, suspended platform and counterweight to be raised above the plant screen and plant on L16 and operate unhindered.



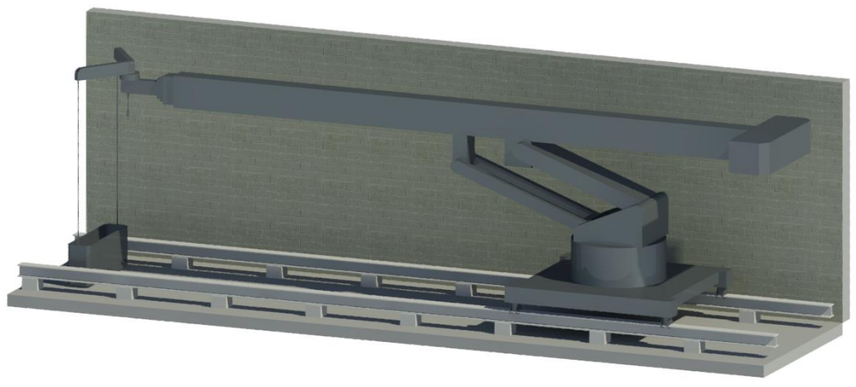


Figure 5: Indicative Z-Luff BMU render, operational (top) & parked (bottom)

The BMU is to traverse on twin steel beam tracks, with 4 wheel-based points of contacts to the tracks. Based upon the current proposal, the system will require a track gauge (distance between tracks) of 4000mmm, and a wheel base of 4000mm. These figures are based upon similar machines available in the market for the parameters required. The track is to have a minimum clearance of 500mm either side of the BMU tracks, from the centre of the web, to provide a 5000mm operating zone between plant screen and balustrade in which the BMU will be able to operate unhindered.

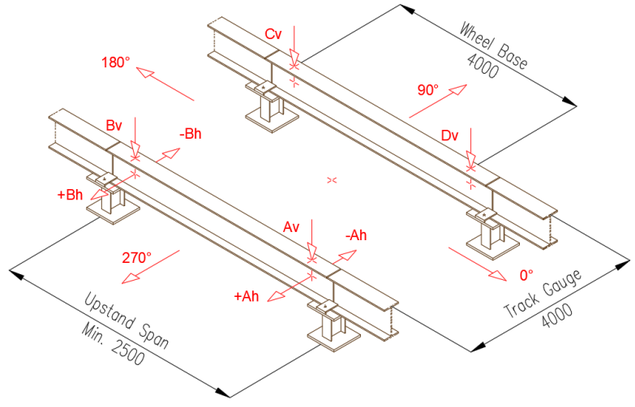


Figure 6: BMU Track Load Distribution

The budget load of the system based upon reference machines with similar working parameters is 75-80t. The weight of the BMU will vary depending on the appointed BMU manufacture. Indicative loads have been provided to the structural engineer.

The twin tracks are to be bolted to upstands cast in the slab. The upstands are to have a maximum span of 2.5m. Two options of upstands are commonly used; concrete upstands cast into the slab, or a metal stub upstand bolted to the structural frame. This is to be determined at the next stage by others.

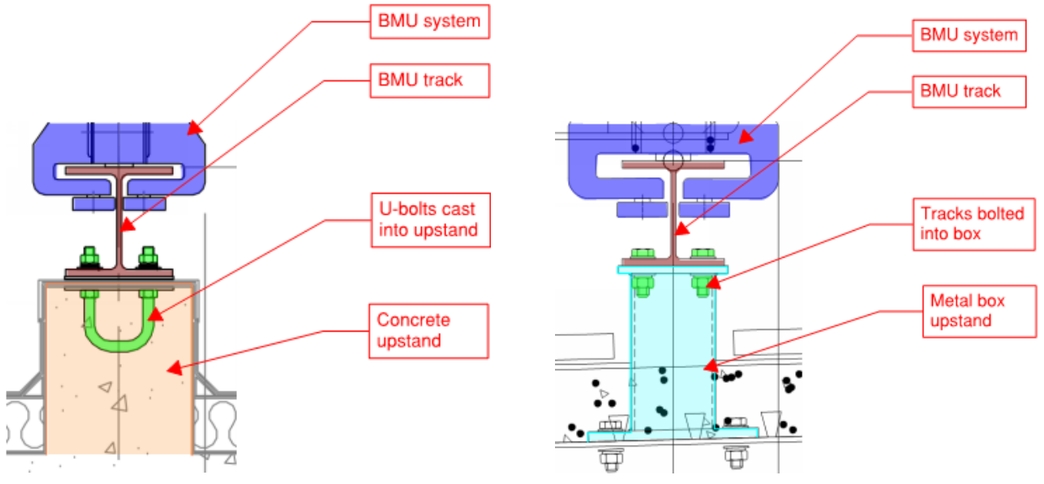


Figure 7: Typical upstand detail - concrete upstands cast into the slab (left), metal box upstand bolted to the structural frame (right)

The system is to run on top of the twin track system and be positioned in the parked condition when not in operation. When parked the system is to have a maximum dimension of 18500mm in length. The z-luffing mechanism is to allow the BMU to park below the roof level plant screen. The parked location of the BMU behind the plant screen and manually opened door are to be coordinated with the design team.

As the point of suspension of the BMU exceeds 40m from ground floor level, the suspended platform of the BMU will need to be restrained to the façade during descent. To comply with BS-EN-1808 2015 Safety Requirements on Suspended Access Equipment, lowest restraint point must be located less than 40m above natural ground level. Above this, the suspended platform will need to be restrained to the façade at a maximum of 20m intervals. The restraints are to be comprised of a socket and pin as shown.

The suspension height of the platform from the BMU is expected to be approx. 8000mm above roof FFL. Restraint pin sockets are to be installed in the facade on each level between L04 and L16. The sockets are to be located at 3000mm span intervals to suit the cladding grid, and are to be designed for a 1kN pull out load

The cladding contractor is to design and install the part of the restraint attachment that is to be permanently mounted in the façade, in the form of a socket. The position of the restraints is to be coordinated between the cladding contractor and the access contractor. The access contractor is to include for the provision of these points and suitable pins.

The façade is to be designed to withstand maximum impact load of 350J as per guidance in CWCT Technical Note 75. An extract from TN75 is available in the appendix of this report.

The BMU platform is to be designed to include a soft roping system to allow the platform to traverse laterally around the elevations and to maintain restraint to the façade. Soft roping is required to ensure the platform is restrained suitably during decent and use which is otherwise not achievable due to the stepped nature of the façade.

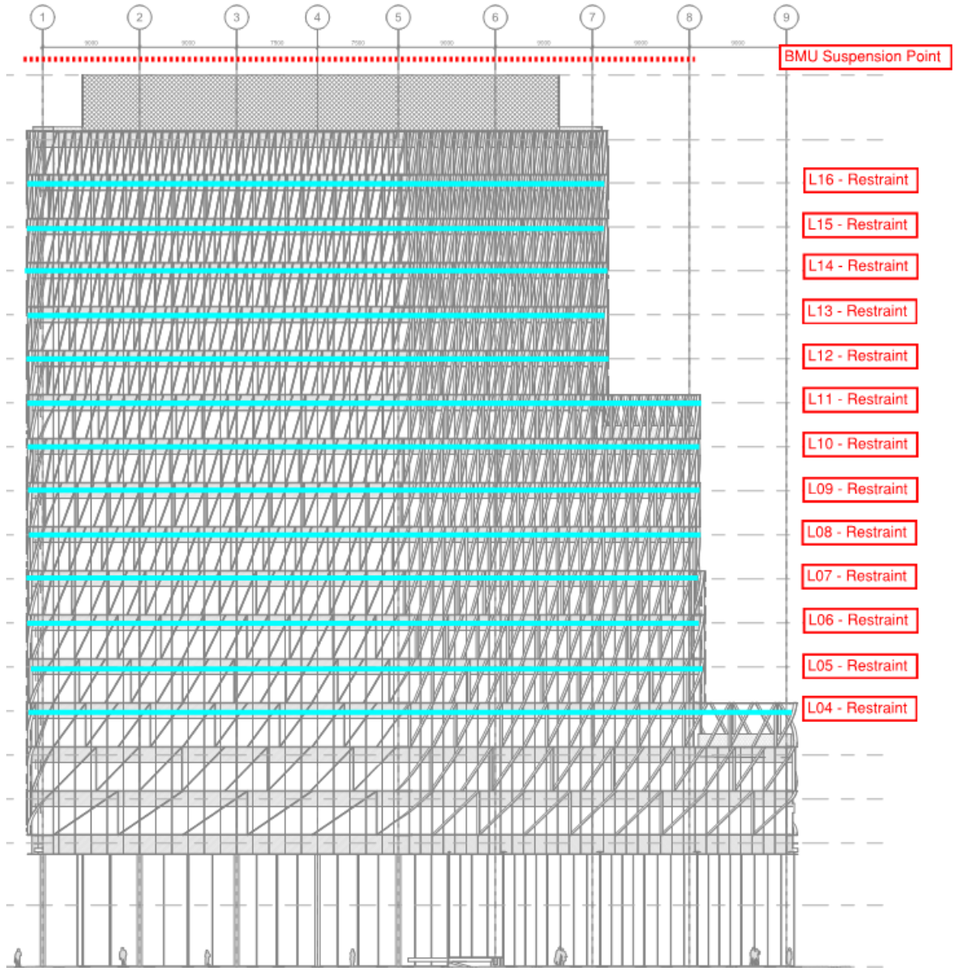


Figure 8: Proposed restraint pin levels

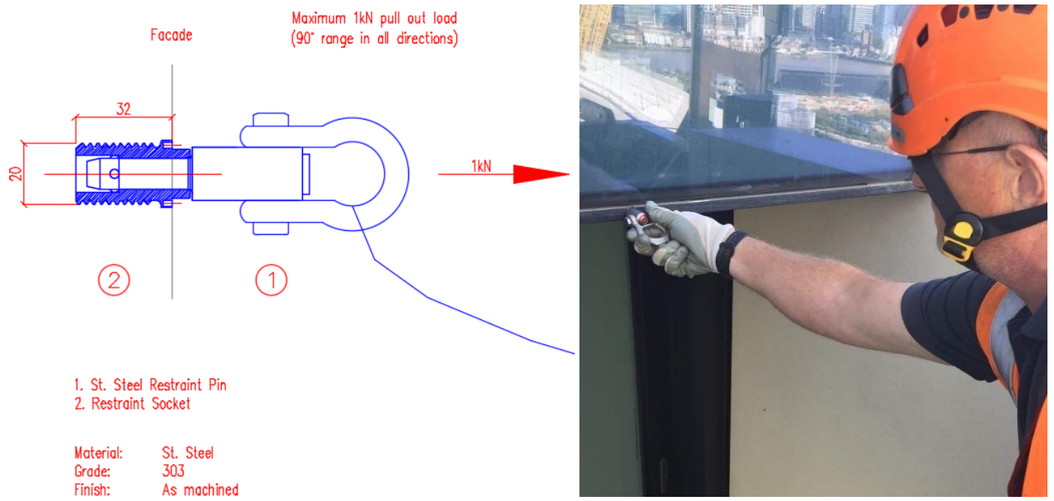


Figure 9: Typical restraint pin and socket detail (left) and operator pinning in (right)

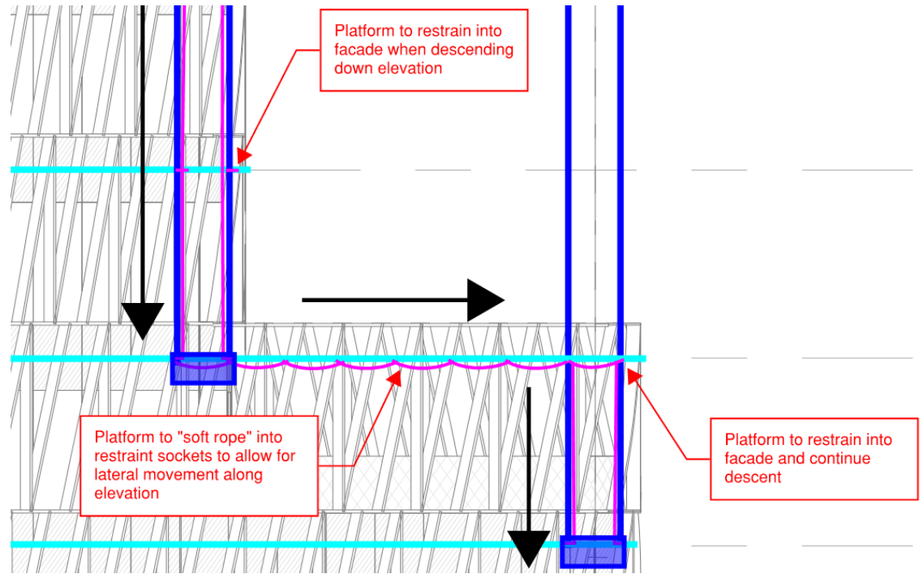


Figure 10: Indicative soft roping operation

It is proposed that the suspended platforms are provided with fixed wind speed indicators and the crew are to check the wind conditions regularly. If the wind exceeds 8m/s (subject to the self-weight of the supplied platform) the crew are to return to the roof.

The proposed façade and terrace design are inclusive of substantial levels of greening. A minimum 1500mm clear space projected from the façade for each elevation accessed by the BMU must be provided for the platform to land in the event of an emergency, including terrace elevations proposed to require BMU access.

The climbers on the terraces that are within the reach can be access from the BMU platform. Using the BMU to access the climbers may affect the system warranties is to be confirmed by the appointed access contractor.

2.2 MEWP.

It is proposed that the method of access to the retail and cinema elevations is to be from a Mobile Elevated Work Platform (MEWP) from GF level.

Figure 11: Example MEWP

The MEWP is required to have a vertical reach of 34.3m from ground floor level. A spider-type system with a crawler base to traverse landscaped areas and 4 outriggers to provide a large operating footprint and mitigate the risk of toppling is proposed. The point load of each outrigger is to be reduced using spreader plates.

To mitigate the impact on Ground Floor during operation, the MEWP is to operate in a “one-side-narrow” orientation, thus reducing the operational footprint. The system will require a nominal 5000mm clear operating zone from the foot of the elevations for travel and operation.

Small landscape features in the operating zone may not restrict MEWP access and are to be reviewed on a case by case basis.

A suitable vehicle and pedestrian traffic management strategy should be applied to ensure the relevant operating zones are closed when access procedures are in progress.

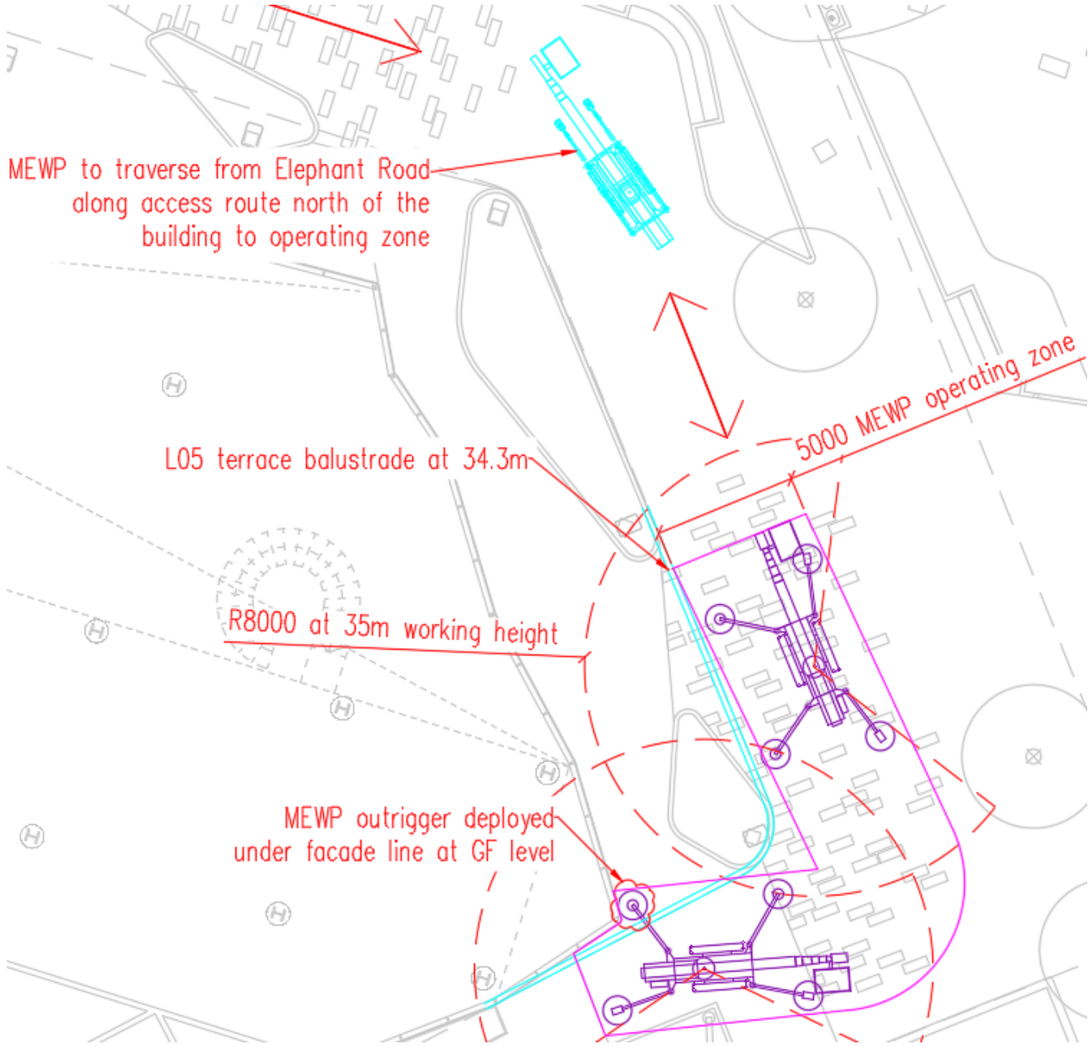


Figure 12: Indicative MEWP operating parameters – GF plan

2.3 Ground Floor / Terrace Access.

HL propose that the roof level BMU is to be used to access the terrace elevations that are 2 levels in height (1 level above the terrace, plus a full height balustrade). This will allow the facades to maintain a high-quality finish to be maintained.

The use of the BMU to access these terraces will require the BMU to utilise a soft rope system to provide restraint and allow lateral movement around the building prior to beginning a vertical descent.

Alternatively, the facades on accessible terraces can be accessed via the use of an extendable aluminium pole from adjacent floor space where practicable. This will allow the facades to be cleaned frequently and a high-quality finish to be maintained.

Facades can efficiently be cleaned up to a height of 6000mm from ground floor and terrace level at a maximum working angle of 75 degrees, requiring a 1800mm clear working zone. The use of extendable tools above 6000m will diminish the quality of the clean and increase the manual strain on the operative.

However, use of this system avoids the need to work at height and is considered to be the most appropriate solution for routine glass cleaning in this area.

To maintain a working angle of 75 degrees, and access up to 8200mm (1 level in height above the terrace, plus the full height balustrade above), the clear working zone required would increase to 2350mm.

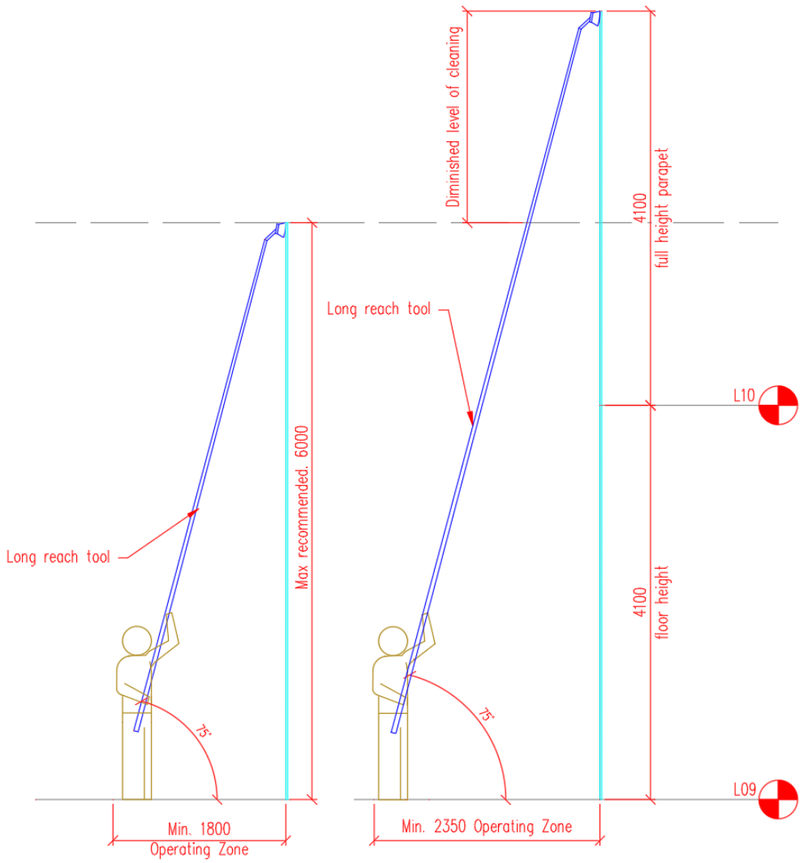


Figure 13: Example Extendible pole operating parameters

2.4 Terrace lattice inner side.

The horizontal wire trellises on the terraces will prevent the BMU platform from being able to provide access to these inner lattice elevations. The use of the BMU platform and would also require a 1500mm clear landing zone at the perimeter of each terrace, and therefore the use of a BMU is not recommended.

HL recommend the use of a small AWP operating from the terrace to access the inner side of the lattice facades and wire trellis up to a height of 5.65m

Figure 14: Example AWP

The system to be inclusive of a descent and ant-tilt alarm system and should not be used in adverse weather conditions.

The AWP is to be transported to the level of works using the passenger/goods lifts and traversed through the office space to the terrace. We would recommend a minimum door width of 1000mm to allow the system to traverse to the location of works from the lifts unhindered.

3. Glass Replacement Strategy.

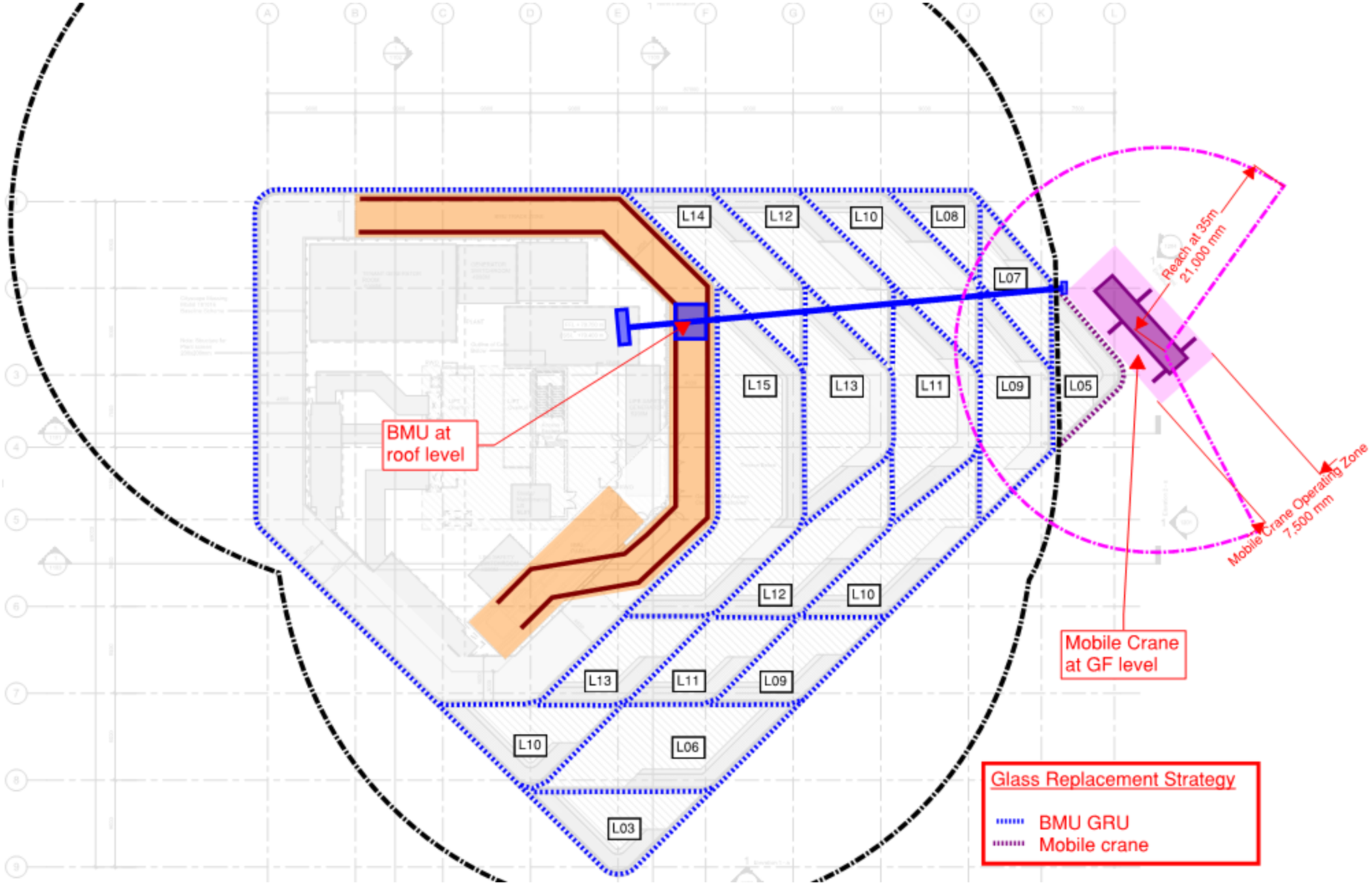


Figure 15: Glass replacement strategy – RF plan

3.1 BMU Aux Hoist.

It is proposed that glazing accessed using a BMU is to be replaced using an integrated auxiliary hoist/glass hoisting replacement unit. The BMU is to suspend the glazing panel and provide operatives external access.

The integrated hoist is to be sized to suit the maximum glass panel weight, and to account for a suitable sized vacuum lifter. Glass panels are to be sized to ensure the integrated hoist used with a suitable sized vacuum lifter is not required to exceed 1000kg to comply with BS EN 1808.

A suitably sized vacuum lifter with a hoisting capacity of 1000kg will have a self-weight of 177kg. A datasheet for a suitable vacuum lifter is provided in the appendix of this report.

The self-weight of the wire ropes for an 84.7m suspension height have a self-weight of 63kg assuming a weight of 0.74kg/m.

Given the maximum lifting capacity of the BMU of 1000kg, panels are not to exceed 760kg.

$$Max\ panel\ weight = 1000kg - (self\ weight\ of\ rope + self\ weight\ of\ lifter$$

$$Max\ panel\ weight = 1000kg - (177kg + 63kg)$$

$$Max\ panel\ weight = 760kg$$

Figure 16: Example glass replacement using BMU

3.2 Mobile Crane.

Panels that are beyond the reach and capacity of the BMU are to be hoisted using a mobile crane operating from ground floor level. Personnel access for fitting works will via the proposed MEWPs.

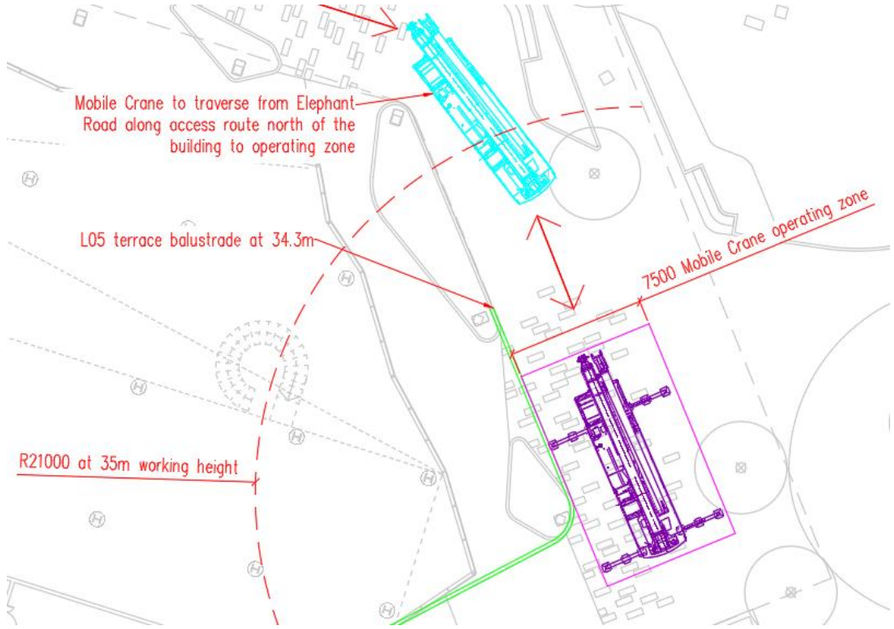


Figure 17: Indicative Mobile Crane operating parameters – GF plan

A pedestrian and traffic management strategy will be required to ensure the relevant operating zones are closed during glass replacement.

An example suitably sized mobile crane datasheet for operating up to 40m is available in the appendix of this report.

Figure 18: Example mobile crane

Appendix.

Regulation 9 of the CDM Regulation 2015.

Regulation 9 Duties of designers

(1) A designer must not commence work in relation to a project unless satisfied that the client is aware of the duties owed by the client under these Regulations.

(2) When preparing or modifying a design the designer must take into account the general principles of prevention and any pre-construction information to eliminate, so far as is reasonably practicable, foreseeable risks to the health or safety of any person—

(a) carrying out or liable to be affected by construction work;
(b) maintaining or cleaning a structure; or
(c) using a structure designed as a workplace.

(3) If it is not possible to eliminate these risks, the designer must, so far as is reasonably practicable—

(a) take steps to reduce or, if that is not possible, control the risks through the subsequent design process;
(b) provide information about those risks to the principal designer; and
(c) ensure appropriate information is included in the health and safety file.

(4) A designer must take all reasonable steps to provide, with the design, sufficient information about the design, construction or maintenance of the structure, to adequately assist the client, other designers and contractors to comply with their duties under these Regulations.

HSE Information SheetMISC611, Page 1.

HSE information sheet

HSE

Safety in window cleaning using suspended and powered access equipment

HSE Information Sheet MISC611

Introduction

For every window cleaning job, the choice of access equipment will be determined by the height to be negotiated, site conditions, duration and extent of work and frequency of access. Cradles and mobile elevating work platforms are an ideal form of access for external window cleaning for many larger buildings.

Use of this type of equipment is one of the safest ways to clean windows, but things can still sometimes go wrong. This information sheet provides a series of checklists for window cleaning businesses so that they can reduce risks as far as possible. It has been produced in co-operation with the National Federation of Master Window and General Cleaners.

Suspended access equipment

Contractor checks

As a window cleaning contractor, you are responsible for ensuring that the workplaces you and your employees are going into are safe. In particular, you must be satisfied that the suspended and powered access equipment you're being given to use is safe.

Before you commence work or take up any contract, here are a few crucial matters you must check.

- Have the equipment's owners carried out their own risk assessment and recorded the findings on its use under the Management of Health and Safety At Work Regulations 1999 and the Provision and Use of Work Equipment Regulations 1998?
- Does the risk assessment cover all significant risks, including those brought about by the age of the equipment, its suitability for the work and the management and maintenance regimes?
- Is the risk assessment genuinely specific to that building or does it appear to be just a generic one?
- Does the risk assessment deal with emergency procedures, rescue, communications and breakdowns, eg can operators be manually winched up or down, can operators be retrieved back into the cradle after falling out?
- Has the suspended access equipment (SAE) been thoroughly examined and maintained recently?
- Have you seen a copy of the last Certificate of Thorough Examination and its last maintenance inspection? **If you haven't, do not use the SAE.**
- Is there a written or illustrated safe system of work for the equipment?
- Is there a system to authorise access to the equipment?
- Is there a suitable system of communication that takes emergencies into account, eg mobile phones?
- Are powered access users included in any emergency evacuation procedure for the building in the event of a bomb or fire evacuation?

Preliminary checks before use

Before you or your employees step onto a cradle or platform you must check the following:

- Is a written or even illustrated safe system of work or operational manual for the equipment accessible on-site for users at all times?
- Can the building's roof area be accessed safely or do you have to use a safety wire system to reach the SAE?
- Is it possible to access the SAE from a safe location? Operators must not have to climb over the edge of a building into a cradle, nor unhook any safety harness at any time once they are attached.

Before commencing any work activities you must check that the SAE is safe and appears to be in good physical working condition. Key points include:

- Are all safety devices operating correctly?
- Are all control buttons operating correctly and can the cradle be properly controlled?
- Are designated safety anchorage points provided on the cradle?
- Are there any physical signs of wear or damage?
- Is there any exposed electrical wiring?
- Are all electrical connectors good and secure?
- Are there dents or misalignment in any tracks or runways?
- Is the floor of the cradle damaged when viewed from both above and below?
- Are the ropes correctly reaved on the drum (if visible) and through pulleys?
- Are the ropes frayed, rusted or unlubricated?
- Are there any signs of extensive corrosion to the cradle, tracks or runways?
- For articulated equipment, check all connecting pins are in place by taking the load and inspecting the joints.

Extract from Technical Note 75.

Impact performance of building envelopes: guidance on specification **TN 75**

Specification of impact performance

Specification of impact performance should consider the risk of impact occurring, the type and severity of impact test and the acceptable performance of the cladding in the test.

Exposure categories
Table 3 gives six exposure categories for impact. This classification was originally given in BS 8200 and has now been adopted in BS 8298 which relates to stone cladding. Risk of impact can be reduced by site security, design of site layout to keep people away from the building surfaces and avoiding the presence of materials that could be used as missiles.

	Areas within 1.5m of ground	
	Description	Examples
A	Readily accessible to the public and others with little incentive to exercise care. Chance of accident occurring and of misuse.	External walls in vandal prone areas.
B	Readily accessible to the public and others with little incentive to exercise care. Chance of accident occurring and of misuse.	Walls adjacent to pedestrian thoroughfares when not in category A.
C	Accessible primarily to those with some incentive to exercise care. Some chance of accident occurring or of misuse.	Walls adjacent to private open gardens. Back walls of balconies.
D	Only accessible, but not near a common route, to those with a high incentive to exercise care. Small chance of accident occurring or of misuse.	Walls adjacent to small fenced decorative garden with no through paths.
	Areas more than 1.5m above ground	
E	Above zone of normal impacts from people but liable to impacts from thrown or kicked objects. May also be subject to impact during maintenance.	1.5 to 6m above pedestrian level in location categories A and B.
F	Above zone of normal impacts from people and not liable to impacts from thrown or kicked objects. May also be subject to impact during maintenance.	Wall surfaces at higher positions than those defined in E above.

Table 3 Exposure categories

Impact test energy
Specification of impact resistance in the UK has generally been based on BS 8200. Experience has shown that the impact requirements in BS 8200 have proved satisfactory and therefore these recommendations may continue to be used following the withdrawal of BS 8200.

The retention of the spheroconical bag from BS 8200 in preference to the double tyre impactor is partly because deformation of the bag is considered to give a better representation of human impact and partly due to the difficulty of establishing an equivalent level of impact energy for the double tyre impactor.

The values given in Tables 4 and 5 below are based on BS 8200. The test procedure is given in Technical Note TN 76. This is also based on the procedure given in BS 8200 but gives more detail both of the construction of the impactor and the test procedure.

Exposure category	Safety	Serviceability
A	No values are given as severity of potential vandalism needs to be assessed	
B	500J	120J
C	500J	120J
D	No values given as risk of impact is minimal	
E	350J	120J
F	350J	120J

Table 4 Soft body impact test energy

For locations E and F, BS 8200 did not give soft body serviceability impacts and these have been added.

Exposure category	Safety	Serviceability
A	No values are given as severity of potential vandalism needs to be assessed	
B	10J	10J
C	10J	6J
D	No values given as risk of impact is minimal	
E	10J	6J
F	3J	3J

Table 5 Hard body impact test energy

BS 8200 did not give a hard body safety impact for exposure category F. These areas are above the normal range of thrown objects and impacts are only likely to occur during

6/10

Example MEWP Datasheet.

Technical data

LEO 35T plus

TEUPEN ...access redefined since '77

PERFORMANCE

Working height, max. (300 kg / 400 kg)	35,00 m / 32,00 m
Working height, max. (both sides narrow)	30,00 m
Platform height (300 kg / 400 kg)	33,00 m / 30,00 m
Platform height, max. (both sidse narrow)	28,00 m
Horizontal outreach, max. (400 kg)	13,00 m
Horizontal outreach, max. (300 kg)	14,00 m
Horizontal outreach, max. (80 kg)	17,00 m
Horizontal outreach, max. (both sides narrow)	14,50 m
Platform capacitiy, max.	400 kg
Platform capacitiy, max. (both sides narrow)	250 kg
Jib, movable	180 °
Platform, rotatable	180 °
Turntable rotation, max.	450 °
To be jacked up on ground slope of	16,7 ° / 30,0 %
Track drive, height- and width-adjustable	24 / 22 cm
Gradeability, max.	16,7 ° / 30,0 %
Slope angle, max.	21,0 ° / 38,0 %
Travel speed, max.	3,0 km/h

MEASUREMENTS*

Platform (height) **(A)**	1,10 m
Platform (length) **(B)**	1,20 m
Platform (width) **(C)**	0,80 m
Length **(D)**	8,00 m
Length without platform **(E)**	7,80 m
Height **(F)**	1,99 m
Width, min. **(G)**	1,58 m
Ground clearance, max. **(H)**	0,43 m
Track (length x width) **(I)**	1,92 x 0,25 m
Outrigger footprint both side wide (length) **(J)**	5,51 m
Outrigger footprint both side wide (width) **(K)**	5,60 m
Outrigger footprint one side narrow (length) **(L)**	7,55 m
Outrigger footprint one side narrow (width) **(M)**	4,30 m
Outrigger footprint both sides narrow (width) **(N)**	2,99 m
Outrigger plate (length x width)	0,31 m x 0,22 m

WEIGHT*

Total weight	5400 kg
Live load in travelling position	4.30 kN/m²
Live load in working position	2.10 kN/m²
Point load per outrigger plate, max.	36.00 kN

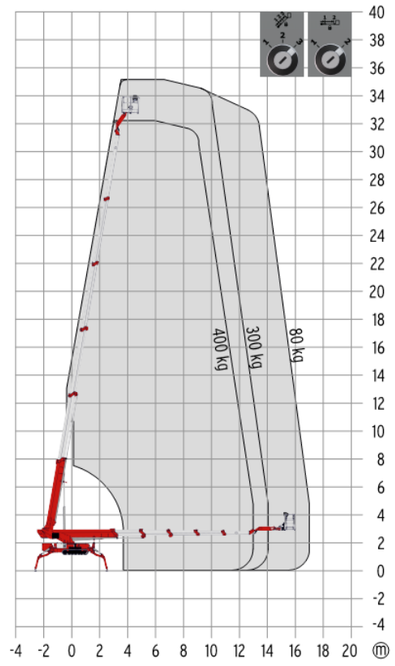
POWER SOURCES

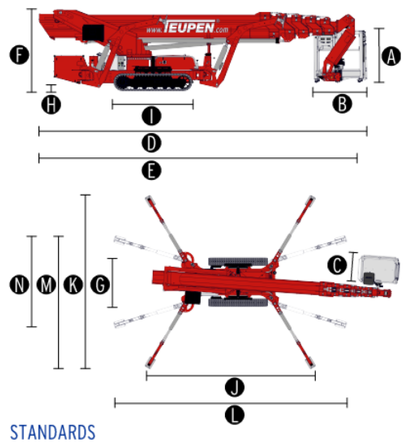
Standard power sources:	
■ Electric motor	(230 V, 12,9 A, 2,2 kW)
■ Combustion engine (Diesel)	Kubota D902 (16,1 kW / 21,9 PS)
Optional power source:	
■ Battery drive	80 V
Fuel tank capacity (Diesel engine)	39,0 l

POWER SUPPLY

Electric current, max.	230 V / 16 A

The technical data may deviate +/- 3 % from the specified values.
* Weight and dimensions may vary depending on options and accessories.





STANDARDS

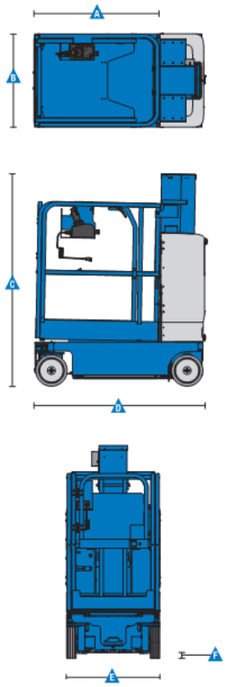
2006/42/EG-Machinery directive
(Harmonised standard EN280:2016); 2004/108/EG (EMV);
2000/14/EG (Noise emmission directive)

Example AWP Datasheet.

Genie
A TEREX BRAND

Aerial Work Platforms

Genie® Runabout™ Contractor



Specifications

Models	GRC-12	
Measurements	**US**	**Metric**
Working height*	18 ft	5.65 m
Platform height	12 ft	3.65 m
A A Platform dimensions (length x width)		
Ext Platform dimensions - retracted	39 x 29.5 in	.99 x .75 m
Ext Platform dimensions - extended	55 x 29.5 in	1.4 x .75 m
A Height - stowed	67 in	1.70 m
A Length - stowed	4 ft 5.75 in	1.37 m
A Width ANSI, CSA	2 ft 5.5 in	.75 m
A Ground clearance - center	2.5 in	6 cm

Productivity

Lift capacity	500 lbs	227 kg
Lift capacity - extension deck	250 lbs	113 kg
Drive speed - stowed	2.5 mph	4.0 km/h
Drive speed - raised	0.5 mph	0.8 km/h
Gradeability**	30%	
Turning radius - inside	zero	
Turning radius - outside ANSI/CSA	4 ft 4 in	1.32 m
Raise / lower speed	12 / 16 sec	12 / 16 sec
Controls	24V DC proportional	
Tires - solid non-marking	10 x 3 x 8 in	25 x 8 x 20 cm

Power

Power source	24V (four 6V 225 Ah batteries)	
Hydraulic system capacity	2.2 gal	8.33 L

Weight***

ANSI, CSA	1,916 lbs	869 kg

Standards Compliance

ANSI A92.6, CSA B354.2, CE Compliance, AS 1418.10

* The metric equivalent of working height adds 2 m to platform height. U.S. adds 6 ft to platform height.
** Gradeability applies to driving on slopes. See operator's manual for details regarding slope rating.
*** Weight will vary depending on options and/or country standards.

www.genielift.com

Genie
A TEREX BRAND

Aerial Work Platforms

Genie® Runabout™ Contractor

Features

Standard Features

Measurements

GRC-12

- 18 ft (5.65 m) working height
- 12 ft (3.65 m) platform height
- Up to 500 lbs (227 kg) lift capacity

Productivity

- 2-person rated
- Steel platform and extension deck with swing gate
- Auxiliary platform lowering
- Steel tube-in-tube mast system
- Compact base 29.5 x 53.75 in (.75 x 1.37 m)
- Ground clearance 2.5 inches (stowed)
- SmartLink™ control system
- Battery charge indicator
- On-board diagnostic system
- AC power to platform
- Work station trays
- Descent and tilt alarm
- Zero inside turning radius
- Dual wheel brakes
- Hydraulic brake release
- Pothole protection
- Hinged rear ABS covers for easy access to all major electrical and hydraulic components
- Tie down attachment points
- Overhead crane attachment point
- Large forklift pockets access
- Non-marking solid tires
- Motion alarm
- Dual LED flashing beacons
- Proportional drive & lift

Power

- Automatic 19 amp battery charger

Options & Accessories

Productivity

- Fluorescent tube caddy*
- Automotive horn*
- EE Certification
- Biodegradable hydraulic oil
- Drive cutout while charging
- 10 ft retractable charging cord (U.S. only)**

Power

- 24V (four 6V 225 Ah batteries)
- 800 watt, 24V inverter (120-230V AC / 50-60 Hz)*
- AGM maintenance-free batteries

* Not available with EE Certification
** Not available with inverter EE Certification

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Distributed By:

GRC 0210D. Part No. 127207

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Example Vacuum Lifter Datasheet.

Hydraulica 1000-A [1000kg]

The Hydraulica 1000-A is a versatile ten to fourteen pad lifter that comes with two extension arms as standard, increasing capacity from 750kg to 1000kg and offering additional stabilisation of larger loads.

Glass, metal and non-porous materials can be safely and easily tilted from upright to horizontal position with the Hydraulica's 90° powered tilt function. Manual 135° left and right lockable rotation is also included along with a cable remote control.

Key Features

- **Capacity: 1000kg**
- **Dual circuit vacuum system with reserve tank, non-return valve and vacuum gauge for each circuit**
- **Powered hydraulic 90° tilt from vertical to horizontal**
- **Manual 135° left & right lockable rotation**
- **Two or four on-board maintenance-free vacuum pumps**
- **12v rechargeable battery with integral 110v or 240v charger and battery energy gauge**
- **Two extension arms with variable position pads supplied as standard**
- **Audio-visual low vacuum warning**
- **Cable remote control as standard**
- **Individual pads can be isolated to accommodate irregular shapes (reduces safe working load)**
- **Optional wheeled stand**

Reference Code
VGL51

Technical Specifications

Safe working load (smooth, clean surface at 60% vacuum)	capacity:	1000kg*	750kg
Number of suction cups	cups:	14	10
Suction cup	description:	black rubber, not abrasion resistant, heat resistant up to 100°F	
Suction cup diameter	diameter:	330mm	
Suitable for lifting	material properties: surface: example:	gastight / non-porous smooth glass, plastic boards, ceramic plates, sheet metals, coated boards	
Weight of lifter	approx:	177kg (with arms)	120kg (without arms)
Depth of lifter	depth:	300mm	
Rotation	rotation:	135° manual left & right lockable	
Tilt	tilt:	90° powered hydraulic	
Vacuum system	dual circuit:	2 or 4 pumps, 2 vacuum reserve tanks	
Voltage	pump: battery charger:	12v DC from rechargeable battery 110v/240v 50/60Hz single phase factory selectable	
Standard accessories	standard:	2 x extension arms with pads, cable remote control	
Optional accessories	optional:	2 x curved extension arms with pads (500kg capacity) increases weight of lifter to 150kg, wheeled stand, low marking pads	

* The capacity is only 1000kg with extension arms and 14 pads fitted.

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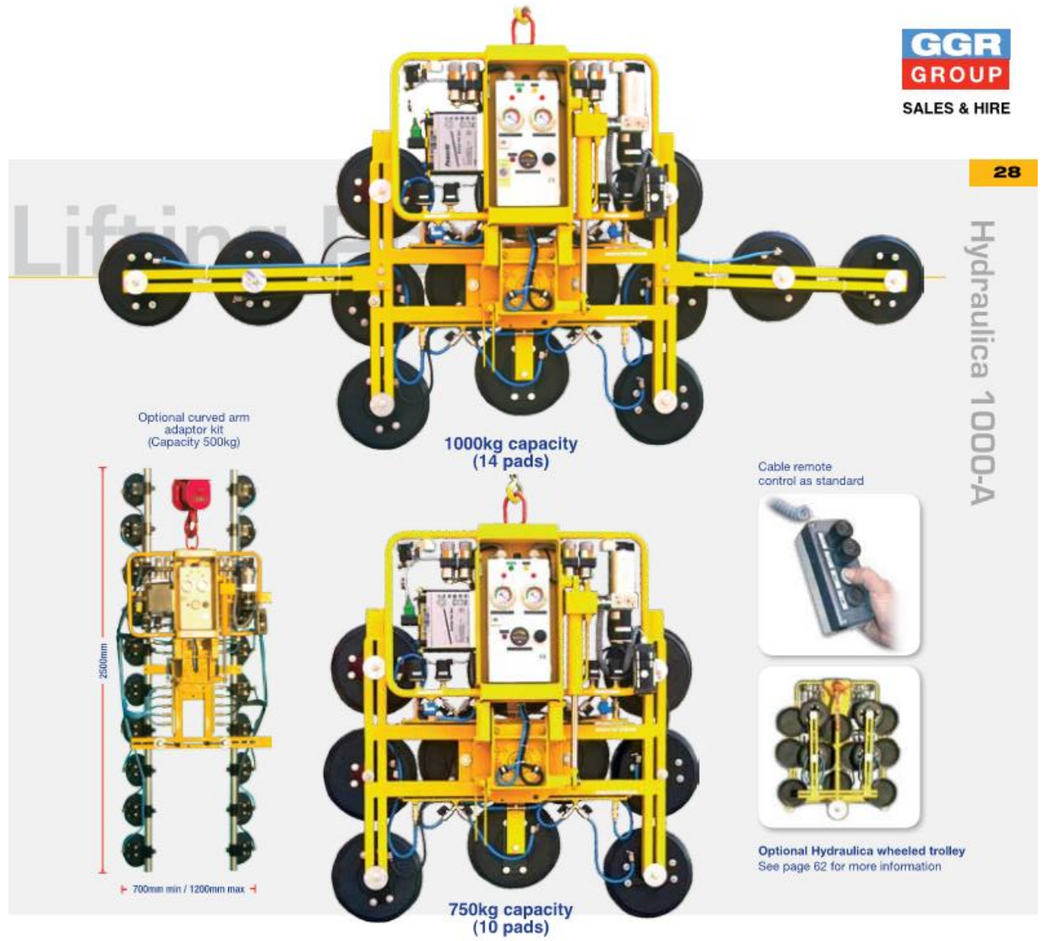
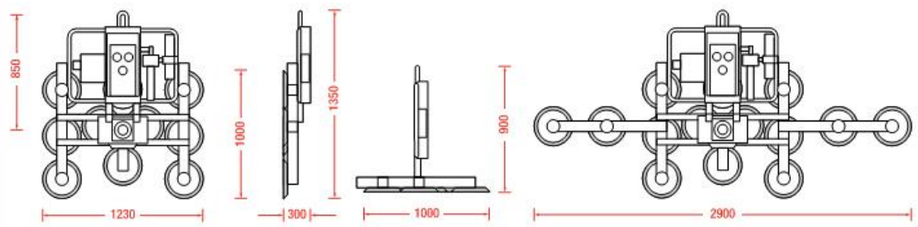


Technical Data (mm)

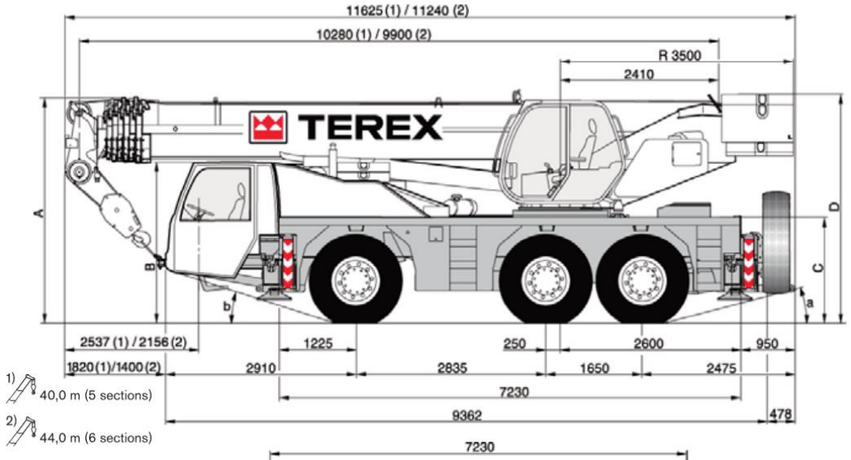


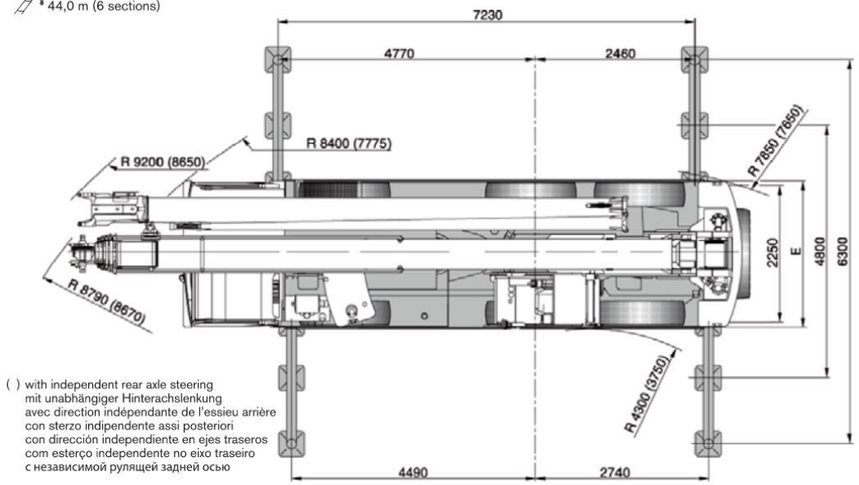
Example Mobile Crane Datasheet.

DIMENSIONS

AC 60/3 (L)

Abmessungen · Encombrement · Dimensioni · Dimensiones · Dimensões · Размеры





( ) with independent rear axle steering
mit unabhängiger Hinterachslenkung
avec direction indépendante de l'essieu arrière
con sterzo indipendente assi posteriori
con dirección independiente en ejes traseros
com esterço independente no eixo traseiro
с независимой рулящей задней осью

	A*	B*	C*	D*	E	a	b
14.00 x 25	3850	2660	1730	3767	2550	20°	19°
16.00 x 25	3900	2710	1781	3817	2550	22°	21°
20.5 x 25	3900	2710	1781	3817	2750	22°	21°

* Suspension lowered to 80 mm · Federung abgesenkt auf 80 mm · Suspension abaissée à 80 mm · Sospensione abbassata a 80 mm · Suspensión rebajada a 80 mm · Suspensão rebaixada para 80 mm · Подвеска, опущенная до 80 мм

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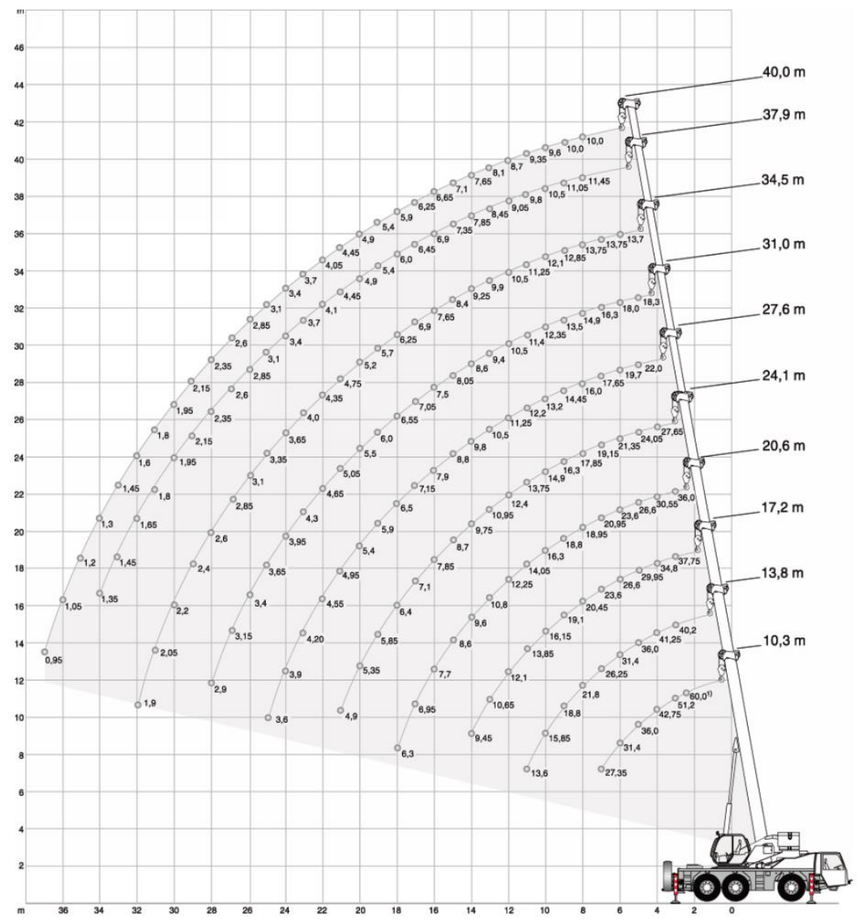
HA

AC 60/3 (L)

5 sections · 5 Segmente · 5 sections · 5 sezioni · 5 secciones · 5 seções · 5-секционная



1) over rear · nach hinten · sur l'arrière · sul retro · hacia atrás · para trás · сзади

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