Ambitious • Collaborative • Diverse • Professional • Responsive

Risetall Ltd

10 and 10a Belmont Street, Camden

Construction Traffic Management Plan

Doc Ref: D121139/T002
August 2008, V0.1

Prepared for:
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10 and 10a Belmont Street, Camden

Construction Traffic Management Plan

August 2009, V0.1

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1. INTRODUCTION

Scope of the Works

1.1 The works that are the subject of this Construction Traffic Management Plan (CTMP) involve the construction of 163 residential units with shared bathrooms and kitchen facilities, 2231sqm of office space and a student roof terrace, basement and lower basement, together with associated service infrastructure within the planning black line plan shown below. Further details of the proposed development and associated servicing and access arrangements can be found in the Transport Statement (March 2009, Scott Wilson) submitted to support the planning application for this development.

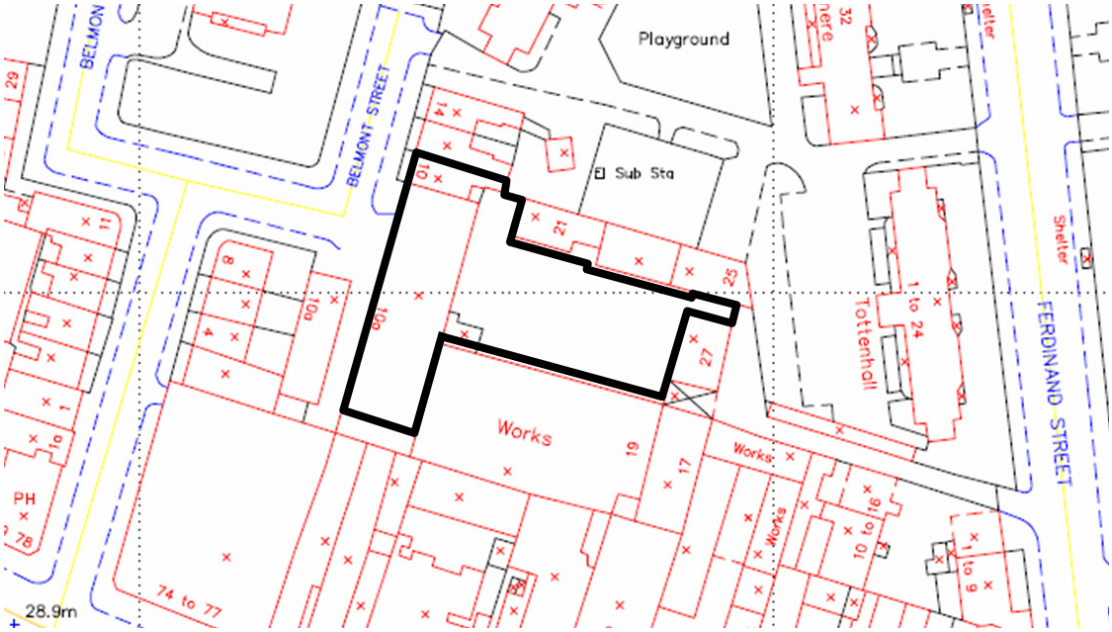


Figure 1-1 Site Black Line Boundary (Source: John Pardey Architects)

Purpose of the CTMP

1.2 The CTMP describes the proposals to safely manage vehicular, cyclist and pedestrian traffic during the construction of the development proposals.

1.3 The purpose of this CTMP is to achieve the following:

1.4 Provide details of the Construction Traffic Management Plan to be applied to provide a safe environment for road users and construction staff;

1.5 Ensure that any impacts on road users are mitigated;

- Ensure that access is maintained for the local resident community and local businesses;

- Outline how potential construction related environmental effects identified in the London Borough of Camden (LBC) *'Sustainable Design and Construction Policy'* will be avoided, remedied or mitigated during the construction period.

1.6 Outline the potential stakeholder issues and set out strategies, systems and procedures to provide for ongoing consultation between local residents and businesses, LBC, and Transport for London (TfL).

Overarching Objectives of the CTMP

1.7 Provision of a safe environment for pedestrians, cyclists, and vehicular traffic through the installation of plans which effectively warn, protect, inform and guide in accordance with best practice guidance.

1.8 Plan and stage all works effectively to minimise delays to pedestrian, cyclist and vehicular traffic, and minimise conflict points on the respective transport networks.

1.9 Enable pedestrians, cyclists, and road users to plan their journeys by providing them with timely and accurate information on programmed traffic management measures.

1.10 Limit obstructions and restrictions to current movement patterns, and where required, provide alternative routes for use by pedestrians, cyclists and vehicular traffic

1.11 Actively liaise with key stakeholders and ensure they are informed about proposed changes to plan measures and implementation programmes

Status of the CTMP

1.12 The CTMP should be referred to when:

- Planning works to minimise, remedy or mitigate the effects on the environment
- Undertaking all works that may have impact on the environment
- Communicating with Stakeholders

1.13 Once the CTMP has been agreed with relevant stakeholders, it will be developed in further detail and made available to all parties, so that it can be used as a practical construction and communication management tool and reference source. An up-to-date CTMP will be kept in a specified site office and all construction staff will be made aware of its location for reference as required.

Construction Environmental Management System Overview

1.14 The CTMP forms one of a suite of documents specifying processes and mitigation measures for all potential areas of construction impact. These documents will cover the following areas:

- Dust and Air Pollution Management
- Noise and Vibration Management
- Water/Sediment Management
- Spoil and Fill Management
- Management of Construction Waste and Re-use
- Site Hazards and Risk Management
- Incident Management

1.15 It should be noted that there are overlaps between some of these documents and the CTMP. For example, construction traffic can contribute to noise and vibration and will need to be mentioned in the relevant construction management document.

Exclusions

1.16 The appointed contractor will prepare a specific Health and Safety Plan for site works to cover all activities within the construction process for the development. This CTMP only considers traffic related risks and management.

Consultation

1.17 The development of this CTMP has been based on consultation with transport planners at the London Borough of Camden.

Structure of This Document

1.18 In order to safely manage vehicular, cyclist and pedestrian traffic during the construction of the development proposals, it is necessary to identify the risks that could potentially impact on safety and integrate mitigation measures into the CTMP. The CTMP is therefore based upon the mitigation measures proposed to address the risks identified in the Risk Register contained in Appendix A.

1.19 The remainder of this document is therefore structured as follows:

- **Chapter 2** – Provides background on the construction site activities, phasing and layout.
- **Chapter 3** – Provides details on the proposed routing and management of construction vehicles into and out of the site.
- **Chapter 4**- Provides details on the management of general traffic not related to construction

- **Chapter 5** – Indicates how the CTMP is envisaged to be developed as further information becomes available.
- **Appendix A –** contains the risk register used to identify the key mitigation measures required
- **Appendix B –** contains drawings of the indicative site layout and temporary highway arrangements.

2. CONSTRUCTION SITE ACTIVITIES, PHASING, AND LAYOUT

Existing HGV Movements

2.1 The existing site is currently occupied by office accommodation at 10a and residential accommodation at 10 Belmont Street. The current car park and service area can be accessed via an un-named access road between Kent House and Tottenhall with a height restriction of 3.2 metres. There is also a paved area in front of 10a Belmont Street that may also be used occasionally for deliveries.

2.2 The existing Office site is estimated to generate the following delivery trips;-

Address:	Gordon House Business Centre 6 Lissenden Gardens Gospel Oak NW5 1LX	**Business Class**	Licensed Office Space B1 - Office
		Location	Inner
		Employ	29
SurveyCode	243	**PTAL**	3
Survey Date	13/01/1999		

Car

Time	In	Out	% In	% Out
09:45-10:0	1	1	17	17
11:00-11:1	1	1	17	17
12:00-12:1	1	1	17	17
12:15-12:3	1	1	17	17
12:30-12:4	1	1	17	17
15:45-16:0	1	1	17	17
Total	6	6	100	100

Managed by MVA Consultancy on behalf of the London Councils

Printed On 27/10/2008 Predictor Type : Employees TRAVL Version : 8.08a

Figure 2-1 TRAVL Site, Office Accommodation Delivery Profile

2.3 The existing Residential sites are estimated to generate the following delivery trips;-

Address:	Albion Wharf (Affordable 6 Hester Road, Battersea SW11 4AL	**Business Class** **Location** **ResUnits**	Residential Development C3 - Residential Central 45
SurveyCode	417	**PTAL**	4
Survey Date	19/04/2005		

Rigid 3 Axles

Time	In	Out	% In	% Out
08:45-09:00	1	1	33	33
09:30-09:45	1	1	33	33
10:15-10:30	1	1	33	33
Total	3	3	100	100

Managed by MVA Consultancy on behalf of the London Councils

Printed On 27/10/2008 Predictor Type : No of Dwellings TRAVL Version : 8.08a

Figure 2-2 TRAVL Site, Residential Accommodation Delivery Profile

2.4 Figure 2.1 and 2.2 estimates that the site currently will only generate HGV traffic movements from the Residential Portion of the site, with 3 inbound HGV movements and 3 outbound HGV movements daily.

2.5 During construction of the development the number of construction HGV trips may be of a higher level than currently generated, but this is only expected during peak construction phases, such as the pouring of concrete foundations, where a constant stream of deliveries is a necessary part of the delivery process. During most construction phases, the volume of HGV movements is predicted to be no more than that currently generated by the existing land uses on the development site. Further details of estimated construction traffic volumes are provided later in this document.

Outline Description of Proposed Development

2.6 The development is formed by a six storey (above ground level) T-shaped building fronting onto Belmont Street. The building will contain two basement levels and a roof garden.

Construction Site Activities

2.7 The proposed activities to be conducted during the construction of the proposed development are as follows:

- Construction of Site Compounds and Placement of Site Offices

- Establishment and securing of site boundaries, and access points via the use of fencing, site hoardings, safety barriers, and gates (subject to revision as required by construction phasing).
- Construction, relocation and/or upgrading of services
- Clearing of non-safeguarded trees and vegetation
- Placement of drainage pipes and structures
- Haulage operations of spoil and fill
- Deliveries of construction materials, and plant equipment
- Transportation, temporary foundation works, and construction of temporary cranes
- Piling and excavation of building foundations
- Pouring of concrete
- Construction of residential building 'pods'
- Construction of Energy Centre
- Construction/Reconstruction of local roads, traffic calming measures and footway
- Construction of vehicle parking areas
- Placement of top soils and replanting/planting of trees and vegetation
- Installation of street furniture, lighting and signage

Construction Programme

2.8 Site demolition is proposed to start in April 2010 and construction of the final stage is expected to be complete by April 2012. The duration of the construction is expected to be approximately 6 months for demolition and enabling works and approximately 18 months for construction. The total construction period will therefore be approximately 24 Months.

Construction Stages and Phasing

Site Clearance Stage

2.9 This stage would commence with the erection of the site hoarding along the boundary shown in drawing SK007 contained in Appendix B.

2.10 The existing buildings are of brick construction. The potential to recycle any bricks currently used in the construction of the existing building is considered to be severely limited.

2.11 During this stage, the area to the rear of 10a will be used as a staging area for construction vehicles to be loaded with material to be removed from site. The

height restricted route to Ferdinand Street will be utilised during this stage. This will allow vehicles to follow a circular route by entering the site from Ferdinand Street turning around in the staging area and exiting back onto Ferdinand Street to exit the local area as shown in SK003 in Appendix B. This will facilitate a quick turnaround of construction vehicles and ensure that movements are limited to Ferdinand Street only.

2.12 Any vehicles unable to use this route due to the 3.2m height restriction will arrive at the site via Belmont Street, where a second site entry point will be located.

2.13 Vehicle movements associated with this stage are likely to comprise of flatbed rigid and articulated heavy goods vehicles delivering demolition plant to the site, as well as tipper bodied rigid vehicles removing construction waste. Smaller van based vehicles associated with visits by the various utility companies would also be expected as the utilities serving the existing buildings are dealt with.

Site Excavation Stage

2.14 Sheet piling around the basement perimeter will allow excavation of the site to commence in preparation for construction of the upper and lower basement levels. The construction vehicle access arrangement described in relation to the site clearance stage above would be maintained for site excavation.

2.15 The site access arrangements would therefore remain as per the site clearance stage with the majority of vehicles entering the site via Ferdinand Street as shown in SK003, with those unable to clear the height restriction of 3.2m entering the site via Belmont Street, as shown in drawing SK001, Sk005 and SK006 contained in Appendix B. As the site is excavated, a ramp would be constructed up to the street level entrances to maintain access and egress for construction vehicles.

2.16 Vehicle movements associated with this stage are likely to comprise of flatbed rigid and articulated heavy goods vehicles delivering piling machinery and excavators to the site, as well as tipper bodied rigid vehicles removing excavated spoil.

Construction Stage

2.17 The development will essentially be constructed in one phase as shown in drawing SK007.

2.18 Phase 1 involves construction of the two sub-basements, lift/stairwell cores, and construction of the office space and the installation of 184 Residential units. The ramp constructed during the excavation stage will be utilised to provide vehicular access to the courtyard area throughout phase 1.

2.19 Once the sub-basements have been constructed, the programme for construction of the remainder of the building will be shorter than typically expected due to the use of modular bedroom components, which will already include many of the main bedroom fittings. The bedrooms will be transported individually on to site by a flatbed articulated vehicle, ready to be lifted into place by the tower crane proposed to be installed on site.

2.20 The final element of phase 1 will be the completion of the cycle storage area to the rear of the site which will have been used as part of the staging area for turning vehicles up to this point.

2.21 A fitting out period will follow Phase 1. However as mentioned above this will be shortened by the fact that many of the modular bedroom units will already include many fittings. During this phase it is anticipated that smaller contractors vehicles will be accommodated in the are to the rear of the site accessed by Ferdinand Street.

Hours of Site Operation

2.22 In accordance with the hours recommended in the London Borough of Camden *'Noise from Construction Sites'*, the hours of work are proposed to be:

- Monday to Friday 08:00 – 18:00
- Saturday 08:00 – 13:00
- No work to be carried out on Sundays or Bank Holidays

Site Access

2.23 Belmont Street and the access off Ferdinand Street will remain open to provide access for construction vehicles and authorised site personnel who will enter the site via the proposed temporary entrances. Belmont Street will remain open as public vehicular and pedestrian route throughout the construction period.

2.24 Banksmen will be stationed at the site access throughout the construction period to assist construction vehicles to enter and exit the site safety, whilst minimising inconvenience to traffic on Belmont Street and Ferdinand Street.

2.25 Access to the parking areas behind the site in the courtyard will be restricted to site vehicles only during the construction process.

2.26 A delivery booking system will minimise the potential for vehicles queuing along either Belmont Street or the access route from Ferdinand Street. However, if this does occur, the cul de sac area of Belmont Street adjacent to the development may be used to temporarily hold vehicles that have arrived only a few minutes before their allotted time.

Site Layout

2.27 An indicative hoarding/fencing boundary for the site during construction is shown in Drawing SK007. The necessary hoarding licences will be applied for.

Phase 1

2.28 An indicative layout for the site during construction Phase 1 is shown in Drawings SK007. This may be subject to revision following further detailed logistics planning.

2.29 It is proposed that vehicles will enter the courtyard area via the access from Ferdinand Street, with the exception of vehicles exceeding the 3.2m height restriction. Vehicles will then be unloaded within the courtyard area by the tower crane, or other suitable equipment. Vehicles exceeding 3.2m will arrive at the site at the Belmont Street entrance. This is likely to mainly be required for the delivery of the bedroom pods, which will be lifted into place by the tower crane.

2.30 All materials will be stored on site, within the courtyard area.

Tower Crane Locations and Arc of Operation

2.31 The use of a luffing jib crane during construction will be investigated. Luffing jib cranes will be employed to specifically avoid the need for over sailing of the adjacent highway and buildings, since the jib angle can be changed to reposition the load at various radii, without the remainder of jib over sailing these sensitive areas. When compared to other tower crane types, it is also usually possible to construct a lower tower height when using luffing jib cranes.

2.32 The tower crane will be erected within the courtyard area of the proposed development which will ultimately be covered and become the cycle storage area. The tower crane location and indicative arc of operation during phase 1 is shown in Drawings SK006.

2.33 All necessary licences required for the erection and operation of the tower crane will be applied for.

3. CONSTRUCTION TRAFFIC MANAGEMENT

3.1 This section of the CTMP identifies all of the environmental impacts specific to construction traffic and presents suitable mitigation measures.

Delivery Booking System

3.2 A delivery booking system will be operated by the site traffic manager. The system will aim to mitigate the following:

- Arrival of unscheduled deliveries
- Deliveries arriving late due to supplier despatch misunderstandings
- Deliveries failing to arrive
- Wrong quantities or materials arriving by mistake, requiring the vehicle to be sent away, or an additional 'part-load' vehicle delivery to make up delivery requirements
- Delivery vehicles arriving early in the hope that they will be dealt with out of turn
- No staff or equipment being available on-site to unload the vehicle.

3.3 Mitigation of the above will avoid unnecessary additional vehicle movements to and from the site. It will also importantly reduce the possibility of construction vehicles queuing outside of the site waiting to be processed.

3.4 As mentioned above, banksmen will be employed to ensure the efficient and safe movement of vehicles into and out of the site. The banksmen will be coordinated by the site traffic manager.

Heavy Goods Vehicle Traffic Volumes

3.5 The monthly profile of construction traffic movements is expected to equate to an average of 42 vehicle movements per month. However during some periods of construction (such as excavation) this average may be exceeded.

3.6 Based on an average of 20 working days a month (excluding significant movements on Saturdays), this peak movement equates to approximately 2 vehicle movements per day. Hourly vehicle movements will vary depending on the site activities.

Heavy Goods Vehicle Types

3.7 A number of types of heavy goods vehicle will serve the site. These are expected to include the following:

- Rigid Skip Lorries – for removal of demolition waste (approximately 7.5 metres long and 2.5 metres wide)
- Tipper Bodied Rigid Lorries – for removal of demolition waste and spoil from the site (maximum of approximately 10.2 metres long and 2.5 metres wide). The swept path of the route of this vehicle into the site is presented in Drawings SK004 and SK005 in Appendix B.
- Box/Flatbed Rigid and Articulated Lorries – for the delivery of some plant, bedroom modules and other construction materials (maximum 16.5 metres long and 2.5 metres wide). The swept path of the route of this vehicle into the site is presented in Drawing SK001 in Appendix B.
- Articulated Low Loader – for the delivery of some construction plant (maximum 16.5 metres and 2.5 metres wide).

3.8 Drawings SK001, SK004 and SK005 illustrate the swept paths for the largest rigid and largest articulated vehicles likely to serve the construction site.

Construction Traffic Approach Routes

3.9 It is envisaged that the A400 Camden High Street and the A503 Camden Road will form the most suitable link in the strategic road network able to accommodate construction vehicles. Primary routes providing connections to the A400 (i.e. A501 Euston Road and A1 Holloway Road) will therefore form the main approach routes to the site. The construction traffic route into and out of the proposed site can be seen below:

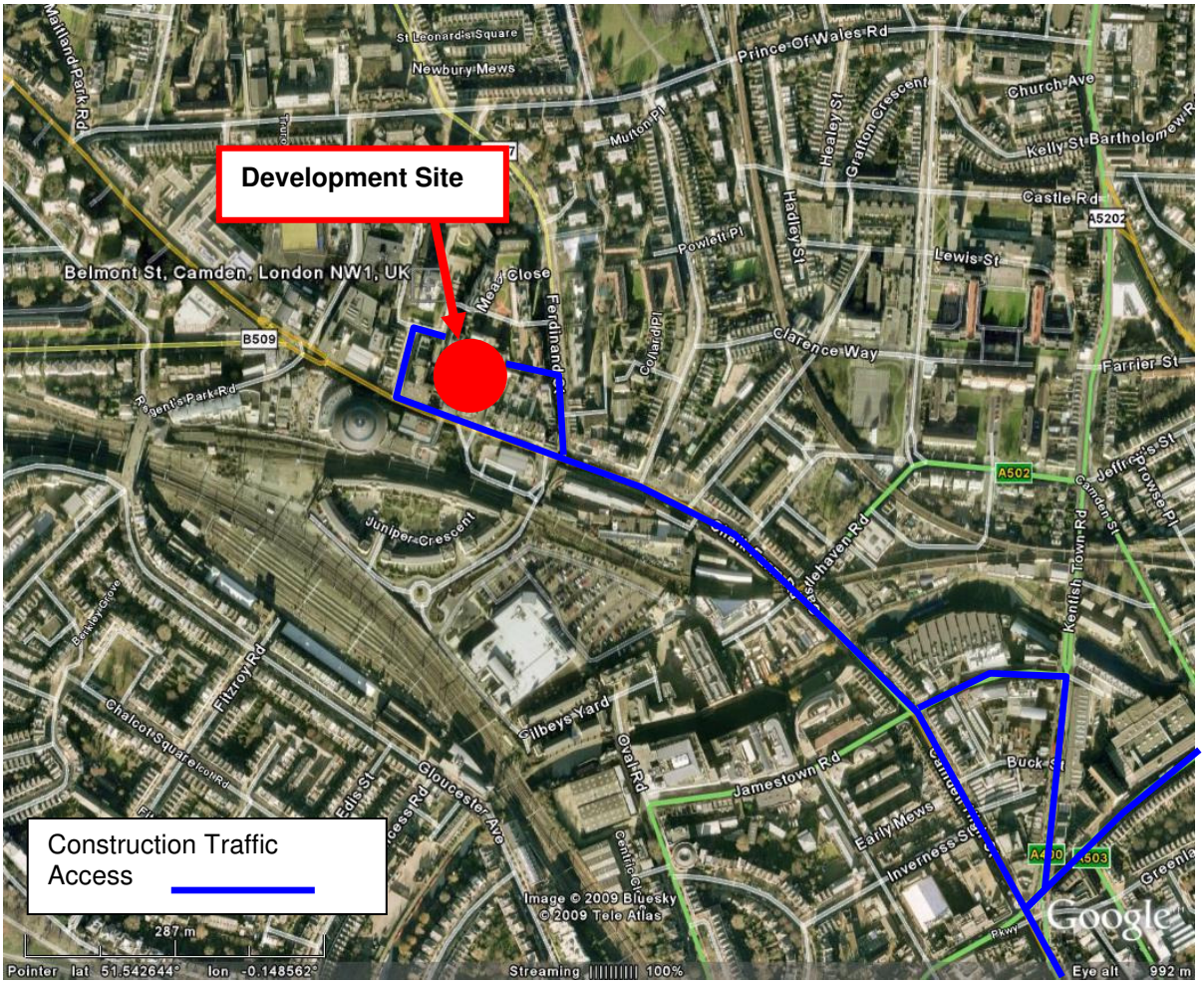


Figure 3-1 Construction Traffic Route Into/Out of Proposed Site (Not to Scale) Source: ©Google Earth Image 2009 BlueSky

Construction Traffic Site Access/Egress Routes

3.10 It is proposed that the access leading off from Ferdinand Street will form the main vehicular access and egress route into the site for heavy goods vehicles, with only large articulated lorries accessing the site from Belmont Street. Light goods vehicles will also be able to use this route.

Off Site Highways Works to Facilitate Construction

3.11 No off-site works are proposed to facilitate light goods vehicle construction site access/egress.

Workforce Traffic

3.12 The site workforce will peak at approximately 40 staff. No staff parking will be provided and construction contractors will be responsible for encouraging workers

to share vehicles or use attractive methods of access to the site such as works buses and public transport expenses.

3.13 The existing Controlled Parking Zone surrounding the site will deter workforce parking on residential streets in the area.

3.14 The close proximity of Chalk Farm Underground Station and Kentish Town West Railway Station will also make workforce access to the site by public transport an attractive proposition for many site workers from a wide catchment.

3.15 Staggered shift patterns for the various trades and specialists employed on site will ensure that the impact of any workforce traffic is spread over a number of hours, and will therefore have a negligible impact on surrounding road network capacity.

4. ADDITIONAL CONSIDERATIONS

Road Closures and Traffic Diversions

Belmont Street

4.1 At the end of the construction period it will be necessary to remove the tower crane from the central courtyard of the development. This will require the use of a mobile crane located on Belmont Street, and closure of a small section of Belmont Street to vehicular traffic. The closure is only envisaged to last for one day.

4.2 The potential to maintain pedestrian access along the affected section of Belmont Street during the day of the closure will be investigated following a more detailed appraisal of the mobile crane equipment required and the associated areas required for safe operation.

Parking Suspensions

Belmont Street

4.3 During the course of the works large vehicles will be unable to access the site via Ferdinand Street due to the 3.2m height restrictions, these include vehicles such as such as a Large Mobile Crane and Articulated Vehicles. They will access the site via Belmont Street and as is shown in Sk001, SK005 and SK006. Parking suspensions will be required on the eastern side of Belmont Street between numbers 8 and 4, and possibly also the northern side of Belmont Street adjacent to the site, due to the large swept paths of these vehicles.

4.4 This will result in a loss of approximately 13 parking spaces on specific days.

Pedestrian Movement and Route Diversions

Belmont Street

4.5 Only the pedestrian routes directly adjacent to the site boundary will be closed for the duration of the construction works. Alternative footways on the other side of the carriageway will still remain open for use by pedestrians.

Access to Public Transport Facilities

4.6 No public transport access will be affected by the construction.

Cycle Movement and Route Diversions

4.7 No LCN cycle routes will be affected by the construction.

5. ONGOING DEVELOPMENT OF THE CONSTRUCTION TRAFFIC MANAGEMENT PLAN

5.1 It is acknowledged that the agreed contents of the Construction Management Plan must be complied with unless otherwise agreed with the Council. The project manager shall work with the Council to review this Construction Management Plan if problems arise in relation to the construction of the development. Any future revised plan must be approved by the Council and complied with thereafter.

5.2 This Construction Traffic Management Plan has been developed in consultation with key stakeholders at a level of detail sufficient to inform them of construction traffic management proposals. The principles identified in this CTMP are considered to form a robust basis for ongoing development and implementation of the construction traffic management plan.

5.3 It is envisaged that the principles described in this document will be developed in further detail as the construction methodology and logistics plans are progressed and contractors appointed. Contractors will be expected to employ their own 'in-house' management systems to meet the overall aims of the CTMP.

5.4 The CTMP may also be revised to maintain compatibility with other documents being developed as part of the Construction Environment Management System for construction.

5.5 The overarching aim is to provide a safe environment for the site workforce and the surrounding business and residential community throughout the duration of construction.

APPENDIX A

CONSTRUCTION TRAFFIC RISK REGISTER

Interpretation of the following Risk Register

The risk register has identified the potential risks associated with the movement of construction traffic in and out of the site. Each risk has been given a ranking in terms of LIKELIHOOD and IMPACT using a value from 1 (how) to 5 (high). The descriptions associated with each LIKELIHOOD and IMPACT ranking are shown in the table below.

By multiplying the LIKELIHOOD ranking of a risk by its IMPACT ranking, it is possible to get a RISK SCORE. The RISK SCORE's have then been further divided into HIGH (Red), MEDIUM (yellow), LOW (green) overall risks. The RISK SCORE is then taken as an indication of the need to implement mitigation measures to address or respond to that risk as shown below the following table.

			IMPACT				
	Description		Extreme	Major	Moderate	Minor	Negligible
	Ranking		5	4	3	2	1
LIKELIHOOD	Very Likely	5	25	20	15	10	5
	Likely	4	20	16	12	8	4
	Possible	3	15	12	9	6	3
	Unlikely	2	10	8	6	4	2
	Very Unlikely	1	5	4	3	2	1

LOW Risk = Mitigation Measures To Address Such Risks Considered **DESIRABLE**
MEDIUM Risk = Mitigation Measures To Address Such Risks Considered **ESSENTIAL**
HIGH Risk = Mitigation Measures To Address Such Risks Considered **MANDATORY**

Example

In the following risk register, risks from *Major Network Maintenance Activities* (Risk ID 1.08) are considered to be 'unlikely' (LIKELIHOOD ranking 2) but if they do occur, they would have a 'major' impact (IMPACT ranking 4). The overall RISK SCORE is therefore 8 (2 x 4), which is an overall MEDIUM (Amber) risk. This indicates that mitigation measures to address this risk (such as regular liaison with TfL and LB Camden) should be considered ESSENTIAL.

ID	Risk Type	Description/Location	Impacts	Potential Mitigation Measures / Responses	Likelihood	Impact	Risk Score
1.0 External Risks							
1.01	Other Major Highway Upgrade Works	A502 Camden High Street	• Possible temporary delay on the A502 affecting construction vehicle access	• Maintain regular liaison with TfL, LB Camden • Where possible, co-ordinate construction activities to minimise cumulative impacts	2	4	**8**
1.02	Major Congestion	• B517 Ferdinand Street • A502 Camden High Street	• Delay to general traffic • Delay to emergency vehicles • Delay to public transport • Delay to construction vehicles	• Analyse possible impacts due to works, using traffic analysis where necessary to identify issues • Develop temporary traffic management schemes where necessary to mitigate congestion where possible, and review these schemes • Programme intensive works during periods of low traffic volume	3	3	**9**
1.03	Major Incidents	• A400 Kentish Town Road • A502 Camden High Street • B517 Ferdinand Street	• Congestion • Temporary Road Closures • Damage to highway infrastructure • Casualties • Fatalities	• Liaise with local emergency services • Ensure procedures are in place to deal with various types of incident • Purchase and store temporary traffic management resources to support incident management activities • Report on incident for input into review process (preventative action) • Maintain contingency plant or recovery equipment on site or identify local contractor for provision of such equipment	3	4	**12**
1.04	Major Public Events	• Strategic Access Routes to Olympic/Paralympic Event Sites • The Roundhouse Theatre	• Congestion • Temporary Road Closures • Parking on construction access routes	• Regularly liaise with LBC and local police • Identify all annual planned events in advance • Consult with event organisers to identify likely impact and timing • Schedule construction traffic movement if possible to avoid conflict with local events	2	2	**4**

ID	Risk Type	Description/Location	Impacts	Potential Mitigation Measures / Responses	Likelihood	Impact	Risk Score
		• Hampstead Heath • Hampstead Golf Course • Parliament Hill • Primrose Hill • Regent's Park • Haverstock School • Camden Market • London Zoo	• High pedestrian movement	• If construction traffic movement can be re-scheduled , implement measures in consultation with event organisers to mitigate impacts and maintain a safe environment for the public			
1.05	Seasonal Traffic Variations – School Holidays, Bank Holidays	• The Roundhouse Theatre • Malden Road (Rhyl Primary School) • Prince of Wales Road (Haverstock Secondary School) • London Zendo (Hannya Temple) • Hampstead Heath • Parliament Hill • Primrose Hill • Regent's Park • London Zoo	• Increased or Reduced Congestion • Increased or Reduced Parking	• Obtain seasonal traffic survey data on adjacent roads • Schedule work if possible to avoid conflict with seasonal traffic increases, or conversely, to utilise quieter periods to benefit specific project activities	5	2	**10**
1.06	Public Transport Disruptions	• Kentish Town Station • Kentish Town West Station • Camden Road Station • Gospel oak Station • Chalk Farm Station • Camden Town Station • Tufnell park Station • Kentish Town Road • A502 Camden High Street	• Potential delays to buses	• Consult public transport operators • Install temporary information/signage to inform public transport users of local construction routes which may affect public transport routes • Provide 'congestion' mitigation measures mentioned above to avoid delay to buses	3	4	**12**
1.07	Terrorist Act	• London	• Local community	• Regularly liaise with local police	1	5	**5**

ID	Risk Type	Description/Location	Impacts	Potential Mitigation Measures / Responses	Likelihood	Impact	Risk Score
			safety fears • Damage to property • Casualties • Fatalities	• Ensure that procedures are in place to deal with this type of incident • Encourage local residents to report suspicious objects or actions to local police			
1.08	Major Network Maintenance Activities	• Congestion • Third Party site access requirements (e.g. Network Rail)	• Delay to construction vehicles • Delay to programme	• Regularly liaise with LB Camden, TfL and other stakeholders • Schedule construction work, if possible, to avoid conflict with planned maintenance by above stakeholders • If construction cannot be re-scheduled, identify mitigation measures to maintain a safe environment for the works and the public	2	4	**8**
1.09	Dis-information by Local Protest Group (intentional) or Media (unintentional)	• Belmont Street • Ferdinand Street • A502 Camden High Street	• Complaints from residents / businesses • Public Protest • Obstruction to access / egress	• Employ Community Relations Team • Be proactive in managing community relations issues and informing local media regarding programme, construction access arrangements, consultation with local stakeholders, ultimate benefit to local community • When escalated, actively negotiate with local representatives, local authority stakeholders, and police	2	2	**4**
2.0 Risks In Area Surrounding Construction Site							
2.01	Driver Distraction	• Belmont Street • Ferdinand Street • A502 Camden High Street	• Road Traffic Accident • Damage to property/ vehicles • Casualties • Fatalities	• Install screening or other devices at locations where drivers may be adversely affected • Inspect and maintain screening regularly to ensure it continues to meet its purpose • Re-position screening to accommodate changes in site configuration or construction stages • Carefully consider placement of signage advertising the development being constructed	1	4	**4**
2.02	Spoil Haulage	• Belmont Street • Ferdinand Street • A502 Camden High	• Congestion due to slow moving vehicles	• Liaise with LB Camden regarding high frequency spoil haulage movements • Prepare specific Traffic Management Plan for	2	3	**6**

ID	Risk Type	Description/Location	Impacts	Potential Mitigation Measures / Responses	Likelihood	Impact	Risk Score
		Street	• Damage to highway infrastructure • Debris on roadway	spoil haulage operations with clear indication of route, and vehicle types to be employed • Install advance signs indicating route to site access • Ensure compliance with Spoil and Fill Management Plan • Identify alternative routes as part of contingency plan • Identify short-term vehicle storage areas within site to allow flexibility in despatching spoil haulage vehicles • Employ experienced haulage contractors with recognised industry accreditation • Agree extents and frequency of inspection on designated spoil haulage routes with LB Camden and TfL • Regularly review haulage operations where necessary			
2.03	Lack of Co-ordination of construction traffic movements	• Belmont Street • Ferdinand Street • A502 Camden High Street	• Queuing of haulage vehicles at site entrance • Noise/Vibration Impact from idling vehicle engines • Construction vehicles parked outside site	• Employ site delivery booking system and notify all suppliers of system procedures • Define the role of, employ, and train the Site Traffic Manager to co-ordinate construction vehicle arrivals and departures and manage site delivery booking system • Carefully plan in advance periods of high frequency construction movements (such as during concrete pouring operations) and identify contingency measures • Notify all contractors of construction routes agreed with LB Camden and TfL • Identify short-term vehicle storage areas within site to allow flexibility in loading/unloading and receiving/despatching vehicles • Employ experienced contractors with recognised industry accreditation • Regularly review haulage operations where necessary	3	4	**12**

ID	Risk Type	Description/Location	Impacts	Potential Mitigation Measures / Responses	Likelihood	Impact	Risk Score
2.04	Debris on roads	• Belmont Street • Ferdinand Street • A502 Camden High Street	• Transfer of dirt onto residents cars • Increased sediment load on highway drainage system • Pedestrian slip/fall resulting in injury • Vehicle damage (i.e. windscreen strike from debris) • Reduced road surface friction contributing to road traffic accident	• Install site wheel washing facilities taking into account sediment control requirements of Water Management Plan • Construct sealed surface site haul roads • Employ secondary cleaning facilities such as street sweepers or portable pressurised water equipment • Conduct a daily inspection of road surface conditions • Maintain equipment on site or identify local contractor for provision of equipment for recovery of larger debris • Implement procedures and systems to ensure that loads are covered and/or secured before leaving site • Employ experienced haulage contractors and suppliers with recognised industry accreditation and in-house procedures to ensure loads are covered and/or secured	4	4	**16**
2.05	Environmental Issues – Noise, Dust	• Belmont Street • Ferdinand Street • Crogsland Road • Prince of Wales Road • A502 Camden High Street	• Transfer of dust into nearby properties or onto residents vehicles • Noise impact on adjacent properties and open space • Perceived vibration impact on adjacent properties	• Area specific dust control measures as specified in the Dust and Air Pollution Management plan • Area specific sediment control measures as specified in the Water Management Plan. • Area specific noise control measures as specified in the Construction Noise and Vibration Management plan. • Check plant equipment and vehicles quarterly for compliance with noise control regulations • Where possible, employ haulage contractors with a modern haulage vehicle fleet meeting latest noise and air pollutant emissions requirements	4	3	**12**
2.06	Vehicle Overloading (by axle weight / load dimension)	• Belmont Street • Ferdinand Street • A502 Camden High	• Damage to highway infrastructure	• Inform all contractors and suppliers of width and height restrictions along construction route • Install advance signs indicating route to site	3	4	**12**

ID	Risk Type	Description/Location	Impacts	Potential Mitigation Measures / Responses	Likelihood	Impact	Risk Score
		Street	• Damage to Railway Infrastructure • Damage to roadside furniture • Vehicle instability increases potential for road traffic accident • Hazard to other road users • Hazard to pedestrians • Hazard to site workers	access • Implement procedures and system to avoid overloading of spoil vehicles exiting site • Employ experienced haulage contractors and suppliers with recognised industry accreditation and in-house procedures to avoid overloading • Identify and plan for 'abnormal' load requirements in advance, employ specialist contractors and inform relevant stakeholders			
2.07	Site Traffic Control	• Belmont Street • Ferdinand Street • A502 Camden High Street	• Queuing of haulage vehicles at site entrance • Noise/Vibration Impact from idling vehicle engines • Construction vehicles parked outside site • Internal site congestion • Increased potential for vehicle conflict • Delay to materials supply	• Define the role of, employ, and train the Site Traffic Manager to co-ordinate construction vehicle arrivals and departures and manage site delivery booking system • Ensure that all supporting staff (banksmen) are appropriately trained, certified and competent to perform duties and are aware of site specific procedures and operations • Development site specific traffic control procedures for each phase of work • Install advance signs indicating route to site access • Review site specific traffic control procedures to suit changes to site conditions and/or external traffic influences (such as scheduled highway maintenance)	4	4	**16**
2.08	Road Traffic Accidents	• Belmont Street • Ferdinand Street • A502 Camden High Street	• Damage to Highway Infrastructure • Damage to Street Furniture	• Implement effective site traffic control • Ensure that all supporting staff (banksmen) are appropriately trained, certified and competent to perform duties and are aware of site specific procedures and operations	3	4	**12**

ID	Risk Type	Description/Location	Impacts	Potential Mitigation Measures / Responses	Likelihood	Impact	Risk Score
			• Congestion • Vehicle Damage • Casualties • Fatalities	• Implement measures to mitigate 'driver distraction' mentioned above • Regularly liaise with local emergency services • Purchase and store temporary traffic management resources to support incident management activities • Ensure procedures are in place to deal with the various types of incidents • Employ experienced haulage contractors and suppliers with recognised industry accreditation and in-house procedures to monitor drivers hours • Maintain contingency plant or recovery equipment on site or identify local contractor for provision of such equipment			
2.09	Temporary Traffic Arrangements on Public Highway	• Belmont Street	• Driver confusion • Congestion • Motorists undertaking banned movements/ entering closed roads • Road Traffic Accidents	• Develop advance warning and information signage strategy • Install appropriate signage, advertising and public media to inform motorists of any impending junction layout changes road closures, and alternative routes • Reinforce signage strategy with physical treatments where necessary	4	4	**16**
2.10	Damage to Infrastructure	• Belmont Street • Ferdinand Street • A502 Camden High Street	• Delay/congestion during inspection / rectification • Road closure • Rail line closure (following bridge strike) • Delay to Programme	• Investigate any likely damage to infrastructure due to construction traffic and incorporate appropriate measures , where possible, to protect infrastructure • Ensure that contacts and procedures are in place for reporting of infrastructure damage to relevant agency (TfL, LBC, Network Rail etc.) • Make safe any damage to infrastructure in consultation with relevant agencies • Inspect infrastructure regularly to ensure that damage is no occurring/reoccurring	3	4	**12**

ID	Risk Type	Description/Location	Impacts	Potential Mitigation Measures / Responses	Likelihood	Impact	Risk Score
2.11	Unplanned Incident	• Belmont Street • Ferdinand Street • Crogsland Road • Prince of Wales Road • A502 Camden High Street	• Delay to programme • Vehicle/plant equipment damage • Property damage • Infrastructure Damage • Casualties • Fatalities	• Liaise with local emergency services • Ensure procedures are in place to deal with various types of incident • Purchase and store temporary traffic management resources to support incident management activities • Maintain contingency plant or recovery equipment on site or identify local contractor for provision of such equipment • Ensure all staff are aware of the site incident response plan • Undertake regular inspection of infrastructure to ensure it does no contribute to an unplanned incident	4	4	**16**
2.12	Site Access and Egress – incident involving a member of the public and construction vehicle or plant	• Belmont Street • Ferdinand Street	• Damage to Highway Infrastructure • Damage to Street Furniture • Congestion • Vehicle Damage • Casualties • Fatalities	• Define site access/egress points with physical barrier and signposting. • Install advance warning signs indicating site access only	4	4	**16**
2.13	Restrictions on Emergency Service Access	• Belmont Street • Ferdinand Street	• Delay to emergency service response times	• Consult with emergency services on proposed arrangements • Notify emergency services of any changes to the timing and layout of temporary traffic management for each construction stage	3	5	**15**
2.14	Impact on adjacent residential property	• Belmont Street • Ferdinand Street	• Obstruction • Noise • Perceived Vibration • Air Pollution • Dust	• Liaise with residents during site implementation • Access to be maintained • Provide 24hr contact number in case issue arises • Ensure appropriate and regular consultation with residents is undertaken – liaise with Community Relations Team • Act upon the report of any obstructions	4	3	**12**

ID	Risk Type	Description/Location	Impacts	Potential Mitigation Measures / Responses	Likelihood	Impact	Risk Score
				immediately			
2.15	Impact on adjacent business operations	• Belmont Street • Ferdinand Street • A502 Camden High Street	• Obstruction • Noise • Perceived Vibration • Air Pollution • Dust	• Liaise with local businesses during site implementation • Access to be maintained for servicing access and customers • Provide 24hr contact number in case issue arises • Ensure appropriate and regular consultation with businesses is undertaken – liaise with Community Relations Team • Act upon the report of any obstructions immediately	3	3	**9**
2.16	Construction staff parking	• Belmont Street • Ferdinand Street • Crogsland Road • Prince of Wales Road • A502 Camden High Street	• Obstruction to movement • Limited car parking for residents	• Plan and provide safe on-site parking spaces and encourage staff to share a vehicle to the site • Investigate options for the provision of site mini-buses to transport staff to site • Monitor and enforce staff parking restrictions on the surrounding streets	4	3	**12**
2.17	Use of Mobile Cranes	• Belmont Street • Ferdinand Street	• Damage to infrastructure • Damage to load • Damage to vehicle • Casualties • Fatalities • Delay to Programme	• Employ experienced contractors with recognised industry accreditation • Identify weather environment thresholds for operation • Identify and secure oversail areas for each proposed mobile crane position • Ensure that site-specific inductions are provided to all those in control of mobile crane positioning, levelling, operation, loading, signalling, and sensitive boundaries (i.e. railway) with an emphasis on appropriate risk assessment. • Review the levels and extent of individual competency for all, including operators and those carrying out inspection and maintenance procedures • Ensure good communications on site among	2	4	**8**

ID	Risk Type	Description/Location	Impacts	Potential Mitigation Measures / Responses	Likelihood	Impact	Risk Score
				those in control of mobile crane operation, including open dialogue between site management and mobile crane operators • Liaise with Community Relations Team and ensure that residents and businesses are given clear information in relation to mobile crane issues including safety record and safety mechanisms in place			
2.18	Adverse Weather Conditions (Fog, Flooding, ice/snow, High Winds, High Temperatures)	• Belmont Street • Ferdinand Street	• Congestion • Blocked highway drainage • Low skid resistance on access road gradients due to ice / snow • High Winds resulting in transfer of site materials and debris to surrounding area • Drought – resulting in dust • High temperatures – resulting in vehicle / plant failure • Driver fatigue / error due to adverse weather • Poor visibility	• Liaise with LBC regarding highway infrastructure condition • Purchase and seasonally store resources to support management of adverse weather conditions (i.e. pumping equipment) • Regularly inspect highway drainage system (particularly during leaf fall) on access roads to site • Regularly inspect highway lighting (particularly during winter months) on access roads to site • Use anti-icing material on access roads during periods of ice/snow • Ensure all site materials and equipment are secure during periods of high wind • Employ dust suppression techniques on access routes • Implement procedures and systems to ensure that vehicle loads are covered and/or secured before leaving site • Regularly inspect and maintain vehicles and plant equipment • Where possible, allow flexibility in site deliveries and despatches to take into account adverse weather and traffic conditions • Employ experienced haulage contractors and suppliers with recognised industry accreditation and in-house procedures to monitor driver training / hours	4	5	**20**

ID	Risk Type	Description/Location	Impacts	Potential Mitigation Measures / Responses	Likelihood	Impact	Risk Score
3.0 Risks In Construction Site							
3.1	Site Access/Egress	• Belmont Street • Ferdinand Street	• Unauthorised access • Obstructed Access • Haulage contractors and materials suppliers are unable to find site • Insufficient physical clearance to accept large construction vehicles	• All access points to be appropriately sign posted on approach routes • Define site with physical barriers where required, and relevant signage to prevent unauthorised access • Provide Emergency service agencies with diagrams indicating emergency access points • Ensure site access/egress points are manned by qualified staff • Design access/egress point to accommodate the largest construction vehicle likely to service site • Inspect all signage and physical barriers regularly to ensure that they are still in place and have not been damaged, removed	4	4	**16**
3.2	Major spill of hazardous chemical / flammable liquid / material	• Belmont Street • Ferdinand Street • Crogsland Road • Prince of Wales Road • A502 Camden High Street	• Major spill from vehicle involved in road traffic accident • Major spill due to a vehicle colliding with a hazardous chemical container • Major spill due to poor loading /unloading of chemicals from vehicle • Major spill due to criminal act by trespasser • Creation of hazardous fumes or dust	• Ensure all chemicals / flammable liquids are stored in accordance with appropriate safety guidelines • Ensure inventories and data sheets are available in site office and regularly updated • Provide Emergency service agencies with diagrams indicating storage locations • Provide containment areas/sheds, and spill containment/ cleanup equipment • Prepare and implement Site Hazards and Risk Management plan • Train relevant staff in the correct handling and storage of chemicals / flammable liquids • Employ experienced suppliers with recognised industry accreditation and in-house procedures for transport of hazardous goods on placarded vehicles • Store chemicals/flammable liquids away from high traffic areas of the site	2	5	**10**

ID	Risk Type	Description/Location	Impacts	Potential Mitigation Measures / Responses	Likelihood	Impact	Risk Score
				• Store chemicals/flammable liquids / fuel bowsers away from sensitive site boundaries • Minimise frequency of plant equipment refuelling on site • Define site with physical barriers where required, and relevant signage to prevent unauthorised access			
3.3	Abnormal Load Access	• Belmont Street • Ferdinand Street • A502 Camden High Street	• Congestion • Obstruction to other construction vehicles • Delay to programme	• Identify and plan for 'abnormal' load requirements in advance, employ specialist contractors and inform relevant stakeholders • Where possible, ensure access is arranged during a period of low traffic flow, whilst taking into account the impacts on surrounding residents and businesses	2	4	**8**
3.4	Industrial Action	• Belmont Street • Ferdinand Street • A502 Camden High Street	• Delay to programme • Protest at site entrances • Obstruction to other construction vehicles • Queuing of construction vehicles • Complaints from Residents	• Be proactive in managing employee / contractor relations • Employ experienced contractors with recognised industry accreditation and in-house procedures addressing industrial action • If situation escalates, actively negotiate within the mediation processes available If Industrial Action occurs: • Identify and monitor the impacts of protest and the security of the site boundary and access/egress points • Inform unaffected suppliers and contractors of the situation and postpone vehicle deliveries where possible • liaise with Community Relations Team and ensure that residents and businesses are kept informed of the situation	1	4	**4**
3.5	Industrial Incident	• Belmont Street • Ferdinand Street • A502 Camden High Street	• Delay to programme • Congestion • Damage to	• Prepare relevant Construction Management Plans • Ensure all site activities are undertaken in accordance with relevant Construction	3	5	**15**

ID	Risk Type	Description/Location	Impacts	Potential Mitigation Measures / Responses	Likelihood	Impact	Risk Score
			property • Damage to plant equipment/ vehicles • Casualties • Fatalities • Site closure	Management Plans • Appropriately train all staff • Employ experienced contractors with recognised industry accreditation and in-house training procedures • Purchase and store resources to support incident management activities In the event of an incident • Notify emergency services and other relevant agencies • Isolate and evacuate work area • Manage construction vehicle arrivals and departures during incident to minimise risk and obstruction to emergency services			
3.6	Utilities i.e damage to gas pipes	• Belmont Street • Ferdinand Street • Crogsland Road • Prince of Wales Road • A502 Camden High Street	• Damage to drain/inspection chamber cover / frame • Crush damage to pipes/ducts • Severance of pipes/ cable • Congestion due to temporary roadworks to remediate damage • Road closures to remediate damage • Closure of part / whole site to remediate damage • Delay to programme	• Ensure plans and information on all utilities is available on site • Train or employ qualified staff/contractors with knowledge of the correct method for locating, marking and identifying the various utilities • Ensure that all construction access routes can accommodate axle loadings forecast for construction traffic • Undertake regular inspection of site access route • Prepare, and implement, a site incident management plan In the event of an incident: • Notify emergency services and relevant utilities agencies • If required, isolate and evacuate the area • Manage construction vehicle arrivals and departures during incident to minimise risk and obstruction to emergency services/utilities agencies	3	4	**12**

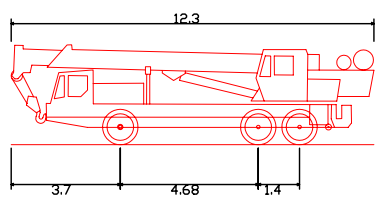
ID	Risk Type	Description/Location	Impacts	Potential Mitigation Measures / Responses	Likelihood	Impact	Risk Score
				• Assist utilities companies where requested			
3.7	Construction Vehicle / Plant Equipment Failures	• Belmont Street • Ferdinand Street • A502 Camden High Street	• Congestion • Programme delay • Obstructed Site access due to broken down vehicle • Obstructed movement on-site due to plant or vehicle failure • Road Traffic Accident	• Employ experienced haulage contractors and suppliers with recognised industry accreditation and in-house procedures for vehicle maintenance • Employ regular scheduled maintenance procedures for plant and equipment • Where practical, store back-up plant equipment on site or identify local plant equipment supplier • Maintain equipment on site or identify local contractor for provision of vehicle recovery equipment • Where practical, maintain space on site for short-term storage of failed plant equipment or vehicles • Manage construction vehicle arrivals and departures during incident to minimise risk and obstruction to recovery process	4	3	**12**
3.8	Public Protest	• Belmont Street • Ferdinand Street • Crogsland Road • Prince of Wales Road • A502 Camden High Street	• Delay to programme • Protest at site entrances • Obstruction to other construction vehicles • Queuing of construction vehicles	• Employ Community Relations Team • Be proactive in managing community relations issues • When escalated, actively negotiate with local representatives, local authority stakeholders, and police In the event of protest: • Notify police immediately • Identify and monitor the impacts of protest and the security of the site boundary and access/egress points • Inform suppliers and contractors of the situation and postpone vehicle deliveries where possible	1	3	**3**
3.9	Use of Tower Cranes	• Belmont Street • Ferdinand Street	• Accidental deposit of load causing	• Employ suitable design of tower crane to avoid moving materials over sensitive areas, including	3	5	**15**

ID	Risk Type	Description/Location	Impacts	Potential Mitigation Measures / Responses	Likelihood	Impact	Risk Score
			obstruction / property damage / casualties / fatalities • Overloading • Structural Failure • Foundation Failure • Over-sailing of sensitive areas • Poor crane control	site access routes • Employ experienced contractors with recognised industry accreditation • Identify weather environment thresholds for operation • Ensure that site-specific inductions are provided to all those in control of tower crane erection, levelling, dismantling, operation, loading and signalling, with an emphasis on appropriate risk assessment. • Review the levels and extent of individual competency for all, including operators and those carrying out inspection and maintenance procedures • Ensure robust and thorough examination and maintenance regimes. • Ensure good communications on site among those in control of crane operation, including open dialogue between site management and crane operators • Liaise with Community Relations Team and ensure that residents and businesses are given clear information in relation to crane issues including safety record and safety mechanisms in place			
3.10	Adverse Weather Conditions (Fog, Flooding, ice/snow, High Winds, High Temperatures)	• Belmont Street • Ferdinand Street • A502 Camden High Street	• Low skid resistance on haul road due to ice / snow • High Winds resulting in transfer of site materials and debris within the site • Drought –	• Purchase and seasonally store resources to support management of adverse weather conditions • Regularly inspect site drainage (particularly during leaf fall) • Use anti-icing material on haul roads during periods of ice/snow • Ensure all site materials and equipment are secure during periods of high wind • Ensure tower cranes do not operate outside of agreed high wind / visibility thresholds	4	5	**20**

ID	Risk Type	Description/Location	Impacts	Potential Mitigation Measures / Responses	Likelihood	Impact	Risk Score
			resulting in dust • High temperatures – resulting in vehicle / plant failure • Driver fatigue / error due to adverse weather • Poor visibility	• Employ dust suppression techniques on site including 'damping down' and covering of loose materials on site • Implement procedures and systems to ensure that vehicle loads are covered and/or secured before leaving site • Regularly inspect and maintain vehicles and plant equipment • Regularly inspect and maintain site lighting equipment • Where possible, allow flexibility in site deliveries and despatches to take into account adverse weather and traffic conditions • Employ experienced haulage contractors and suppliers with recognised industry accreditation and in-house procedures to monitor driver training / hours			

APPENDIX B

SUPPORTING DRAWINGS



Large Mobile Crane	
Overall Length	12.300m
Overall Width	2.430m
Overall Body Height	3.386m
Min Body Ground Clearance	0.590m
Track Width	2.430m
Lock to Lock Time	6.00 sec
Kerb to Kerb Turning Radius	10.000m

PARKING

Drawing Title

BELMONT STREET
LARGE MOBILE CRANE
SWEPT PATH ANALYSIS

SK006		
Scale at A3 : 1:500		
Drw MC	App	Rev
Chk MG	Date	Date

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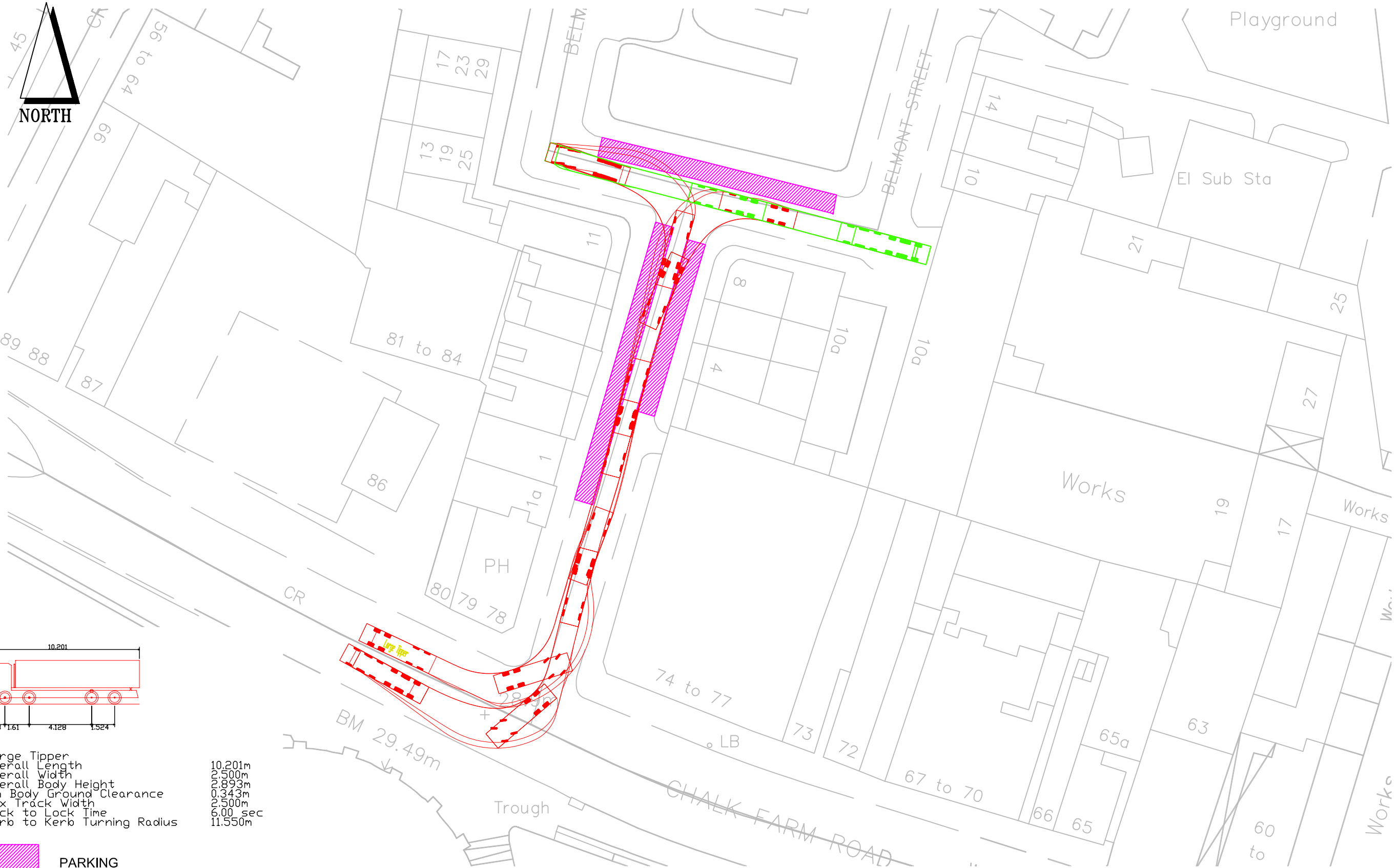
DB3



Drawing Title

BELMONT STREET
LARGE TIPPER
SWEPT PATH ANALYSIS

SK005		
Scale at A3 : 1:500		
Drw MC	App	Rev
Chk MG	Date	Date

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DB3

Plot Date : 05-Mar-09 11:26 AM BY : 32178sg
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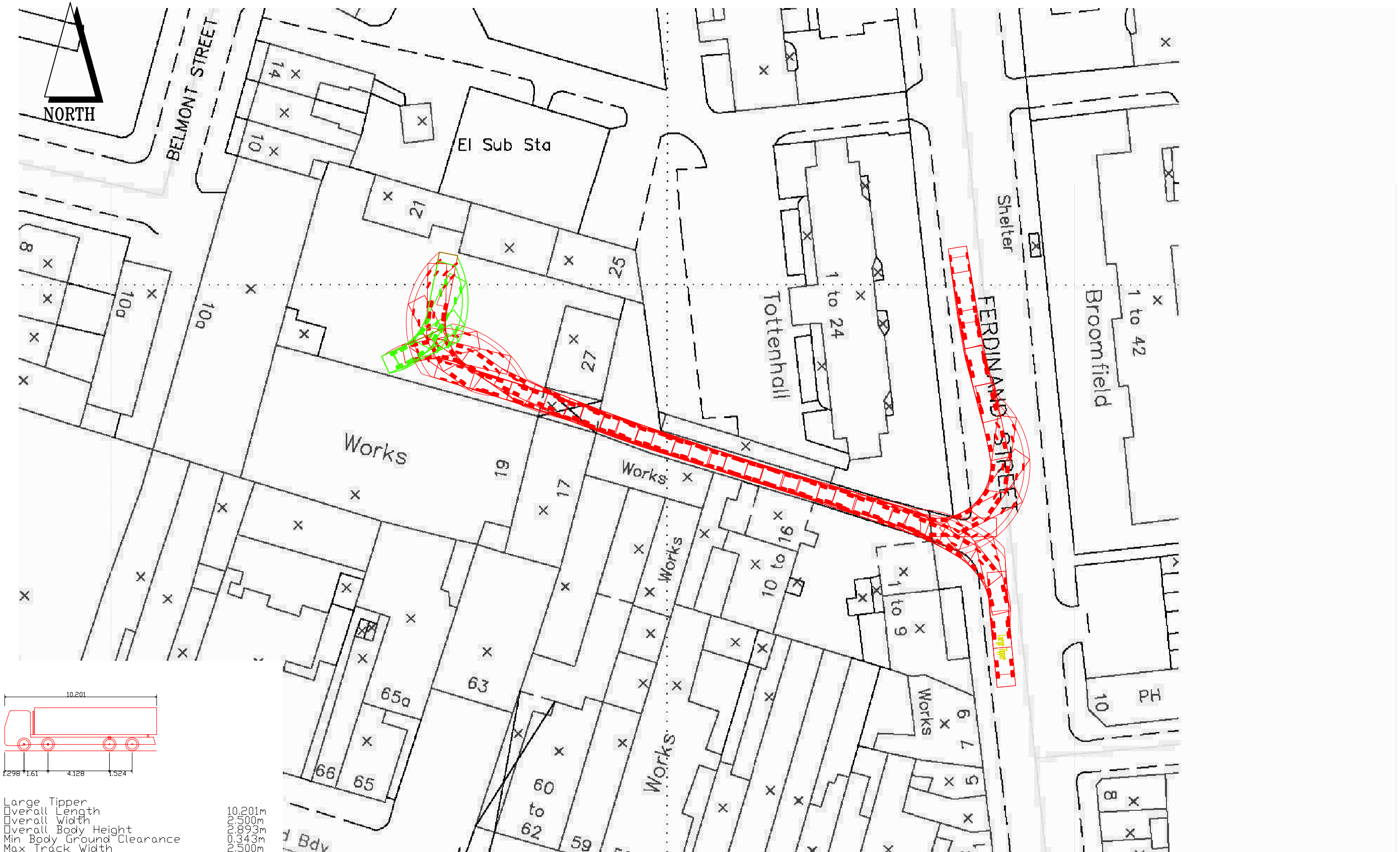

Large Tipper

Overall Length	10.201m
Overall Width	2.500m
Overall Body Height	2.893m
Min Body Ground Clearance	0.343m
Max Track Width	2.500m
Lock to Lock Time	6.00 sec
Kerb to Kerb Turning Radius	11.550m

Drawing Title

FERDINAND STREET
LARGE TIPPER
SWEPT PATH ANALYSIS

SK004		
Scale at A3 : 1:500		
Drw MC	App	Rev
Chk CW	Date	Date

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Plot Date : 05-Mar-09 11:25 AM BY : 32178sg
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DB3

Phoenix 2-12W (with Elite 2 4x2 chassis)

Overall Length	8.395m
Overall Width	2.530m
Overall Body Height	3.205m
Min Body Ground Clearance	0.410m
Track Width	2.500m
Lock to Lock Time	4.00 sec
Kerb to Kerb Turning Radius	7.300m

Drawing Title

FERDINAND STREET
REFUSE VEHICLE
SWEPT PATH ANALYSIS

SK003		
Scale at A3 : 1:500		
Drw MC	App	Rev
Chk CW	Date	Date

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Plot Date : 05-Mar-09 11:25 AM BY : 32178sg
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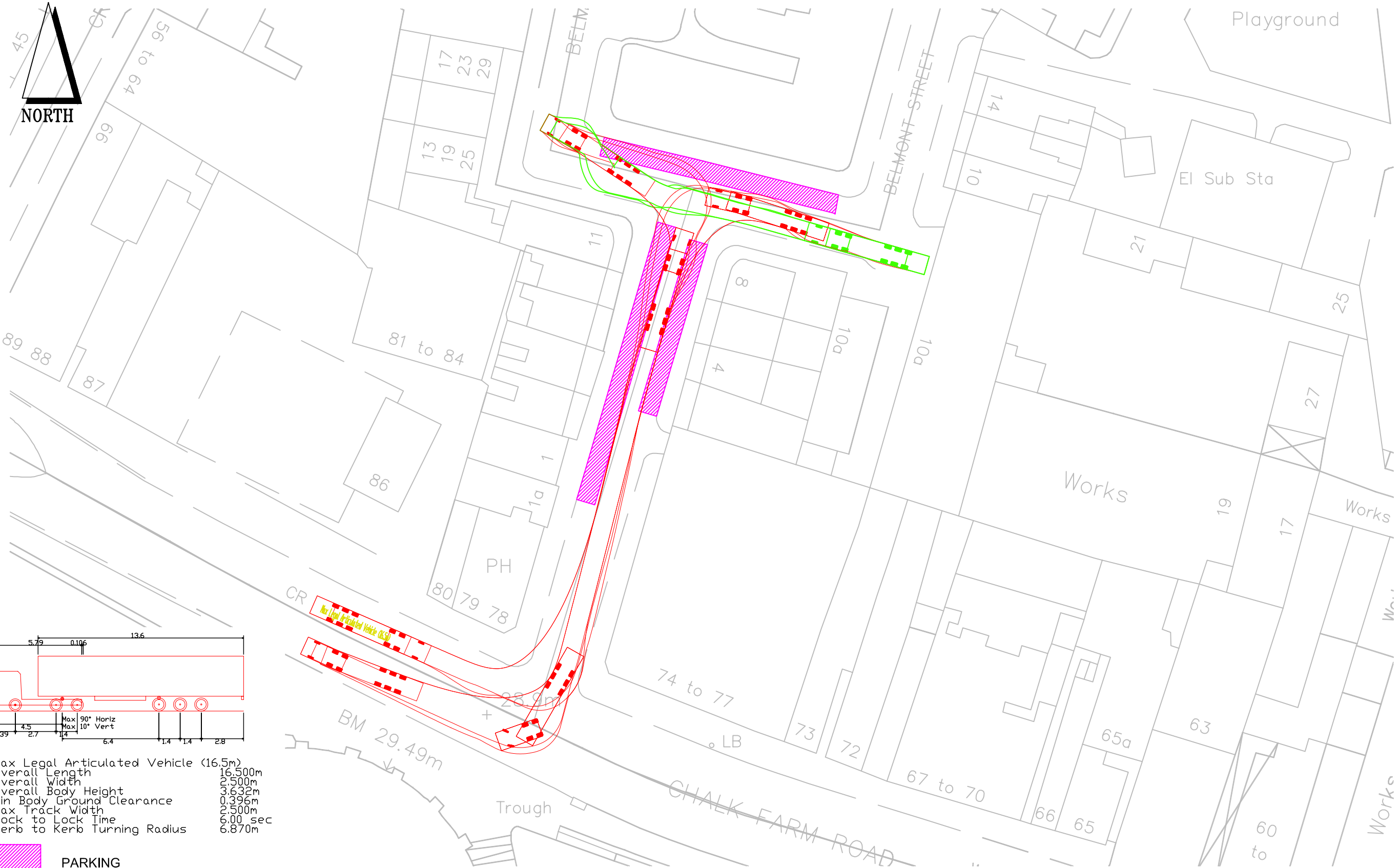
DB3



Max Legal Articulated Vehicle (16.5m)

Overall Length	16.500m
Overall Width	2.500m
Overall Body Height	3.632m
Min Body Ground Clearance	0.396m
Max Track Width	2.500m
Lock to Lock Time	6.00 sec
Kerb to Kerb Turning Radius	6.870m

PARKING

Drawing Title

BELMONT STREET ARTICULATED VEHICLE SWEPT PATH ANALYSIS

SK001		
Scale at A3 : 1:500		
Drw MC	App	Rev
Chk MG	Date	Date

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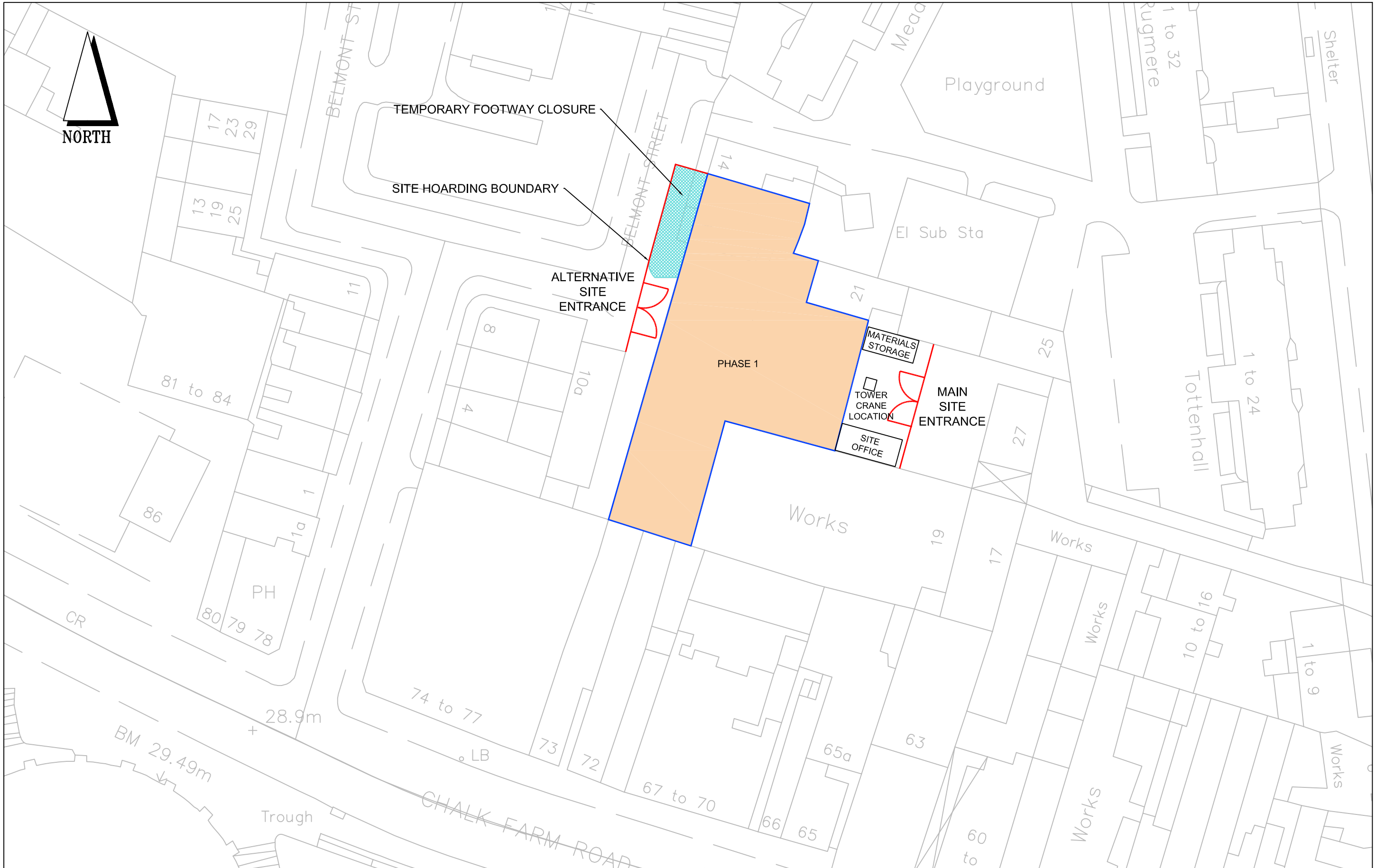

Drawing Title

BELMONT STREET
INDICATIVE SITE LAYOUT

SK007		
Scale at A3 : 1:500		
Drw MC	App	Rev
Chk MG	Date	Date

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Plot Date : 05-Mar-09 11:27 AM BY : 32178sg

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