NORTH WEST cambridge

Controls on the Public Transport Route

Condition 39

September 2013

North West Cambridge

Discharge of Condition 39 of the outline planning permissions 11/1114/OUT and S/1886/11 - Controls on the Public Transport route

On behalf of **University of Cambridge**

Project Ref: 23035 / 052 | Rev: 3.0 | Date: August 2013

Office Address: 11 Prospect Court, Courteenhall Road, Blisworth, Northampton NN7 3DG
T: +44 (0)1604 878 300 F: +44 (0)1604 878 333 E: northampton@peterbrett.com

Document Control Sheet

Project Name: **North West Cambridge**

Project Ref: **23035-052**

Report Title: **Discharge of Condition 39 - Controls on the Public Transport route**

Doc Ref: **3.0**

Date: **23rd August 2013**

	Name	Position	Signature	Date
Prepared by:	Tim Taylor	Principal Engineer	*Tim Taylor*	9th July 2013
Reviewed by:	John Hopkins	Associate	*John Hopkins*	9th July 2013
Approved by:	Greg Callaghan	Partner	*Greg Callaghan*	9th July 2013
For and on behalf of Peter Brett Associates LLP				

Revision	Date	Description	Prepared	Reviewed	Approved
1	9th July 2013	Issued for Team Review	TT	JH	JH
2	11th July 2013	Submitted to Joint Authorities	TT	JH	JH
3	23rd August 2013	Addition of monitoring section	TT	JH	GLC

Contents

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Appendices

1 Introduction

1.1 Overview

1.1.1 Peter Brett Associates LLP (referred to from here as Peter Brett Associates, abbreviated to PBA) has been commissioned by the University of Cambridge to provide technical information to support the discharge of transport-related conditions associated with the North West Cambridge (NWC) Development outline planning permission granted on 22nd February 2013 - planning application reference 11/1114/OUT (Cambridge City Council) and S/1886/11 (South Cambridgeshire District Council).

1.1.2 North West Cambridge comprises a Sustainable Urban Extension consisting of:

Market Housing	Up to 1,500 units	
Key Worker Housing	Up to 1,500 units	
Academic Research	At least 60,000m^2	Total - Up to 100,000m^2
Commercial Research	Up to 40,000m^2	
Collegiate	Up to 2,000 bed spaces	
Local Centre / Community	Up to 5,300m^2 gross retail floorspace (the Food Store is not more than 2,000 m^2 net floorspace Further Local Centre / Community facilities includes: Up to 500m^2 community centre, Up to 450 m^2 indoor sports provision Up to 200m^2 Police office, Up to 700m^2 Primary Health Care	
Hotel	Hotel – Up to 7,000 m^2 (130 bed spaces)	
Nurseries	Up to 2,000m^2	
Senior Living	Up to 6,500 m^2 (75 units of Sheltered Accommodation have been assumed in the Assessment)	
School	3,750 m^2	

1.2 Background Planning and Transport Context

1.2.1 Technical assessment work was undertaken and submitted in September 2011 by Peter Brett Associates LLP to support the outline planning application including a Transport Assessment, a Travel Plan Statement and the transport chapter of the Environmental Statement.

1.2.2 North West Cambridge received a planning permission on 22 February 2013, subject to a number of conditions. The outline planning consent includes 13 planning conditions relating to access and movement, numbered 36 to 48. This report sets out the methodology and results of the assessment to allow the discharge of Condition 39 - providing further details on the location, design, specification, management, maintenance and phasing of the controlled public transport route through the heart of North West Cambridge.

1.2.3 This report is set within the context of the outline planning application and permission which included the access strategy and traffic and impact assessment information.

1.3 Summary of the proposed Public Transport route control

1.3.1 To provide a more direct, more attractive public transport route through the site, a short section of the on-site carriageway is to be provided with a control to restrict the movement of all other vehicles.

1.3.2 A rising bollard system will be installed on the section of carriageway to the east of the Local Centre. This is shown on Figure 1.

1.3.3 Further details are provided in Section 3 of this Report.

2 Background – Planning and Transport Assessment Context

2.1 Introduction

2.1.1 This section reviews the planning condition, work within the agreed Transport Assessment which supported the outline planning application, and the later work undertaken to resolve Section 106 aspects.

2.2 Planning Condition and Supporting text

2.2.1 Planning Condition 39 was drafted to ensure that details of public transport provision within North West Cambridge are reviewed following the grant of outline planning permission.

2.2.2 Condition 39 states that:

> *No development, apart from enabling works agreed in writing by the local planning authority, shall commence until such a time as details relating to the location, design, specification, management and maintenance and phasing of means by which the controlled public transport route within the development will control access to the private car have been submitted to and approved by the local planning authority. Any details shall include any associated CCTV provision. Development shall then be carried out in accordance with the approved details.*

2.2.3 The reason provided for this planning condition is the need to provide adequate public transport provision for residents of the site in accordance with the North West Cambridge Area Action Plan policies NW14 and NW16.

2.3 Review of relevant work in the previous Transport Assessment

2.3.1 Chapter 8 of the Transport Assessment, submitted in September 2011 in support of the outline planning application, considered the public transport strategy for North West Cambridge. Section 8.6 considered On-site Bus Infrastructure including references to "bus priority measures such as…bus gates".

2.3.2 Paragraph 8.6.5 makes reference to the controlled public transport route:

> *"A bus gate is proposed on the Huntingdon Road – Madingley Road Link Road through the centre of the Development in the early stages, to prevent traffic from taking a direct route between Huntingdon Road and Madingley Road (although an alternative, longer and less attractive route would be available for all vehicles). Service Uni 4 would make use of this, as would the proposed shuttle service to the Science Park".*

2.4 Proposed bus routes and services

2.4.1 The proposed bus routes through the Development were shown originally on Figure 12A from the Transport Assessment – this figure is attached in Appendix A. The routes were revised during the Section 106 negotiations and updated as Section 106 Figure 10 also included in Appendix A. This shows the alignment for bus routes Citi5 and Uni 4 via the bus-only section. Whilst it had originally been suggested that the Science Park Service would also route via the bus-only section, this service was routed away following subsequent discussions with the highway and planning authorities to improve the accessibility.

2.4.2 By the completion of the development these two bus routes passing through the bus-only section would eventually operate on a ten minute frequency in both directions through the bus gate, resulting in average flows of 12 buses per hour, per direction.

3 Information to respond to the Condition

3.1 Overview

3.1.1 This section summarises the details of the proposed bus gate controls to respond to the following aspects of the Condition:

i) Location

ii) Design

iii) Specification

iv) Management and maintenance

v) Phasing.

3.2 Location

3.2.1 The control on the public transport route is to be provided on the link to the east of the Local Centre, on the Orbital Route shown on Figure 1.

3.2.2 As shown on these figures, the bus-only section extends in a north / south orientation to the east of the Market Square pedestrian zone, within the Local Centre area of the North West Cambridge Development. A short section of this route is to be restricted by rising bollards within bus gates located north and south of a pair of bus stops. These bus gates are the subject of this Discharge of Condition Report.

3.3 Design of the control

3.3.1 The layout of the bus gate control is shown in detail on plan reference NWC1-TLA-LB-ZZZ-XX-DRG-LD-5001 prepared by Townshend Landscape Architects, and is included in Appendix B.

3.3.2 Ideally the control apparatus at North West Cambridge to restrict movement to buses and approved taxis only will be the same as the apparatus used elsewhere within Cambridge for approaching twenty years. The physical control used throughout the City is provided by rising bollards, operated by selected vehicle detection. Details of the apparatus used elsewhere in Cambridge are shown in Appendix C on ATG's Figure "VP700 Installation Instructions" for information, albeit that no commitment has been made by the University to use this particular make of apparatus.

3.3.3 It is proposed that there would be an entry and exit control point for each direction, forming an 85m section of bus-only section. As each control point would be fitted with one rising bollard, there would be in total four rising bollards to be implemented.

3.3.4 Within the section of bus-only section are two bus stops, one serving each direction. The bus stops are designed to accommodate one vehicle at a time on the basis that the probability of two buses needing to stop at any one point in time is relatively low given bus frequencies, and that providing further bus storage would impact on the urban design of this area.

3.3.5 The benefit of this arrangement is its operational flexibility. A permitted vehicle can enter the bus-only section and may, if required, overtake a vehicle such as a stationary bus prior to the exit from the bus-only section.

3.4 Specification

3.4.1 The details for the proposed bus gate arrangement within the Local Centre are shown on drawing 23035-052-001B, included in Appendix D.

3.4.2 The transponder-controlled rising bollards used throughout Cambridge are supplied by ATG.

Access control

3.4.3 Movement through the bus-only section would generally be controlled by Select Vehicle Detection. The classes of vehicles to be allowed through would be confirmed by the highway and planning authority, but reflecting accepted usage elsewhere in Cambridge is likely to include:

i) service buses;

ii) suitably-equipped emergency vehicles;

iii) suitably-equipped regular service vehicles (refuse collection lorries etc);

iv) taxis.

3.4.4 The entry control points would include the detection system (elsewhere in Cambridge this is the “Sietag” loop system) such that vehicles would only be permitted to enter the bus-only section if:

i) they are fitted with the appropriate transponder; or

ii) if the vehicles are not fitted with a transponder, by requesting access through an intercom link in the pillar on the adjacent median island. An example of vehicles that may use this alternative would be delivery vehicles.

3.4.5 The exit control points would have a more simplified form of this control, allowing any vehicle approaching from within the controlled public transport route to pass unhindered. The loops would be specified to detect all vehicles, and trigger the barriers to depress. The intercom link would only be required if the loops failed to detect the presence of a vehicle - for example, to allow for unhindered egress of a servicing vehicle, or if the apparatus was not functioning properly.

Operational contingency

3.4.6 The precise details of the contingency arrangements for a “failsafe” system are to be agreed with CCC. For example, if one of the four rising bollards was to fail or was damaged and could not be moved to the down position, the remaining bollards could be set to respond to the protocol agreed with the highway authority – for instance, some or all bollards could be moved to the down position so that vehicles could continue to proceed with caution through the restricted area.

3.4.7 The proposed layout offers greater flexibility for shuttle working through a single entry/exit point with temporary traffic management.

3.4.8 In a worst case, if all four bollards are affected – such as being jammed by ice during an extreme cold event – buses would be locally diverted around the Local Centre along the proposed route of the Science Park service with minimal effect to the service operation, and the passengers redirected to adjacent stops.

Swept path design checks

3.4.9 To refine the current design proposals the swept path of a 12m bus has been assessed using AutoTRACK through the entry and exit points through the bus-only section, to ensure that adequate width is provided for expected vehicle movements. The results of this swept path analysis are presented in drawing 23035-052-002 included in Appendix E.

3.4.10 The swept path analysis determined that for straight approaches a narrow width of 3.25m is appropriate, whereas for angled approaches the access width has been increased to 3.5m to reduce the risk of kerb overrunning.

Traffic signs

3.4.11 Signage of the bus-only section will be signed in accordance with the Traffic Signs Regulations and General Directions.

3.4.12 The “Pedestrian Zone” signs would specify the times when the access control applies, and identify which motor vehicles are exempted. This would be supported by warning signs and manufacturer-specified information signs. These provide benefit that they would alert road users to the need for caution when entering the bus/pedestrian area.

Construction design detail

3.4.13 The electrical connections and the fine detail of the duct arrangements for inductive loops would be specified within the construction design. In developing this aspect of the specification further support would be required from the preferred supplier of the rising bollards.

CCTV

3.4.14 Monitoring of the bus gates would be achieved through two CCTV cameras mounted on separate posts. This CCTV system would be linked into the Estate Management CCTV arrangements.

Safeguarding for future alternative access control designs

3.4.15 The inclusion of rising bollard access controls reflects the control systems and designs of bus gates throughout Cambridge.

3.4.16 In the design process, consideration has been given to the possibility that an alternative method of access control could be implemented that does not require physical restrictions, such as Automatic Number Plate Recognition (ANPR) cameras.

3.4.17 Whilst the North West Cambridge design is flexible enough to exchange the proposals for an ANPR system, this would not provide the physical deterrent that the rising bollards provide. – albeit that .this would reflect similar provision across Cambridge.

3.5 Management and maintenance

3.5.1 Whilst the bus gates would be designed to adoptable standards, the road will be managed and maintained by the Estate Management Company.

3.5.2 The management and maintenance of the controlled bus-only section would be the responsibility of the Development’s Estate Management Company.

3.5.3 The University would be responsible for undertaking routine maintenance and repairs of the rising bollards and their associated control mechanisms and signage.

3.6 Phasing

3.6.1 The controlled public transport route will be delivered within the initial first phase of development within the Development. This would enable the extension of the University's Uni4 bus service to the Local Centre.

3.7 Stakeholder Liaison

3.7.1 There will be liaison with Cambridgeshire County Council and the bus service operators to ensure that the access control remains fit for purpose, and that the respective fleet operators continue to equip their vehicles with transponders.

3.8 Monitoring and operation

3.8.1 The County Council wishes the Bus Gate to be implemented for 12 hours per weekday to prevent 'rat-running' traffic along less desirable routes through the area.

3.8.2 Whilst agreeing fully with the principle of preventing rat-running, the University is also mindful that a flow of traffic along the eastern side of the Local Centre will be good for the viability of the area by improving accessibility. As such, the University has an aspiration to be able to vary the hours of operation on the Bus Gate – to prevent still the peak hour "rat-running" movements, but also to enable the movement of all vehicles along this route at other times less sensitive to the network.

3.8.3 In order to facilitate an experimental period and to refine these hours to an optimal arrangement, the County Council would accept a monitoring strategy being implemented to demonstrate that traffic is not re-assigning to the bus-only street – demonstrating that there is no unacceptable additional congestion and pressure on local roads. The strategy would involve the monitoring of traffic flows on Windsor Road before and during the implementation of the Development – this would identify the attributable changes.

3.8.4 Assuming that this monitoring demonstrates that no significant traffic flow increases occurs along Windsor Road, the County Council would be willing to agree to an experimental period of part-time operation of these bollards. It is anticipated that the Estate Management Company, working on behalf of the University, would deliver the monitoring of the traffic movements.

3.8.5 Initially, it is expected that the rising bollards would be operational for 12 hours per weekday. With traffic monitoring, the operational times could then be reduced to peak hours only during weekdays. This would enable a phased, monitored approach to refining the operational times for the rising bollards. The findings from this monitoring exercise would influence the decision permanently to vary the operational hours of the bollards.

3.8.6 Any alterations in the set operational times would require revisions to times displayed on signs for the entry links into the bus-only street. Furthermore if the section of highway is to be adopted changes in operational times may also require the legal support of a traffic order.

3.8.7 The scope of the traffic monitoring would need to be agreed with the County Council, but could include Automatic Traffic Counters (ATCs) on Windsor Avenue to help assess the wider impacts of any traffic re-assignment associated with the controlled public transport route.

4 Conclusions

4.1 This report has been produced by Peter Brett Associates to respond specifically to Condition 39 of the outline planning permission 111/1114 and S/1886/11 for the development relating to land between Huntingdon Road, Madingley Road and M11, Cambridgeshire.

4.2 To respond to this Condition, this Report contains details relating to the location, design, specification, management, maintenance and phasing of the physical measures required to restrict vehicular access to the public transport route through the centre of North West Cambridge in accordance with the requirements of Condition 39, the controlled public transport route.

4.3 The conclusions are that:

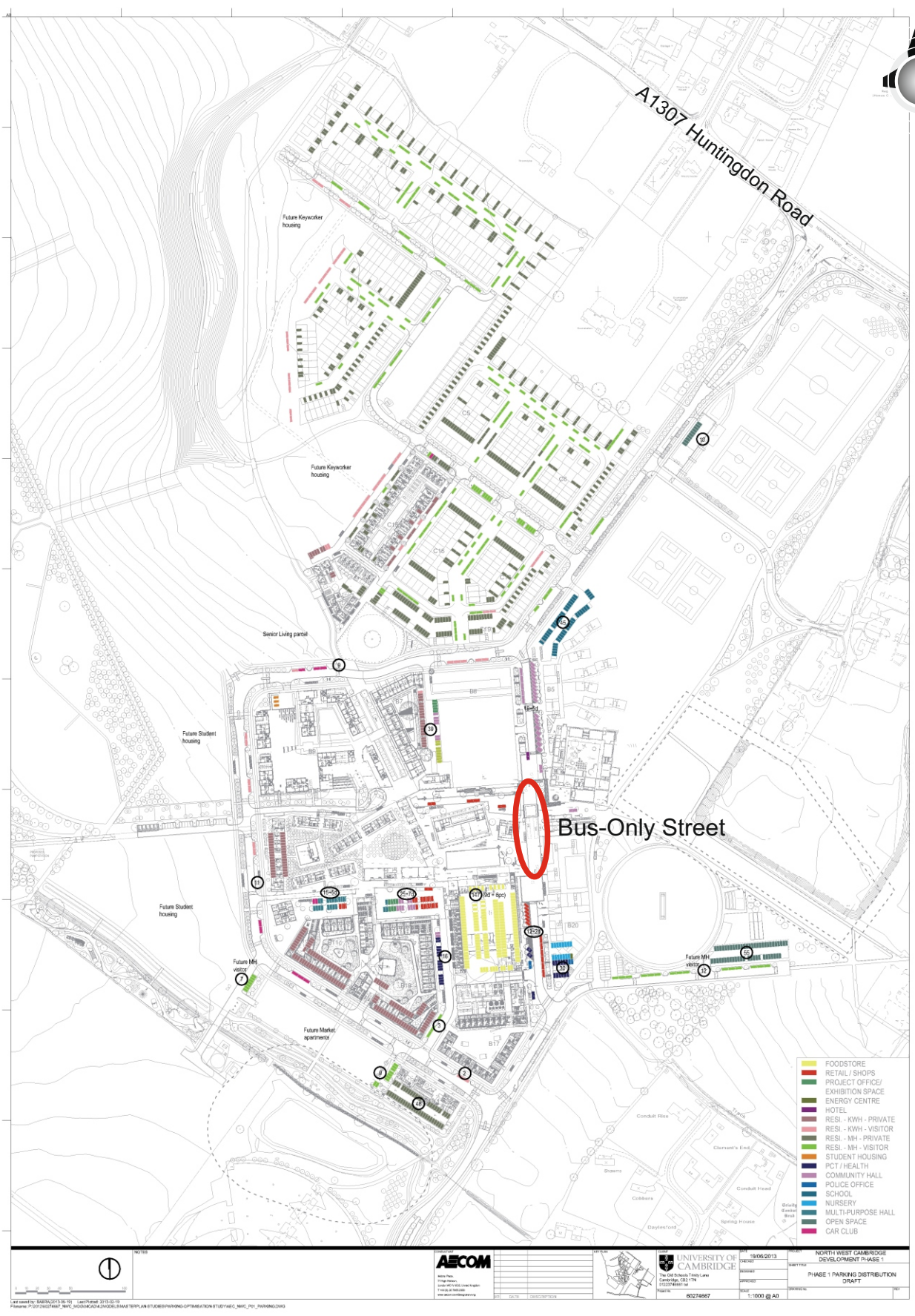
i) the bus-only section would be controlled by rising bollards, reflecting the control apparatus elsewhere within Cambridge;

ii) two sets of controls would be provided at the northern and southern ends of the controlled bus-only section;

iii) the University, through its Estate Management Company, would be responsible for management and maintenance of the access controls in the controlled bus-only section; and

iv) the controlled public transport route infrastructure would be delivered within the initial phase of the development.

4.4 This report therefore provides the details to allow Condition 39 of the outline planning permissions to be discharged.



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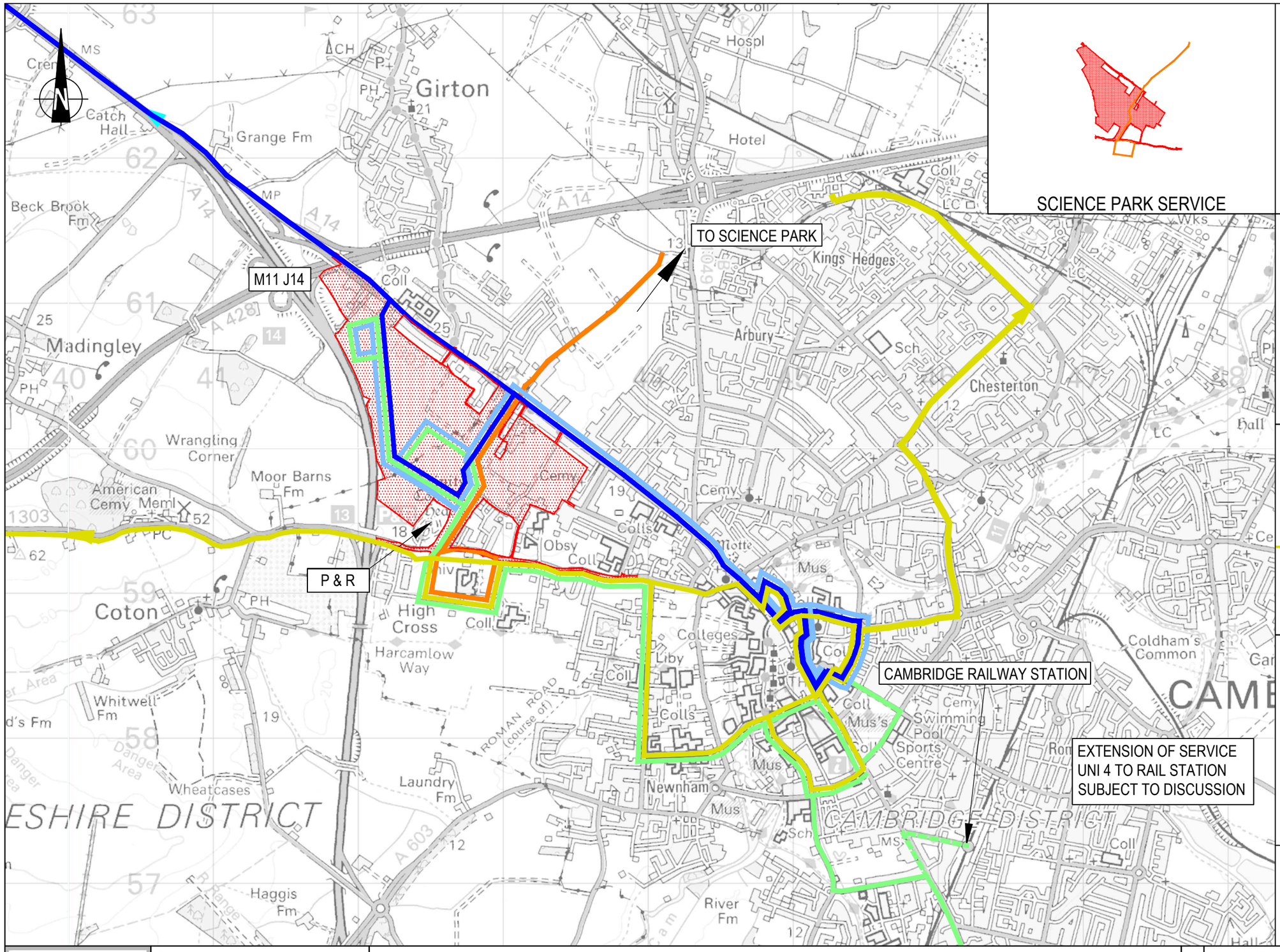
Bus-Only Street Location Plan

Date	02/07/2013
Scale	NTS
Drawn by	JP
Checked by	TT
Revision	-

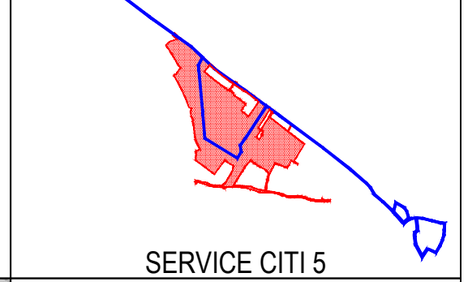
Figure 1

J:\23035 NW Cambridge\052 Bus stops and bus gates\Corel

Appendix A Proposed bus routes across North West Cambridge

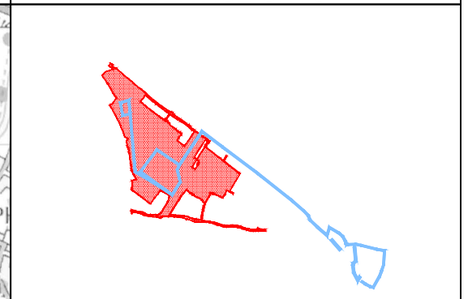


SCIENCE PARK SERVICE

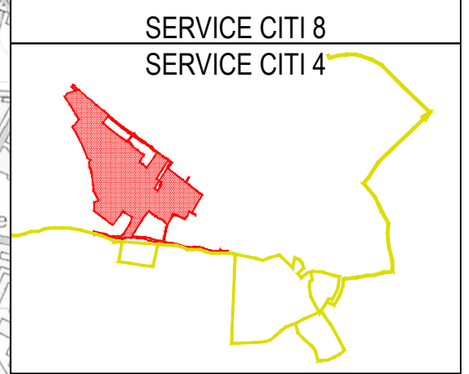


SERVICE CITI 5

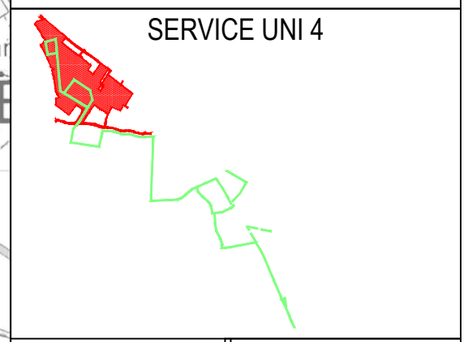
SERVICE CITI 8



SERVICE CITI 4



SERVICE UNI 4



10mins Citi 5
10mins Citi 8
10mins Uni 4 to City, 30 mins to Addenbrookes
30mins Science Park

KEY	SERVICE
	Citi 5
	Uni 4
	Citi 4
	Citi 8
	Science Park Service

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SCALING NOTE: Do not scale from this drawing. If in doubt, ask.
UTILITIES NOTE: The position of any existing public or private sewers, utility services, plant or apparatus shown on this drawing is believed to be correct, but no warranty to this is expressed or implied. Other such plant or apparatus may also be present but not shown. The Contractor is therefore advised to undertake his own investigation where the presence of any existing sewers, services, plant or apparatus may affect his operations.

NORTH WEST CAMBRIDGE

PROPOSED BUS SERVICE ROUTE

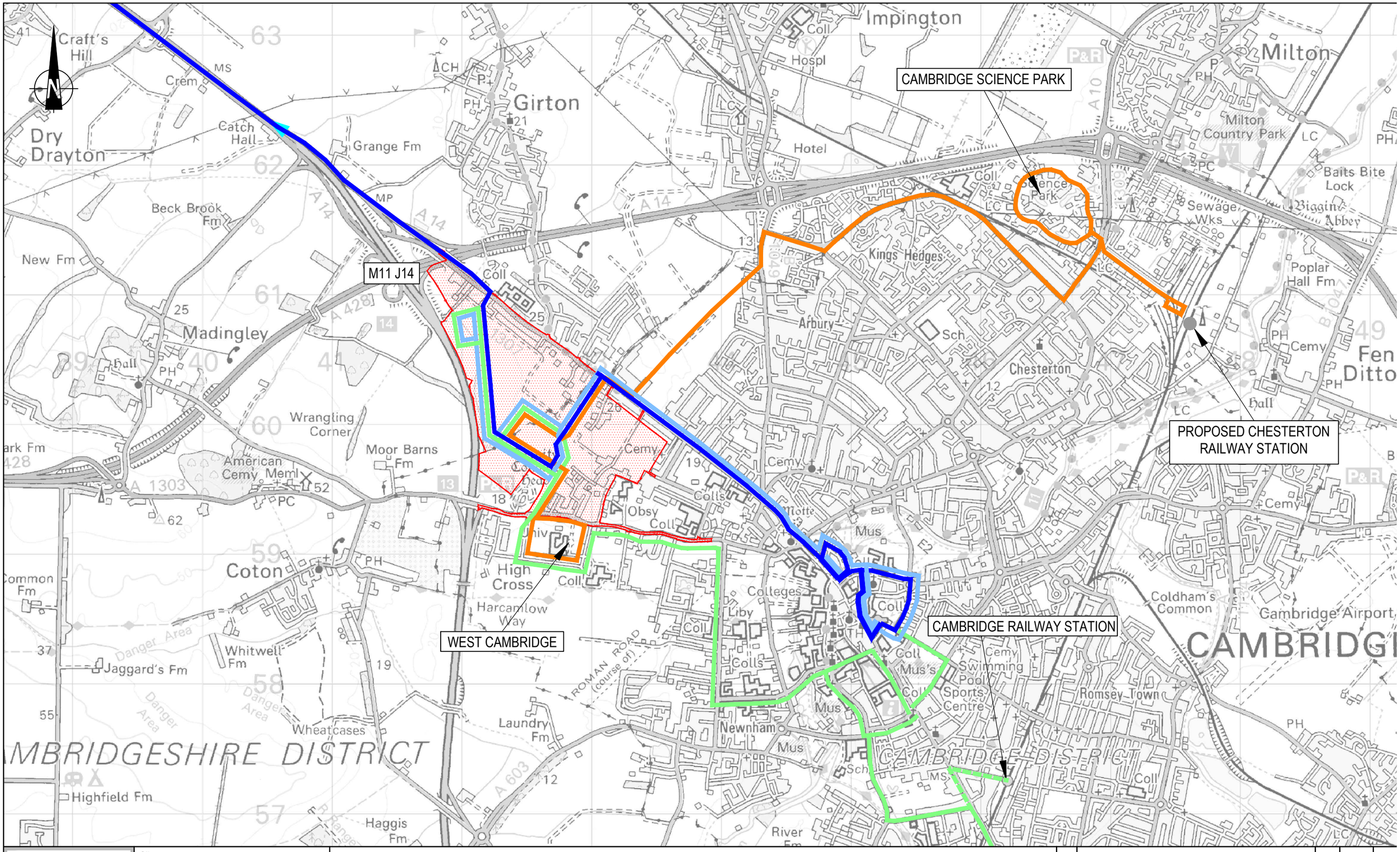
Mark	Revision	Drawn	Date	Chkd
A	PLANNING APPLICATION	TA	09/09/11	JPH

Drawing Status: TRANSPORT ASSESSMENT

Date of 1st Issue	12/10/10
A3 Scale	NTS
Drawn by	TA
Checked by	JPH

Drawing Number: FIGURE 12
23035 / TA / 012 - Figure 12

Revision: A



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NORTH WEST CAMBRIDGE

10. BUS SERVICE IMPROVEMENT ROUTES

Mark	Revision	Drawn	Date	Chkd

Drawing Status: S106 AGREEMENT

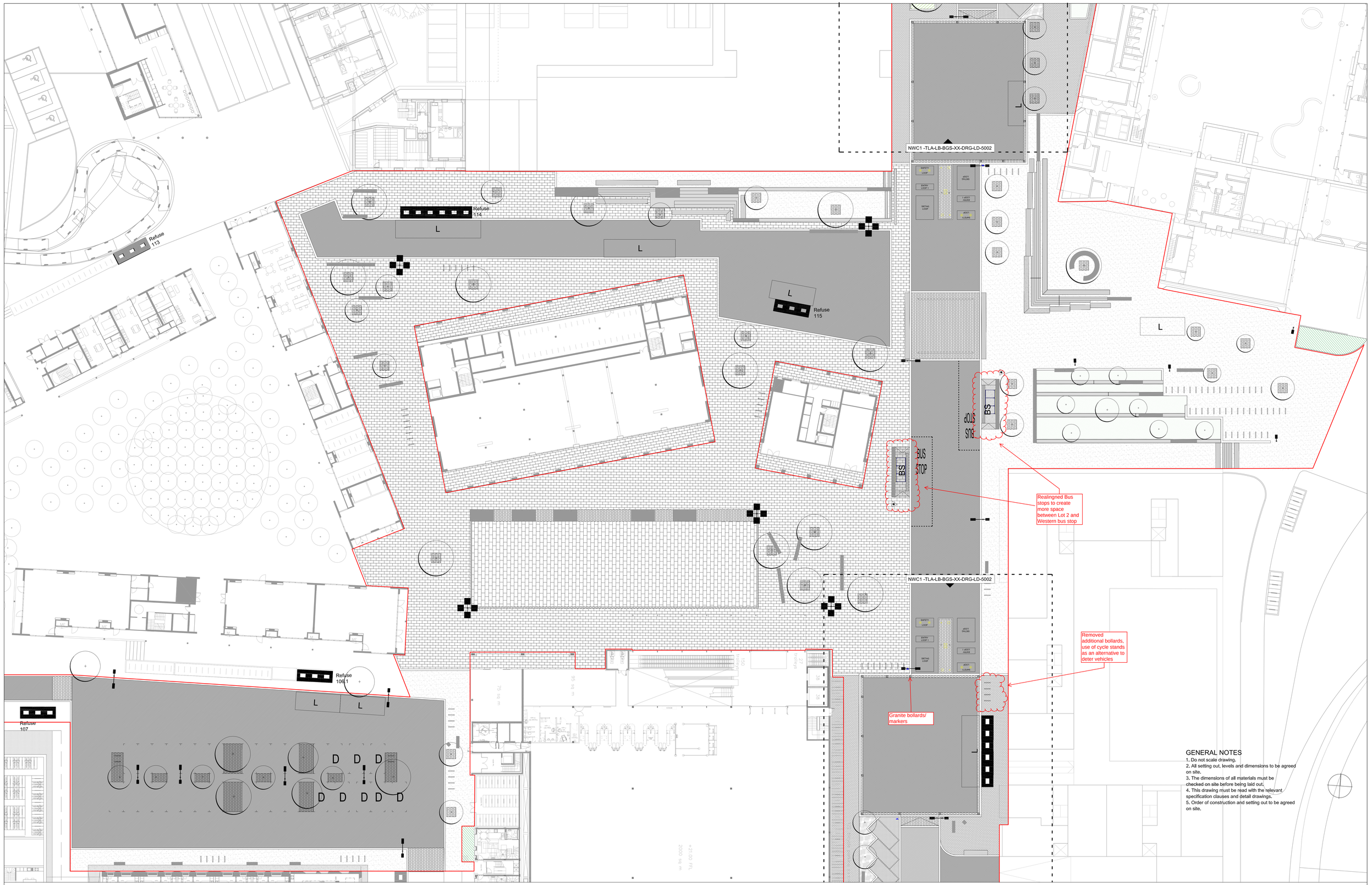
Date of 1st Issue	07/11/12
A3 Scale	NTS
Drawn by	JB
Checked by	JPH

Drawing Number: FIGURE 10

23035 / S106 / 001 - Figure 10

Revision: -

Appendix B Townshend Architects – Local Centre plan



KEY

- RED LINE BOUNDARY
- CAITHNESS PAVING TYPE 1
- CAITHNESS PAVING TYPE 2
- GRANITE SETS
- AXOGOLD
- ASPHALT
- RESIN BONDED GRAVEL
- SELF BINDING GRAVEL
- PRE-CAST CONCRETE BLOCK
- FEATURE STEPS
- KERB EDGE
- CONCRETE BRIDGE
- PROPOSED LAWN
- PROPOSED SHRUB PLANTING
- SUD'S
- PROPOSED CYCLE STANDS
- GRANITE BOLLARD
- PROPOSED TIMBER BENCH
- PROPOSED TRANSPONDER ENGINEER TO CONFIRM
- PROPOSED BIN
- BS BUS SHELTER
- MULTI-STEM TREE
- PROPOSED STREET TREE
- LIGHTING LOCATIONS IN ABEYENCE
- TACTILE PAVING
- RISING BOLLARD
- FURNITURE ASSOCIATED WITH TRANSPONDERS

GENERAL NOTES
1. Do not scale drawing.
2. All setting out, levels and dimensions to be agreed on site.
3. The dimensions of all materials must be checked on site before being laid out.
4. This drawing must be read with the relevant specification clauses and detail drawings.
5. Order of construction and setting out to be agreed on site.

WORK IN PROGRESS

Project	Drawing Title
NW CAMBRIDGE DEVELOPMENT	LOCAL CENTRE LANDSCAPE SURFACE FINISH PLAN

Revision	Date
P01 - Layout amended	11/04/13
P02 - Layout amended	30/04/13
P03 - Layout amended	03/05/13
P04 - Layout amended	14/05/13
P05 - Layout amended	22/05/13

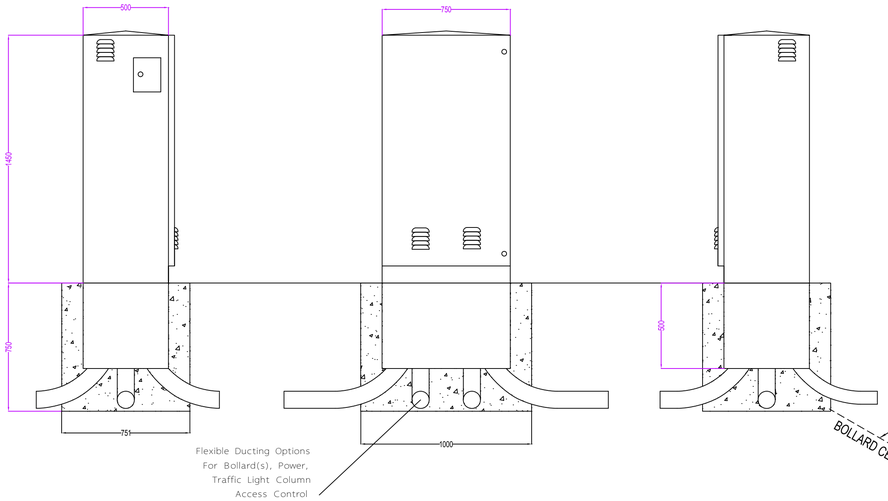
Dimensions to be verified on site.
Figured dimensions to take preference to those scaled.
Any areas indicated on this drawing are for guidance only.
No responsibility is taken for their accuracy.

Client: University Of Cambridge
Address: Address
Telephone: Telephone

Consultant: TOWNSHEND Landscape Architects
Unit 3A Zetland House
London EC2A 4HJ
Telephone: 020 7729 9333 Fax: 020 7729 3300
E-Mail tla@townshendla.com

Project No.	Scale	Approved By	Drawing No.	Revision
528	1:200	GA		P05
Date	Drawing Size	Drawn By		
APRIL 13	A0	OB	NWC1 -TLA-LB-ZZZ-XX-DRG-LD-5001	

Appendix C ATG rising bollards specification



Control Cabinet Reference

VP700 Control Cabinet

Specification

Cabinet size	1500h x 750w x 500d (mm)
Cabinet Finish	Standard - Powder coated black, Anti-poster paint available
Lock	3 No Tubar Attack Tested Locks
Power	a 240v 20amp, single phase, 3 core supply is required to control cabinet.
DETR	Approved October 1998
Override	Lock Type Std Tubar

Installation Instructions

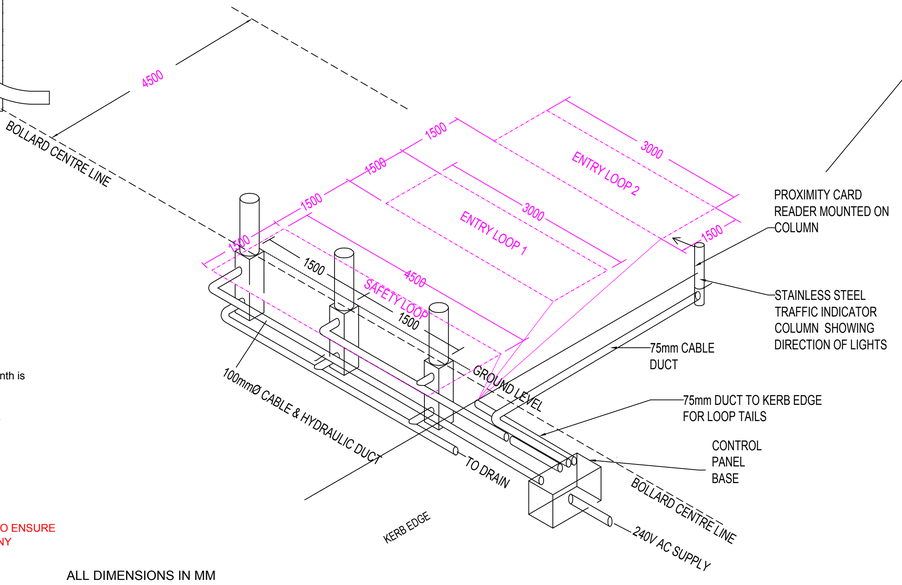
Area to be CAT scanned for underground services before commencement

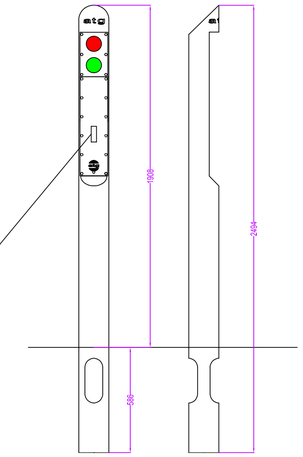
1. Mark a 1000mm x 500m hole on the ground.
2. Cut the surface to a depth of 75mm with a cutting disc.
3. Cut out the centre of the hole with a hammer drill (Kango).
4. Dig the hole to a final depth of 500mm which ensures that the top of the plinth is 15mm proud of ground level.
5. Set plinth in the centre of the hole ensuring it is vertical and the top edge is level and set 15mm proud of ground level.
6. Fill sides of the hole with concrete C35 concrete ensuring all ducts are in place complete with pull cords.
7. All above as per enclosed drawing.

BEFORE COMMENCING WITH THE FITTING, GREAT CARE MUST BE TAKEN TO ENSURE THE PROPOSED LOCATION HOLE DOES NOT COME INTO CONTACT WITH ANY UNDERGROUND SERVICES. A CABLE AVOIDANCE TOOL MUST BE USED.

All excavations must be protected by a safety barrier.
atg access accept no liability what-so-ever for any physical or personal damage due to the aforementioned.

If the fitting is not carried out exactly as instructed we accept no liability and any visit to site will be charged for.





Traffic Light Reference

Traffic Indicator Column

Specification

Diameter	168mm
Number of Aspects	2 (Red/Green)
Diameter of Aspects	100mm
Height of Column	Standard
Indicator Finish	Stainless Steel
Indicator Colour	Stainless Steel
Lamp Voltage	12vdc

Installation Instructions

Area to be CAT scanned for underground services before commencement

1. Mark a 350mm square hole on the ground.
2. Cut the surface to a depth of 75mm with a cutting disc.
3. Cut out the centre of the hole with a hammer drill (Kango).
4. Dig the hole to a final depth of 700mm.
5. Set the traffic indicator column in the centre of the 350mm square hole ensuring it is Vertical and facing in the correct direction (check with head office if unsure).
6. Fill the hole with concrete using C35 concrete.
7. All above as per enclosed drawing.

BEFORE COMMENCING WITH THE FITTING, GREAT CARE MUST BE TAKEN TO ENSURE THE PROPOSED LOCATION HOLE DOES NOT COME INTO CONTACT WITH ANY UNDERGROUND SERVICES. A CABLE AVOIDANCE TOOL MUST BE USED.

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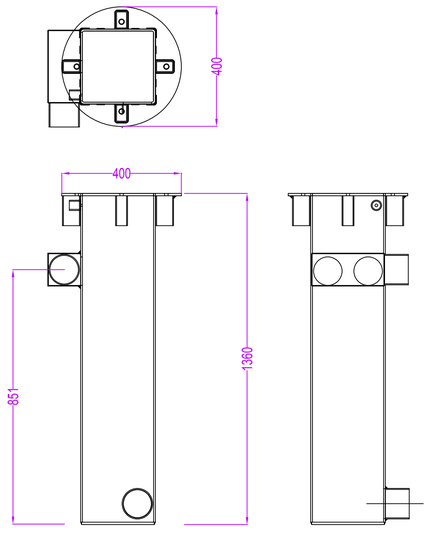
ALL DIMENSIONS IN MM

ATG ACCESS LTD RESERVE THE RIGHT TO MODIFY ANY DESIGN WITHOUT PRIOR NOTICE
NOTE 1. DIRECTION OF TRAFFIC INDICATOR AS IN ACCORDANCE WITH DETR APPROVAL



Bollard Specifications

VP700 Bollard Outer Casing

See Above Detail

Bollard Reference

VP700 Automatic Bollard

Specification

Bollard Diameter	168 mm
Bollard Height	700 mm
Bollard Inner Core	168 Diameter Steel
Bollard Outer Sleeve	Polyurethane
Bollard Colour	Black
Maximum Bollard Rise Time	2 seconds*
Maximum Bollard Lower Time	2 seconds*
Safety	See bollard safety assessment
Access Control	All Types
Power Requirements	240v single phase 20 amp
Max No. of Bollards per System	4 Bollards
Bollard Operations:	Up to 2000 per day
Applications:	Pedestrian Scheme & Bus Gate Control
DETR APPROVED:	Full approval in this product
Traffic Indicators	Complete with VP700

* This is the fastest speed possible. Actual speed is dependent on panel to bollard duct length

Installation Instructions

Area to be CAT scanned for underground services before commencement

1. Mark a 500mm square hole on the ground.
2. Cut the surface to a depth of 75mm with a cutting disc.
3. Cut out the centre of the hole with a hammer drill (Kango).
4. Dig the hole to a final depth of 1600mm which ensures that the top of the post is level with finished ground level.
5. Set outer post in the centre of the 500mm square hole ensuring it is vertical and the top edge is level with the finished ground level
6. Ensure bottom drain connection is connected to a main drain.
7. Fill remainder of the hole with C35 concrete.
8. All above as per enclosed drawing.
9. Ensure all ducts are fitted with pull cords.

BEFORE COMMENCING WITH THE FITTING, GREAT CARE MUST BE TAKEN TO ENSURE THE PROPOSED LOCATION HOLE DOES NOT COME INTO CONTACT WITH ANY UNDERGROUND SERVICES. A CABLE AVOIDANCE TOOL MUST BE USED.

All excavations must be protected by a safety barrier.
atg access accept no liability what-so-ever for any physical or personal damage due to the aforementioned.
If the fitting is not carried out exactly as instructed we accept no liability and any visit to site will be charged for.

REV	DATE	DESCRIPTION	DRN	CHK	APP
A	17.11.05	FIRST ISSUE	WP		
B					
C					
D					

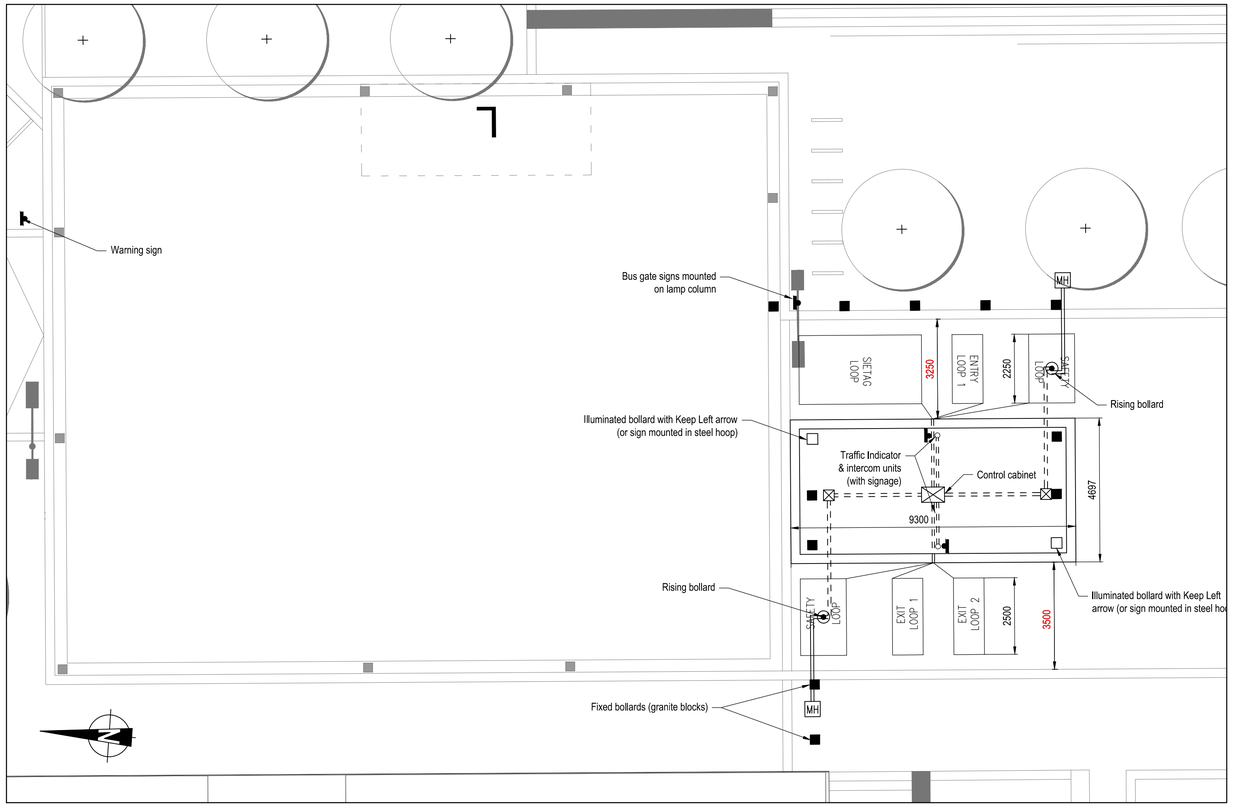
atg access
ATG ACCESS LIMITED
AUTOMATION HOUSE
LOWTON BUSINESS PARK
NEWTON ROAD, LOWTON ST.MARY'S
WARRINGTON,
CHESHIRE,
ENGLAND, WA3 2AP
TEL 01942 685522 FAX 01942 269676

TITLE
VP700 INSTALLATION INSTRUCTIONS

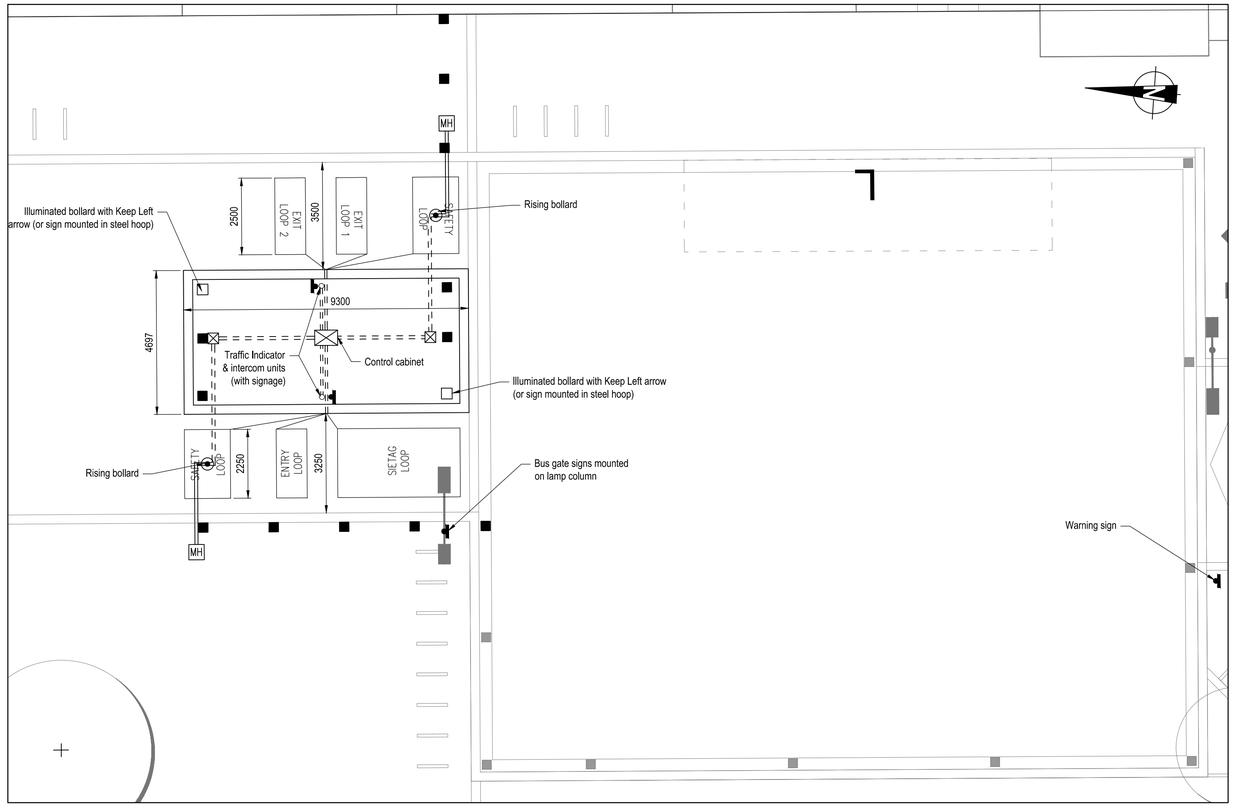
A1 | DRAWING No

ALL DIMENSIONS IN MILLIMETERS UNLESS OTHERWISE STATED

Appendix D General arrangement drawing of bus-only section



DETAIL 1 - ACCESS CONTROL ZONE A
Scale 1:100



DETAIL 2 - ACCESS CONTROL ZONE B
Scale 1:100

RISING BOLLARDS
(Black or stainless steel finish)

TRAFFIC INDICATOR / INTERCOM UNIT & ASSOCIATED SIGNAGE

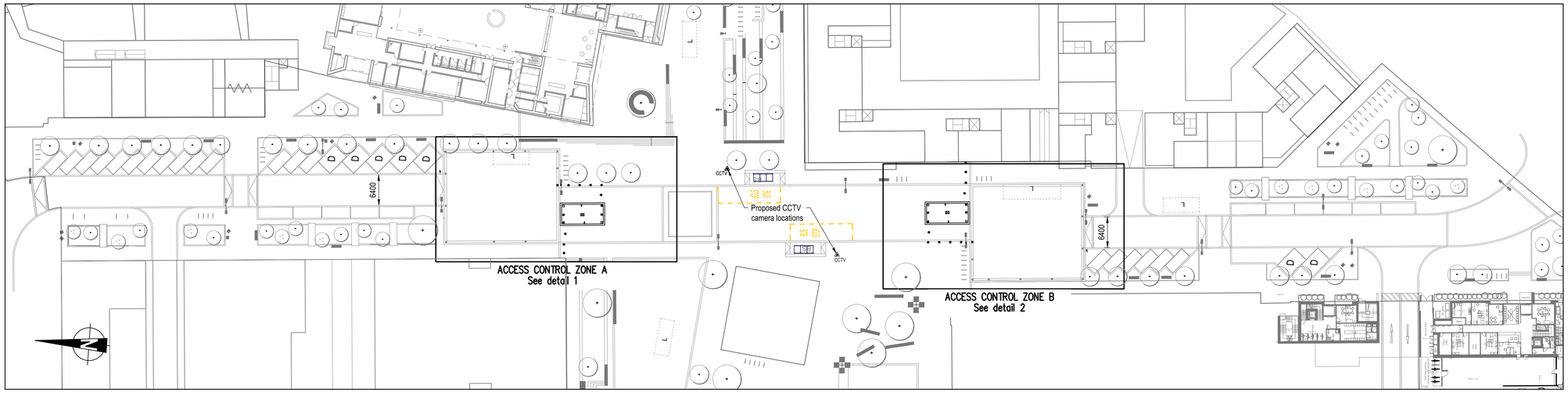
GRANITE BOLLARD

ILLUMINATED BOLLARD

WARNING SIGN

ENTRY RESTRICTION SIGN
(Details to be agreed)

ZONE ENDS SIGN



LOCATION PLAN
Scale 1:500

NOTES

1. Do not scale this from drawing.
2. All dimensions are in millimetres except where stated.
3. Proposed layout, setting out and dimensions subject to detail design.
4. Location of utilities and ducting subject to detail design.
5. Rising bollards and associated equipment to be ATG Access type VP700 in black or stainless steel finish. Refer to manufacturer's drawings and specifications for further information.
6. Bus boarding area to have minimum kerb upstand of 125mm (140mm preferred).
7. Sign face details are not shown.
8. Locations of CCTV are indicative.
9. Proposed road layout to be designed and built to adoptable standards, but it is understood that it will be maintained by the University.

KEY

- ■ Granite bollard (to prevent vehicles bypassing restriction)
- ⊠ Drawpit
- Cable duct (for electrical & hydraulic connections)
- Drainage pipe
- MH Inspection chamber

Mark	Revision	Drawn	Date	Chkd
C	Illuminated bollard option 1 deleted.	REM	11.07.13	TT
B	Access control signs revised	REM	10.06.13	TT
A	Lane width & no. of bollards reduced. Duct, sign & bollard details added	REM	30.05.13	GD

SCALING NOTE: Do not scale from this drawing. If in doubt, ask.

UTILITIES NOTE: The position of any existing public or private sewers, utility services, plant or apparatus shown on this drawing is believed to be correct, but no warranty to this is expressed or implied. Other such plant or apparatus may also be present but not shown. The Contractor is therefore advised to undertake his own investigation where the presence of any existing sewers, services, plant or apparatus may affect his operations.

Drawing Issue Status
CONDITION 39 DISCHARGE REPORT

NW Cambridge Development
Proposed Bus Gate With Rising Bollards
General Arrangement

Client
University of Cambridge

Date of 1st Issue: 21.05.13	Drawn by: REM
A1 Scale: 1:500 / 1:100	Checked by: TT
Drawing Number: 23035/052/001	Revision: C

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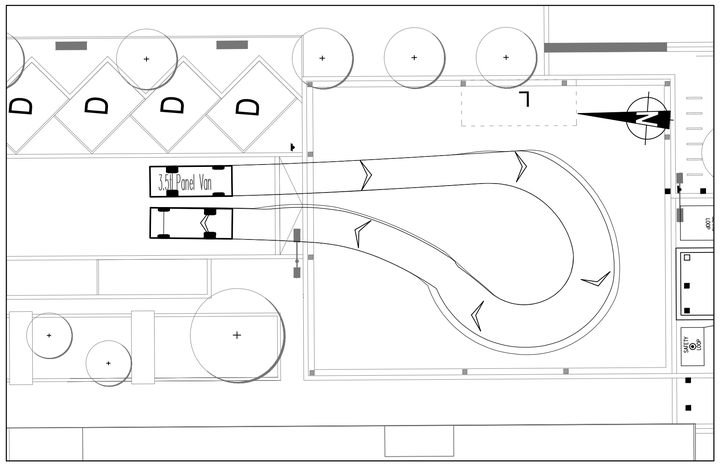
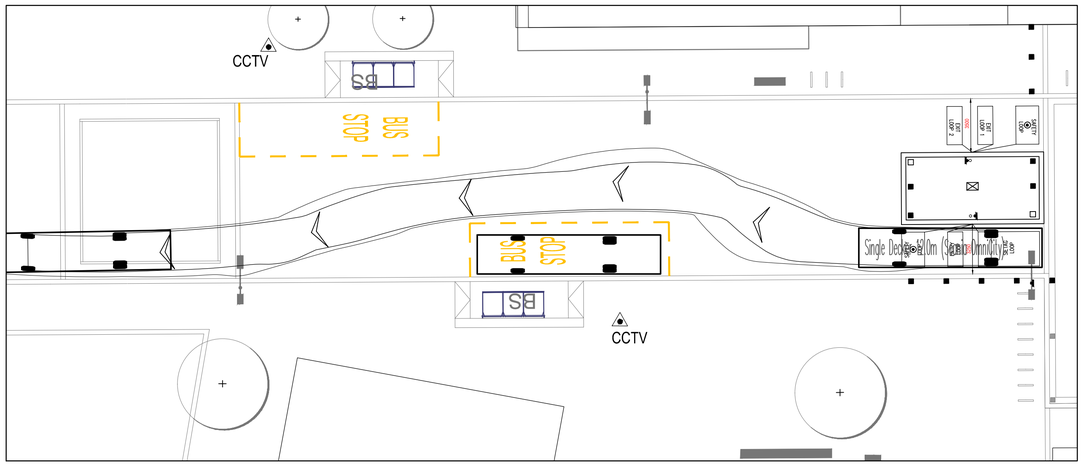
READING
Tel: 0118 950 0761

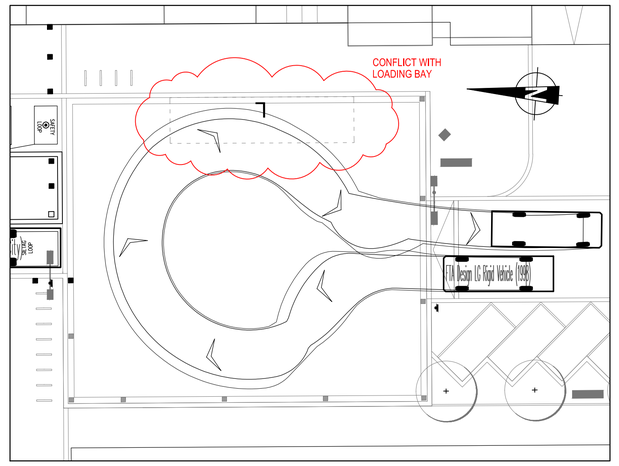
Appendix E Vehicle swept path analysis



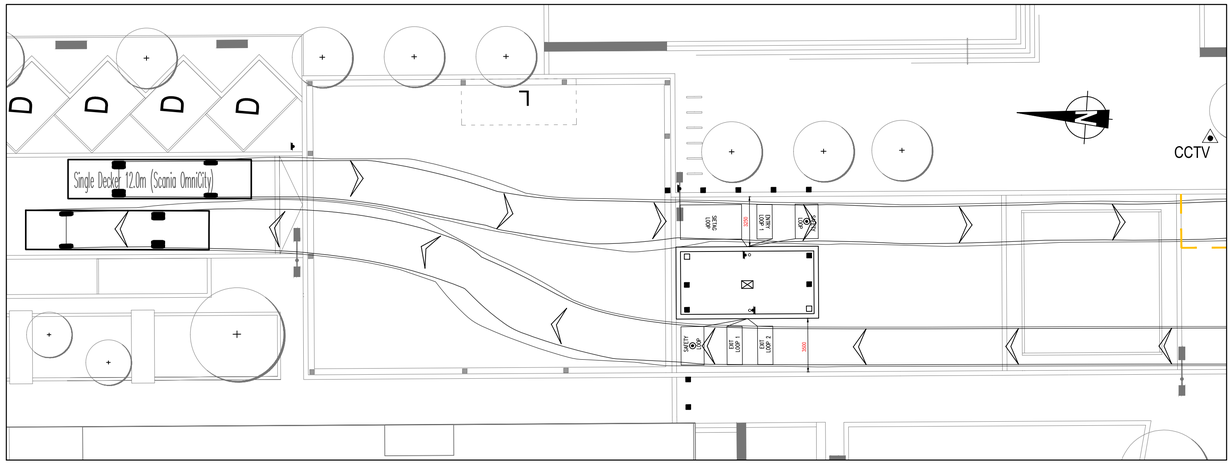
DETAIL 1 - TRANSIT VAN TURNING
Scale 1:200



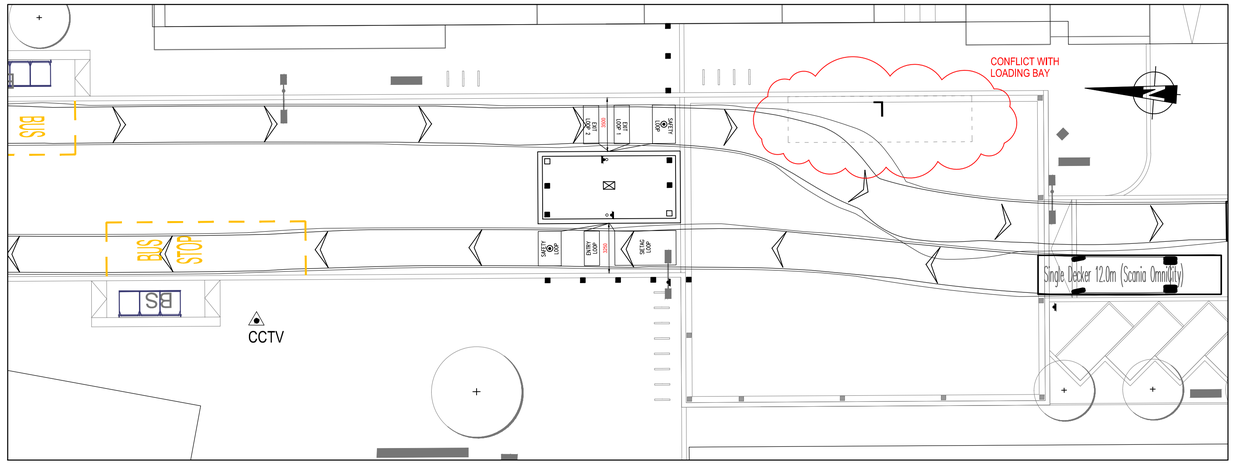
DETAIL 1 - BUS PASSING ANOTHER BUS
Scale 1:200



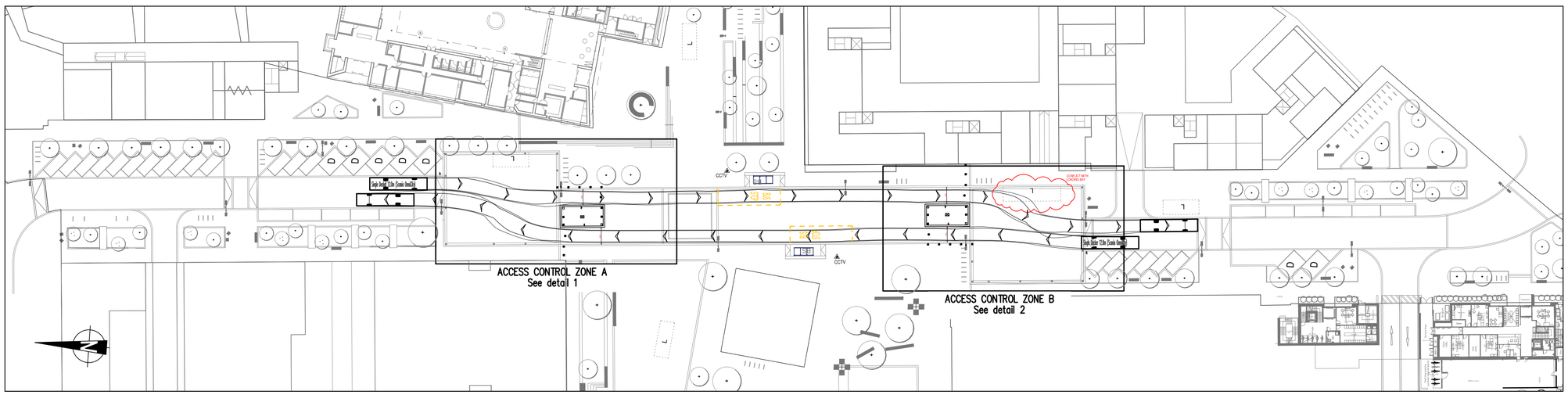
DETAIL 2 - 7.5T LIGHT HGV TURNING
Scale 1:200



DETAIL 1 - SINGLE DECK BUSES RUNNING
THROUGH IN EACH DIRECTION
Scale 1:200



DETAIL 2 - SINGLE DECK BUSES RUNNING
THROUGH IN EACH DIRECTION
Scale 1:200



SINGLE DECK BUSES RUNNING
THROUGH IN EACH DIRECTION
Scale 1:500

Mark	Revision	Drawn	Date	Chkd
A	Drawing issue status revised	REM	11.07.13	TT

SCALING NOTE: Do not scale from this drawing. If in doubt, ask.

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Drawing Issue Status

CONDITION 39 DISCHARGE REPORT

NW Cambridge Development
Proposed Bus Gate With Rising Bollards
Vehicle Swept Paths

Client

University of Cambridge

Date of 1st Issue: 31.05.13	Drawn by: REM
A1 Scale: 1:500 / 1:200	Checked by: TT
Drawing Number: 23035/052/002	Revision: A

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File Location: j:\23035 nw cambridge\052 bus stops and bus gates\cad\dwgs\23035-052-001c_002a.dwg