Construction Logistics









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Construction Logistics Handbook

1. Introduction

This framework Construction Logistics Plan is part of a Croydon council initiative to manage the impact of prospective development in central Croydon so that the benefits of new development can be achieved with the minimum of transient disruption. It is hoped that this will be used as a blueprint for similar logistics planning elsewhere in London and further afield.

1.1 Policy Background & Planning for Freight Guidance

The London Freight Plan, published by TfL in October 2007, acknowledged the important role of the movement of goods in supporting future growth of London's economy. The plan also recognised that such transport can have negative impacts on the local environment, particularly emissions that affect air quality and contribute to climate change and noise pollution.

The London Freight Plan identified several key projects that have subsequently been incorporated within the Mayor's Transport Strategy. This has been backed up more recently by specific guidance that covers the relationship between transport and planning: particularly the need to balance the importance and impact of the delivery of goods during the construction phase, through new guidance for CLPs, for example https://tfl.gov.uk/cdn/static/ cms/documents/construction-logistics-plan-guidance-fordevelopers.pdf, and management of deliveries once a building is subsequently put to its intended use https://tfl.gov.uk/info-for/ freight/planning/delivery-and-servicing-plans

1.2 Background to CLPs & DSPs

Construction Logistics Plans (CLPs), which provide a structure for how logistics will be organised throughout the construction phase of a development, and Delivery & Servicing Plans (DSPs), which have the same function for the eventual use, are two of the key projects within the London Freight Plan.

The purpose of developing a CLP is to reduce the number of deliveries made to a construction site and to reduce their overall impact. The best approach to achieve this is by cooperation between client, contractor and supply chain in order to maximise efficiencies and provide greater project certainty.

The CLP is expected to minimise impacts on the local environment such as congestion, noise, emissions, visual intrusion and damage to infrastructure through a combination of actions to ensure that all delivery activity is well-managed, safe and legal.

CLPs are now required as part of the planning approval process for all major developments within London and for developments with

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the potential to impact on London's main highways (the TLRN or Transport for London Route Network).

Further work is currently underway by TfL, Waste Resources Action Plan (WRAP) and BRE to incorporate the CLP elements into Material Logistics Plans (MLP) and Site Waste Management Plans (SWMP).

Delivery and Servicing Plans are intended to provide a similar structure to CLPs by which the owners and occupiers of premises can ensure that the delivery and servicing activities required when a development is used for its intended purpose can be conducted in a safe and efficient way whilst minimising impacts on the local environment.

As advocated in 'Travel Planning for New Development in London: Incorporating Deliveries & Servicing' (TfL, February 2011), there is a move towards integrating delivery and servicing aspects of a new development within the travel plan produced for the development. However, in some cases, particularly where commercial activity or a transport function is a core part of the building's use, a local authority may request that these aspects are addressed in a DSP that is separate but related to the travel plan. This is addressed further in section 6.

1.3 Introduction to a 'Framework CLP'

One of the ways in which a CLP can achieve its expected impacts is through promoting greater cooperation between client, contractor and supply chain in order to maximise efficiencies and provide greater project certainty.

The implementation of a macro level 'Framework CLP' which would consider collectively the construction activity taking place across Croydon Town Centre is expected to result in more substantial benefits than could be achieved by considering individual sites in isolation. This would make it easier to integrate logistics processes across development sites; for example, among others, removing direct conflicts between deliveries to neighbouring sites and allowing consolidation of deliveries leading to a reduction in the number of deliveries. This will require a greater degree of collaboration than is normal, but with a view to delivering benefits for all stakeholders.

Similarly, when it comes to the subsequent use of the proposed developments, the provision of a common approach to, or even joint facilities for, the management of delivery and servicing activity for developments in close proximity to each other, through the development of a framework DSP, would be expected to lead to a more organised outcome than is currently often the case.

One of the ways in which a CLP can achieve its expected impacts is through promoting greater cooperation between client, contractor and supply chain in order to maximise efficiencies and provide greater project certainty. One of the first developments in this area involves the renewal of Croydon Council's own public service delivery hub Implementing this through a broad framework in the early stages of planning would be beneficial by ensuring common approach to delivery and servicing infrastructure provision and capacity, and more importantly establishing an outline framework for collaborative processes for delivery and servicing management, which building managers and occupiers would be expected to follow from the point of occupation. It is expected that by putting such a structure in place a series of voluntary DSPs would result, rather than requiring them to be mandated through planning (although mandating would remain an option), following a similar process to that for workplace or residential travel plans.

1.4 Relationship to the Croydon Opportunity Area Planning Framework

Croydon Town Centre is in a process of wholesale regeneration that is about to intensify. Planning applications have already been approved for a number of sizeable construction projects that, together, will transform the character of central Croydon. One of the first developments was the renewal of Croydon Council's own public service delivery hub - Bernard Weatherill House. The CLP for Bernard Weatherill House was placed at the heart of its build programme and resulted in significant reductions in traffic movements and pollution in Croydon Town Centre had the CLP not been in place. A case study for this development has been produced to help promote the benefits of the CLP concept both within Croydon and more widely across London (and potentially beyond). It is hoped that it will also act as a stepping stone towards the wider co-ordination of construction logistics within Croydon as development activity increases in the future.

In order to manage this development the spatial planning team at Croydon Council is already working with the developers and other key stakeholders to ensure a coherent outcome. This is being done through the production of a number of masterplans covering tightly defined areas within central Croydon where the most significant concentrations of development, and hence the biggest chance of conflict between developments, exist. These masterplan areas are:

- West Croydon
- Wellesley Road
- East Croydon
- Mid Croydon
- College Green

At a higher level, plans are underway to develop a broader development framework covering the whole of central Croydon.

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This will include all the masterplan areas but will additionally cover other more isolated developments within central Croydon, so ensuring a co-ordinated approach across the whole central area. This broader framework, shown by the black outer line in the diagram, is being developed in partnership with, among others, Transport for London, and will be classified as an Opportunity Area Planning Framework (OAPF).

The current expectation is that the Town Centre framework CLP, and possibly a framework DSP, will be aligned with the OAPF, so providing a detailed explanation, structure and practical tools that could be used in the CLPs for individual developments, with the masterplan management forums providing an opportunity to use existing, established communication channels as a focus to ensure potential synergies between neighbouring developments are actually exploited. with the masterplan management forums providing an opportunity to use existing, established communication channels as a focus to ensure potential synergies between neighbouring developments are actually exploited.

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Local transport assessment guidance is to check for the presence of neighbouring sites and to attempt to quantify the combined impact as part of the transport assessment,

1.5 Relationship to the Development Control Requirements

The formal requirement for CLPs within the development control process is at the level of an individual planning application, which is co-ordinated by a designated planning officer with input from a range of appropriate council officers on issues such as noise, air quality and transport impacts. However, where there is a high concentration of development sites in close proximity, each placing demands on the same access routes and impacting on the same local environment, the cumulative effect, even if the impact of each individual development is minimised, could be considerable and lead to conflict between sites. Local transport assessment guidance is to check for the presence of neighbouring sites and to attempt to quantify the combined impact as part of the transport assessment, but until now this has not stretched to promoting active co-operation to minimise impacts in respect of either the construction phase or subsequent use.

This framework CLP attempts to promote this collaborative step, and the way that it will be enforced is therefore inextricably linked to the way in which the development control process encompasses it. This relates not only to the way in which the framework CLP requirements will be applied to individual planning applications, but also the degree to which developer contributions can be captured in order to fund useful collaborative services to be made available to developers and their contractors through application of the framework CLP.

Alignment with the OAPF is expected to help with this as there will need to be a strong link between the OAPF and the planning process if the OAPF is to be successful and effective.

1.6 Approach to the Framework CLP Guidance

Just as was the case with individual CLPs 2-3 years ago, the concept of a framework CLP is innovative. The Croydon Town Centre framework CLP is being developed to be in line with TfL guidance on CLPs, DSPs and management of work-related road risk, focusing on the safety of vulnerable road users.

The aim is that the Croydon Town Centre CLP takes a simple yet holistic approach, covering construction logistics activity throughout the various phases of the full design and build cycle, leaving a legacy for subsequent use in the form of the DSP and the interaction with neighbouring developments as they come on stream.

In order to achieve this it attempts to provide Croydon Council and local developers with the tools to ensure both traffic flow and construction programmes are maintained.

2 Site Access

2.1 Use of Strategic Access Routes

Unless all goods are being transported from extremely local suppliers, which even with the best intentions is unlikely to be feasible given the specialist nature of many construction materials, goods vehicles will be required to travel towards Croydon from locations elsewhere in London or further afield. Journeys to the edge of Croydon town centre should be restricted to the strategic road network which is best suited to this type of heavy traffic, for example, using the A23 from the south or the A21 / A232 from the east for access from the M25.

Deliveries will need to arrive at site at a specified time in order to ensure continuity of materials supply according to a schedule approved by the site management. To ensure accuracy of arrival times it may sometimes be necessary for slack to be built into journey times to allow contingency for unexpected delays and congestion. This is fully understood, but needs to be proactively managed, as it is not acceptable for vehicles to arrive at site in advance and then wait in potentially dangerous or unsuitable locations that may cause damage, hazardous obstructions and / or congestion. Nor is it acceptable for vehicles arriving early to circulate in central Croydon contributing unnecessarily to local congestion and pollution.

Instead a proactive approach needs to be taken where one or more approved holding points are identified en route where vehicles can wait until they are called into the site to meet their booked arrival time. These locations should be discussed and agreed with Croydon Council based on the aforementioned principles.

While waiting it is expected that the vehicles' engines would be switched off to avoid unnecessary idling emissions. Alternatively, if a consolidation centre is active for a project or in support of the wider OAPF area then it might be able to fulfil this role and allow travel over the main highways network during off-peak hours, leaving only the final short journey length in daytime hours when traffic levels are higher.

2.2 Local Access Routes

Within the town centre one or more specific access routes on the local distributor road network should be specified as compulsory to link the approach routes on the strategic road network to the site. These should be discussed and agreed with Croydon Council on a site-specific basis, taking into account the transport assessment results, local capacity constraints, safety considerations and the likely site access and unloading points. Instead a proactive approach needs to be taken where one or more approved holding points are identified on route where vehicles can wait until they are called into the site to meet their booked arrival time.



2 Site Access

The arrangement of the logistics within the confines of the site is primarily the concern of the site's main contractor, providing the site complies with all relevant legislation.

2.3 Site Operation Times and Access Times

Standard practice for construction sites already established in Croydon is for noisy activities to be restricted to the following times:

Monday – Friday: 8:00am – 6:00pm

Saturday: 8:00am – 1:00pm

Sunday & Bank Holidays: No noisy activities on site

(Ref: Pollution and Noise from Demolition and Construction Sites, Code of Practice March 2004 – see:

www.croydon.gov.uk/environment/pollution/noisecontrol/ constucsite)

In general deliveries would be expected to adhere to these times. However, restricting deliveries to daytime hours may actually exacerbate existing peak hour congestion in the town centre and on certain access roads. Hence, Croydon Council may be open to requests for some deliveries to be made outside these hours, subject to consideration of the specific location and the proximity of residents, the site unloading arrangements and any special procedures that might be put in place to mitigate delivery / access noise. Sites wishing to explore this option should contact Croydon Council – it is likely that any agreement to waive the standard restrictions on hours would be accompanied by a request for noise monitoring for confirmation that there is no disruption to local residents under the condition that any complaints would result in the removal of this waiver.

2.4 Site Access Arrangements

The arrangement of the logistics within the confines of the site is primarily the concern of the site's main contractor, providing the site complies with all relevant legislation. Therefore it is assumed that such issues will be addressed within the site's CLP on a site-specific basis.

In this context it needs to be recognised that:

- A well-planned and managed site is likely to produce less waste (i.e. less unnecessary cost) and hence be more efficient.
- Within site a detailed assessment of materials flows and a swept path analysis to establish vehicle access and manoeuvrability will form essential parts of the site logistics management strategy.
- In particular, the location of access points to site, unloading points and any storage within site, and their relationship with both the building's footprint and the locations of hoists, cranes etc. will be critical to the efficiency of the site and could potentially have adverse impacts on the local road network if not implemented properly. Hence confirmation that these issues are addressed form a necessary part of the framework CLP.

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Items such as cranes and possibly some large pre-assembled items will need to be brought to site as abnormal loads and / or may require temporary local restrictions to general traffic to allow for unloading and assembly.

In such cases it is expected that the contractor will apply to Croydon Council for the necessary permissions and that these activities will be scheduled at periods of low traffic activity when disruption will be minimised.

2.5 Staff Travel Plan

The movement of staff to a construction site is not always seen as a constituent part of a CLP. However, for sub-contracted trade contractors, it is relevant, particularly at the fit-out stage, because they often travel to site in the same vehicle that they use to transport both tools and materials. If appropriate arrangements can be made to store tools securely on site and for materials to be supplied in a centrally co-ordinated manner then there could be a significant opportunity to reduce the number of vehicle trips to site, with person-movements being made by public transport.

The actual public transport options relevant to each site and specific arrangements for cycle storage / security etc. should be addressed in the site CLP. However, in general the whole OAPF area, to which the framework CLP is aligned, is easily accessible by a range of mainline rail, bus and tram services as well as on foot from central Croydon and by bicycle.

The travel plan should include specific measures to encourage use of sustainable modes and specify an appropriate monitoring regime and associated targets for the use of sustainable modes to site.

2 Site Access

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3 Supply Chain Management Tools

Within this framework CLP construction logistics is being interpreted in its broadest sense. Therefore, in order to maximise benefits it includes items that might otherwise be omitted from the traditional approach taken to a site logistics plan. Such items include:

- Consideration of waste management within the broader context of other developments.
- Consideration of the full supply chain, rather than just the movements in and around site.
- Joint consideration of the logistics operations of closely located sites.

3.1 Supply Chain Management Tools

In order to fully optimise logistics both at the site level and the collaborative level consideration and implementation of a combination of measures from a range of options, including the following techniques that have been identified as representing an improvement over traditional construction logistics processes, should be considered:

- Just in time delivery: the delivery of materials to site 'just in time' for usage thereby reducing the need for onsite stock storage and the associated wastage of materials due to damage and theft.
- **Reverse logistics:** an enhanced delivery chain which allows for the return of unused goods back to the source supplier. Reduces waste and costs for construction projects.
- **Demand smoothing:** organising deliveries to site so that there are fewer peaks (associated with on site and in traffic congestion) and fewer troughs (with delivery management staff unable to carry out any activity).
- Web-based delivery booking and tracking systems: the use of IT systems to track the expected and actual arrival of vehicles and goods in order to provide greater control over delivery management. Without this there is often little grasp on where construction materials and larger components are at any given time – see section 4.1 for more detail.
- Consolidation through onsite marketplace: the provision of an onsite storeroom with shared materials for builders and craftsmen onsite to avoid multiple deliveries of the same basic items – see section 2.5 in relation to staff travel at fit out phase).
- Better control of materials ordering: linked to onsite marketplace and facilitated by a consolidation centre, as a measure on its own closer central control of ordering has been shown to yield significant benefits in terms of cost control and a reduction in the number of deliveries to site – see section 4.3 for more detail.

Care should be taken to reduce noise when loading or unloading vehicles or dismantling scaffolding or moving materials etc.

3 Supply Chain Management Tools

- Offsite fabrication: the building of larger items offsite to limit deliveries of smaller items and site congestion and to allow quality checking of the pre-fabricated items in a more suitable location see section 4.2 for more detail.
- **Promoting modal shift:** identifying elements within the supply chain where use of alternative modes to road transport would lead to greater efficiency and lower environmental impact.
- **Promoting safe and efficient operators:** by including requirements for the promotion of TfL's FORS scheme and adherence to TfL's 'Standard for construction logistics: Managing work related road risk (WRRR)' see sections 4.4 and 4.5.

3.2 Integration of Sites

Within this framework CLP reference has already been made to the potential for close location of neighbouring construction sites and the potential for clashes in operation if they are managed in isolation. There is, however, significant potential for neighbouring developments to work closely together and integrate elements of their logistics chains in order to reduce costs and capture wider benefits.

Logistics practices that show particular promise in this collaborative context include:

- By combining several supply chains which would otherwise be operating in parallel it might be that the volumes of materials suitable for consolidation would be sufficient to justify a consolidation centre, resulting in fewer deliveries to site, whereas taken individually that might not be the case. Even if this is only the case for a particular phase (probably most likely at fit-out) then it offers the opportunity to reduce the number of vehicle movements when it is at its peak – see section 4.2 for more detail.
- Developing an onsite marketplace, or indeed a marketplace at a consolidation centre, might provide an opportunity to capture economies of scale in terms of common materials and could be combined with efficient delivery management processes to improve vehicle utilisation, reduce the number of deliveries and reduce material costs. This principle may also provide sufficient material volumes to enable the use of common batching plants and favour the use of rail to supply these and also for long distance transport of aggregates.
- Joint consideration of upstream logistics chains may identify deliveries originating from either the same supplier, or suppliers in close proximity, providing opportunities for load sharing.

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3 Supply Chain Management Tools

Any plant used for the crushing of materials should be issued with an Environmental Permit by a local authority under The Environmental Permitting (England & Wales) Regulations 2010.

- Combined application of a single web-based delivery booking and tracking system would both highlight any opportunities for load sharing and also help avoid conflict between deliveries on the constrained local road network in proximity to the sites.
- Joint approach to waste management see section 3.4 for more detail.
- Strategic consideration of access routes and timing to the various sites would lead to a co-ordinated approach to routing and associated signage can be implemented for all developments, in conjunction with a web-based delivery booking and tracking system.

Initiatives that would particularly support this collaborative approach will be developed and promoted to contractors within the OAPF area and where appropriate tools that support these initiatives will be developed. Further details of possible tools and initiatives to support OAPF developments are provided in section 4.

3.3 Use of Alternative Modes

Section 2.1 assumes the final mile is by road. This is likely to be the case in the majority of locations, although opportunities for rail and water access direct to site should be considered.

There is significantly more potential for use of alternative modes to be viable for longer journey legs or for bulk materials within the supply chain. In particular:

- The location of a well-managed, rail-connected aggregates depot and concrete plant in Purley offers the opportunity to use rail rather than road to transport the raw materials for aggregates / concrete so reducing the overall environmental impact of the supply chain.
- Where goods are travelling long distances, particularly from abroad, then it is more likely to be economic to incorporate road or water legs within the supply chain. Goods could be transferred to road for the final delivery leg, or held and checked off-site at a consolidation facility prior to the final journey to site.

3.4 Waste Management

Incorporation of waste management within the CLP and joint consideration of site waste management plans may reveal opportunities for shared loads and / or re-use of waste materials on other local developments that would otherwise be disposed of or returned to a remote supplier. This will increase opportunities for recycling and further reduce vehicle mileage which would not be visible at the individual site level.

4.1 Delivery Booking & Scheduling

A booking-in system is required to plan and organise deliveries, providing greater control over delivery management and vehicle movements around the site. The booking-in system should also record movements to and from site for the full duration of the development and needs to be maintained and be open to review by the council and any other authority wishing to scrutinise it.

For those sites without an existing system, Croydon Council can provide an MS Excel based tool which can be used for recording vehicle movements and compliance. The tool can also provide calculations on carbon emissions along with other useful outputs.

The use of such a system for developments is expected to become a requirement for obtaining planning permission within the OAPF area. Sites outside the OAPF area may be requested to use such a system depending on local conditions and a site impact/risk assessment.

Furthermore, the use of a common web-based delivery booking and tracking system across the sites, using IT systems to track the expected and actual arrival of vehicles and goods, could enhance the impact of the framework CLP. Allowing each site to control its own deliveries, but with central management that is mindful of the overall capacity of the road system in Croydon would both highlight any opportunities for load sharing and also help avoid conflict between deliveries on the constrained local road network in proximity to the sites.

The use of such systems offers Croydon Council significant advantages due to its ability to monitor vehicle movements by location, time of day, vehicle type, level of vehicle utilisation etc., which will provide important inputs to the project monitoring regime that will be used to evaluation the impact and hence success (or otherwise) of the framework CLP.

4.2 Off-site Fabrication & Consolidation

Previous experience in the construction industry has shown that there are a number of potential benefits to contractors in the use of Freight Consolidation in conjunction with a package of sound logistics practices.

Significant identifiable cost savings to the contractor have been through reductions in waste in comparison to the traditional approach where excess stock was ordered to ensure staff always have materials to hand including a buffer to take into account onsite damages and theft. The secure and organised environment of the freight consolidation centre (FCC) reduces the need for Previous experience in the construction industry has shown that there are a number of potential benefits to contractors in the use of Freight Consolidation in conjunction with a package of sound logistics practices.





Various standards and tools are available to help developers and contractors demonstrate their commitment to good practice. this additional stock as well as making stock returns to suppliers simpler. Having a reduced amount of material stored on site makes the site a safer place to work.

Other savings come from the management and reduction of risk from potential interruptions to the overall construction schedule. One example of the ways that FCC's achieve this is through the implementation of a damage and quality checking regime. An FCC allows for the inspection of materials from the supplier during the holding period before stock is passed to the site. Therefore, any returns can take place without holding up the onsite build process. This has been shown to provide an average saving of 2 weeks in rectification activity over the direct to site delivery scenario for critical items that turn out to be damaged.

The FCC can also provide a storage buffer for long lead time items needed for shell, core, lifts, curtain walling and Mechanical & Electrical (M&E) phases. Having such items, which are often specialist equipment that needs to be built to order and transported significant distances, near the site where they can be called in at short notice helps to avoid construction delays.

For larger items significant amounts of time can also be saved at site if large items coming from the manufacturer are first unloaded at the FCC and then transferred to a loading and handling mechanism that is easier to manage at the site gate; for example through the pre-slinging of materials at the FCC before the delivery to site. This reduces vehicle dwell time at a potentially congested site and reduces the potential for on-site unloading damage though it does in itself introduce an extra set of handling activity requiring resource and insurance which the FCC operator will require payment for taking on the risk. An advantage to the FCC offering is that they will have experienced staff and the appropriate handling equipment in comparison to the onsite contractors who may not.

Existing construction FCCs have demonstrated a saving of 25 minutes per man day of construction tradesman time through having enough material readily available to hand on site and not having to deal with site deliveries to get it.

However, the intensive use of a consolidation centre is primarily suited to a relatively small proportion (in the later stages) of the full build duration, which means that investment in a dedicated Consolidation Centre can often be prohibitive. It is possible that, when taken together the developments in the OAPF area might provide enough phased demand to make economic a shared consolidation centre operating over an extended period of time. This could be operated on a pay-as-you-go basis. Alternatively, if

projected demand is not sufficient for such a facility to be set up specifically for the OAPF developments, the opportunity also exists to use existing facilities on a pay-as-you-go basis – the precedent for which has already been set by Sir Robert McAlpine for the CCURV:PSDH development.

4.3 Common Procurement

The degree to which common procurement exists within a development's supply chain is generally down to a combination of how proactive the main contractor is in making such arrangements available to its subcontractors.

However, even without proactive effort to arrange it, given the significant amount of activity planned for the OAPF area it seems likely that there will be overlapping operations in terms of contractors working on, and suppliers delivering to, neighbouring sites. This suggests that supply chain efficiencies would present themselves as a matter of course and that a collaborative procurement initiative, with or without a consolidation centre, would have the potential to deliver significant savings in cost and number of deliveries.

4.4 FORS

TfL has established the Fleet Operators Recognition Scheme (FORS) which is a free, voluntary membership scheme that aims to improve freight delivery in London by providing a quality and performance benchmark for the freight industry and encouraging freight operators to follow best practice. Becoming a Bronze member of FORS means the contractor/ subcontractor who operates Heavy Goods Vehicles (HGVs) and or fleets of vans can demonstrate that they meet the minimum FORS Bronze standards for their company which covers the following areas:

- Drivers and Driver Management
- Vehicle Maintenance and Fleet Management
- Transport Operations
- Supporting Policies and Procedures

Main contractors for projects within the OAPF will be required to demonstrate that their suppliers are committed to safer and more efficient operations by requiring them to register, if they are not already registered, for membership of FORS, or equivalent, and attain bronze membership as a minimum standard through the FORS assessment process, within 3 months of being awarded a contract. The precedent for this has been set and tested on Crossrail contracts for main contractors and all subcontracted companies.

For more information about FORS see www.tfl.gov.uk/fors

Contractors for projects within the OAPF will be required to demonstrate that their suppliers are committed to safer and more efficient transport operations through membership of Transport for London's Fleet Operators Recognition Scheme (FORS).

4.5 Road Safety & Work-Related Road Risk

Following a number of high profile accidents between HGVs, particularly those involved in construction activity, and vulnerable road users such as pedestrians, cyclists and motorcyclists, TfL has facilitated the formation of industry working groups which have identified what could be done to reduce the risks posed by large vehicles to these groups. TfL's approach has been to require minimum contractual standards that are applied to all GLA contacts as outlined in Annex A to its CLP guidance document for developers and their contractors. This has been developed into an emerging standard for construction logistics for the management of work related road risk (WRRR), see **www.tfl.gov.uk/WRRRstandards**. All developers will be expected to require their main contractors and associated subcontractors adhere to this standard.

4.6 LEZ & ECO Stars

Given that one of the key objectives of introducing the framework construction logistics plan is to minimise local air pollution in central Croydon – an area which already suffers with poor air quality – it is important to consider specific measures that would help to meet this goal.

The London Low Emission Zone (LEZ) goes some way towards this and effectively sets a 'baseline' standard. However, given that central Croydon still suffers from poor air quality whilst the LEZ has been in force for several years, it seems that further steps should be considered.

One way to promote the best operational use of clean vehicle technologies would be to require contractors and their subcontractors to sign up to the local 'ECO Stars' scheme. ECO Stars is an environmental fleet recognition scheme originally developed in South Yorkshire with the specific objective of reducing emissions that contribute to poor local air quality and which is now operating in 18 local authority areas, with more interest being generated across the UK. (This would be complementary to the requirements to join FORS as the two schemes have different operational characteristics.)

ECO Stars works by assigning a star rating both to each individual vehicle, based on a number of emissions-related criteria, and the overall fleet operating from a specified depot, based on the degree to which a number of fleet management measures aimed at cutting emissions and promoting efficient operation have been applied.

The proposal would be to limit delivery access to construction sites within the OAPF area to vehicles rated 4* or better unless a special permit was granted based on a particular reason for exemption – for example specialist vehicle equipment that made standard vehicle replacement profiles impractical.

At the time of writing Sutton Council has launched a local ECO Stars scheme in partnership with Croydon Council.

The London Low Emission Zone (LEZ) goes some way towards this and effectively sets a 'baseline' standard.

5 Site Specific CLPs

5.1 Relationship Between Framework & Site CLPs

The individual nature of construction sites is such that each one requires a specific assessment of its logistics requirements based on the relationship between the proposed building design and the full site footprint, the proposed arrangements for site logistics, the local road network and access points and the phasing of the works etc.

Therefore there is scope for each site to produce a tailored site-specific construction logistics plan. The role of this framework construction logistics plan is to provide the structure for the site CLP, identify the overall objectives and content that will be expected of it and to provide access to a set of tools that will help with its efficient implementation.

5.2 Outline Site CLP Content & Structure

A suggested starting point for the structure of a site construction logistics plan, recognising the need for flexibility outlined in section 5.1 is presented as Annex 1. The structure proposed takes into account the content of this framework CLP and the associated planning requirements / code of practice

5.3 Implementing the CLP

It is expected that the site CLP will be submitted to Croydon Council for approval in advance of contract details with the main and sub-contractors being irreversibly concluded so that the implications of the CLP can be accurately costed into actual working practices. As a guide this might be expected no later than 3 months prior to the expected start of works.

In order to ensure that the working practices agreed within the CLP are adhered to by all contractors, developers and their main contractors are encouraged to include the CLP as an annex to any contracts let with subcontractors.

5.4 Contractors' Handbook

It is proposed that a 'Contractors' Handbook' will be prepared in order to communicate the provisions of the framework and site specific construction logistics plans to the contractors working on projects within Croydon Town Centre. The purpose of this would be to give site-based supervisors and managers the essential information needed to ensure the provisions of the construction logistics plan are adhered to. Once again, the precedent for this has already been set by Sir Robert McAlpine for the development of Bernard Weatherill House, the handbook for which was produced by Alandale Logistics.

The basis for this would be the common provisions set out within the framework construction logistics plan, but would need to be varied according to the detailed provisions of each site's own construction logistics plan as well as the main contractor's own working practices.



6 Subsequent Use – the DSP

As introduced in Section 1.2, delivery and servicing plans are intended to provide a structure by which the owners and occupiers of premises can ensure that the delivery and servicing activities required as a development is used for its intended purpose can be conducted in a safe and efficient way whilst minimising impacts on the local environment. For new developments, such as those proposed in Croydon, ensuring that the design takes into account subsequent use and provides adequate access and loading / unloading facilities can form an important part of a DSP.

Just as has been identified within the framework CLP, when it comes to the subsequent use of the proposed developments, the provision of a common approach to, or even joint facilities for, the management of delivery and servicing activity for developments in close proximity to each other, through the development of a framework DSP, would be expected to lead to a more organised outcome than is currently often the case. Implementing this through a broad framework in the early stages of planning would be beneficial by ensuring a common approach to delivery and servicing infrastructure provision and capacity, and more importantly establishing an outline framework for collaborative processes for delivery and servicing management, which building managers and occupiers would be expected to follow from the point of occupation. It would be hoped that by putting such a structure in place a series of voluntary DSPs would result, rather than requiring them to be mandated through planning although mandating would remain an option), following a similar process to that for workplace or residential travel plans.

The framework DSP for the new developments would aim to set out procedures to minimise the number of deliveries by encouraging a cooperative approach to delivery and servicing and to improve the efficiency in which they are made. This could be, for example, through requirements:

- to establish a standard agreement for occupants to use collaborative systems for local order placement, or
- to use freight operators who can demonstrate their commitment to following best practice, for example through membership of FORS.

This Code of Practice provides advice to assist developers and their contractors to ensure that they undertake their works using best practice and thereby reducing their impact on local communities

The collaborative approach could be extended to a joint strategic approach to waste management and removal in order to avoid proliferation of waste storage locations and multiple visits by an unnecessarily large number of waste transport contractors.

However, perhaps more importantly, by considering these issues at such an early stage in the planning process it should be possible to design in adequate access arrangements and features that facilitate low impact delivery practices. In particular this should involve taking an active approach to ensuring that there is adequate provision of dedicated facilities within a local group of developments where legal and safe delivery and servicing can take place. These facilities should be located 'off-street' and, where possible, efforts should be made to incorporate them within the footprint of the building, possibly underground, or in other suitable locations. This would offer an opportunity to support the concept of out of hours deliveries, through the scope of designing in noise containment measures and safe storage facilities, so removing some delivery and servicing vehicles from periods of peak traffic flow on the network, and provide planning officers with the confidence not to place restrictions on out of hours delivery activity. This could be backed up by positive phraseology within the OAPF documents such as: 'the Council recognises the potential benefits of out-of-hours deliveries (including activity at night) where appropriate measures and management techniques are introduced to reduce potential disruption to residents'.

Looking further ahead, depending upon the results of TfL's CVIS loading bay pilot, future consideration should be given to making all, or part of the loading bay bookable in advance possibly using an online system. The previously mentioned collaborative and well defined delivery and servicing management agreement should facilitate implementation of a booking system.

The detailed content of the individual DSPs developed within the framework will depend on the balance between the ultimate uses of the various developments i.e. retail vs office vs residential etc, and the outcome of the transport assessments required within the development control process. As part of this process, it is recommended that a desk-based FERS (Freight Environment Review System) audit is conducted at the stage of initial design and that this is revisited if any significant design changes are requested / proposed at a later stage of the planning process.

6 Subsequent Use

Ihe purpose of this Code of Practice is to ensure that disturbances due to noise, vibration, dust and smoke arising from demolition and construction works are kept to an acceptable level.



7 Monitoring



This Code of Practice provides advice to assist developers and their contractors to ensure that they undertake their works using best practice and thereby reducing their impact on local communities. Monitoring is important given that the main objective is to minimise impacts such as congestion, noise, pollutant emissions and visual intrusion on the local environment, which are linked to the CLP – in other words it is the impact of implementing an effective CLP that is important, rather than the CLP itself.

Croydon Council's Construction Compliance and Monitoring Officer will be able to provide advice on the monitoring requirements. The monitoring framework will need to be a balance between what data can realistically be collected by developer / contractor systems, as specified in the framework CLP, and the indicators that will give a true picture of the impact both of individual developments and the overall system.

The use of delivery booking and tracking systems will provide detailed evidence about the number and type of delivery vehicles and the efficiency and accuracy of the deliveries carried. This information will be collated at the level of individual developments, with the potential for collaborative data collection depending upon the final nature of the systems implemented.

Headline outputs from the monitoring process will be matched to track progress against the final objectives as defined within the framework CLP.

Croydon Council has produced a tool to assess emissions called Croydon Development Emissions Tool (CDET) to assist developers to assess whether or not their new development meets the target set by the council. It allows development emissions to be estimated based on fuel type, building use class and building size, as compared with an existing building or greenfield site. The development can be screened against the space it replaces and the local reduction target for NO2, PM and CO_2 , and scenarios for fuel use and energy efficiency be tested.

The data collection related to the construction logistics operations will complement the CDET assessment results.

The monitoring framework will need to be a balance between what data can realistically be collected data by developer / contractor systems, as specified in the framework CLP, and the indicators that will give a true picture of the impact both of individual developments and the overall system.

7 Monitoring

A number of tools are currently under development that might help in defining the detail of the monitoring framework, including a Low Emissions Toolkit that is being produced for the Low Emission Strategy Partnership and a Planning Emissions and Reduction Assessment Tool (PERAT), the development of which is being led by TfL.

The exact scope of the indicators included, the tool to be used, and focus (construction vs subsequent use) will need to be assessed in due course to understand their applicability in this context.

7.1 Data Collection

Data collection will be the responsibility of each individual site under the guidance of the Construction Compliance and Monitoring Officer following the template laid out in the site's CLP. Data should be collected on a continual basis to allow interim reporting which will show up any particular instances of good or disappointing results at a relatively early stage.

Targets for the CLP need to be SMART (specific, measurable, achievable, realistic, timely) and easily collected and interpreted. They should be agreed between the developer, the main contractor and the planning authority, as should the indicators and data used to measure them. TfL's CLP Guidance presents a good starting point for the data required to monitor compliance as follows:

Number of vehicle movements to site

- Total
- By vehicle type/size/age

Vehicle mileage

- Total
- By vehicle type/size/age

Level of vehicle fill

- For each delivery/collection
- Extent of vehicle sharing
- For each delivery/collection

CO2 calculation

Local air quality emissions

- NOx
- PM10

The purpose of this Code of Practice is to ensure that disturbances due to noise, vibration, dust and smoke arising from demolition and construction works are kept to an acceptable level



Noise

Delivery/collection accuracy compared to schedule Breaches and complaints

- Vehicle routing
- Unacceptable queuing
- Unacceptable parking
- Supplier FORS accreditation
- LEZ compliance
- Contractual conditions compliance

Safety

- Logistics-related accidents
- Record of associated fatalities and serious injuries
- Ways staff are travelling to site
- Vehicles and operations not meeting safety requirements

Effectiveness of waste plan

- Percentage of recycled materials used in development
- Percentage of materials re-used on site
- Percentage of waste recycled

Scheme cost and efficiency impacts

- Identifiable cost savings
- Record of lost hours
- Material losses
- Material costs reclaimed
- Duration of scheme or phase
- Size of development
 - Metres squared



As mentioned previously, the use of a booking and tracking system or the Croydon Council site compliance spreadsheet tool will offer significant advantages in respect of monitoring due to the ability to record vehicle movements by location, time of day, vehicle type, level of vehicle utilisation etc., which will provide important, standardised inputs to the monitoring regime that will be used to evaluation the impact and hence success (or otherwise) of the CLP.

7.2 Reporting

Reporting should be at regular intervals as agreed with the Construction Compliance and Monitoring Officer. It is suggested that this initially be monthly until both parties are satisfied as to the satisfactory flow and accuracy of information and its presentation prior to a potential relaxation to quarterly, assuming both parties agree. The option of reverting to monthly reporting should be retained in the event of problems relating to data quality, timeliness, report format or other related issues arising at a later date.

7.3 Indicators

The development of a generic indicator set to be used as part of the monitoring regime and relating to the objectives that led to the development of the framework CLP (congestion, noise, pollutant emissions) will be developed by / in agreement with the Construction Compliance and Monitoring Officer.



Annex 1 Site Specific CLP Outline Structure

1. Introduction

- 1.1 Introduction to the Development and the Site Location
- 1.2 Summary of the Construction Phases and Techniques to be employe
- 1.3 Relationship to the Croydon OAPF
- 1.4 Relationship to the Development Control Requirements

2. Supply Chain Management

- 2.1 Supply Chain Management
- 2.1.1 Delivery Booking & Scheduling
- 2.1.2 Off-site Fabrication & Consolidation
- 2.1.3 Contractor Handbook
- 2.1.4 FORS
- 2.1.5 LEZ & ECO Stars
- 2.2 Waste Management
- 2.3 Use of Alternative Modes

3. Site Access

- 3.1 Local Access Routes
- 3.2 Site Operation Times and Access Times
- 3.3 Site Access Arrangements

- 3.4 On-Site Arrangements
- 3.4.1 Loading / Unloading Locations
- 3.4.2 Cranes & Equipment
- 3.4.3 Swept Path Analysis
- 3.4.4 Materials Storage (if applicable) and Security
- 3.5 Staff Travel Plan
- 3.5.1 Tool Storage

4. Implementation

- 4.1 Contractual Arrangements
- 4.1.1 Common Procurement
- 4.2 Contractor Handbook
- 4.3 Integration with Neighbouring Sites
- 4.4 Data Collection

5. Subsequent Use – the DSP

6. Monitoring Arrangements

- 6.1 Review Meetings & Data Sharing
- 6.2 Data Format & Indicators
- 6.3 Targets

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