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Area Action Plan

Supporting Documents

Transport Analysis Summary Report
June 2009

Local
Development
Framework

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Colindale Area Action Plan (AAP)

Transport Analysis Summary Report

Project No: 133131
June 2009

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1 Introduction

1.1 Background

1.1.1 Colin Buchanan (CB) were commissioned as part of a team led by Urban Practitioners (UP) to develop the Colindale Area Action Plan (AAP). A series of different technical notes, reports and contributions to other reports were developed, and this report summarises and consolidates these.

1.1.2 The report is structured as follows:

- Chapter 2 :Existing Situation
- Chapter 3: Summary of travel generation analysis for the AAP
- Chapter 4: Sustainable travel and parking
- Chapter 5: Walking and Cycling proposals
- Chapter 6: Bus proposals
- Chapter 7: Colindale Underground Station
- Chapter 8 :Highways

1.2 General

1.2.1 The proposals for transport and movement aim to encourage use of sustainable travel modes through the provision of better and safer pedestrian and cycle permeability, connections and facilities; opening up the area for more frequent bus services reaching more destinations, and using travel plans for developments to encourage use of more sustainable modes. The AAP therefore proposes a balanced provision across all modes of transport to ensure that future travel demands can be catered for and that real travel choice is provided within a sustainable transport framework.

2 Existing situation

2.1 Existing Public Transport

2.1.1 Although benefiting from a tube station, Colindale is not very accessible to the wider area and bus services, in particular, do not serve a wide area outside of Colindale. Colindale Underground Station provides quick and frequent connections into Euston and central London on the Northern Line. Mill Hill Broadway station, located just north of the AAP area, offers excellent fast links on the First Capital Connect Thameslink rail service to London Kings Cross St Pancras, the City of London and Gatwick Airport to the south or Luton Airport and Bedford to the north.

2.1.2 Bus services are critical to local people in Colindale and provide a network of local links to the area's immediate hinterland and nearby centres and interchanges. Bus services are relatively limited with only a few services penetrating the AAP area. While the A5/Edgware Road is a major north-south bus corridor, this runs along the western periphery of the AAP area and these services are not easily accessible from sites in the north of the AAP area. Most of the Colindale AAP area is within a 20 minute walk or 10 minute cycle of Colindale underground station, Mill Hill Broadway station and the A5/Edgware Road.

2.2 Existing Walking and Cycling

2.2.1 Most of the Colindale AAP area is within a 20 minute walk or 10 minute cycle of Colindale underground station, Mill Hill Broadway station and the A5/Edgware Road. However, Colindale suffers from a lack of, or poor quality, walking routes and connections within the area and to adjacent areas, partly due to the severance caused by the strategic road and rail network, namely the M1, A5, A41, and underground and overground railway lines. A key objective of the AAP is therefore to improve the quality and amount of walking and cycle routes in the area.

2.2.2 The strategic cycle links to the area include the London Cycle Network Plus route 16 (LCN+16), which is signed along Edgware Road. Whilst there are some other cycle routes through parts of Colindale, these do not provide good permeability throughout the whole of the AAP area. Improvements to cycle routes through enhanced infrastructure and signage are required to promote cycling to improve local connectivity and offer an alternative sustainable mode of travel.

2.3 Existing Highway Network

2.3.1 The Colindale area is close to the wider strategic road network, with the M1 and A41 forming the eastern boundary while the A5 (Edgware Road) bounds the area to the west. However, these major routes create local severance problems and isolate the area from neighbouring communities. There is congestion on these routes on the periphery of the Colindale area, particularly in the morning peak.

2.3.2 There are a limited number of points where roads can currently cross over or under roads or railways. This puts pressure on traffic and makes pedestrian and cycle access more difficult. There are five main routes into/out of the AAP area that lead to the strategic network:

1. Colindale Avenue is the key east/west link that crosses the Underground line, serves Colindale Underground station and links Colindale to the A5/Edgware Road. Although it is a key' gateway' to the study area, its current scale and

character do not reflect its importance, and this should be improved in the future. It is currently a major bus link and an important route for pedestrians and cyclists. Colindale Avenue is frequently congested on the approach to the A5.

2. Aerodrome Road runs from the heart of Colindale under the M1/mainline railway on the eastern boundary of the study area and links directly to the A41, which then provides links to the A1 and M1 – it is therefore the primary access road to the strategic network. Aerodrome Road has recently been improved with replacement widened bridges enabling double-decker buses to use the road for the first time and an increased capacity on the approach to the A41. This route also links to Hendon where Middlesex University are consolidating their new flagship campus.
3. Grahame Park Way/Bunns Lane runs from the heart of Colindale to the north and Mill Hill Broadway railway station, crossing under the M1/mainline rail, but is frequently congested in the Mill Hill area during the peak hours.
4. Colindeep Lane links the A41 to the A5 on the south-eastern boundary of the AAP – however this road is not directly accessible from Colindale and traffic wishing to use it must gain access via Colindale Avenue.
5. Montrose Avenue runs along the western boundary of the AAP and provides access to the A5/Edgware Road. The main access to this road from the centre of Colindale is via Booth Road.

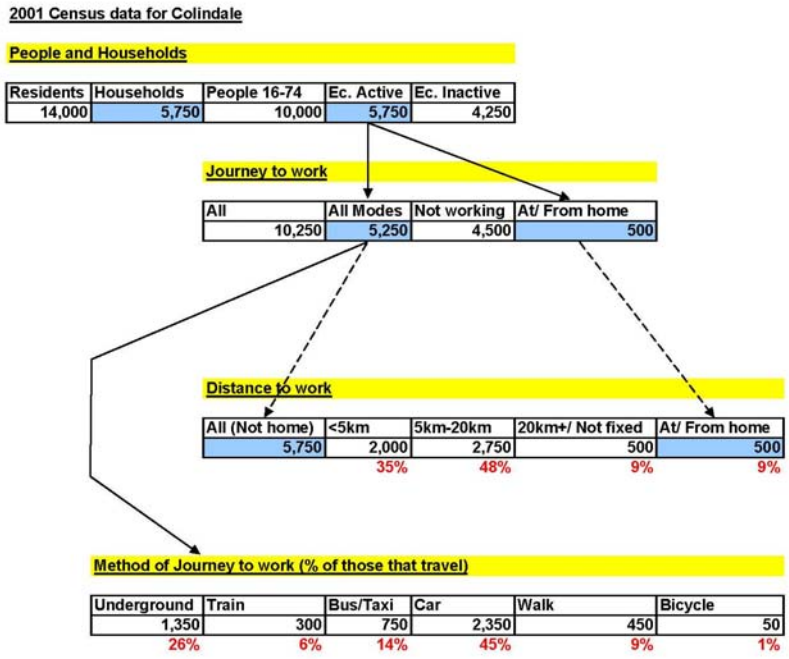
2.3.3 The AAP has considered whether these links will be adequate for future demands based on the level of growth planned for the area.

3 Travel generation estimates

3.1 Existing travel

3.1.1 Figure 3.1 presents a detailed summary analysis of the 2001 census area statistics for the ward of Colindale. This describes number of households, population, number, mode and distance travelled for journeys to work. The figure shows that 45% of those travelling to work use a car, with 26% using the underground, 6% the train, 14% bus, 9% walk and 1% cycle.

Figure 3.1: 2001 Census travel data analysis



3.2 Travel estimates

3.2.1 A number of land use changes were proposed for the AAP area, with the majority of the development proposed being new housing. In broad terms the AAP area expects to have an increase of circa 10,000 new homes in the period 2001-2021, but some 5,000 of these have already received planning permission. The AAP transport work focussed on estimating the additional trips likely to be generated from these approved sites) (the do-minimum option) and the additional approx. 5,000 dwellings expected (the do-something options).

3.2.2 The methodology used for the travel generation was agreed with LB Barnet and TfL, as is set out in detail in the technical note in Appendix A. A summary is as follows:

1. Trip rates sourced from TRICS/ TRAVL
2. Trip rates verified for car driver and car passenger trip rates – agreed LBB & TfL
3. Trip rates for same sites used as initial basis for walk, cycle and PT trips
4. Mode split for car, walk, cycle, bus, rail, tube – compared to local data

- Comparison to 2001 Census Journey to Work (JtW) dataset for Colindale Ward

5. Convergence between trip rate derived mode share & Colindale Ward JtW mode share for three key headings: car, PT & walk, cycle
6. PT and walk modal share (from trip rates) split down into tube, rail, bus, walk based on census Colindale Ward JtW travel proportions

3.2.3 The modes shares assumed are shown in Table 3.1 – these imply a reduction in car travel mode share overall, as new developments will be higher density and are likely to have less car parking. The estimates show the importance of the underground and bus as travel modes and the need to improve the attractiveness of walking and cycling within and around Colindale.

Table 3.1: Colindale future estimated mode share

Mode	Am Peak %	Pm peak %
Car	37%	45%
Bus	16%	14%
Tube	29%	26%
Rail	6%	6%
Walk	9%	9%
Cycle	2%	1%
Total	100%	100%

3.3 Total movements

3.3.1 **Error! Reference source not found.** shows the estimates of total future travel demand by mode, and then for car trips, the latter distinguishing between do –minimum (existing planning permissions) and 'do-something' (full AAP proposals).

Figure 3.2: Future travel generation summary

ALL MODE - TRIPS SUMMARY

AM

Mode	Year		
	2011	2016	2021
car	1116	2140	3385
bus	341	1091	1467
tube	614	1963	2640
rail	137	436	587
walk	205	654	880
cycle	44	106	150

PM

Mode	Year		
	2011	2016	2021
car	990	2831	3968
bus	293	969	1285
tube	527	1745	2314
rail	117	388	514
walk	176	582	771
cycle	29	84	113

CAR TRIPS SUMMARY

AM

	Basis	Year		
		2011	2016	2021
DO-MIN	IN	321	377	433
	OUT	796	922	1049
	TOTAL	1116	1300	1482
DO-SOME	IN	0	100	415
	OUT	0	741	1489
	TOTAL	0	840	1903
TOTAL	**TOTAL**	**1116**	**2140**	**3385**

PM

	Basis	Year		
		2011	2016	2021
DO-MIN	IN	605	965	1067
	OUT	385	828	896
	TOTAL	990	1792	1962
DO-SOME	IN	0	590	1175
	OUT	0	449	831
	TOTAL	0	1039	2006
TOTAL	**TOTAL**	**990**	**2831**	**3968**

4 Sustainable travel and parking

4.1 Sustainable Travel/Travel Plans

4.1.1 The AAP proposes improvements for each travel mode which will need to be supported by development travel plans as required by the London Borough of Barnet and TfL, which can be co-ordinated with and support physical measures. The travel plans should consider measures to encourage travel choice including car clubs, cycle clubs, home delivery and servicing consolidation measures. The amount of developments proposed in the area offer opportunities to achieve 'critical mass' to make such measures viable. The preliminary recommendation is that the travel plans associated with the developments should aim at a reduction of some 5%-10% of the peak car travel mode share.

4.1.2 Development proposals will require the submission of a travel plan and transport assessment and include appropriate measures to minimise impacts on the local highway network and promote the use of public transport, walking and cycling.

4.1.3 The Council will require developers to provide electric car recharging points in developments where practical and deliverable. Developers should also consider car sharing schemes and car clubs.

4.2 Parking

4.2.1 On the local roads within the AAP area a controlled parking zone (CPZ) is in operation between 2 and 3pm Monday to Friday. During these periods only residents with valid permits are allowed to park in the designated bays. The council will give further consideration to the adequacies of existing car parking controls in the surrounding area and explore options to expand CPZ controls if necessary. The Council will require contributions from developers to enable a review of CPZ controls, and where necessary expand them.

4.2.2 In order to promote sustainable travel choices and to tie into other objectives of minimising congestion on the highway network and maintaining traffic flow whilst still providing parking as necessary, the provision of parking will be managed to meet the needs of residents, local businesses and facilities without encouraging unnecessary car travel, particularly for shorter distances.

4.2.3 Residential parking requirements will vary across Colindale depending on the location of each development site, and be agreed on a site by site basis. 1 space per unit will be taken as the maximum standard but a lower provision of 0.7 spaces per unit will be encouraged on sites within close proximity to the public transport interchange, neighbourhood centre and high frequency bus routes.

4.2.4 Non residential parking will be provided at levels consistent with Annex 4 of the London Plan.

4.2.5 Parking standards for new development will need to work alongside the range of other measures proposed to promote sustainable travel and support trip making through enhanced provision of public transport, cycling and walking.

4.2.6 In all cases developments will need to show that on-site parking will be adequate and will not generate on-street parking with detrimental impacts. This approach is in line with the London Plan parking standards of 1 space per unit to less than 1 space per unit (for 1 to 2 bedroom flats) where developments are in areas of good public transport accessibility.

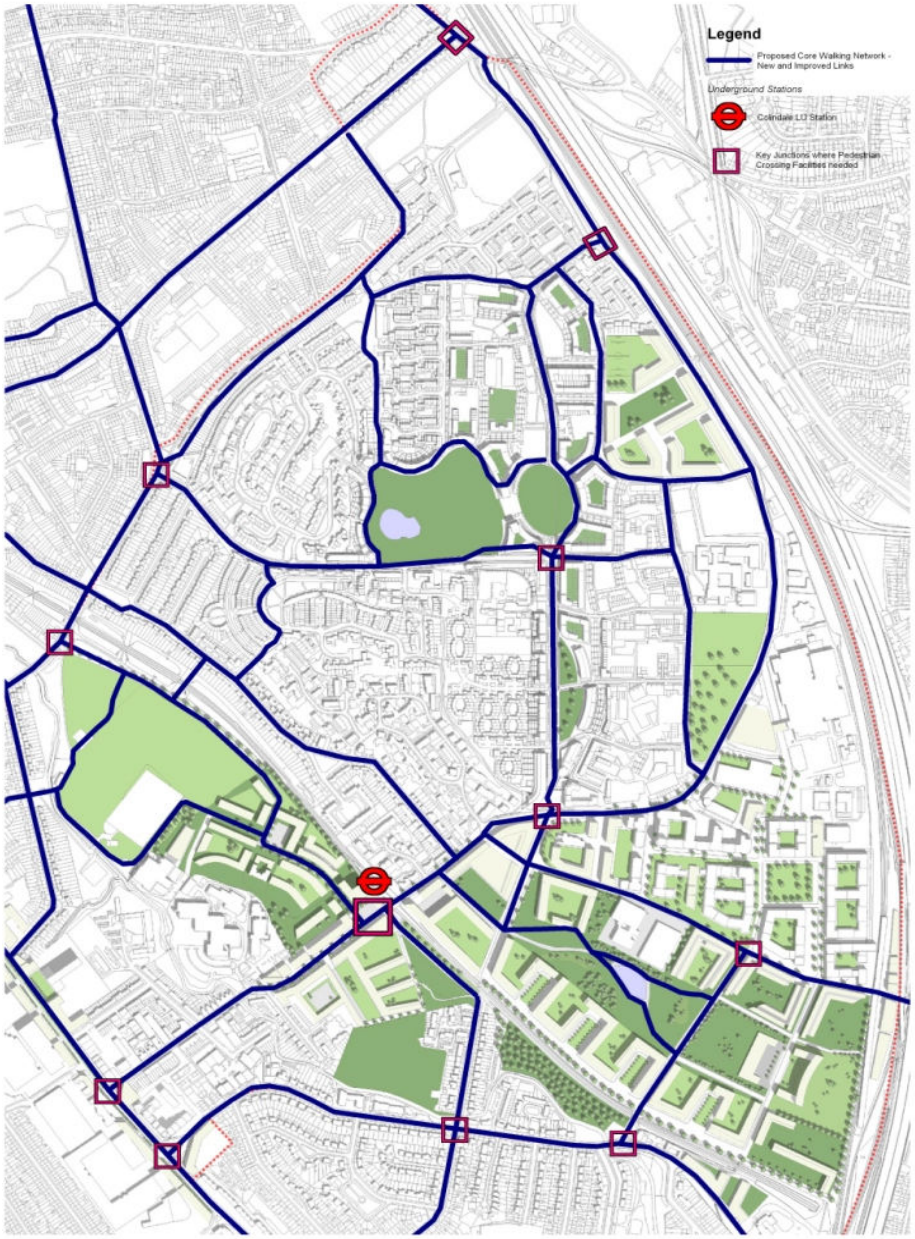
The needs of disabled residents should be taken into account with appropriate provision of disabled parking in accordance with UDP Policy.

5 Walking and cycling proposals

5.1 Walking

5.1.1 Figure 3.1 presents a proposed core walking network for Colindale. This takes account of development sites coming forward in the AAP period.

Figure 5.1: Walking Network



5.1.2 The network proposes core pedestrian links, which are the key routes between:

- key residential areas (existing and proposed),
- transport infrastructure (Colindale LU station, Mill Hill Broadway NR station, local and regional bus stops)
- parks and greenspaces;
- educational facilities (primary/ secondary schools, colleges, Middlesex University)
- local shops and services (supermarkets, GP surgeries, community facilities)

5.1.3 Linked to this core network are a number of other walking routes within Colindale and to onward destinations. It is recommended that this core network be the focus of improvements, including signing, and should be promoted actively.

5.2 Cycling

5.2.1 Figure 3.2 shows a proposed cycling network for Colindale.

Figure 5.2: Proposed Cycling Network

5.2.2 The proposals will increase permeability for cyclists throughout Colindale, and consist of a range of on- and off- road cycling routes, which together form a comprehensive network for access to key origins and destinations within Colindale and the local area.

5.2.3 The routes provide links between and to the Graham Park Estate, Colindale Hospital, Montrose Park, Colindale Avenue and Colindale LU station, Edgware Road, Colindeep Lane, Sheaveshill and Peel Centre Parks, and onward to Hendon and Mill Hill.

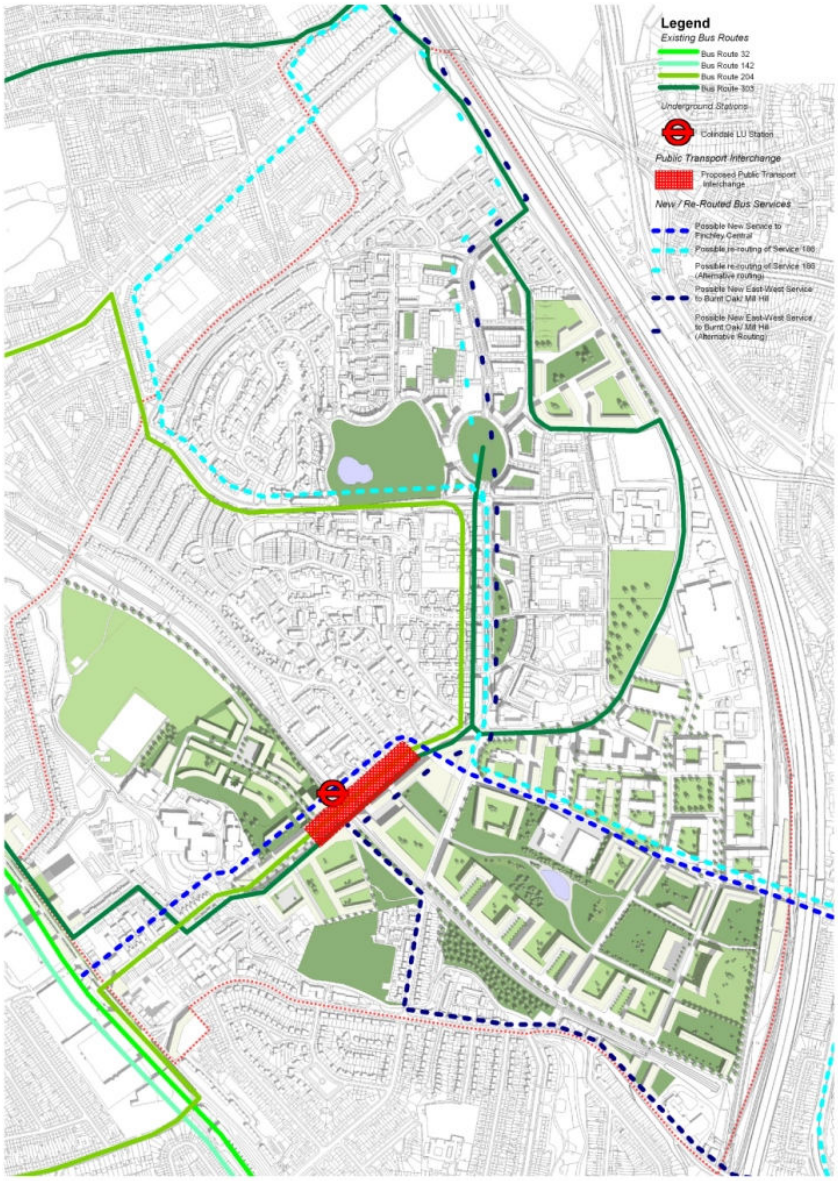
5.2.4 It is recommended that the cycle routes be signed and improved, with appropriate priority provision where possible, and actively marketed.

6 Bus proposals

6.1 Buses and Interchange

6.1.1 Figure 4.1 shows existing bus routes in Colindale, Colindale LU station, the location of the proposed public transport bus/ rail/ cycle/ walk interchange and proposals for new and re-routed bus services.

Figure 6.1: Buses and Interchange



6.1.2 The improvements to the Aerodrome Road bridges and potential new connections in the area provide opportunities for new and enhanced bus routes. Key routes will be designed to a standard suitable for bus operations and with appropriate accessible bus stopping facilities, particularly at interchanges such as Colindale Station. Developers will provide an appropriate level of financial contributions to local bus services.

6.1.3 New bus routes will be crucial to opening up the area to local and regional employment opportunities such as Brent Cross and to link residential development with onward modes, such as rail and London Underground.

6.1.4 A central core of the sustainable transport strategy which underpins the AAP for Colindale is the focus on the underground station of Colindale and the location of a central, focal public transport interchange served by all local and regional bus services.

6.1.5 The interchange will be served by existing bus routes 204 and 303, while bus routes 32 and 142 currently pass along the western perimeter of the study area on Edgware Road.

6.1.6 The new potential bus routes, as shown on Figure 4.1, are as follows:

- A possible new service to Finchley Central
  - via Colindale Avenue, public transport interchange, Aerodrome Road;
- A possible re-routing of route 186 (serving Grahame Park and Beaufort Park)
  - via Lanacre Avenue/ Boulevard, Aerodrome Road and Hendon
- A possible new East-West service between Burnt Oak/ Mill Hill and
  - via Colindale Avenue, public transport interchange, Colindeep Lane; AND
  - via Montrose Access Road north (to Burnt Oak) OR
  - via Lanacre Avenue/ Boulevard (to Mill Hill).

6.1.7 These will be developed over time by the Council in conjunction with TfL Buses.

6.1.8 The proposed highway improvements should help to protect bus reliability and journey times from congestion. Enhanced bus stopping facilities (double stops in each direction) will be required in the vicinity of Colindale Underground Station. In addition, throughout the Colindale area, the proposed bus network needs to provide at least one bus stop within 400 metres of each residential unit, in line with TfL guidance.

6.1.9 A new public transport interchange will be provided around Colindale Underground Station, improving the interchange between different modes of transport and providing a new gateway in to Colindale. At the heart of the interchange will be a new public piazza and station building. The interchange will include:

- High quality safe and secure walking and cycling routes to/ from the interchange, including safe crossing facilities;
- Step free access for all on public transport;
- A high quality, secure public space which improves the station access and provides comfortable interchange space;
- Secure, covered cycle parking facilities;
- Double bus stops in each direction located on Colindale Avenue itself (in-line provision);
- Set-down/pick-up spaces for disabled passengers;
- Taxi set down/pick up provision;
- Adequate facilities for the servicing and maintenance of the interchange;
- High quality information for passengers;
- The ability within the local street network for buses to turn enabling Colindale to serve as a bus route destination/start; and
- Improved ticket hall with increased passenger capacity and facilities.

7 Colindale underground station

7.1 Introduction

7.1.1 An analysis of the impact of estimated future demand on Colindale station and the Underground line was carried out in accordance with London Underground Modelling Guidelines. The details of the assessment have been included in Appendix B

7.2 Line load conclusions

7.2.1 The current line loads have been reviewed in order to consider the likely impact on line capacity of additional passengers wanting to board trains at Colindale. The figures summarise RODS 2006 smoothed line load data on the average train load arriving at and departing from Colindale.

Figure 7.1: AM Peak period Line load

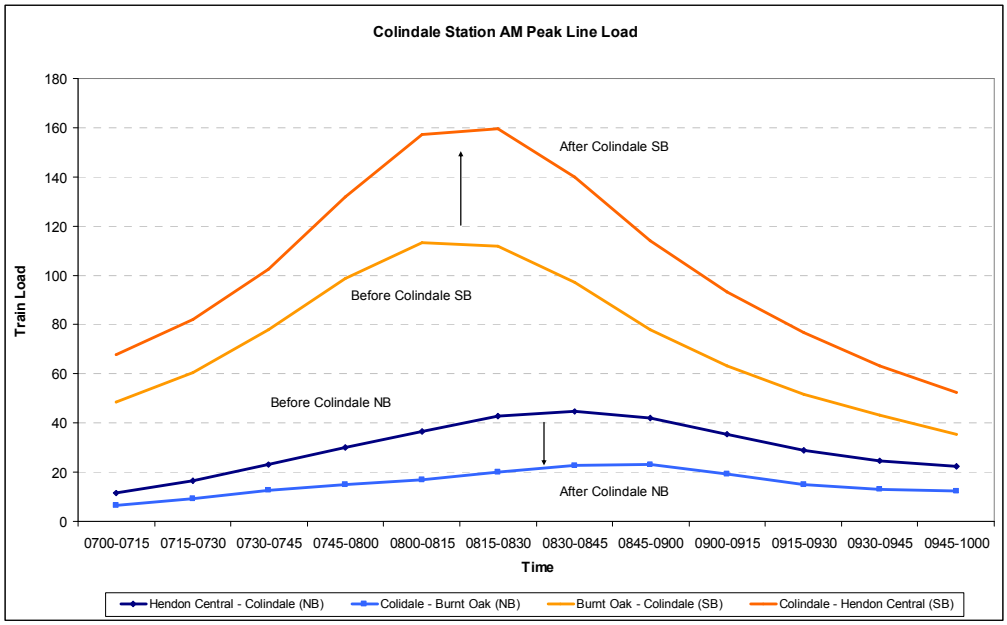
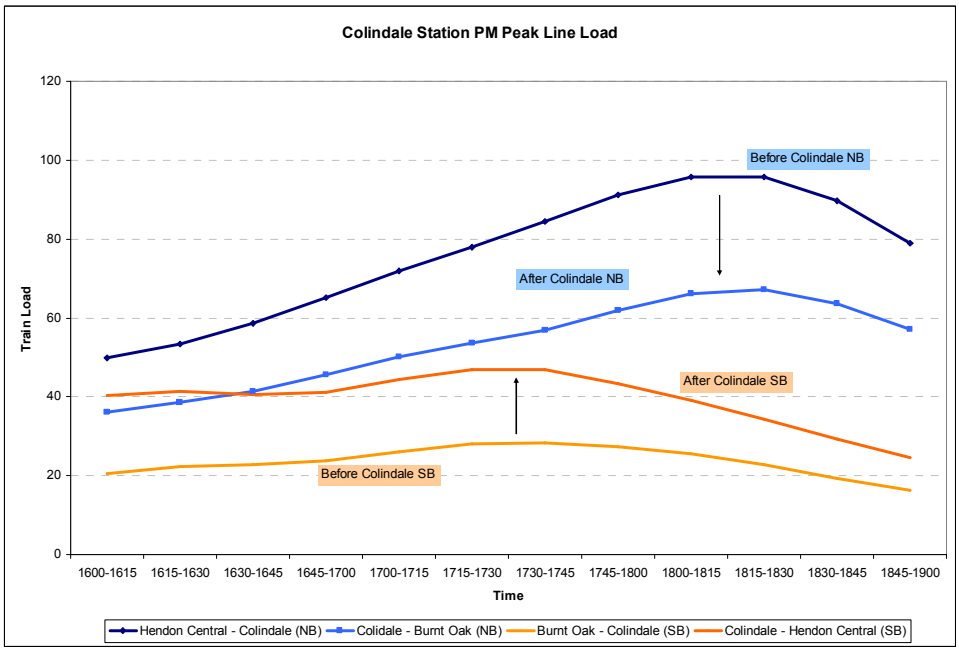


Figure 7.2: PM Peak period line load



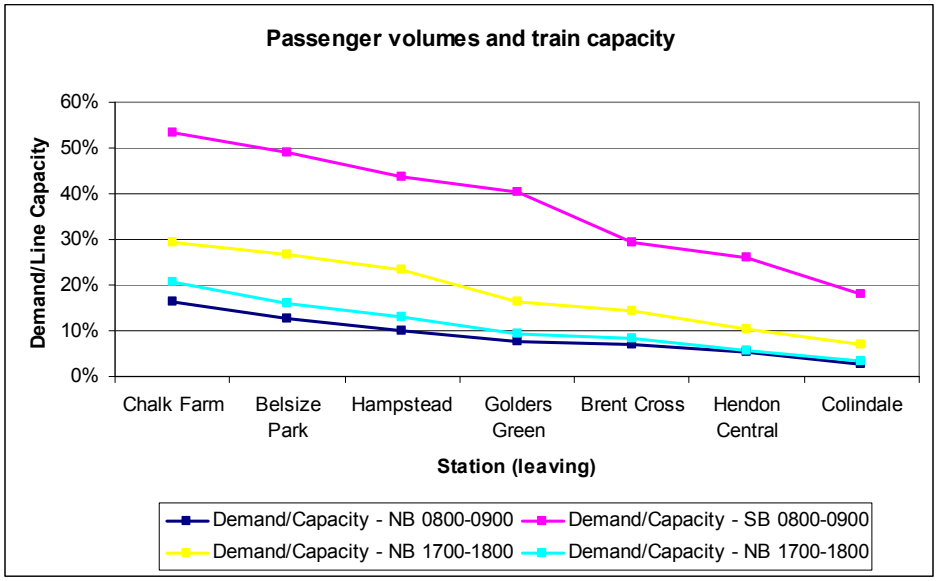
7.2.2 Around 50 passengers are added to individual train loads at Colindale in the morning peak hour, currently. The average train load is such that boarding/alighting behaviour at Colindale is unlikely to impact on train reliability. In the future a further 73 boarders may be added. The boarding load (123) on southbound trains during the morning peak 15 minutes at Colindale would therefore equate to around 15% of the train capacity of 796 passengers in 2021 or 17.9% of the train capacity if standing capacity is based on a density of 4 passengers / sq m.

Table 7.1: Boarders per train – future years

	AM Peak			PM Peak		
	2011	2016	2021	2011	2016	2021
SB Additional Boarders per Train	25	49	73	9	30	39
NB Additional Boarders per Train	0	1	1	2	6	8

7.2.3 Further south, the Northern Line runs at above 50% of planned capacity (assuming standing passengers at a density of 5 per sq m) by the time it reaches Chalk Farm southbound during the morning peak hour. On individual trains, and in the event of service disruptions, capacity may be reached, however on average there is sufficient line capacity to cater for current demand. In the future, the significant additional demand generated at Colindale may require further investigation.

Figure 7.3: Wider line load implications



7.3 Station capacity conclusions

7.3.1 The infrastructure requirements at Colindale Station have been calculated. These have been based upon RODS 2006 smoothed station demand data for the current year, with additional development data calculated as part of Colin Buchanan's AAP study. The forecast development will significantly increase demand through the station, and may have implications for line loads elsewhere.

7.3.2 Table summarises the key station infrastructure requirements at Colindale; areas that do not comply with LUL Standard 1-371 are highlighted. Currently there is insufficient queuing space provided in the vicinity of the ticket machines; in future, with additional provision for ticket sales (by POM or TIW) likely to be required, the need for this to be addressed will become more urgent, and the opportunity to locate ticketing sales equipment elsewhere in the ticket hall should be investigated.

7.3.3 By 2021 it is likely that further station modification would be required, since the gateline as currently configured does not provide sufficient space for the required additional UTS gate. It is possible that this may be provided by some rearrangement of the staff accommodation.

7.3.4 In the event of a station fire, passengers would need to be evacuated by train, which may be acceptable operationally but does not accord with planning standards. In the event of a train arriving on fire, all passengers can be evacuated from the platform in 4 minutes, and can reach a place of safety in 6 minutes in all forecast scenarios.

7.3.5 Colindale Station does not have step-free access to the platforms. Preliminary work indicated that it should be possible to create a lift access to the platforms by replacing one of the stairs to the platforms with a lift – further work will be needed to confirm the design.

8 Highways

8.1 Colindale highway network

8.1.1 As noted in section 2, Colindale has relatively few access points to the wider road network – these are described below:

8.1.2 **Aerodrome Road/A41** on the west of the study area offers the shortest and most direct access to London's strategic road network. A recent improvement scheme part-funded by development in Colindale has increased capacity on the Colindale approach to this signalised junction (from 1 lane to 2). However due to the signal settings and the dominance of the A41 flows, the available green time for the Colindale approach is limited. Grade-separation is unlikely to be feasible here given the adjacent railway and M1 and surrounding development. There is existing congestion further south on the A41 in the morning peak at The Boroughs junction, which is the capacity constraint on this stretch of the A41. While there does not appear to be any potential for a major improvement at this junction, reallocating lanes and adding more green time to the Colindale approach could reduce delays on this approach.

8.1.3 **Colindale Aveneue/A5/Annesley Avenue** – this signalised junction with the A5 on the east of the study area is already at capacity. The right-turn is banned at the A5, and vehicles must use an adjacent largely residential street (Annesley Avenue) to make this movement. The model also indicates that vehicles use Annesley Avenue to turn left onto the A5, bypassing the queue on the Colindale Avenue approach. This route is also the most direct route for cars, cyclists and pedestrians from Colindale to the major retail facilities on the Edgware Road.

8.1.4 **Montrose Avenue/A5** – this priority junction on the east of the study area is not at capacity, but is difficult to access from within Colindale other than by the residential streets of Booth Road and Larnacre Avenue. In addition the right turn, southbound, from Booth Road into Colindale Avenue is currently banned.

8.1.5 **Grahame Park Way/Bunns Lane** – this mini-roundabout junction to the north of the study area is being considered for improvement following recent development in Colindale, and some improvement in capacity appears possible. Further north the road passes through Mill Hill Broadway, a constrained part off the highway network, and this and Mill Hill Circus junction on the A1 acts as the effective capacity constraint to the north.

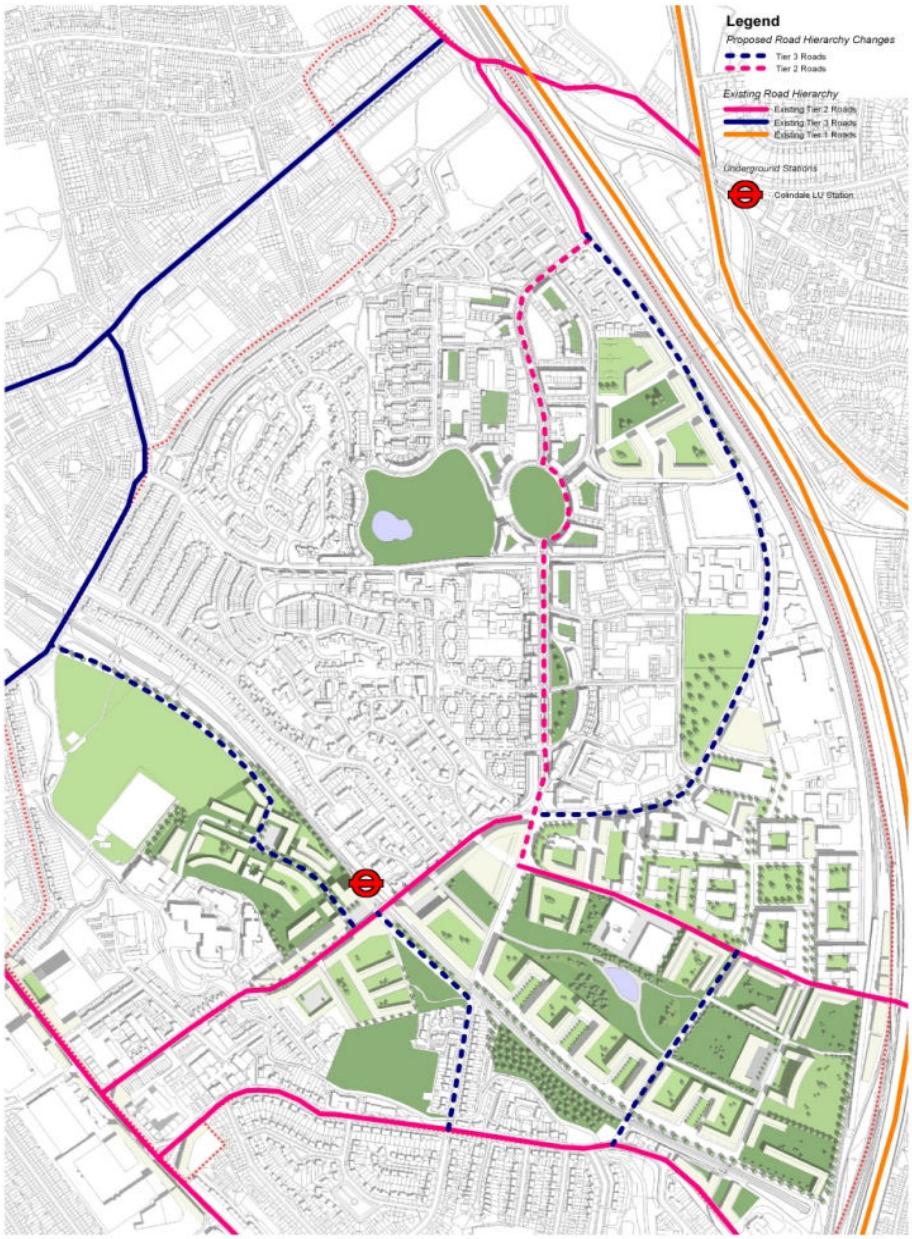
8.1.6 To the south lies **Colindeep Lane**, which connects the A41 via a grade-separated junction to the A5. However access from the study area to this road currently has to be via Colindale Avenue/A5 junction, which is a current capacity constraint, so the route is effectively not available as an access point to Colindale.

8.1.7 The strategic network that Colindale has direct access to – the A5 and the A41, are both corridors with a number of capacity constraints – it was assumed that in respect of the AAP, the key consideration was to ensure acceptable network conditions in the immediate Colindale area, with the strategic network requiring more in-depth consideration by TfL and the relevant authorities on a corridor basis.

8.2 Colindale Road Hierarchy

8.2.1 Figure 6.1 below shows the proposed road hierarchy for Colindale.

Figure 8.1: Road Hierarchy



8.2.2 Figure 6.1 describes only **Tier 2** and **Tier 3** roads in the local area. The M1 and A41/ A1 are **Tier 1** (roads of national/ regional significance) and bypass the area to the East.

8.2.3 Tier 3 roads are designed for predominantly local highway movements whereas Tier 2 roads will carry a mixture of local, sub-regional and some longer distance trips.

8.2.4 The following are current and proposed **Tier 2** roads in Colindale:

- Edgware Road, Colindeep Lane, Colindale Avenue, Aerodrome Road, Bunn's Lane, Grahame Park Way (*existing*)

- Lanacre Avenue/ Lanacre Boulevard (*proposed*)

8.2.5 The following are current and proposed **Tier 3** roads in Colindale:

- Montrose Avenue, Watling Avenue/ Woodcroft Avenue (*existing*)
- Peel Centre link, Montrose Access Road(s), Grahame Park Way (*proposed*)

8.2.6 Grahame Park Way is proposed to be downgraded from a **Tier 2** to a **Tier 3** road, which will reduce the by-pass effect of this route and help promote the new, inclusive redevelopment of Grahame Park. The Peel Centre Link would be a **Tier 3** roads if taken forward.

8.3 SATURN modelling

8.3.1 A calibrated and validated SATURN highway model of the Colindale area, base year 2007 was developed on behalf of TfL by consultants. The model analysed 2 peak periods, a weekday AM and PM peak hour. Colin Buchanan (CB) was commissioned by LB Barnet in association with TfL to develop Do Minimum and Do Something future year models relating to development proposed for an Area Action Plan (AAP) in the Colindale area. The key assumptions used for the model were agreed with LB Barnet and TfL in a series of technical notes. The main aim of the SATURN work was to understand the more strategic implications of additional development at Colindale, and to test new road proposals which might improve access.

8.3.2 A number of tests were undertaken in 2008, and initial findings were reported - in early 2009 additional tests were undertaken on options - the detailed testing is reported in the separate SATURN modelling report.

8.3.3 Significant development is proposed in the Colindale Area Action Plan (AAP) – approximately 10,000 new residential units in the period 2001 to 2021. Some 5,000 of these already have planning permission and were regarded as the ‘do-minimum’ scenario. The ‘do-something’ scenarios assumed the remaining proposed development was implemented, and tested various different network changes.

8.3.4 The base tests indicated that the Colindale are itself only generates some 5% of the total trips in the wider modelled area, and that the strategic network suffers from congestion and capacity constraints in a number of locations. There were indications from the base model that congestion on the wider strategic network will lead to future peak spreading and/or changes in travel. The solutions to these strategic constraints were regarded as outside the scope of the Colindale AAP work.

8.4 Network Tests

8.4.1 The ‘do-minimum’ (committed development) flows increase local congestion and at the key junctions. When the ‘do-something’ flows (i.e. Colindale AAP growth) are applied to the network, this obviously increases flows within the Colindale area, and at the main exits. /entry points to this. There are flow increases on other external roads, in particular the A41 and A1, and to a lesser extent the A5 but flow changes on the M1 are negligible. Some of the changes to flows on external roads are likely to be due to new Colindale trips, while others are likely to be due to ‘through’ traffic in Colindale being diverted to other parts of the network. Within Colindale the Aerodrome Rd/A41 and Colindale Avenue/A5 junctions are significantly over capacity.

8.4.2 Relatively minor improvements to the local network will assist in managing future flows, but will not be adequate to bring network conditions back to a ‘do-minimum’ level in the future. The smaller changes tested included minor changes at the Aerodrome Road/A41 junction, improvements to the junction of Grahame Park Way and Bunns Lane, a new

crossroads at Aerodrome Road/Colindale Avenue, and signals at the junction of Montrose Avenue and Edgware Road.

8.4.3 The introduction of a North Montrose access link (a new road between Montrose Avenue and Colindale Avenue) did not significantly improve network conditions, and carried relatively low levels of traffic (circa 500-800 vehicles per hour 2-way) . The North Montrose access link did not appear to add exit/entry capacity to the Colindale area, and performed more as a limited local distributor, providing an alternative to a short section of the A5 and Booth Road.

8.4.4 When a full Montrose access link was tested (the North Montrose link as above, plus a link from Colindale Avenue to Colindeep Lane via Sheaveshill Avenue) this carried more significant volumes, particularly on the southern part (some 1,500 vehicles per hour). It is likely that this option could be delivered as it uses land primarily within Council control, and offered a new access route between the heart of the study area and Colindeep Lane, from which traffic could access either the A5 or A41. Tests indicated that it provided the most relief to future network conditions in the pm peak of the options tested (the Peel link described below performed slightly better in the am peak) and could also be used by bus services if required. However it also introduced a very significant increase in flows on Sheaveshill Avenue (which is currently a short residential cul-de-sac) and introduced significant new traffic volumes and a new junction in the Colindale Station area, which is the key local interchange.

8.4.5 The Peel link option tested introducing a new link between Aerodrome Road and Colindeep Lane, as with the full Montrose link, providing access to either the A5 or A41. It provided some relief to the constrained Aerodrome Road/A41 junction and direct access to Colindeep Lane for the proposed major development at the Peel Centre. Tests indicate that this option is the best performing of those tested in the am peak, while in the pm peak it provided almost as much relief as the full Montrose link. Provided this is introduced in conjunction with the redevelopment of the Peel Centre, this solution appears deliverable. The final design should aim to reinforce the routes main role of the route as a local distribution and access for Peel Centre development.

8.4.6 The Colindale Avenue improvement tested provides increased capacity at this key junction on Edgware Road, but does require some land-take from highway land in the ownership of LB Brent, and the removal of a section of bus lane on Edgware Road. It would however relieve congestion on this key link to the A5. It may be possible to introduce a lower level of scheme, perhaps with widening on only one side of Edgware Road, but further work will be required to confirm this.

8.5 VISSIM modelling

8.5.1 A VISSIM micro-simulation model was also developed for the am peak. This model was based on the SATURN data, but was calibrated and validated to the local counts, and helped confirm the SATURN findings. This model gave a better understanding of the detailed interaction within Colindale and the way the junctions could operate. The separately bound VISSIM Model Validation and VISSIM Proposed Model reports contain the detail of the work.

8.5.2 The work concluded that the Base model is less congested than the Do-Minimum (committed development) scenario, but no major traffic congestion is observed although some queues are present on the exit approaches to the Colindale area.

8.5.3 For the three Do Something models, the Peel Access Link performs best, followed closely by the Colindale Avenue / Edgware Road junction upgrade. North Montrose Link however is the worst performing option in the AM peak. Both the Peel Access link and the

Colindale Avenue/A5 improvement scenario result in network speeds above the do-minimum (committed development) scenario – this is regarded as acceptable in the light of the significant development planned here.

8.6 Highway Conclusions

8.6.1 The conclusions from the SATURN and VISSIM modelling work are that in order to provide capacity for predicted Colindale AAP flows, some improvements are necessary, and improvements to the Aerodrome Road/A41, the Montrose Avenue/A5 and Aerodrome Road/Colindale Avenue junctions are recommended. However these will not provide sufficient relief for future network conditions, and further improvements will be required.

8.6.2 The Colindale Avenue/A5 improvements will help in the medium term to relieve this important connection to Edgware Road and the shopping area here. It would require joint working with LB Brent and TfL to implement, but together with the junction improvements noted above, should be adequate to deliver development during the earlier part of the AAP period, at least until major housing sites are developed at the Peel Centre.

8.6.3 The introduction of a full Montrose access link between Colindeep Lane and Montrose Avenue is likely to provide the most overall network relief, although these benefits are not significantly different form those provided by the Peel Link. However this option also introduces significant new volumes on Sheaveshill Avenue and at the Colindale Station interchange, and consultation for the AAP revealed significant opposition to this proposal.

8.6.4 The Peel Link offers some of the advantages of the Montrose link (access to Colindeep Lane and the A5/A41) but does not directly affect existing dwellings or parkland, and can be delivered in conjunction with major development, but this is only likely towards the end of the AAP period. The tests indicate that the benefits of this option are very close to that achievable with the full Montrose link.

8.6.5 The tests indicated that the combined effect of the Peel Link and Colindale Avenue schemes was not significantly better than the individual schemes in the pm peak, but both schemes together will provide more capacity to the A5 and Colindeep Lane and a much higher level of network resilience. It is recommended that this package be pursued rather than the Montrose link, as it appears to offer most of the benefits of the latter. Should either of these schemes not be deliverable, the introduction of the Montrose Link offers an alternative, and it is recommended that nothing in the AAP be done to prevent such a link being introduced in future should this be required.

8.6.6 The recommendation is therefore for the AAP to implement a phased set of improvements in the area:

8.6.7 • The first phase of improvement should include the Aerodrome Road/A41 improvement, the Colindale Avenue/Aerodrome Road scheme, and the Montrose Avenue/A5 junction scheme. Final proposals for the Colindale Avenue/A5 junction improvement scheme should be developed in conjunction with LB Brent and TfL.

8.6.8 • The second phase, in conjunction with the redevelopment of the Peel Centre, would be to introduce the Peel Access Link.

8.6.9 This phasing will need to allow for changes in future developments coming on line, and be flexible enough to adapt to these. It should be noted that given the constraints in the wider network and the extent of development proposed in the area, additional congestion is expected on the wider network, probably resulting in some peak spreading. These improvements will only assist in reducing impact in the local Colindale area, and more strategic studies/solutions will be required for the wider network. In addition, measures to

encourage mode shift in Colindale may reduce the traffic impact of the proposed developments.

8.6.10 The wider strategic network in this part of London is congested, and there are a number of strategic constraints on traffic levels and speeds which are beyond the scope of the AAP. Given these network conditions and constraints and the significant levels of proposed new development in the area, some additional congestion at peak times of the day is likely in future, even with road improvements in the Colindale area. It is therefore important to improve the quality and attractiveness of the transport network/ infrastructure, particularly where this will encourage the use of sustainable modes of transport, including walking, cycling and the use of public transport.

Appendix A - Travel Generation Estimates

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Technical Note

Job Title	CAAP		
Job Number	133131	**Date**	24/06/2008
Copy	GA, GL, NS	**File reference**	
Prepared by	RJ	**Approved by**	AN
Subject	**Multi-Modal Trips and 'Full Mode Share'**		

1 Methodology for Calculation

1.1 The methodology for calculation of Multi-Modal Trips and 'Full Mode Share' for Colindale to predict trip patterns resulting from new development was as follows:

- Trip rates sourced from TRICS/ TRAVL
- Trip rates verified for car driver and car passenger trip rates – agreed LBB & TfL
- Trip rates for same sites used as initial basis for walk, cycle and PT trips
- Mode split for car, walk, cycle, bus, rail, tube – compared to local data
  - Comparison to 2001 Census Journey to Work (JtW) dataset for Colindale Ward
- Convergence between trip rate derived mode share & Colindale Ward JtW mode share for three key headings: car, PT & walk, cycle
- PT and walk modal share (from trip rates) split down into tube, rail, bus, walk based on census Colindale Ward JtW travel proportions

2 Additional PT, Walk and Cycle trips

2.1 The following three tables show a breakdown, using the above methodology, of additional trips by development site and year for all public transport modes – Underground, Rail, Bus – as well as Walk and Cycle. These are additional trips predicted as a result of the proposed development as described in the land use table.

3 Summary Additional Trips [All modes]

3.1 Summary tables showing expected trip attraction and trip generation for all modes are also attached. These tables describe total expected additional trips by car, bus, tube, rail, walk, and cycle for 2011, 2016 and 2021.

		Colindale AAP - Land use assumptions for SA	SATURN ZONE NO.		LAND USE 1	PT/ Walk combined					LAND USE 2	PT/ Walk combined					LU 1 & 2	PT/ Walk combined					Underground					Train					Bus					Walk					Cycle				
		Location				TOTAL TRIPS						TOTAL TRIPS						TOTAL TRIPS					TOTAL TRIPS					TOTAL TRIPS					TOTAL TRIPS					TOTAL TRIPS					TOTAL TRIPS				
2011						AM		PM				AM		PM				AM		PM			AM		PM			AM		PM			AM		PM			AM		PM			AM		PM		
						IN	OUT	IN	OUT			IN	OUT	IN	OUT			IN	OUT	IN	OUT		IN	OUT	IN	OUT		IN	OUT	IN	OUT		IN	OUT	IN	OUT		IN	OUT	IN	OUT		IN	OUT	IN	OUT	
Done		Sites in Barnet																																													
	√	Grahame Park (Lanacre Avenue)	10060		Resi Flat (90%)	35	135	89	57		Resi housing	7	31	11	16		42	165	99	73	√	20	78	47	35		4	17	10	8		11	44	26	19		7	26	16	12		0	5	3	1	
	√	Beaufort Park (Aerodrome Road)	10013		Resi Flat	199	756	498	322		N/A	0	0	0	0		199	756	498	322	√	94	358	236	153		21	80	52	34		52	199	131	85		31	119	79	51		3	31	17	6	
	√	Beaufort Park 2	10013		Resi Flat	0	0	0	0		N/A	0	0	0	0		0	0	0	0	√	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
	√	Zenith House (Edgware Road)	10062		Resi Flat	15	58	38	25		N/A	0	0	0	0		15	58	38	25	√	7	27	18	12		2	6	4	3		4	15	10	7		2	9	6	4		0	2	1	0	
	√	Former National Grid/ Kidstop Premises (Edgware Road)	10015		Resi Flat	6	23	15	10		Employ (B1)	3	0	1	6		9	23	16	15	√	4	11	8	7		1	2	2	2		2	6	4	4		1	4	3	2		0	1	1	0	
	√	Barnet College (Grahame Park Way)	10061		~~Resi Flat~~	0	0	0	0		~~Minus college~~	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
	√	Peel Centre East (Colindale Ave/ Aerodrome Road)	10011		Resi Flat (90%)	0	0	0	0		Resi housing	0	0	0	0		0	0	0	0	√	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
	√	Peel Centre West (Aerodrome Road)	10011		Resi Flat (90%)	0	0	0	0		Resi housing	0	0	0	0		0	0	0	0	√	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
	√	Farrow House (Colindeep Lane)	10059		Employ (B1)	0	0	0	0		N/A	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
	√	British Library (Colindale Avenue)	10014		Resi Flat	0	0	0	0		N/A	0	0	0	0		0	0	0	0	√	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
	√	Colindale Hospital (including frontage & Phase 2)	10014		Resi Flat	0	0	0	0		College	0	0	0	0		0	0	0	0	√	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
	√	Middlesex University Halls (Grahame Park Way)	10013		Student Acc	0	0	0	0		N/A	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
	√	National Blood Service expansion site	10014		N/A	0	0	0	0		N/A	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
	√	Brent Works (Colindale Avenue)	10014		Resi Flat	0	0	0	0		N/A	0	0	0	0		0	0	0	0	√	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
	√	Land between railway line (Aerodrome Road)	10013		Employ (B1)	0	0	0	0		N/A	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
	√	Site along Watford Way	10019		Resi Flat	0	0	0	0		N/A	0	0	0	0		0	0	0	0	√	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
	√	McDonalds Site (Edgware Road)	10059		Resi Flat	0	0	0	0		N/A	0	0	0	0		0	0	0	0	√	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
	√	Burger King & Eyeland site (Edgware Road)	10003		Resi Flat	0	0	0	0		N/A	0	0	0	0		0	0	0	0	√	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
	√	Merit House (Edgware Road)	10003		Resi Flat	0	0	0	0		N/A	0	0	0	0		0	0	0	0	√	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
	√	Green Point (Edgware Road/ The Greenway)	10003		Resi Flat	6	23	15	10		Employ (B1)	0	0	0	0		6	23	15	10	√	3	11	7	5		1	2	2	1		2	6	4	3		1	4	2	2		0	1	1	0	
						262	995	656	424			10	31	12	22		272	1025	667	445		129	486	316	211		29	108	70	47		72	270	176	117		43	162	105	70		4	41	22	7	
		Sites in Brent																																												
	√	Oriental City (Edgware Road)	10038		NET TRIP GEN	0	0	0	0		N/A	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
	√	Capitol Way (Edgware Road)	10037		Resi Flat	0	0	0	0		N/A	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
	√	Asda site (Edgware Road)	10038		Resi Flat	0	0	0	0		N/A	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
	√	Sarema House & school (Edgware Road)	10036		Resi Flat	0	0	0	0		N/A	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
	√	Retail Park (Edgware Road)	10036		Resi Flat	0	0	0	0		N/A	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
						0	0	0	0			0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
						262	995	656	424			10	31	12	22		272	1025	667	445		129	486	316	211		29	108	70	47		72	270	176	117		43	162	105	70		4	41	22	7	

	Colindale AAP - Land use assumptions for SA	SATURN ZONE NO.	LAND USE 1	PT/ Walk combined				LAND USE 2	PT/ Walk combined				LU 1 & 2	PT/ Walk combined				Underground				Train				Bus				Walk				Cycle			
	Location			TOTAL TRIPS					TOTAL TRIPS					TOTAL TRIPS				TOTAL TRIPS				TOTAL TRIPS				TOTAL TRIPS				TOTAL TRIPS				TOTAL TRIPS			
				AM		PM			AM		PM			AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM	
2016				IN	OUT	IN	OUT		IN	OUT	IN	OUT		IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
Done	Sites in Barnet																																			
√	Grahame Park (Lanacre Avenue)	10058	Resi Flat (90%)	71	269	178	115	Resi housing	14	62	21	32		85	331	199	146	40	157	94	69	9	35	21	15	22	87	52	38	13	52	31	23	1	11	6	2
√	Beaufort Park (Aerodrome Road)	10013	Resi Flat	199	756	498	322	N/A	0	0	0	0		199	756	498	322	94	358	236	153	21	80	52	34	52	199	131	85	31	119	79	51	3	31	17	6
√	Beaufort Park 2	10013	Resi Flat	28	108	71	46	N/A	0	0	0	0		28	108	71	46	13	51	34	22	3	11	7	5	7	28	19	12	4	17	11	7	0	4	2	1
√	Zenith House (Edgware Road)	10062	Resi Flat	15	58	38	25	N/A	0	0	0	0		15	58	38	25	7	27	18	12	2	6	4	3	4	15	10	7	2	9	6	4	0	2	1	0
√	Former National Grid/ Kidstop Premises (Edgware Road)	10015	Resi Flat	6	23	15	10	Employ (B1)	3	0	1	6		9	23	16	15	4	11	8	7	1	2	2	2	2	6	4	4	1	4	3	2	0	1	1	0
√	Barnet College (Grahame Park Way)	10061	~~Resi Flat~~	30	116	76	49	~~Minus college~~	-800	-13	-6	-59		-770	103	70	-10	-365	49	33	-5	-81	11	7	-1	-203	27	18	-3	-122	16	11	-2	-10	3	3	-1
√	Peel Centre East (Colindale Ave/Aerodrome Road)	10011	Resi Flat (90%)	11	41	27	18	Resi housing	2	9	3	5		13	51	30	22	6	24	14	11	1	5	3	2	3	13	8	6	2	8	5	4	0	2	1	0
√	Peel Centre West (Aerodrome Road)	10011	Resi Flat (90%)	0	0	0	0	Resi housing	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
√	Farrow House (Colindeep Lane)	10059	Employ (B1) (15000)	132	0	38	231	N/A	0	0	0	0		132	0	38	231	63	0	18	109	14	0	4	24	35	0	10	61	21	0	6	36	5	0	0	0
√	British Library (Colindale Avenue)	10014	Resi Flat	24	93	61	40	N/A	0	0	0	0		24	93	61	40	12	44	29	19	3	10	6	4	6	25	16	10	4	15	10	6	0	4	2	1
√	Colindale Hospital (including frontage & Phase 2)	10014	Resi Flat	55	211	139	90	College	1782	27	15	130		1837	238	154	219	870	113	73	104	193	25	16	23	483	63	41	58	290	38	24	35	16	12	5	5
√	Middlesex University Halls (Grahame Park Way)	10013	Student Acc	24	204	196	123	N/A	0	0	0	0		24	204	196	123	11	97	93	58	3	22	21	13	6	54	52	32	4	32	31	19	0	0	0	0
√	National Blood Service expansion site	10014	N/A	0	0	0	0	N/A	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
√	Brent Works (Colindale Avenue)	10014	Resi Flat	7	28	19	12	N/A	0	0	0	0		7	28	19	12	4	13	9	6	1	3	2	1	2	7	5	3	1	4	3	2	0	1	1	0
√	Land between railway line (Aerodrome Road)	10013	Employ (B1) (7000)	62	0	18	108	N/A	0	0	0	0		62	0	18	108	29	0	8	51	6	0	2	11	16	0	5	28	10	0	3	17	2	0	0	0
√	Site along Watford Way	10019	Resi Flat	7	27	18	12	N/A	0	0	0	0		7	27	18	12	3	13	8	5	1	3	2	1	2	7	5	3	1	4	3	2	0	1	1	0
√	McDonalds Site (Edgware Road)	10059	Resi Flat	7	27	18	12	N/A	0	0	0	0		7	27	18	12	3	13	8	5	1	3	2	1	2	7	5	3	1	4	3	2	0	1	1	0
√	Burger King & Eyeland site (Edgware Road)	10003	Resi Flat	7	27	18	12	N/A	0	0	0	0		7	27	18	12	3	13	8	5	1	3	2	1	2	7	5	3	1	4	3	2	0	1	1	0
√	Merit House (Edgware Road)	10003	Resi Flat	0	0	0	0	N/A	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
√	Green Point (Edgware Road/ The Greenway)	10003	Resi Flat	6	23	15	10	Employ (B1)	5	0	1	9		11	23	17	19	5	11	8	9	1	2	2	2	3	6	4	5	2	4	3	3	0	1	1	0
				693	2012	1443	1232		1006	86	36	122		1699	2097	1479	1354	805	993	701	641	179	221	156	142	447	552	389	356	268	331	234	214	19	75	40	14
	Sites in Brent																																			
√	Oriental City (Edgware Road)	10038	NET TRIP GEN	0	0	313	239	N/A	0	0	0	0		0	0	313	239	0	0	148	113	0	0	33	25	0	0	82	63	0	0	49	38	0	0	13	8
√	Capitol Way (Edgware Road)	10037	Resi Flat	0	0	0	0	N/A	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
√	Asda site (Edgware Road)	10038	Resi Flat	36	135	89	58	N/A	0	0	0	0		36	135	89	58	17	64	42	27	4	14	9	6	9	36	23	15	6	21	14	9	1	6	3	1
√	Sarema House & school (Edgware Road)	10036	Resi Flat	0	0	0	0	N/A	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
√	Retail Park (Edgware Road)	10036	Resi Flat	37	140	93	60	N/A	0	0	0	0		37	140	93	60	17	67	44	28	4	15	10	6	10	37	24	16	6	22	15	9	1	6	3	1
				72	275	495	356		0	0	0	0		72	275	495	356	34	130	234	169	8	29	52	38	19	72	130	94	11	43	78	56	1	11	19	10
				765	2287	1938	1588		1006	86	36	122		1771	2373	1974	1710	839	1124	935	810	186	250	208	180	466	624	519	450	280	375	312	270	20	86	59	24

				LAND USE 1	PT/ Walk combined				LAND USE 2	PT/ Walk combined				LU 1 & 2	PT/ Walk combined				Underground				Train				Bus				Walk				Cycle			
	Colindale AAP - Land use assumptions for SA				TOTAL TRIPS					TOTAL TRIPS					TOTAL TRIPS				TOTAL TRIPS				TOTAL TRIPS				TOTAL TRIPS				TOTAL TRIPS				TOTAL TRIPS			
	Location	SATURN ZONE NO.			AM		PM			AM		PM			AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM	
2021					IN	OUT	IN	OUT		IN	OUT	IN	OUT		IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
Done	Sites in Barnet																																				
√	Grahame Park (Lanacre Avenue)	10058		Resi Flat (90%)	106	404	266	172	Resi housing	21	92	32	47		127	497	298	220	60	235	141	104	13	52	31	23	34	131	78	58	20	78	47	35	1	16	9	3
√	Beaufort Park (Aerodrome Road)	10013		Resi Flat	199	756	498	322	N/A	0	0	0	0		199	756	498	322	94	358	236	153	21	80	52	34	52	199	131	85	31	119	79	51	3	31	17	6
√	Beaufort Park 2	10013		Resi Flat	28	108	71	46	N/A	0	0	0	0		28	108	71	46	13	51	34	22	3	11	7	5	7	28	19	12	4	17	11	7	0	4	2	1
√	Zenith House (Edgware Road)	10062		Resi Flat	15	58	38	25	N/A	0	0	0	0		15	58	38	25	7	27	18	12	2	6	4	3	4	15	10	7	2	9	6	4	0	2	1	0
√	Former National Grid/ Kidstop Premises (Edgware Road)	10015		Resi Flat	6	23	15	10	Employ (B1)	3	0	1	6		9	23	16	15	4	11	8	7	1	2	2	2	2	6	4	4	1	4	3	2	0	1	1	0
√	Barnet College (Grahame Park Way)	10061		~~Resi Flat~~	30	116	76	49	~~Minus college~~	-800	-13	-6	-59		-770	103	70	-10	-365	49	33	-5	-81	11	7	-1	-203	27	18	-3	-122	16	11	-2	-10	3	3	-1
√	Peel Centre East (Colindale Ave/Aerodrome Road)	10011		Resi Flat (90%)	26	97	64	41	Resi housing	5	22	8	11		31	119	72	53	15	57	34	25	3	13	8	6	8	31	19	14	5	19	11	8	0	4	2	1
√	Peel Centre West (Aerodrome Road)	10011		Resi Flat (90%)	113	429	283	183	Resi housing	22	98	34	50		135	527	316	233	64	250	150	110	14	55	33	25	36	139	83	61	21	83	50	37	2	17	10	3
√	Farrow House (Colindeep Lane)	10059		Employ (B1) (15000)	132	0	38	231	N/A	0	0	0	0		132	0	38	231	63	0	18	109	14	0	4	24	35	0	10	61	21	0	6	36	5	0	0	0
√	British Library (Colindale Avenue)	10014		Resi Flat	24	93	61	40	N/A	0	0	0	0		24	93	61	40	12	44	29	19	3	10	6	4	6	25	16	10	4	15	10	6	0	4	2	1
√	Colindale Hospital (including frontage & Phase 2)	10014		Resi Flat	70	267	176	114	College	1782	27	15	130		1852	294	191	243	877	139	91	115	195	31	20	26	487	77	50	64	292	46	30	38	16	14	6	5
√	Middlesex University Halls (Grahame Park Way)	10013		Student Acc	24	204	196	123	N/A	0	0	0	0		24	204	196	123	11	97	93	58	3	22	21	13	6	54	52	32	4	32	31	19	0	0	0	0
√	National Blood Service expansion site	10014		N/A	0	0	0	0	N/A	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
√	Brent Works (Colindale Avenue)	10014		Resi Flat	7	28	19	12	N/A	0	0	0	0		7	28	19	12	4	13	9	6	1	3	2	1	2	7	5	3	1	4	3	2	0	1	1	0
√	Land between railway line (Aerodrome Road)	10013		Employ (B1) (7000)	62	0	18	108	N/A	0	0	0	0		62	0	18	108	29	0	8	51	6	0	2	11	16	0	5	28	10	0	3	17	2	0	0	0
√	Site along Watford Way	10019		Resi Flat	7	27	18	12	N/A	0	0	0	0		7	27	18	12	3	13	8	5	1	3	2	1	2	7	5	3	1	4	3	2	0	1	1	0
√	McDonalds Site (Edgware Road)	10059		Resi Flat	7	27	18	12	N/A	0	0	0	0		7	27	18	12	3	13	8	5	1	3	2	1	2	7	5	3	1	4	3	2	0	1	1	0
√	Burger King & Eyeland site (Edgware Road)	10003		Resi Flat	7	27	18	12	N/A	0	0	0	0		7	27	18	12	3	13	8	5	1	3	2	1	2	7	5	3	1	4	3	2	0	1	1	0
√	Merit House (Edgware Road)	10003		Resi Flat	14	54	36	23	N/A	0	0	0	0		14	54	36	23	7	26	17	11	1	6	4	2	4	14	9	6	2	9	6	4	0	2	1	0
√	Green Point (Edgware Road/ The Greenway)	10003		Resi Flat	6	23	15	10	Employ (B1)	5	0	1	9		11	23	17	19	5	11	8	9	1	2	2	2	3	6	4	5	2	4	3	3	0	1	1	0
					885	2742	1925	1543		1039	227	84	194		1923	2969	2009	1737	911	1406	952	823	202	313	211	183	506	781	529	457	304	469	317	274	22	104	56	20
	Sites in Brent																																				
√	Oriental City (Edgware Road)	10038		NET TRIP GEN	0	0	313	239	N/A	0	0	0	0		0	0	313	239	0	0	148	113	0	0	33	25	0	0	82	63	0	0	49	38	0	0	13	8
√	Capitol Way (Edgware Road)	10037		Resi Flat	45	173	114	74	N/A	0	0	0	0		45	173	114	74	22	82	54	35	5	18	12	8	12	45	30	19	7	27	18	12	1	7	4	1
√	Asda site (Edgware Road)	10038		Resi Flat	36	135	89	58	N/A	0	0	0	0		36	135	89	58	17	64	42	27	4	14	9	6	9	36	23	15	6	21	14	9	1	6	3	1
√	Sarema House & school (Edgware Road)	10036		Resi Flat	24	92	61	39	N/A	0	0	0	0		24	92	61	39	11	43	29	19	3	10	6	4	6	24	16	10	4	14	10	6	0	4	2	1
√	Retail Park (Edgware Road)	10036		Resi Flat	37	140	93	60	N/A	0	0	0	0		37	140	93	60	17	67	44	28	4	15	10	6	10	37	24	16	6	22	15	9	1	6	3	1
					142	540	669	469		0	0	0	0		142	540	669	469	67	256	317	222	15	57	70	49	37	142	176	123	22	85	106	74	2	22	25	12
					1027	3282	2594	2012		1039	227	84	194		2065	3509	2678	2206	978	1662	1269	1045	217	369	282	232	543	923	705	581	326	554	423	348	24	126	81	32

Colindale AAP - Multi-modal trips (SUMMARY)

Attraction (TRIPS IN)

AM

Mode	Year		
	2011	2016	2021
car	321	673	1044
bus	72	466	543
tube	129	839	978
rail	29	186	217
walk	43	280	326
cycle	4	20	24

PM

Mode	Year		
	2011	2016	2021
car	605	1590	2278
bus	176	519	705
tube	316	935	1269
rail	70	208	282
walk	105	312	423
cycle	22	59	81

Generation (TRIPS OUT)

AM

Mode	Year		
	2011	2016	2021
car	796	1684	2559
bus	270	624	923
tube	486	1124	1662
rail	108	250	369
walk	162	375	554
cycle	41	86	126

PM

Mode	Year		
	2011	2016	2021
car	385	1324	1773
bus	117	450	581
tube	211	810	1045
rail	47	180	232
walk	70	270	348
cycle	7	24	32

Colindale AAP Mode Share

CAAP - Agreed Trip Rates

	Trips Rates																							
	Car						PT						Walk						Cycle					
	AM			PM			AM			PM			AM			PM			AM			PM		
Use Class	IN	OUT	**TOTAL**	IN	OUT	**TOTAL**	IN	OUT	**TOTAL**	IN	OUT	**TOTAL**	IN	OUT	**TOTAL**	IN	OUT	**TOTAL**	IN	OUT	**TOTAL**	IN	OUT	**TOTAL**
Residential - Flats [C3]	0.083	0.21	**0.293**	0.158	0.099	**0.257**	0.071	0.27	**0.341**	0.178	0.115	**0.293**			**0**			**0**	0.001	0.011	**0.012**	0.006	0.002	**0.008**
Residential - Housing [C3]	0.254	0.397	**0.651**	0.413	0.333	**0.746**	0.016	0.397	**0.413**	0.048	0.079	**0.127**	0.111	0.159	**0.27**	0.143	0.206	**0.349**	0	0	**0**	0	0	**0**
Residential - Student Accomodation [C3]	0.013	0.014	**0.027**	0.024	0.027	**0.051**	0	0.012	**0.012**	0.014	0.005	**0.019**	0.017	0.134	**0.151**	0.126	0.083	**0.209**	0	0	**0**	0	0	**0**
Employment - Office [B1]	0.203	0.017	**0.22**	0.119	0.491	**0.61**	0.762	0	**0.762**	0.136	1.151	**1.287**	0.118	0	**0.118**	0.119	0.389	**0.508**	0.034	0	**0.034**	0	0	**0**
College *(Existing)* [D1]	0.164	0.019	**0.183**	0.024	0.034	**0.058**	0.381	0.006	**0.387**	0.003	0.028	**0.031**			**0**			**0**	0.005	0.001	**0.006**	0	0.001	**0.001**
College *(Proposed)* [D1]	0.093	0.01	**0.103**	0.017	0.022	**0.039**	0.591	0.009	**0.6**	0.005	0.043	**0.048**			**0**			**0**	0.005	0.001	**0.006**	0	0.001	**0.001**

	Car (Total)		PT(Total)		Walk (Total)		Cycle (Total)	
Use Class	AM	PM	AM	PM	AM	PM	AM	PM
Residential - Flats [C3]	0.293	0.257	0.341	0.293	0	0	0.012	0.008
Residential - Housing [C3]	0.651	0.746	0.413	0.127	0.27	0.349	0	0
Residential - Student Accomodation [C3]	0.027	0.051	0.012	0.019	0.151	0.209	0	0
Employment - Office [B1]	0.22	0.61	0.762	1.287	0.118	0.508	0.034	0
College *(Existing)* [D1]	0.183	0.058	0.387	0.031	0	0	0.006	0.001
College *(Proposed)* [D1]	0.103	0.039	0.6	0.048	0	0	0.006	0.001

AM Peak

	Mode Share		
Use Class	**Car**	**PT & Walk**	**Cycle**
Residential - Flats [C3]	45%	53%	2%
Residential - Housing [C3]	49%	51%	0%
Residential - Student Accomodation [C3]	14%	86%	0%
Employment - Office [B1]	19%	78%	3%
College *(Existing)* [D1]	32%	67%	1%
College *(Proposed)* [D1]	15%	85%	1%

PT & Walk mode - split using 2001 census JtW for Colindale (below)

Mode Share					
Car	**PT & Walk**				**Cycle**
	Undergrou	**Train**	**Bus/Taxi**	**Walk**	
45%	25%	6%	14%	8%	2%
49%	24%	5%	13%	8%	0%
14%	41%	9%	23%	14%	0%
19%	37%	8%	20%	12%	3%
32%	32%	7%	18%	11%	1%
15%	40%	9%	22%	13%	1%

PM Peak

	Mode Share		
Use Class	**Car**	**PT & Walk**	**Cycle**
Residential - Flats [C3]	46%	53%	1%
Residential - Housing [C3]	61%	39%	0%
Residential - Student Accomodation [C3]	18%	82%	0%
Employment - Office [B1]	25%	75%	0%
College *(Existing)* [D1]	64%	34%	1%
College *(Proposed)* [D1]	44%	55%	1%

PT & Walk mode - split using 2001 census JtW for Colindale (below)

Mode Share					
Car	**PT & Walk**				**Cycle**
	Undergrou	**Train**	**Bus/Taxi**	**Walk**	
46%	25%	6%	14%	8%	1%
61%	18%	4%	10%	6%	0%
18%	39%	9%	22%	13%	0%
25%	35%	8%	20%	12%	0%
64%	16%	4%	9%	5%	1%
44%	26%	6%	14%	9%	1%

2001 Census Journey to Work dataset

	Trips						Mode share						
		PT & Walk						PT & Walk					
		PT						PT					
	Car	**Underground**	**Train**	**Bus/Taxi**	**Walk**	**Bicycle**	**Car**	**Undergrou**	**Train**	**Bus/Tax**	**Walk**	**Bicycle**
Colindale Ward	2350	1350	300	750	450	50	45%	26%	6%	14%	9%	1%
								46%				
								54%				

LATS - Outer London

	Trips						Mode share						
		PT & Walk						PT & Walk					
		PT						PT					
	Car	**Underground**	**Train**	**Bus/Taxi**	**Walk**	**Bicycle**	**Car**	**Undergrou**	**Train**	**Bus/Tax**	**Walk**	**Bicycle**
AM peak	7404	721	692	1121	4231	171	52%	5%	5%	8%	30%	1%
								18%				
								47%				
	Trips						Mode share						
		PT & Walk						PT & Walk					
		PT						PT					
	Car	**Underground**	**Train**	**Bus/Taxi**	**Walk**	**Bicycle**	**Car**	**Undergrou**	**Train**	**Bus/Tax**	**Walk**	**Bicycle**
PM peak	5292	708	879	723	1369	156	58%	8%	10%	8%	15%	2%
								25%				
								40%				

Comparison to RODS data

Egress mode

		Trips				Mode share			
station name	**time period**	**Car/ Van Parked**	**Car/ Van Driven away**	**Bus/ Coach**	**Walked**	**Car/ Van Parked**	**Car/ Van Driven away**	**Bus/ Coach**	**Walked**
Colindale	**AM peak**	2	11	81	896	0%	1%	8%	91%
Colindale	**PM Peak**	116	213	177	1035	8%	14%	11%	67%

Access mode

		Trips				Mode share			
station name	**time period**	**Car/ Van Parked**	**Car/ Van Driven away**	**Bus/ Coach**	**Walked**	**Car/ Van Parked**	**Car/ Van Driven away**	**Bus/ Coach**	**Walked**
Colindale	**AM peak**	144	136	186	1466	7%	7%	10%	76%
Colindale	**PM Peak**	0	35	39	1120	0%	3%	3%	94%

Colindale AAP - Land use assumptions for SATURN Modelling - table 7.1 in Technical Note produced by Colin Buchana

2011 CAR TRIPS

2011	Location	Site Area (Ha)	PTAL	Existing land use	Land use/possible land use(s)	Density dw/ha	2011 units*	2011 Other uses	2016 cumulative units*	2016 cumulative Other uses	2021 cumulative units*	2021 cumulative Other uses	SATURN ZONE NO.	Primary Land Use: Land Use	No.	Trip Rates AM IN	Trip Rates AM OUT	Trip Rates PM IN	Trip Rates PM OUT	Trips AM IN	Trips AM OUT	Trips PM IN	Trips PM OUT	Secondary Land Use: Land Use	No.	Trip Rates AM IN	Trip Rates AM OUT	Trip Rates PM IN	Trip Rates PM OUT	Trips AM IN	Trips AM OUT	Trips PM IN	Trips PM OUT
SITE	Sites in Barnet																																
1	Grahame Park (Lanacre Avenue)	35	1, 2	*Residential, neighbourhood centre*	Residential led mixed use (neighbourhood centre)	*112*	554	Various - see pp	1108	Various - see pp	1663	Various - see pp	10060	*Resi Flat (90%)*	498.6	0.08	0.21	0.16	0.1	41	105	79	49	*Resi housing*	55.4	0.25	0.4	0.41	0.33	14	22	23	18
2	Beaufort Park (Aerodrome Road)	10	1, 2	*Vacant*	Residential led mixed use (neighbourhood centre)	*278*	2800	Various - see pp	2800	Various - see pp	2800	Various - see pp	10013	*Resi Flat*	2800	0.08	0.21	0.16	0.1	232	588	442	277	*N/A*						0	0	0	0
3	Beaufort Park 2								400		400		10013	*Resi Flat*	0	0.08	0.21	0.16	0.1	0	0	0	0	*N/A*						0	0	0	0
4	Zenith House (Edgware Road)	1	3	*Office/warehouse*	Residential, restaurant, ba	*195*	215	Various - see pp	215	Various - see pp	215	Various - see pp	10062	*Resi Flat*	215	0.08	0.21	0.16	0.1	18	45	34	21	*N/A*						0	0	0	0
5	Former National Grid/ Kidstop Premises (Edgware Road)	0.6	3	*National Grid, Kidstop premises*	Residential,B1 use (375sq.m)	*140*	84	B1 (375sq.m)	84	B1 (375sq.m)	84	B1 (375sq.m)	10015	*Resi Flat*	84	0.08	0.21	0.16	0.1	7	18	13	8	*B1 emp*	3.75	0.2	0.02	0.12	0.49	1	0	0	2
6	Barnet College (Grahame Park Way)	5.1	1	Barnet College (350 parking spaces)	Residential, primary school	112	0		428	Primary school	428	Primary school	10061	*Resi Flat*	0	0.08	0.21	0.16	0.1	0	0	0	0	*Minus college*	0	0.16	0.02	0.02	0.03	0	0	0	0
7	Peel Centre East (Colindale Ave/Aerodrome Road)	3.8	2, 3	Residential + Met Police training	Residential-led mixed use	150	0		170	Retail	400	Retail	10011	*Resi Flat (90%)*	0	0.08	0.21	0.16	0.1	0	0	0	0	*Resi housing*	0	0.25	0.4	0.41	0.33	0	0	0	0
8	Peel Centre West (Aerodrome Road)	14.7	1, 2	Met Police training	Residential, employment, primary school,	120	0		0	Primary school	1764	Primary school	10011	*Resi Flat (90%)*	0	0.08	0.21	0.16	0.1	0	0	0	0	*Resi housing*	0	0.25	0.4	0.41	0.33	0	0	0	0
9	Farrow House (Colindeep Lane)	0.9	1	Met Police training	Employment (15,000 sq m)	-	0		0	Employment	0	Employment	10059	*B1 emp*	0	0.2	0.02	0.12	0.49	0	0	0	0	*N/A*						0	0	0	0
10	British Library (Colindale Avenue)	2.3	3	British Library Storage facility (50 staff)	Residential-led mixed use (likely retail, retain employment No.s)	150	0		345	Retail	345	Retail	10014	*Resi Flat*	0	0.08	0.21	0.16	0.1	0	0	0	0	*N/A*						0	0	0	0
11	Colindale Hospital (including frontage & Phase 2)	6.6	2, 3	Vacant, Nurses accommodation, Residential	Residential-led mixed use, Barnet College (50 parking spaces)	150	0		780	Barnet College, Retail	990	Barnet College, Retail	10014	*Resi Flat*	0	0.08	0.21	0.16	0.1	0	0	0	0	*College*	0	0.09	0.01	0.02	0.02	0	0	0	0
12	Middlesex University Halls (Grahame Park Way)	2.2	2	Student accommodation (600 beds)	Student accommodation-led (2000 beds - 50 staff) mixed use	-	0		0	Student village, retail	0	Student village, retail	10013	*Student Acc*	0	0.01	0.01	0.02	0.03	0	0	0	0	*N/A*						0	0	0	0
13	National Blood Service expansion site	0.6	2	Vacant	National Blood Service expansior (employment)	-	0		0	Employment	0	Employment	10014	*N/A*						0	0	0	0	*N/A*						0	0	0	0
14	Brent Works (Colindale Avenue)	0.7	3	Vacant	Residentia	150	0		105		105		10014	*Resi Flat*	0	0.08	0.21	0.16	0.1	0	0	0	0	*N/A*						0	0	0	0
15	Land between railway line (Aerodrome Road)	0.7	1	Vacant	Employment (7,000 sq m)	-	0		0	Employment	0	Employment	10013	*B1 emp*	0	0.2	0.02	0.12	0.49	0	0	0	0	*N/A*						0	0	0	0
16	Site along Watford Way	1	1	Residential	Residential	100	0		100		100		10019	*Resi Flat*	0	0.08	0.21	0.16	0.1	0	0	0	0	*N/A*						0	0	0	0
17	McDonalds Site (Edgware Road)	0.5	2	McDonalds	Residential-led mixed usi	200	0		100		100		10059	*Resi Flat*	0	0.08	0.21	0.16	0.1	0	0	0	0	*N/A*						0	0	0	0
18	Burger King & Eyeland site (Edgware Road)	0.5	2	Burger King, Eyeland	Residential-led mixed use	200	0		100		100		10003	*Resi Flat*	0	0.08	0.21	0.16	0.1	0	0	0	0	*N/A*						0	0	0	0
19	Merit House (Edgware Road)	1	2	Office (approximately 350 parking spaces)	Residential, office (presume existing office use remains)	200	0		0		200		10003	*Resi Flat*	0	0.08	0.21	0.16	0.1	0	0	0	0	*N/A*						0	0	0	0
20	Green Point (Edgware Road/ The Greenway)	0.46	3	*Light industrial*	Residential-led mixed use	*200*	86	Retail, office (see pp)	86	Retail, office (see pp)	86	Retail, office (see pp)	10003	*Resi Flat*	86	0.08	0.21	0.16	0.1	7	18	14	9	*B1 emp*	0	0.2	0.02	0.12	0.49	0	0	0	0
																				306	774	582	365							15	22	23	20
	Sites in Brent																																
21	Oriental City (Edgware Road)	3	2,3	Retail	Retail, residential, primary schoc	*181*	0		520	Various -see pp	520	Various -see pp	10038	*NET TRIP GEN*						0	0	0	0	*N/A*						0	0	0	0
22	Capitol Way (Edgware Road)	3.2	3	Garage, light industrial	Residential-led mixed usi	200	0		0		640		10037	*Resi Flat*	0	0.08	0.21	0.16	0.1	0	0	0	0	*N/A*						0	0	0	0
23	Asda site (Edgware Road)	2.5	2	Asda	Asda, residentia	200	0		500		500		10038	*Resi Flat*	0	0.08	0.21	0.16	0.1	0	0	0	0	*N/A*						0	0	0	0
24	Sarema House & school (Edgware Road)	1.7	2	Light industrial, school	Residential, workspaces, primary school	200	0		0		340		10036	*Resi Flat*	0	0.08	0.21	0.16	0.1	0	0	0	0	*N/A*						0	0	0	0
25	Retail Park (Edgware Road)	2.6	2	Retail	Retail, residentia	200	0		520		520		10036	*Resi Flat*	0	0.08	0.21	0.16	0.1	0	0	0	0	*N/A*						0	0	0	0
																				0	0	0	0							0	0	0	0
																				306	774	582	365							15	22	23	20

2011	Location	TOTAL CAR TRIPS AM IN	TOTAL CAR TRIPS AM OUT	TOTAL CAR TRIPS AM TOTAL	TOTAL CAR TRIPS PM IN	TOTAL CAR TRIPS PM OUT	TOTAL CAR TRIPS PM TOTAL	DO-MIN CAR TRIPS AM IN	DO-MIN CAR TRIPS AM OUT	DO-MIN CAR TRIPS AM TOTAL	DO-MIN CAR TRIPS PM IN	DO-MIN CAR TRIPS PM OUT	DO-MIN CAR TRIPS PM TOTAL	DO-SOME CAR TRIPS AM IN	DO-SOME CAR TRIPS AM OUT	DO-SOME CAR TRIPS AM TOTAL	DO-SOME CAR TRIPS PM IN	DO-SOME CAR TRIPS PM OUT	DO-SOME CAR TRIPS PM TOTAL
SITE	Sites in Barnet																		
1	Grahame Park (Lanacre Avenue)	55	127	182	102	68	169	55	127	182	102	68	169						
2	Beaufort Park (Aerodrome Road)	232	588	820	442	277	720	232	588	820	442	277	720						
3	Beaufort Park 2	0	0	0	0	0	0							0	0	0	0	0	0
4	Zenith House (Edgware Road)	18	45	63	34	21	55	18	45	63	34	21	55						
5	Former National Grid/ Kidstop Premises (Edgware Road)	8	18	25	14	10	24	8	18	25	14	10	24						
6	Barnet College (Grahame Park Way)	0	0	0	0	0	0							0	0	0	0	0	0
7	Peel Centre East (Colindale Ave/Aerodrome Road)	0	0	0	0	0	0							0	0	0	0	0	0
8	Peel Centre West (Aerodrome Road)	0	0	0	0	0	0							0	0	0	0	0	0
9	Farrow House (Colindeep Lane)	0	0	0	0	0	0							0	0	0	0	0	0
10	British Library (Colindale Avenue)	0	0	0	0	0	0							0	0	0	0	0	0
11	Colindale Hospital (including frontage & Phase 2)	0	0	0	0	0	0							0	0	0	0	0	0
12	Middlesex University Halls (Grahame Park Way)	0	0	0	0	0	0							0	0	0	0	0	0
13	National Blood Service expansion site	0	0	0	0	0	0							0	0	0	0	0	0
14	Brent Works (Colindale Avenue)	0	0	0	0	0	0							0	0	0	0	0	0
15	Land between railway line (Aerodrome Road)	0	0	0	0	0	0							0	0	0	0	0	0
16	Site along Watford Way	0	0	0	0	0	0							0	0	0	0	0	0
17	McDonalds Site (Edgware Road)	0	0	0	0	0	0							0	0	0	0	0	0
18	Burger King & Eyeland site (Edgware Road)	0	0	0	0	0	0							0	0	0	0	0	0
19	Merit House (Edgware Road)	0	0	0	0	0	0							0	0	0	0	0	0
20	Green Point (Edgware Road/ The Greenway)	7	18	25	14	9	22	7	18	25	14	9	22						
		321	796	1116	605	385	990	321	796	1116	605	385	990	0	0	0	0	0	0
	Sites in Brent																		
21	Oriental City (Edgware Road)	0	0	0	0	0	0	0	0	0	0	0	0						
22	Capitol Way (Edgware Road)	0	0	0	0	0	0							0	0	0	0	0	0
23	Asda site (Edgware Road)	0	0	0	0	0	0							0	0	0	0	0	0
24	Sarema House & school (Edgware Road)	0	0	0	0	0	0							0	0	0	0	0	0
25	Retail Park (Edgware Road)	0	0	0	0	0	0							0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		321	796	1116	605	385	990	321	796	1116	605	385	990	0	0	0	0	0	0
				2106						2106						0			

Colindale AAP - Land use assumptions for SATURN Modelling - table 7.1 in Technical Note produced by Colin Buchana

2016	Location	Site Area (Ha)	PTAL	Existing land use	Land use/possible land use(s)	Density dw/ha	2011 units*	2011 Other uses	2016 cumulative units*	2016 cumulative Other uses	2021 cumulative units*	2021 cumulative Other uses	SATURN ZONE NO.
Done	**Sites in Barnet**												
√	**Grahame Park (Lanacre Avenue)**	35	1, 2	*Residential, neighbourhood centre*	Residential led mixed use (neighbourhood centre)	*112*	554	Various - see pp	1108	Various - see pp	1663	Various - see pp	10060
√	**Beaufort Park (Aerodrome Road)**	10	1, 2	*Vacant*	Residential led mixed use (neighbourhood centre)	*278*	2800	Various - see pp	2800	Various -see pp	2800	Various -see pp	10013
√	**Beaufort Park 2**								400		400		10013
√	**Zenith House (Edgware Road)**	1	3	Office/warehouse	Residential, restaurant, ba	*195*	215	Various - see pp	215	Various - see pp	215	Various - see pp	10062
√	**Former National Grid/ Kidstop Premises (Edgware Road)**	0.6	3	*National Grid, Kidstop premises*	Residential,B1 use (375sq.m)	*140*	84	B1 (375sq.m)	84	B1 (375sq.m)	84	B1 (375sq.m)	10015
√	**Barnet College (Grahame Park Way)**	5.1	1	Barnet College (350 parking spaces)	Residential, primary school	112	0		428	Primary school	428	Primary school	10061
√	**Peel Centre East (Colindale Ave/Aerodrome Road)**	3.8	2, 3	Residential + Met Police training	Residential-led mixed use	150	0		170	Retail	400	Retail	10011
√	**Peel Centre West (Aerodrome Road)**	14.7	1, 2	Met Police training	Residential, employment, primary school,	120	0		0	Primary school	1764	Primary school	10011
√	**Farrow House (Colindeep Lane)**	0.9	1	Met Police training	Employment (15,000 sq m)	-	0		0	Employment	0	Employment	10059
√	**British Library (Colindale Avenue)**	2.3	3	British Library Storage facility (50 staff)	Residential-led mixed use (likely retail, retain employment No.s)	150	0		345	Retail	345	Retail	10014
√	**Colindale Hospital (including frontage & Phase 2)**	6.6	2, 3	Vacant, Nurses accommodation, Residential	Residential-led mixed use, Barnet College (50 parking spaces)	150	0		780	Barnet College, Retail	990	Barnet College, Retail	10014
√	**Middlesex University Halls (Grahame Park Way)**	2.2	2	Student accommodation (600 beds)	Student accommodation-led (2000 beds - 50 staff) mixed use	-	0		0	Student village, retail	0	Student village, retail	10013
√	**National Blood Service expansion site**	0.6	2	Vacant	National Blood Service expansior (employment)	-	0		0	Employment	0	Employment	10014
√	**Brent Works (Colindale Avenue)**	0.7	3	Vacant	Residentia	150	0		105		105		10014
√	**Land between railway line (Aerodrome Road)**	0.7	1	Vacant	Employment (7,000 sq m)	-	0		0	Employment	0	Employment	10013
√	**Site along Watford Way**	1	1	Residential	Residential	100	0		100		100		10019
√	**McDonalds Site (Edgware Road)**	0.5	2	McDonalds	Residential-led mixed use	200	0		100		100		10059
√	**Burger King & Eyeland site (Edgware Road)**	0.5	2	Burger King, Eyeland	Residential-led mixed use	200	0		100		100		10003
√	**Merit House (Edgware Road)**	1	2	Office (approximately 350 parking spaces)	Residential, office (presume existing office use remains)	200	0		0		200		10003
√	**Green Point (Edgware Road/ The Greenway)**	0.46	3	*Light industrial*	Residential-led mixed use	*200*	86	Retail, office (see pp)	86	Retail, office (see pp)	86	Retail, office (see pp)	10003
	Sites in Brent												
√	**Oriental City (Edgware Road)**	*3*	2,3	*Retail*	Retail, residential, primary schoc	*181*	0		520	Various -see pp	520	Various -see pp	10038
√	**Capitol Way (Edgware Road)**	3.2	3	Garage, light industrial	Residential-led mixed use	200	0		0		640		10037
√	**Asda site (Edgware Road)**	2.5	2	Asda	Asda, residentia	200	0		500		500		10038
√	**Saremа House & school (Edgware Road)**	1.7	2	Light industrial, school	Residential, workspaces, primary school	200	0		0		340		10036
√	**Retail Park (Edgware Road)**	2.6	2	Retail	Retail, residentia	200	0		520		520		10036

2016 CAR TRIPS

	Primary Land Use		Trip Rates AM		Trip Rates PM		Trips AM		Trips PM		Secondary Land Use		Trip Rates AM		Trip Rates PM		Trips AM		Trips PM	
	Land Use	No.	IN	OUT	IN	OUT	IN	OUT	IN	OUT	*Land Use*	No.	IN	OUT	IN	OUT	IN	OUT	IN	OUT
	Resi Flat (90%)	997.2	0.08	0.21	0.16	0.1	83	209	158	99	*Resi housing*	110.8	0.25	0.4	0.41	0.33	28	44	46	37
	Resi Flat	2800	0.08	0.21	0.16	0.1	232	588	442	277	*N/A*						0	0	0	0
	Resi Flat	400	0.08	0.21	0.16	0.1	33	84	63	40	*N/A*									
	Resi Flat	215	0.08	0.21	0.16	0.1	18	45	34	21	*N/A*						0	0	0	0
	Resi Flat	84	0.08	0.21	0.16	0.1	7	18	13	8	*B1 emp*	3.75	0.2	0.02	0.12	0.49	1	0	0	2
	Resi Flat	428	0.08	0.21	0.16	0.1	36	90	68	42	*Minus college*	-2100	0.16	0.02	0.02	0.03	-344	-40	-50	-71
	Resi Flat (90%)	153	0.08	0.21	0.16	0.1	13	32	24	15	*Resi housing*	17	0.25	0.4	0.41	0.33	4	7	7	6
	Resi Flat (90%) B1 emp (15000)	0	0.08	0.21	0.16	0.1	0	0	0	0	*Resi housing*	0	0.25	0.4	0.41	0.33	0	0	0	0
	Resi Flat	150	0.2	0.02	0.12	0.49	30	3	18	74	*N/A*						0	0	0	0
	Resi Flat	345	0.08	0.21	0.16	0.1	29	72	55	34	*N/A*						0	0	0	0
	Resi Flat	780	0.08	0.21	0.16	0.1	65	164	123	77	*College*	900	0.09	0.01	0.02	0.02	84	9	15	20
	Student Acc	1400	0.01	0.01	0.02	0.03	18	20	34	38	*N/A*						0	0	0	0
	N/A						0	0	0	0	*N/A*						0	0	0	0
	Resi Flat	105	0.08	0.21	0.16	0.1	9	22	17	10	*N/A*						0	0	0	0
	B1 emp (7000)	70	0.2	0.02	0.12	0.49	14	1	8	34	*N/A*						0	0	0	0
	Resi Flat	100	0.08	0.21	0.16	0.1	8	21	16	10	*N/A*						0	0	0	0
	Resi Flat	100	0.08	0.21	0.16	0.1	8	21	16	10	*N/A*						0	0	0	0
	Resi Flat	100	0.08	0.21	0.16	0.1	8	21	16	10	*N/A*						0	0	0	0
	Resi Flat	0	0.08	0.21	0.16	0.1	0	0	0	0	*N/A*						0	0	0	0
	Resi Flat	86	0.08	0.21	0.16	0.1	7	18	14	9	*B1 emp*	5.7	0.2	0.02	0.12	0.49	1	0	1	3
							618	1429	1117	808							-226	20	19	-4
	NET TRIP GEN						0	0	257	372	*N/A*						0	0	0	0
	Resi Flat	0	0.08	0.21	0.16	0.1	0	0	0	0	*N/A*						0	0	0	0
	Resi Flat	500	0.08	0.21	0.16	0.1	42	105	79	50	*N/A*						0	0	0	0
	Resi Flat	0	0.08	0.21	0.16	0.1	0	0	0	0	*N/A*						0	0	0	0
	Resi Flat	520	0.08	0.21	0.16	0.1	43	109	82	51	*N/A*						0	0	0	0
							85	214	418	473							0	0	0	0
							703	1643	1535	1281							-226	20	19	-4

	TOTAL CAR TRIPS AM			TOTAL CAR TRIPS PM			DO-MIN CAR TRIPS AM			DO-MIN CAR TRIPS PM			DO-SOME CAR TRIPS AM			DO-SOME CAR TRIPS PM		
	IN	OUT	TOTAL	IN	OUT	TOTAL	IN	OUT	TOTAL	IN	OUT	TOTAL	IN	OUT	TOTAL	IN	OUT	TOTAL
	111	253	364	203	136	339	111	253	364	203	136	339						
	232	588	820	442	277	720	232	588	820	442	277	720						
	33	84	117	63	40	103							33	84	117	63	40	103
	18	45	63	34	21	55	18	45	63	34	21	55						
	8	18	25	14	10	24	8	18	25	14	10	24						
	-309	50	-259	17	-29	-12							-309	50	-259	17	-29	-12
	17	39	56	31	21	52							17	39	56	31	21	52
	0	0	0	0	0	0							0	0	0	0	0	0
	30	3	33	18	74	92							30	3	33	18	74	92
	29	72	101	55	34	89							29	72	101	55	34	89
	148	173	321	139	97	236							148	173	321	139	97	236
	18	20	38	34	38	71							18	20	38	34	38	71
	0	0	0	0	0	0							0	0	0	0	0	0
	9	22	31	17	10	27							9	22	31	17	10	27
	14	1	15	8	34	43							14	1	15	8	34	43
	8	21	29	16	10	26							8	21	29	16	10	26
	8	21	29	16	10	26							8	21	29	16	10	26
	8	21	29	16	10	26							8	21	29	16	10	26
	8	21	29	16	10	26							8	21	29	16	10	26
	0	0	0	0	0	0							0	0	0	0	0	0
	8	18	26	14	11	26	8	18	26	14	11	26						
	392	1449	1841	1136	804	1940	377	922	1300	708	456	1163	15	526	541	428	348	777
	0	0	0	257	372	629	0	0	0	257	372	629						
	0	0	0	0	0	0							0	0	0	0	0	0
	42	105	147	79	50	129							42	105	147	79	50	129
	0	0	0	0	0	0							0	0	0	0	0	0
	43	109	152	82	51	134							43	109	152	82	51	134
	85	214	299	418	473	891	0	0	0	257	372	629	85	214	299	161	101	262
	477	1663	2140	1554	1277	2831	377	922	1300	965	828	1792	100	741	840	590	449	1039
			4971						3092						1879			

Colindale AAP - Land use assumptions for SATURN Modelling - table 7.1 in Technical Note produced by Colin Buchana

2021 CAR TRIPS

2021	Location	Site Area (Ha)	PTAL	Existing land use	Land use/possible land use(s)	Density dw/ha	2011 units*	2011 Other uses	2016 cumulative units*	2016 cumulative Other uses	2021 cumulative units*	2021 cumulative Other uses	SATURN ZONE NO.	Primary Land Use: Land Use	No.	Trip Rates AM IN	Trip Rates AM OUT	Trip Rates PM IN	Trip Rates PM OUT	Trips AM IN	Trips AM OUT	Trips PM IN	Trips PM OUT	Secondary Land Use: Land Use	No.	Trip Rates AM IN	Trip Rates AM OUT	Trip Rates PM IN	Trip Rates PM OUT	Trips AM IN	Trips AM OUT	Trips PM IN	Trips PM OUT
Done	**Sites in Barnet**																																
√	**Grahame Park (Lanacre Avenue)**	35	1, 2	*Residential, neighbourhood centre*	Residential led mixed use (neighbourhood centre)	*112*	554	Various - see pp	1108	Various - see pp	1663	Various - see pp	10060	*Resi Flat (90%)*	1496.7	0.08	0.21	0.16	0.1	124	314	236	148	*Resi housing*	166.3	0.25	0.4	0.41	0.33	42	66	69	55
√	**Beaufort Park (Aerodrome Road)**	10	1, 2	*Vacant*	Residential led mixed use (neighbourhood centre)	*278*	2800	Various - see pp	2800	Various - see pp	2800	Various - see pp	10013	*Resi Flat*	2800	0.08	0.21	0.16	0.1	232	588	442	277	*N/A*						0	0	0	0
√	**Beaufort Park 2**								400		400		10013	*Resi Flat*	400	0.08	0.21	0.16	0.1	33	84	63	40	*N/A*									
√	**Zenith House (Edgware Road)**	1	3	*Office/warehouse*	Residential, restaurant, ba	*195*	215	Various - see pp	215	Various - see pp	215	Various - see pp	10062	*Resi Flat*	215	0.08	0.21	0.16	0.1	18	45	34	21	*N/A*						0	0	0	0
√	**Former National Grid/ Kidstop Premises (Edgware Road)**	0.6	3	*National Grid, Kidstop premises*	Residential,B1 use (375sq.m)	*140*	84	B1 (375sq.m)	84	B1 (375sq.m)	84	B1 (375sq.m)	10015	*Resi Flat*	84	0.08	0.21	0.16	0.1	7	18	13	8	*B1 emp*	3.75	0.2	0.02	0.12	0.49	1	0	0	2
√	**Barnet College (Grahame Park Way)**	5.1	1	Barnet College (350 parking spaces)	Residential, primary school	112	0		428	Primary school	428	Primary school	10061	*Resi Flat*	428	0.08	0.21	0.16	0.1	36	90	68	42	*Minus college*	-2100	0.16	0.02	0.02	0.03	-344	-40	-50	-71
√	**Peel Centre East (Colindale Ave/Aerodrome Road)**	3.8	2, 3	Residential + Met Police training	Residential-led mixed use	150	0		170	Retail	400	Retail	10011	*Resi Flat (90%)*	360	0.08	0.21	0.16	0.1	30	76	57	36	*Resi housing*	40	0.25	0.4	0.41	0.33	10	16	17	13
√	**Peel Centre West (Aerodrome Road)**	14.7	1, 2	Met Police training	Residential, employment, primary school,	120	0		0	Primary school	1764	Primary school	10011	*Resi Flat (90%) B1 emp (15000)*	1587.6	0.08	0.21	0.16	0.1	132	333	251	157	*Resi housing*	176.4	0.25	0.4	0.41	0.33	45	70	73	59
√	**Farrow House (Colindeep Lane)**	0.9	1	Met Police training	Employment (15,000 sq m)	-	0		0	Employment	0	Employment	10059		150	0.2	0.02	0.12	0.49	30	3	18	74	*N/A*						0	0	0	0
√	**British Library (Colindale Avenue)**	2.3	3	British Library Storage facility (50 staff)	Residential-led mixed use (likely retail, retain employment No.s)	150	0		345	Retail	345	Retail	10014	*Resi Flat*	345	0.08	0.21	0.16	0.1	29	72	55	34	*N/A*						0	0	0	0
√	**Colindale Hospital (including frontage & Phase 2)**	6.6	2, 3	Vacant, Nurses accommodation, Residential	Residential-led mixed use, Barnet College (50 parking spaces)	150	0		780	Barnet College, Retail	990	Barnet College, Retail	10014	*Resi Flat*	990	0.08	0.21	0.16	0.1	82	208	156	98	*College*	900	0.09	0.01	0.02	0.02	83.7	9	15.3	20
√	**Middlesex University Halls (Grahame Park Way)**	2.2	2	Student accommodation (600 beds)	Student accommodation-led (2000 beds - 50 staff) mixed use	-	0		0	Student village, retail	0	Student village, retail	10013	*Student Acc*	1400	0.01	0.01	0.02	0.03	18	20	34	38	*N/A*						0	0	0	0
√	**National Blood Service expansion site**	0.6	2	Vacant	National Blood Service expansion (employment)	-	0		0	Employment	0	Employment	10014	*N/A*						0	0	0	0	*N/A*						0	0	0	0
√	**Brent Works (Colindale Avenue]**	0.7	3	Vacant	Residentia	150	0		105		105		10014	*Resi Flat*	105	0.08	0.21	0.16	0.1	9	22	17	10	*N/A*						0	0	0	0
√	**Land between railway line (Aerodrome Road)**	0.7	1	Vacant	Employment (7,000 sq m)	-	0		0	Employment	0	Employment	10013	*B1 emp (7000)*	70	0.2	0.02	0.12	0.49	14	1	8	34	*N/A*						0	0	0	0
√	**Site along Watford Way**	1	1	Residential	Residential	100	0		100		100		10019	*Resi Flat*	100	0.08	0.21	0.16	0.1	8	21	16	10	*N/A*						0	0	0	0
√	**McDonalds Site (Edgware Road)**	0.5	2	McDonalds	Residential-led mixed use	200	0		100		100		10059	*Resi Flat*	100	0.08	0.21	0.16	0.1	8	21	16	10	*N/A*						0	0	0	0
√	**Burger King & Eyeland site (Edgware Road)**	0.5	2	Burger King, Eyeland	Residential-led mixed use	200	0		100		100		10003	*Resi Flat*	100	0.08	0.21	0.16	0.1	8	21	16	10	*N/A*						0	0	0	0
√	**Merit House (Edgware Road)**	1	2	Office (approximately 350 parking spaces)	Residential, office (presume existing office use remains)	200	0		0		200		10003	*Resi Flat*	200	0.08	0.21	0.16	0.1	17	42	32	20	*N/A*						0	0	0	0
√	**Green Point (Edgware Road/ The Greenway)**	0.46	3	*Light industrial*	Residential-led mixed use	*200*	86	Retail, office (see pp)	86	Retail, office (see pp)	86	Retail, office (see pp)	10003	*Resi Flat*	86	0.08	0.21	0.16	0.1	7	18	14	9	*B1 emp*	5.7	0.2	0.02	0.12	0.49	1	0	1	3
																				843	1997	1545	1076							-162	121	124	80
	Sites in Brent																																
√	**Oriental City (Edgware Road)**	*3*	2,3	*Retail*	Retail, residential, primary schoc	*181*	0		520	Various -see pp	520	Various -see pp	10038	*NET TRIP GEN*						0	0	257	372	*N/A*						0	0	0	0
√	**Capitol Way (Edgware Road)**	3.2	3	Garage, light industrial	Residential-led mixed use	200	0		0		640		10037	*Resi Flat*	640	0.08	0.21	0.16	0.1	53	134	101	63	*N/A*						0	0	0	0
√	**Asda site (Edgware Road)**	2.5	2	Asda	Asda, residentia	200	0		500		500		10038	*Resi Flat*	500	0.08	0.21	0.16	0.1	42	105	79	50	*N/A*						0	0	0	0
√	**Sarema House & school (Edgware Road)**	1.7	2	Light industrial, school	Residential, workspaces, primary school	200	0		0		340		10036	*Resi Flat*	340	0.08	0.21	0.16	0.1	28	71	54	34	*N/A*						0	0	0	0
√	**Retail Park (Edgware Road)**	2.6	2	Retail	Retail, residentia	200	0		520		520		10036	*Resi Flat*	520	0.08	0.21	0.16	0.1	43	109	82	51	*N/A*						0	0	0	0
																				166	420	573	570							0	0	0	0
																				1009	2417	2118	1646							-162	121	124	80

2021	Location	TOTAL CAR TRIPS AM IN	TOTAL CAR TRIPS AM OUT	TOTAL CAR TRIPS AM TOTAL	TOTAL CAR TRIPS PM IN	TOTAL CAR TRIPS PM OUT	TOTAL CAR TRIPS PM TOTAL	DO-MIN CAR TRIPS AM IN	DO-MIN CAR TRIPS AM OUT	DO-MIN CAR TRIPS AM TOTAL	DO-MIN CAR TRIPS PM IN	DO-MIN CAR TRIPS PM OUT	DO-MIN CAR TRIPS PM TOTAL	DO-SOME CAR TRIPS AM IN	DO-SOME CAR TRIPS AM OUT	DO-SOME CAR TRIPS AM TOTAL	DO-SOME CAR TRIPS PM IN	DO-SOME CAR TRIPS PM OUT	DO-SOME CAR TRIPS PM TOTAL
Done	**Sites in Barnet**																		
√	**Grahame Park (Lanacre Avenue)**	166	380	547	305	204	509	166	380	547	305	204	509						
√	**Beaufort Park (Aerodrome Road)**	232	588	820	442	277	720	232	588	820	442	277	720						
√	**Beaufort Park 2**	33	84	117	63	40	103							33	84	117	63	40	103
√	**Zenith House (Edgware Road)**	18	45	63	34	21	55	18	45	63	34	21	55						
√	**Former National Grid/ Kidstop Premises (Edgware Road)**	8	18	25	14	10	24	8	18	25	14	10	24						
√	**Barnet College (Grahame Park Way)**	-309	50	-259	17	-29	-12							-309	50	-259	17	-29	-12
√	**Peel Centre East (Colindale Ave/Aerodrome Road)**	40	91	132	73	49	122							40	91	132	73	49	122
√	**Peel Centre West (Aerodrome Road)**	177	403	580	324	216	540							177	403	580	324	216	540
√	**Farrow House (Colindeep Lane)**	30	3	33	18	74	92							30	3	33	18	74	92
√	**British Library (Colindale Avenue)**	29	72	101	55	34	89							29	72	101	55	34	89
√	**Colindale Hospital (including frontage & Phase 2)**	166	217	383	172	118	290							166	217	383	172	118	290
√	**Middlesex University Halls (Grahame Park Way)**	18	20	38	34	38	71							18	20	38	34	38	71
√	**National Blood Service expansion site**	0	0	0	0	0	0							0	0	0	0	0	0
√	**Brent Works (Colindale Avenue]**	9	22	31	17	10	27							9	22	31	17	10	27
√	**Land between railway line (Aerodrome Road)**	14	1	15	8	34	43							14	1	15	8	34	43
√	**Site along Watford Way**	8	21	29	16	10	26							8	21	29	16	10	26
√	**McDonalds Site (Edgware Road)**	8	21	29	16	10	26							8	21	29	16	10	26
√	**Burger King & Eyeland site (Edgware Road)**	8	21	29	16	10	26							8	21	29	16	10	26
√	**Merit House (Edgware Road)**	17	42	59	32	20	51							17	42	59	32	20	51
√	**Green Point (Edgware Road/ The Greenway)**	8	18	26	14	11	25	8	18	26	14	11	26						
		681	2118	2799	1669	1157	2825	433	1049	1482	810	524	1333	249	1069	1317	859	633	1492
	Sites in Brent																		
√	**Oriental City (Edgware Road)**	0	0	0	257	372	629	0	0	0	257	372	629						
√	**Capitol Way (Edgware Road)**	53	134	188	101	63	164							53	134	188	101	63	164
√	**Asda site (Edgware Road)**	42	105	147	79	50	129							42	105	147	79	50	129
√	**Sarema House & school (Edgware Road)**	28	71	100	54	34	87							28	71	100	54	34	87
√	**Retail Park (Edgware Road)**	43	109	152	82	51	134							43	109	152	82	51	134
		166	420	586	573	570	1143	0	0	0	257	372	629	166	420	586	316	198	514
		847	2538	3385	2242	1727	3968	433	1049	1482	1067	896	1962	415	1489	1903	1175	831	2006
				7353						3444						3909			

Appendix B– Station capacity analysis

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Technical Note

Job Title	Colindale Area Action Plan		
Job Number	133131	**Date**	08/07/2008
Copy		**File reference**	V2 - forecasting
Prepared by	Wenjie Fan	**Approved by**	Graham Long
Subject	**Colindale London Underground Station space requirement**		

1 Introduction

1.1 This note details the static analysis carried out on Colindale London Underground (LUL) station according to LUL Station Planning Standards and Guidance (SPSG 1-371). Following a description of the demand and other input data, this note sets out the station capacity requirements under normal and emergency evacuation conditions for the following elements:

- Ticket gates and ticketing;
- Run-offs and concourse areas;
- Passageway and stair widths;
- Platform widths and boarding/alighting with reference to line loads.

1.2 This second issue takes into account comments received by TfL on an earlier draft and potential mitigation identified by the consultant team. In summary, the revisions refer to the following:

- Further analysis of gateline requirements;
- Investigating the potential impacts of relocation of the stairs;
- Further consideration of standing loads on trains.

2 Information used to calculate the requirements

2.1 The ticket hall at Colindale station is shown in Figure 2.1; the station is served by the Edgware branch of the Northern Line.

Figure 2.1: Colindale ticket hall

2.2 RODS 2006 smoothed station flow data indicates that the great majority of demand at Colindale is towards central London in the AM Peak, with the reverse journey the most popular in the PM Peak period.

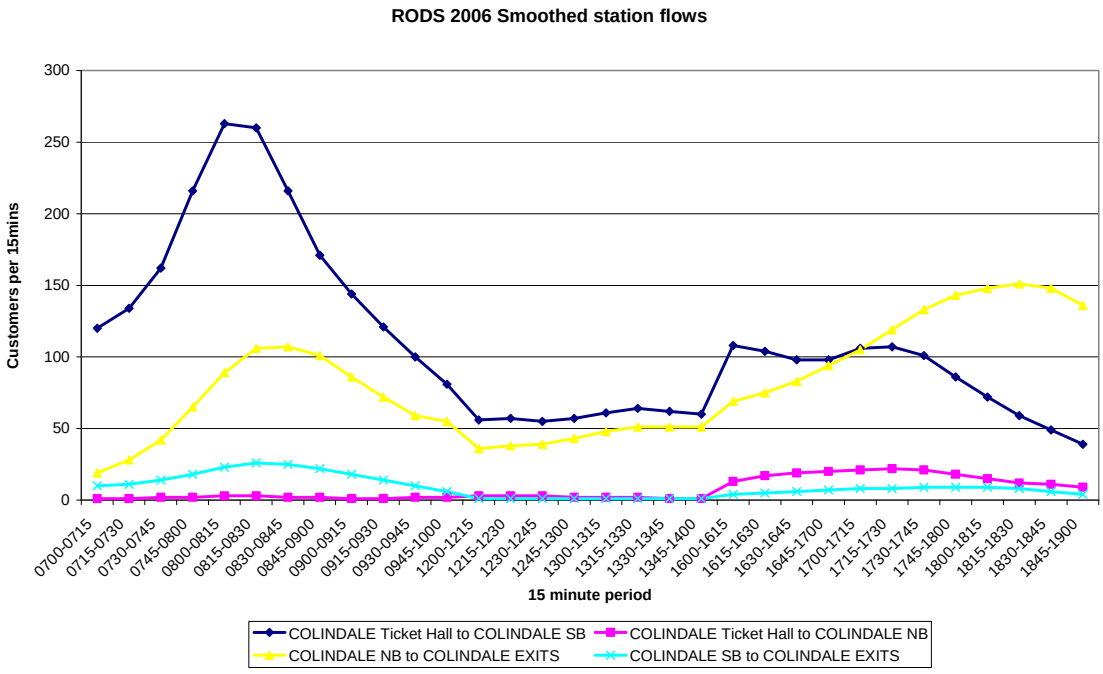

Figure 2.2: 2006 RODS smoothed station flows

2.3 RODS data (Table 2.1) has been compared with standard peak factors (Table 2.2); the higher of the two (as shown in Table 2.3) were used as inputs to the station sizing calculations.

Table 2.1: 2006 RODS smoothed station flows

	07:00-10:00	Peak Hour	Peak 15 Mins	Peak 5 Mins
COLINDALE T H to COLINDALE SB	1988	910	263	88
COLINDALE T H to COLINDALE NB	22	10	3	1
COLINDALE NB to COLINDALE EXITS	829	403	107	36
COLINDALE SB to COLINDALE EXITS	197	96	26	9

Table 2.2: LUL Standard peak flow factors

	Zone 4
3 Hours to Peak Hour	0.48
Peak Hour to Peak 15 mins	0.27
Peak 15mins to Peak 5 mins	0.4

Table 2.3: Current year AM Peak period demand

	From	Ticket Hall	Ticket Hall	NB	SB
	To	SB	NB	EXITS	EXITS
Peak hour	Calculated	954	11	398	95
	RODS data	910	10	403	96
	Inputs	954	11	403	96
Peak 15 min	Calculated	258	3	107	26
	RODS data	263	3	107	26
	Inputs	263	3	107	26
Peak 5 min	Calculated	103	1	43	10
	RODS data	88	1	36	9
	Inputs	103	1	43	10

2.4 For the PM Peak, the equivalent values are as follows:

Table 2.4: Current year PM Peak period demand

	From	Ticket Hall	Ticket Hall	NB	SB
	To	SB	NB	EXITS	EXITS
Peak hour	Calculated	493	95	674	40
	RODS data	408	82	583	34
	Inputs	493	95	674	40
Peak 15 min	Calculated	133	26	182	11
	RODS data	108	22	151	9
	Inputs	133	26	182	11
Peak 5 min	Calculated	53	10	73	4
	RODS data	36	7	50	3
	Inputs	53	10	73	4

2.5 It is notable that for the peak movement (southbound in the morning peak), the standard factors produce a higher peak hour figure than RODS 2006. This assessment has used the higher of the two in order to consider the highest likely demand levels.

2.6 Peak hour (0800-0900 and 1700-1800) trips forecast to be generated by developments in the Colindale area, additional to current trips, are summarised in Table 2.5. These reflect land use assumptions and trip rates recorded in Colin Buchanan spreadsheet 'Colindale land uses and trips - all modes v4.xls' (24 June 2008).

Table 2.5: Additional peak hour LUL trips

	TOTAL TRIPS			
	AM		PM	
	From station	To station	From station	To station
2011	129	486	316	211
2016	839	1124	935	810
2021	978	1662	1269	1045

2.7 The College development on the hospital site generates significant in-bound (contra the current peak) trips from 2016 onwards. The estimated passenger movements have been assigned to the northbound/southbound LUL direction in proportion to current peak hour movements, summarised in Table 2.6.

Table 2.6: RODS entry/exit proportions

	AM Peak Hr RODS	% Of Entry/Exit	PM Peak Hr RODS	% Of Entry/Exit
COLINDALE T H to COLINDALE SB	910	99%	408	83%
COLINDALE T H to COLINDALE NB	10	1%	82	17%
COLINDALE NB to COLINDALE EXITS	403	81%	583	94%
COLINDALE SB to COLINDALE EXITS	96	19%	34	6%

2.8 Adding these to 2006 observed data results in the values shown in Table 2.7. Standard factors have been applied to generate 15 minute and 5 minute flows.

Table 2.7: Peak period Colindale forecasting flows

AM Peak (07:00-10:00)	2006			2011			2016			2021		
	Hourly	15 min	5 min	Hourly	15 min	5 min	Hourly	15 min	5 min	Hourly	15 min	5 min
COLINDALE T H to COLINDALE SB	954	263	103	1435	387	155	2066	558	223	2598	702	281
COLINDALE T H to COLINDALE NB	11	3	1	16	4	2	23	6	2	29	8	3
COLINDALE NB to COLINDALE EXITS	398	107	43	507	137	55	1081	292	117	1193	322	129
COLINDALE SB to COLINDALE EXITS	95	26	10	121	33	13	257	70	28	284	77	31
PM Peak (16:00-19:00)	**2006**			**2011**			**2016**			**2021**		
	Hourly	15 min	5 min	Hourly	15 min	5 min	Hourly	15 min	5 min	Hourly	15 min	5 min
COLINDALE T H to COLINDALE SB	493	133	53	669	181	72	1167	315	126	1363	368	147
COLINDALE T H to COLINDALE NB	95	26	10	130	35	14	231	62	25	270	73	29
COLINDALE NB to COLINDALE EXITS	674	182	73	973	263	105	1557	420	168	1873	506	202
COLINDALE SB to COLINDALE EXITS	40	11	4	57	15	6	91	25	10	110	31	12

Table 2.8: Peak period Colindale forecasting flows +20%

AM Peak (07:00-10:00)	2006			2011			2016			2021		
	Hourly	15 min	5 min	Hourly	15 min	5 min	Hourly	15 min	5 min	Hourly	15 min	5 min
COLINDALE T H to COLINDALE SB	954	263	103	1531	412	165	2288	617	247	2927	789	316
COLINDALE T H to COLINDALE NB	11	3	1	17	5	2	25	7	3	32	9	3
COLINDALE NB to COLINDALE EXITS	398	107	43	529	143	57	1217	329	131	1352	365	146
COLINDALE SB to COLINDALE EXITS	95	26	10	126	34	14	290	78	31	322	87	35
PM Peak (16:00-19:00)	**2006**			**2011**			**2016**			**2021**		
	Hourly	15 min	5 min	Hourly	15 min	5 min	Hourly	15 min	5 min	Hourly	15 min	5 min
COLINDALE T H to COLINDALE SB	493	133	53	704	190	76	1302	352	141	1537	415	166
COLINDALE T H to COLINDALE NB	95	26	10	137	37	15	258	70	28	305	82	33
COLINDALE NB to COLINDALE EXITS	674	182	73	1032	279	111	1734	468	187	2112	570	228
COLINDALE SB to COLINDALE EXITS	40	11	4	61	16	7	102	27	11	124	35	13

2.9 The Northern Line operates at a frequency of 20 tph (trains per hour) in each direction, using 6 car 1995 rolling stock, with a total capacity of 248 seated passengers and 548 standing (at 5/sq m) or 438 standing (at 4/sq m) As indicated in Table 2.9, a 20% enhancement to capacity is scheduled to be introduced by 2016.

Table 2.9: Train frequencies (trains per peak hour)

	2006	2011	2016	2026

Northbound	20	20	24	24
Southbound	20	20	24	24

2.10 The station has been assessed using LUL AutoCAD drawings (dated 2001) N025 – 06s, N025 – 05s, N025 – 04s, and N025 – 03s.

2.11 These have been verified by selective on-site measurements and photographs. The following calculated requirements refer to SPSG paragraph numbers in order to clarify the approach taken.

3 Ticket hall and passageways

3.1 The required number of gates was calculated using the formula from SPSG in 3.3.2.4 and then compared to the current number of UTS gates.

Table 3.1: UTS Gateline

	Current	2006	2011	2016	2021
Entry gates	2	1	2	2	3
Exit gates	2	1	1	2	2
Additional gates		1	1	1	1
Total gates (plus 1 manual gate)	4	3	4	5	6

3.2 The calculated gateline requirement is summarised below. In 2016, the calculated requirement of 1.8 and 1.45 are both well below the 2in/2out capacity currently provided. According to LUL standards another gate should be added.

3.3 The manual (or a bi-directional wide-aisle gate) would add a further 7 passengers per minute capacity (or around 0.28 of a standard UTS gate). It may be, with reference to the 2021 scenario, that 2 gates plus a manual gate may be sufficient to handle the forecast demand. The rapid growth in trips with Colindale as a destination suggests (even allowing for the fact that there is a pillar in the way) that the two exit gates are required during the AM Peak. It is therefore unlikely that LUL could assign the gates 3in/1out during the peaks, for instance.

Table 3.2: Gateline calculation

	Current	2006 round	Calc	2011 round	Calc	2016 round	Calc	2021 round	Calc
Entry Gate	**2**	1	0.83	2	1.25	2	1.80	3	2.27
Exit Gate	**2**	1	0.64	1	0.81	2	1.45	2	1.60

3.4 The results show that sufficient gates are provided until 2011. In 2021 two additional bi-directional UTS gates are required; space for this within the current configuration of gates is constrained by staff accommodation, an electrical equipment room at the south eastern end of the gates, and a roof support at the centre of the gateline.

3.5 Using standard widths in SPSG Section 3.3.2, the minimum gateline width is 4.81m (using slimline gates) or 5.59m (using pneumatic gates), plus 1.7m for a manual gate. We have noted in paragraph 3.2 that the additional gate requirement is due primarily to 'rounding up' and to the addition of a gate on top of this requirement. While this may be required, it is also possible that the addition of just one gate above the current requirement could also be sufficient.

Figure 3.1: Electrical equipment room 1/661

3.6 The number of Ticket Issuing Windows (TIWs) and Passenger Operated Machines (POMs) was calculated using formula from 3.7.2.1 and 3.7.2.2 and this was compared with current ticketing provision. The minimum queuing distance required is stated in 3.7.6.1.

Table 3.3: Ticket issuing requirements

	Current	Required 2006	2011	2016	2021
Ticket Issuing Windows	2	2	2	3	4
Passenger Operated Machines	2	1	1	2	2
Ticket Machine Queue 1 (m)	3.9	4	4	4	4
Ticket Machine Queue 2 (m)	2.8	4	4	4	4
Ticket Issuing Window Queue (m)	3.8	4	4	4	4

3.7 The standards indicate the need in 2006 for 1 POMs and 2 TIWs, which the station has, in addition to an assistance window. The Station has sufficient TIW and POM under the current year scenario. In the future, additional TIW and/or POM capacity is likely to be required.

3.8 The ticket machines are located in close proximity to the UTS gateline and there is insufficient queuing space provided (a minimum of 4m clearance is required). This can result in congestion in the AM peak as illustrated in Figure 3.2, a situation that will worsen at higher demand levels.

Figure 3.2: Ticket queuing photo

3.9 The run-offs within the station were calculated and compared to measurements taken within the station, using the formula from SPSG in 3.4.4 and Table 3.4.1. The station falls into the category of having light levels of flow; the current layout provides sufficient run-off for current requirements.

Table 3.4: Run-offs (m)

	Current	Minimum Standard
Staircase to Passageway	6.6	4
Gateline to Street	8.1	6
Gateline to Passageway	5.1	4

3.10 The size of the concourse area within the station was calculated using the formula under 3.6.1 in SPSG and compared to the current concourse area. There is sufficient area to cater for demand, although as noted above the layout of the ticket hall facilities does not provide sufficient queuing space.

Table 3.5: Unpaid concourse

	Current (m^2)	Required 2006	2011	2016	2021
Concourse area m^2	88.4	26.6	37.4	61.7	73.9

3.11 The passageways were compared to calculated minimum widths taken from 3.10.2.1 within SPSG. The critical passageway is the bridge (at 4.5m).

Table 3.6: Passageways

	Current (m)	Required 2006	2011	2016	2021
Passageway (stair to gate-line)	4.5	1.3	1.5	2.1	2.4

3.12 The minimum width of the passageways required by 1-371 is 2m, the current widths are sufficient.

3.13 The staircase width was compared with the calculated widths taken from the formula in 3.10.6.1 within the SPSG.

Table 3.7: Staircases

	Current	Required 2006	2011	2016	2021
Staircase Width (m)	4.5	1.0	1.3	2.2	2.4

3.14 The staircase considered is the 4 riser stair in the ticket hall – this provides sufficient width. The measured width of the stairs to platform level (2.35m) is close to the required minimum of 2.4m between handrails. By 2021 the required width rises to 2.4m – the width of one of the platform stairs. Were MIP access to be considered, a portion of the 4 riser stair could be converted to a ramp, with a lift then to platform level. The remaining staircase to platform would then be at capacity by 2021, and the resulting changes to runoffs produced by altering the 4-riser stair would need to be considered.

3.15 The requirements in the ticket hall are illustrated in Figure 3.3.

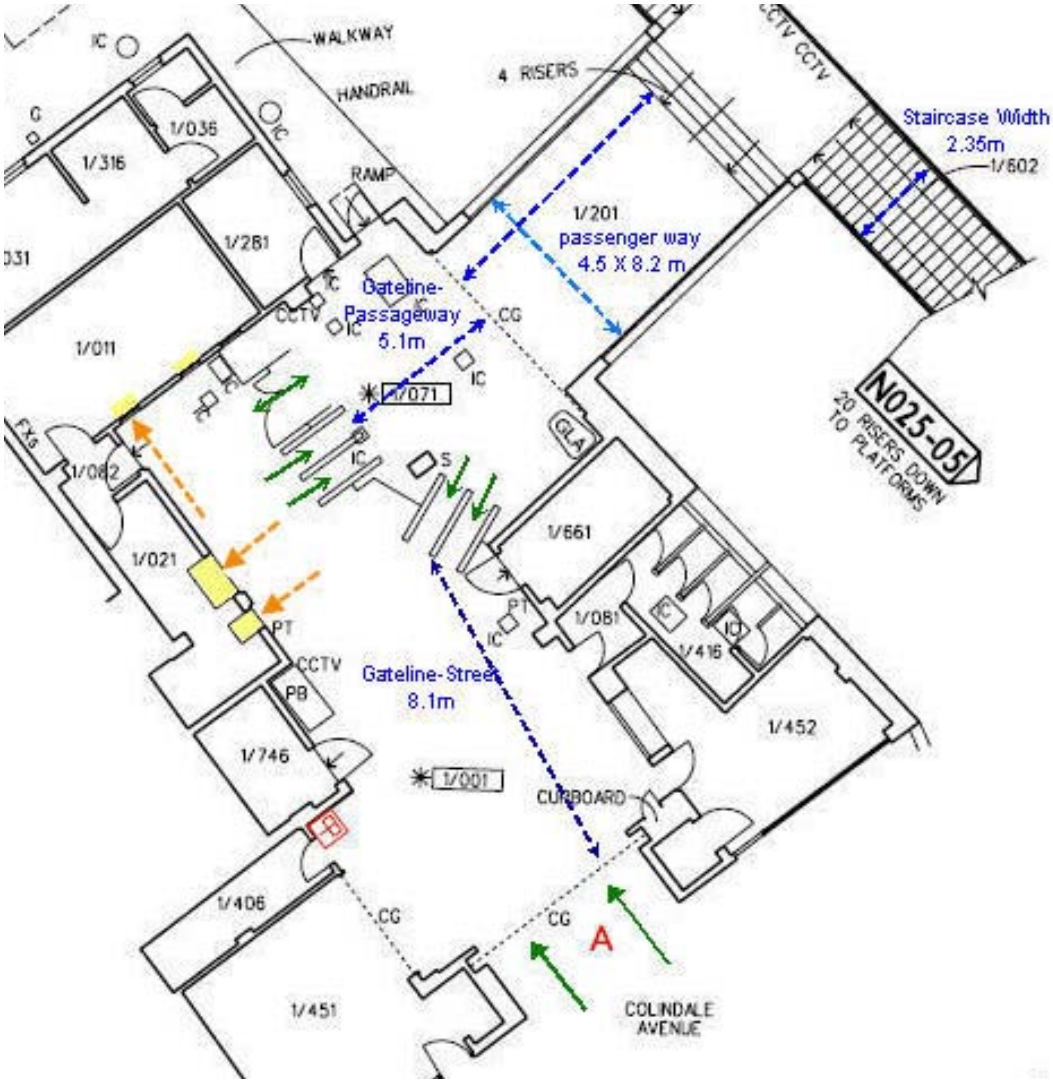

Figure 3.3: Summary of ticket hall requirements

4 Platform level

4.1 The island platform is variable in width, with a minimum of 4.7m between nosings at the platform ends and up to 7.7m at its widest point at the centre of the platform. This is reduced to around 5m effective width to accommodate the stairs. The current provision and calculated requirements are summarised in Table 4.1. An island platform should (considering it as two separate platforms) have a minimum width of 6m, with variation permitted consistent with the general principles shown in Figure 4.1. The platform is compliant with SPSG requirements currently.

Table 4.1: Platform widths – calculated requirement

	Current	Required 2006	2011	2016	2021
SB platform – AM Peak	6	1.42	1.61	1.91	2.13
NB platform – AM Peak	6	1.16	1.21	1.43	1.48
SB platform – PM Peak	6	1.21	1.29	1.49	1.58
NB platform – PM Peak	6	1.30	1.43	1.70	1.84

3.11.2 Platform width - General principles

3.11.2.1 The width of a platform shall be the same along its entire length except in the following circumstances:

a) when space is restricted elsewhere within the station and there is a justifiable need to encroach into the platform area to accommodate equipment rooms and staff accommodation only;
b) for essential structural reasons;
c) to accommodate track geometry.

3.11.2.2 Any variation in platform width shall be subject to the following conditions:

a) width reductions shall be at the less busy parts of the platform as defined below for variable platform width;
b) all parts of the platform shall be visible from all of the entrance and exit points onto the platform;

Figure 4.1: Platform widths – general principles

4.2 Moving the access to the platforms to the south (in conjunction with a possible station move) would reduce platform width at the foot of the stair towards the southern end of the platform to around 4.5m from around 5.0m width in the current layout. This is estimated (as in the Figure below) by translating the current stairs to a new location with the foot of the northern stair immediately below the southern edge of the road bridge (which is 31.5m south of the centre of the current ticket hall bridge).

4.3 As indicated in Table 4.1, the minimum calculated width required is 3.97m, which is less than the 4.5m width where new stair would potentially be located. The narrowing of the platform close to the entry/exit stairs should therefore not pose a significant restriction on passenger movement under the forecast scenarios (assuming that the platform area between the two stairs constitutes a 'less busy part of the platform', ref SPSG 3.11.2.2 a). Dynamic testing of any proposed change in layout may be useful. The change is otherwise not beneficial in so far as it would lengthen evacuation times by around 47 seconds, reduce the potential for even spreading of passengers along the platform, and extend the distance from the northern platform end to exit stair further above the design standard of 45m.

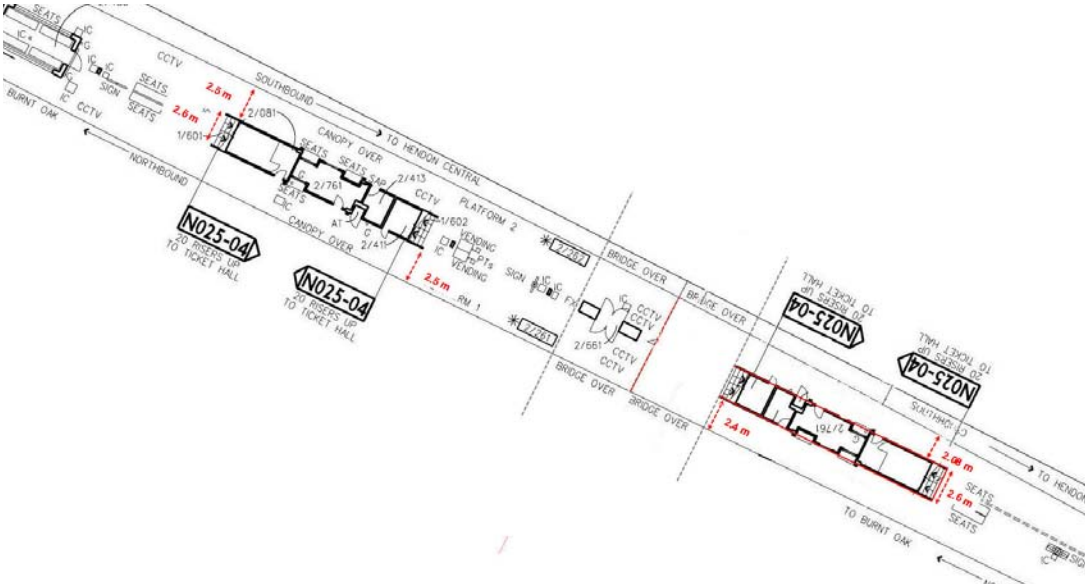

Figure 4.2: Potential station relocation – platform level

5 Line loads

5.1 The current line loads have been reviewed in order to consider the likely impact on line capacity of additional passengers wanting to board trains at Colindale. Figure 5.1 (AM Peak period) and Figure 5.2 (PM Peak period) summarise RODS 2006 smoothed line load data on the average train load arriving at and departing from Colindale.

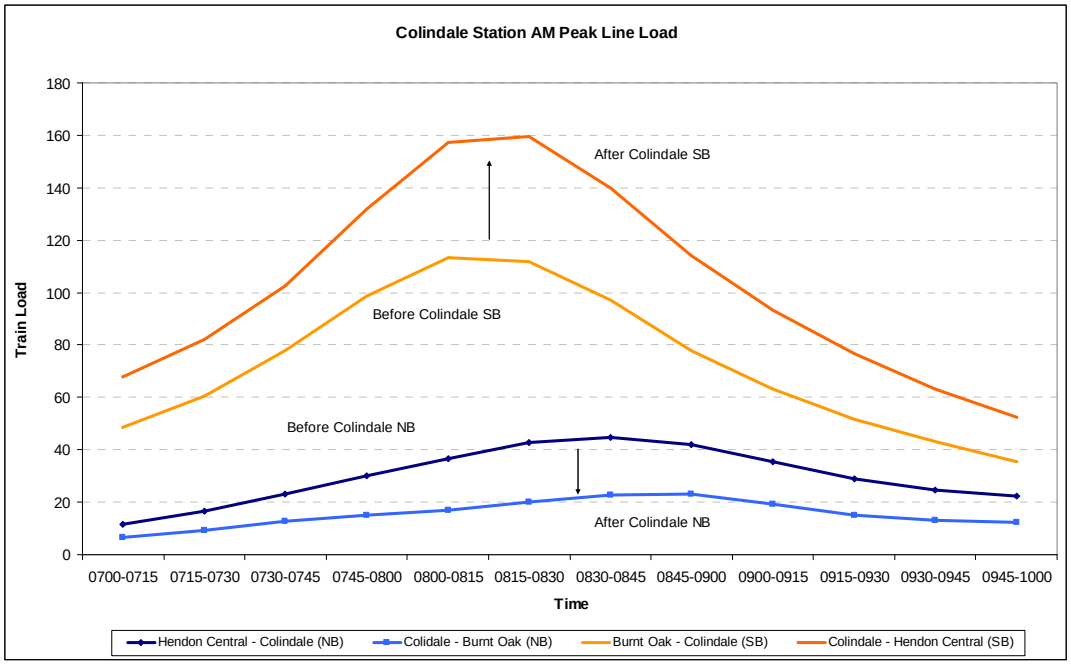

Figure 5.1: AM Peak period Line load

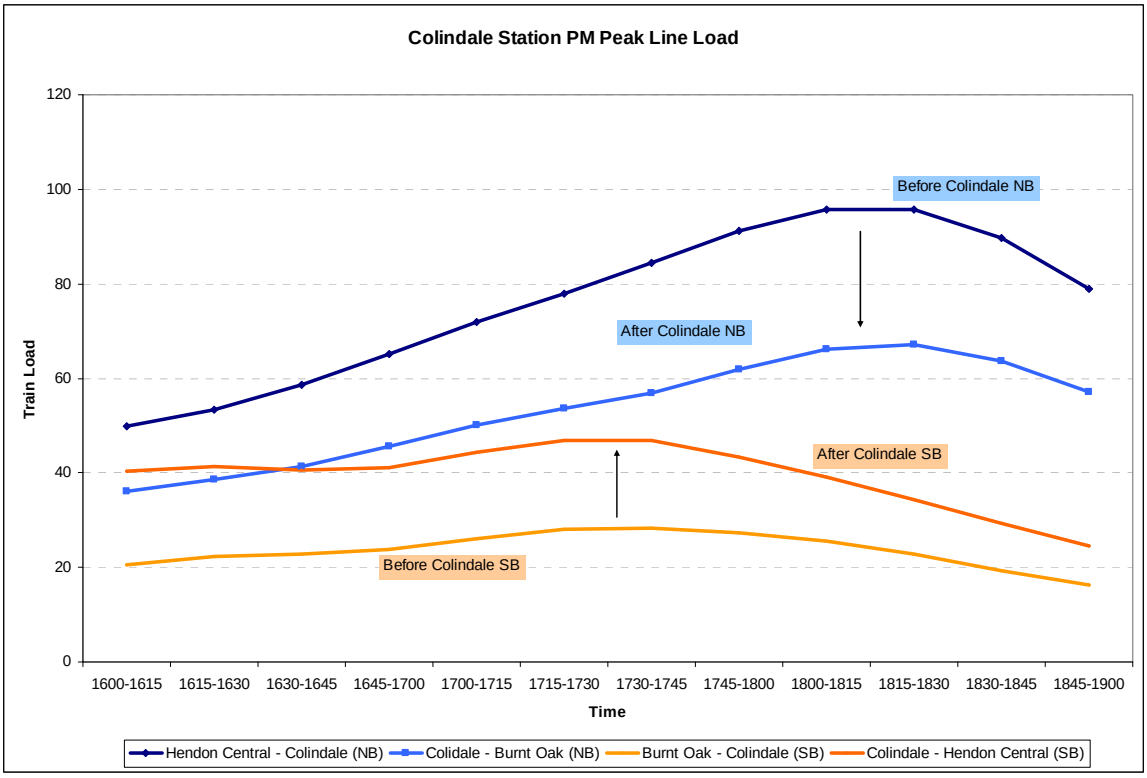

Figure 5.2: PM Peak period line load

5.2 Around 50 passengers are added to individual train loads at Colindale in the morning peak hour, currently. The average train load is such that boarding/alighting behaviour at Colindale is unlikely to impact on train reliability. In the future, as summarised in Table 5.1, a further 73 boarders may be added. The boarding load (123) on southbound trains during the morning peak 15 minutes at Colindale would therefore equate to around 15% of the train capacity of 796 passengers in 2021 or 17.9% of the train capacity if standing capacity is based on a density of 4 passengers / sq m.

Table 5.1: Boarders per train – future years

	AM Peak			PM Peak		
	2011	2016	2021	2011	2016	2021
SB Additional Boarders per Train	25	49	73	9	30	39
NB Additional Boarders per Train	0	1	1	2	6	8

5.3 Further south, the Northern Line runs at above 50% of planned capacity (assuming standing passengers at a density of 5 per sq m) by the time it reaches Chalk Farm southbound during the morning peak hour. On individual trains, and in the event of service disruptions, capacity may be reached, however on average there is sufficient line capacity to cater for current demand. In the future, the significant additional demand generated at Colindale may require further investigation.

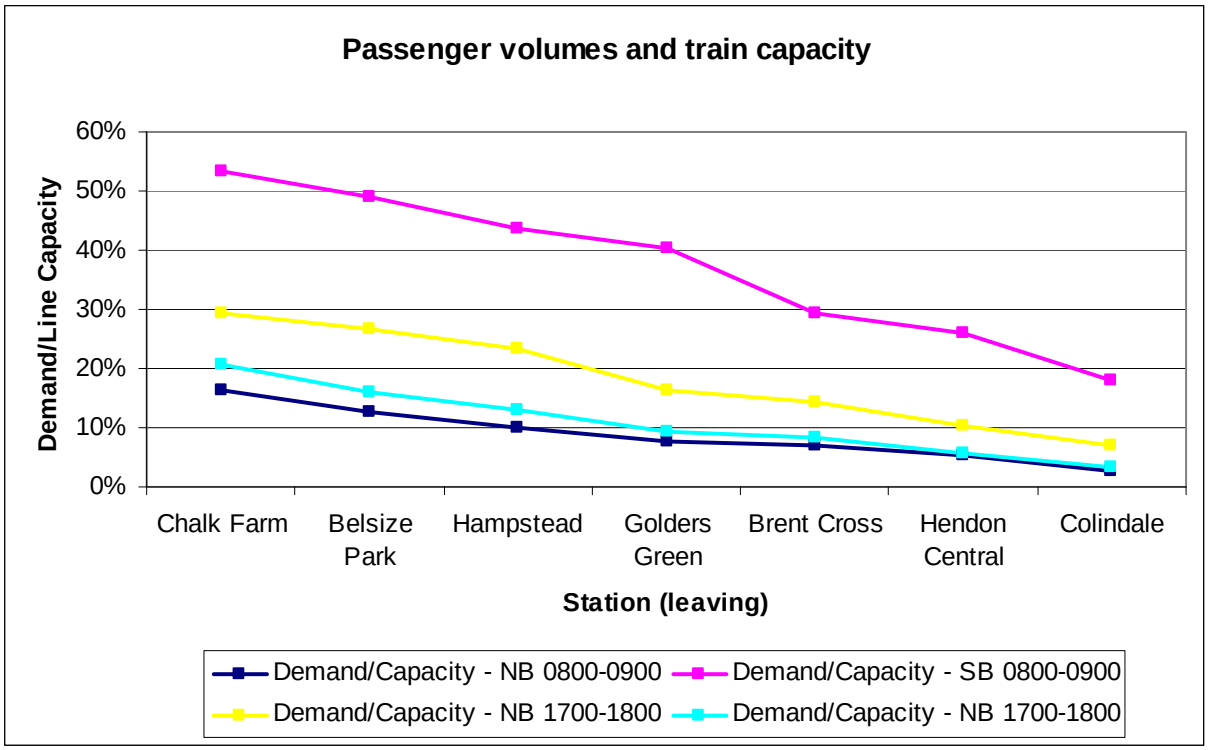

Figure 5.3: Wider line load implications

6 Evacuation

6.1 Colindale has been examined as a surface level station with no 'special events' commonly occurring; under these assumptions it has been reviewed with regard to the following circumstances:

a) Train on fire in station. In this case the evacuation load (platform and train loads) shall be cleared from the immediate area (the platform) within four minutes, and shall reach a fire-protected route within six minutes.

b) Fire within the station structure. In this the affected passenger load shall reach a fire-protected route within six minutes

6.2 The two staircases provide separate means of escape from the platform.

Train on Fire

6.3 The time to evacuate the affected platform in the event of a train on fire were calculated according to section 3.15 of SPSG, which requires that the evacuation load shall be cleared from the immediate area within 4 minutes and shall reach a fire-protect route within six minutes.

6.4 The station evacuation load is calculated for a train arriving at the busiest platform (accounting for train load and waiting platform demand) assuming one cancelled train. The busiest platform is the southbound, and the evacuation load (assuming standing passenger loadings of 5 customers / sq m) is summarised in Table 6.1.

Table 6.1: Evacuation load

	2006(AM)	2021(AM)	2006(PM)	2021(PM)
Train Load (+25% for 2021)	227	236	192	200
Platform Load	80	185	70	163
Evacuation Load	307	421	262	362

6.5 As summarised in Table 6.2, the calculated walk time for a passenger at the end of the southbound platform to clear the station in evacuation conditions is 2.8mins.

Table 6.2: Evacuation time

	Distance (Horizontal Or Vertical)	Walk Speed (m/min horizontal Or vertical)
Platform (m)	65	38
Staircase (m)	6.5	12
Passageway to street (m)	21.6	38
Total walk time (mins)		***2.8***

6.6 At Colindale the area with least capacity on the evacuation route to the unpaid concourse is the ticket gateline; including the manual gate, this has an evacuation capacity of 250 persons per minute.

Table 6.3: Capacity Requirements

	Current	2006 AM	2021 AM	2006 PM	2021 PM
Platform Width (m)	4.7-7.7	1.0	1.3	0.8	1.1
Staircase Width (m)	4.5(2.35)	1.4	1.9	1.2	1.6
Passageway Width (m)	4.5	1.0	1.3	0.8	1.1
# of UTS	5	1.5	2.1	1.3	1.8

6.7 In order to clear the evacuation load through the gateline in less than the calculated walktime, 1.5 gates are required in 2006 and 2.1 gates are required in 2021. The gateline pinchpoint does not therefore pose an additional constraint to evacuation time. The evacuation time falls below that required by SPSG and is therefore compliant in this regard. The evacuation load can clear the platform in under 4 minutes in 2021 with a 2.4m stair.

Station fire

6.8 At Colindale. passengers may only escape from the island platforms by train, or through a single passageway through the concourse. In this respect the station is non-compliant and will remain so without major alteration.

7 Conclusions

7.1 The infrastructure requirements at Colindale Station have been calculated. These have been based upon RODS 2006 smoothed station demand data for the current year, with additional development data calculated as part of Colin Buchanan's AAP study. The forecast development will significantly increase demand through the station, and may have implications for line loads elsewhere (considered in outline in this assessment).

7.2 Table 7.1 summarises the key station infrastructure requirements at Colindale; areas that do not comply with LUL Standard 1-371 are highlighted. Currently there is insufficient queuing space provided in the vicinity of the ticket machines; in future, with additional provision for ticket sales (by POM or TIW) likely to be required, the need for this to be addressed will become more urgent, and the opportunity to locate ticketing sales equipment elsewhere in the ticket hall should be investigated.

7.3 By 2021 it is likely that further station modification would be required, since the gateline as currently configured does not provide sufficient space for the required additional UTS gate. It is possible that this may be provided by some rearrangement of the staff accommodation.

7.4 In the event of a station fire, passengers would need to be evacuated by train, which may be acceptable operationally but does not accord with planning standards. In the event of a train arriving on fire, all passengers can be evacuated from the platform in 4 minutes, and can reach a place of safety in 6 minutes in all forecast scenarios.

Table 7.1: Station Capacity Summary

		Actual	Needed 2006	Needed 2011	Needed 2016	Needed 2021	Minimum Standard
	UTS Gates	4	3	3	4	5	3
	Concourse (m^2)	88.4	26.6	37.4	61.7	73.9	
	Passageway Width (m)	4.5	1.3	1.5	2.1	2.4	2
Run-Offs	Gate line-Passageway (m)	5.1	4	4	4	4	4
	Gate line-Street (m)	6	6	6	6	6	6
	Staircase-Passageway (m)	6.6	4	4	4	4	4
	Staircase-Gate line (m)	9.9 -10.8					6 -10
Staircase	Staircase North Width (m)	2.35	0.5	0.65	1.05	1.2	2.4
	Staircase South Width (m)	2.35	0.5	0.65	1.05	1.2	2.4
Platform	Platform Width	4.7 - 7.7	1.3	1.5	2.1	2.4	6
	SB Platform Length (m)	130.7					106.6 +3
	NB Platform Length (m)	126.0					106.6+3
Tickets	No. of TIW	2	2	2	3	4	2(+1)
	No. of POM	2	1	1	2	2	
	POM1 Queuing Length (m)	3.9	4	4	4	4	4
	POM2 Queuing Length (m)	2.8	4	4	4	4	4
	TIW Queuing Length (m)	3.8	4	4	4	4	4

notes: 1. The total number of gates doesn't include the manual gate

Station Capacity Summary +20%

		Actual	Needed 2006	Needed 2011	Needed 2016	Needed 2021	Minimum Standard

	UTS Gates	4	3	3	5	6	3
	Concourse (m^2)	88.4	26.6	39.6	68.7	83.3	
	Passageway Width (m)	4.5	1.3	1.6	2.3	2.7	2
Run-Offs	Gate line-Passageway (m)	5.1	4	4	4	4	4
	Gate line-Street (m)	6	6	6	6	6	6
	Staircase-Passageway (m)	6.6	4	4	4	4	4
	Staircase-Gate line (m)	9.9 -10.8					6 -10
Staircase	Staircase North Width (m)	2.35	0.5	0.71	1.23	1.49	2.4
	Staircase South Width (m)	2.35	0.5	0.71	1.23	1.49	2.4
Platform	Platform Width	4.7 - 7.7	1.3	1.6	2.3	2.7	6
	SB Platform Length (m)	130.7					106.6 +3
	NB Platform Length (m)	126.0					106.6+3
Tickets	No. of TIW	2	2	2	4	5	2(+1)
	No. of POM	2	1	1	2	2	
	POM1 Queuing Length (m)	3.9	4	4	4	4	4
	POM2 Queuing Length (m)	2.8	4	4	4	4	4
	TIW Queuing Length (m)	3.8	4	4	4	4	4

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Technical Note

Job Title	Colindale Area Action Plan		
Job Number	133131	**Date**	01/08/2008
Copy		**File reference**	+20% sensitivity test
Prepared by	Wenjie Fan	**Approved by**	Graham Long
Subject	**Colindale London Underground Station space requirement, 20% increase sensitivity test**		

1 Introduction

- This note estimates a sensitivity test of a 20% increase on the estimated future demand used in CB's tech note dated 08/07/2008.

2 Sensitivity Test 1, +20%

2.1 Table 2.1 indicates the forecast demand for the future years with a 'sensitivity test' of a 20% increase on the demand estimated in CB tech note dated 08/07/2008

2.2 The increase will cause the following significant changes from the base scenario as indicated in Table 2.4

- The no. of UTS gates required in 2016 and 2021 will both increase by 1 from the base scenario.
- The no. of TIW required in 2016 and 2021 will both increase by 1 from the base scenario.
- The concourse requirement approaches the current provision, as does the run-off between staircase and gate-line.

Table 2.1: Peak period Colindale forecasting flows - base scenario

AM Peak (07:00-10:00)	2006			2011			2016			2021		
	Hourly	15 min	5 min	Hourly	15 min	5 min	Hourly	15 min	5 min	Hourly	15 min	5 min
COLINDALE T H to COLINDALE SB	954	263	103	1435	387	155	2066	558	223	2598	702	281
COLINDALE T H to COLINDALE NB	11	3	1	16	4	2	23	6	2	29	8	3
COLINDALE NB to COLINDALE EXITS	398	107	43	507	137	55	1081	292	117	1193	322	129
COLINDALE SB to COLINDALE EXITS	95	26	10	121	33	13	257	70	28	284	77	31
PM Peak (16:00-19:00)	**2006**			**2011**			**2016**			**2021**		
	Hourly	15 min	5 min	Hourly	15 min	5 min	Hourly	15 min	5 min	Hourly	15 min	5 min
COLINDALE T H to COLINDALE SB	493	133	53	669	181	72	1167	315	126	1363	368	147
COLINDALE T H to COLINDALE NB	95	26	10	130	35	14	231	62	25	270	73	29
COLINDALE NB to COLINDALE EXITS	674	182	73	973	263	105	1557	420	168	1873	506	202
COLINDALE SB to COLINDALE EXITS	40	11	4	57	15	6	91	25	10	110	31	12

Table 2.2: Peak period Colindale forecasting flows - 20% increase on the estimated demand

AM Peak (07:00-10:00)	2006			2011			2016			2021		
	Hourly	15 min	5 min	Hourly	15 min	5 min	Hourly	15 min	5 min	Hourly	15 min	5 min
COLINDALE T H to COLINDALE SB	954	263	103	1531	412	165	2288	617	247	2927	789	316
COLINDALE T H to COLINDALE NB	11	3	1	17	5	2	25	7	3	32	9	3
COLINDALE NB to COLINDALE EXITS	398	107	43	529	143	57	1217	329	131	1352	365	146
COLINDALE SB to COLINDALE EXITS	95	26	10	126	34	14	290	78	31	322	87	35
PM Peak (16:00-19:00)	**2006**			**2011**			**2016**			**2021**		
	Hourly	15 min	5 min	Hourly	15 min	5 min	Hourly	15 min	5 min	Hourly	15 min	5 min
COLINDALE T H to COLINDALE SB	493	133	53	704	190	76	1302	352	141	1537	415	166
COLINDALE T H to COLINDALE NB	95	26	10	137	37	15	258	70	28	305	82	33
COLINDALE NB to COLINDALE EXITS	674	182	73	1032	279	111	1734	468	187	2112	570	228
COLINDALE SB to COLINDALE EXITS	40	11	4	61	16	7	102	27	11	124	35	13

Table 2.3: Station Capacity Summary (Base)

		Actual	Needed 2006	Needed 2011	Needed 2016	Needed 2021	Minimum Standard
	UTS Gates	4	3	3	4	5	3
	Concourse (m^2)	88.4	26.6	37.4	61.7	73.9	
	Passageway Width (m)	4.5	1.3	1.5	2.1	2.4	2
Run-Offs	Gate line-Passageway (m)	5.1	4	4	4	4	4
	Gate line-Street (m)	6	6	6	6	6	6
	Staircase-Passageway (m)	6.6	4	4	4	4	4
	Staircase-Gate line (m)	9.9 -10.8	6.0	6.9	8.1	9.2	6 -10
Staircase	Staircase North Width (m)	2.35	0.5	0.65	1.05	1.2	2.4
	Staircase South Width (m)	2.35	0.5	0.65	1.05	1.2	2.4
Platform	Platform Width	4.7 - 7.7	1.3	1.5	2.1	2.4	6
	SB Platform Length (m)	130.7					106.6 +3
	NB Platform Length (m)	126.0					106.6+3
Tickets	No. of TIW	2	2	2	3	4	2(+1)
	No. of POM	2	1	1	2	2	
	POM1 Queuing Length (m)	3.9	4	4	4	4	4
	POM2 Queuing Length (m)	2.8	4	4	4	4	4
	TIW Queuing Length (m)	3.8	4	4	4	4	4

notes: 1. The total number of gates doesn't include the manual gate

Table 2.4: Station Capacity Summary (20% increase on the estimated demand)

		Actual	Needed 2006	Needed 2011	Needed 2016	Needed 2021	Minimum Standard
	UTS Gates	4	3	3	5	6	3
	Concourse (m^2)	88.4	26.6	39.6	68.7	83.3	
	Passageway Width (m)	4.5	1.3	1.6	2.3	2.7	2
Run-Offs	Gate line-Passageway (m)	5.1	4	4	4	4	4
	Gate line-Street (m)	6	6	6	6	6	6
	Staircase-Passageway (m)	6.6	4	4	4	4	4
	Staircase-Gate line (m)	9.9 -10.8	6.0	7.1	8.6	9.9	6 -10
Staircase	Staircase North Width (m)	2.35	0.5	0.71	1.23	1.49	2.4
	Staircase South Width (m)	2.35	0.5	0.71	1.23	1.49	2.4
Platform	Platform Width	4.7 - 7.7	1.3	1.6	2.3	2.7	6
	SB Platform Length (m)	130.7					106.6 +3
	NB Platform Length (m)	126.0					106.6+3
Tickets	No. of TIW	2	2	2	4	5	2(+1)
	No. of POM	2	1	1	2	2	
	POM1 Queuing Length (m)	3.9	4	4	4	4	4
	POM2 Queuing Length (m)	2.8	4	4	4	4	4
	TIW Queuing Length (m)	3.8	4	4	4	4	4

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