Reference number 106125-02

DELIVERY AND SERVICING PLAN

LONDON BOROUGH OF RICHMOND UPON THAMES

SYSTRA

TWICKENHAM REDISCOVERED PROGRAMME – RIVERSIDE PROJECT

DELIVERY AND SERVICING PLAN

IDENTIFICATION TABLE	
Client/Project owner	London Borough of Richmond Upon Thames
Project	Twickenham Rediscovered Programme – Riverside Project
Study	Delivery and Servicing Plan
Type of document	Final Report
Date	23/11/2017
File name	Delivery and Servicing Plan
Reference number	106125-02
Number of pages	36

APPROVAL

Version	Name		Position	Date	Modifications
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	Checked by	David Watson	Principal Consultant	16/10/2017	
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	Checked by	David Watson	Principal Consultant	07/11/2017	
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	Approved by	Kelly Rose	Associate Director	23/11/2017	
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1. INTRODUCTION

1.1 General

1.1.1 SYSTRA Ltd ('SYSTRA') has been commissioned by the London Borough of Richmond upon Thames ('LBRuT', 'the Applicant') to provide transport and highways advice relating to the proposed redevelopment of 1A, 1B King Street and 2/4 Water Lane, the site of the remaining former swimming pool buildings at the corner of Water Lane and The Embankment and the river-facing parcel of land on the Embankment in front of Diamond Jubilee Gardens in Twickenham, London, TW1 3SD ('the Site').

1.1.2 The Site currently comprises 1,217sqm of retail floorspace (A1/A2), 226sqm of office floorspace and a private car park.

1.1.3 The Proposed Development entails the demolition and removal of all existing buildings and structures, to provide a mixed-use development comprising:

- Lower Ground Floor Level: a new vehicular access from the Embankment, parking for 23 cars and 68 cycles and three seasonal units (201sqm);
- Ground Floor Level: 505sqm A3, 250sqm B1, 244sqm A1 and 62sqm flexible commercial floor space, a new public square and areas of public realm;
- First, Second and Third Floors: 39 residential units (18 no. 1 bedroom, 19 no. 2 bedroom and 2 no. 3 bedroom, including 6 no. affordable homes); and
- Public realm improvements, reconfiguration of on-street parking, improved pedestrian access and landscaping and an amendment of service vehicle access.

1.1.4 This Delivery and Servicing Plan ('DSP') accompanies the planning application submitted to the London Borough of Richmond upon Thames, who act as the Local Planning Authority and Local Highway Authority. It should be read alongside the Transport Assessment which accompanies the application.

1.2 Scoping Discussions

1.2.1 The project team has undertaken extensive scoping discussion with LBRuT Officers, with regular design meetings throughout the pre-planning period. A formal pre-application meeting took place with the highways and transport officers on 30 August 2017, which was attended by SYSTRA.

1.2.2 On 18 October 2017, SYSTRA issued a draft version of the planning documents to LBRuT for review and comment.

1.3 Report Structure

1.3.1 Following this introductory section, this TA is structured as follows:

- **Section 2: Policy and Guidance –** Outlines national, regional and local policy relevant to the development;
- **Section 3: Baseline Conditions** – Describes the existing highways and transport conditions in the area surrounding the Site, with a focus on parking, waiting and loading restrictions;

- **Section 4: Existing Site Servicing –** Presents the existing servicing arrangements, including the results of servicing surveys undertaken at the Site;
- **Section 5: Development Proposals –** Summarises the land use, access and parking proposals of the development;
- **Section 6: Servicing Trip Generation –** Estimates the number of servicing and delivery trips generated by the Proposed Development;
- **Section 7: Proposed Servicing and Delivery Strategy –** Devises a strategy for servicing and deliveries, including measures to minimise conflicts with other road users; and
- **Section 8: Summary and Conclusion** – Summarises the findings of the DSP and concludes regarding the suitability of the Proposed Development.

1.3.2 All technical appendices are included at the end of this report, for reference.

2. POLICY AND GUIDANCE

2.1 General

2.1.1 This section of the DSP focuses on policy and guidance related to servicing and deliveries, including TfL's requirements, stated in the Making Freight Work for You document, and on LBRuT's requirements, as stated in the Twickenham Area Action Plan and in the Refuse and Recycling Storage Requirements SPD.

2.1.2 A summary of the key national, regional and local transport policies relevant to the Site is included in the Transport Assessment which accompanies this application.

2.2 TfL Delivery and Servicing Plan Guidance: Making Freight Work for You

2.2.1 TfL has produced a Delivery and Servicing Plan document titled *Making Freight Work for You*, which provides guidance to best manage deliveries and reduce the negative impacts of delivery-related activities such as emissions, congestion and collisions.

2.2.2 Key elements stated in the guidance include:

- The recommendation to begin by recording all the delivery and servicing movements to and from the site;
- Identifying safe and legal loading and unloading locations;
- Implementing a delivery booking system, to ensure deliveries will be managed according to the capacity of the loading facilities available and to minimise congestion on site;
- Move deliveries outside of peak, or normal working, hours;
- Reduce the time spent on-site by suppliers (for example via the booking system);
- Reduce delivery, servicing and collection frequencies;
- Reduce or consolidate the number of suppliers;
- Centralised location for courier collections;
- Liaise with consolidation centres;
- Cooperate with building tenants and your neighbours, for example through area-wide DSPs; and
- Promote the use of low or no emission vehicles / modes.

2.3 Twickenham Area Action Plan (TAAP)

2.3.1 The TAAP states the following recommendations with regards to any proposals on Site:

- To retain the existing rear service areas unless equivalent alternative arrangements can be provided; and
- To ensure any changes to road layouts take account of servicing needs and where possible and necessary enhance provision.

2.4 LBRuT Refuse and Recycling Storage Requirements SPD (2015)

2.4.1 The London Borough of Richmond upon Thames had adopted a Supplementary Planning Document which states the requirements for refuse and recycling storage. Key requirements relevant to refuse collection:

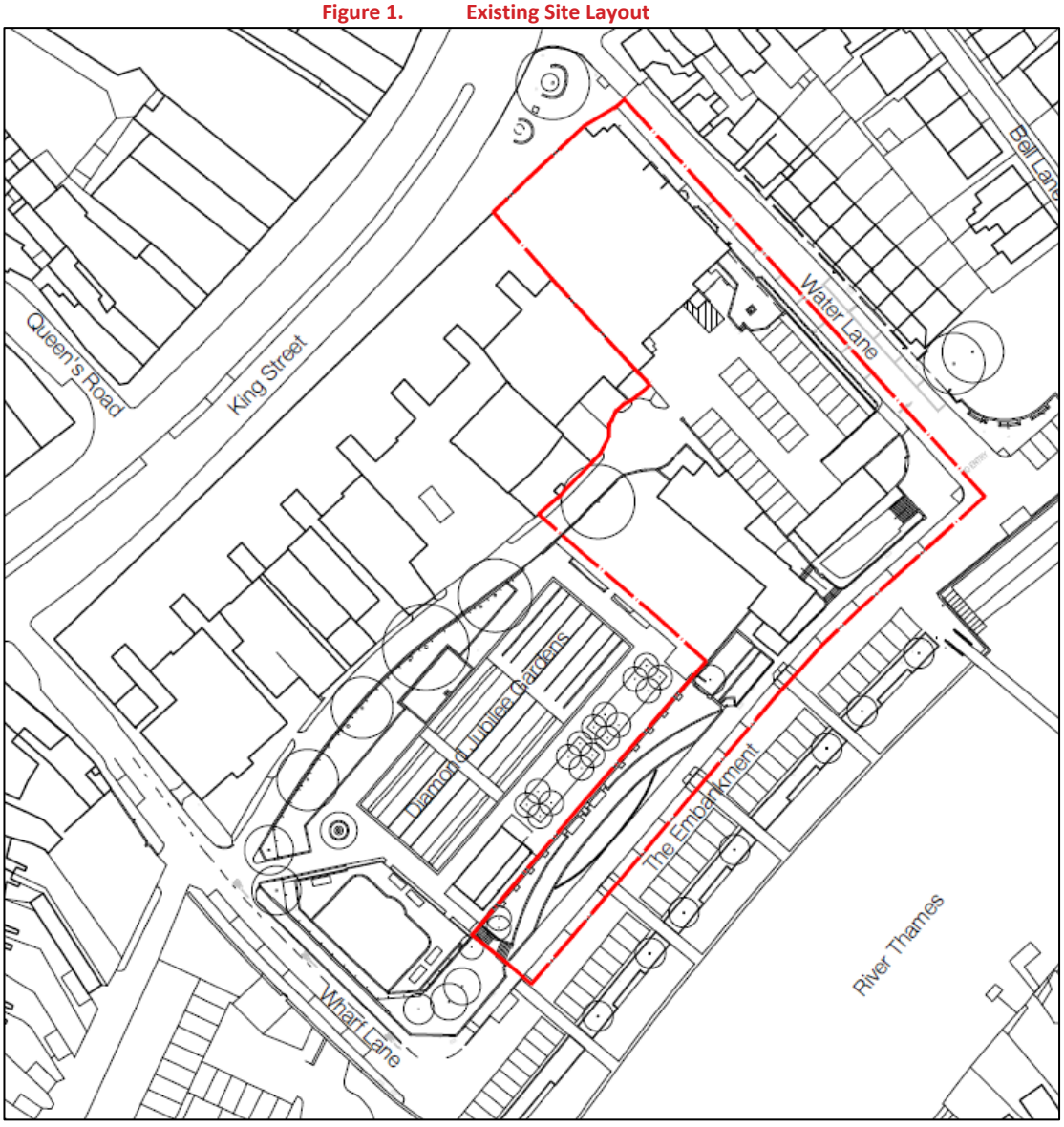
- Consideration must be given to the sensitivity of the location of bin stores, the requirements for vehicular access and the likely constraints of headroom and turning space;
- For Eurobins or other wheeled waste containers, the path between the bin store and the nearest vehicular access should be free of steps or kerbs, be level and have a minimum width of 2m;
- Waste collection operatives should not be required to carry waste sacks, dustbins or move wheeled bins more than 20m in total;
- Storage areas for residential dwellings should be sited to shat the occupiers are not required to carry refuse or recycling more than 30m from an external door;
- The need for reversing by vehicles should be avoided wherever possible. British Standard (BS 5906:2005) recommends a maximum reversing distance for vehicles of 12m. Greater distances may be acceptable where this would allow for substantial gains in other aspects of design; and
- Refuse collection vehicle: three axle 21.2 – 26t GVW (10.4m long, 2.5m wide, 3.8m high).

3. BASELINE CONDITIONS

3.1 Site Location

3.1.1 The Site is in Twickenham Town Centre, and is bounded by King Street to the North, Water Lane to the east, the Embankment to the south and Diamond Jubilee Gardens to the west (see **Figure 1**).

Figure 1. Existing Site Layout



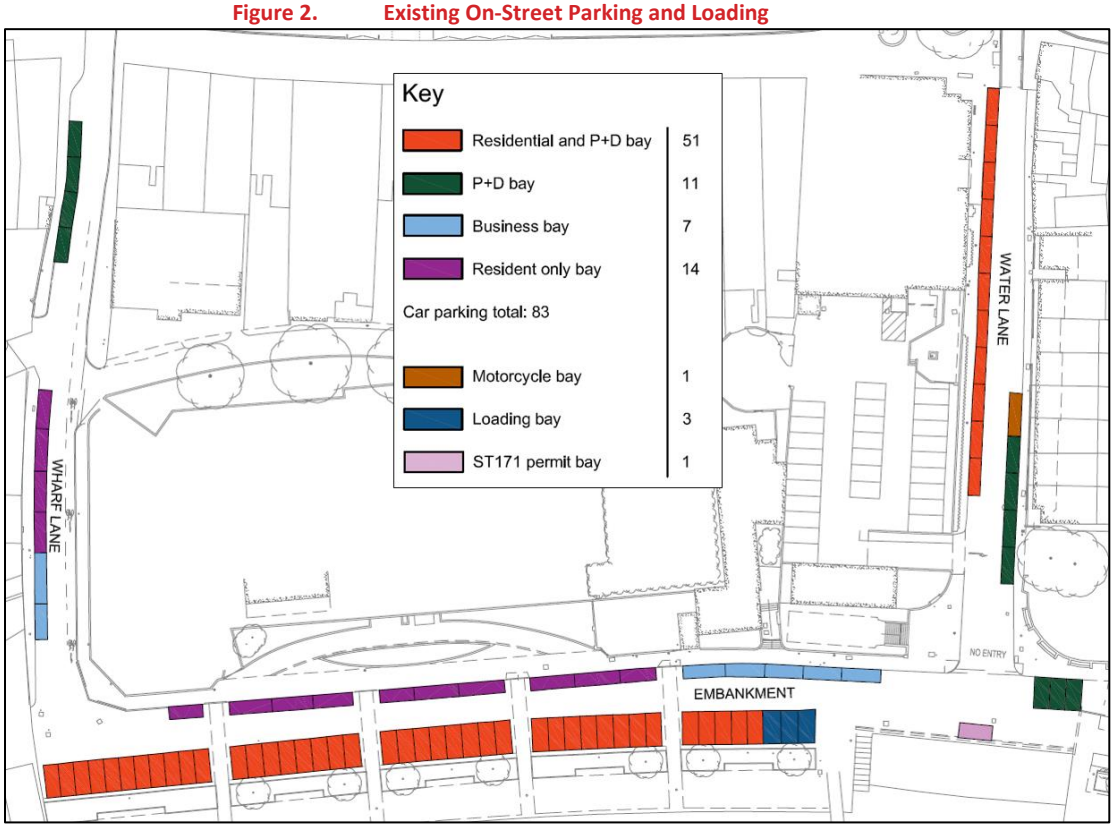
3.1.2 This section of the DSP will focus on the local highway network and parking restrictions. Additional baseline information, particularly relating to public transport, walking and cycling infrastructure, is contained in the Transport Assessment which accompanies the planning application.

3.2 Parking

3.2.1 There are 26 car parking spaces within the Site, which are currently allocated to businesses on King Street, with the licenses renewed on a monthly basis.

3.2.2 The surrounding streets area are part of Controlled Parking Zone (CPZ) D "Central Twickenham", which operates Monday-Friday 8:30-18:30. On-street spaces include a mixture of pay & display, residents-only, mixed use and shared use bays, as indicated in **Figure 2** below. The ST171 permit bay is for an ice cream van.

Figure 2. Existing On-Street Parking and Loading



3.3 Local Highway Network

3.3.1 This section provides an overview of the local highway network surrounding the Site.

King Street

3.3.2 King Street, to the north of the Site, is part of the A310 which runs along the Thames from Teddington in the south to Isleworth in the north.

3.3.3 In proximity to the Site, it is a dual carriageway street with one lane of traffic in each direction, as well as advisory cycle lanes. On the approach to the junction with Water Lane, there is a right turning pocket for eastbound vehicles, and the road bisects ahead of the junction with the A305.

3.3.4 There are wide footways on both sides of the street (6m on the southern side and 3m on the northern side) which are in excellent condition, and there are double yellow lines with single

blips on the footway indicating that waiting of vehicles is prohibited at any time and that loading or unloading is prohibited during the day. In the section of road closest to Wharf Lane, loading and unloading are prohibited at any time, to protect the left turn lane.

3.3.5 Double yellow lines are present along the southern side of King Street. In proximity to the junction with Water Lane, these are accompanied by double kerb blips, indicating no stopping is permitted. On the remainder of the Site frontage, there are single kerb blips, with no loading permitted Monday – Friday 7:30 – 9:30am and 4:30 -6:30pm. The same restrictions apply to the western section of King Street, up to the junction with Wharf Lane. On the Northern side of King Street, the entire stretch is lined with single yellow blips with the same timings (see **Figure 3**).

Figure 3. Photograph of King Street, looking west (05/07/2016)

3.3.6 The two pedestrian crossings closest to the Site are approximately 60m away: one is at the junction with the A305 York Street (to the east) whilst the other is adjacent to the junction with Queen's Road (to the west).

Water Lane

3.3.7 Water Lane runs north-south along the eastern boundary of the Site, connecting King Street to the Embankment. It is a one-way road (southbound only) which slopes gently towards the River Thames.

3.3.8 The road width varies between 5.8m to the north and 7.3m to the south, and there are footways along both sides of the road. The northern part only has parking bays on the western side of the road, whilst the southern section has parking on both sides. At the southern end of the road, there is an access to a private car park which leads to a Service Road connecting Water Lane and Wharf Lane.

3.3.9 Towards the northern end, at the junction with King Street and Church Street, the road narrows down and there is a large raised table.

3.3.10 On the northern half of Water Lane, sections of the road where parking is prohibited are lined with double yellow lines (no blips); whilst on the half of the road, there are single yellow lines.

Service Road – Water Lane to Wharf Lane

3.3.11 There is a two-way Service Road which runs east-west through the Site, connecting Water Lane and Wharf Road.

3.3.12 Within the London Borough of Richmond's Highways Land Search Register (available online), the Service Road is listed as an unnamed publicly maintained accommodation road "Accommodation Road TW Wharf Lane at rear of 3-33 King Street". The car park at the Water Lane end of the road is private land, therefore from a land ownership perspective the Accommodation Road is not a through road.

3.3.13 The road is between 3.5-4m wide and runs along the back of the residential / commercial units on King Street. There is no footway on either side of the road and at the eastern end, adjacent to the car park, the road widens to provide a 6m diameter turning head / parking / passing area.

3.3.14 Single yellow lines line the entirety of the Service Road (see **Figure 4**). Due to the narrow width of the road, any vehicles stopping to service result in other road users having to wait or undertake a tight passing manoeuvre.

3.3.15 The road is largely used for servicing of the commercial units on King Street and experiences low traffic volumes. A video survey of vehicle movements along the Service Road was undertaken, and the results are presented in Section 4 of this report.

Figure 4. Photograph of Service Road, looking east (05/07/2016)

The Embankment

3.3.16 The Embankment runs along the River Thames waterfront between Wharf Lane and Church Lane. It varies in width and has parking on both sides of the road, whilst there is a segregated promenade along the waterfront for pedestrians and cyclists.

3.3.17 There are three perpendicular loading bays located next to the bridge to Eel Pie Island on the south side of The Embankment (see **Figure 5**). There are a few small stretches of single yellow line provision where delivery vehicles can stop temporarily.

Figure 5. Photograph of Service Road, looking east (05/07/2016)

Wharf Lane

3.3.18 Wharf Lane runs parallel to Water Lane, to the west of the Site. It is a one-way 6m wide road (northbound only), with an advisory contraflow cycle lane along its entire length.

3.3.19 The majority of the street is lined with car parking on the western side of the road. The road narrows at the northern end, where there is a raised entry treatment onto King Street. There are footways along both sides of the street for its entire length.

3.3.20 At the southern end of Wharf Lane there is a short section of a single yellow line before the parking starts on the Western side of the road. The areas around the access into the Service Road and at the junction with King Street have double yellow lines.

4. EXISTING SITE SERVICING

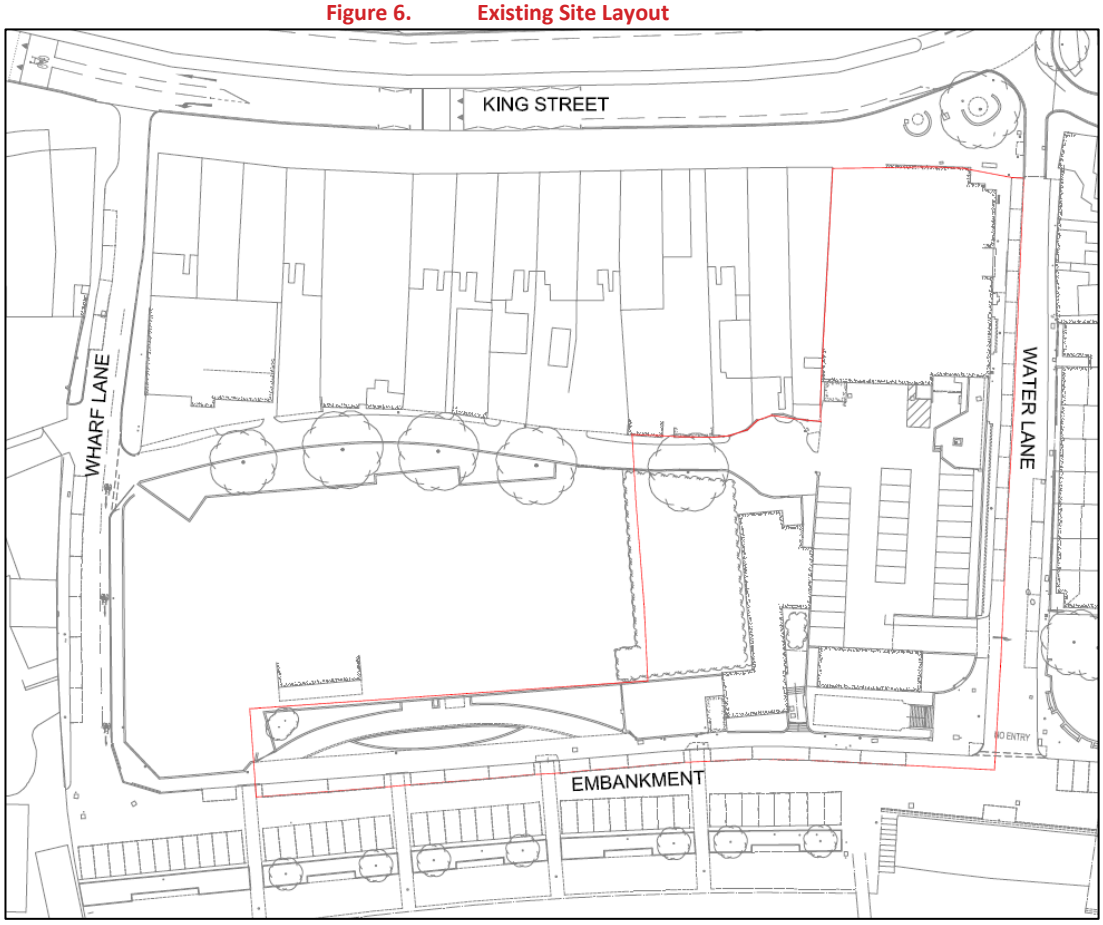
4.1 Land Use and Floor Area

4.1.1 The Site currently comprises various buildings and a private car park with 26 spaces. The existing land uses and floor areas are presented in **Table 1**, whilst the layout is shown in **Figure 6**.

Table 1. Existing Uses

LAND USE	QUANTUM
A1 Retail	741sqm
A2 Retail	479sqm
B1 Office	226sqm
Car Parking	26 spaces

Figure 6. Existing Site Layout



4.2 Land Ownership

4.2.1 The entire proposal Site is owned by LBRuT, including the existing car park. Water Lane, Wharf Lane and the Embankment are part of the public highway. As stated in Section 3 of this report, the Service Road off Wharf Lane is an unnamed publicly maintained accommodation road.

4.2.2 The units on the King Street Block which are not part of the Site are all owned by a single land owner ('the owner of the King Street commercial units'), who has been consulted in the preparation of these proposals.

4.3 Access

4.3.1 As stated in the Baseline section of this report, there is a significant level difference across the Site, with the land sloping towards the River Thames. This level change creates severance and limits the opportunities for permeability. The current access points to the Site are:

- King Street: entrances to shops;
- Water Lane: one entrance to the Santander and one vehicular entrance to the private car park, connecting through to the Service Road. A painted line demarcates the pedestrian access along the ramp to the car park;
- The Embankment: stepped accesses to the Site and to Diamond Jubilee Gardens; and
- Wharf Lane: step-free access to Diamond Jubilee Gardens, vehicular access to the Service Road and servicing access for the Iceland Supermarket.

4.3.2 The permeability of the Site is currently poor, with no step-free access from the Embankment and few access points to Diamond Jubilee Gardens. The Service Road provides east-west connectivity, but it is an unsafe environment for pedestrians and cyclists.

4.4 Servicing Surveys

4.4.1 Servicing surveys were undertaken on Water Lane, Wharf Lane and the Embankment to assess existing servicing arrangements for the Site and the adjacent businesses and residents. The surveys were undertaken between 1-7 July 2016, and the findings are summarised in the *Transport Survey Note* (05/08/2016) produced by SYSTRA under the JMP brand and included in **Appendix A**.

4.4.2 The main findings of the surveys are summarised in the following sections of this chapter.

Water Lane

4.4.3 The surveys indicated an average of 26 servicing and delivery vehicles per day. Approximately 30% of the trips took place between 9am and 12pm and 50% between 12-5pm.; whilst only two trips took place in the network peak hours (8-9am and 5-6pm).

4.4.4 The majority of vehicles stopped on the single yellow lines on the eastern side of the road. Approximately 56% of vehicles stopped for less than ten minutes, with a further 30% stopping for between ten and 20 minutes. Only four vehicles per day stopped for over 20 minutes.

4.4.5 Approximately 60% of vehicles were minivans or small vans, with the largest vehicles being box vans and large refuse vehicles.

Wharf Lane

4.4.6 The surveys indicated that there was minimal servicing activity on Wharf Lane and that it was largely concentrated at the northern end of the road, adjacent to the Iceland servicing entrance.

4.4.7 Vehicles were seen to stop on both sides of the road, at times blocking the eastern footway, the contraflow cycle lane and the main carriageway (see **Figure 7**). Most vehicles servicing at this location were large box vans, 10m rigid vehicles or refuse vehicles.

Figure 7. Wharf Lane Servicing

Service Road and Private Car Park

4.4.8 The average daily number of servicing trips on the service road and car park were 19 and three respectively. Given the tight kerb radius on the car park entrance from Water Lane, the largest vehicles (10m rigid and some refuse vehicles) usually reverse into the service road from Wharf Lane. This is a complex manoeuvre and presents a potential safety hazard, particularly when vehicles reverse towards oncoming vehicles along the entire length of the two-way road, to reach the car park (see **Figure 8)**.

Figure 8. Service Road Servicing

4.4.9 Vehicles exiting the service road onto Wharf Lane often overrun the kerb and at times have to perform 3, 5 or even 7-point turns.

4.4.10 Some of the retail units along the service road have off-street service bays which are used by small vans, and some vehicles were seen to stop on the kerb. However, a number of vehicles stopped in the carriageway, blocking the road for up to an hour.

4.4.11 Servicing trips were evenly distributed throughout the day, with most trips between 9am and 5pm. Approximately half of the vehicles stopped for less than 5 minutes, but some vehicles (one or two per day) stopped for over an hour.

4.4.12 The data shows that, whilst most servicing trips were undertaken by small vehicles, there are five trips per day by 10m rigid or large refuse vehicles which are difficult to accommodate in the narrow road.

The Embankment

4.4.13 The three parking bays closest to Eel Pie Island bridge are reserved for loading between 8:30am and 6:30pm Monday-Saturday, with a maximum stay of 1 hour and no return within 1 hour.

4.4.14 An average of 19 servicing vehicles were seen to use these bays on a daily basis, with two or three additional vehicles stopping on the single yellow lines to the east of the footbridge.

4.4.15 During the survey, it was noticed that several drivers did not notice the loading designation and parked their vehicles in the bays, receiving parking tickets.

4.4.16 The data indicates that 95% of trips took place outside the network peak hours, with a balanced split between morning and afternoon. Most vehicles stop for between 10-40 minutes, as items have to be trolleyed over the footbridge and onto the island.

4.4.17 There was a single instance (for approximately 10 minutes), where all three loading bays were occupied by servicing vehicles.

Summary

4.4.18 The servicing survey has identified the following issues:

- Considerable informal servicing activity on the single yellow lines on Water Lane;
- Dangerous reversing manoeuvres on the Service Road;
- Conflicts between servicing vehicles on the Service Road;
- Unsafe entrance and exit manoeuvres into the Service Road; and
- Conflict between vehicles servicing on Wharf Lane and other road users (in particular pedestrians and cyclists).

5. DEVELOPMENT PROPOSALS

5.1 General

5.1.1 This section presents the land use, access and parking proposals of the development, devised in line with policy requirement and based on the findings of the surveys undertaken on Site.

5.2 Land Uses

5.2.1 The proposals entail the demolition of the existing buildings and the construction of two new buildings, linked with a bridge. The quantum of development presented in **Table 2**.

Table 2. Proposed Development

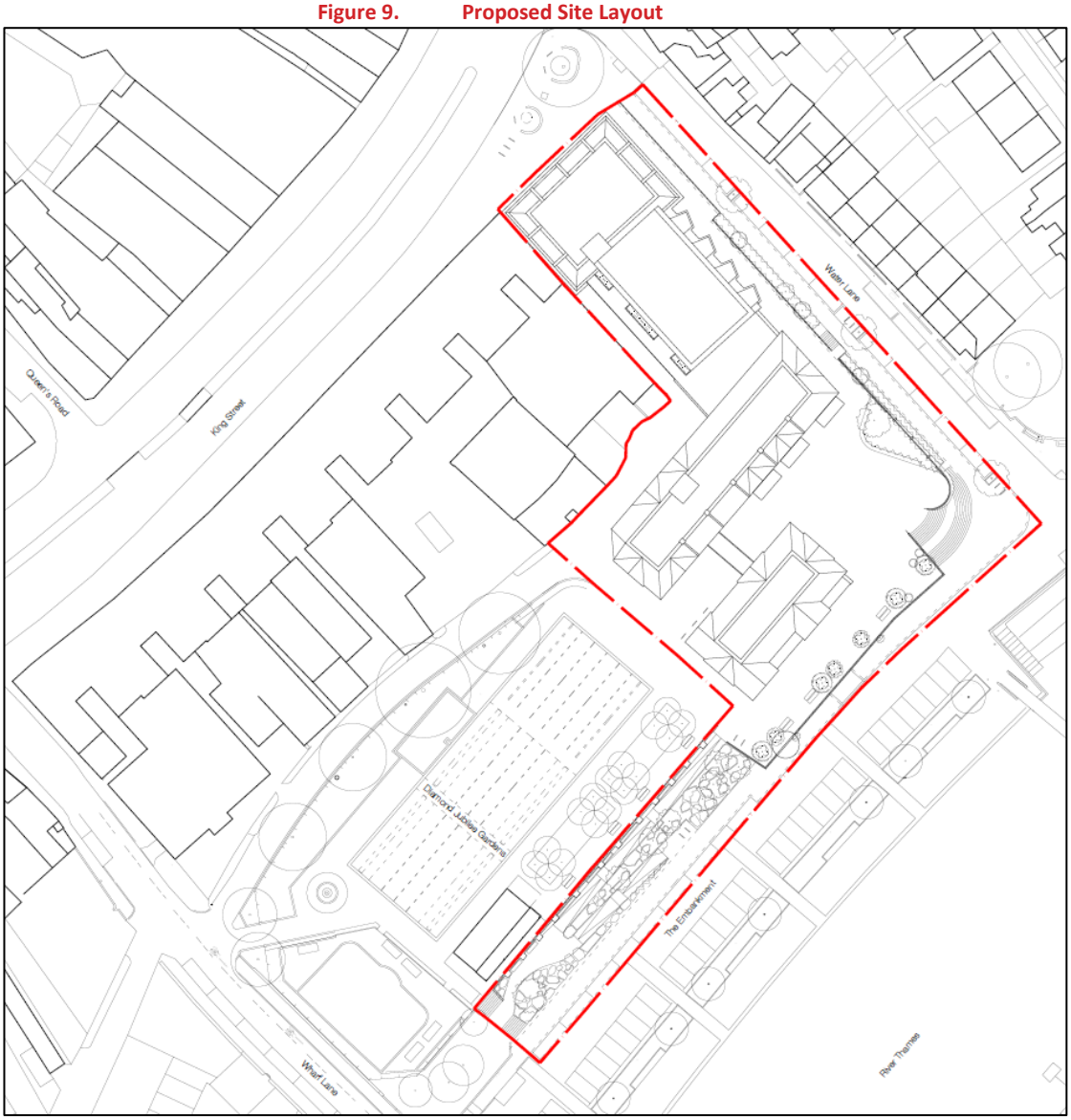
UNIT	LAND USE	QUANTUM
Unit 1	A1	244sqm
Unit 2	B1	250sqm
Unit 3	A3	274sqm
Unit 4	A1 / A3 / D1	62sqm
Unit 5	A3	231sqm
Residential	C3	39 units (18 no. 1-bed, 19no. 2-bed, 2no. 3-bed)

5.2.2 All the retail uses will be on the ground floor, with residential units on the three upper floors. Given the level changes across the Site, a podium will be created, with the lower ground floor level hosting private car and cycle parking.

5.2.3 As part of the development, a new public square will be provided, alongside improved access and permeability. A new vehicular access will be created from the Embankment and modifications will be made to on-street parking arrangements, further discussed overleaf.

5.2.4 The proposed Site layout is shown in **Figure 9.** Additional ground and basement plans are included in **Appendix B**.

Figure 9. Proposed Site Layout



5.3 Access Arrangements

5.3.1 The Proposed Development will be constructed on a podium, at the existing level of King Street and Diamond Jubilee Gardens.

5.3.2 The existing level accesses from King Street and Wharf Lane / Diamond Jubilee Gardens will therefore be retained and enhanced, with a wide footway along the eastern façade of the buildings. The proposed public square will also enhance the pedestrian environment, in line with the policy objectives.

5.3.3 A new step-free access to the Site / Diamond Jubilee Gardens will be provided from the Embankment, with a 1:20 ramp and level platforms every 0.5 m rise, improving north-south permeability.

5.3.4 The existing vehicular access to the private car park will be extinguished, with a stepped access proposed in a similar location. Whilst it is not envisaged that this access will be heavily used, it retains east-west permeability through the Site.

5.3.5 A new feature staircase will be provided at the south-east corner of the Site, providing connectivity to the Embankment and to Eel Pie Bridge.

5.3.6 Vehicular access to the lower ground floor car park will be taken from the Embankment. This location was selected because it minimised excavation and ramp length, whilst maximising visibility of oncoming vehicles.

5.4 Parking

On Site

5.4.1 A new private parking area will be provided at lower ground floor, accessed from the Embankment. It will accommodate 23 car parking spaces and 68 cycle parking spaces for residents and staff of the Proposed Development.

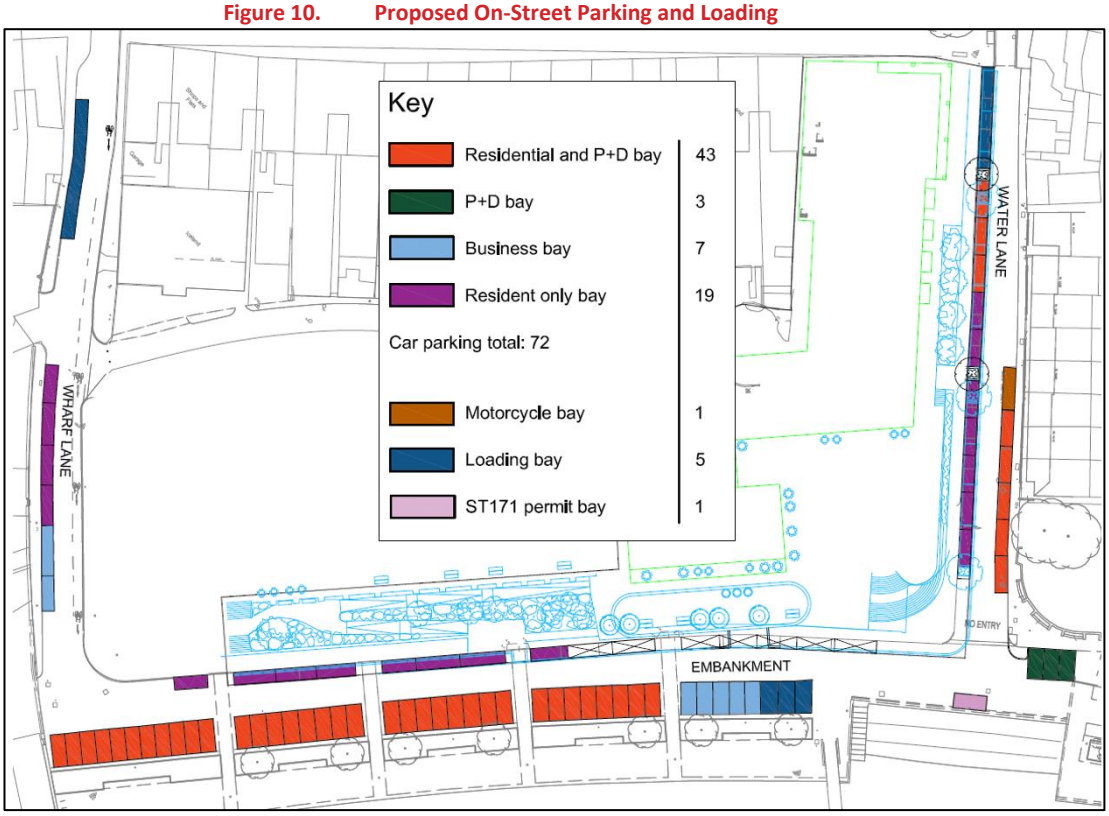
Off Site

5.4.2 To reduce car dominance and best match car parking supply and demand, some changes are proposed to existing on-street parking. It is proposed to remove eight p&d bays and eight shared use bays, whilst five new resident bays are created.

5.4.3 As part of the reallocation, two new 15-18m long loading bays will be provided on Water Lane and Wharf Lane, addressing the issues identified in the servicing surveys. Further details of the servicing arrangements are provided in Section 7.

5.4.4 The plan showing the proposed on-street parking and loading arrangement is shown in **Figure 10,** with the existing arrangement in **Figure 2.**

Figure 10. Proposed On-Street Parking and Loading



5.4.5 It is noted that the relocation and removal of parking and the designation of new loading bays will require changes to the Traffic Management Orders, which are subject to public consultation, to be undertaken following determination of the planning application for the Proposed Development.

5.4.6 The proposals also entail the provision of 26 short-stay cycle parking spaces for customers and visitors.

6. SERVICING TRIP GENERATION

6.1 Methodology

6.1.1 This section of the DSP provides a summary of the delivery and servicing trip generation associated with the Proposed Development.

6.1.2 The TRICS database contains surveys of Light Goods Vehicle (LGV) and Other Goods Vehicle (OGV) trips to sites, which can be used to estimate servicing and delivery trip generation. An assessment was undertaken using TRICS data to quantify the expected trips at the Proposed Development however, given the small proposed floor areas, these were deemed unrepresentative (fewer than ten vehicles). This is partly due to the fact that many surveys were undertaken before the rise in popularity of online shopping.

6.1.3 In light of the above, it was decided to use a first principles approach to estimate the servicing trip generation.

6.2 Results

6.2.1 As stated above, Unit 4 has a have flexible commercial use (A1 / A3 / D1). Out of these uses, it is expected that the A3 use will be the highest servicing and delivery trip generator. **Table 3** below states the floor areas and expected number of servicing and delivery trips to the Site.

Table 3. Expected Servicing and Delivery Vehicles

LAND USE	UNIT	FLOOR AREA	VEHICLES	DESCRIPTION
A1 Retail	Unit 1	244sqm	5	Goods (2), couriers (2), refuse (1)
A3 Retail	Unit 3 Unit 4 Unit 5	274sqm 62sqm 231sqm	8 5 8	Food (2-3 per unit), beverages (1-2 per unit), refuse (2), couriers (1-2 per unit)
B1 Office	Unit 2	250sqm	4	Goods (1), couriers (3)
C3 Residential	39 units		10	Couriers
TOTAL			40	

6.2.2 For robustness, this assessment estimates the future number of delivery and servicing trips at the Site without subtracting the number of existing trips. This will ensure the proposed servicing provision is sufficient to accommodate the expected trips, as some of the existing servicing areas (Service Road, private car park) will be modified as part of the development proposals.

6.2.3 It is expected that the Proposed Development could generate approximately 40 servicing and delivery trips. The vast majority of trips will be undertaken with small vans, with two 7.5t box vans and three or four refuse vehicles per day as a maximum.

6.2.4 It is envisaged that the number and type of vehicles will depend on the tenant of the units.

7. PROPOSED SERVICING AND DELIVERY STRATEGY

7.1 Aims

7.1.1 The Proposed Development aims to address the issues identified with the existing servicing arrangements surrounding the Site, and to minimise conflicts between vehicles and other road users. The strategy considers both the servicing needs of the Proposed Development and of the adjacent businesses and residents, in particular the other commercial units on King Street, all owned by a single land owner.

7.1.2 One main aim of the servicing strategy is to ensure the Service Road and Wharf Lane are a safe environment for all users, particularly pedestrians and cyclists. Whilst the Service Road is not a major desire line for pedestrians, it may become one for cyclists arriving from the west, and who do not want to dismount (via Diamond Jubilee Gardens) or climb the 1:20 ramp (via the Embankment).

7.2 Options

7.2.1 In devising the preferred strategy, a wide range of options were considered, including both on-street and off-street provision.

7.2.2 Whilst it is noted that off-street provision would generally be preferable to minimise conflicts with other road users and visual impact of servicing activity, the level differences across the Site limit the opportunities for this. The following off-street options were considered:

- Service Road connecting Water Lane and Wharf Lane: this would create severance through the Site and require a significant portion of the Site be used for carriageway, reducing the space available for the new public square. A loading bay would also have to be provided on Site, further reducing the space available for pedestrians;
- Service cul-de-sac from Wharf Lane: minimal impact on the Site, but the road is only 3.5-4m wide, which is not enough to accommodate two-way vehicle movements. The potential to increase the width of the road were explored, but these relied on third party land. Whilst a turning head can be provided for vehicles, there is still the potential for eastbound and westbound movements to conflict, which would require large vehicles to reverse towards the Site or towards Wharf Lane, which are deemed unsafe manoeuvres. As such, servicing activity in the cul-de-sac should be restricted to essential servicing; and
- Embankment access to the lower ground floor: this would require additional lifts and a complex management strategy, with the potential for vehicles stopping on the Embankment, where pedestrian and cyclist volumes are greater than on Water Lane.

7.2.3 None of the options above are suitable to accommodate most servicing activity on Site. As such, on-street options were explored, focusing on the northern section of Water Lane, where level access to the entire Site can be provided. On-street servicing also enables the vast majority of the podium (with the exception for the turning head) to be free of vehicles, creating a healthy and safe environment for all users. Whilst it is noted that there will be an impact on visual appearance, the safety of all users is deemed paramount.

7.2.4 For the adjacent commercial units of King Street, there were considerably fewer options available as the sites are not being redeveloped. Current servicing activity entails dangerous

manoeuvres and blocking of the Service Road, as well as encroachment upon the footways and cycle lane on Wharf Lane. To address these highway safety concerns, on-street servicing was deemed to be the only viable option.

7.3 Servicing Strategy

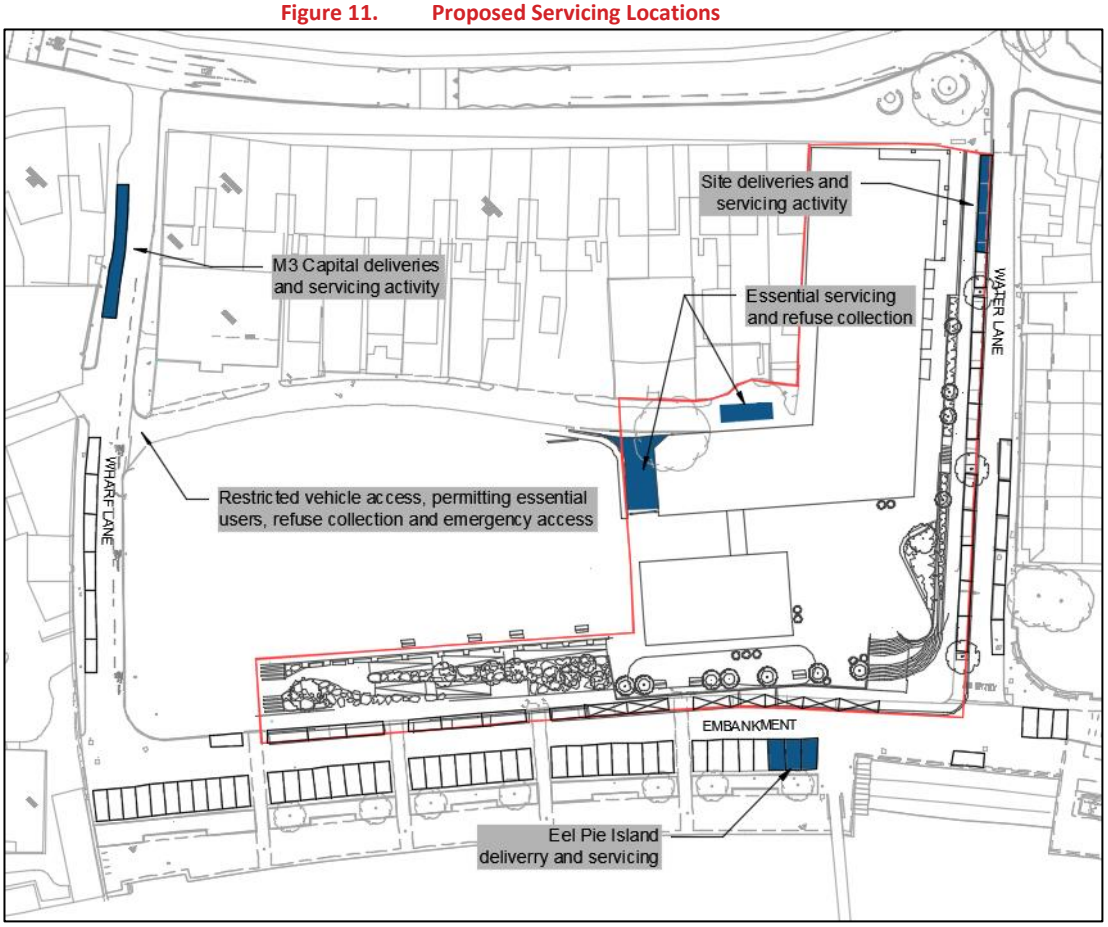
Proposed Provision

7.3.1 As part of the development proposals, no changes will be made to the existing servicing arrangements and restrictions on King Street or on the Embankment (Eel Pie Island loading bays).

7.3.2 Given the nature and location of the scheme, which will deliver a new pedestrianised square, servicing activity will be located off-Site, on Water Lane and Wharf Lane. Given the width and access constraints, the Service Road will only be used for essential trips (emergency and refuse vehicles, residents and staff of the King Street commercial units).

7.3.3 The proposed servicing areas are highlighted in blue in **Figure 11**.

Figure 11. Proposed Servicing Locations



Water Lane

7.3.4 As noted above, the existing buildings on Site are serviced informally from Water Lane or from the private car park, which will be replaced with buildings and a new square. To ensure safe

servicing of the Proposed Development, a new 15m loading bay will be provided at the northern end of Water Lane, displacing existing car parking spaces further south. The loading bay has been located at the northern end of Water Lane, where level access can be gained to the entire Site from the King Street frontage.

7.3.5 It is envisaged that this loading bay will accommodate most of the servicing and delivery trips associated with the Proposed Development. Drawing 106125-27 in **Appendix C** demonstrates that the servicing bay can accommodate a 10m rigid vehicle or two minivans. Given most vehicles are expected to stop for less than 15 minutes, this is deemed sufficient to accommodate the 40 daily servicing trips.

7.3.6 If all vehicles were to stop for 15 minutes, the loading bay would only be fully occupied for five hours a day (or half occupied for 10 hours). Therefore, as the bay will be unoccupied for the majority of the day, the visual impact on the streetscape is deemed acceptable and a potential improvement on the existing arrangement, which entails car parking at the northern end of Water Lane.

Wharf Lane

7.3.7 To ensure the Wharf Lane footways and cycle lane are kept clear, a new 20m long loading bay will replace the existing parking bays adjacent to King Street. It is envisaged that this loading bay will accommodate the vast majority of servicing and delivery trips associated with the King Street commercial units, with goods trundled to the respective units.

7.3.8 Drawing 106125-27 in **Appendix C** demonstrates that this bay can accommodate two 10m rigid vehicles or three minivans. Based on the results of the servicing survey, it is expected that this is sufficient to accommodate all servicing activity which currently takes place on Wharf Lane and on the Service Road. As a result, there will be no need for large vehicles to attempt the dangerous turning manoeuvre into the Service Road, and the cycle lane and footways will be kept clear, improving safety of all users.

7.3.9 As above, it is expected that the loading on Wharf Lane will be unoccupied for the majority of the day, resulting in an improvement of the streetscape with respect to the existing car parking provision.

7.3.10 Based on the servicing surveys, it appears that the loading bays on the Embankment are often mistakenly used by visitors as parking bays. As such, whilst formal loading bays are proposed on Wharf Lane and Water Lane, these can either be clearly designated as such, or simply demarcated with yellow lines, permitting loading. The Applicant will liaise with LBRuT following determination to agree the preferred designation.

Service cul-de-sac

7.3.11 To address highway safety concerns on the service road, it is proposed to restrict traffic to essential vehicles only, creating an environment reserved for cyclists and pedestrians for the majority of the day.

7.3.12 In order to maintain safe access for essential servicing and emergency vehicles, a turning head has been provided on Site, catering to a medium sized refuse vehicle or a 7.5t box van (swept path analysis in drawings 106125-25 and 106125-26 in **Appendix C**). A gate will be provided

in the turning head, minimising conflict with pedestrians and other Site users. A bollard will also be provided adjacent to the building, to ensure reversing vehicles do not hit the walls.

Management and Mitigation

7.3.13 Given the limited road width (3.5-4m), vehicular traffic on the service cul-de-sac will have to be carefully managed, to minimise conflicts between vehicles and ensure the safety of all users. As previously discussed, the potential to upgrade the Service Road to accommodate bidirectional traffic was investigated but is not feasible due to land ownership constraints.

7.3.14 To restrict traffic on the cul-de-sac, it is proposed to introduce cameras or rising bollards at the junction with Wharf Lane, restricting access to non-essential users. The arrangement will ensure emergency access at all times, refuse collection and access for essential users, subject to agreement with LBRuT and with the owner of the King Street commercial units.

7.3.15 Signs will be introduced at the junction with Wharf Lane, clearly stating the restrictions as well as the maximum vehicle size which can safely access and use the servicing cul-de-sac (a medium refuse vehicle, 7.5t box van or equivalent). The use of any larger vehicles would be inappropriate as it would lead to dangerous manoeuvres and the need to reverse over significant distances, representing a highway safety hazard.

7.3.16 It is recommended that a booking system be implemented for the on-Site loading bay, minimising conflicts between servicing and delivery vehicles. Whilst most deliveries should take place on Water Lane, there may be some exceptional circumstances (moving in, fit out) in which on-Site deliveries are required. Tenants will have to book a 15-minute slot with the Site manager, who will then grant access to the associated vehicle. A 5-minute gap will be retained between slots, ensuring smooth operation.

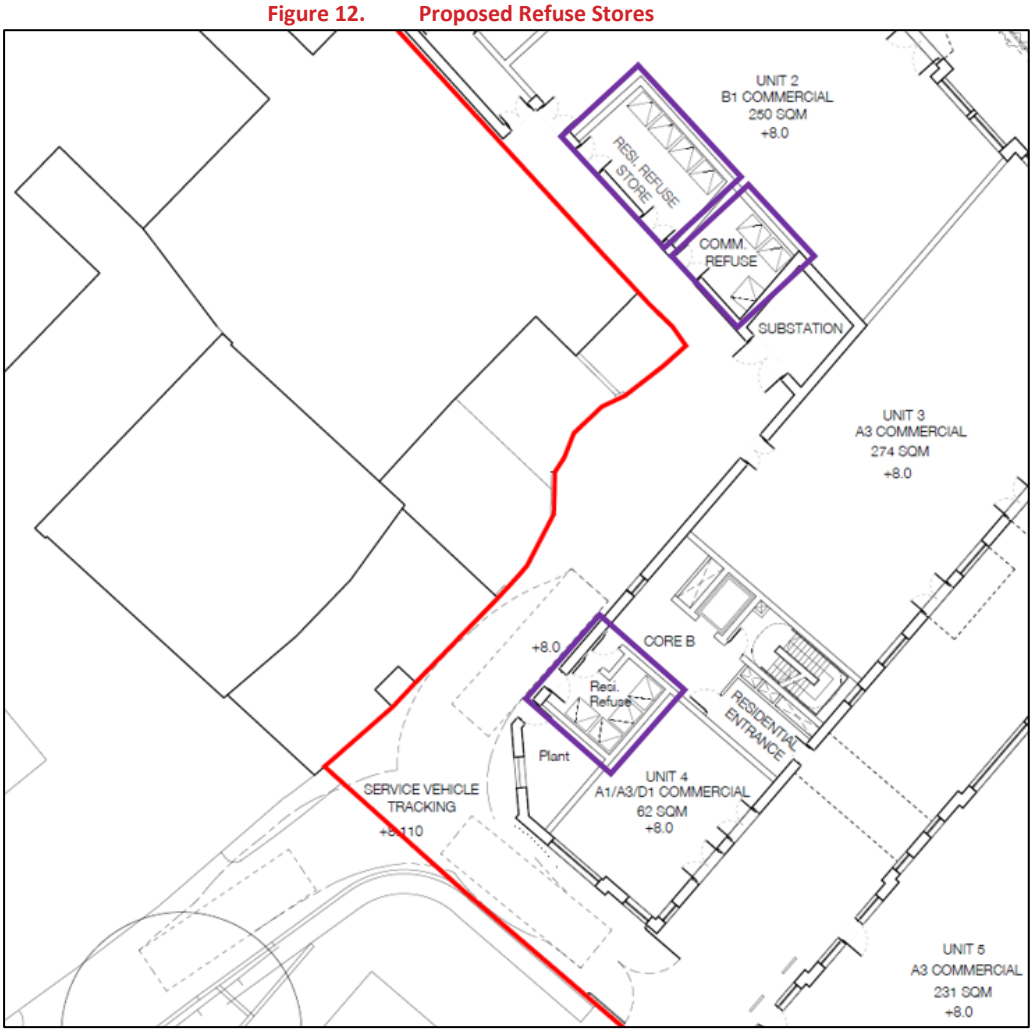
7.3.17 To minimise the number of servicing and delivery trips, the Site manager will encourage retail staff to consolidate deliveries, particularly of food and drinks.

7.4 Refuse Strategy

7.4.1 Separate commercial and residential waste areas are provided, in line with policy requirements.

7.4.2 The location of the commercial and residential stores are indicated in **Figure 12**. All residents will be able to access the residential store from within the building, in compliance with policy requirements. The commercial refuse is to be located partly within the building and partly on street, with staff members responsible for carrying refuse to the designated locations.

Figure 12. Proposed Refuse Stores



7.4.3 The LBRuT Refuse and Recycling Storage SPD states the storage requirements for the various land uses:

- Residential Refuse: 70L per bedroom -> 62 bedrooms x 70 L = 4,340L or 4 x 1,100L Eurobins;
- Residential Dry Recycling: 26-45 households, 4 x 1,100L Eurobins;
- Offices: 2.6 cubic metres per 1,000sqm gross floor space -> 2.6 x 246sqm / 1,000 = 0.65 cubic metres = 650L or 1 x 1,100L Eurobin; and
- Commercial: no specification in the LBRuT Policy. The London Borough of Islington and London Borough of Westminster Recycling and Refuse Storage Requirements specify 5 cubic metres and 4 cubic metres per 1,000sqm gross floor area respectively. Therefore, as a worst-case proxy, 5 x 838sqm / 1,000 = 4.2 cubic metres = 4,200L or 4 x 1,100L

7.4.4 The refuse stores have been sized to accommodate:

- Residential: 8no 1,100L Eurobins (four refuse and four recycling required); and
- Commercial: 5no 1,100L Eurobins (one office and four commercial required required).

7.4.5 Refuse collection will take place via the Service Road, between 6-8am and 6-9pm. If a bollard is implemented, vehicle operatives will be able to lower it and access the Site, driving up to the refuse stores and collecting all refuse.

7.4.6 In scoping discussions with LBRuT it has been agreed that a medium refuse vehicle will be used to undertaken collections from the Site. Drawings 106125-25 and 106125-26 in **Appendix C** demonstrates that this vehicle can safely turn on Site, thereby entering and exiting the Service Road in forward gear. The swept path analysis indicates that the refuse vehicles can drive to within 10m of each refuse store, in line with policy requirements.

8. SUMMARY AND CONCLUSION

8.1.1 SYSTRA Ltd ('SYSTRA') has been commissioned by the London Borough of Richmond upon Thames ('LBRuT', 'the Applicant') to provide transport and highways advice relating to the proposed redevelopment of 1A, 1B King Street and 2/4 Water Lane, the site of the remaining former swimming pool buildings at the corner of Water Lane and The Embankment and the river-facing parcel of land on the Embankment in front of Diamond Jubilee Gardens in Twickenham, London, TW1 3SD ('the Site').

8.1.2 The Site currently comprises 1,217sqm of retail floorspace (A1/A2), 226sqm of office floorspace and a private car park.

8.1.3 The Proposed Development entails the demolition and removal of all existing buildings and structures, to provide a mixed-use development comprising:

- Lower Ground Floor Level: a new vehicular access from the Embankment, parking for 23 cars and 68 cycles and three seasonal units (201sqm);
- Ground Floor Level: 505sqm A3, 250sqm B1, 244sqm A1 and 62sqm flexible commercial floor space, a new public square and areas of public realm;
- First, Second and Third Floors: 39 residential units (18 no. 1 bedroom, 19 no. 2 bedroom and 2 no. 3 bedroom, including 6 no. affordable homes); and
- Public realm improvements, reconfiguration of on-street parking, improved pedestrian access and landscaping and an amendment of service vehicle access.

8.1.4 This Delivery and Servicing Plan ('DSP') accompanies the planning application submitted to the LBRuT, who act as the Local Planning and Highway Authority. The project team has undertaken extensive scoping discussion with LBRuT Officers, with regular design meetings throughout the pre-planning period. A formal pre-application meeting took place with the highways and transport officers on 30 August 2017, which was attended by SYSTRA.

8.1.5 The development proposals have been informed by a review of local, regional and national policy including TfL's Delivery and Servicing Plan Guidance, the Twickenham Area Action Plan and the LBRuT Refuse and Recycling Storage Requirements.

8.1.6 The Site is in Twickenham Town Centre, and is currently serviced from King Street, Water Lane and the private car park on Site. The adjacent developments (King Street retail units and Eel Pie Island) are serviced from King Street, Wharf Lane, the Service Road and the Embankment.

8.1.7 Servicing surveys undertaken at the Site raised highway safety issues with regards to current servicing activity on Wharf Lane and the Service Road, in particular conflicts with non-motorised vulnerable users.

8.1.8 To address these safety concerns, a wide range of options were considered for the servicing and delivery strategy of the Site and of the adjacent King Street commercial units. Given the level and land ownership constraints, on-street servicing was deemed to be the only option which guaranteed the safety of all users.

8.1.9 Therefore, as part of the Proposed Development, the Service Road will be converted to a Service cul-de-sac, with traffic restricted to essential users (refuse collection, residents and

staff and emergencies). A turning head has been provided on Site, allowing vehicles to enter and exit the Service cul-de-sac in forward gear.

8.1.10 Two new loading bays are proposed on Water Lane and Wharf Lane, minimising servicing activity on the cul-de-sac, formalising existing servicing activity on Wharf Lane and ensuring servicing vehicles do not encroach footways and cycle lanes.

8.1.11 Refuse collection will take place on the service cul-de-sac, with waste operatives able to drive to within 10m of the refuse stores.

8.1.12 A servicing trip generation assessment has been undertaken, indicating that the Proposed Development will be serviced by approximately 40 vehicles on a daily basis. The final figure and the type of vehicles are likely to change subject to the final occupiers.

8.1.13 In summary, the servicing and delivery arrangements for the Proposed Developments aim to resolve existing highway safety issues and minimise conflicts with non-motorised users, creating an environment that is less vehicle-dominated, in line with policy requirements.

Transport Survey Note

TWICKENHAM RIVERSIDE

Report

Double-click to insert client logo

Transport Survey Note

TWICKENHAM RIVERSIDE

Report

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Report Record

Job No.	Report No.	Issue No.	Prepared	Verified	Approved	Status	Date
ST16349	02	01	GF	DW	PWJ	Draft	05/08/2016

Contents Amendments Record

Issue No.	Revision description	Approved	Status	Date

Contents

Tables and Figures

Appendices

1 Introduction

GENERAL

1.1 JMP Consultants Limited (JMP) has been commissioned by the Quinlan & Francis Terry Architects, on behalf of the London Borough of Richmond upon Thames ('LBRuT', 'the Client') to provide transport and highways advice relating to the proposed development of Twickenham Riverside between Water Lane, Wharf Lane and the Embankment in Twickenham, London TW1 3SD ('the Site').

1.2 In order to understand the existing baseline conditions at the Site, a number of transport surveys were undertaken. During scoping discussions with LBRuT, it was agreed to conduct the following surveys, as evidenced by the email trail in Appendix A:

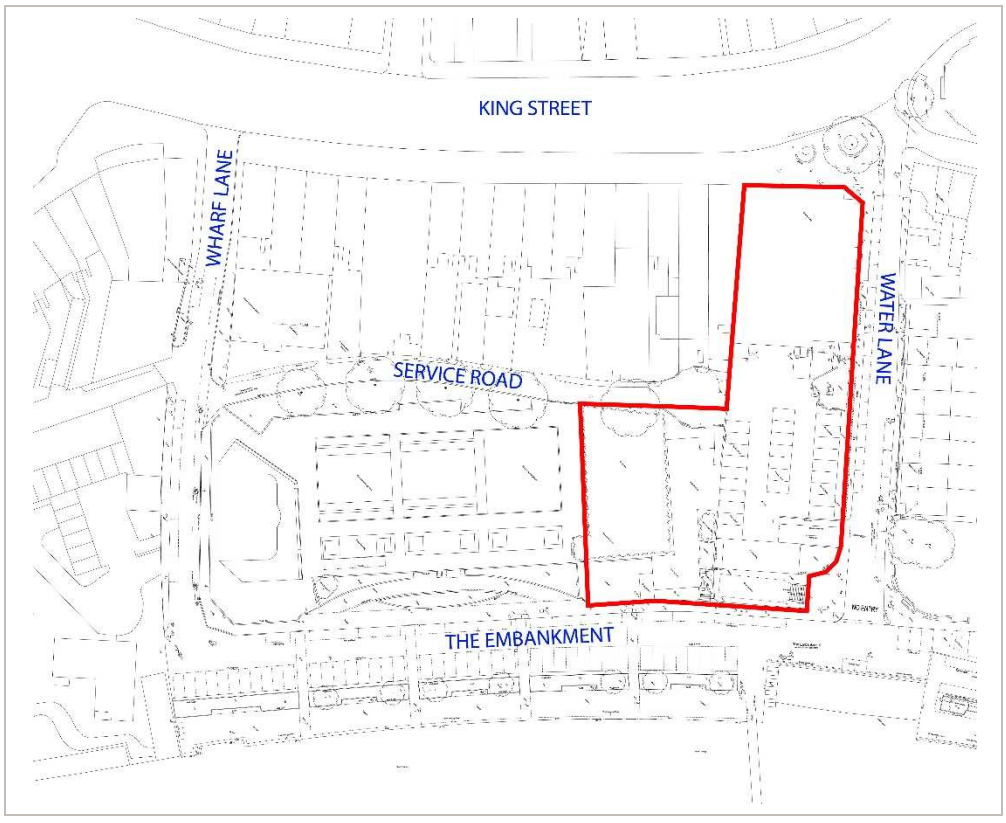
- Overnight and daytime parking surveys;
- Servicing surveys; and
- Traffic surveys.

1.3 The results and findings of these surveys are summarised in this report.

SITE LOCATION

1.4 The Site comprises of a plot of land bounded by King Street to the North, Water Lane to the east, the Embankment to the south and Diamond Jubilee Gardens to the west. The Site boundary and surrounding highway network are shown in Figure 1.1.

Figure 1.1 Site Boundary Plan



REPORT STRUCTURE

1.5 Following this introductory section, this report is structured as follows:

- **Section 2: Parking Surveys** – Presents the findings of the parking surveys;
- **Section 3: Servicing Surveys** – Presents the results of the servicing surveys;
- **Section 4: Traffic Surveys** – Presents the findings of the traffic surveys; and
- **Section 5: Summary** – Summarises the findings of the surveys.

1.6 All technical appendices are included at the end of this report for information.

1.7 Please note that the information contained in section 2 of this report builds on and ultimately supersedes that contained within the *Twickenham Riverside Movement and Parking Study* issued in July 2016.

2 Parking Surveys

SCOPE

Area

2.1 The surveys were conducted in line with the Richmond Parking Survey Methodology outlined in Appendix A of the LBRuT's SPD (included in Appendix B), whereby an initial inventory must be prepared classifying spaces by type (resident only, shared use, pay and display, single yellow line etc.). Figure 2.1 shows examples of signs indicating the parking restrictions in the area.

Figure 2.1 Examples of Parking Restrictions

2.2 The extents of the survey include:

- The Embankment, between Wharf Lane and Water Lane;
- The Water Lane Car Park
- Water Lane;
- Wharf Lane;
- The service road connecting Wharf Lane and Water Lane; and
- The section of London Road between York Street and Holly Road (for the overnight survey).

2.3 The other streets within 200m were not included due to the parking restrictions along them (in line with Richmond Parking Methodology and in agreement with LBRuT).

Timings

2.4 The following parking beats were agreed with LBRuT in order to quantify both the overnight (residential) and daytime (visitor / shopper) demand:

- Wednesday 4 November 2015
  - 5-6am;
  - 8-10am; and
  - 3-5pm;
- Saturday 7 November 2015: 12-1pm;

- Thursday 30 June 2016: 2-5am; and
- Sunday 3 July 2016: 2-5am.

2.5 During all beats, resident and non-resident vehicles were counted separately, in order to better understand demand by the defined user.

INVENTORY

2.6 The Site and the surrounding area are part of Controlled Parking Zone (CPZ) D "Central Twickenham", which operates Monday-Friday 8:30-18:30. The CPZ map is included in Appendix C.

2.7 A parking inventory was prepared for the area, following the Richmond methodology, whereby each bay is measured to be 5.5m in length. The inventory is summarised in Figure 2.2.

Figure 2.2 Parking Inventory (Marked Bays)

2.8 In addition to the bays shown above, the overnight beats included single yellow lines on:

- London Road (4 spaces);
- The Embankment (11 spaces);
- Service Road (28 spaces);
- Water Lane (3 spaces); and

- Wharf Lane (16 spaces).

2.9 Double yellow lines were also surveyed, but there were no vehicles parked on them during any of the beats. Hence, they have been discounted from this analysis.

2.10 The motorcycle bay on Water Lane, which has capacity for up to eight motorcycles, had a maximum occupancy of three vehicles. It has been discounted from this analysis.

RESULTS

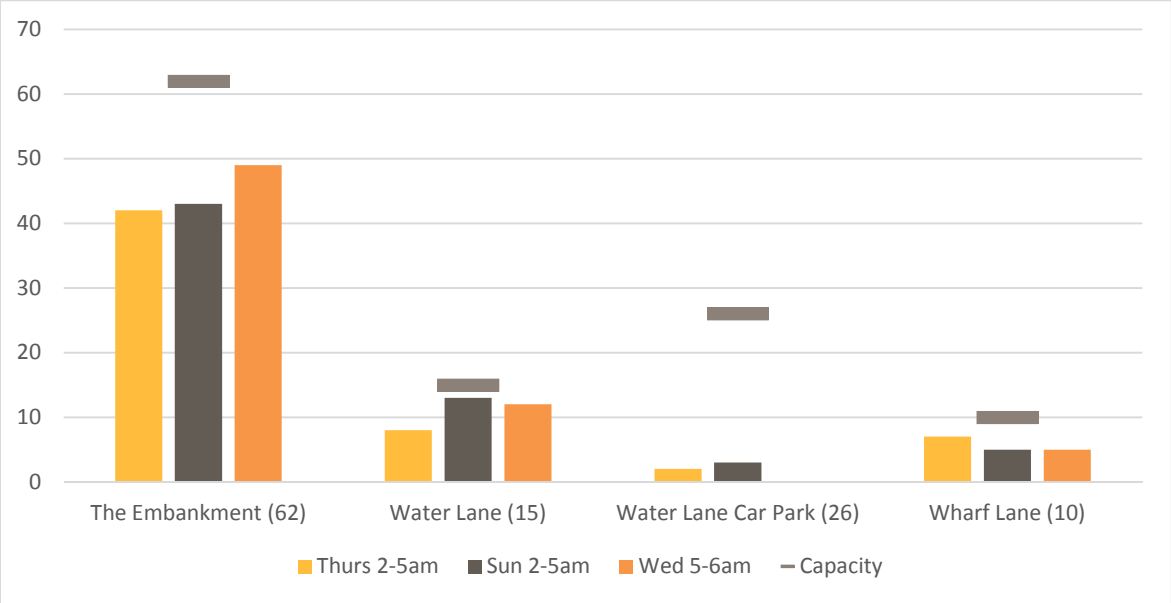
Overnight Occupancy by Road

2.11 As stated above, vehicles can park on single yellow lines overnight. However, these vehicles would have to be moved early in the morning. During the parking beats, the only road where vehicles parked on the single yellow lines was the Service Road. In both the Wednesday and Sunday beat there were two vehicles parked on the single yellow lines, whilst in the Thursday beat there was only one.

2.12 As the inventory indicates that the single yellow lines have capacity for up to 62 vehicles, including these in the occupancy calculations would considerably affect the data. As such, the single yellow line demand and supply has been discounted.

2.13 The overnight parking demand is shown in Figure 2.3. The figure in brackets on the x axis indicates the capacity along each street. The total overnight capacity in the survey area (not including the single yellow lines) is 113 vehicles.

Figure 2.3 Overnight Parking Demand



2.14 The Richmond Parking Methodology states 90% as the threshold above which parking is considered saturated. The graph shows that there is some spare capacity on all the roads. Water Lane is the most utilised (87% max), followed by the Embankment (79%).

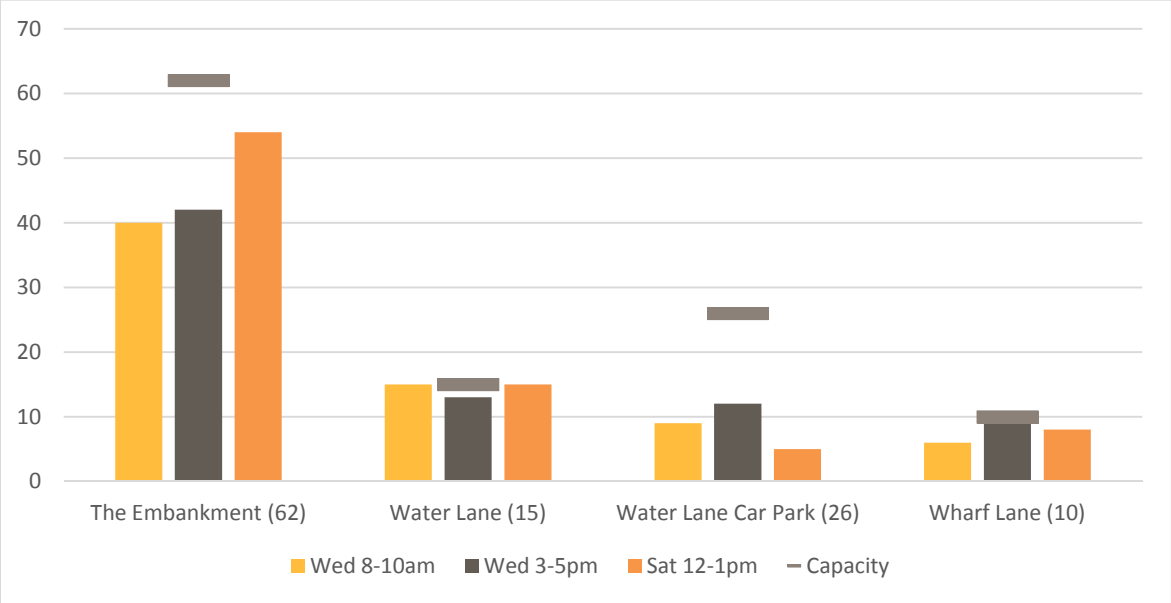
2.15 Even during the busiest beat (Wednesday) there were 66 parked cars and 47 empty bays, a parking stress of 58%, which is well below the threshold.

2.16 If we discount the Water Lane Car Park, which is reserved to private permit holders, the maximum occupancy is 76% (66 of 87 bays occupied), meaning that an additional demand of 12 vehicles can be accommodated without reaching the 90% threshold.

Daytime Occupancy by Road

2.17 The daytime parking demand is shown in Figure 2.4. As no vehicles can park on the single yellow lines, the total daytime capacity is 113 spaces.

Figure 2.4 Daytime Parking Demand



2.18 The daytime occupancy is slightly higher than the one in the overnight survey. The highest occupancy levels are Water Lane (87-100%) and Wharf Lane (100% in the afternoon beat). The occupancy on the Embankment reaches a peak of 87% in the weekend beat.

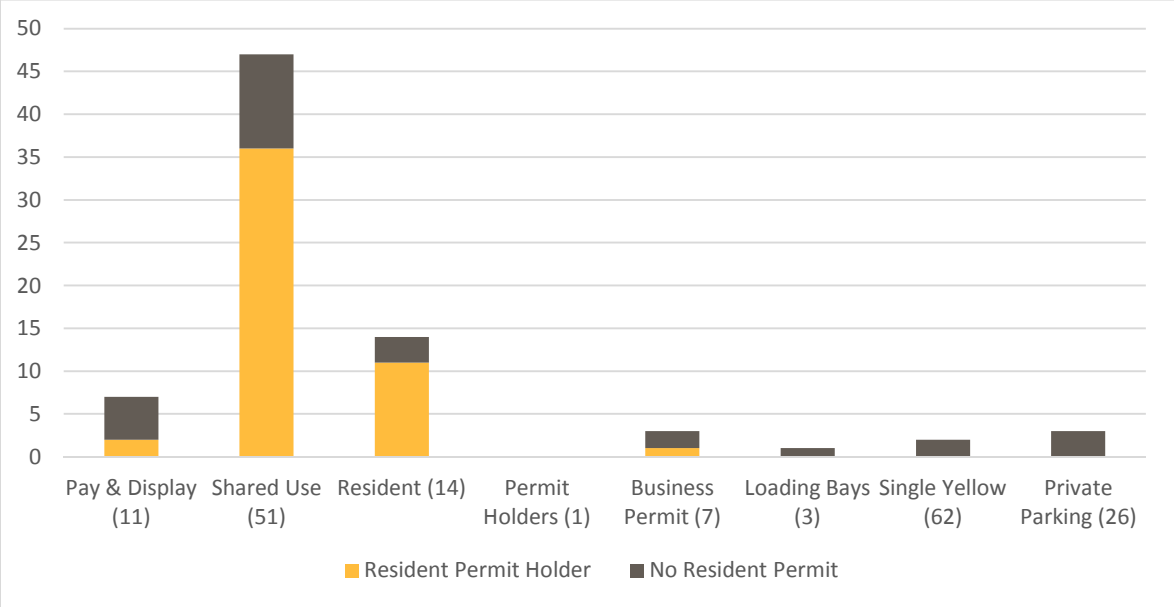
2.19 The busiest beat is the weekend survey (91 parked vehicles), with an occupancy of 80%, still comfortably below the 90% threshold.

2.20 If the private bays in the car park are discounted, the occupancies in the three beats become 70%, 75% and 89%, indicating there is spare capacity in a weekday but not on the weekend.

Occupancy by Restriction

2.21 In order to further assess the overnight utilisation, Figure 2.5 shows the maximum overnight parking demand per parking restriction.

Figure 2.5 Maximum Overnight Parking Demand per Parking Restriction

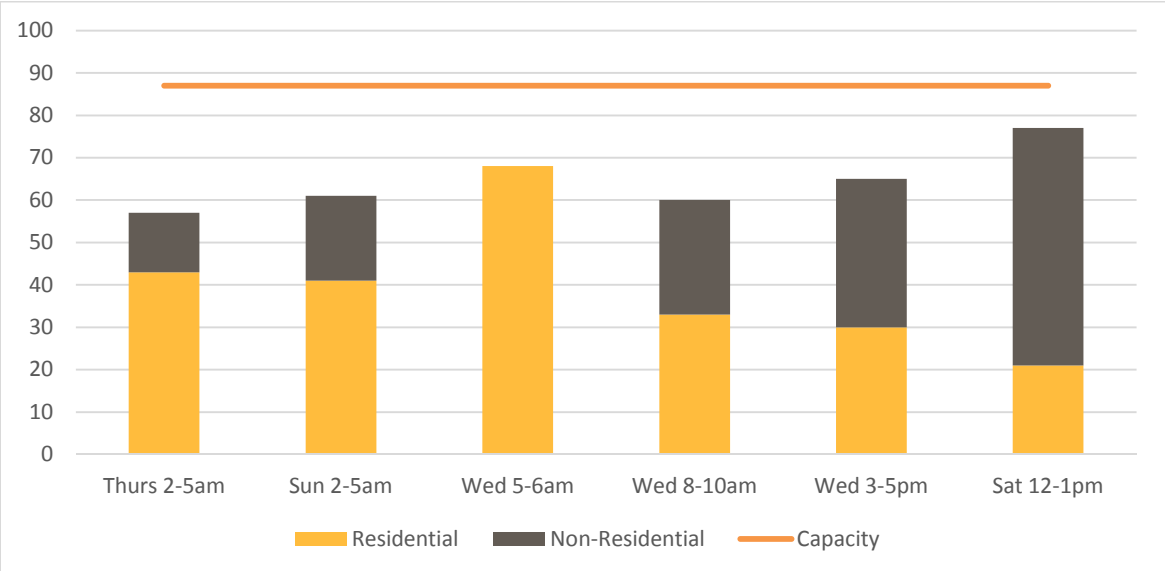


2.22 It is noted that the bays with the highest utilisations are the resident only bays (100% occupied) and shared use bays (92%). As previously discussed, the single yellow (8%) and private parking bays (11%) show very low occupancies.

Occupancy by User

2.23 A further analysis is conducted in Figure 2.6 to determine the balance between resident and non-resident demand. The single yellow lines and private parking spaces are not taken into account, for a total capacity of 87 bays.

Figure 2.6 Parking Demand by User



2.24 The data above shows that the greatest demand for parking is on the weekend, with a peak occupancy of 89%. During this beat, 73% of the demand was by non-residents. Unsurprisingly, the overnight bays

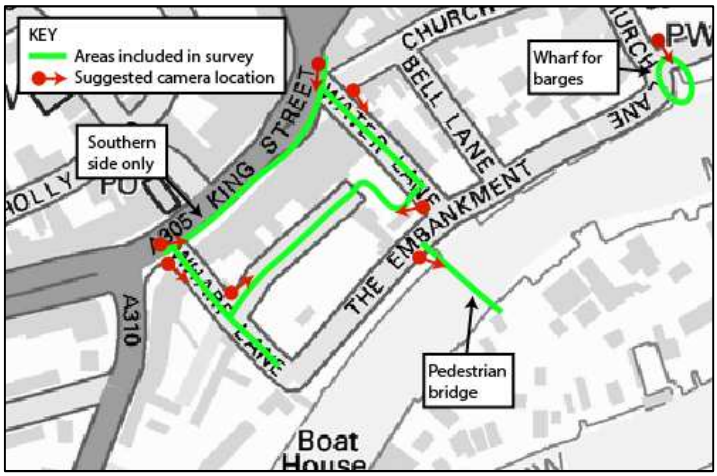
show a much higher proportion of resident demand, but the occupancy peaks at 78%, well below the 90% threshold.

3 Servicing Survey

SCOPE

3.1 The scope of the servicing survey was agreed to include servicing on Water Lane, Wharf Lane, King Street, the Service Road, the footbridge to Eel Pie Island and at the dock for Eel Pie Island. The location of the cameras is shown in Figure 3.1.

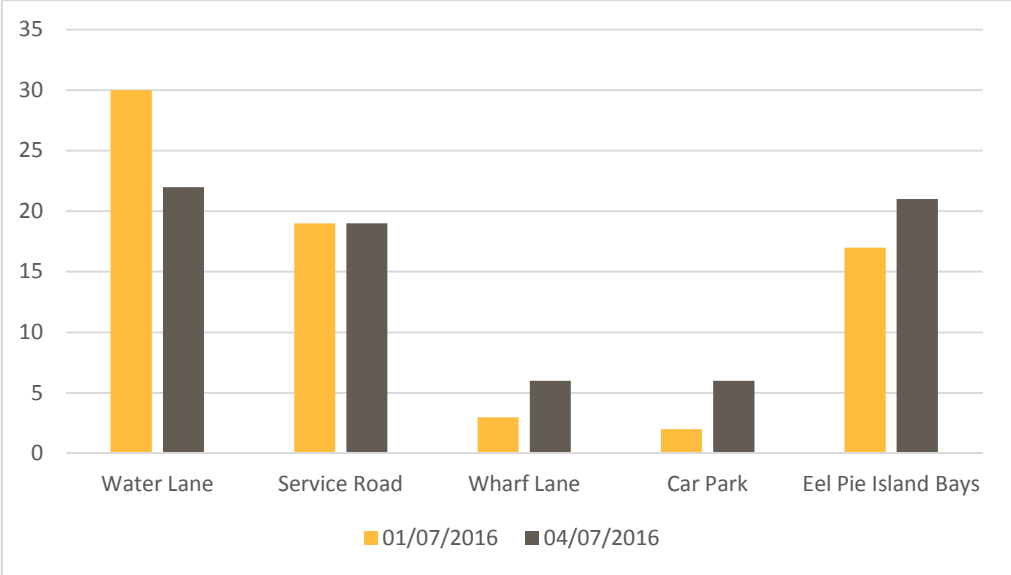
Figure 3.1 Servicing Survey Camera Location



RESULTS

3.2 Data has been analysed for Friday 1 July and Monday 4 July 2016. The number of servicing trips by location is shown in Figure 3.2.

Figure 3.2 Servicing Trips by Location



3.3 The data shows that the majority of servicing vehicles stop on Water Lane, on the service road and on the Eel Pie Island loading bays. Similar levels of servicing activity were recorded on the two days.

Eel Pie Island Dock

3.4 The Eel Pie Island dock data was analysed separately, with an entire week of video footage analysed (1-7 July 2016). Throughout this time, only one boat arrived at the dock (Tuesday 5 July at 3:41pm), carrying waste from the island. The following morning (08:42), a skip lorry arrived to pick up the waste and take it away (leaving at 08:56). Approximately 20 minutes later, another lorry arrived and loaded the boat with timber (09:01-09:41). The boat then left for the Island in the afternoon (4:23pm).

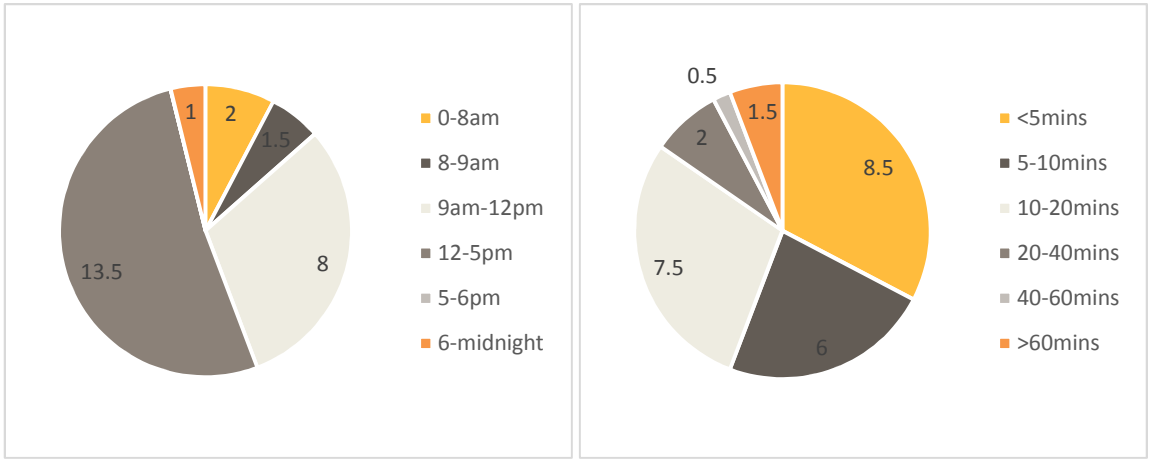
Water Lane

3.5 The average number of vehicles stopping to service on Water Lane was 26 per day. The vehicles usually stop on the single yellow lines on the eastern side of the road, north of the parking bays. In several cases the vehicles stop to the south of the parking bays, but rarely on the western side of the road. In some cases, the drivers park in the pay and display parking bays

3.6 In the vast majority of cases, the drivers park and then walk towards King Street. Very few servicing and delivery trips are associated with units on Water Lane.

3.7 The average number of servicing vehicles arriving per time of day and the duration of each stop are presented in Figure 3.3.

Figure 3.3 Water Lane Average Servicing Trips by Time of Day (left) and Duration (right)

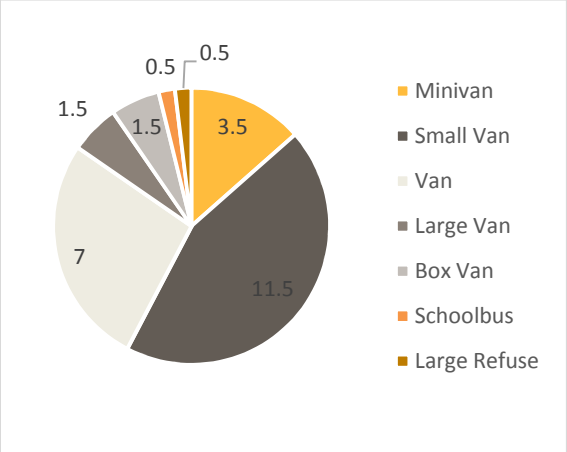


3.8 The data shows that over 50% of the trips take place between 12 and 5pm, with another 30% taking place between 9am and 12pm. Very few trips take place in the peak hours (two per day in the AM peak, none in the PM peak).

3.9 The chart on the right shows that 56% of vehicles stop for less than ten minutes, with a further 30% stopping for between ten and 20 minutes. Only four vehicles per day stop for over 20 minutes.

3.10 The type of vehicle undertaking the servicing trip is shown in Figure 3.4.

Figure 3.4 Water Lane Average Servicing Trips by Vehicle Type



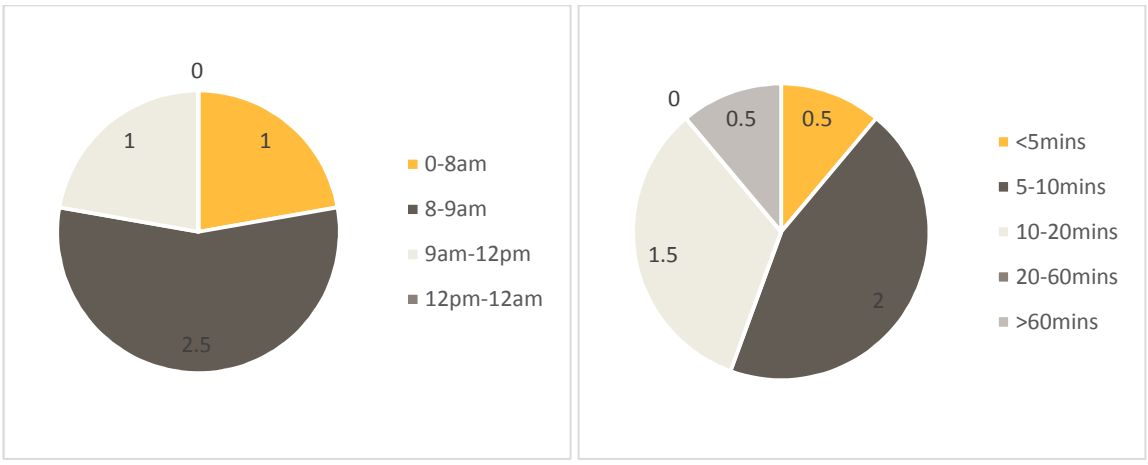
3.11 The data shows that 58% of the servicing vehicles stopping on Water Lane are minivans or small vans. The largest vehicles stopping on Water Lane are box vans and large refuse vehicles, only totalling 2 servicing stops per day.

Wharf Lane

3.12 The average number of servicing trips on Wharf Lane was 4.5 per day. The vast majority of these take place on the northern side of the road, adjacent to the Iceland servicing entrance, either on the western side of the road (when the parking bays are empty), or on the eastern side of the road (on the kerb, blocking the contraflow cycle lane).

3.13 The average number of servicing vehicles arriving per time of day and the duration of each stop are presented in Figure 3.5.

Figure 3.5 Wharf Lane Average Servicing Trips by Time of Day (left) and Duration (right)



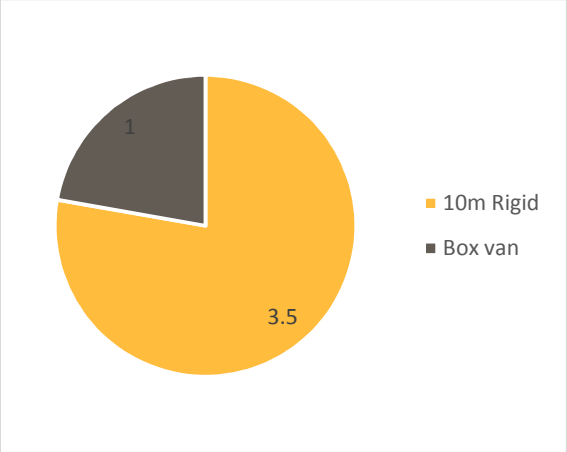
3.14 The graph on the left shows that 2.5 trips per day take place in the morning peak hour. No trips take place after midday. The chart on the right shows that most vehicles stop for less than ten minutes.

3.15 During the surveys, there was one instance of the servicing vehicles blocking Wharf Lane (for four minutes) when the bays were occupied and two vehicles (one delivery and one refuse) were servicing simultaneously (see Figure 3.6).

Figure 3.6 Wharf Lane Servicing – Road Blocked

3.16 The type of vehicle undertaking the servicing trip is shown in Figure 3.7.

Figure 3.7 Wharf Lane Average Servicing Trips by Vehicle Type



3.17 The data for vehicle types is very different from that on the surrounding streets, with most of the vehicles being 10m rigid vehicles servicing Iceland (Kingsmill, Muller, Warburtons). All these vehicles reach Water Lane via the Embankment.

3.18 During the Site visit, an articulated vehicle struggled to exit Wharf Lane and join King Street due to the presence of a bollard on the footway (see Figure 3.8). The driver had to ask the vehicles behind it to reverse in order to perform the manoeuvre again.

Figure 3.8 Wharf Lane Servicing – Vehicle Stuck at King Street junction

Service Road and Car Park

3.19 The average number of servicing trips on the Service Road and car park were 19 and 3 per day respectively.

3.20 Vehicles can reach the service road and car park either from Water Lane or from Wharf Lane. From the survey it appeared that these routes are both utilised to the same degree.

3.21 Given the tight kerb radius to enter the car park from Water Lane, the largest vehicles (10m rigid and some refuse vehicles) tend to prefer reversing into the service road from Wharf Lane. This is a difficult manoeuvre and presents a potential safety hazard – especially when vehicles reverse along the entire service road to reach the car park (see Figure 3.9).

Figure 3.9 Service Road – Large Vehicle Reversing

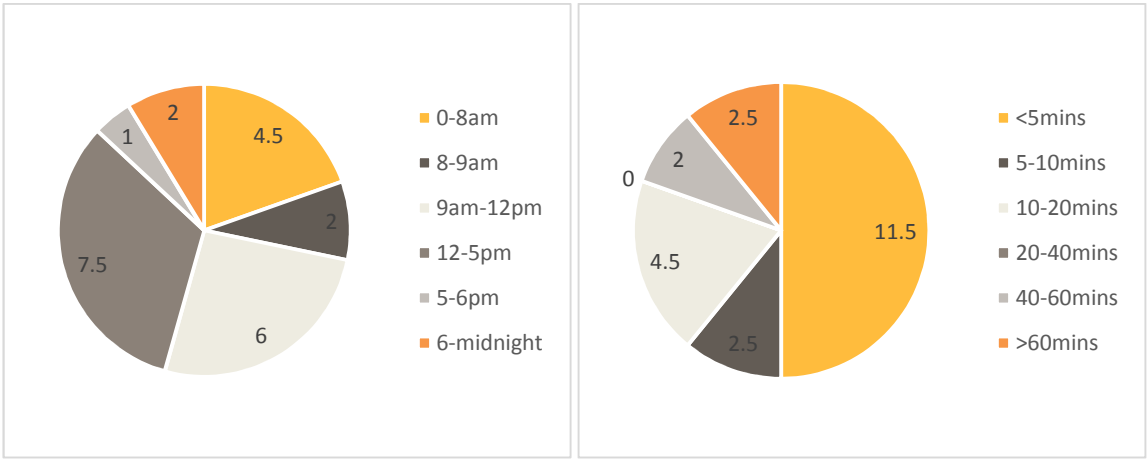
3.22 When exiting the service road onto Wharf Lane, the larger vehicles have to overrun the kerb (see Figure 3.10). In some cases they have to perform complex manoeuvres with 3, 5 or even 7-point turns.

Figure 3.10 Service Road – Large Refuse Overrunning Kerb

3.23 Along the servicing road there are loading bays allocated to individual retail units, which are used by the smaller vehicles (up to a van) to service. Some smaller vehicles were seen to be stopping on the kerb, allowing vehicles to pass. However, the large vehicles (10m rigid or large refuse) cannot be accommodated in the bays and they occupy the entire width of the street, thus not allowing any vehicles through.

3.24 The average number of servicing vehicles arriving per time of day and the duration of each stop are presented in Figure 3.11.

Figure 3.11 Service Road and Car Park Average Servicing Trips by Time of Day (left) and Duration (right)



3.25 The graph on the left shows a fairly even distribution of trips throughout the day, with 4.5 trips in the early morning, 2 and 1 in the peak hours and the majority (61%) between 9 and 5.

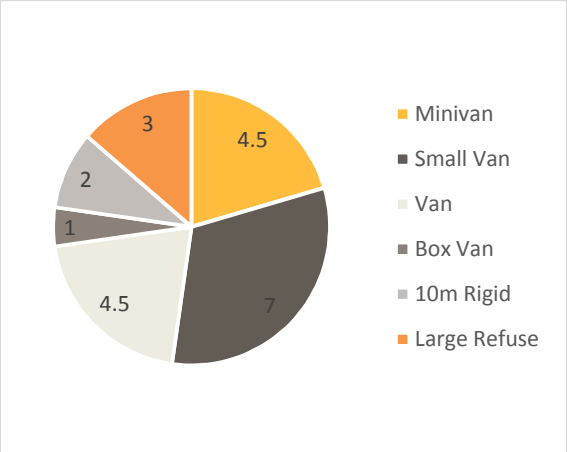
3.26 The chart on the right shows that almost half of the trips last below 5 minutes and only 4.5 each day stop for more than 40 minutes. Duration of stay is particularly important for trips in the service road, as they can lead to blocking back.

3.27 The longest instances of road blockage recorded were:

- Friday 11:03am to 12:10pm – 10m rigid vehicle (Bidvest Logistics) reverses into the service road from Wharf Lane;
- Monday 08:57-09:11am – Large refuse vehicle reverses into the service road from Wharf Lane;
- Monday 10:35-10:51am – 10m rigid vehicle reverses into the service road from Wharf Lane; and
- Monday 13:11-14:13 – 10M rigid vehicle (Bidvest Logistics) reverses into the service road from Wharf Lane.

3.28 The type of vehicle undertaking the servicing trip is shown in Figure 3.12.

Figure 3.12 Servicing Road and Car Park Average Servicing Trips by Vehicle Type



3.29 The data shows that, whilst the majority of trips are undertaken by small vehicles, there are several trips made each day by 10m rigid or large refuse vehicles which are difficult to accommodate in the narrow road.

Eel Pie Island Loading Bays

3.30 There are three loading bays adjacent to the footbridge to Eel Pie Island. These are reserved for loading between 8:30am and 6:30pm Mon-Sat, with a maximum stay of 1 hour and no return within 1 hour.

3.31 The average number of servicing stops on the Eel Pie Island loading bays was 19 per day.

3.32 The surveys show that the bays are often used by private cars, and several tickets were seen to be issued by ticket officers. In some cases, the loading bays were fully occupied (by non-loading activity) and the servicing vehicles had to stop on the single yellow lines to the east of the footbridge. Only at one point in the two days were all three bays simultaneously occupied by servicing vehicles, indicating the current provision of three bays is adequate.

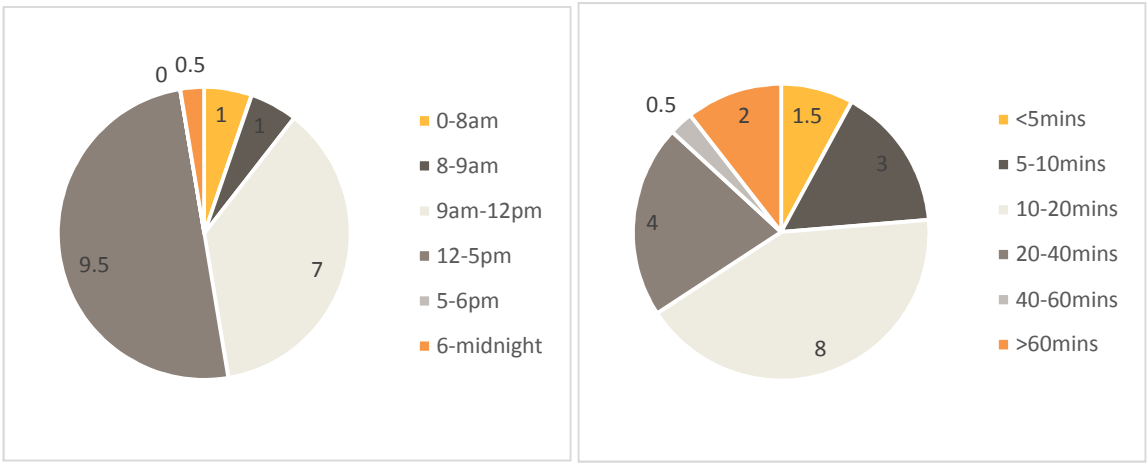
3.33 Vehicles larger than a large van cannot be accommodated in the loading bays, and have to stop on the single yellow lines.

3.34 Once the vehicles have parked, the items are usually carried by hand over the footbridge and onto the island. When the items are particularly bulky, they are trundled over on small carts.

3.35 There were some cases (one or two per day) in which the vehicle stopped in the bays but the servicing was not associated with the Island.

3.36 The average number of servicing vehicles arriving per time of day and the duration of each stop are presented in Figure 3.13.

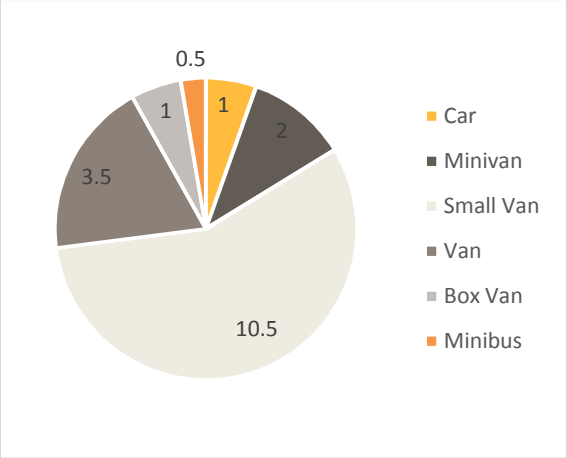
Figure 3.13 Eel Pie Island Loading Bays Average Servicing Trips by Time of Day (left) and Duration (right)



3.37 The graph on the left shows that 95% of trips take place outside of the network peak hours, with a similar split between morning (47%) and afternoon (53%). The chart on the right shows that most vehicles stop for between 10-40 minutes, as items have to be trolleyed over the footbridge and onto the island.

3.38 The type of vehicle undertaking the servicing trip is shown in Figure 3.14.

Figure 3.14 Eel Pie Island Loading Bays Average Servicing Trips by Vehicle Type



3.39 The majority of servicing vehicles are small vans, with only 1 daily trip made by a box van.

ISSUES AND OPPORTUNITIES

3.40 The existing servicing arrangements on Water Lane, Wharf Lane and for Eel Pie Island are adequate and do not pose any highway safety issues. Additional signage or road markings indicating the restrictions on the Eel Pie Island loading bays could help enforcement.

3.41 However, the arrangements on the servicing road do not appear safe. Large vehicles have to reverse over long distances and with poor visibility along a very narrow street. Furthermore, large vehicles block the roads, create queuing and overrun kerbs on Wharf Lane.

3.42 In order to improve the servicing arrangements, the following could be proposed as part of the development:

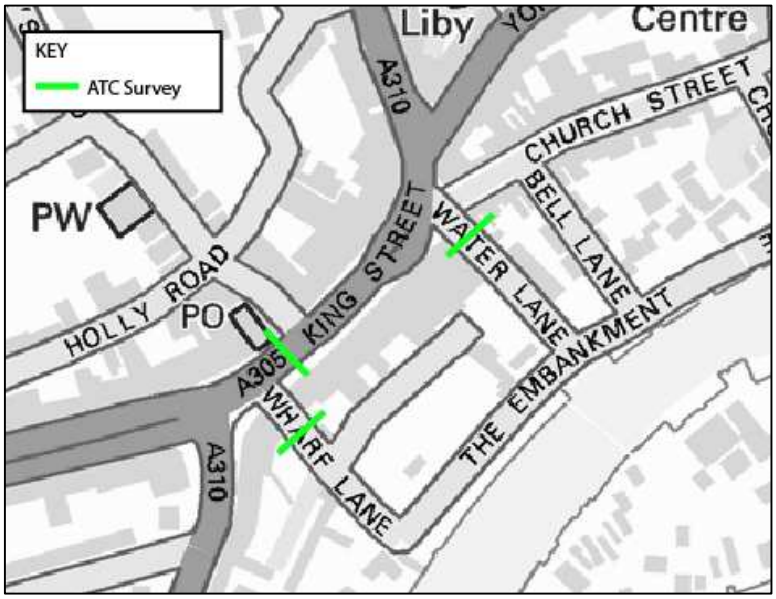
- The service road could be made one-way, eliminating potential conflicts between vehicles;
- The access to the service road from Water Lane should be improved, with a wider radius catering to large vehicles, eliminating the need for them to reverse along the road;
- The kerb on the northern side of the Wharf Lane / Service Road junction should be amended so that vehicles do not have to overrun it;
- A dedicated loading area could be provided on the western side of Wharf Lane, opposite the Iceland servicing access, so that vehicles do not have to mount the eastern kerb and block the advisory cycle lane;
- Double yellow lines and no stopping restrictions should be introduced and enforced on the service road, so that it is not blocked at any time; and
- 3 clearly marked loading bays could be provided for Eel Pie Island, meeting the current requirements. One bay will be large enough to cater to a 10m rigid vehicle, eliminating the need for them to service on the single yellow lines (as is currently done).

4 Traffic Surveys

SCOPE

4.1 Automatic Traffic Count (ATC) surveys were conducted on King Street, Water Lane and Wharf Lane, at the locations shown in Figure 4.1.

Figure 4.1 ATC Survey Location



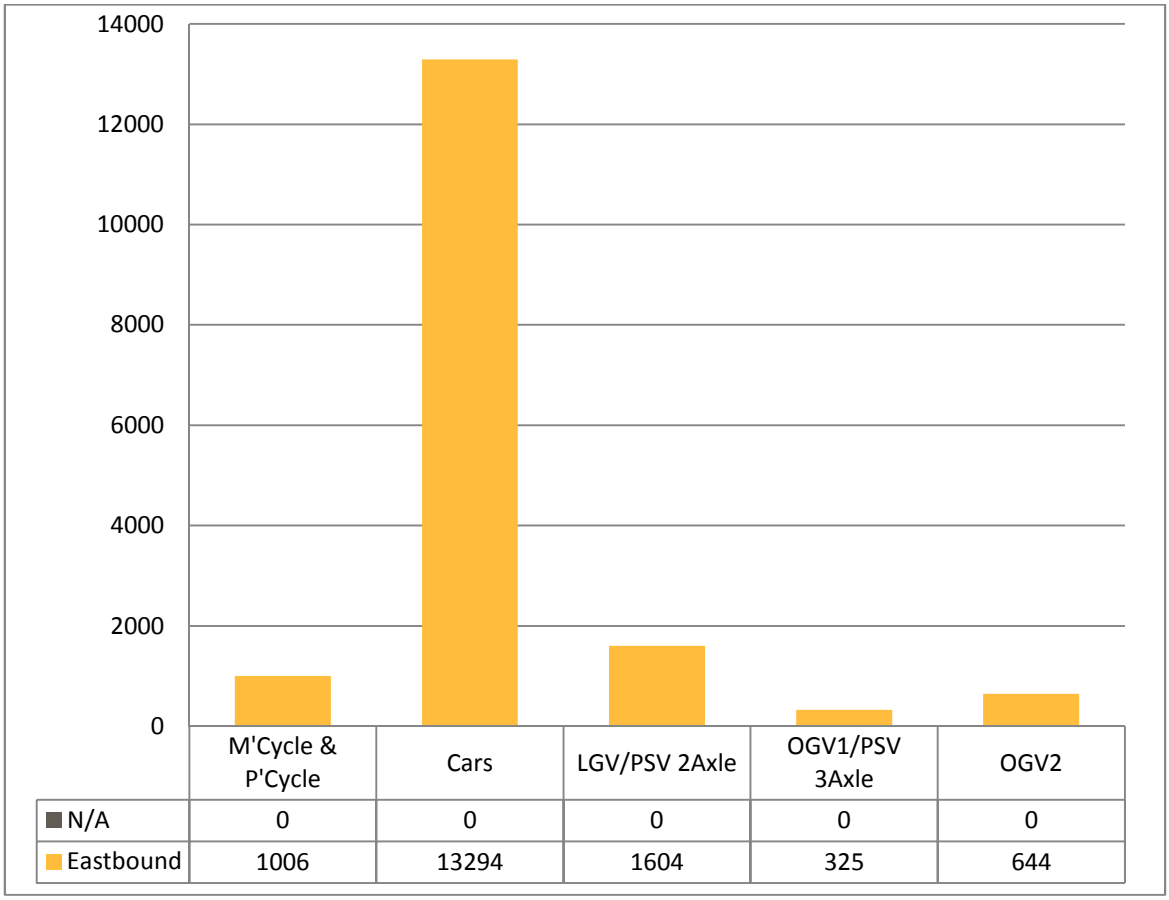
4.2 Data was collected for 168 hours between 2 July and 8 July 2016.

RESULTS

King Street (Eastbound)

4.3 The eastbound vehicle flows on King Street are presented in Figure 4.2.

Figure 4.2 King Street Eastbound – Weekday Average Flows



4.4 The weekday average flow was in the region of 16,900 road users. Cars accounted for 79% of vehicles, LGV's 10% and motorcycles and pedal cycles 6%.

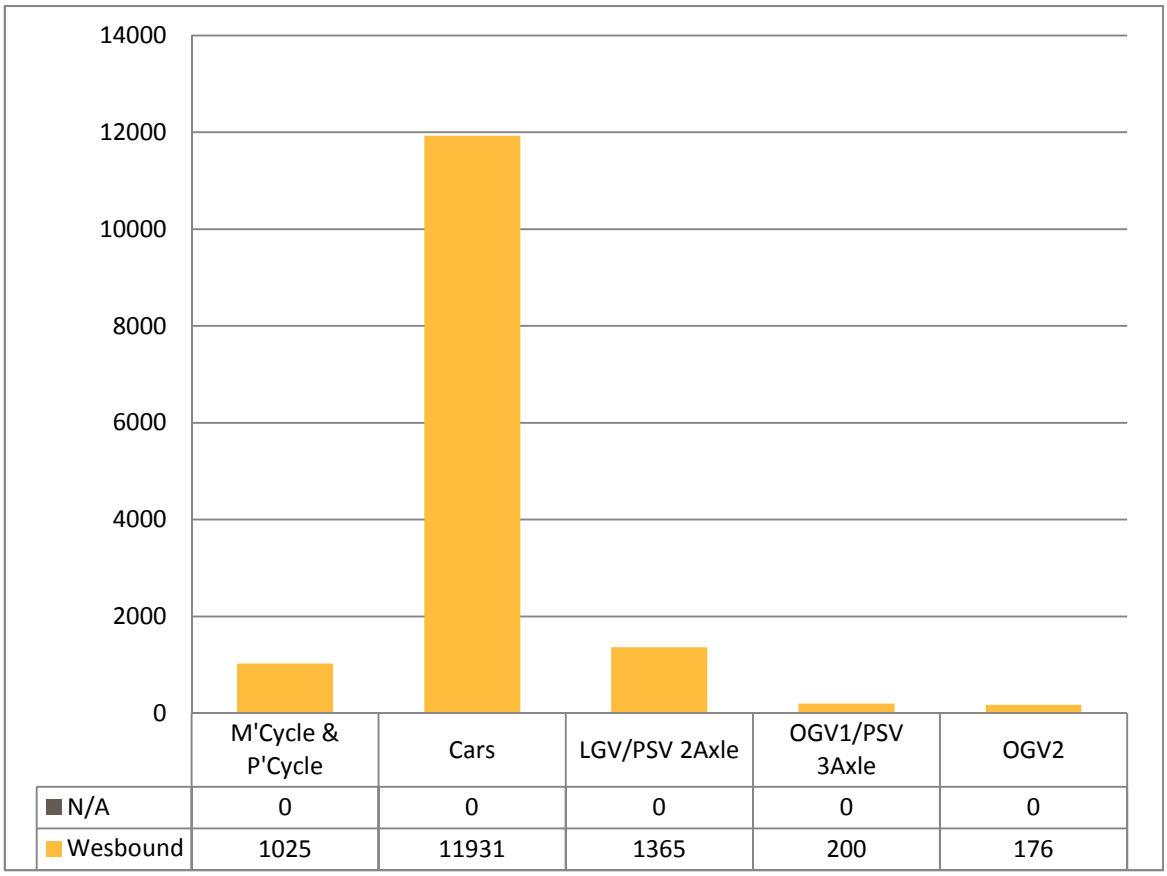
4.5 The peak hourly flow was 1,206 movements recorded between 6:45-7:45, whilst the PM peak (1,096) was between 18:15-19:15.

4.6 The 85th percentile speed recorded was 23.5mph, with only 1% over the 30mph speed limit.

King Street (Westbound)

4.7 The westbound vehicle flows on King Street are presented in Figure 4.3.

Figure 4.3 King Street Westbound – Weekday Average Flows



4.8 The weekday average flow was in the region of 14,700 road users, significantly lower than the eastbound one. Cars accounted for 81% of vehicles, LGV's 9% and motorcycles and pedal cycles 7%.

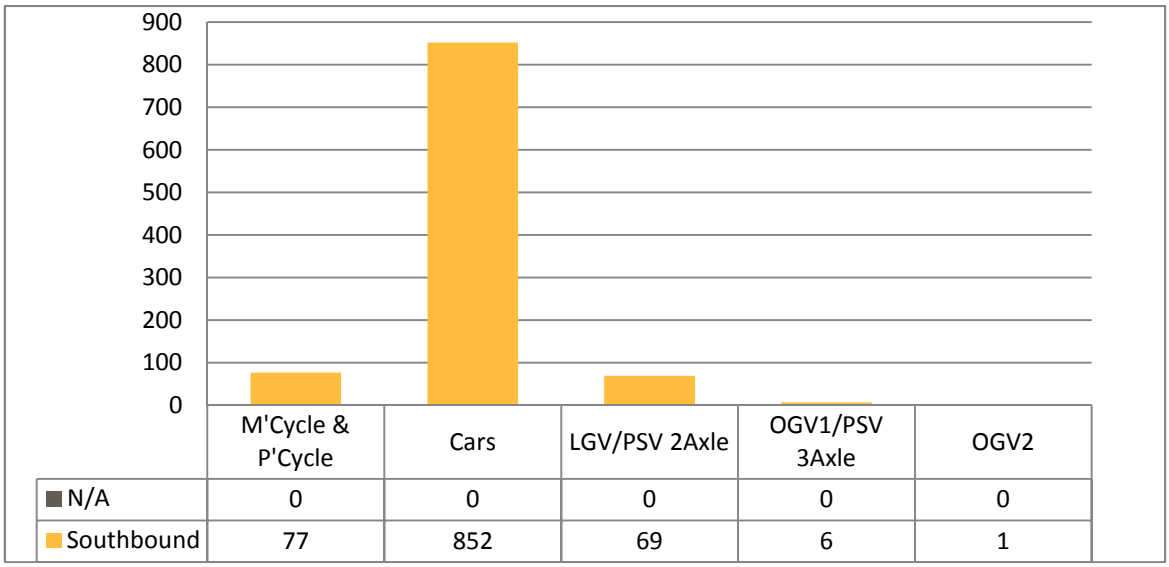
4.9 The peak hourly flow was 1,056 movements between 17:00-18:00, whilst the AM peak (984) was between 7:30-8:30.

4.10 The 85th percentile speed recorded was 24.1mph, with only 1% over the 30mph speed limit.

Water Lane

4.11 The vehicle flows on Water Lane are presented in Figure 4.4.

Figure 4.4 Water Lane – Weekday Average Flows

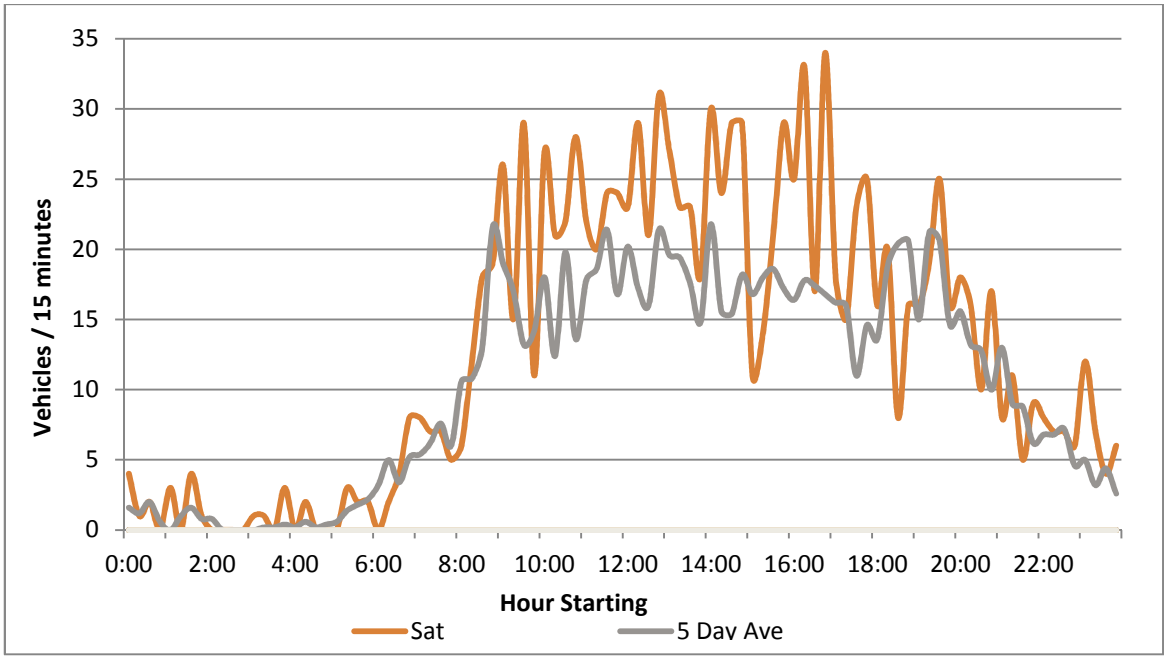


	M'Cycle & P'Cycle	Cars	LGV/PSV 2Axle	OGV1/PSV 3Axle	OGV2
N/A	0	0	0	0	0
Southbound	77	852	69	6	1

4.12 The average weekday flow on Water lane was approximately 1,000 road users. Cars accounted for 85% of vehicles, LGV's 7% and motorcycles and pedal cycles 8%. The six OGV1s are in line with the number observed in the servicing surveys.

4.13 The weekday peak hourly flow of 78 movements was recorded between 12:45 and 13:45. Traffic flows were fairly even throughout the day, with the Saturday flows being the highest overall (see Figure 4.5).

Figure 4.5 Water Lane – Weekday Average Flows

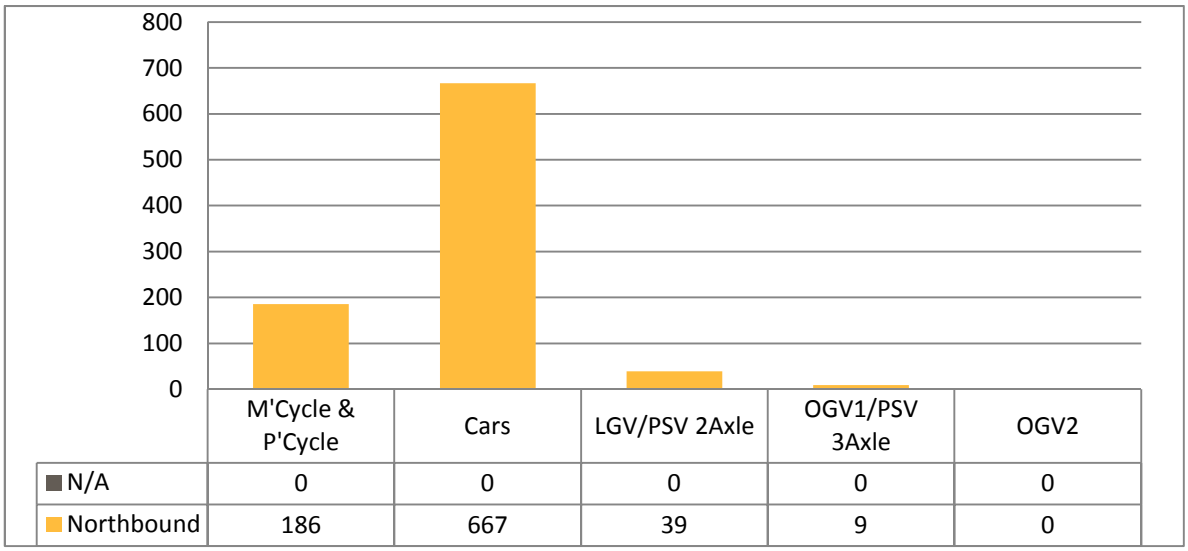


4.14 The 85th percentile speed recorded was 12.4mph, with no vehicles over the 20mph speed limit.

Wharf Lane

4.15 The vehicle flows on Wharf Lane are presented in Figure 4.6.

Figure 4.6 Wharf Lane – Weekday Average Flows



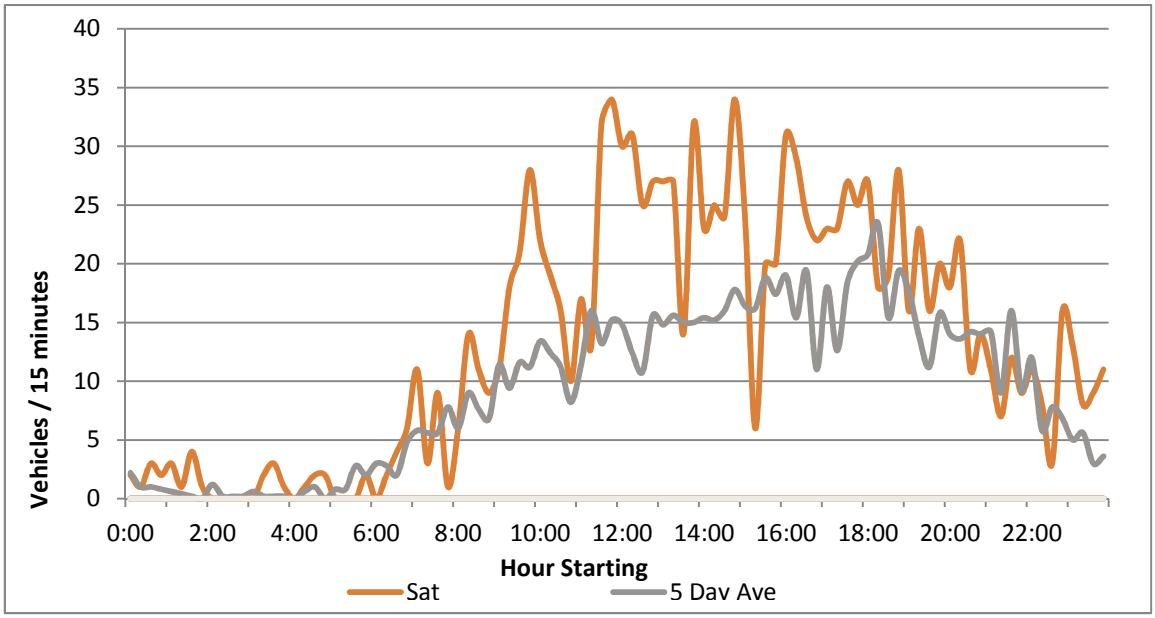
	M'Cycle & P'Cycle	Cars	LGV/PSV 2Axle	OGV1/PSV 3Axle	OGV2
N/A	0	0	0	0	0
Northbound	186	667	39	9	0

4.16 The weekday average flow on Wharf Lane was 900 road users, slightly lower than the one on Water Lane. Cars accounted for 74% of vehicles, LGV's 4% and motorcycles and pedal cycles 21%, showing the popularity of the contraflow cycle lane.

4.17 The peak weekday hourly flow of 83 movements was recorded between 17:30 and 18:30, with no detectable AM peak.

4.18 The highest vehicle flows were recorded on Saturday, and are shown in Figure 4.7.

Figure 4.7 Wharf Lane – Flow by Time of Day



4.19 The 85th percentile speed recorded was 15.8mph, with 3% over the 20mph speed limit.

Other Observations

4.20 During the site visit and in the video survey analysis it was noticed that some vehicles drive northbound along Water Lane, in order to turn right onto the eastbound carriageway of King Street. This dangerous manoeuvre was seen to be performed by two vehicles on the 1 July and three people on the 4 July.

5 Summary

5.1 JMP Consultants Limited (JMP) has been commissioned by the Quinlan & Francis Terry Architects, on behalf of the London Borough of Richmond upon Thames ('LBRuT') to provide transport and highways advice relating to the proposed development of Twickenham Riverside between Water Lane, Wharf Lane and the Embankment in Twickenham, London TW1 3SD ('the Site').

5.2 To inform the transport strategy for the Site, the following surveys were undertaken, in agreement with LBRuT:

- Overnight and daytime parking surveys;
- Servicing surveys; and
- Traffic surveys.

5.3 The Site and the surrounding area are part of a Controlled Parking Zone (CPZ) D "Central Twickenham", which operates Monday-Friday 8:30-18:30. The bays surrounding the site are a mix of residents only, pay & display, shared use, business permit holder and loading bays. The single yellow lines and private parking bays have been discounted from the analysis.

5.4 The parking surveys data shows that there is considerable spare capacity overnight, with a peak occupancy of 78%. On Saturdays, the occupancy reaches up to 89%, just below the Richmond threshold of 90%. The vast majority of the weekday demand (72%) is generated by shoppers and visitors.

5.5 The majority of the servicing activity in the area takes place on Water Lane (up to 30 trips), on the Service Road (19) and on the Eel Pie Island loading bays (up to 21).

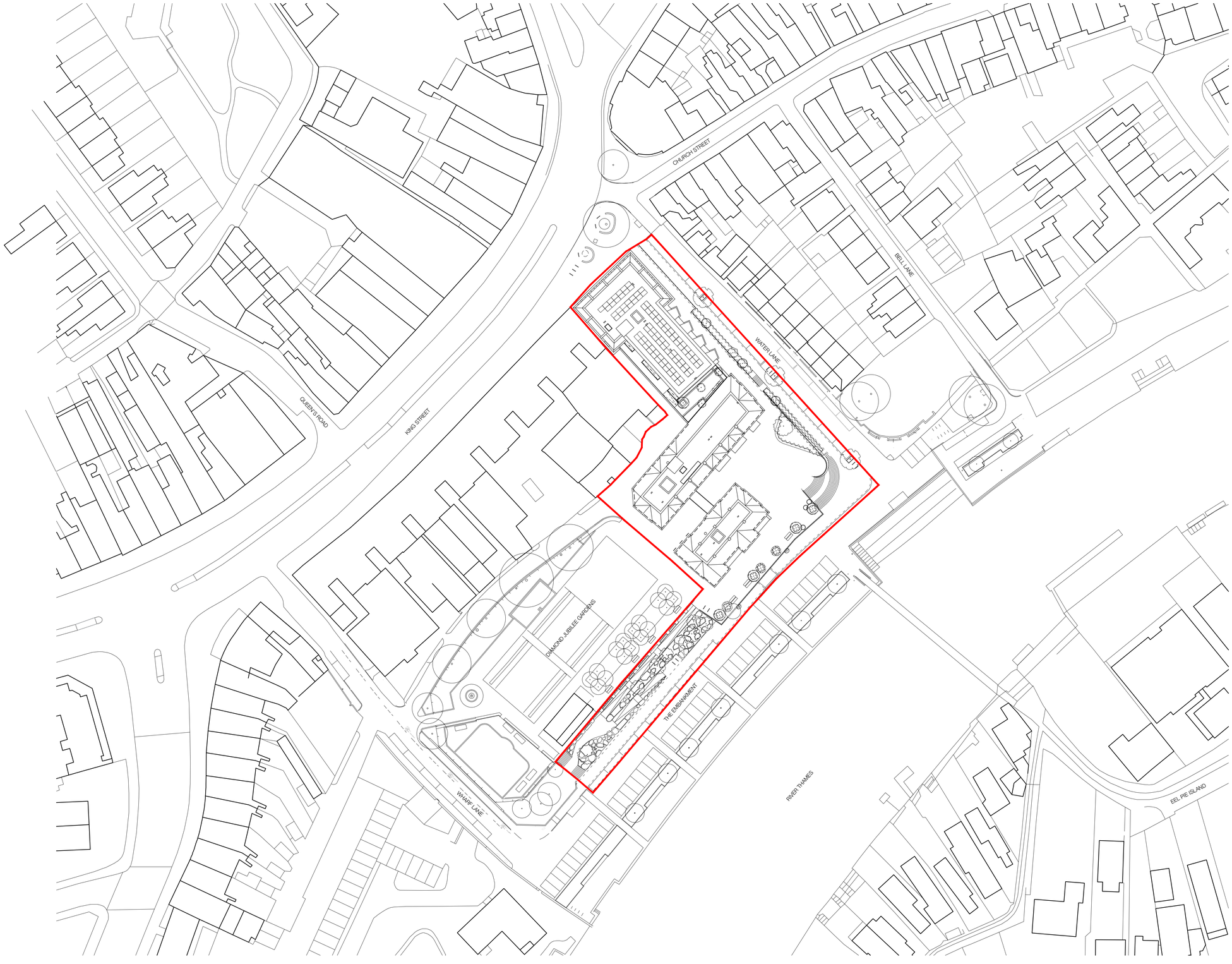
5.6 Most of the servicing activity takes place on single yellow lines, with minivans and small vans stopping for a short period of time. On Wharf Lane there 3-4 servicing trips per day made by 10m rigid vehicles servicing the Iceland Supermarket. These vehicles usually stop on the kerb, blocking the contraflow cycle lane.

5.7 The geometry of the Service Road is such that 10m rigid and large refuse vehicles have to reverse down it and block it. When exiting it onto Wharf Lane they have to undertake a complex manoeuvre and overrun the kerb.

5.8 The traffic surveys indicate that the main flow along King Street is eastbound. The flows on Wharf Lane and Water Lane are in the region of 900-1,000 vehicles per day, with the highest flows recorded on Saturday.

5.9 The proportion of cyclists is 7-8% on most roads, with the exception of Wharf Lane where it is 21%. The data suggests that speeding could be an issue on Wharf Lane, whilst there were several instances of vehicles driving northbound along Water Lane (which is one way southbound only).

Appendix B: Proposed Plans



0 5 10 15 20 25m

Scale 1:500

Proposed Site Plan 1:500

Rev.	Des.	By	Date	Ch.
D04	LAYOUT UPDATED	RPP	17.11.17	RGF
D03	SCHEME UPDATE	RGF	10.11.17	TNT
D02	BOUNDARY AMENDED	RPP	01.11.17	RGF
D01	FIRST ISSUE	RPP	27.10.17	RGF

Location Plan

The internal layouts within residential apartments and ancillary areas of buildings may be subject to design development.

The precise location of walls, internal doors, columns, risers and the detailed layout of bathroom and kitchen areas may be the subject of non-material changes and may vary from the internal layouts set out in these plans.

These minor alterations should not affect the position and arrangements of external doors and windows nor should they affect the relative relationship between habitable rooms and windows.

All materials shown or highlighted are indicative only and may be subject to changes made during detailed design development.

Project: Twickenham

Job No. 31033

Title: Proposed Site Plan

Scale: 1:500@A1, 1:1000@A3

Drawn By: RPP

Date: October 2017

Checked By: RGF

Drawing No: (20)_020

Revision: D04

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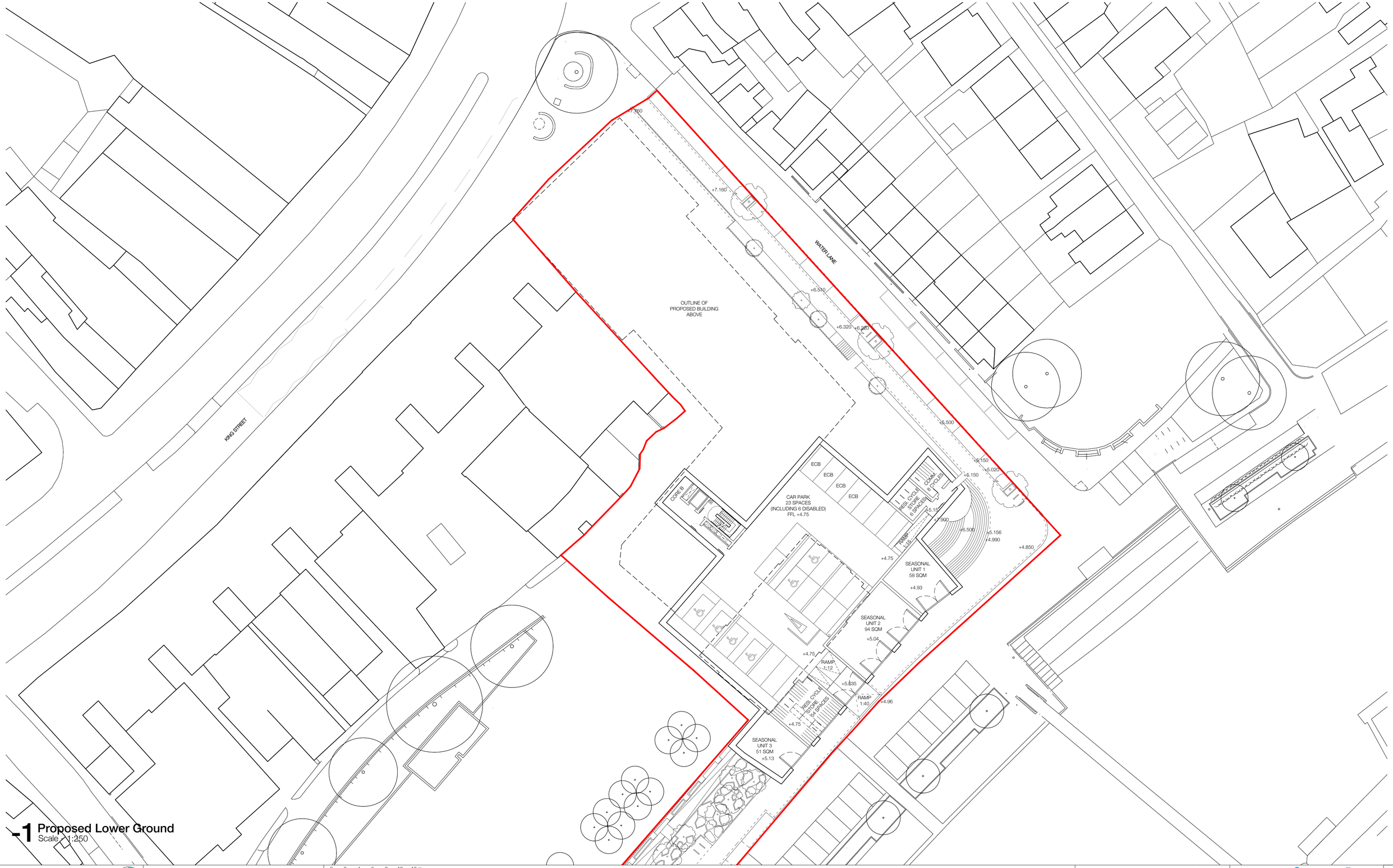
PRELIMINARY



-1 Proposed Lower Ground

Scale - 1:250

0 2 4 6 8 10 12 m

Scale 1:250

ECB= Electrical Charging Bay

The internal layouts within residential apartments and ancillary areas of buildings may be subject to design development.

The precise location of walls, internal doors, columns, risers and the detailed layout of bathroom and kitchen areas may be the subject of non-material changes and may vary from the internal layouts set out in these plans.

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Rev.	Des.	By	Date	Ch.
P01	PLANNING SUBMISSION	RPP	24.11.17	RGF

Location Plan

Project: **Twickenham Rediscovered Programme**
Riverside Project

Job No. **31033**

Title: **Proposed Lower Ground**

Scale: **1:250 @ A1, 1:500 @ A3**

Drawn By: **RPP**

Date: **November 2017**

Checked By: **RGF**

Drawing No: **(20)_099**

Revision: **P01**

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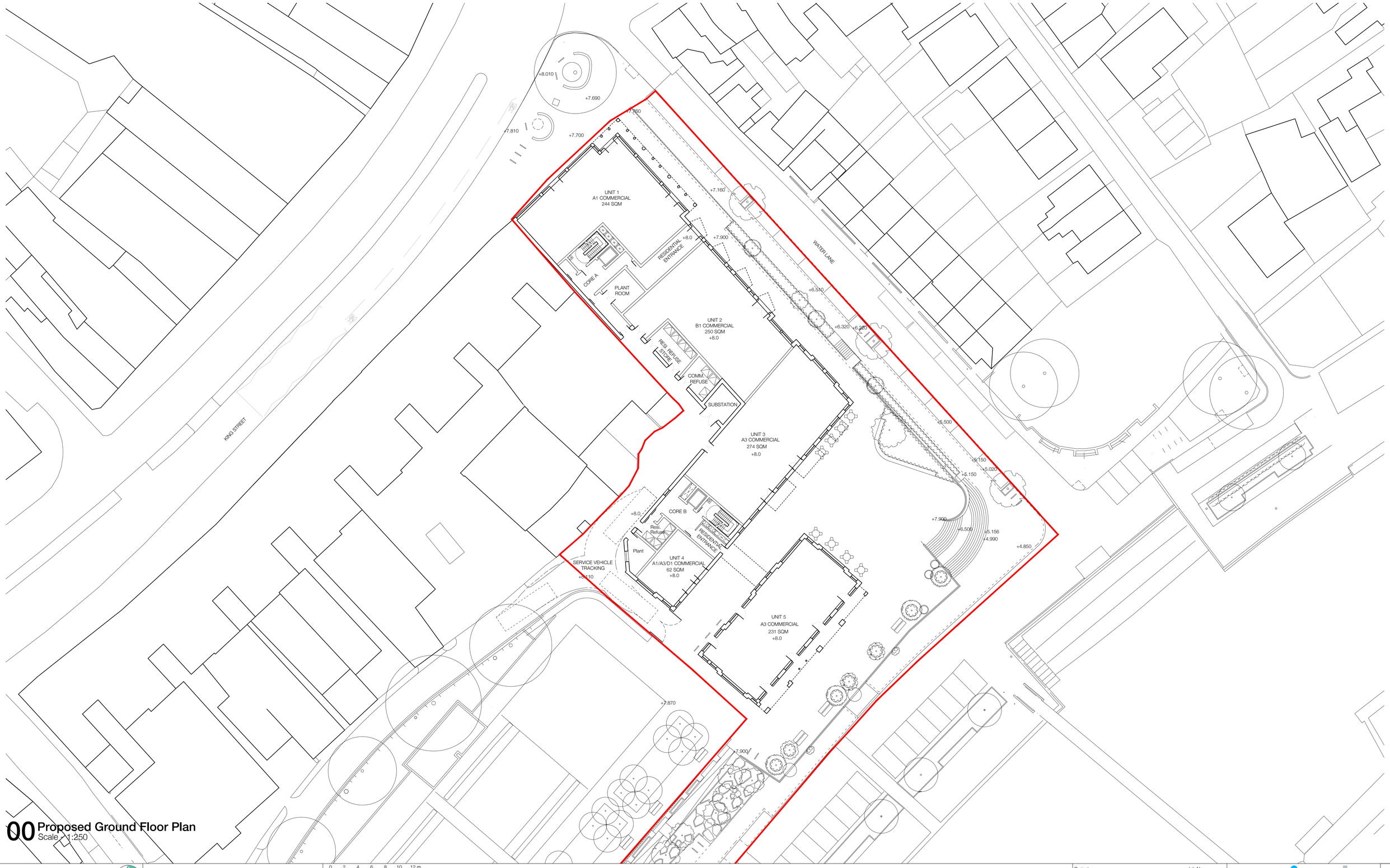
PLANNING



00 Proposed Ground Floor Plan

Scale - 1:250

0 2 4 6 8 10 12 m

Scale 1:250

The internal layouts within residential apartments and ancillary areas of buildings may be subject to design development.

The precise location of walls, internal doors, columns, risers and the detailed layout of bathroom and kitchen areas may be the subject of non-material changes and may vary from the internal layouts set out in these plans.

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Rev.	Des.		By	Date	Ch.
P01	PLANNING SUBMISSION		RPP	24.11.17	RGF

Location Plan

Project: Twickenham Rediscovered Programme
Riverside Project

Job No. 31033

Title: Proposed Ground Floor Plan

Scale: 1:250 @ A1, 1:500 @ A3

Drawn By: RPP

Date: November 2017

Checked By: RGF

Drawing No: (20)_100

Revision: P01

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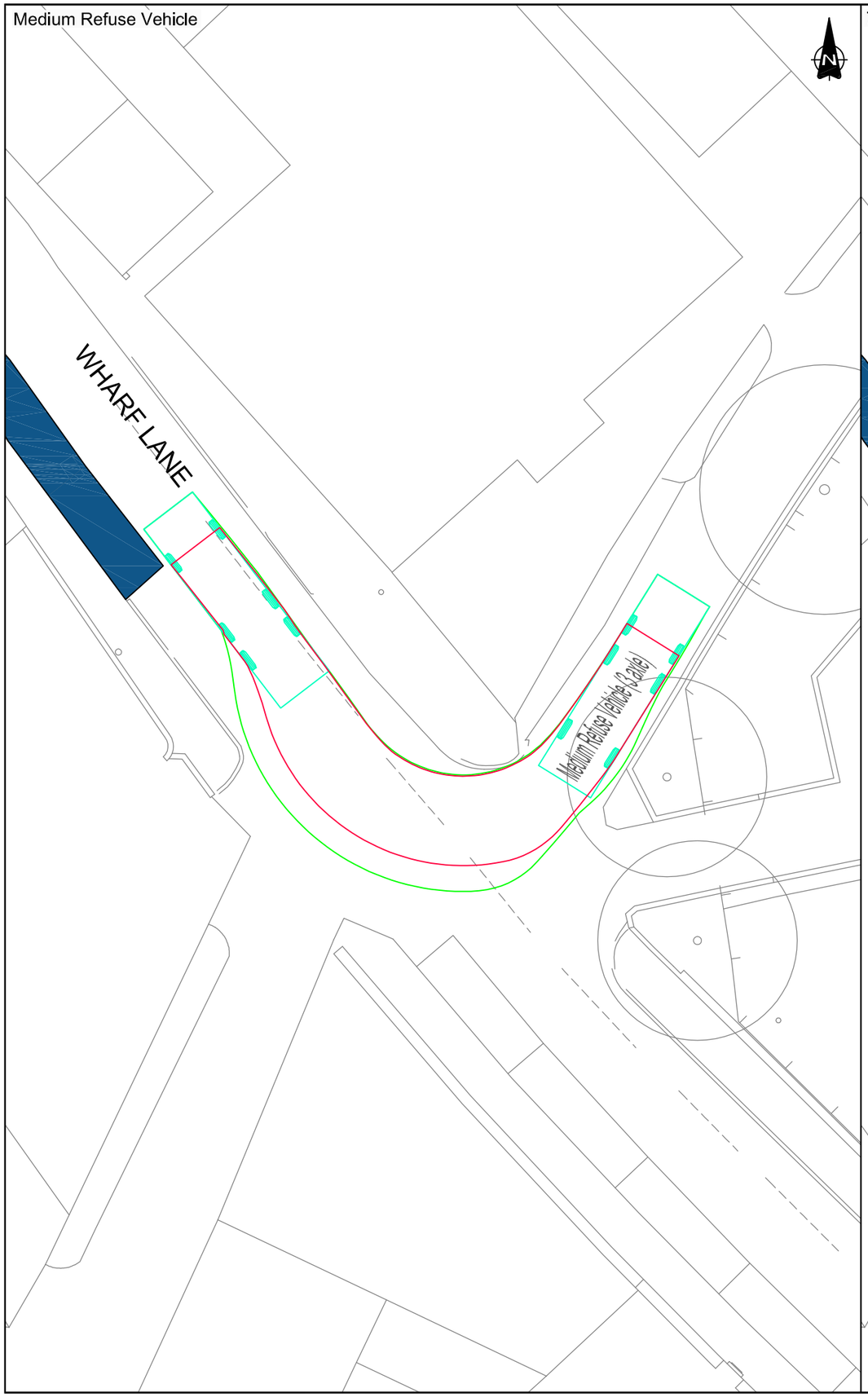
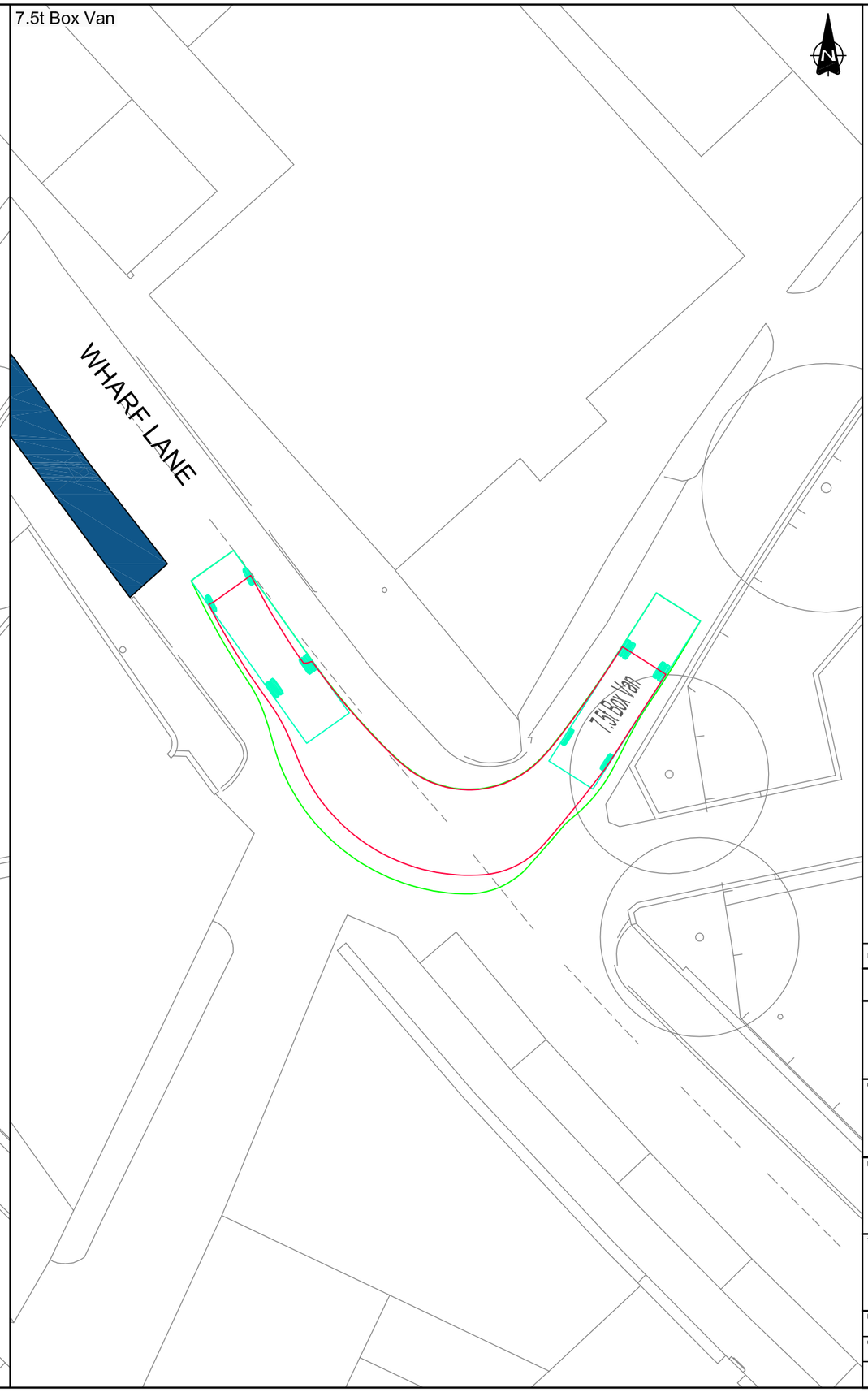
PLANNING

Appendix C: Technical Drawings

Medium Refuse Vehicle



7.5t Box Van



Notes:

1. Do not scale from this drawing

2. All dimensions in metres unless otherwise stated

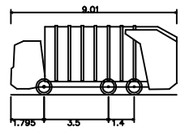
3. Vehicle forward speed is 5kph

4. Vehicle reverse speed is 2.5kph

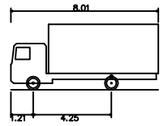
5. Dry steering has not been used unless otherwise stated

Key

Loading bay



Medium Refuse Vehicle (3 axle)	
Overall Length	9.010m
Overall Width	2.450m
Overall Body Height	3.742m
Min Body Ground Clearance	0.295m
Track Width	2.450m
Lock to Lock Time	4.00s
Kerb to Kerb Turning Radius	8.200m



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

Rev.	Date	Revision details	Drawn	Checked	Approved
A	23/11/17	Revised with site layout	DH	GF	-

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Client

London Borough of Richmond upon Thames

Project

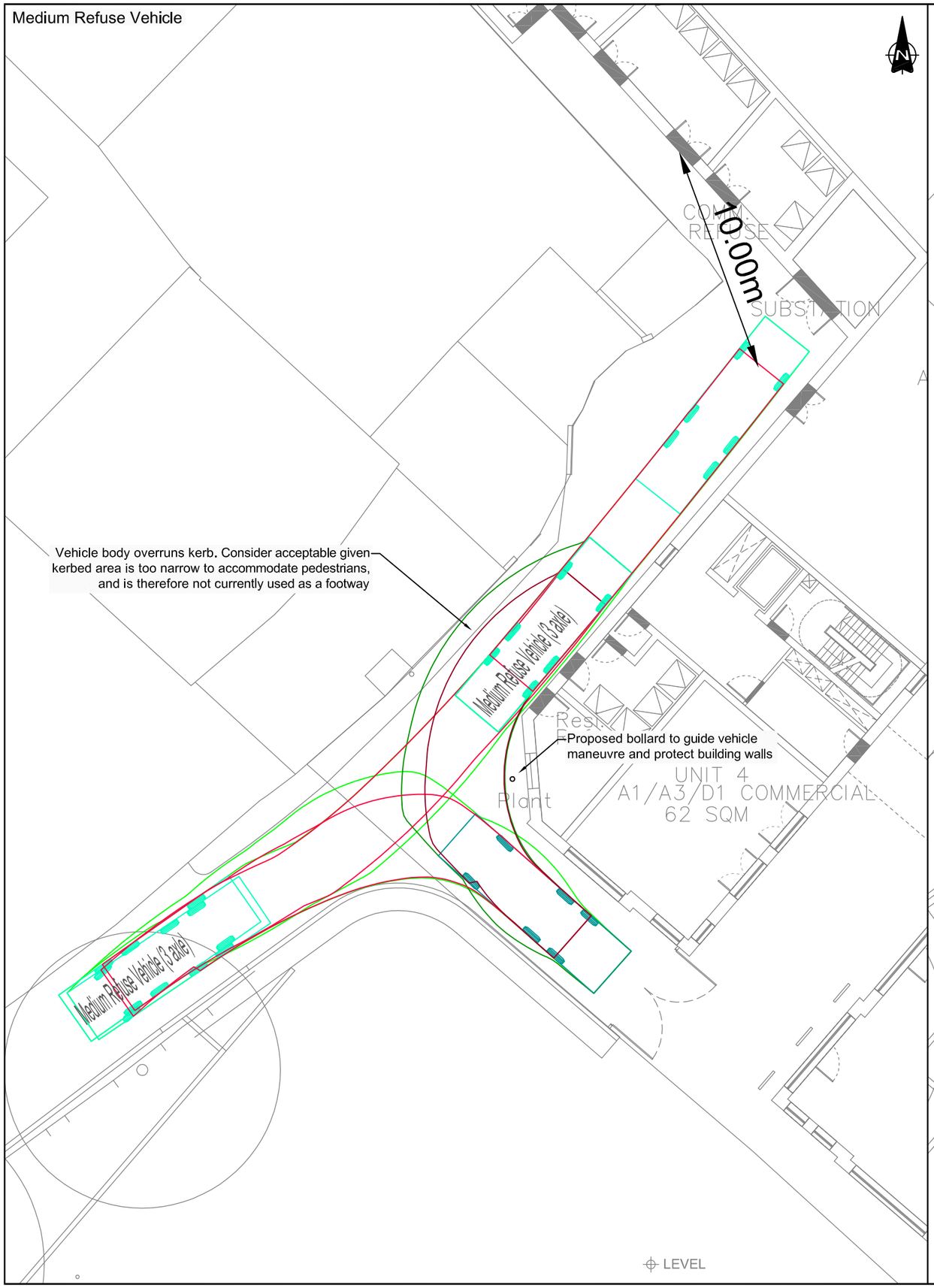
Twickenham Rediscovered Programme - Riverside Project

Title

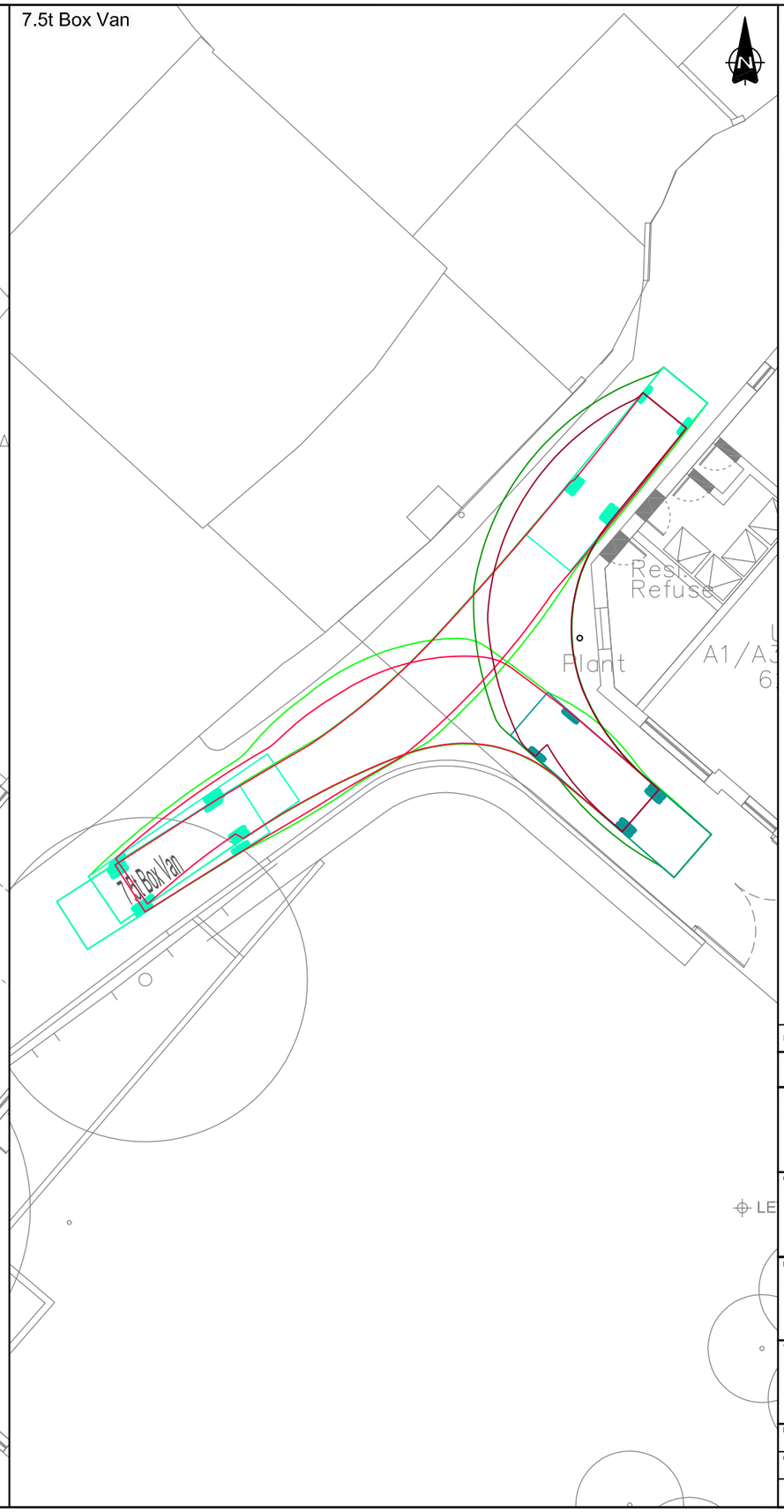
Service Road Swept Path Analysis
Medium Refuse Vehicle &
7.5t Box Van

Drawn	Checked	Approved
DH	GF	-
Original drg. size: A3	Date: 07/11/2017	Scale: 1:200
Drawing Status: Preliminary	Drawing Number: 106125-25	Rev.: A

Medium Refuse Vehicle



7.5t Box Van



Notes:

1. Do not scale from this drawing

2. All dimensions in metres unless otherwise stated

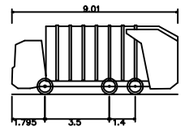
3. Vehicle forward speed is 5kph

4. Vehicle reverse speed is 2.5kph

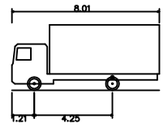
5. Dry steering has not been used unless otherwise stated

Key

○ Proposed Bollard



Medium Refuse Vehicle (3 axle)	
Overall Length	9.010m
Overall Width	2.450m
Overall Body Height	3.742m
Min Body Ground Clearance	0.295m
Track Width	2.450m
Lock to Lock Time	4.00s
Kerb to Kerb Turning Radius	8.200m



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

Rev.	Date	Revision details	Drawn	Checked	Approved
A	23/11/17	Revised with site layout	DH	GF	-

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Client

London Borough of Richmond upon Thames

Project

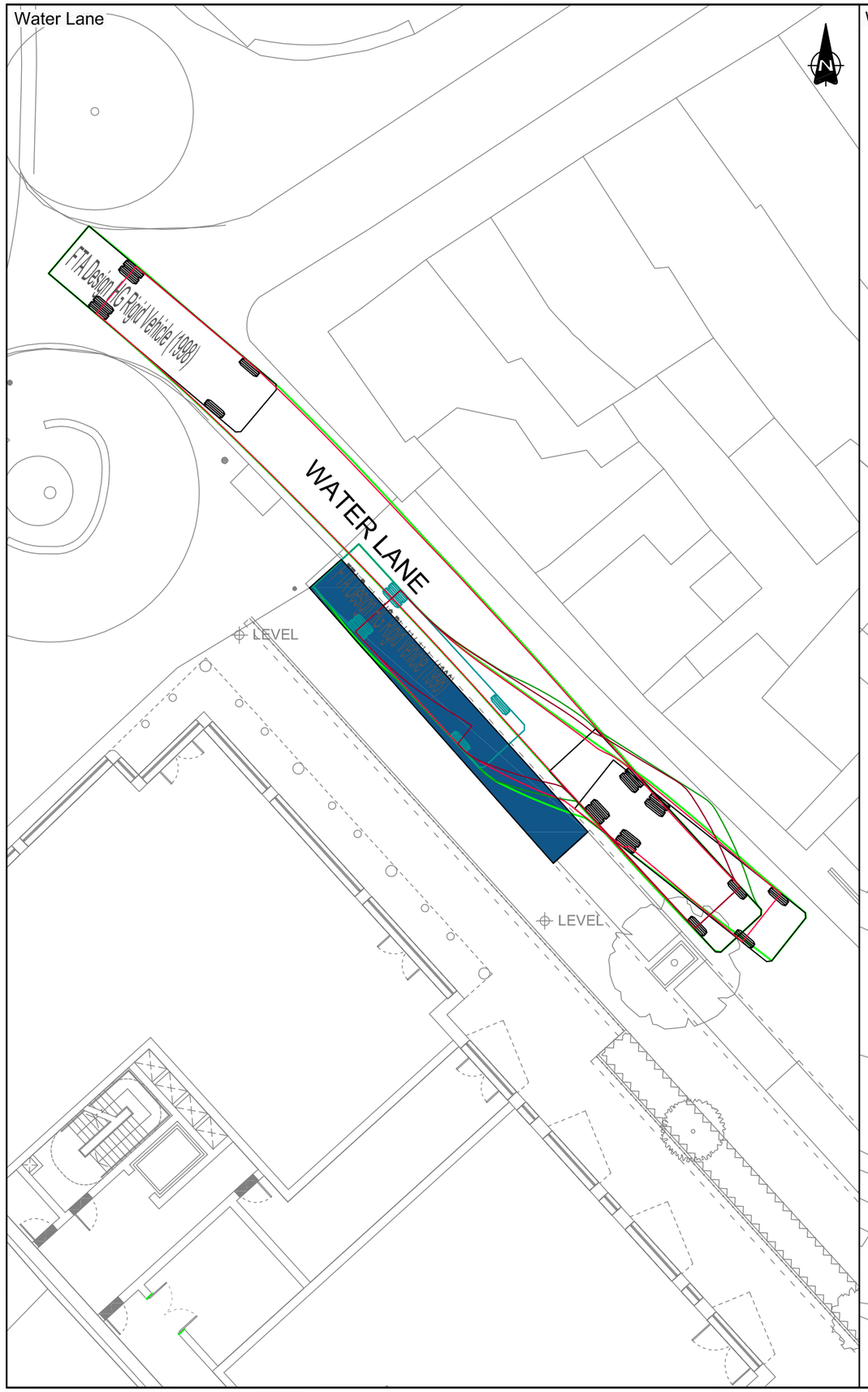
Twickenham Rediscovered Programme - Riverside Project

Title

Turning Head Swept Path Analysis
Medium Refuse Vehicle &
7.5t Box Van

Drawn	Checked	Approved
DH	GF	-
Orfginal drg. size: A3	Date: 07/11/2017	Scale: 1:200
Drawing Status: Preliminary	Drawing Number: 106125-26	Rev.: A

Water Lane



Wharf Lane

Notes:

1. Do not scale from this drawing

2. All dimensions in metres unless otherwise stated

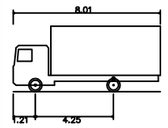
3. Vehicle forward speed is 5kph

4. Vehicle reverse speed is 2.5kph

5. Dry steering has not been used unless otherwise stated

Key

Loading bay



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

Rev.	Date	Revision details	Drawn	Checked	Approved
A	23/11/17	Revised with site layout	DH	GF	-

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Client

London Borough of
Richmond upon Thames

Project

Twickenham Rediscovered Programme -
Riverside Project

Title

Loading Bays Swept Path Analysis
Water Lane & Wharf Lane
7.5t Box Van

Drawn	Checked	Approved
DH	GF	-
Original drg. size: A3	Date: 07/11/2017	Scale: 1:200
Drawing Status: Preliminary	Drawing Number: 106125-27	Rev.: A

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