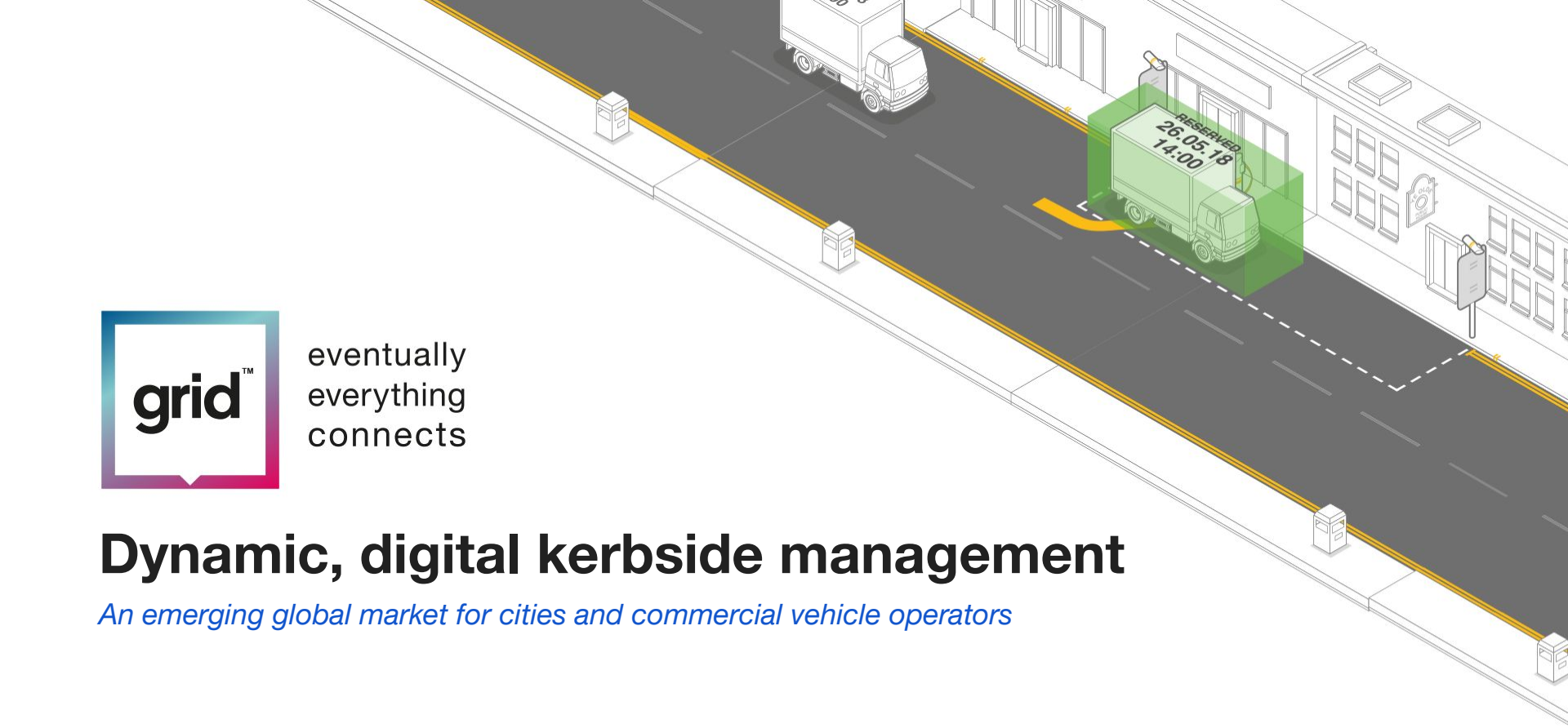

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Dynamic, digital kerbside management

An emerging global market for cities and commercial vehicle operators

Hello, we are Grid

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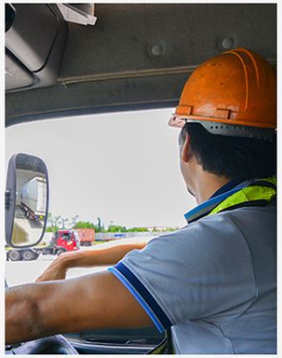
We specialise in building digital products that **enable the smarter management of freight and servicing activity at the kerbside**.

Our mission is to improve the lives of the people living in cities; enabling:

- **Smarter, cost-efficient services**
- **Positive social, economic and environmental outcomes**
- **Sustainable revenues for the city**

Grid Smarter Cities - *bringing order to the kerbside*

Grid's Kerb® platform enables dynamic booking of the kerb, revolutionising the urban realm.



Kerb Users

Commercial vehicle operators, freight and logistics, delivery drivers, service and maintenance vehicles

Kerb Owners

Local authorities and landowners with the legal responsibility for highway and kerbside management, congestion, planning and air quality.

*Bringing order to the kerbside with a **flexible, user management tool** enabling **prioritisation** and a **permissions hierarchy** approach to turn a static 2 dimensional piece of real estate into a **3 dimensional flexible and dynamic asset***

A Kerb® *'solution'* for every sector

Flexible platform configuration to meet specific needs of sectors and cities required to bring order to the kerb

Construction

Parcels

Chilled & Frozen

Brewery Logistics

Service & Maintenance

Consolidation **Electrification** **Low / Zero emission** **Air Quality**

*and ensuring that kerbside management strategically and operationally **complements** decarbonisation and electrification policies and **integrates** with consolidation, e-cargo bike and zero carbon deliveries, low and zero emission zones and route optimisation, scheduling and load planning and **addresses** congestion and air quality targets.*

Kerbside on demand

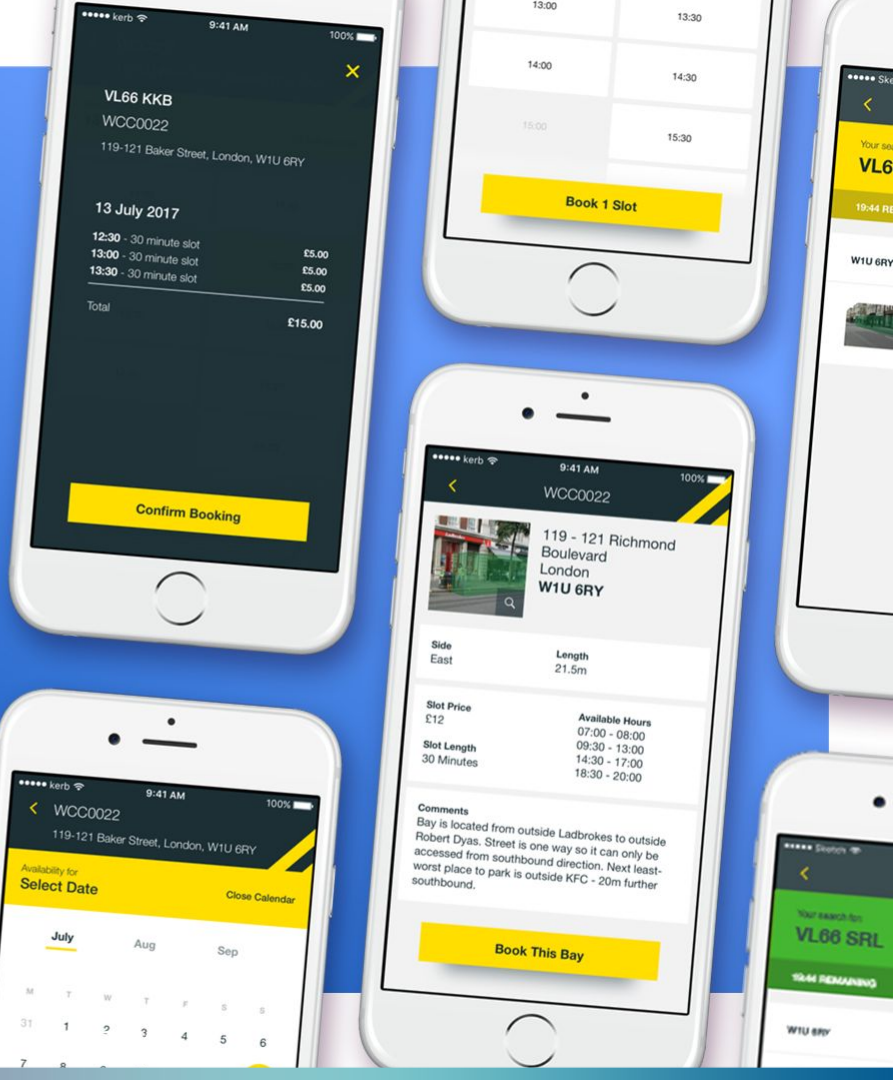
Booking | Payment | Management

Management
Enforcement - back office - highways - planning

Planning
Routing and scheduling - delivery planning - resource management

Pay as you go
Mobile app - real time space availability and booking

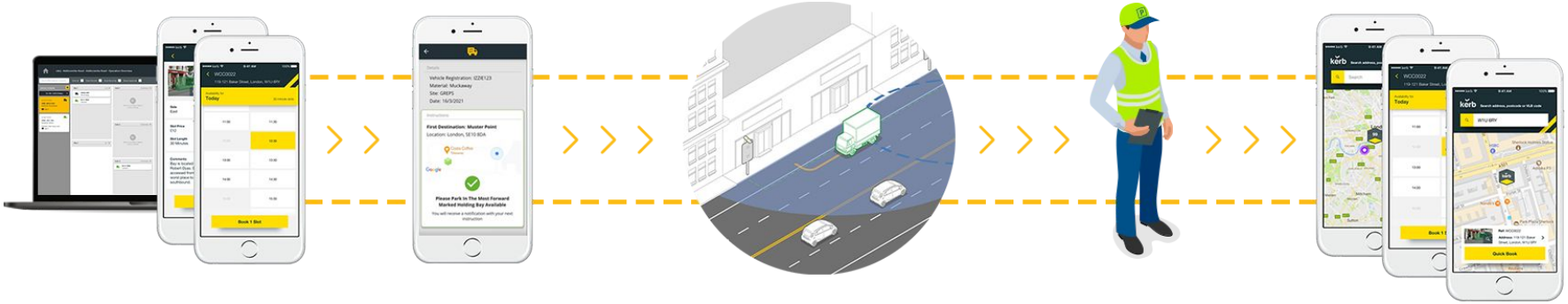
Fleet account
Depot booking - planned activity - regular slots - client account



Easy to use ‘end to end’ solution

Desktop and mobile app provides flexibility to meet kerbside operational needs

1. Depot or driver books space for specific time or location using the application.
2. The driver can then leave with the knowledge of exactly where to park, allowing for a more efficient journey.
3. Geo-fence breach can alert recipient of imminent arrival reducing dwell time.
4. The enforcing authority is notified that the vehicle has permission to park.
5. Once the vehicle leaves, the space is 'live' and available unless booked.



Smart Sign

Our Smart Sign allows the same stretch of kerb to be accessed by different types of users over the course of a day. The display can be configured to show any type and format of information required.

The changing restrictions, days and times of operation, dwell times and tariffs are set by the local authority, and can be changed on-demand.

Smart Sign

The sign is fully is integrated with our digital booking and permit software.

The sign communicates the changing kerbside restrictions and activities to other users of the road and adjacent sidewalk.

Smart Sign


LOADING BAY I.D.
Day Date Month
0000A
00:00
Street Name - Direction (N,S,E,W)
Loading / Unloading Only
00:00 - 00:00
No Parking At Any Time - 00:00 - 00:00

Smart Sign


Authorised permit holders only
LBS - 104
Authorised permit holders only
LBS - 104
Authorised permit holders only
LBS - 104

Kerb Delivery

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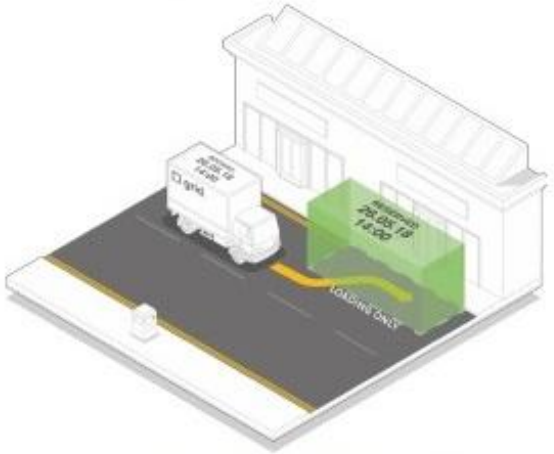
Dynamic Kerbside Solutions

Bookable Loading Bays (BLBs)

BLBs are the digital management of existing bays, using the same system that manages VLBs.
Exposing existing bays to the same management system brings two benefits. Firstly, operators can utilise these assets with the same certainty as a VLB, through a booking. And secondly, by managing BLBs alongside VLBs, you get to see operational usage data for the two asset types in one location.
Access to BLBs can be managed through digital permits.
Generating the BLBs requires the same information as a VLB, and all booking information can be shared with parking enforcement in as near real time as possible, either via a stand alone mobile application or through integration to their existing mobile handsets.
Details of any users utilising a BLB, can be shared with parking enforcement in as near real time as possible, either via a stand alone mobile application or through integration to their existing mobile handsets.

BLBs would be well suited for use by Parcel Companies, Brewery Logistics, Chilled Goods Delivery, Service Vehicles and Care Vehicles.



Bookable Loading Bay Illustration

Kerb Delivery

Dynamic Kerbside Solutions

Virtual Loading Bays (VLBs)

VLBs use a digital dispensation to generate guaranteed, time-spliced kerb slots for delivery vehicles. VLBs are generated in areas that are identified as having a positive impact on operational efficiency, while minimising impact on traffic flow. The certainty of the location, which the user books via a mobile application, prevents circling for the limited existing loading bay network.

VLBs can be used in isolation as an individual bay or in conjunction with other elements - for example, pre-approved risk assessed areas adjacent to physical bookable bays to cope with issues such as overrunning bookings or rogue vehicles.

VLBs are digital, and are therefore not marked on the highway.

The VLBs can be quickly and easily generated for use in a mobile application. Once a location has been approved, it's physical location is all that is required for it to be created. Operational parameters can be added at the same time, so any consumer can easily see when a VLB can be used and at what cost. As this new asset is digital, it's operational parameters and indeed any of it's attributes can be changed or amended in as close to real time as possible.

Details of any users utilising a VLB, can be shared with parking enforcement in as near real time as possible, either via a stand alone mobile application or through integration to their existing mobile handsets.

VLBs would be well suited for use by Parcel Companies, Brewery Logistics, Chilled Goods Delivery, Service Vehicles and Care Vehicles.

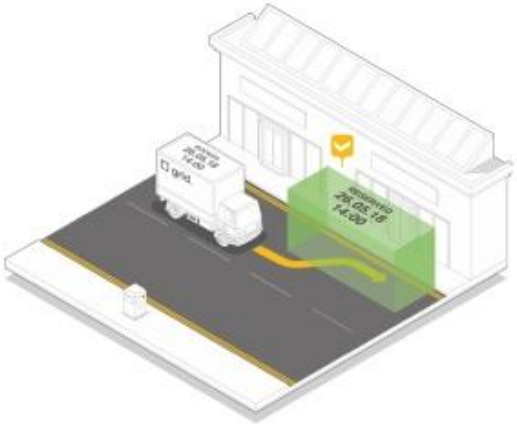


Figure 2. Virtual Bay Illustration

Kerb Delivery

Dynamic Kerbside Solutions

Virtual Loading Extensions (VLEs)

A VLE is an area where loading is already permitted, but time limited. By using a mobile application, a registered user can utilise a permitted time extension, in order for the user to complete their loading / unloading. The permitted time extension can prevent alternative, illegal behaviour by the vehicle, or inefficient and unnecessary movement to a new location to complete their job.
The creation of a VLE would mimic that of a VLB and BLB. All that is required is the location information and operational parameters for the VLE to be visible on a mobile application. Details of users using the VLE can be shared in real time, either via a stand alone mobile application or through integration to their existing mobile handsets.

VLEs are most suited to support delivery by large HGV or consolidated loads, the latter of which is being seen more and more in Brewery Logistics.

Virtual Loading Extension Illustration

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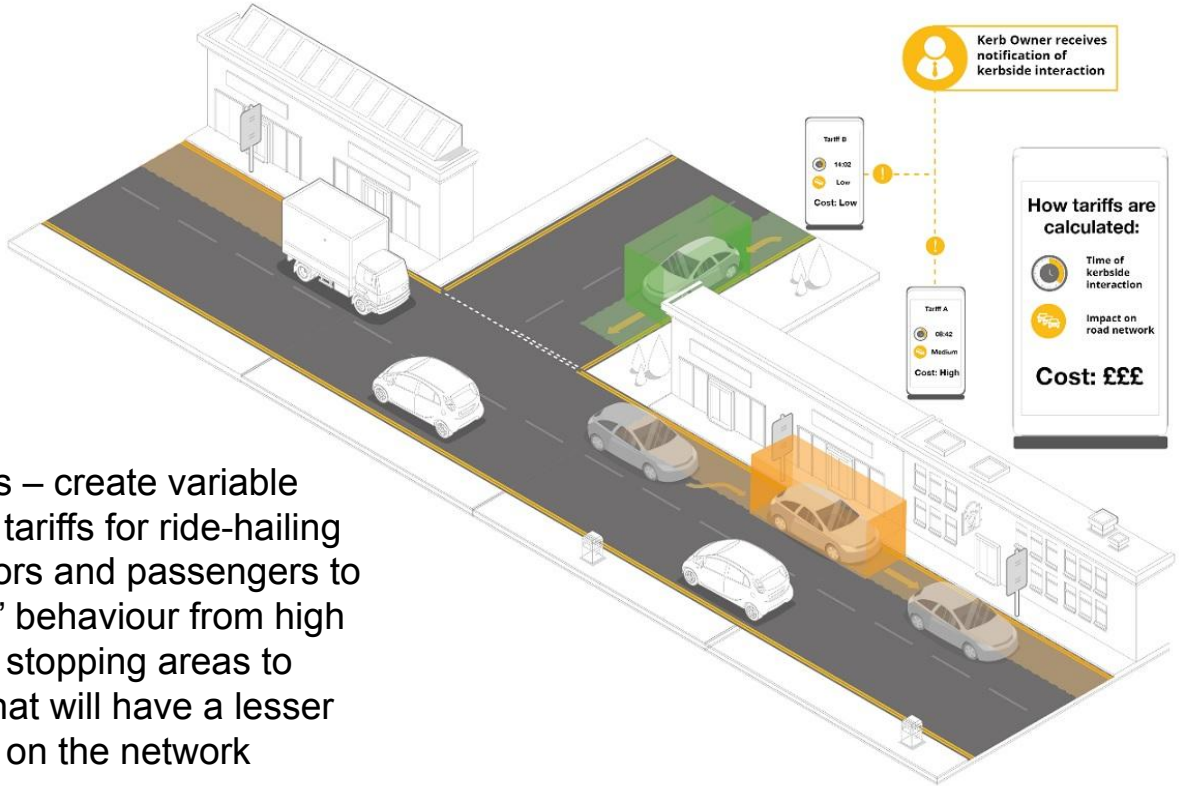
Virtual Permit Zones (VPZ)

A VPZ is an area, within which users with a digital permit, utilise parking assets that would normally require a permit, alongside the ability to extend dwelling for extended time (where loading and unloading is already permitted). The digital permit is held on a mobile application, and using geofence technology, it will record when a user enters the zone, making the registered vehicle information can be shared with parking enforcement in real time, either via a stand alone mobile application or through integration to their existing mobile handsets.

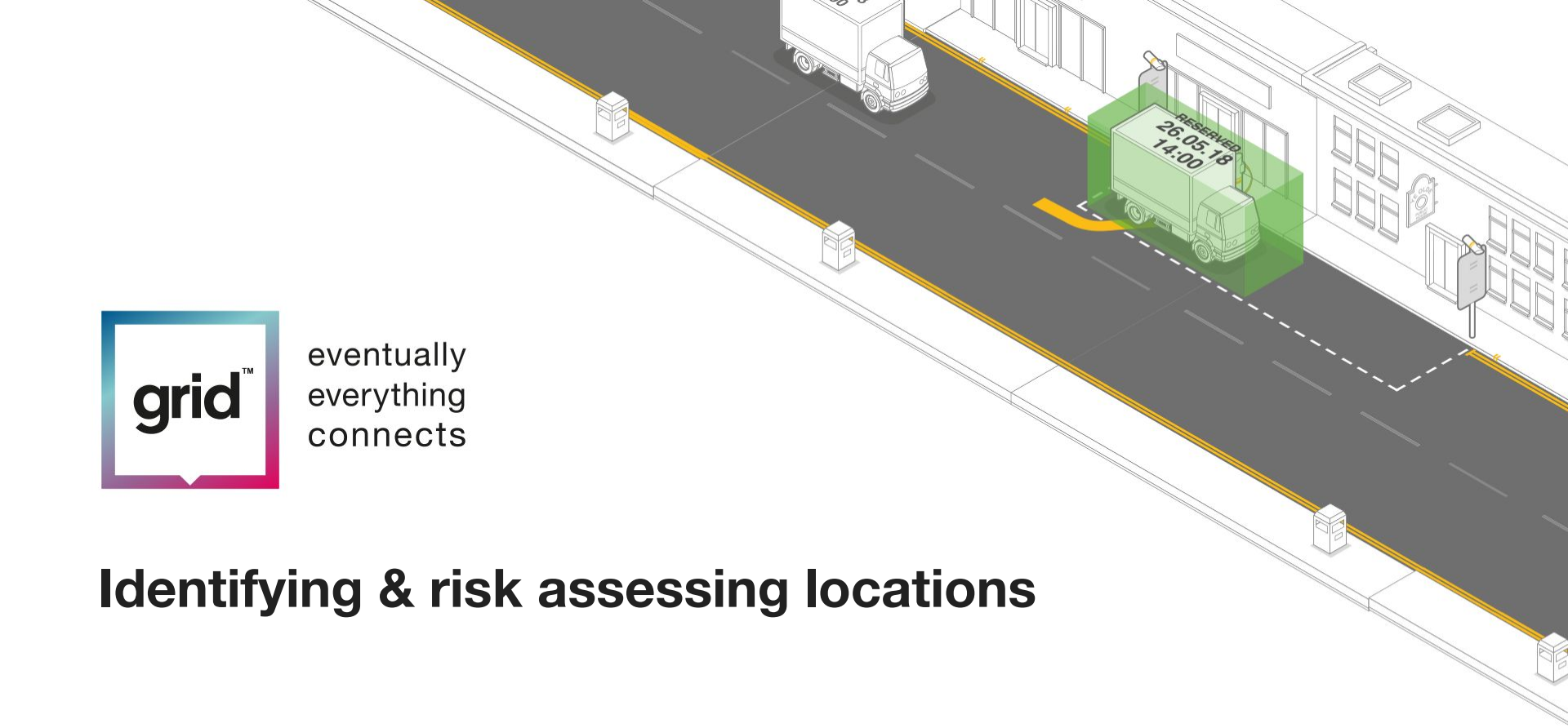
Virtual Permit Zone Illustration

Kerb PUDO – Pick-Up Drop-Off Zones



PUDOs – create variable spatial tariffs for ride-hailing operators and passengers to ‘nudge’ behaviour from high impact stopping areas to ones that will have a lesser impact on the network

Enables micro-transactions at a hyperlocal level to ensure that ride-hailing services are paying towards the upkeep of the assets and infrastructure in the areas that they operate.



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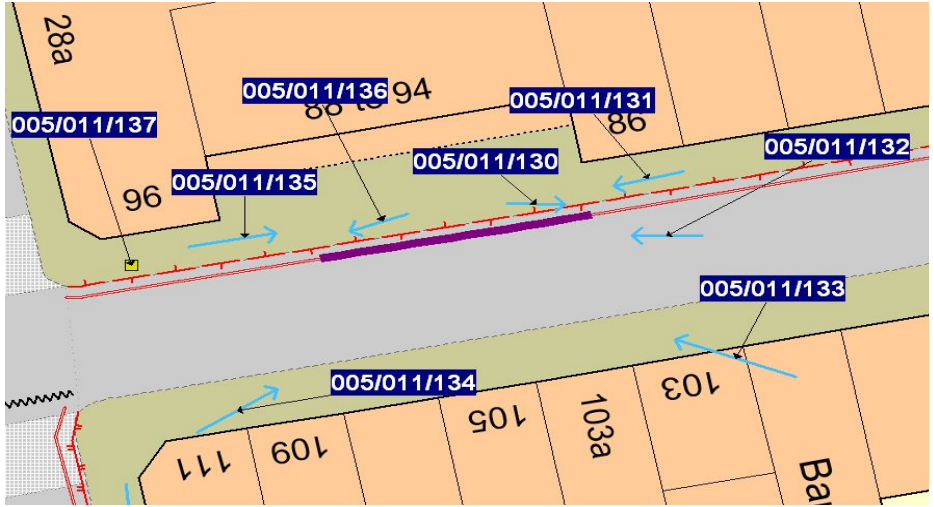
Identifying & risk assessing locations

Identify & risk assessing locations

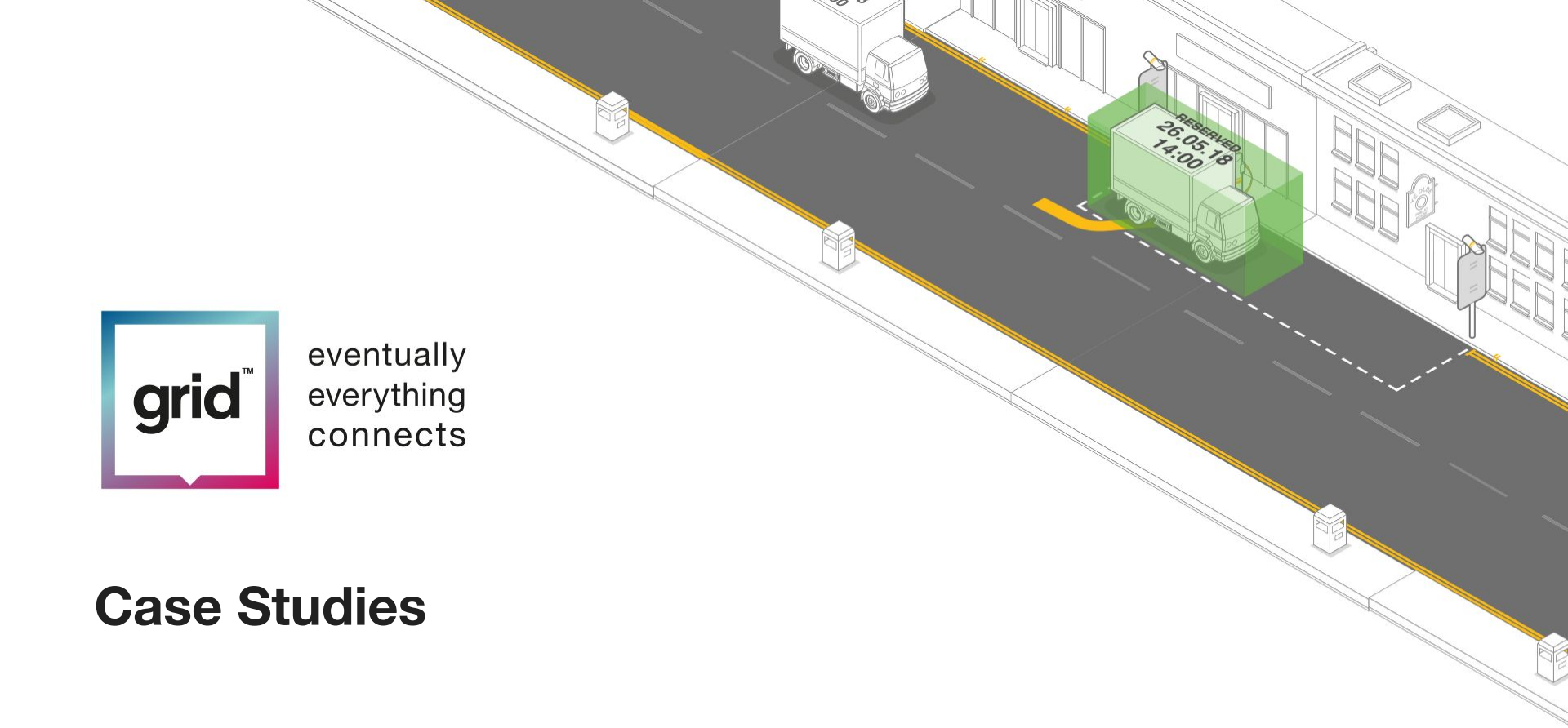
Loading restricted	Yes
Restricted times	Monday – Saturday 7.30-10am and 4-6.30pm
Location	86-94 Westbourne Grove W2 5RT
Side of Street	North
Length - metres	16m
Start description	From a point 16 metres east of its junction with Hereford Road
Finish description	For a distance of 16 metres in an easterly direction



Key to Plans:

Saved to this PC

- Virtual Parking Bay
- VPB in Loading Break
- Sign Plate Location
- Direction of Photo
- No waiting
- No waiting AAT
- No loading
- No loading AAT
- Parking Place
- Taxi Rank
- Bus stop
- Ped. Crossing



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Case Studies

Kerb Delivery - DPD Sunderland

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dpd

Challenge

To understand and help address the increase of express parcel deliveries in Sunderland city centre.

Solution

The deployment of virtual loading bays in Sunderland city centre. Used daily by a single operator as a trial to test high volume deliveries across a small geographical area. Phase 2 adds more virtual loading bay to introduce a zone, where a user can utilise virtual loading bays and/or permit bays without booking, like a permit approach

Results

User benefits shown to be using a bookable VLB as a mini depot, reducing miles driven per delivery. Allowing a 20% time efficiency saving, and/or 20% more deliveries per vehicle route. User commented on how they had a better relationship with enforcement. Data on expanded and new use to help inform further use, and identification of other zones in Sunderland

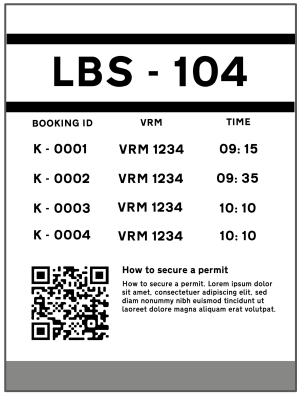
It was great, easy to use handset, the parking space was always free and made my life easier

DPD Driver

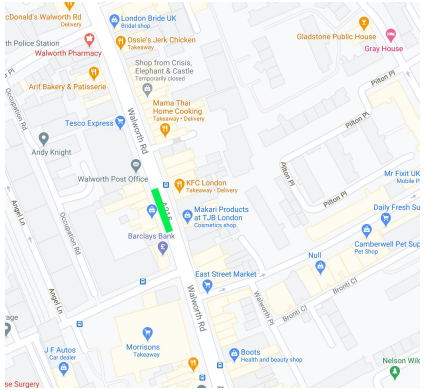
Kerb Delivery & ‘Smart Sign’ case study - Southwark

- Can operate with a booking system to ensure time slots can be allocated to operators
- An advisory sign can inform other road users and businesses of the booked slots
- Integrated into routing and scheduling and navigation systems

Regulatory Plate



Advisory Plate



Walworth Road, Southwark

Kerb Delivery – Dublin

kerb™ for Dublin

Grid and Smart Dublin identified locations for VLBs in key city centre locations for the trial users;

- Temple Bar
- Nassau Street
- College Green

VLB use data to also inform DCC of potential revenue from kerbside

COVID-19 halted implementation yet Dublin City Council have expressed the desire for a Solutions playbook, a guide on how to implement the Kerb platform.

Grid worked with Coord to survey the locations

Kerb Delivery ‘Chargerie’ - coming soon to central London...

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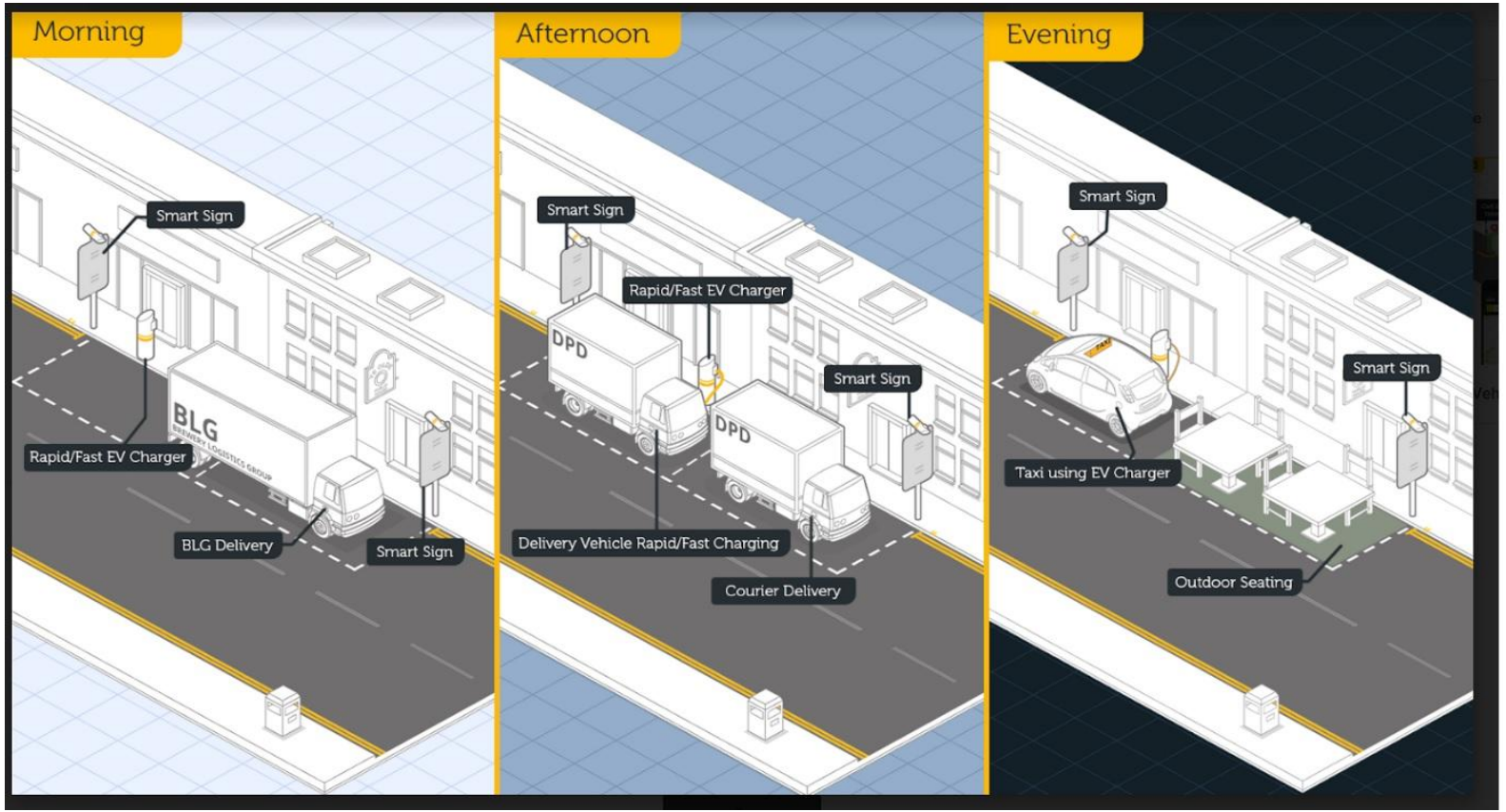


Kerb Construction

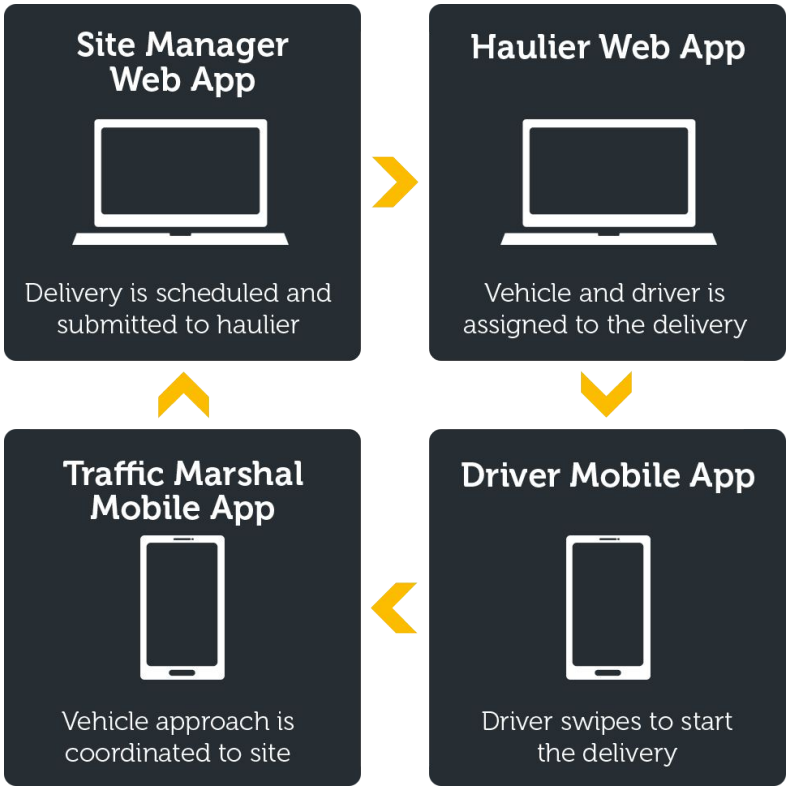
How does it work?

Kerb construction coordinates last mile vehicle movements to a construction site via a series of ‘Virtual Holding Bays’.

It incorporates a web app for site management and haulier, and a mobile app for drivers and Traffic Marshals.

Traffic Marshals direct a driver’s approach to the site through a sequence of Virtual Holding Bays.

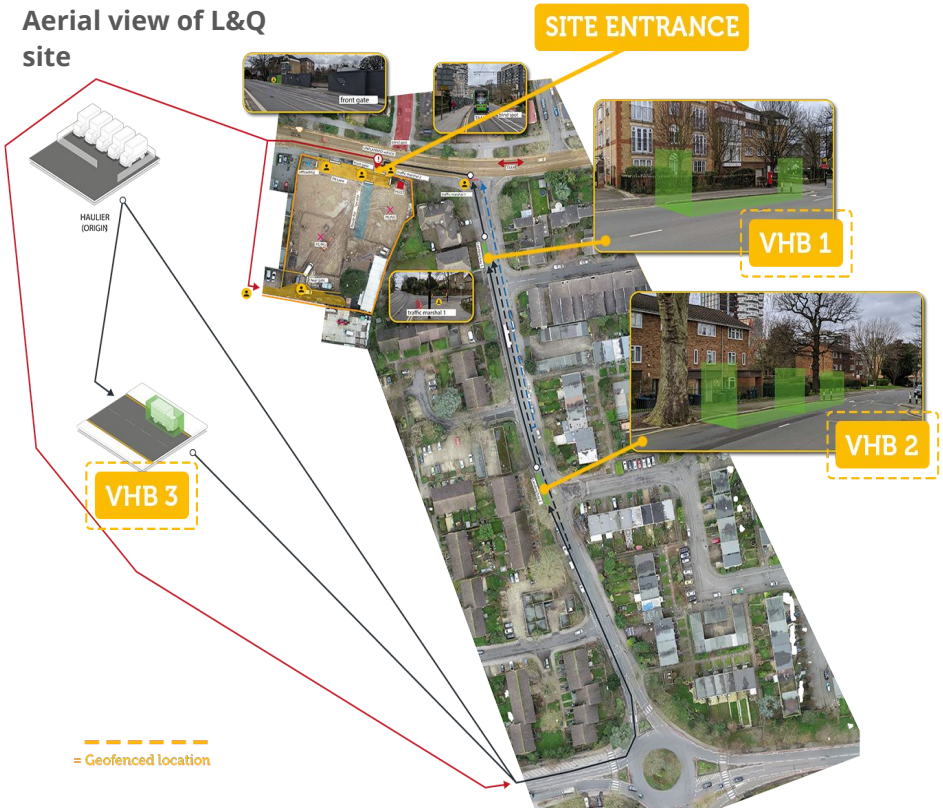
This is supported by automatic geofence breaches triggered by the driver app GPS signal as they progress to site.



Kerb Construction

Where has it been used? - L&Q, Thames Tideway, HS2, & South32

Aerial view of L&Q site



London & Quadrant (137 houses, & 18 storey tower development) in south west London. Dan Duckworth, L&Q Site Manager described the benefits:

"As a site and wider industry we can now better understand, manage, and reduce vehicles making inefficient journeys to and from construction sites. Grid's detailed but simplified overview of scheduled deliveries to site, control, and management of them has reduced the impact on the environment and improved efficiency."

Thames Tideway (£4.2bn super sewer below River Thames, completing in 2025) Planned 6 week trial from Feb 2021, up to 200 vehicles per day to deliver "transformational logistical legacy operations."

HS2 Ltd (£80bn UK high speed railway, open in 2036) Selected from 100+ bids for one of only 5 places on the HS2 Accelerator scheme. Discussions to trial Kerb Construction at London Euston & Old Oak Common in Q2 2021

South 32 (£5.4bn globally diversified mining & metals company) exploring using Kerb Construction at sites in Arizona, USA & Perth, Australia in Q2/Q3 2021

Partners and Clients

Grid Smarter Cities works with a wide range of partners and clients to maximise exposure and user offerings