Former Shredded Wheat Factory, Broadwater Rd, Welwyn Garden City

Residential led mixed-use development

TRANSPORT ASSESSMENT

Prepared by: Entran Ltd

On behalf of: Plutus Estates (WGC) Ltd and
Metropolitan Housing Trust

DATE: January 2018

THE WHEAT QUARTER

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WEST OF ENGLAND TRAVEL PLAN AWARDS GOLD AWARD

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Revision	Date	Notes	Author	Checked	Approved
V1	Dec 17	Draft	SOA	RLF	RAF
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1. INTRODUCTION

1.1. This Transport Assessment (TA) has been prepared by Entran Ltd in support of a planning application for the redevelopment of the former Shredded Wheat Factory to provide a residential led mixed-use development. The proposed development is known as the Wheat Quarter. Full details of the proposed development are contained in section 6 of this report.

1.2. The site falls within the jurisdiction of Welwyn Hatfield District Council (WHDC) who are the planning authority and Hertfordshire County Council (HCC) who are the local highway authority.

1.3. This TA has been developed following early discussions with the highway authority; it takes account of the comments received as well as local and national guidance.

1.4. Guidance published by the DfT and the DCLG in 2007 provided advice on the content and preparation of Transport Assessments and Transport Statements. It also assisted stakeholders to determine whether an assessment may be required and, if so, what the level and scope of the assessment should be.

1.5. Previous guidance on the assessment of traffic implications associated with development proposals was contained in the “Guidelines for Traffic Impact Assessment” published by the Institute of Highways and Transportation (IHT) in 1994. Since the IHT guidelines were produced, there has been a significant change in Government policy and general guidance regarding improved sustainability in transport. The fundamental difference between TAs and the old TIAs is that TAs seek to influence modes of travel and assess person-trips rather than vehicle trips, whereas TIAs were based on the principles of “predict and provide” for the private car.

1.6. The 2007 document brought the Guidance on transport assessment up to date with these changes in Government policy, and expanded it to address the assessment of the potential implications of development proposals on the entire transport system.

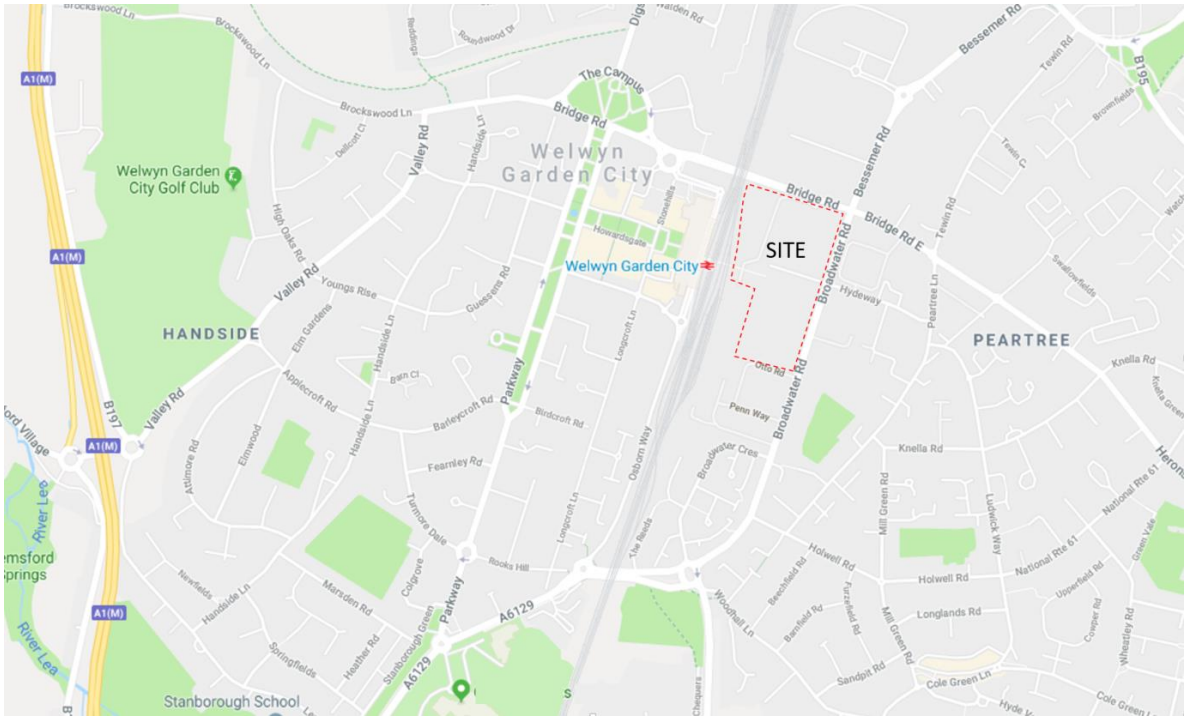
1.7. In 2014 DCLG published a suite of Planning Practice Guidance including advice entitled “Travel plans, transport assessments and statements in decision taking”. The 2007 guidance has been superseded by the PPG as current government guidance on the transport related effects of development but many highway authorities still refer to it as useful advice on detailed matters of transport assessment.

2. SITE LOCATION AND DESCRIPTION

2.1. The proposed development site consists of approximately 10.4 hectares (Ha) of brownfield land and is located on the eastern edge of Welwyn Garden City's town centre on Broadwater Road. The site is bounded by Bridge Road to the north, Broadwater Road to the east, residential developments to the south and the East Coast Mainline to the west.

2.2. The application red line boundary is included as **Appendix A** and a location plan is included as Figure 2.1 below:

Figure 2.1 – Site Location



2.3. The northern portion of the site was previously occupied by the Nabisco Shredded Wheat Factory and includes some distinctive silos, which are listed buildings. The production building is also a grade 2 listed building and has been closed since 2008. Full details of these buildings' history and current planning status are included in the Design and Access Statement and Planning Statement.

2.4. In addition to the East Coast Mainline a warehouse building of approximately 10,000m2 (known as Pall Mall) also abuts the western side of the site.

Means of access

2.5. The site currently takes vehicular access from Hydeway which has a junction with Broadwater Road. There are also a further five dropped-crossing (haulingway) style accesses from Broadwater Road. The site also shares access with the adjacent warehouse via a priority junction onto Bridge Road.

2.6. A short spur road links to a footbridge that connects the site to the Railway Station and to the Howard Shopping Centre on Howardsgate.

3. RECENT PLANNING HISTORY

3.1. The Welwyn Hatfield District Plan was adopted by Welwyn Hatfield Borough Council (WHBC) in 2005. WHBC adopted a supplementary planning document in 2008 to guide the redevelopment of the former Shredded Wheat Factory site. The SPD sets out design guidance for the site in respect of, amongst other things:

- Pedestrian network
- Cycle routes
- Public transport connections
- Vehicular routes, and
- Parking

3.2. WHBC's Draft Local Plan was submitted for examination in May 2017.

3.3. In 2015, Spen Hill Developments Ltd submitted a planning application for the redevelopment of the former Shredded Wheat Factory site. The scheme comprised:

- 850 dwellings (Use class C3, with potential to include 80 (C2) assisted living units)
- 2554m^2 hotel
- 6370m^2 office/research
- 572m^2 convenience/comparison retail
- 834m^2 healthcare
- 650m^2 crèche
- 1990m^2 restaurants/cafes
- 757m^2 community facilities
- 703m^2 gym/dance studio

3.4. The residential component comprised 259 one-bed units, 309 two-bed units 170 three-bed units and 89 duplexes.

3.5. The scheme included 1,092 cycle parking spaces and a total of 1,376 car parking spaces for the various land uses.

3.6. The approved planning application was supported by a Transport Assessment dated February 2015, prepared by Transport Planning Associates (TPA). The TA assessed the transport effects of the proposed development and suggested a range of transport improvement measures including extensive pedestrian and cycle facilities in Broadwater Road and Bridge Road west.

3.7. Planning permission was granted in August 2017 subject to a range of conditions and obligations, including the requirement for extensive off-site highway improvements.

4. LOCAL HIGHWAY NETWORK

4.1. Broadwater Road forms part of the A1000 which links the A1(M), to the north of Welwyn Garden City, to the A414 and Hatfield to the south, before continuing on to north London.

4.2. Broadwater Road has a width of approximately 8.0m and is subjected to a 30mph speed limit, which is enforced by speed cameras. There are a number of roads joining of roads joining Broadwater Road which provides access to residential areas; there are also a number of employments sites with direct access on to Broadwater Road.

4.3. Hydeway had a width of approximately 6.75m and provides access from Broadwater Road to the footbridge over the railway line. The proposed development site lies on both sides of Hydeway and as such there are currently no properties served directly by Hydeway.

4.4. Concrete bollards were positioned along Hydeway in October 2014 to prevent unauthorised parking which had been occurring, predominantly by commuters.

4.5. A significant number of Sheffield loop stands have been provided on the southern side of Hydeway. These are popular with commuters from the east of Welwyn Garden City who park their bicycles on Hydeway and cross the footbridge to the station.

4.6. Bridge Road is a dual carriageway that runs from the east to west, with access to the town centre via Hunters Bridge which crosses the railway and is subjected to a 30mph speed limit. The width of the carriageway varies from 14m to 15.5m as the number of lanes changes from single to two lanes in either direction. There is a central reserve for the majority of its length.

4.7. The junction between Bridge Road and Broadwater Road is a four arm signal controlled junction with two approach lanes on Bridge Road east and three approach lanes on the other three arms. The signals include uncontrolled pedestrian crossings with central refuges on each arm.

5. LOCAL TRANSPORT NETWORK

Pedestrian movement.

5.1. Acceptable journey distances on foot vary depending on the purpose of the journey, the environment in which the journey is taking place and of course the individual walking. Prior to being superseded by the National Planning Policy Framework (NPPF) PPG13 suggested that walking offers the greatest potential to replace short car trips for journeys less than 2km. The IHT guide 'Providing for Journeys on Foot' suggests that for journeys to work a desirable walking distance would be 500m, an acceptable walking distance would be 1km and the preferred maximum walking distance would be 2km, in line with the PPG13 advice.

5.2. The site is accessible to the town centre and surrounding areas and facilities through and extensive footway network, which includes the footbridge linking Hydeway to the railway station. The town centre and railway station are both within approximately 200m form the site, which is within the desirable walking distance for commuting and shopping.

5.3. There are footways along both sides of Broadwater Road, one with a grass verge between the carriageway and the footway, with the width varying from approximately 3.2m to 4m.

5.4. Bridge Road has footways along both sides of the carriageway, with the width varying from approximately 2.6m to 2.9m. The footways continue along Bridge Road East, although the width varies from approximately 2.3m on the north side and 3.9m on the south side.

5.5. Bessemer Road has footways of between 2.6m and 2.9m along both sides of the carriageway.

5.6. There are footways along both sides of Hydeway, with widths of between 2.4m and 2.5m.

5.7. The footbridge which provides access to the railway station has a width of approximately 3m and is currently accessed on the site-side via a flight of steps, restricting access for wheelchair users and, making access for those with pushchairs difficult.

5.8. There are currently two signal controlled pedestrian crossings within 100m walk of the site providing access across Broadwater Road (south of Hydeway and north of Otto Way) as well as uncontrolled crossings at the junction between Broadwater Road, Bessemer Road and Bridge Road. All formal crossing points, whether controlled or uncontrolled, have flush dropped kerns and tactile paving.

5.9. Overall, the footways in the area around the site are generally in a reasonable state of repair and street lighting is provided.

5.10. Figure 5.1 below shows five, ten and fifteen minutes walking isochrones from the site to the surrounding area. This demonstrates that a wide range of facilities and transport hubs are within easy walking distance from the site. This includes the Howards Centre, railway station and bus station. Additional retail, food and drink, pharmacy and health facilities are within easy walking distance as well as education and employment.

Figure 5.1 – Pedestrian isochrones.

5.11. It is evident that a comprehensive range of retail, employment, education, health and leisure facilities are within easy walking distance of the site, further reducing reliance on the car for short journeys. The site is extremely well located to promote travel on foot.

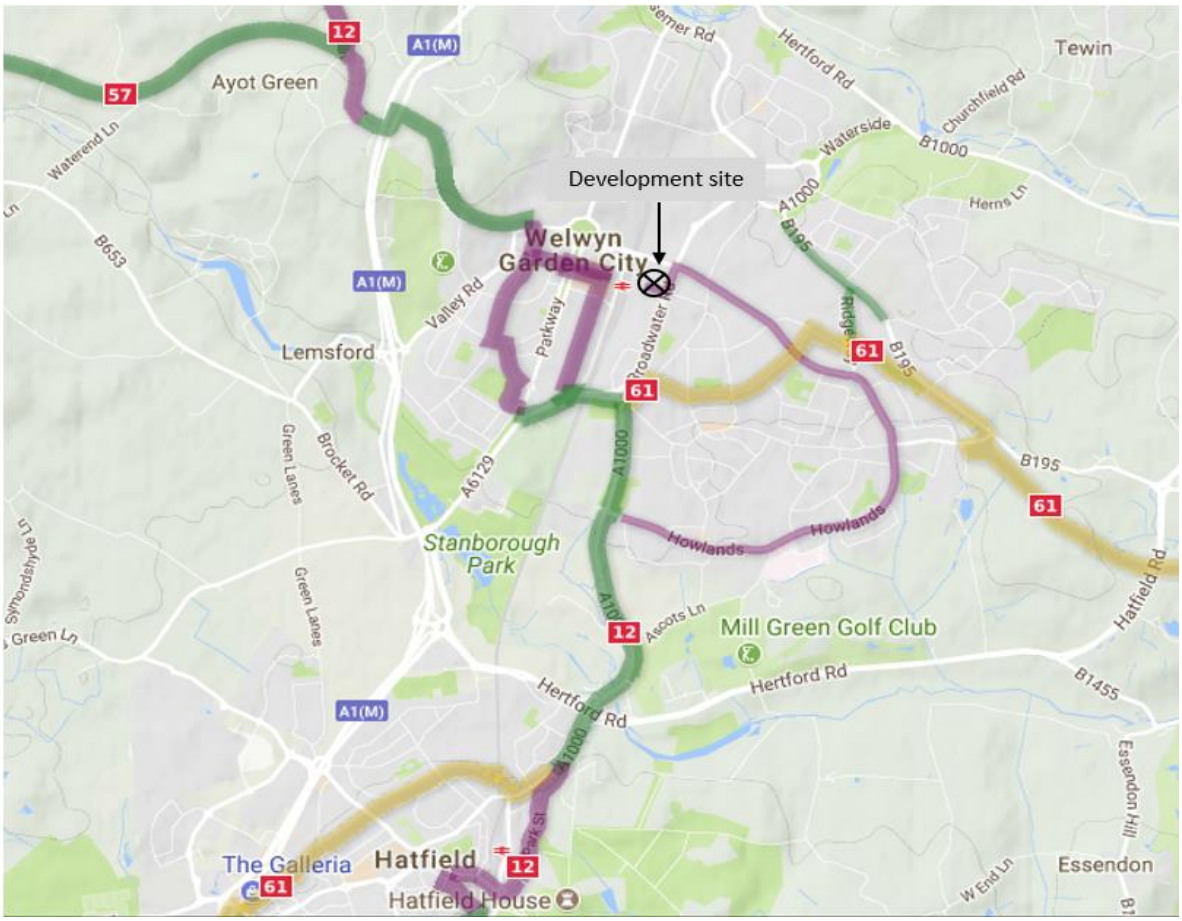
Cycle movement.

5.12. It is widely recognised that cycling has the potential to substitute for short car trips, particularly those that are less than 5km. The site lies within 5km of every point in Welwyn Garden City and as such all local facilities, such as schools, leisure and employment sites are all within an acceptable cycling distance.

5.13. Within the proposed development site, there is currently secure cycle parking for approximately 90 cycles along Hydeway. These stands are heavily utilised by commuters who park on Hydeway and then use the footbridge to access the railway station and Welwyn Garden City town centre.

5.14. Figure 5.2 below shows the site's proximity to the National Cycle Network. This demonstrates that a series of traffic-free (green) and lightly trafficked (purple) cycle routes provide access to a wider catchment by bike. The Great North Way, National Cycle Network Route 12 (NCN12) runs from Enfield Lock in north London to Spalding via Stevenage and Peterborough. NCN12 generally leads north to south and connects Route 61 (Cole Green Way) & 57; which lead east towards Hertford and west towards Harpenden respectively. The site benefits from the National Cycle Network as it is directly to the east and leads to Route 61 & 12.

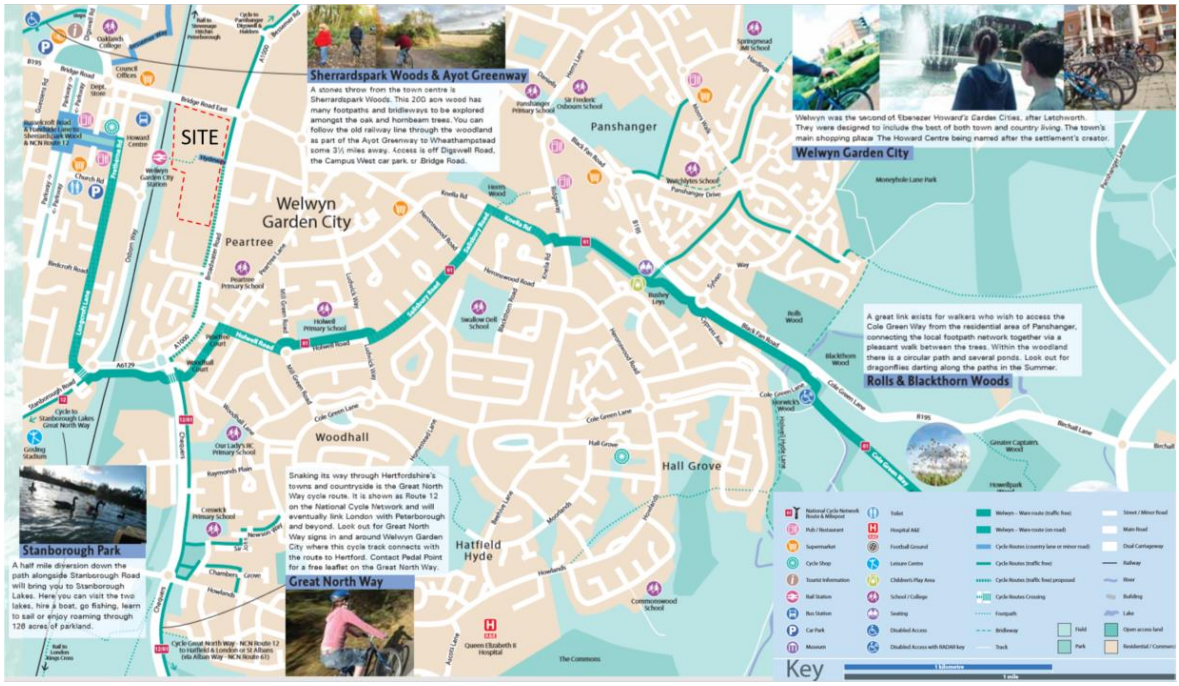
Figure 5.2 – Proximity to National Cycle Network



5.15. Hydeway (west) as it dissects the site is signed as an advisory cycle route to the station. The 'footway' on the southern side of Hydeway is signed as a cycle route. This is somewhat ambiguous as it should be signed as a shared cycleway/footway.

5.16. An extract from the WHBC Cole Green Way cycle map is shown in figure 5.3 below with the development site location indicated:

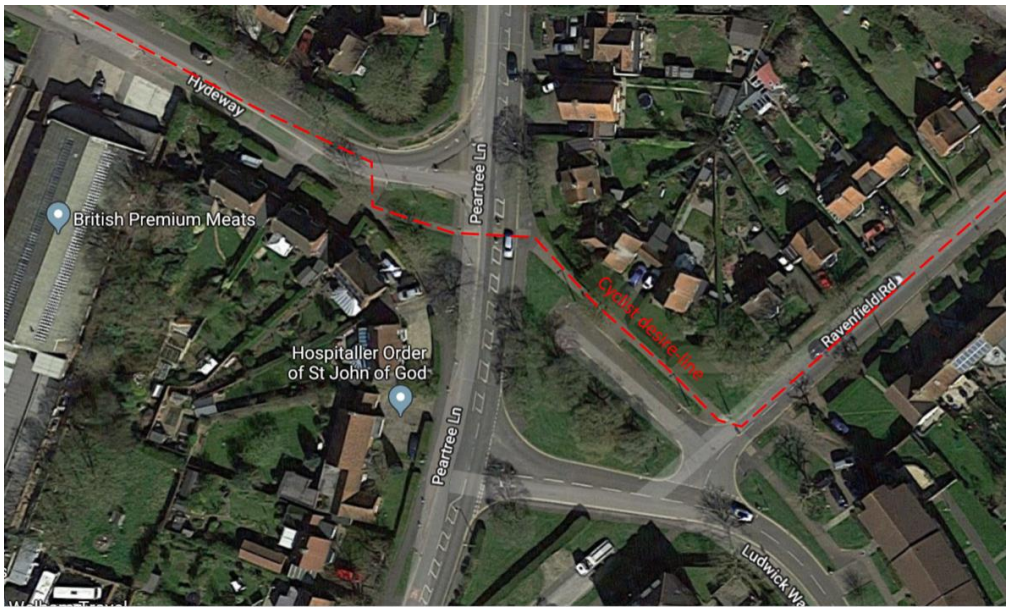
Figure 5.3 – Extract from Cole Green Way cycle map



5.17. This plan shows the existing traffic-free cycle routes in Welwyn Garden City and also shows a proposed cycle route running along the western side of Broadwater Road. This was proposed as part of the consented Shredded Wheat development.

5.18. Additional signage directs cyclist from the junction with Broadwater road, east along Hydeway (east) towards Bridge Road East. We understand from local ward Councillors that this results in cyclists using the footway between Peartree Lane and Ravenfield Road. This is illustrated in Figure 5.4 below.

Figure 5.4 – Cyclist desire line from Hydeway east



5.19. The combination of the National Cycle Network, local cycle routes, proposed routes and lightly trafficked residential roads make proposed development site a suitable location to promote travel by bike.

Public transport

5.20. The nearest bus stops are located Broadwater Road, Bridge Road and Osborn Road. The entire site is within 200m of six bus stops; these are served by 14 bus routes in total. Bus stop on Broadwater Road is served by the bus 601 with majority of the services severed by the bus stop of Bridge Road. The bus services, duration and frequency can be seen on table 5.1. Full, current bus timetables can be found at arrivabus.co.uk, centrebus.info, greenline.co.uk, tfl.gov.uk and unobus.info.

Table 5.1 - Bus route summary

No	Details	Duration	Frequency
201	Welwyn Garden City – Welham Green	0923 – 1004	1 trip per day (Tuesday and Friday)
203	Welwyn Garden City – Watton at Stone	1245 - 1323	1 trip per day (Thursday only)
206	Welwyn Garden City – Panshanger Circular	0845 - 1505	2 trips per day (Tuesday, Thursday & Friday)
242	Welwyn Garden City – Waltham Cross	0814 - 1840	2 hours
300	Hemel Hempstead - Stevenage	0540 - 1953	20 – 30 mins
301	Hemel Hempstead - Stevenage	0547 - 2348	20 – 30 mins
314	Welwyn Garden City – Hitchin	0740 - 0825	8 trips per day
315	Kimpton - Welwyn Garden City	0700 - 1825	4 trips per day
330	St. Albans – Welwyn Garden City	0800 – 1500	30 mins
366	Luton – Welwyn Garden City - Hatfield	0606 - 1907	1 per hour
388	Herford - Welwyn Garden City - Stevenage	0637 - 0825	1 trip (Schooldays only)
401	Welwyn Garden City – Panshanger Circular	0610 - 1950	20 – 30 mins
403	Woodhall and Haldens Circular	0721 - 1904	30 – 40 mins
404	Welwyn Garden City – South Hatfield	0900 - 1755	2 hours
405	Welwyn Garden City – South Hatfield	1000 – 1655	2 hours
601	Borehamwood – St Albans - Welwyn Garden City	0616 - 2026	20 – 30 mins
653	Welwyn Garden City – New Greens	0548 - 2247	20 mins
724	Heathrow Airport - Harlow	0315 - 2209	20 -30 mins

5.21. It is clear that the site is well served by frequent bus service which are located in close proximity to the site. The services in table 5.1 connect with the bus station allowing passengers to connect to the wider local bus network. The bus station is less than 500m walk from the site.

5.22. Works to improve the Bus station are due for completion at the end of March 2018. The new bus station layout will segregate pedestrians and buses in order to improve safety and ensure ease of access for all bus passengers. A custom designed bus shelter will be provided for all six bus stops and will contain seating, lighting and bus information.

Figure 5.5 – Artists impression of bus station improvements

Rail

5.23. The nearest rail station is Welwyn Garden City, located to the west of the site and accessed via the footbridge which connects the site to the town centre. The stations is served by the Great Northern Route (southern end of East Coast Main Line). Welwyn Garden City train station benefits from a bus terminus, taxi rank and secure, covered cycle parking. Trains from Welwyn Garden City provide a direct link to London King's Cross station to the south and Peterborough to the north. The journey times to main destinations can be found in Table 5.2.

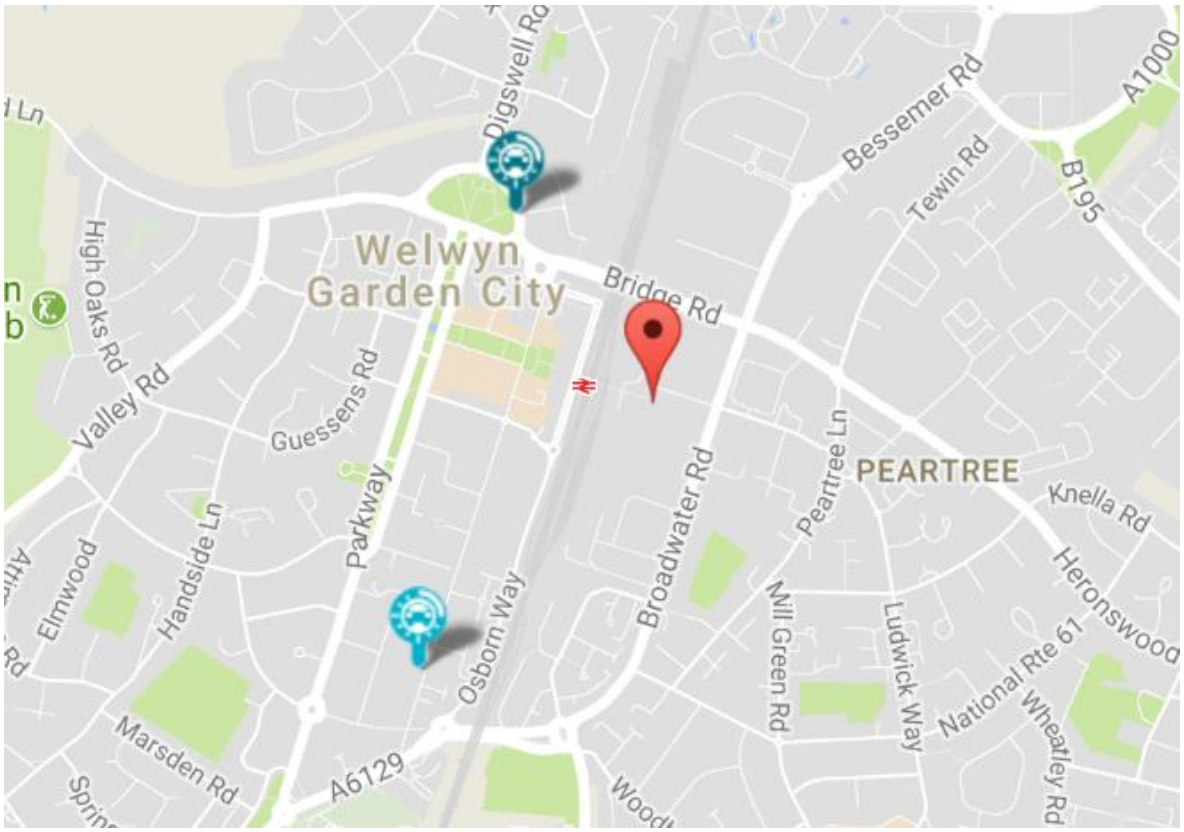
Table 5.2 - Train journeys from WGC train station

Destination	Duration
London King's Cross	23 mins
Moorgate	47 mins
Cambridge	57 mins
Peterborough	1hr 4mins
Stevenage	10 mins

Car Clubs

5.24. There are two Car Clubs operating in the Welwyn Garden City area including E-Car and Hiya Car. The closest of these is the E-Car space in the WHBC car park, the second is a Hiya car space is on Longcroft Lane, 1.1km (15 minutes' walk) from the site.

Figure 5.6 – Existing Car Club locations



Section conclusion

5.25. It is clear that ample opportunities exist to travel to and from the site by foot, by bike, or using local public transport. Some areas have been found that would benefit from improvements for pedestrians and cyclists but overall this is a good site to promote sustainable travel and reduce reliance on the private car.

6. DEVELOPMENT DESCRIPTION AND MEANS OF ACCESS

6.1. The proposed development comprises the creation of a mixed-use quarter including the erection of 1,340 residential dwellings of which 414 (31%) will be affordable dwellings (Use class C3); 114 extra care homes (use class C2); the erection of a civic building including health (D1), community use (D1), office (B1), retail (A1) and food and drink (A3-A5) uses. The alterations, additional and change of use of the Grade II Listed Building and retained silos provide flexible business space (B1), combined heat and power (Sui Generis), International Art Centre (D1) Gymnasium (D2), restaurant/coffee shop/bar (A1-A5), Crèche and Network Rail TOC building. The development includes car and cycle parking, access, landscaping, public art and other supporting infrastructure.

6.2. The development is generally sub-divided into two halves, north and south of Hydeway. The south site comprises residential development only whereas the north site represents the mixed-use area of the development with residential, commercial and community uses.

6.3. The proposed schedules of accommodation are included as **Appendix B.**

6.4. A set of architects' plans are included as **Appendix C.**

Movement strategy

6.5. The adopted SPD provides guidance on the approach to access, linkages and routes into and through the site, Figure 6.1 below shows the masterplan pedestrian and cycle links. This includes new or improved pedestrian and cycle links between the site and the town centre, across the railway, along Bridge Road and along Broadwater Road. These principles have informed the movement strategy for the development.

Figure 6.1 – SPD routes and linkages diagram

Routes and Linkages | Pedestrian Linkages | Cycle Linkages

Means of access

6.6. The movement strategy for the scheme is guided by the SPD and the previous planning permission. On both the north and south sites the central core is to be developed as a pedestrian realm with access for cyclists. Cycle parking locations have been chosen so that cyclists can park their bikes close to the entrance of whichever building they are visiting, but without the need to cycle directly through some of the public squares. As a general principle, movement corridors within these core areas are shares by pedestrians and cyclists but public squares are predominantly pedestrian realms.

6.7. Vehicular access is gained from Bridge Road and Broadwater Road via a number of existing and new cul-de-sac roads. The junction arrangements were agreed through a series of collaborative workshops with HCC and WHBC as part of the previous application. The agreed junction arrangements have therefore been retained as part of the current proposals. These predominantly shared space cul-de-sacs provide direct access to the parking areas but maintain the integrity of the pedestrian and cycle areas in the heart of the development.

6.8. For ease of reference, the site accesses are summarised below in Table 6.1 and illustrated in Figure 6.2.

Table 6.1 – Site accesses

Junction	Access
1	Bridge Road
2	Lind Grove
3	Hydeway
4	Middle
5	Broad Court
6	Southern

Figure 6.2 – Site access reference names and numbers

6.9. This closely matches the access descriptions from the consented scheme; however, Junction 5 was referred to in the TPA assessment as the 'Fourth access' from Broadwater Road. This was likely to cause confusion so as it is located opposite Broad Court it has been re-named for this assessment. It is important to note that all the access roads will remain private but will be subject to a statutory road naming process. The names given to these access in this report are therefore merely for ease of reference, and not intended as future road names. The accesses are described in greater detail below.

Bridge Road

6.10. The existing Bridge Road access will be retained. This will continue to serve the adjacent warehouse and will provide access to the northern part of the site for delivery and service vehicles as well a car park access. The junction will continue to operate as a priority junction allowing all movements.

Lind Grove

6.11. The Lind Grove access, which is the most northerly from Broadwater Road, will be a priority junction with Broadwater Road. The site access arm will be raised to provide a shared surface within the site.

6.12. The junction will provide access to a limited amount of surface level car parking.

Hydeway

6.13. The site currently takes access from Hydeway. The junction will remain a priority crossroads but will become a raised table junction. Within the site Hydeway will be completely remodelled to include a turning area with drop-off facilities for the station, 'echelon' parking along both sides, central parking/waiting suitable for taxis, a tree lined footway along the northern side and a tree lined cycleway along the southern side.

6.14. It has been agreed with the highway authority that existing public highway rights will be extinguished from Hydeway so that it becomes a private road, but that the footway/cycleway along the southern side is retained as a public right of way between Broadwater Road and the railway footbridge. This is illustrated in **Appendix D.**

6.15. Hydeway will provide access into the underground parking beneath blocks 6 and 7 as well as the undercroft parking beneath block 8.

Middle Access

6.16. The middle access from Broadwater Road, will be a priority junction with Broadwater Road. The site access arm will be raised to provide a shared surface within the site.

6.17. The junction will provide access to a limited amount of surface level car parking and the undercroft parking beneath block 9.

Broad Court

6.18. The site access immediately opposite Broad Court will be a priority junction with Broadwater Road. The site access arm will be raised to provide a shared surface within the site.

6.19. The junction will provide access to a limited amount of surface level car parking and the undercroft parking beneath block 10.

Southern access

6.20. The Southern Access into the proposed development from Broadwater Road will be a raised table priority junction, with Broadwater Road forming the main arms. The access road into the site will continue as a shared surface although a separate footway/cycleway will be provided adjacent to it, providing direct access into the south site's central pedestrianised landscape area.

6.21. The junction will provide access to a limited amount of surface level car parking as well as the undercroft parking beneath blocks 11, 12 and 13.

7. PARKING

7.1. As part of the Transport Assessment for the approved development, TPA produced a technical note explaining the parking strategy for the development. That technical note examined WHDC parking standards (including zonal approach), the objectives of the Framework Travel Plan, the differentials between the residential parking demand and commercial parking demand and the need for a Parking Management Plan. That technical note is included here as **Appendix E.**

7.2. The approved proposals provided an average of 1.02 parking spaces per dwelling across the site.

7.3. The principles of the approved parking strategy have been followed for this new proposal; however, the approach to residential car parking better reflects the new unit mix, and the commercial parking provision reflects the changes in proposed commercial uses.

Parking need and harm

7.4. If a development in an inaccessible location provides less parking than it *needs* then the residents' ability to travel would be limited, potentially resulting in social exclusion. That is not the case here. The accessibility audit described in Section 5 demonstrates that residents in the proposed development would have a genuine choice of modes of travel. These residents would not be reliant on a private car to travel to work, education, leisure, shopping or other journeys. The provision of a new Car Club as part of this development means that those residents who choose not to own a car would still have access to one as often as they like. (This is described further below). The issue of parking 'need' is fully addressed by the proposed development.

7.5. In most cases, if a development provides insufficient parking then vehicles may be displaced onto the surrounding highway network resulting in *harm* to the free flow of traffic or the amenity of local residents. In this instance, however, the residential roads surrounding the site are either privately maintained or covered by comprehensive, enforceable waiting restrictions. Figure 7.1 below shows 200m walking routes from the site. The existing waiting restrictions are considered sufficient to prevent any effect on the surrounding residential roads, but if concern is raised by local residents or Councillors then it would be a simple matter for the development to fund any traffic regulation orders (TROs) to reinforce the on-street waiting restrictions surrounding the site. This addresses the issue of harm.

Figure 7.1 – Side roads within 200m walking distance from the edge of the development site

Residential parking

7.6. Car parking associated with the residential components of the development is sub-divided into residents' spaces, car club spaces and visitor spaces. The adopted parking standards promote a progressive introduction of parking restraint depending on the accessibility of the area in which the site is located. The site falls within Zone 2 and should only provide 25-50% of the WHBC maximum standards.

7.7. A detailed review of Census data for the Peartree area indicates an average vehicle ownership per household in the region of 0.6 per dwelling. This represents unrestrained vehicle ownership so it is reasonable to therefore apply a 40% reduction to the baseline maximum resident's parking provision. Visitor and car club spaces will be provided in addition to this number.

DCLG research

7.8. In 2007 the then DCLG commissioned the research paper 'Residential Car Parking Research' which was used to inform PPS3. Whereas PPS3 has been superseded by NPPF this research document is very useful in providing an empirical background to increases or decreases in parking demand depending on proportions of allocated or unallocated spaces, or mixes of unit sizes and tenure. This is discussed below.

7.9. The DCLG research paper shows that if all parking spaces are allocated to individual dwellings then demand for parking spaces increases. This is, in part, a result of parking spaces being allocated to households who do not own a vehicle. In 2011 the Census data showed that around 40% of all households living in flats in the Peartree ward had no vehicle.

7.10. The lowest parking demand is achieved by having all spaces unallocated (i.e. first come, first served) but this is unpopular with some housing developers and is not accepted by some housing associations. The solution is to allocate parking spaces to households rather than to properties. This simply means that a parking space is available for the exclusive use of a household upon request, usually for a fee. This way, households without vehicles are not allocated parking spaces unnecessarily. Such a system requires a management company involvement but this is usually possible where flats are rented or leasehold as in this case.

Car clubs

7.11. Carplus is an independent body which promotes shared mobility including car clubs, 2+ sharing, bike sharing and taxi sharing. Part of Carplus' work is research, best practice and technical advice. They state that on average one Car Club vehicle removes the need for between 10 and 20 private parking spaces.

7.12. Recent developments in Hertfordshire which have included Car Clubs have suggested that each Car Club space would equate to at least 6 car parking spaces. This is well below the advice from Carplus but still demonstrates the benefits of providing Car Club spaces rather than allocated car parking spaces. Each Car Club spaces therefore equates to anything from 6 to 20 residential parking spaces.

7.13. The development will deliver a new community Car Club with a range of spaces across the site, including electric vehicle charging points (EVCP). Three Car Club operators have reviewed the proposed development, assessed the accessibility of the area and calculated the viability of a Car Club in this location. They have confirmed they would be pleased to provide new Car Club vehicles at a ratio of 6% for the residential development. The decision as to which company will operate the Car Club will be down to a commercial decision by the developer. The obligation to provide the Car Club will fall to the developer who will be required to let a contract with a commercial operator which would be expected to include:

- Free 3 year membership for new residents providing access to cars on site, the rest of Hertfordshire and the UK ;
- First car to be delivered by first occupation;
- Bespoke marketing material and membership certificates;
- Briefing of sales staff at the development on the car club and attendance at promotional events;
- 24/7 customer service team;
- 24/7 booking system including mobile booking site (IOS and Android) and iPhone app;
- Vehicle insurance;
- Vehicle maintenance;
- Creation of reports and statistics for the developer and Council;

7.14. This would be fully funded by the developer at no expense to the new occupiers. Importantly, the Car Club would also be available to local residents in the area thereby reducing parking demand beyond the development site itself. Further details of the Car Club are contained in the Framework Travel Plan.

7.15. The provision of the Car Club can be secured by appropriate planning condition.

7.16. In accessible areas Car Clubs allow residents who only require occasional use of a vehicle to make the choice not to own a vehicle themselves. Equally, many two-car households only use 1.1 cars on a regular basis so the provision of a Car Club allows them to own a single vehicle and use the Car Club as often as they like on a pay-as-you-go basis.

Parking space equivalence

7.17. The on-site Car Club will significantly reduce the private residential car parking demand, whilst still allowing residents the ability to use a car for those journeys where they cannot, or choose not to walk, cycle or use public transport. CarPlus suggest that each Car Club vehicle removes the need for anything between 10 and 20 private parking spaces; however, for a robust approach to parking provision, each space has been assessed as only being equivalent to 6 private spaces (lowest available figure). The total residential parking provision can therefore be defined in terms of 'spaces' and 'equivalent provision'. The 'equivalent provision' is the number of parking spaces that would be provided if a standard, less innovative approach was taken to parking without a Travel Plan and without such good Car Club provision on site.

7.18. For a robust assessment, the extra care units (C2) have been included in the figures for the residential accommodation (C3) even though the parking demand is expected to be lower. This will ensure a robust approach to residential parking provision.

7.19. Full car parking calculations are included as **Appendix F** and summarised below:

South site

7.20. The South site is purely residential, comprising **643 flats**; parking provision therefore comprises residents' spaces, visitor spaces and Car Club spaces. Visitor spaces are provided at a ratio of 10% and Car Club spaces are provided at ratio of 6%. For the proposed unit mix this equates to 369 residents spaces, 64 visitor spaces and 39 Car Club vehicles. The total provision is therefore 472 parking spaces and the **equivalent provision is 665 spaces**.

7.21. The maximum parking provision for this unit mix in this location equates to 1.057 spaces per dwelling, including visitor spaces. The proposed equivalent provision equates to 1.034 spaces per dwelling including visitor and Car Club spaces. This makes best use of land, promotes sustainable travel behaviour but ensures sufficient parking provision is made on site for the new residents.

7.22. The majority of parking across the south site is provided in the form of undercroft parking beneath podium landscape areas. This is in accordance with the 2008 SPD which requires parking to be provided sensitively and for undercroft parking to be considered in preference to on-street or open plan parking.

North site

7.23. The North site comprises residential and non-residential. The residential component comprises **811 flats**. In line with the south site methodology Car Club spaces are provided at ratio of 6%. Visitor spaces are calculated at a ratio of 10%, however, many of these can be considered dual-use spaces with the commercial uses.

7.24. For the proposed unit mix this equates to 426 residents spaces, 81 visitor spaces and 49 Car Club vehicles. The total requirement is therefore 556 parking spaces and the **equivalent provision is 799 spaces**.

7.25. The residents and Car Club spaces together equate to 475 spaces (excluding visitors). An additional 46 specific residents visitor parking spaces are provided, equating to a total provision of 521 dedicated residential parking. An additional 35 dual-use spaces are available for visitors outside peak commercial operating periods.

7.26. The maximum parking provision for this unit mix in this location equates to 0.975 spaces per dwelling. The proposed equivalent provision equates to 0.985 spaces per dwelling including visitor and Car Club spaces. This makes best use of land, promotes sustainable travel behaviour but ensures sufficient parking provision is made on site for the new residents.

Commercial

7.27. In addition to the residential parking provision a further 142 car spaces are provided across the North site. Of these 107 are dedicated commercial/community use parking spaces and 35 are dual-use spaces available for residential visitors outside peak commercial operating hours. This complies with the principles established for the approved development scheme and as set out in TPA's Technical Note 13.

7.28. It is important to recognise that whereas the B1 employment uses and arts centre will require dedicated parking provision (at 25-50% of WHDC maximum), other uses (such as convenience retail and crèche) are ancillary to the main development. The primary users of retail units such as convenience stores, sandwich shops, coffee shops, salons etc. will be residents living in the development or employees and visitors associated with the B1 and D2 uses. For this reason the non-residential parking demand is not simply a sum of the parts. The total peak demand for the B1 office, D1 health and community, D2 leisure and D2 arts equates to 142 parking spaces (at 25% of maximum).

7.29. The majority of parking across the north site is provided in the form of basement or undercroft parking. The large basement beneath blocks 6 and 7 dramatically reduces the need to provide on-street or open plan parking. In addition, the car park beneath blocks 2 and 3 is masked from the public squares by landscape structures such as tiered landscaping, steps and ramps. This is a common approach in major cities throughout the UK and Europe and ensures high quality parking provision but minimises the dominance of parking on the public realm. This is in accordance with the SPD requirement for parking to be provided sensitively.

Hydeway

7.30. In accordance with SPD and the approved development scheme Hydeway has been re-modelled to include 16 short-stay parking spaces, oriented at 45 degrees to the carriageway to facilitate a one-way system into and out of Hydeway. This reduces the overall corridor width of Hydeway (compared to parking at 90 degrees) and allows for a tree planting and landscaped areas. These short-stay spaces are expected to allow parking up to 15 minutes. This is sufficient for those collecting passengers arriving at the station and also for those visiting the convenience stores as part of a pass-by trip on their way to or from work (for example).

7.31. In addition, a new over-sized turning circle has been provided at the head of Hydeway. This facilitates the one-way operation but also allows cars to stop against the kerb to set down passengers who may work within the development site or be walking through to the station or town centre. The 'kiss-and-ride' facility was incorporated into the approved scheme and has been retained in the current proposals. The turning circle has been designed so that if a large car is setting down a passenger, another car can still pass on the inside.

7.32. A further six spaces have been provided down the middle of Hydeway. The proposal is that these spaces will be taxi spaces. Hydeway will become a private road so the provision of these spaces on private land will function in a similar manner to taxi rank spaces on Network Rail land at many rail stations. The operation of these spaces will be agreed and secured by means of the Car Parking Management Plan. This will be secured by planning condition.

Parking space details

7.33. All standard car parking spaces have been designed to be a minimum of 2.4m x 4.8m. Those spaces designed for to be suitable for disabled drivers have an additional 1m length and 1.2m width although these areas may be accommodated in the overall aisle width where appropriate. All aisles are a minimum of 6.0m wide where a vehicle is required to reverse into them.

7.34. All Car Club spaces and 20% of all other spaces will be provided with electric vehicle charging points (EVCP). Where practicable, a further 20% will have passive EVCP provision.

7.35. Undercroft residential parking areas in the south site and basement residential parking areas in the north site will have gates set back from the carriageway. These will be electronically operated either by keypad or transponder.

7.36. Vehicle swept path analyses demonstrating the operation of the car parking areas are included as **Appendix G**.

Cycle parking provision

7.37. Cycle parking provision for the proposed development will be provided in accordance with WHBC parking standards.

7.38. For the proposed residential uses cycle parking will be provided at a ratio of one space per dwelling. This has also been applied to the C2 units even though the adopted standard if for a lower ratio than this.

7.39. The total residential cycle parking provision across the Wheat Quarter will therefore be 1454 spaces. In line with local and national guidance the cycle parking has been disaggregated into smaller secure cycle stores close to the residential cores. Best practice suggests that smaller stores are more secure and more likely to be used. The decision to place them next to the residential cores not only makes the journey between store and apartment shorter, it also means that the residents are more likely to be sharing the cycle store with immediate neighbours and those who they meet on a daily basis. This also adds to a feeling of security and increases the usage of the cycle stores.

7.40. All cycle stores will be secure and well-lit. Figure 7.2 below is an extract from the Design and Access Statement and illustrates the disaggregation of residential cycle parking across the site.

Figure 7.2 – Residential cycle parking locations

7.41. The commercial cycle parking provision is divided into Long-stay and Short-stay. For the proposed commercial and community uses the long stay parking requirement is for one space per 10 members of staff on site. For the 'A' class uses, due to the size of the individual units this generally equates to a single space so the long-stay staff cycle parking will be incorporated into the back of house component of the units.

7.42. The B1 office has a requirement for 18 long-stay spaces so these will be provided in the form of 9 stands at ground floor level.

7.43. The D2 arts and leisure uses have a requirement for 11 long-stay staff spaces so these will be provided at ground floor level.

7.44. In addition to the long-stay spaces a total of 180 short-stay spaces will be provided across the development. Of these 100 spaces will be provided to serve the function of the existing Hydeway cycle parking. Around 20 of these will be provided on Hydeway itself as Sheffield loop stands and a further 80 will be provided beneath the new steps up to the footbridge. These will be in a variety of formats including lockers and stands.



7.45. A further 80 short-stay visitor space will be provided across the development, close to the entrances to the non-residential uses. These will be standard Sheffield loop stands, located in well-lit, well supervised areas.

8. FRAMEWORK TRAVEL PLAN

8.1. As stated in the introduction, this TA has been developed to seek to influence modes of travel to the proposed development rather than merely predicting travel patterns and providing mitigation.

8.2. The development will be supported by a four-part Transport Implementation Strategy (TIS) comprising:

- Framework Travel Plan;
- Delivery and Servicing Plan;
- Construction Logistics Plan;
- Car Parking Management Plan

8.3. These are described in the following chapters.

8.4. The development will be supported by a Framework Travel Plan (FTP) for residents, staff and visitors. The full FTP has been submitted in support of this application and is summarised below.

8.5. The development proposals present an opportunity for the FTP approved as part of the consented scheme to be reviewed an updated in accordance the DCLG Planning Practice Guidance note entitled "Travel plans, transport assessments and statements in decision taking" (2014).

8.6. The FTP provides a framework against which individual travel plans will be prepared for the residential element of the scheme. It is likely that individual non-residential operators such as the arts centre will develop their own TP under the aegis of the FTP. The employment use may be occupied by a single employer or a number of smaller businesses, therefore the need for commercial TPs must be flexible enough to accommodate different future circumstances. The provision of a FTP at the planning stage therefore secures the necessary obligations and procedures whilst allowing the individual TPs to be tailored to the needs of the development as it progresses.

8.7. The updated FTP includes an audit of sustainable travel options available to this site. It also includes details of mode-share targets following the implementation of the proposed development.

8.8. The FTP sets out clear objectives and targets and then lists a range of proposed measures. The measures are described as follows:

- **Hard measures** – these are infrastructure provision or improvements;
- **Soft measures** – these are management measure, incentives, marketing initiatives etc.;
- **Secured measures** – these are either existing measures or those to be delivered by the development;
- **Potential measures** – these are an 'arsenal' of measures available to the TP Co-ordinator if required, to be chosen according to survey feedback so that resources can be targeted towards those measures found to be most effective.

8.9. The FTP includes an action plan with a clear schedule of surveys, monitoring and reviews. It also explains how the FTP can be secured and enforced.

8.10. The TP will play a valuable role in supporting the Wheat Quarter's sustainability concepts and extend them to the way in which people travel to, from and within Welwyn Garden City.

8.11. The proposed development will provide appropriate infrastructure to encourage sustainable travel and will also provide information and incentives where practicable.

8.12. The effects of travel choices on our environment, our health and our quality of life are well documented. Sources describe how increases in road traffic have produced unsustainable levels of congestion and pollution. The effects can be felt at a local level through poor air quality, noise and busier roads and at a global level through suggested linkages to climate change. Journeys by road are becoming slower and more unreliable causing problems for business and stress to drivers.

8.13. There has been a significant increase in the proportion of individuals travelling to work by car. Over 80% of car journeys to work in Hertfordshire are driver only. Even a small modal shift in home-work-home journeys away from the car would result in a considerable reduction in traffic congestion at peak times.

8.14. Travel planning must be realistic and should not expect to remove car usage altogether. Instead, an effective travel initiative will maximise the use of sustainable travel to achieve more sensible and appropriate use of the private car. If every car commuter used an alternative to the car on just one day a week, car usage levels for commuting would be reduced by as much as 20% immediately, with commuter parking requirements also reduced by up to 20%. In an accessible location such as the Wheat Quarter, however, low-car or car-free housing is a realistic prospect.

Infrastructure

8.15. A key element of the proposed development is the introduction of appropriate infrastructure to encourage sustainable travel.

8.16. The Site is already highly accessible on foot, by bike and by bus and rail. The transport infrastructure surrounding the Site lends itself to encouraging these modes of travel. The development has therefore been designed to incorporate direct segregated pedestrian access into the site, and to provide secure cycle parking spaces for each dwelling.

8.17. In addition, improvements will be made to the pedestrian realm on Bridge Road and Broadwater Rod as well as links into the town centre to enhance the pedestrian and cycle environment around the site.

Car Club

8.18. Three car club operators have reviewed this site location and the proposed development and have agreed that they would be happy to provide a Car Club as part of this development.

8.19. The car club operator would provide the vehicles and operate the Car Club. Their offer would include:

- Free 3 year membership providing access cars on site, the rest of Hertfordshire and the UK ;
- First car to be delivered by first occupation;
- Bespoke marketing material and membership certificates;
- Briefing of sales staff at the development on the car club and attendance at promotional events;
- 24/7 customer service team;
- 24/7 booking system including mobile booking site (IOS and Android) and iPhone app;
- Vehicle insurance;
- Vehicle maintenance and valeting;
- Creation of reports and statistics for the developer and Council;

8.20. This would be fully funded by the developer at no expense to the new occupiers. Importantly, the Car Club would also be available to local residents in the area. The provision of the Car Club can be secured by appropriate planning condition.

Residents' Travel Pack

8.21. Unlike employment, retail or educational sites it is not possible to dictate to residents how they should travel. For this reason residential travel planning is based on the provision of infrastructure and information rather than the imposition of management procedures. In the case of this proposed residential development the introduction of appropriate infrastructure and the communication of relevant information are structured as a 'Residential Travel Information Pack'.

8.22. It will be the responsibility of the developer to ensure that residents are provided with an information pack containing details of the Car Club, public transport timetables and maps, as well cycling and pedestrian infrastructure when they move in to the flats.

8.23. The site's communal areas will be maintained by a management company. The management company will be obliged to provide an update to the 'Residents Travel Pack' once every twelve months in order that any new residents are made aware of their local transport options.

8.24. The information pack will include information and incentives for all purchasers/tenants. The information will enable the new residents to make informed decisions about their modes of travel. The incentives will be provided by the developer in the first instance and will be dependent on negotiating suitable packages with local shops and services. The likely content of the Residents' Travel Pack will be:

- Car Club membership and information;
- Cycle route information;
- Sustrans leaflets on the beneficial effects of walking and cycling ;
- Free or discounted reflective clothing i.e. cycle bib, arm bands etc.;
- Free or discounted bicycle locks/helmets;
- Developer to negotiate local cycle shop discount ;
- Details of local cycle groups;
- Details of BikeBUDi travel system ;
- Bus route/timetable information;
- Free bus 'taster' tickets;
- Rail timetable and route information;
- Details of car-sharing website (e.g. www.Liftshare.com);
- Details of CarBUDi travel system;
- Notice/message board in foyer of flats to allow people to car share/walk/cycle together (perhaps at night for safety);
- Developer to negotiate preferential rates at local car-hire company;
- Taxi company information – possible discount vouchers for a taxi company;
- Details of TaxiBUDi travel system;
- Supermarket home delivery details.

8.25. This list is not exhaustive or a prescriptive list of what will be in the travel pack but provides details of the likely content of the pack. Details of the final pack will be agreed in partnership with the Council.

9. DELIVERY AND SERVICING PLAN

9.1. This Delivery and Servicing Plan (DSP) highlights the implications of the proposed redevelopment with regard to existing and also proposed servicing constraints. This report takes into consideration the adopted methods of good design practice. This DSP has been prepared in accordance with the Freight Transport Association document *'Designing for Deliveries'* and the guidance document "*Managing freight effectively: Delivery and Servicing Plans'*.

9.2. A DSP will aim to provide consideration of consolidation and collaborative delivery arrangements to help reduce the impact of commercial goods and servicing vehicle activity in and out of premises/developments.

9.3. A refined version of this DSP will be prepared in partnership with XXDC prior to the proposed development being occupied; however, the structure, obligations and principles are included here for agreement prior to determination.

Orientation

9.4. The two parts to the development site include a number of cul-de-sacs, public squares and areas of privately maintained public realm. For ease of reference two orientation plans are included below as Figures 9.1 and 9.2. The service areas for the North site are described as locations A-I and the cul-de-sacs in the South site are referred to as CS1-CS6.

North site.

9.5. The servicing requirements that influence the residential components of the layout are refuse collection and daily deliveries. The layout has been tested for a 4-axle large refuse vehicle. This exceeds the requirement for a 3-axle refuse vehicle as dictated by WHBC. The layout has also been tested for daily deliveries (Post, supermarket deliveries, Amazon parcels etc.) using a 7.5t box van. Residential properties may also have occasional larger deliveries (removal vans, white goods) but these vehicles will operate in the same manner as the refuse vehicles.

9.6. The commercial uses also require deliveries. For the purpose of this servicing strategy we have assumed that the DSP will restrict commercial service vehicles to no larger than 10.7m rigid pantechnicons. These are adequate for the vast majority of commercial uses and have similar geometric requirements to the 4-axle refuse vehicle. For this reason, any swept path analysis of a 4-axle refuse vehicle is also suitable for the large commercial delivery vehicles. No 16.5m articulated vehicles will be permitted to service this site.

9.7. Unlike the south site, on the north site the same servicing areas will be used by all delivery vehicles of all sizes. The following notes therefore describe service areas by block; these areas are to be used by all service vehicles.

9.8. The north site refuse vehicle swept paths are included as **Appendix H.**

Figure 9.1 – North site servicing locations

9.9. Block 1 is serviced from location E at the southern end of Reiss Walk. This is an area of pedestrian realm which will be constructed as a strengthened footway. This area will be for set down and pick up only and will therefore operate as footway/cycleway for 90% of the time, but allow for occasional deliveries and collections. If necessary, the hours can be restricted in the DSP.

9.10. Block 2A is also serviced from location E.

9.11. Block 2B is serviced directly from the western service road in location J.

9.12. Block 2C requires a fire tender to gain access via Reiss Walk. Part of this route is therefore available for deliveries. In order to minimise vehicular use of Reiss Walk, service area D would only be available to refuse and recycling vehicles and occasional large residential deliveries (removal vans etc.) by prior arrangement. Daily deliveries for Block 2C would take place from location B; this requires an element of service management, either in the form of residential concierge or a secure area for parcel delivery and collection.

9.13. Block 3A is serviced from location A which allows a service vehicle to reverse off the access road and reach a point within 10m of the Block 3A bin store. This requires an area of landscaping on the inside of the bend to be no higher than 600mm in order to ensure adequate visibility for the reversing vehicle.

9.14. Block 3B can be adequately serviced from location B.

9.15. Block 4 can be serviced from locations B or D, depending on the internal building layout and occupier requirements. Location C is suitable for taxis or for crèche drop-off/pickup etc. Location C is not suitable for large deliveries.

9.16. Block 5 could potentially be serviced from location F (the head of Hydeway), or from the eastern side of Goodman Square; however, this is not preferred. Hydeway will serve many functions, including set-down for the station and a semi-formal taxi rank. The use of Goodman Square to service Block 5 would still leave residential block 7E without direct service access, thereby requiring a managed solution. The preferred option is therefore to allow limited service vehicles to location G. This area would be similar to area E, laid out as pedestrian realm but managed to allow service vehicle access.

9.17. Blocks 6A, 6C and 6F would be serviced from location I. Block 6E would be serviced from location B.

9.18. Blocks 6B and 6D would be serviced from location H. The original strategy included a turning head to the west of Block 6, however, this has an unacceptable effect on the Louis de Soisson's Gardens and setting of Block 4. The mews street between Blocks 6 and 7 has therefore been designed to allow turning half way along (this will be occasional use only).

9.19. Blocks 7A and 7D would also be serviced from location H.

9.20. Block 7B would rely on kerbside refuse collection directly from Broadwater Road. Daily deliveries from will use service location H or Hydeway (F) as the 15m carry distance would not apply to daily deliveries.

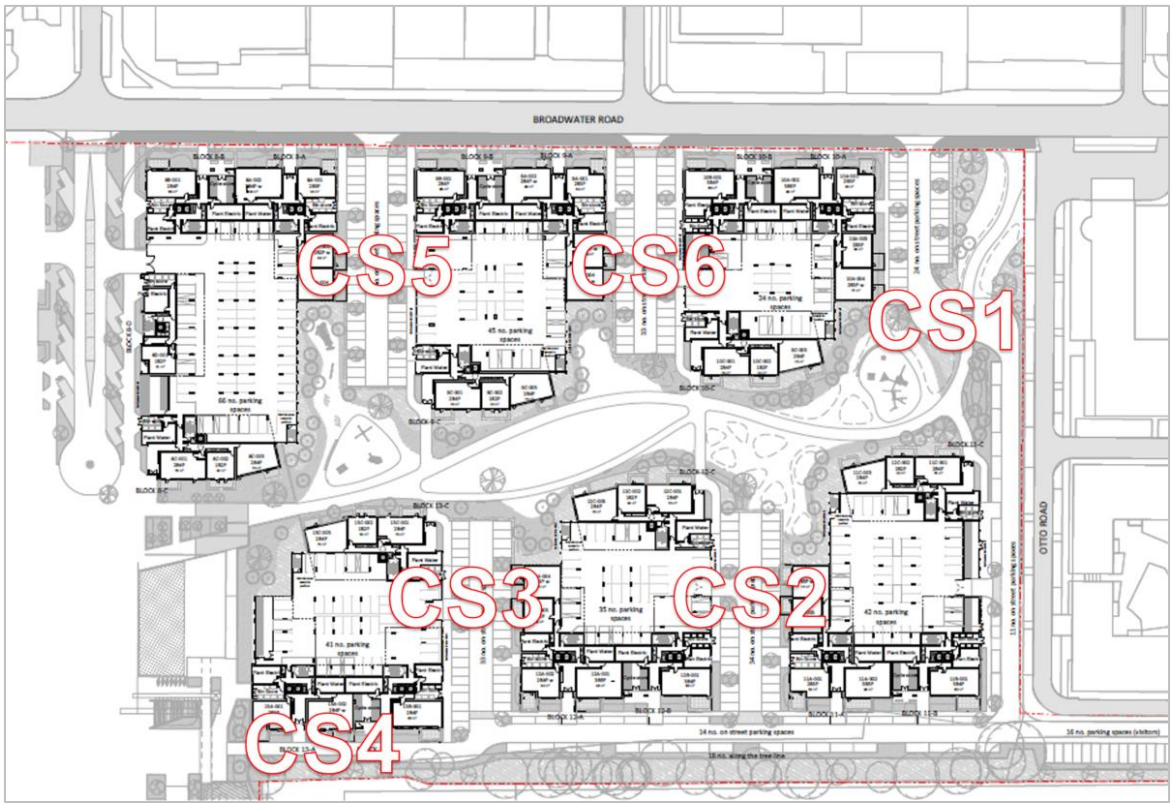
9.21. Block 7C would be serviced from Hydeway.

9.22. Blocks 7E and 7F would use service area G.

South site

9.23. The south site is residential in nature. The servicing requirements that influence the layout are therefore as described above for the north site residential uses.

Figure 9.2 – South site servicing locations



9.24. South site refuse collection swept path analyses are included as Appendix I.

9.25. Cul-de-sacs1, 2 and 3 (CS1-CS3) serve residential blocks 11-13. CS2 and CS3 do not have formal turning heads so the refuse vehicles use the parking entrances to turn. This allows a refuse vehicle

to reach a point within 15m of the bin stores for blocks 11 and 12, as well as 13B. The road CS4 has been down-graded to a Home Zone type area. This route is too long for a refuse vehicle to reverse its entire length to service block 13A. For this reason, as a service area is required in location E on the North site in any case this area can be used for Block 13A refuse collection (and any large deliveries).

9.26. CS5 (middle access) and CS6 (Broad Court) would operate in the same way as CS2 and CS3.

9.27. Whereas refuse and recycling may be collected weekly or every fortnight, the residential development will attract daily deliveries of post, groceries or parcels. Swept path analyses of a 7.5t box van are included as **Appendix J**. These vans can comfortably use the car parking areas for daily deliveries.

Emergency vehicle access

9.28. The internal layout has been assessed to ensure fire appliances (and other smaller emergency vehicles) can gain access to every residential core and every commercial access.

Refuse collection.

9.29. Refuse stores are provided at ground floor level with double-doors directly onto the building frontage. Residents will be able to bring refuse down to ground level where they will have easy access into the refuse stores. The refuse stores will have doors opening onto hard paved areas linking directly to the vehicle access routes. This arrangement ensures the bin stores are no further than 15m from the access roads or service locations. Refuse and recycling bins can be collected directly from the stores and wheeled to the vehicles.

Consolidation

9.30. Residents will be advised of the importance of consolidating deliveries where possible. New residents will be provided with information explaining how they can consolidate deliveries such as supermarket deliveries with their neighbours and how this can deliver cost savings. This accords with WHBC advice.

Hours of delivery

9.31. There are no restrictions on the hours of delivery to other residential or business premises in this area so there is no need for a general restriction on servicing hours. However, on the north site, service locations D and G serve as public realm during the day. Servicing in these locations will generally only be permitted between 7pm and 7am. Servicing in location G may be further restricted during any outdoor events or exhibitions held at the arts centre.

Route management

9.32. The site takes access from Broadwater Road (A1000). There are no height or weight restrictions on this road that would result in HGV diversion routes to or from the site.

9.33. As a principle, all drivers will be advised to use the highest category of road legally available to them and to avoid residential roads where practicable.

First time delivery

9.34. Provisions will be made for first time deliveries. This will ensure that there is a safe and secure location to drop parcels off if residents are unavailable to take receipt of goods at time of delivery. This will reduce the need for return visits.

Promotion of LGV rather than HGV

9.35. Residents will be advised of the benefits of promoting delivery by Light Goods Vehicles. New residents will be provided with a leaflet explaining what information should be provided to delivery companies to maximise the use of small vehicles for deliveries or to advise of appropriate servicing arrangements for larger vehicles. This accords with WHBC advice.

10. CONSTRUCTION LOGISTICS PLAN

10.1. Prior to commencement on site a Construction Logistics Plan (CLP) will be drawn up in partnership with HCC and WHBC and submitted for approval. The CLP will comply with the guidance document *'Building a better future for freight: Construction Logistics Plans'*.

10.2. The Wheat Quarter CLP will:

- Help the construction process comply with NPPF and the Traffic Management Act;
- Demonstrate that construction materials can be delivered, and waste removed in a safe, efficient and environmentally friendly way;
- Identify deliveries that could be reduced, re-timed or even consolidated, particularly during busy periods;
- Help cut congestion on Hertfordshire roads and ease pressure on the environment;
- Improve reliability of deliveries to the site;
- Reduce fuel costs.

10.3. The CLP must include:

- On-site management and design;
- Off-site management;
- Vehicle numbers;
- Vehicle types;
- Hours of delivery;
- Route management;
- Procurement strategy
- Operational efficiency;
- Waste management;
- Road trip reduction; and
- Targets and monitoring.

10.4. The CLP will be a stand-alone document but sit alongside the Framework Travel Plan, Delivery & Servicing Plan and Car Parking Management Plan in a four-part *Transport Implementation Strategy*.

11. CAR PARKING MANAGEMENT PLAN

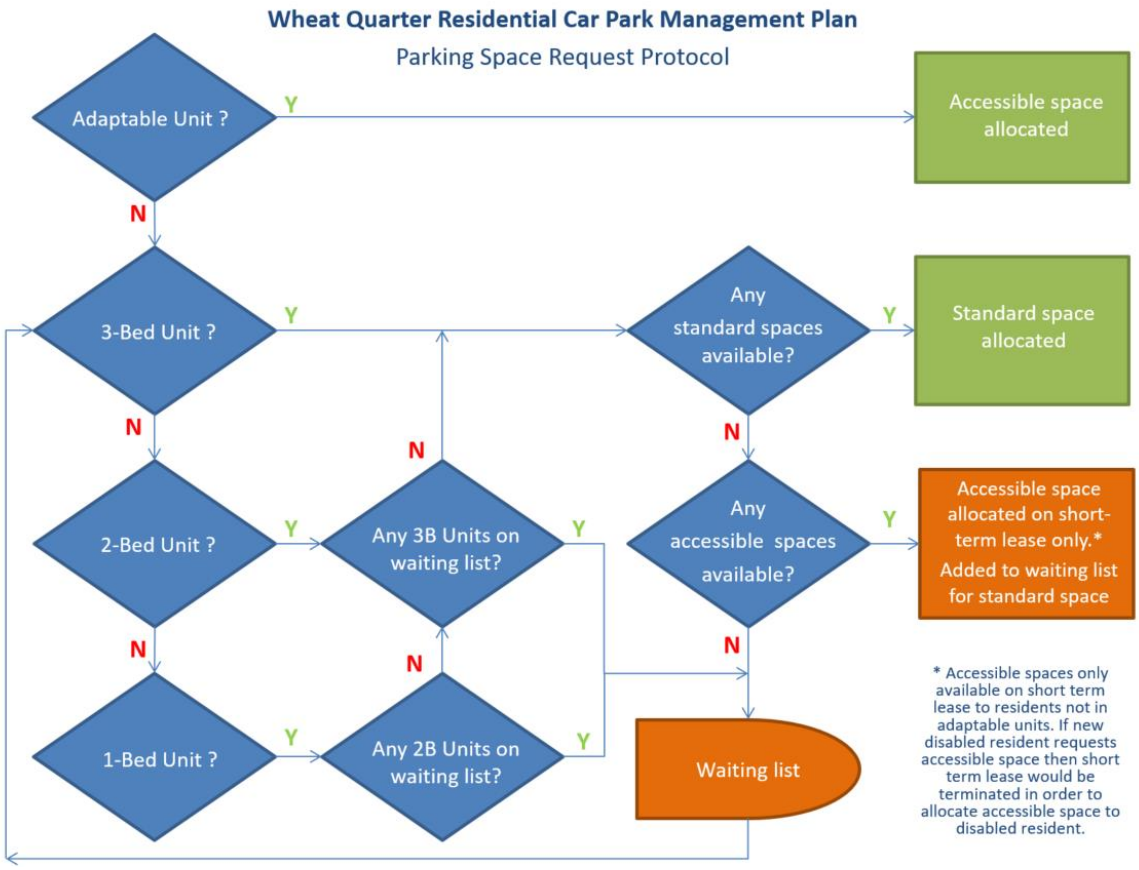
11.1. In line with the previously approved scheme, a Car Parking Management Plan will be prepared and implemented to ensure that only permitted vehicles are able to park within the residential car parks. The main principles of the plan will be:

- Parking spaces will be allocated to individual households;
- All residents vehicles will need to be registered with the Management Company;
- Any unregistered vehicles will only be permitted to park within visitor spaces for a limited time period before being fined, unless booked in by a resident;
- Car Club parking spaces will be provided as part of the development and managed by a private operator;
- All eligible residents will be provided with free Car Club membership for a minimum period of three years.

11.2. The undercroft and basement parking areas will have gates at their entrances. These will be set back from the access routes. The entire Wheat Quarter will be permeable and accessible to pedestrians and cyclists so there will be no perception of any gates communities, but he parking areas will be secure and only accessible by those authorized to do so.

11.3. Parking spaces will be allocated to households on request. Priority will be given to family units. Residents who require an accessible space will be allocated one. Surplus accessible spaces will be available to non-disabled residents on a short-term lease only. A draft allocations protocol is indicated below. The final protocol will be agreed with HCC and WHBC as part of the approved Car Parking Management Plan prior to first occupation.

Figure 11.1 – Draft residents parking space request protocol



11.4. All commercial parking spaces will be managed by the Management Company. It is anticipated that employment spaces will be permit-holder only spaces with an allocations protocol; however, as a proportion of the commercial spaces will be required for visitor parking a system of automatic number plate recognition (ANPR) is being considered, subject to viability. This system would be ideal to allow short-stay free parking (such as Hydeway) where a levy is then imposed for over-staying the maximum period. None of the roads within the site will be public highway and none of the parking areas will be managed by the local authority. The most appropriate means for operating such a system would therefore be to utilise a company such as ParkingEye who manage car parks using ANPR across a range of sectors throughout the UK.

12. TRIP GENERATION

12.1. The impact of the proposed development is determined by comparing the net increase in journeys between the lawful use of the site and the proposed development. Accordingly, the DfT Guidance on Transport Assessment (March 2007) advises at paragraph 4.7 that baseline traffic data should be derived as follows:

*"**Baseline transport data***

- *The quantification of person trips generated from the existing site and their modal distribution, or, where the site is vacant or partially vacant, the person trips which might realistically be generated by any extant planning permission or permitted uses;"*

12.2. The site is currently vacant so the baseline constitutes the trips which would be generated by the extant planning permission. These were set out in full in the TPA Transport Assessment in 2015 and agreed by the Highway and Planning Authorities.

12.3. The transport impact of the proposed development is therefore determined by comparing the journeys associated with the extant use of the site and those anticipated for the proposed use.

Residential

12.4. The 2015 TA prepared by TPA explored the predicted residential traffic generation in detail. It first established the predicted resident population of the proposed development, then established the likely working population. From this information the agreed methodology was to quantify journeys to work by mode and then to establish non-work journeys. The total trips were then distributed onto the highway network.

12.5. This agreed methodology was far more detailed than a conventional assessment of the TRICS database and resulted in a very precise, site related analysis. The same methodology has therefore been followed for this assessment.

12.6. As part of the current proposals, the predicted resident population has been calculated to inform a number of planning considerations including health and education.

12.7. Table 12.1 below shows the assessment of resident population for the proposed unit mix.

Table 12.1 – Resident population

			Owned/shared			Affordable rented			All
	Description	**Location**	**Flat 1B**	**Flat 2B**	**Flat 3b**	**Flat 1B**	**Flat 2B**	**Flat 3b**	**Flats 1-3B**
A	Tenure by bespoke accom type by number of bedrooms	Welwyn Hatfield	1985	2650	294	2783	1398	174	9284
B	All ages by tenure by bespoke accom type by # bedrooms	Welwyn Hatfield	2990	5288	850	3367	2922	477	15894
C= B/A	Average total occ by bespoke accom type by # bedrooms	Welwyn Hatfield	1.51	2.00	2.89	1.21	2.09	2.74	1.71
D	Tenure by bespoke accom type by # bedrooms	Shredded Wheat site (North Site)	466	314	31	0	0	0	811
E= C x D	Estimated total occupants by bespoke accom type by # bedrooms	Shredded Wheat site (North Site)	702	627	90	0	0	0	**1418**
F	Tenure by bespoke accom type by # bedrooms	Shredded Wheat site (South Site)	171	226	15	68	114	49	643
G= F x D	Estimated total occupants by bespoke accom type by # bedrooms	Shredded Wheat site (South Site)	258	451	43	82	238	134	**1207**
H	Tenure by bespoke accom type by # bedrooms	Shredded Wheat site (North & South Sites)	637	540	46	68	114	49	1454
I=H x D	Estimated total occupants by bespoke accom type by # bedrooms	Shredded Wheat site (North & South Sites)	960	1078	133	82	238	134	**2625**

12.8. The approved methodology then required an assessment of the working population. This is shown in Table 12.2 below.

Table 12.2 – Working population

Proposed dwellings	1454
Pax/dwelling	1.81
Expected residents	2625
16-74 residents	1856
% working from home	7.80%
% 16-74 unemployed	29.80%
Estimated working population	**1158**

12.9. It is important to note that the approved scheme included 850 dwellings and that that unit mix resulted in an expected resident population of 2023 resident, of whom 892 would be working adults. The proposed development now comprises 1454 dwellings, however, the higher density development has a very different unit mix and tenure and therefore only has a predicted population of 2625, of whom 1158 would be working adults.

12.10. The total number of units has risen by 71% but the adult working population has only risen by 30%.

12.11. It is also important to note that again, due to the different unit mix and parking allocation assumptions, the average parking per unit was slightly higher in the consented scheme than the current proposals. This is in part due to the higher proportion of one-bed units in the current proposal. The current proposal includes around 88% of the parking per unit compared to the consented scheme. It is therefore reasonable to apply a small level of suppression (12%) to the residential trip assumptions to take account of the slight reduction in overall parking provision.

12.12. Table 12.3 shows the residential vehicle trips associated with he consented scheme, based on a detailed assessment of working population and travel by mode and purpose.

Table 12.3 – Consented scheme residential vehicle trips

	AM peak			PM peak		
Use	**Arr**	**Dep**	**Total**	**Arr**	**Dep**	**Total**
Resi	0	253	253	235	0	235
School*	0	119	119	0	0	0
Other**	33	132	165	237	356	593
Total	**33**	**504**	**537**	**472**	**356**	**828**

* School trips generated by the residential development

** leisure and other trips generated by the residential development

12.13. When the above methodology is applied to the predicted resident population of the proposed development, the results are as shown in table 12.4 below.

Table 12.4 – Proposed scheme residential vehicle trips

	AM peak			PM peak		
Use	**Arr**	**Dep**	**Total**	**Arr**	**Dep**	**Total**
Resi	0	290	290	269	0	269
School*	0	136	136	0	0	0
Other**	38	151	189	272	408	680
Total	**38**	**578**	**616**	**541**	**408**	**949**

12.14. It is likely that the proportion of school trips per resident will in fact be lower for the proposed development than for the consented development so this direct translation of vehicle trips is likely to over-estimate the school trips. This is therefore a robust assessment.

12.15. The above calculation is based on a total residential development id 1454 dwellings. It has not sub-divided the proposed development into 1340 dwellings and 114 extra care homes. The predicted vehicle trips are again likely to be an over-estimate. This is therefore a robust assessment.

12.16. The above assessment, including the two areas of over-estimation, concludes that the proposed development would be expected to result in an overall increase of 27% in residential vehicle trips when compared to the consented scheme.

Non-residential

12.17. The trip generation associated with the approved non-residential uses were derived by interrogating the TRICS database. The types of commercial and community uses proposed as part of this current development have changed somewhat. There have also been a number of updates to the TRICS database since the TPA assessment. For this reason a new TRICS analysis has been undertaken for each of the proposed commercial uses. Full TRICS data is included as **Appendix K.**

12.18. As stated earlier in relation to parking provision, some of the proposed non-residential uses are expected to be purely ancillary to the residential accommodation and employment uses. For example the small convenience stores, coffee shops or sandwich shops will not be trip attractors in their own right. Their customers will be the 2,600 new residents, office staff or arts centre visitors. The same is expected of the cafes and bars, especially during the weekday morning and afternoon highway peak periods. The crèche is also primarily to serve the development as a whole, thereby reducing vehicle trips rather than generating any new.

12.19. Given the above, vehicle trips have been attributed to those non-residential uses that are deemed to be trip attractors in their own right. Table 12.5 represents the gross trip generation of each use.

Table 12.5 – Non-residential gross vehicle trip attraction.

Use	. GFA	Trip rate			Gross trips		
		AM	PM	Daily	AM	PM	Daily
A1 store	530	17.76	24.118	274.803	94	128	1456
A1 convenience	1340	-	-	-	-	-	-
A3 restaurant	710	-	-	-	-	-	-
B1 office	4654	1.85	1.648	12.297	86	77	572
B1 TOC	362						
D1 community	494	1.06	0.845	16.796	5	4	83
D1 Health	494	1.74	1.534	23.486	9	8	116
D1 Crèche	644	-	-	-	-	-	-
D2 Gym/Leisure	1242	-	-	-	-	-	-
D2 Arts gallery	1043	1.49	4.914	38.519	19	61	478
D2 arts exhib	1043	0.49	0.02	4.52	5	0	47

12.22. The TRICS trip rates above are based on stand-alone developments. The proposed mixed-use development includes a significant resident population who will be the primary users of many of the non-residential uses on the north site. It goes without saying that the employment uses (B1) and the arts centre will attract journeys from the wider community, but with a new population of 2600 residents, many of the trips associated with the commercial and community uses will originate within the development itself.

12.23. Table 12.6 below therefore demonstrates the resultant non-residential primary vehicle trips, originating from the wider community once the internal trips have been removed.

Table 12.6 – Non-residential net vehicle trip attraction.

Use	GFA	Primary trips	Trip rate		
			AM	PM	Daily
A1 store	530	10%	9	13	146
A1 convenience	1340	-	0	0	0
A3 restaurant	710	-	0	0	0
B1 office	4654	50%	43	38	286
B1 TOC	362	-	0	0	0
D1 community	494	20%	1	1	17
D1 Health	494	20%	2	2	23
D1 Crèche	644	-	0	0	0
D2 Gym/Leisure	1242	50%	9	31	239
D2 Arts	1043	80%	13	2	137
Total			**88**	**86**	**848**

12.26. Tables 12.7 below show the total peak hour vehicle trips associated with the approved scheme and the current proposal.

Table 12.7 – Combined residential and commercial traffic generation

	AM	PM
Approved scheme	728	1046
Proposed development	704	1035
Net change	-24	-11

12.27. Table 12.7 indicates that whereas the residential accommodation would result in an increase in peak hour vehicle trips, the change in commercial and community uses means that during the highway peak periods the total site traffic generation would be broadly similar to the consented scheme.

12.28. It is likely that some of the proposed commercial uses such as arts centre, leisure uses, community buildings and restaurants will have their peak periods later in the evening; however, as these development peaks fall outside the highway peak periods they would have a limited effect on highway operational capacity.

13. TRANSPORT EFFECTS

13.1. Section 12 of this assessment examines the agreed traffic generation associated with the consented scheme and the predicted traffic generation associated with the current proposals. It concludes that the residential accommodation would result in more traffic than the approved scheme but the commercial and community uses would generate slightly less than the consented scheme during the highway peak periods. The net effect would be peak hour traffic generation broadly similar to the approved scheme.

13.2. The transport Assessment prepared by TPA which supported the planning application for the approved scheme, included comprehensive detailed junction capacity analyses. That detailed work concluded that off-site junction improvements would be required to accommodate the traffic generated by the consented development. Given the findings of Section 12, it is now proposed that the current development will also deliver the same highway mitigation and highway improvements. These are described in detail in Section 14.

13.3. Notwithstanding the above, the distribution of development and car parking across the site is different in the current proposal resulting in a change in use of each of the proposed site accesses. For this reason, each of the site accesses has been assessed for operational capacity using the proprietary modelling software PICADY.

13.4. The wider distribution on to the highway network follows the methodology used by TPA; this is based on identified journey to work origins and destinations. The distribution from each of the six site

accesses follows the wider origins and destinations gravity model. The trip distribution and turning movements at each access are included as **Appendix L.**

13.5. The PICADY output files are included as **Appendix M** and summarised below.

Table 13.1 - Junction 1; Bridge Road

	AM Peak			PM Peak		
	Max RFC	Max Q (V)	Delay (s)	Max RFC	Max Q (V)	Delay (s)
Site access	0.54	1.1	28.83	0.57	1.3	35.62
Bridge Rd E	0.01	8.18	0.0	0.07	0.1	8.78

13.6. This shows junction 1 working well within capacity. There will be a minor delay on the side road (within capacity) but no delay or queuing on Bridge Road.

Table 13.2 - Junction 2; Lind Grove

	AM Peak			PM Peak		
	Max RFC	Max Q (V)	Delay (s)	Max RFC	Max Q (V)	Delay (s)
Site access	0.00	0.0	0.00	0.04	0.0	13.84
Broadwater Rd N	0.00	0.0	8.96	0.01	0.0	8.29

13.7. This shows junction 2 working well within capacity with no delays on Lind Grove or Broadwater Road.

Table 13.3 - Junction 3; Hydeway

	AM Peak			PM Peak		
	Max RFC	Max Q (V)	Delay (s)	Max RFC	Max Q (V)	Delay (s)
Site access left	1.11	12.9	289	1.27	19.4	450
Site access right	1.11	16.5	269	1.26	22.6	439
Broadwater Rd S	0.16	0.2	6.66	0.18	0.3	8.49
Hydeway E left	0.09	0.1	15.03	0.09	0.1	14.84
Hydeway E right	0.17	0.2	22.85	0.27	0.4	50
Broadwater Rd N	0.06	0.1	7.23	0.30	0.7	6.45

13.8. This shows Hydeway west (site access) operating over capacity during the highway peaks. The appropriate mitigation would be to widen the bellmouth to allow a two lane exit, segregating left and tight turning traffic. However, care has been taken to reduce the dominance of the car at this junction

and to improve facilities for pedestrians and cyclists travelling along Broadwater Road. For this reason, the decision has been taken to retain the single lane exit despite the modelled queue.

Table 13.4 - Junction 4; Middle access

	AM Peak			PM Peak		
	Max RFC	Max Q (V)	Delay (s)	Max RFC	Max Q (V)	Delay (s)
Site access	0.16	0.2	13.71	0.13	0.1	14.87
Broadwater Rd N	0.01	0.0	8.23	0.06	0.1	7.85

13.9. This shows junction 4 working well within capacity with no delays on the site access or Broadwater Road.

Table 13.5 - Junction 5; Broad Court

	AM Peak			PM Peak		
	Max RFC	Max Q (V)	Delay (s)	Max RFC	Max Q (V)	Delay (s)
Site access	0.10	0.1	10.61	0.09	0.1	13.92
Bridge Rd E	0.00	0.0	8.29	0.04	0.0	8.06

13.10. This shows junction 5 working well within capacity with no delays on the site access or Broadwater Road.

Table 13.6 - Junction 6; Southern access

	AM Peak			PM Peak		
	Max RFC	Max Q (V)	Delay (s)	Max RFC	Max Q (V)	Delay (s)
Site access	0.53	1.1	23.7	0.46	0.8	25.59
Bridge Rd E	0.01	0.0	7.73	0.19	0.3	7.34

13.11. This shows the southern access working well within capacity with no delays on the site access or Broadwater Road

13.12. This traffic impact assessment demonstrates that with the exception of Hydeway, all site access junctions will operate well within operational capacity during the highway peak periods. The delays on Hydeway will have no effect on the capacity of Broadwater Road but will result in some peak hour queues for traffic attempting to leave the private side road. The mitigation for this would be to widen Hydeway to allow for a two-lane exit; however, the preferred approach is to retain the single lane exit to the benefit of pedestrians and cyclists.

13.13. Off-site mitigation measures are required as designed and agreed as part of the previously approved development. The same off-site mitigation measures will be provided as part of the proposed development. As a result of this analysis it is clear that the proposed development would have no residual effect on the operational capacity of the public highway. The development would, as might be expected, benefit from its accessible location and ability to promote sustainable travel.

14. TRANSPORT IMPROVEMENTS

14.1. The previously approved development on the former Shredded Wheat factory site included a comprehensive range of transport improvement measures. Some of these were integral components of the development, some were dictated by the SPD and some were proposed as mitigation measures to address the transport effects of development.

14.2. The current Wheat Quarter proposal will deliver all of the off-site transport improvements agreed as part of the consented scheme. It will also fund some additional off-site improvements. These are set out below:

Road hierarchy

14.3. The access from Bridge Road will remain as a private road with a minimum width of 6m. A 2m footway will be provided along the western side of the carriageway.

14.4. The southern access from Broadwater Road will be a major access road with a width of 6.0m where cars are parked at 90 degrees and a minimum of 4.8m otherwise. The carriageway has localised widening on bends where necessary. In addition there will be a segregated footway provided through the central landscape area and to each of the residential blocks.

14.5. The three Mews / Streets, which form part of the internal road network, will all be shared surfaces with a width of approximately 6m.

14.6. All accesses from Broadwater Road will have raised entrance tables to assist pedestrian/cycle movement along Broadwater Road.

Broadwater Road improvements

14.7. The redevelopment proposals would reallocate the existing highway land along Broadwater Road so that there is greater provision for pedestrians and cyclists. The existing carriageway would be narrowed to 6.75m while a 4m foot/cycleway would be provided along both sides of the carriageway across the site frontage, where possible.

14.8. The narrowing of Broadwater Road would continue along its entire length, providing the opportunity to widen pedestrian and cycle facilities along the length of Broadwater Road as the area is redeveloped in the future, subject to land ownership.

14.9. The existing pedestrian crossing facilities along Broadwater Road will be retained, although the signalised crossing south of Hydeway will be relocated further north.

14.10. The proposed scheme is shown in TPA drawing 1309-14-PL109 included in **Appendix N.**

Bridge Road / Hunters Bridge improvements

14.11. Overall traffic calming measures proposed along Broadwater Road will be extended to include Bridge Road and Hunters Bridge so that the characteristics of these roads are changed from being vehicle dominant to an area which is more attractive to pedestrians and cyclists.

14.12. TPA drawing 1309-14-PL111 (included in **Appendix N**) shows the proposed traffic calming along Bridge Road. The proposals will narrow the highway land allocated to vehicles so that there is a single 3m lane in either direction. This in turn allows the foot/cycleways to be widened to 4m along both sides of the carriageway and a central pedestrian area of approximately 5.7m will also be provided.

Rail bridge

14.13. The existing rail bridge between the site and the railway station will be refurbished as part of the development. This will include demolishing the existing steps on the site side of the rail lines and replacing them with a new set of much wider steps directly onto the newly created public square. The stops will include provision to wheel bicycles up onto the bridge. A range of bespoke cycle parking facilities will be provided beneath the steps. A lift will also be provided to allow access for the mobility impaired or for those with pushchairs for example. The bridge itself will be refurbished in agreement with Network Rail. Full details of the bridge refurbishment are submitted in support of the planning application.

Broadwater Road / Bridge Road junction

14.14. The existing signalised crossroads of Broadwater Road / Bridge Road and Bessemer Road will be altered to a shared space 'octabout', as shown in TPA drawing 1309-14-PL106, included here within **Appendix N.**

14.15. The proposed octabout will operate along the same principals as a roundabout albeit on a less formal basis, as the intention is to introduce controlled uncertainty to drivers which will result in slower vehicle speeds and a more agreeable environment for pedestrians and cyclists.

Broadwater Road / Osborne Way / Stanborough Road junction

14.16. The Stanborough Road arm of the Broadwater Road / Osborn Way / Stanborough Road roundabout will be widened to 8.5m to increase the approach capacity.

Broadwater Road / A1000 Chequers roundabout

14.17. The Broadwater Road and A1000 Chequers arms of the Broadwater Road / Broadwater crescent / A1000 Chequers roundabout will be improved to increase the flare lengths on both arms to increase the entry capacity.

Hydeway west

14.18. The kerb radii on the entry to Hydeway west will be increased to improve entry / egress for HGVs. The radii on the western arm of Hydeway will also be altered and the whole junction will become a raised table.

14.19. Highway rights will be extinguished (stopped-up) from Hydeway west so that the road will become private in line with the other access roads into the Wheat Quarter. A 3m wide shared cycleway/footway will be provided along the southern side which will remain a public right of way between Broadwater Road and the new steps to the rail bridge.

Peartree Lane / Ravenfield cycle route

14.20. The existing pedestrian crossing over Peartree Lane at the eastern end of Hydeway will be upgraded to allow cyclists to cross and then to use the carriageway of the cul-de-sac section of Peartree Lane rather than the footway.

15. SUMMARY AND CONCLUSIONS

15.1. This Transport Assessment (TA) has been prepared by Entran Ltd in support of a planning application for the redevelopment of the former Shredded Wheat Factory to provide a residential led mixed-use development. The proposed development is known as the Wheat Quarter.

15.2. This TA has been prepared alongside a Transport Implementation Strategy which provides the opportunity to reduce dependence on travel by private car and seeks to influence travel to and from the site rather than merely assessing its impact.

WHBC adopted a supplementary planning document in 2008 to guide the redevelopment of the former Shredded Wheat Factory site. In 2017 planning permission was granted for a mixed use development comprising 850 dwellings (Use class C3, with potential to include 80 (C2) assisted living units), 2554m^2 hotel, 6370m^2 office/research, 572m^2 convenience/comparison retail, 834m^2 healthcare, 650m^2 crèche, 1990m^2 restaurants/cafes, 757m^2 community facilities, and 703m^2 gym/dance studio

15.3. Planning permission was granted subject to a range of conditions and obligations, including a requirement to implement a range of off-site highway improvements.

15.4. The site is very well placed to promote sustainable travel. A wide range of employment, retail, health, education and leisure facilities can be reached within walking and cycling distance of the site. In addition, a wide range of bus routes can be reached easily form the site. Welwyn Garden City rail station is immediately to the west of the site, reached via an existing footbridge over the railway. This is a good location to reduce reliance on the private car. The provision of a comprehensive mixed-use development further supports the objective to reduce the need to travel, especially by car.

15.5. The proposed development comprises the creation of a mixed-use quarter including the erection of 1,340 residential dwellings of which 414 (31%) will be affordable dwellings (Use class C3); 114 extra care homes (use class C2); the erection of a civic building including health (D1), community use (D1), office (B1), retail (A1) and food and drink (A3-A5) uses. The alterations, additional and change of use of the Grade II Listed Building and retained silos provide flexible business space (B1), combined heat and power (Sui Generis), International Art Centre (D1) Gymnasium (D2), restaurant/coffee shop/bar (A1-A5), Crèche and Network Rail TOC building. The development includes car and cycle parking, access, landscaping, public art and other supporting infrastructure.

15.6. The South site is purely residential, comprising 643 flats. Visitor spaces are provided at a ratio of 10% and Car Club spaces are provided at ratio of 6%. For the proposed unit mix this equates to 369 residents spaces, 64 visitor spaces and 39 Car Club vehicles. The total provision on the south site is therefore 472 parking spaces and the equivalent provision is 665 spaces.

15.7. The North site comprises residential and non-residential. The residential component comprises 811 flats. Car Club spaces are provided at ratio of 6%. Visitor spaces are calculated at a ratio of 10%, however, many of these can be considered dual-use spaces with the commercial uses. For the proposed unit mix this equates to 426 residents spaces, 81 visitor spaces and 49 Car Club vehicles, a total of 556 parking spaces (equivalent provision is 799 spaces).

15.8. The commercial parking on the north site comprises 142 spaces. Of these 35 are dual-use, available for residents' visitors in the evening, and 107 are for commercial staff and visitors.

15.9. In total the development includes 1135 car parking spaces including parking suitable for disabled drivers and electric vehicle charging points.

15.10. Cycle parking is provided for every dwelling, and for all the commercial and community uses. An additional 100 public cycle parking spaces are provided between Hydeway and the footbridge. The total cycle parking provision is 1681 spaces.

15.11. The Wheat Quarter development provides a new electric vehicle Car Club; residents would be offered Car Club membership as part of the Residents' Travel Plan so that those households who do not own a vehicle will still have access to one as and when they may need one. The Car Club would be

available to the wider community thereby reducing on-street parking pressure on the surrounding local roads.

15.12. The development will be supported by a four-part Transport Implementation Strategy comprising the Framework Travel Plan (FTP), Construction Logistics Plan (CLP), Delivery & Servicing Plan (DSP) and Car Parking Management Plan (CPMP). Final versions of the CLP, DSP and CPMP will be prepared (prior to commencement and occupation respectively) in partnership with HCC and WHBC.

15.13. A detailed assessment of vehicle trips has been carried out, comparing those associated with the approved scheme and those associated with the current proposals. This assessment has established that whereas there is a 71% increase in unit numbers, the change in density and unit mix means that there will only be a 27% increase in adult working population. Furthermore, the proposed commercial and community uses differ slightly from those in the approved scheme, to the degree that there will be a greater rate of internal linked trips and a lower proportion of travel during the highway peak periods. The development will generate more peak hour residential vehicle trips but fewer peak hour non-residential trips. The result on the wider highway network will be broadly the same as the approved scheme. The same off-site highway mitigation measures will therefore be required.

15.14. An assessment of the six site access junctions demonstrates that all site access junctions will operate well within operational capacity during the highway peak periods. The delays on Hydeway will have no effect on the capacity of Broadwater Road but will result in some peak hour queues for traffic attempting to leave the private side road. The mitigation for this would be to widen Hydeway to allow for a two-lane exit; however, the preferred approach is to retain the single lane exit to the benefit of pedestrians and cyclists.

15.15. The development will deliver a wide range of transport improvements. The internal layout of the scheme itself will provide a high quality, permeable environment for pedestrians and cyclists. This will include landscaped links and routes as well as new public squares.

15.16. The development will deliver extensive improvement works to Broadwater Road and Bridge Road, reducing vehicle speeds and providing improved facilities for pedestrians and cyclists. The junction of Broadwater Road and Bridge Road will be re-modelled as an ‘octobout’ in line with the previously approved scheme.

15.17. Hydeway will be completely remodelled to provide a ‘kiss-and-ride’ drop-off facility for car passengers heading to the station or town centre. A new taxi rank will also be provided as well as short stay parking for those collecting passengers from the station or popping to the local convenience store on their way to or from work.

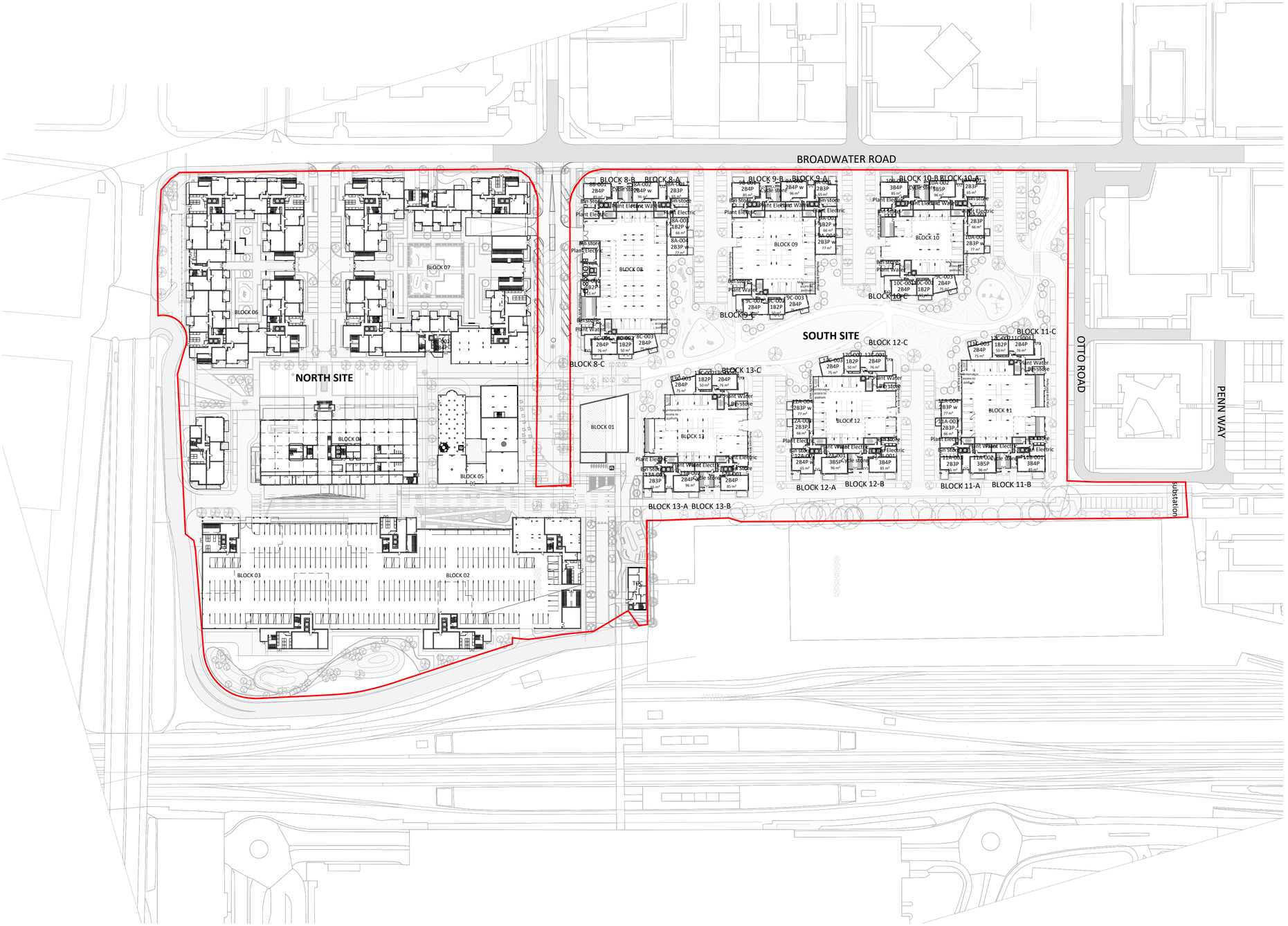
15.18. The footbridge over the railway will be refurbished and provided with a new, wider set of steps on the site side, together with a new passenger lift.

15.19. The wide range of highways and transport improvements will mitigate the effects of the additional travel demand generated by the development and will significantly enhance the sustainable travel options for Welwyn Garden City as a whole.

15.20. For the reasons set out in this Transport Statement there is no reason why the proposed development should be refused on grounds of highway capacity or safety, impact on the transport network or sustainability. The provision of new homes, employment and community facilities at the Wheat Quarter offers an opportunity to enhance this area and have a positive effect on transport. It should be positively supported by the local highway authority.

Appendix A

Planning application red line



1 Site Masterplan (Ground Floor)

1 : 1000 @A1

NOTES
- Do not scale from this drawing
- Check all dimensions on site
- Subject to site inspection
- This document is for information only and is subject to a preliminary risk analysis to be carried out by all relevant consultants

AREAS
- Refer to area schedule

Rev	Notes	Date	By	Auth
1	DRAFT issue for Planning	17-12-12	CS	FvB
2	Planning Submission	18-01-12	CS	FvB

NOTES
Any decisions to be made on the basis of this drawing, whether as to project viability, pre-letting, lease agreements and the like, should make allowance for:
- Design development
- Accurate surveys
- Accurate bundary/site ownership documentation
- Construction methods and building tolerances
- Local Authority/Statutory consents

0m 20m 40m 60m 80m 100m

VISUAL SCALE 1:1000 @ A1

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Drawn By: Author
Checked by: Checker
Scale @ A1: 1 : 1000
Scale @ A3: 1 : 1250
CAD File No:

Plutus Estates (WGC) Limited and Metropolitan Housing Trust
Former Shredded Wheat Factory
Site Masterplan (Ground)

PRELIMINARY
16037 P0-001

2 Revision

Appendix B

Schedules of accommodation

Welwyn Garden City 16037
Area Schedule - P2
Residential
12 01 2018

NORTH SITE

ColladoCollinsArchitects

BLOCK 2	GIA / NSA PROPOSED					
	GEA		GIA		NSA	
	sq m	*sq ft*	sq m	*sq ft*	sq m	*sq ft*
Ground	863.6	*9,296*	856.9	*9,224*	0.0	*0*
First	2034.9	*21,904*	1874.9	*20,181*	1477.1	*15,900*
Second	2034.9	*21,904*	1874.9	*20,181*	1512.8	*16,284*
Third	2034.9	*21,904*	1874.9	*20,181*	1513.1	*16,287*
Fourth	2034.9	*21,904*	1874.9	*20,181*	1513.1	*16,287*
Fifth	2034.9	*21,904*	1874.9	*20,181*	1513.1	*16,287*
Sixth	1014.7	*10,922*	927.0	*9,978*	717.8	*7,726*
Seventh		*0*		*0*	0.0	*0*
TOTAL	**12052.8**	***129736***	**11158.4**	***120109***	**8247.0**	***88771***

APARTMENT NUMBERS					
1 Bed 1P	1 Bed 2P	2 Bed 3P (1 bath)	2 Bed 4P (2 baths)	3 Bed 5P (2 baths)	**TOTAL**
No.	No.	No.	No.	No.	No.
					0
6	8	9	4		**27**
6	6	9	6		**27**
6	6	9	6		**27**
6	6	9	6		**27**
6	6	9	6		**27**
4	4	6			**14**
					0
34	**36**	**51**	**28**	**0**	**149**
22.8%	24.2%	34.2%	18.8%	0.0%	100.0%

Habitable Rooms	Bed Spaces
No.	No.
0	0
79	92
81	96
81	96
81	96
81	96
38	44
0	0
441	**520**

70		**79**	**0**	**149**
47.0%		53.0%	0.0%	**100.0%**

441	**520**

percentage of units by type

BLOCK 3 (C2)	GIA / NSA PROPOSED					
	GEA		GIA		NSA	
	sq m	*sq ft*	sq m	*sq ft*	sq m	*sq ft*
Ground	610.2	*6,568*	546.8	*5,886*		*0*
First	1852.3	*19,938*	1719.5	*18,509*	1084.9	*11,678*
Second	1527.6	*16,443*	1411.4	*15,192*	1154.7	*12,429*
Third	1527.6	*16,443*	1411.4	*15,192*	1154.7	*12,429*
Fourth	1527.6	*16,443*	1411.4	*15,192*	1154.7	*12,429*
Fifth	1527.6	*16,443*	1411.4	*15,192*	1154.7	*12,429*
Sixth	1014.7	*10,922*	927.0	*9,978*	718.9	*7,738*
Seventh		*0*		*0*	0.0	*0*
TOTAL	**9587.6**	***103201***	**8838.9**	***95142***	**6422.6**	***69133***

APARTMENT NUMBERS					
1 Bed 1P	1 Bed 2P	2 Bed 3P (1 bath)	2 Bed 4P (2 baths)	3 Bed 5P (2 baths)	**TOTAL**
No.	No.	No.	No.	No.	No.
					0
4	8	6	2		**20**
4	4	6	6		**20**
4	4	6	6		**20**
4	4	6	6		**20**
4	4	6	6		**20**
4	4	6			**14**
					0
24	**28**	**36**	**26**	**0**	**114**
21.1%	24.6%	31.6%	22.8%	0.0%	100.0%

Habitable Rooms	Bed Spaces
No.	No.
0	0
58	66
62	74
62	74
62	74
62	74
38	44
0	0
344	**406**

52		**62**	**0**	**114**
45.6%		54.4%	0.0%	**100.0%**

344	**406**

percentage of units by type

Welwyn Garden City 16037
Area Schedule - P2
Residential
12 01 2018

NORTH SITE

ColladoCollinsArchitects

BLOCK 6	GIA / NSA PROPOSED					
	GEA		GIA		NSA	
	sq m	*sq ft*	sq m	*sq ft*	sq m	*sq ft*
Ground	3644.4	*39,228*	3402.8	*36,628*	1967.3	*21,176*
First	3606.3	*38,818*	3359.1	*36,157*	2702.8	*29,093*
Second	3606.3	*38,818*	3359.1	*36,157*	2686.8	*28,921*
Third	3486.8	*37,532*	3241.0	*34,886*	2578.4	*27,754*
Fourth	3486.8	*37,532*	3241.0	*34,886*	2578.4	*27,754*
Fifth	1766.0	*19,009*	1624.6	*17,487*	1284.5	*13,826*
Sixth	1766.0	*19,009*	1624.6	*17,487*	1284.7	*13,829*
Seventh	413.2	*4,448*	376.8	*4,056*	282.3	*3,039*
Eighth	413.2	*4,448*	376.8	*4,056*	282.3	*3,039*
TOTAL	**22189.0**	***238842***	**20605.8**	***221801***	**15647.5**	***168430***

APARTMENT NUMBERS						Habitable Rooms	Bed Spaces
1 Bed 1P	1 Bed 2P	2 Bed 3P (1 bath)	2 Bed 4P (2 baths)	3 Bed 5P (2 baths)	**TOTAL**		
No.	No.	No.	No.	No.	No.	No.	No.
9	10	8	4	2	**33**	96	112
10	16	12	4	3	**45**	132	154
10	16	12	4	3	**45**	132	154
10	17	10	4	3	**44**	129	149
10	18	9	4	3	**44**	129	148
6	11	3	1	2	**23**	66	74
6	11	3	1	2	**23**	66	74
	3	2			**5**	15	17
	3	2			**5**	15	17
61	**105**	**61**	**22**	**18**	**267**	**780**	**899**
22.8%	39.3%	22.8%	8.2%	6.7%	100.0%		

166	**83**	**18**	**267**	**780**	**899**
62.2%	31.1%	6.7%	**100.0%**		

percentage of units by type

BLOCK 7	GIA / NSA PROPOSED					
	GEA		GIA		NSA	
	sq m	*sq ft*	sq m	*sq ft*	sq m	*sq ft*
Ground	3180.2	*34,232*	2868.6	*30,878*	1501.8	*16,165*
First	3728.9	*40,138*	3460.2	*37,246*	2761.5	*29,725*
Second	3728.9	*40,138*	3460.2	*37,246*	2763.4	*29,745*
Third	3609.3	*38,851*	3342.1	*35,974*	2655.0	*28,578*
Fourth	3609.3	*38,851*	3342.1	*35,974*	2655.0	*28,578*
Fifth	2228.9	*23,992*	2053.0	*22,098*	1611.5	*17,346*
Sixth	2228.9	*23,992*	2053.0	*22,098*	1611.5	*17,346*
Seventh	413.2	*4,448*	376.8	*4,056*	282.3	*3,039*
Eighth	413.2	*4,448*	376.8	*4,056*	282.3	*3,039*
TOTAL	**23140.8**	***249088***	**21332.8**	***229626***	**16124.3**	***173562***

APARTMENT NUMBERS						Habitable Rooms	Bed Spaces
1 Bed 1P	1 Bed 2P	2 Bed 3P (1 bath)	2 Bed 4P (2 baths)	3 Bed 5P (2 baths)	**TOTAL**		
No.	No.	No.	No.	No.	No.	No.	No.
9	10	4	3	1	**27**	76	85
13	14	11	7	2	**47**	137	159
13	14	11	7	2	**47**	137	159
13	15	9	7	2	**46**	134	154
13	16	8	7	2	**46**	134	153
8	13	3	3	2	**29**	84	94
8	13	3	3	2	**29**	84	94
	3	2			**5**	15	17
	3	2			**5**	15	17
77	**101**	**53**	**37**	**13**	**281**	**816**	**932**
27.4%	35.9%	18.9%	13.2%	4.6%	100.0%		

178	**90**	**13**	**281**	**816**	**932**
63.3%	32.0%	4.6%	**100.0%**		

percentage of units by type

Welwyn Garden City 16037
Area Schedule - P2
Residential
12 01 2018

NORTH SITE

ColladoCollinsArchitects

TOTAL	GIA / NSA PROPOSED					
	GEA		GIA		NSA	
	sq m	*sq ft*	sq m	*sq ft*	sq m	*sq ft*
Block 2	12052.8	*129,736*	11158.4	*120,109*	8247.0	*75,401*
Block 3	9587.6	*103,201*	8838.9	*95,142*	6422.6	*74,433*
Block 6	22189.0	*238,842*	20605.8	*221,801*	15647.5	*168,430*
Block 7	23140.8	*249,088*	21332.8	*229,626*	16124.3	*173,562*
TOTAL	**66970.2**	***720867***	**61935.9**	***666678***	**46441.4**	***491826***

APARTMENT NUMBERS					
1 Bed 1P	1 Bed 2P	2 Bed 3P (1 bath)	2 Bed 4P (2 baths)	3 Bed 5P (2 baths)	**TOTAL**
No.	No.	No.	No.	No.	No.
34	36	51	28	0	**149**
24	28	36	26	0	**114**
61	105	61	22	18	**267**
77	101	53	37	13	**281**
196	**270**	**201**	**113**	**31**	**811**
24.2%	33.3%	24.8%	13.9%	3.8%	100.0%

Habitable Rooms	Bed Spaces
No.	No.
441	520
344	406
780	899
816	932
2381	**2757**

466	**314**	**31**	**811**	**2381**	**2757**
57.5%	38.7%	3.8%	**100.0%**		

percentage of units by type (incl. 10% wheelchair units)

Ground Floor Parking Block 2 + 3	
Parking Spaces	209.0
Parking Ratio	0.79 spaces per unit

Basement Parking Block 6 + 7	
Parking Spaces	312.0
Parking Ratio	0.57 spaces per unit

Commercial Parking	
Parking Spaces	142.0

Total Parking	*663*

Average Hab Rooms per unit	2.94
Average Bed Spaces per unit	3.40

Welwyn Garden City 16037
Area Schedule
Non-Residential Uses
05 01 2017

NORTH SITE

ColladoCollinsArchitects

A1 -A5 - Retail	GIA / NSA PROPOSED			
	GEA		GIA	
	sq m	*sq ft*	sq m	*sq ft*
Block 1 L00 Retail	646.0	*6,954*	615.0	*6,620*
Block 2 L00 Retail	214.0	*2,303*	195.0	*2,099*
Block 2 L00 Retail	266.0	*2,863*	241.0	*2,594*
Block 5 L00 Restaurant/Café/Bar	269.0	*2,896*	248.0	*2,669*
Block 5 L00 Restaurant/Café/Bar	144.0	*1,550*	138.0	*1,485*
Block 5 L09 Bar/Restaurant	297.0	*3,197*	285.0	*3,068*
Block 7 L00 Retail	530.0	*5,705*	491.0	*5,285*
TOTAL	**2366.0**	***18514***	**2213.0**	***17201***

B - OFFICE	GIA / NSA PROPOSED			
	GEA		GIA	
	sq m	*sq ft*	sq m	*sq ft*
TOC L00	181.0	*1,948*	158.0	*1,701*
TOC L01	181.0	*1,948*	158.0	*1,701*
Block 1 L03 Offices	498.0	*5,360*	465.0	*5,005*
Block 1 L04 Offices	329.0	*3,541*	294.0	*3,165*
Block 4 L01 Offices	1970.0	*21,205*	1864.0	*20,064*
Block 4 L02 Offices	1104.0	*11,883*	1065.0	*11,464*
Block 4 L03 Conference/Offices	753.0	*8,105*	719.0	*7,739*
TOTAL	**5016.0**	***53992***	**4723.0**	***50838***

D1 - PUBLIC SERVICES	GIA / NSA PROPOSED			
	GEA		GIA	
	sq m	*sq ft*	sq m	*sq ft*
Block 1 L01 - Community	494.0	*5,317*	466.0	*5,016*
Block 1 L02 - Healthcare	494.0	*5,317*	466.0	*5,016*
Block 1 L00-02 - Cores	405.0	*4,359*	357.0	*3,843*
Block 4 L00 Crèche/Day Nursery	644.0	*6,932*	606.0	*6,523*
Block 4 L00 Lobby	62.0	*667*	52.0	*560*
Block 4 L00-03 Atrium	774.0	*8,331*	733.0	*7,890*
Block 4 L00 Servicing/Refuse	177.0	*1,905*	152.0	*1,636*
Block 5 L00 Energy Centre	268.0	*2,885*	249.0	*2,680*
TOTAL	**3318.0**	***35715***	**3081.0**	***33164***

D2 - ENTERTAINMENT AND LEISURE	GIA / NSA PROPOSED			
	GEA		GIA	
	sq m	*sq ft*	sq m	*sq ft*
Block 4 L00 Leisure	1242.0	*13,369*	1149.0	*12,368*
Block 4 L03 Art Studios/Office	429.0	*4,618*	352.0	*3,789*
Block 5 L00 Art Centre	232.0	*2,497*	217.0	*2,336*
Block 5 L00 Art Centre	92.0	*990*	84.0	*904*
Block 5 L00 Art Centre	567.0	*6,103*	521.0	*5,608*
Block 5 L01 Art Centre	341.0	*3,671*	298.0	*3,208*
Block 5 L02 Art Centre	268.0	*2,885*	226.0	*2,433*
Block 5 L02 Art Centre	103.0	*1,109*	86.0	*926*
Block 5 L03 Art Centre	54.0	*581*	43.0	*463*
TOTAL	**3328.0**	***35823***	**2976.0**	***32034***

BLOCK 13 (Ex-A)	GIA / NSA PROPOSED						APARTMENT NUMBERS						Habitable Rooms	Bed Spaces
	GEA		GIA		NSA		1 Bed 2P	2 Bed 3P	2 Bed 4P	3 Bed 4P	3 Bed 5P	TOTAL		
	sq m	*sq ft*	sq m	*sq ft*	sq m	*sq ft*	No.	No.	No.	No.	No.	No.	No.	No.
Core A														
Ground	407.0	*4,381*	374.0	*4,026*	161.0	*1,733*		1	1			**2**	6	7
First	686.0	*7,384*	641.0	*6,900*	487.0	*5,242*	4	4				**8**	20	20
Second	689.0	*7,416*	641.0	*6,900*	510.0	*5,490*	3	4	1			**8**	21	22
Third	689.0	*7,416*	641.0	*6,900*	510.0	*5,490*	3	4	1			**8**	21	22
Fourth	689.0	*7,416*	641.0	*6,900*	510.0	*5,490*	3	3	2			**8**	21	23
Fifth	689.0	*7,416*	641.0	*6,900*	510.0	*5,490*	3	3	2			**8**	21	23
Sixth	448.0	*4,822*	404.0	*4,349*	304.0	*3,272*	3	1	1			**5**	12	13
Core B														
Ground	364.0	*3,918*	336.0	*3,617*	85.0	*915*			1			**1**	3	4
First	518.0	*5,576*	485.0	*5,221*	371.0	*3,993*	2	3	1			**6**	16	17
Second	518.0	*5,576*	485.0	*5,221*	378.0	*4,069*	2	2	2			**6**	16	18
Third	518.0	*5,576*	485.0	*5,221*	378.0	*4,069*	2	2	2			**6**	16	18
Fourth	518.0	*5,576*	485.0	*5,221*	378.0	*4,069*	2	2	2			**6**	16	18
Core C														
Ground	424.0	*4,564*	381.0	*4,101*	199.0	*2,142*	1		2			**3**	8	10
First	545.0	*5,866*	505.0	*5,436*	396.0	*4,263*	3		2		1	**6**	16	19
Second	550.0	*5,920*	509.0	*5,479*	416.0	*4,478*	4	1	2			**7**	17	19
Third	550.0	*5,920*	509.0	*5,479*	416.0	*4,478*	4	1	2			**7**	17	19
Fourth	325.0	*3,498*	291.0	*3,132*	219.0	*2,357*	1		1		1	**3**	9	11
TOTAL	**9127.0**	***98,243***	**8454.0**	***90,999***	**6228.0**	***67,038***	**40**	**31**	**25**		**2**	**98**	**256**	**283**
							40.8%	31.6%	25.5%	0.0%	2.0%	100.0%		

	40	**56**		**2**	**98**
percentage of units by type	40.8%	57.1%		2.0%	**100.0%**

BLOCK 12 (Ex-B)	GIA / NSA PROPOSED						APARTMENT NUMBERS						Habitable Rooms	Bed Spaces
	GEA		GIA		NSA		1 Bed 2P	2 Bed 3P	2 Bed 4P	3 Bed 4P	3 Bed 5P	TOTAL		
	sq m	*sq ft*	sq m	*sq ft*	sq m	*sq ft*	No.	No.	No.	No.	No.	No.	No.	No.
Core A														
Ground	587.0	*6,318*	540.0	*5,813*	304.0	*3,272*		3			1	**4**	13	14
First	686.0	*7,384*	638.0	*6,867*	487.0	*5,242*	4	4				**8**	20	20
Second	689.0	*7,416*	641.0	*6,900*	510.0	*5,490*	3	4	1			**8**	21	22
Third	689.0	*7,416*	641.0	*6,900*	510.0	*5,490*	3	3	2			**8**	21	23
Fourth	695.0	*7,481*	648.0	*6,975*	520.0	*5,597*	1	2	2	1	1	**7**	22	25
Fifth	695.0	*7,481*	648.0	*6,975*	520.0	*5,597*	1	2	2	1	1	**7**	22	25
Sixth	454.0	*4,887*	411.0	*4,424*	317.0	*3,412*	1			2	1	**4**	14	15
Seventh	454.0	*4,887*	411.0	*4,424*	317.0	*3,412*	1			2	1	**4**	14	15
Core B														
Ground	364.0	*3,918*	336.0	*3,617*	85.0	*915*				1		**1**	4	4
First	518.0	*5,576*	485.0	*5,221*	371.0	*3,993*	2	3		1		**6**	17	17
Second	518.0	*5,576*	485.0	*5,221*	378.0	*4,069*	2	2	1	1		**6**	17	18
Third	518.0	*5,576*	485.0	*5,221*	378.0	*4,069*	2	2	1	1		**6**	17	18
Fourth	518.0	*5,576*	485.0	*5,221*	378.0	*4,069*	2	2	1	1		**6**	17	18
													0	0
Core C														
Ground	424.0	*4,564*	381.0	*4,101*	199.0	*2,142*	1		1	1		**3**	9	10
First	545.0	*5,866*	505.0	*5,436*	396.0	*4,263*	3		2		1	**6**	16	19
Second	550.0	*5,920*	509.0	*5,479*	416.0	*4,478*	4	1	2			**7**	17	19
Third	550.0	*5,920*	509.0	*5,479*	416.0	*4,478*	4	1	2			**7**	17	19
Fourth	325.0	*3,498*	291.0	*3,132*	219.0	*2,357*	1		1		1	**3**	9	11
TOTAL	**9779.0**	***105,261***	**9049.0**	***97,403***	**6721.0**	***72,345***	**35**	**29**	**18**	**12**	**7**	**101**	**287**	**312**
							34.7%	28.7%	17.8%	11.9%	6.9%	100.0%		

	35	**47**	**19**	**101**
percentage of units by type	34.7%	46.5%	18.8%	**100.0%**

BLOCK 11 (Ex-C)	GIA / NSA PROPOSED						APARTMENT NUMBERS						Habitable Rooms	Bed Spaces
	GEA		GIA		NSA		1 Bed 2P	2 Bed 3P	2 Bed 4P	3 Bed 4P	3 Bed 5P	TOTAL		
	sq m	*sq ft*	sq m	*sq ft*	sq m	*sq ft*	No.	No.	No.	No.	No.	No.	No.	No.
Core A														
Ground	587.0	*6,318*	540.0	*5,813*	304.0	*3,272*		3			1	**4**	13	14
First	686.0	*7,384*	638.0	*6,867*	487.0	*5,242*	4	4				**8**	20	20
Second	689.0	*7,416*	641.0	*6,900*	510.0	*5,490*	3	4	1			**8**	21	22
Third	689.0	*7,416*	641.0	*6,900*	510.0	*5,490*	3	4	1			**8**	21	22
Fourth	695.0	*7,481*	648.0	*6,975*	520.0	*5,597*	1	2	2	1	1	**7**	22	25
Fifth	695.0	*7,481*	648.0	*6,975*	520.0	*5,597*	1	2	2	1	1	**7**	22	25
Sixth	454.0	*4,887*	411.0	*4,424*	317.0	*3,412*	1			2	1	**4**	14	15
Seventh	454.0	*4,887*	411.0	*4,424*	317.0	*3,412*	1			2	1	**4**	14	15
Core B														
Ground	364.0	*3,918*	336.0	*3,617*	85.0	*915*				1		**1**	4	4
First	518.0	*5,576*	485.0	*5,221*	371.0	*3,993*	2	3		1		**6**	17	17
Second	518.0	*5,576*	485.0	*5,221*	378.0	*4,069*	2	2	1	1		**6**	17	18
Third	518.0	*5,576*	485.0	*5,221*	378.0	*4,069*	2	2	1	1		**6**	17	18
Fourth	518.0	*5,576*	485.0	*5,221*	378.0	*4,069*	2	2	1	1		**6**	17	18
Core C														
Ground	424.0	*4,564*	381.0	*4,101*	199.0	*2,142*	1		1	1		**3**	9	10
First	545.0	*5,866*	505.0	*5,436*	396.0	*4,263*	3		2		1	**6**	16	19
Second	550.0	*5,920*	509.0	*5,479*	416.0	*4,478*	4	1	2			**7**	17	19
Third	550.0	*5,920*	509.0	*5,479*	416.0	*4,478*	4	1	2			**7**	17	19
Fourth	325.0	*3,498*	291.0	*3,132*	219.0	*2,357*	1		1		1	**3**	9	11
TOTAL	**9779.0**	***105,261***	**9049.0**	***97,403***	**6721.0**	***72,345***	**35**	**30**	**17**	**12**	**7**	**101**	**287**	**311**
							34.7%	29.7%	16.8%	11.9%	6.9%	100.0%		

	35	**47**		**19**	**101**	**287**	**311**
percentage of units by type	34.7%	46.5%		18.8%	**100.0%**		

BLOCK 10 (Ex-D)	GIA / NSA PROPOSED						APARTMENT NUMBERS						Habitable Rooms	Bed Spaces
	GEA		GIA		NSA		1 Bed 2P	2 Bed 3P	2 Bed 4P	3 Bed 4P	3 Bed 5P	TOTAL		
	sq m	*sq ft*	sq m	*sq ft*	sq m	*sq ft*	No.	No.	No.	No.	No.	No.	No.	No.
Core A														
Ground	587.0	*6,318*	540.0	*5,813*	304.0	*3,272*		3			1	**4**	13	14
First	686.0	*7,384*	638.0	*6,867*	487.0	*5,242*	4	4				**8**	20	20
Second	689.0	*7,416*	641.0	*6,900*	510.0	*5,490*	3	4	1			**8**	21	22
Third	689.0	*7,416*	641.0	*6,900*	510.0	*5,490*	3	4	1			**8**	21	22
Fourth	695.0	*7,481*	647.0	*6,964*	520.0	*5,597*	1	2	2	1	1	**7**	22	25
Fifth	695.0	*7,481*	647.0	*6,964*	520.0	*5,597*	1	2	2	1	1	**7**	22	25
Sixth	454.0	*4,887*	411.0	*4,424*	317.0	*3,412*	1			2	1	**4**	14	15
Seventh	454.0	*4,887*	411.0	*4,424*	317.0	*3,412*	1			2	1	**4**	14	15
Core B														
Ground	364.0	*3,918*	336.0	*3,617*	85.0	*915*				1		**1**	4	4
First	518.0	*5,576*	485.0	*5,221*	371.0	*3,993*	2	3		1		**6**	17	17
Second	518.0	*5,576*	485.0	*5,221*	378.0	*4,069*	2	2	1	1		**6**	17	18
Third	518.0	*5,576*	485.0	*5,221*	378.0	*4,069*	2	2	1	1		**6**	17	18
Fourth	518.0	*5,576*	485.0	*5,221*	378.0	*4,069*	2	2	1	1		**6**	17	18
Fifth	518.0	*5,576*	485.0	*5,221*	378.0	*4,069*	2	2	1	1		**6**	17	18
Core C														
Ground	424.0	*4,564*	381.0	*4,101*	199.0	*2,142*	1		1	1		**3**	9	10
First	545.0	*5,866*	505.0	*5,436*	396.0	*4,263*	3		2		1	**6**	16	19
Second	550.0	*5,920*	509.0	*5,479*	416.0	*4,478*	4	1	2			**7**	17	19
Third	550.0	*5,920*	509.0	*5,479*	416.0	*4,478*	4	1	2			**7**	17	19
Fourth	325.0	*3,498*	291.0	*3,132*	219.0	*2,357*	1		1		1	**3**	9	11
TOTAL	**10297.0**	***110,837***	**9532.0**	***102,602***	**7099.0**	***76,414***	**37**	**32**	**18**	**13**	**7**	**107**	**304**	**329**
							34.6%	29.9%	16.8%	12.1%	6.5%	100.0%		

	37	**50**	**20**	**107**
percentage of units by type	34.6%	46.7%	18.7%	**100.0%**

BLOCK 9 (Ex-E)	GIA / NSA PROPOSED						APARTMENT NUMBERS						Habitable Rooms	Bed Spaces
	GEA		GIA		NSA		1 Bed 2P	2 Bed 3P	2 Bed 4P	3 Bed 4P	3 Bed 5P	TOTAL		
	sq m	*sq ft*	sq m	*sq ft*	sq m	*sq ft*	No.	No.	No.	No.	No.	No.	No.	No.
Core A														
Ground	587.0	*6,318*	540.0	*5,813*	304.0	*3,272*	1	2	1			**4**	11	12
First	686.0	*7,384*	638.0	*6,867*	487.0	*5,242*	4	3	1			**8**	20	21
Second	689.0	*7,416*	641.0	*6,900*	510.0	*5,490*	3	3	2			**8**	21	23
Third	689.0	*7,416*	641.0	*6,900*	510.0	*5,490*	3	3	2			**8**	21	23
Fourth	689.0	*7,416*	641.0	*6,900*	510.0	*5,490*	3	3	2			**8**	21	23
Fifth	689.0	*7,416*	641.0	*6,900*	510.0	*5,490*	3	3	2			**8**	21	23
Sixth	448.0	*4,822*	404.0	*4,349*	304.0	*3,272*	3	1	1			**5**	12	13
Seventh	448.0	*4,822*	404.0	*4,349*	304.0	*3,272*	3	1	1			**5**	12	13
Core B														
Ground	364.0	*3,918*	336.0	*3,617*	85.0	*915*			1			**1**	3	4
First	518.0	*5,576*	485.0	*5,221*	371.0	*3,993*	2	3	1			**6**	16	17
Second	518.0	*5,576*	485.0	*5,221*	378.0	*4,069*	2	2	2			**6**	16	18
Third	518.0	*5,576*	485.0	*5,221*	378.0	*4,069*	2	2	2			**6**	16	18
Fourth	518.0	*5,576*	485.0	*5,221*	378.0	*4,069*	2	2	2			**6**	16	18
													0	0
Core C														
Ground	424.0	*4,564*	381.0	*4,101*	199.0	*2,142*	1		2			**3**	8	10
First	545.0	*5,866*	505.0	*5,436*	396.0	*4,263*	3		2		1	**6**	16	19
Second	550.0	*5,920*	509.0	*5,479*	416.0	*4,478*	4	1	2			**7**	17	19
Third	550.0	*5,920*	509.0	*5,479*	416.0	*4,478*	4	1	2			**7**	17	19
Fourth	325.0	*3,498*	291.0	*3,132*	219.0	*2,357*	1		1		1	**3**	9	11
TOTAL	**9755.0**	***105,003***	**9021.0**	***97,102***	**6675.0**	***71,850***	**44**	**30**	**29**	**0**	**2**	**105**	**273**	**304**
							41.9%	28.6%	27.6%	0.0%	1.9%	100.0%		

	44	**59**	**2**	**105**	**273**	**304**
percentage of units by type	41.9%	56.2%	1.9%	**100.0%**		

BLOCK 8 (Ex-F)	GEA		GIA		NSA		1 Bed 2P	2 Bed 3P	2 Bed 4P	3 Bed 5P	3 Bed 4P	TOTAL		
	sq m	*sq ft*	sq m	*sq ft*	sq m	*sq ft*	No.	No.	No.	No.	No.	No.	No.	No.
Core A														
Ground	587.0	*6,318*	540.0	*5,813*	304.0	*3,272*	1	2	1			**4**	11	12
First	686.0	*7,384*	638.0	*6,867*	487.0	*5,242*	4	4				**8**	20	20
Second	689.0	*7,416*	641.0	*6,900*	510.0	*5,490*	3	4	1			**8**	21	22
Third	689.0	*7,416*	641.0	*6,900*	510.0	*5,490*	3	3	2			**8**	21	23
Fourth	689.0	*7,416*	641.0	*6,900*	510.0	*5,490*	3	3	2			**8**	21	23
Fifth	689.0	*7,416*	641.0	*6,900*	510.0	*5,490*	3	3	2			**8**	21	23
Sixth	443.0	*4,768*	407.0	*4,381*	304.0	*3,272*	3	1	1			**5**	12	13
Seventh	448.0	*4,822*	404.0	*4,349*	304.0	*3,272*	3	1	1			**5**	12	13
Core B														
Ground	364.0	*3,918*	336.0	*3,617*	85.0	*915*			1			**1**	3	4
First	384.0	*4,133*	357.0	*3,843*	263.0	*2,831*	1	1	2			**4**	11	13
Second	385.0	*4,144*	360.0	*3,875*	263.0	*2,831*	1	1	2			**4**	11	13
Third	385.0	*4,144*	360.0	*3,875*	263.0	*2,831*	1	1	2			**4**	11	13
Fourth	385.0	*4,144*	360.0	*3,875*	263.0	*2,831*	1	1	2			**4**	11	13
Fifth	385.0	*4,144*	360.0	*3,875*	263.0	*2,831*	1	1	2			**4**	11	13
Sixth	385.0	*4,144*	360.0	*3,875*	263.0	*2,831*	1	1	2			**4**	11	13
Core D														
Ground	234.0	*2,519*	205.0	*2,207*	51.0	*549*	1					**1**	2	2
First	444.0	*4,779*	410.0	*4,413*	311.0	*3,348*	1	3	1			**5**	14	15
Second	447.0	*4,812*	413.0	*4,446*	318.0	*3,423*	1	2	2			**5**	14	16
Third	447.0	*4,812*	413.0	*4,446*	318.0	*3,423*	1	2	2			**5**	14	16
Fourth	447.0	*4,812*	413.0	*4,446*	318.0	*3,423*	1	2	2			**5**	14	16
Fifth	447.0	*4,812*	413.0	*4,446*	318.0	*3,423*	1	2	2			**5**	14	16
Core C														
Ground	424.0	*4,564*	381.0	*4,101*	199.0	*2,142*	1		2			**3**	8	10
First	545.0	*5,866*	505.0	*5,436*	396.0	*4,263*	3		2		1	**6**	16	19
Second	550.0	*5,920*	509.0	*5,479*	416.0	*4,478*	4	1	2			**7**	17	19
Third	550.0	*5,920*	509.0	*5,479*	416.0	*4,478*	4	1	2			**7**	17	19
Fourth	325.0	*3,498*	291.0	*3,132*	219.0	*2,357*	1		1		1	**3**	9	11
TOTAL	**12453.0**	***134,044***	**11508.0**	***123,872***	**8382.0**	***90,224***	**48**	**40**	**41**	**0**	**2**	**131**	**253**	**290**
							36.6%	30.5%	31.3%	0.0%	1.5%	100.0%		

	48	**81**	**2**	**131**	**253**	**290**
percentage of units by type	36.6%	61.8%	1.5%	**100.0%**		

TOTAL

TOTAL	GIA / NSA PROPOSED					
	GEA		GIA		NSA	
	sq m	*sq ft*	sq m	*sq ft*	sq m	*sq ft*
Block 13	9127.0	*98,243*	8454.0	*90,999*	6228.0	*67,038*
Block 12	9779.0	*105,261*	9049.0	*97,403*	6721.0	*72,345*
Block 11	9779.0	*105,261*	9049.0	*97,403*	6721.0	*72,345*
Block 10	10297.0	*110,837*	9532.0	*102,602*	7099.0	*76,414*
Block 9	9755.0	*105,003*	9021.0	*97,102*	6675.0	*71,850*
Block 8	12453.0	*134,044*	11508.0	*123,872*	8382.0	*90,224*
TOTAL	**61190.0**	***658,649***	**56613.0**	***609,382***	**41826.0**	***450,215***

APARTMENT NUMBERS						Habitable Rooms	Bed Spaces
1 Bed 2P	2 Bed 3P	2 Bed 4P	3 Bed 5P	3 Bed 4P	**TOTAL**		
No.	No.	No.	No.	No.	No.	No.	No.
40	31	25	0	2	**98**	256	283
35	29	18	12	7	**101**	287	312
35	30	17	12	7	**101**	287	311
37	32	18	13	7	**107**	304	329
44	30	29	0	2	**105**	273	304
48	40	41	0	2	**131**	253	290
239	**192**	**148**	**37**	**27**	**643**	**1660**	**1829**
37.2%	29.9%	23.0%	5.8%	4.2%	100.0%		

	239	**340**	**64**	**643**	**1660**	**1829**
percentage of units by type	37.2%	52.9%	10.0%	**100.0%**		

Parking	**Ground fl. GIA (m2)**	**Spaces**		
Block 13		41		
Block 12		35		
Block 11		42		
Block 10		24		
Block 9		45		
Block 8		66		
Subtotal undercroft parking		**253**		
On street parking		**203**		
South west strip of land		**16**		
Total		**472**		

Parking Spaces	472.0
Parking Ratio	0.73 spaces per unit
Average Hab Rooms per unit	2.58
Average Bed Spaces per unit	2.84
Wheelchair units (10%)	**64**

The NSA is the sum of the all of the GIAs of the individual apartments
The areas have been measured as shown on the following drawings: **P0(S)-100 ;P0(S)-101 ; P0(S)-102; P0(S)-103; P0(S)-104 ; P0(S)-105; P0(S)-106; P0(S)-10**
The areas are approximate and relate to the likely areas of the building at the current state of the design.
The standard RICS Code of Practice for measuring areas has been used with the exception that internal balconies are not included in GIA/NSA
Any decisions to be made on the basis of these predictions, whether as to project viability,
pre-letting, lease agreements and the like, should make allowance for the following:

Appendix C

Architects' plans

1 North Site - Ground Floor

1 : 500 @A1

NOTES
CONSULTANTS
- Refer to highways consultant's drawings for details
- Refer to landscape consultant's drawings for details
- Landscaping layout is indicative only

AREAS
- Refer to area schedule

Rev	Notes	Date	By	Auth
P1	DRAFT issue for Planning	17-12-12	CS	FvB
P2	Planning Submission	18-01-12	CS	FvB

0m 10m 20m 30m 40m 50m

VISUAL SCALE 1:500 @ A1

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Date: 07/17
Drawn By: CS
Checked by: FvB
Scale @ A1: 1 : 500
Scale @ A3:
CAD File No:

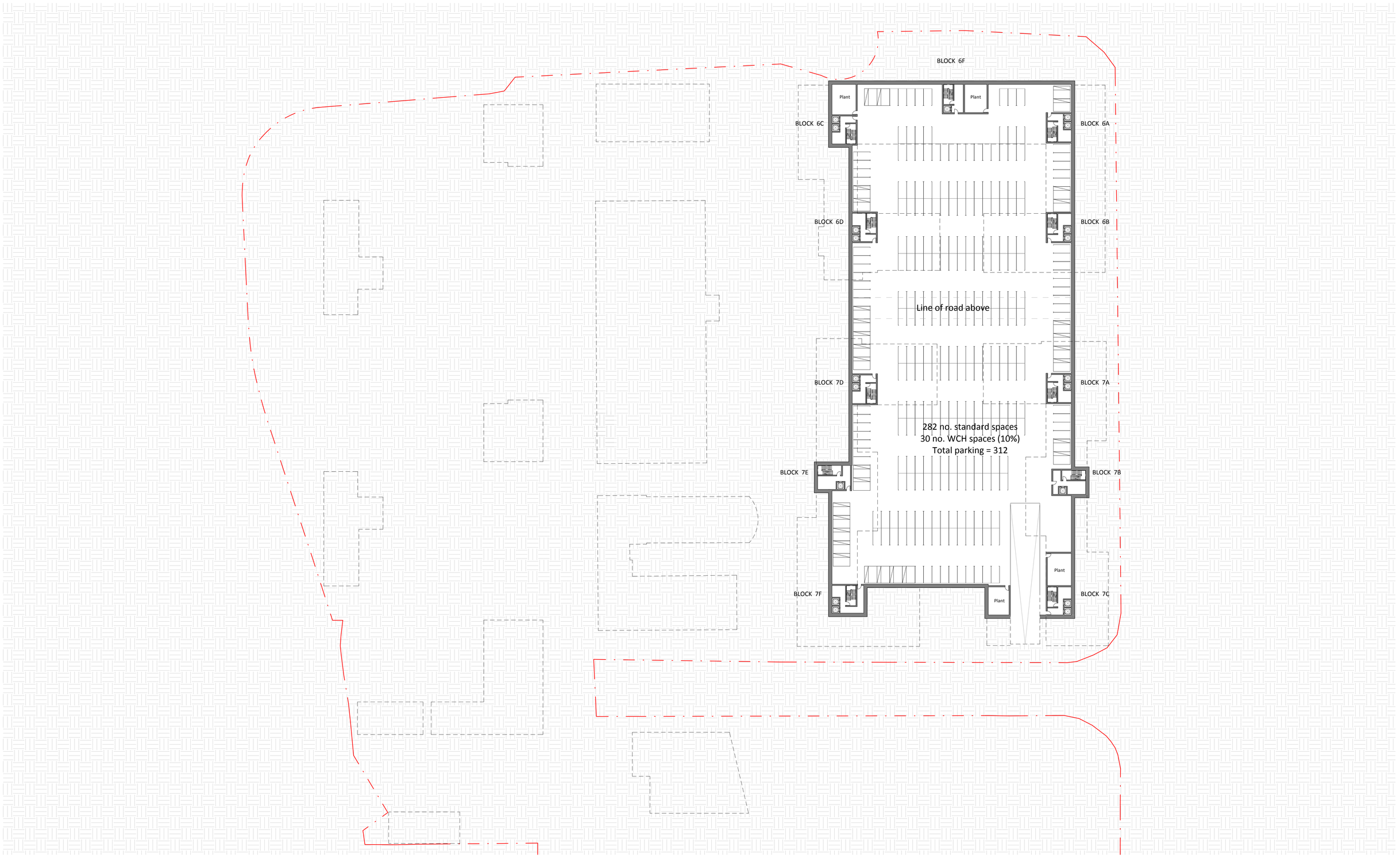
Plutus Estates (WGC) Limited and Metropolitan Housing Trust

Former Shredded Wheat Factory

Ground Floor Plan

PLANNING
16037 P0(N)-100

P2
Revision



1 North Site - Basement Floor Plan

1 : 500 @A1

NOTES
CONSULTANTS
- Refer to highways consultant's drawings for details
- Refer to landscape consultant's drawings for details
- Landscaping layout is indicative only

AREAS
- Refer to area schedule

Rev	Notes	Date	By	Auth
P1	DRAFT issue for Planning	17-12-12	CS	FvB
P2	Planning Submission	18-01-12	CS	FvB

0m 10m 20m 30m 40m 50m

VISUAL SCALE 1:500 @ A1

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Date: 10/27/17
Drawn By: CS
Checked by: FVB
Scale @ A1: 1 : 500
Scale @ A3:
CAD File No:

Plutus Estates (WGC) Limited and Metropolitan Housing Trust

Former Shredded Wheat Factory

Basement Floor Plan

PLANNING

16037 P0(N)-099

P2
Revision

1 P0(S)-100 - Ground Floor Plan

1 : 500 @A1

NOTES
CONSULTANTS
- Refer to highways consultant's drawings for details
- Refer to landscape consultant's drawings for details
- Landscaping layout is indicative only

AREAS
- Refer to area schedule

Rev	Notes	Date	By	Aut
P1	Draft Planning Set	17-12-20		PM
P2	Planning Submission	18-01-12		VC

0m 10m 20m 30m 40m 50m

VISUAL SCALE 1:500 @ A1

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Date: 12/01/18
Drawn By: LB
Checked by: PM
Scale @ A1: 1 : 500
Scale @ A3: 1 : 1000
CAD File No:

Plutus Estates (WGC) Limited and Metropolitan Housing Trust

Former Shredded Wheat Factory

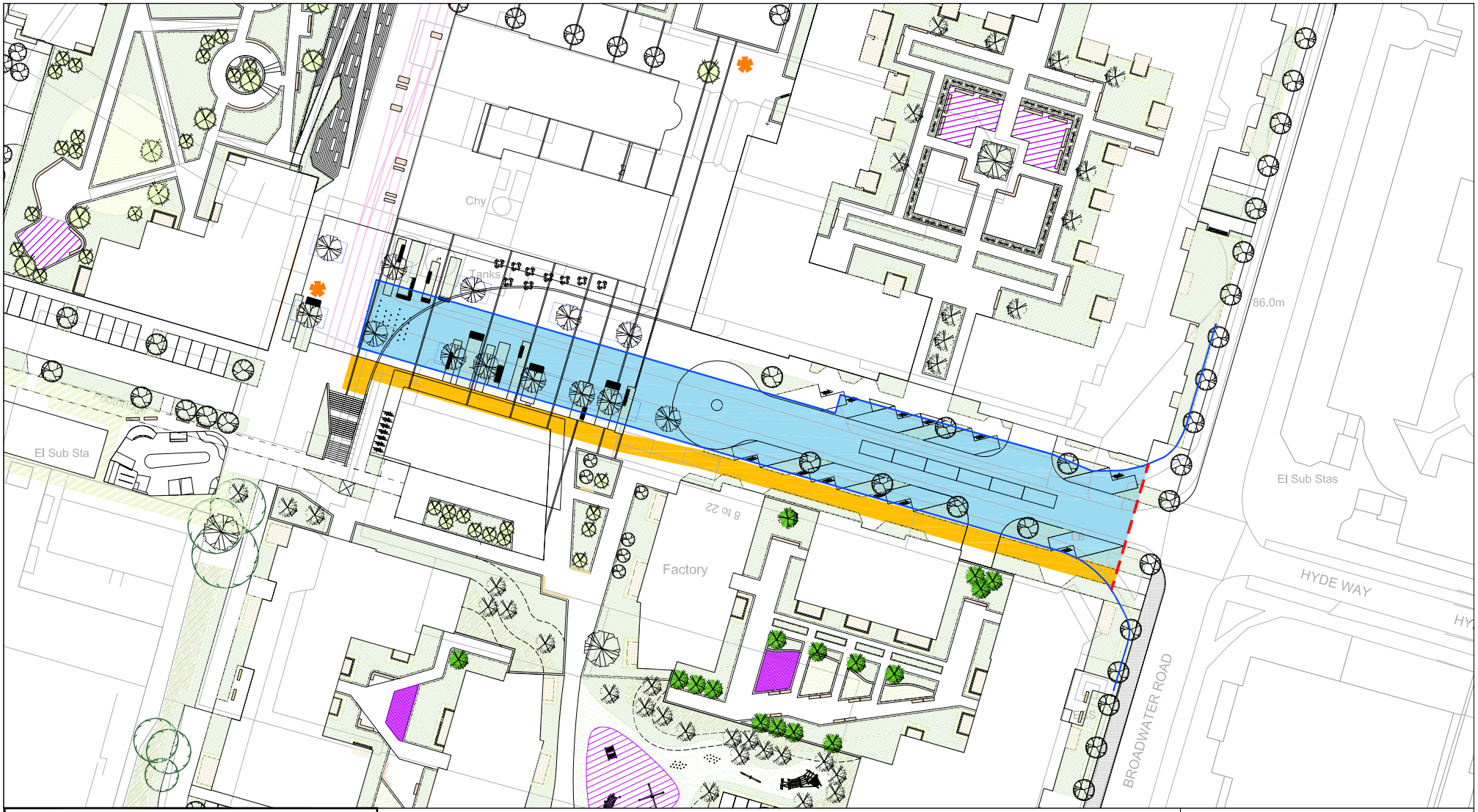
Ground Floor Plan

PLANNING
16037 P0(S)-100

P2 Revision

Appendix D

Hydeway stopping-up plans



entran
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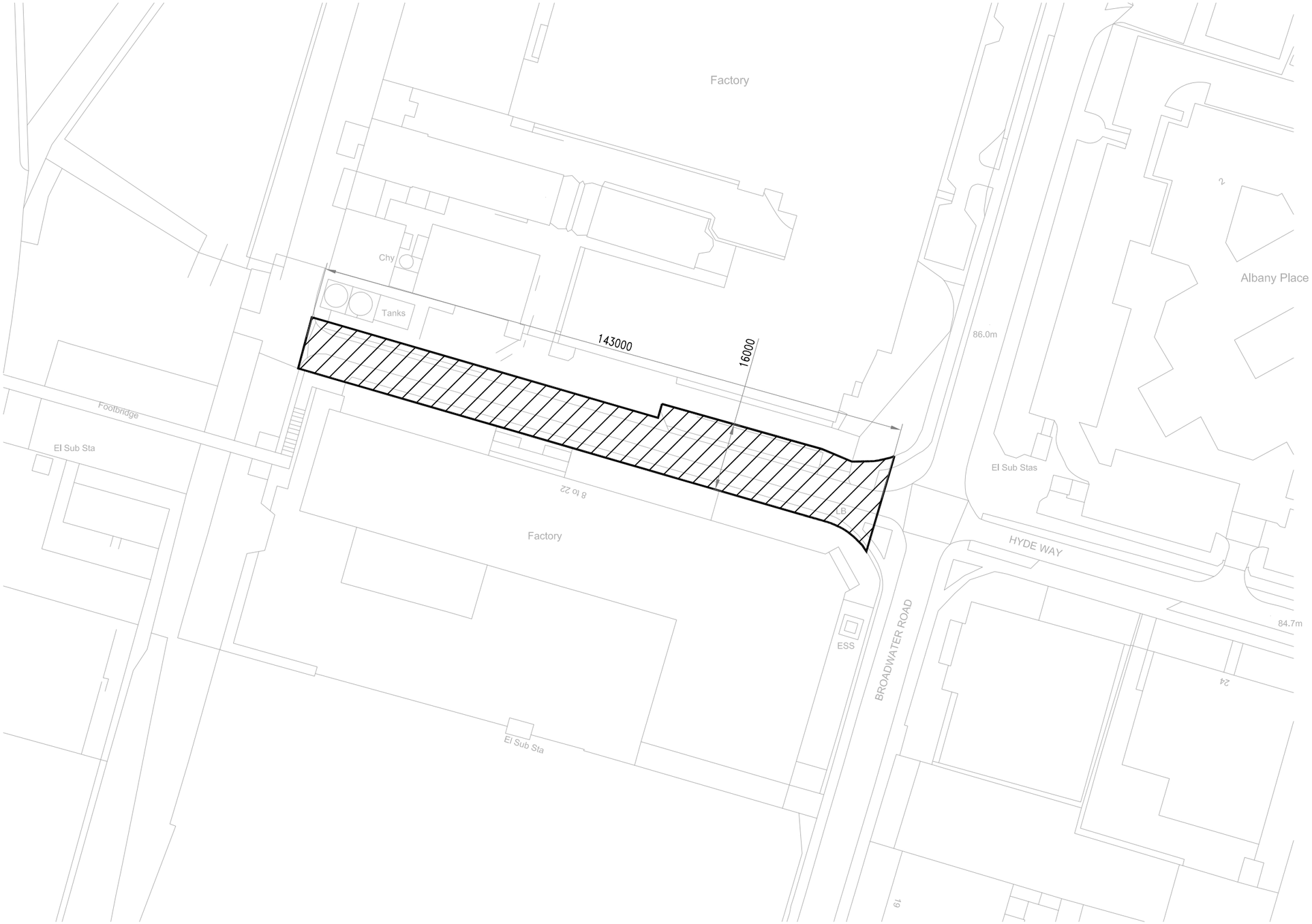
PROJECT TITLE BROADWATER ROAD, WELWYN GARDEN CITY

DRAWING TITLE HYDEWAY: PROPOSED ALTERATIONS TO THE HIGHWAY BOUNDARIES

DATE 19.12.17	SCALE 1:1000 AT A4	STATUS
DRAWN DJA	CHECKED RF	APPROVED RF
DRG SIZE A4	DRAWING NUMBER SK20	REV -

- HIGHWAY BOUNDARY
- PROPOSED HIGHWAY BOUNDARY
- PUBLIC RIGHT OF WAY
- HIGHWAY TO BE STOPPED UP

AREA TO BE STOPPED UP



REV	DATE	REVISION DETAILS	BY

entran
environmental & transportation
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TELEPHONE : 0117 937 4077

PROJECT TITLE
HYDE WAY
WELWYN GARDEN CITY

DRAWING TITLE
STOPPING UP PLAN

CLIENT / ARCHITECT

STATUS

SCALE		DRAWN
1:1000	AT A3	DJA
CHECKED		APPROVED
RF		RF

DRG SIZE	DATE	DRAWING NUMBER	REV
A3	19.12.17	SK21	-

Appendix E

TPA parking technical note

Spen Hill Development Ltd

Broadwater Road West,
WELWYN GARDEN CITY

Project Reference: 1309-14/TN/13D

Technical Note – Parking Strategy

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1 INTRODUCTION

1.1 Previous discussions with Welwyn Hatfield Borough Council (WHBC) established that further clarification is required with regards to the proposed parking allocation, for both the residential and commercial parking, for the proposed redevelopment of the former Shredded Wheat Factory site on Broadwater Road, Welwyn Garden City.

1.2 Since this initial request the proposed scheme has been reviewed and this includes both the proposed number of units as well as the total parking provision. It is now proposed to provide up to 850 residential units and a total of 1,023 parking spaces.

1.3 This Technical Note sets out the proposed parking allocation for the various land uses across the site, although it should be noted that these principles, as well as the final parking allocation, may change slightly when actually implemented.

2 WELWYN HATFIELD PARKING STANDARDS

2.1 WHBC's parking standards are set out in Welwyn Hatfield District Local Plan Review – Car Parking Standards (January 2004) and the Interim Policy for Car Parking Standards and Garage Sizes (August 2014). The standards are subject to zonal areas and are maximum parking standards. The standards for the relevant land uses are set out in Table 1.

Table 1 WHBC Maximum Demand-Based Car Parking Standards

Use Class	Description of Development	Maximum Car Parking Standards
A1 Retail Food Stores	a) Small food shops up to 500m^2 GFA	1 space per 30m^2
	b) Food supermarket exceeding 500m^2 GFA but not exceeding 2,500m^2 GFA	1 space per 18m^2 GFA

Use Class	Description of Development	Maximum Car Parking Standards	
A3 Food & Drink	a) Restaurants/cafes b) Public houses / bars	1 space per 5m^2 of dining area plus 3 spaces per 4 employees 1 space per 3m^2 of bar area plus 3 spaces per 4 employees	
B1 Business	a) B1 (a) offices b) B1 (b) research & development, high-tech / B1(c) light industry	1 space per 30m2 GFA 1 space per 35m2 GFA	
C1 Hotels & Hostels	a) Hotels	1 space per bedroom (inc staff accommodation) plus 1 space per manager plus 2 spaces per 3 staff minus spaces related to staff bedrooms plus 1 space per 5m^2 dining area plus 1 space per 3m^2 bar area plus 1 space per 5m^2 public area in conference facility plus 1 space per 6m^2 of public area in exhibition hall plus a minimum of 1 coach parking space per 100 rooms	
C3 Residential	a) General i) Bedsits ii) 1 bedroom dwellings iii) 2 bedroom dwellings iv) 3 bedroom dwellings v) 4 or more bedroom dwellings	**Zones 1 and 2** 0.75 spaces per bedsit 0.75 spaces per dwelling 1 space per dwelling 1.5 spaces per dwelling 2 spaces per dwelling	**Elsewhere** 1.25 spaces per bedsit 1.25 spaces per dwelling 1.5 spaces per dwelling 2.25 spaces per dwelling 3 spaces per dwelling
D1 Non-residential institutions	b) Community/family centres e) Surgeries & clinics h) Education establishments iii) nursery schools/playgroups	1 space per 9m^2 GFA plus 1 space per full-time staff member or equivalent 3 spaces per consulting room plus 1 space per employee other than consulting doctors/dentist/vets 1 space per 4 pupils	
D2 Assembly & leisure	h) Fitness centres/sports clubs	1 space per 15m^2 GFA	

2.2 Zone Map 4 for Welwyn Garden City, a copy of which is attached to this report, indicates that the proposed redevelopment site is located within Zone 2 and as such should only provide 25-50% of the maximum parking standard.

2.3 The proposals will have an average of approximately 1.02 spaces per unit across the site, which is in line with the local standards.

3 TRANSPORT ASSESSMENT AND FRAMEWORK TRAVEL PLAN PROPOSALS

Transport Assessment

3.1 Section 3 of the Transport Assessment (TPA Report 1309-14 TA01 Rev E) set out the proposed parking provision. It was proposed to provide a total of 1,236 residential car parking spaces, which equates to 1.49 spaces per unit, and 157 commercial car parking spaces.

3.2 This has now been revised to 866 residential spaces, equating to 1.02 spaces per unit, while the number of commercial spaces remains unchanged.

3.3 The residential car parking spaces will be split as follows:

- 700 allocated car parking spaces;
- 87 visitor car parking spaces;
- 27 car club spaces; and
- 52 car parking spaces for rent.

3.4 If the car club and rentable spaces are excluded then the parking ratio for the entire site reduces to 0.93 spaces per unit.

3.5 Phase 1 of the development originally proposed to provide a total of 365 units and 619 residential car parking spaces, which included car club, visitor and rentable spaces, equating to 1.7 spaces per unit. If the car club and rentable spaces are excluded, which total 48 spaces, then there are 1.56 spaces per unit.

3.6 The revised proposals for Phase 1 envisage a total of 357 units and 617 residential car parking spaces (including car club, visitor and rentable spaces), equating to 1.73 spaces per unit. If the car club and rentable spaces (61 in total) are excluded, then there are 1.56 spaces per unit.

3.7 Phase 2 of the development originally proposed to provide a further 462 units and 617 residential car parking spaces, which included car club and visitor spaces, equating to 1.34 spaces per unit. If the car club and rentable spaces are excluded, which total 50 spaces, then there are 1.23 spaces per unit.

3.8 The revised proposals for Phase 2 envisage 493 residential units and 249 residential car parking spaces (including car club, visitor and rentable spaces), equating to 0.51 spaces per unit. If the car club and rentable spaces (18 in total) are excluded, then there are 0.47 spaces per unit.

3.9 It is also proposed that 25% of the car parking spaces will be suitable for electric car charging with a further 25% suitable for conversion in the future.

3.10 Of the commercial car parking spaces 17 will be located on Hydeway and a further 140 will be located within Block 2's car park.

Framework Travel Plan

3.11 Following comments received from Hertfordshire County Council revisions were made to the Framework Travel Plan (TPA Report 1309-14 TP01 Rev E) to provide further clarification on the residential car parking. The revised Framework Travel Plan states out in paragraph 4.9 the proposed approach to residential car parking allocations:

"The exact allocation of individual spaces to individual units will be progressed and agreed prior to the units being available to purchase so that new residents know exactly where their parking space(s) are. Where possible the allocated spaces will be as close to the respective unit as feasible, although there will be no such guarantee for the rented car parking spaces."

4 RESIDENTIAL PARKING ALLOCATION CLARIFICATION

4.1 Due to the building form, ground levels and the complexities and costs of providing basement car parking it has not been possible to provide the exact number of car parking spaces required, beneath each of the individual blocks. This therefore results in what appears to be over or under provision of car parking spaces for individual blocks.

4.2 Rather than look at the parking at each individual block, the approach taken has been to look at the site as a whole and therefore the parking should be viewed as being site wide rather than block specific. However, as set out above, going forward individual spaces will be allocated to individual units and they will be located as close to the unit as possible.

4.3 Tables 2 and 3 below set out the parking provision for each of the residential blocks and also the allocation of the spaces within the blocks. On average the following parking provision has been provided for the various sized units:

- 0.75 car parking spaces per 1 bed unit
- 1.00 car parking spaces per 2 bed unit
- 1.40 car parking spaces per 3 bed unit
- 1.24 car parking spaces per town house.

Table 2: Car Parking Provision

Block	1 Bed	2 Bed	3 Bed	Town House	Total Units	Required Resident Spaces*	Available Spaces	Difference
1	23	33	14	-	70	70	32	-38
2&3	45	61	35	-	141	144	139	-5
5	-	2	-	-	2	2		-2
6	28	43	39	6	116	126	204	+78
7	24	28	37	9	98	109	274	+165
8	45	39	10	7	101	95	70	-25
9	27	38	14	5	84	84	40	-44
10	24	38	12	4	78	78	58	-20
11	24	38	12	3	77	77	29	-48
12	31	38	12	2	83	81	20	-61
Total	**271**	**358**	**185**	**36**	**850**	**866**	**866**	

*Based on average car parking spaces as set out in paragraph 4.3

Table 3: Block Parking Space Allocation

	Resident Spaces Required	Allocation	
Block 1	57	Block 1 Block 2/3 Basement 6/7	29 4 24
Block 2&3	116	Block 2/3	116
Block 5	2	Basement 6/7	2
Block 6	102	Block 6 Basement 6/7	39 63
Block 7	88	Block 7 Basement 6/7	58 30
Block 8	77	Block 8 Basement 6/7	65 12
Block 9	68	Block 9 Basement 6/7	35 33
Block 10	63	Block 10 Basement 6/7	53 10
Block 11	62	Block 11 Basement 6/7	26 36
Block 12	65	Block 12 Basement 6/7	17 48
TOTAL	700		700

4.4 TPA drawing 1309-14 PL135B, which is reproduced within this report, shows these allocations graphically.

4.5 The Site Management Company will be responsible for managing the use of the car parks and will take suitable enforcement action if and when residents do not abide by the rules of the car park(s).

Visitor Parking

4.6 As set out in Section 3 of the Transport Assessment, a Car Park Management Plan will be implemented to ensure that only permitted vehicles are able to park within the residential car parks.

4.7 All residents will be required to register their vehicles with the Management Company and will have to park within their allocated space. Any unregister vehicles (i.e. visitors) will only be permitted to park within the designated visitor spaces for a limited time period before being fined. If visitors require a longer duration of stay then the resident they are visiting would have to book them in with the Management Company, but again there would be time limits, likely to be two days, for booked vehicles which are booked to ensure that visitor spaces are not used as unofficial parking for residents.

4.8 An Automatic Number Plate Recognition (ANPR) system will be used to monitor all vehicles arriving and departing. This will also remove the need for barrier controls on the entrances to the car parks.

5 COMMERCIAL PARKING

5.1 From the outset of the development of the scheme it has been envisaged that the commercial element of the site should complement the town centre rather than being seen as separate. This combined with the sustainable location of the site has helped influence the proposed parking provision for the commercial uses.

B1 Offices/Research

5.2 The proposed B1 offices/research facilities, which are located within the former production hall (Block 5), have a total floor area of 6,370m^2. Based on local parking standards, set out in Table 1 above, there should be a maximum of between 182 and 212 parking spaces provided subject to the final end use. However, given the site location these numbers should be reduced to 25-50% as per the local parking standards which equates to between 46 and 106 car parking spaces.

5.3 As the end occupiers are unknown and given the forecast vehicle movements associated with and the parking standard for the land use it is envisaged that 106 car parking spaces will be provided within the Block 2 car park, although this number will be reviewed once the occupier(s) requirements are known. If the demand for car parking exceeds the number of

spaces provided then the overspill would have to use town centre car parks or alternatively the occupier(s) could potentially rent any spare commercial car parking spaces which are available subject to the take up from the other commercial uses on site.

5.4 Given the normal working hours of offices and to maximise car park space utilisation it is envisaged that the office will share their car parking spaces with the hotel.

5.5 Employees at the office/research building would be able to access the car parking spaces for a specific time period, potentially between 08:30 and 18:00, after which time they would be required to move their vehicle or be fined. This would be managed through the Management Company. The hotel guests would then be able to use the car parking spaces between 18:00 and 08:30.

Crèche

5.6 The proposed development would provide a crèche of 650m^2. Based on the local parking standards a maximum of one space per four pupils should be provided, reduced to 25-50% as per parking standards.

5.7 At present the end operator is unknown and as such it is not possible to predict their staff parking requirements accurately. Notwithstanding this, it is likely that the vast majority of staff would live in the local area and as such it is intended that there will be three dedicated car parking spaces within the Block 2 car park, although this number will be reviewed once the operator is known. If the demand for car parking exceeds the number of spaces provided then the overspill would have to use town centre car parks or alternatively the operator could potentially rent any spare commercial car parking spaces which are available.

5.8 As with the office/research car parking it is envisaged that the crèche car parking spaces could be utilised by the hotel during the evening and overnight. As such similar parking restrictions will be applied to the time when crèche staff can use the spaces.

Hotel

5.9 The proposed hotel would have a total area of 2,554m^2, which could justify in excess of 70 spaces car parking spaces, depending on the final number of bedrooms and staff numbers which are currently unknown.

5.10 Given the operational nature of hotels, the peak demand for car parking normally occurs in the evening and overnight, when the demand from other commercial uses, such as the offices and the crèche, is traditionally very low. Within the Block 2 car park there will be six car parking spaces allocated for hotel staff to use, it also proposed that the 109 car parking spaces allocated to the offices/research and the crèche will be made available for the hotel to use outside the normal working hours.

5.11 If the demand for car parking exceeds the number of spaces provided then the overspill would have to use town centre car parks or alternatively the occupier(s) could potentially rent any spare commercial car parking spaces which are available.

Health Care Facilities

5.12 The proposed health care facilities will have a total area of 836m^2 (which includes plant room), although the exact number of consulting rooms is currently unknown. As such it is not possible to accurate forecast the maximum number of car parking spaces.

5.13 As the end operator and exact nature of use is currently unknown it is difficult to predict the parking demand for staff. However, there will be a mix of medical staff and administrative staff and as such it could be reasonably assumed that the majority of administrative staff are likely to live reasonably close to the site and as such would not require a car parking space.

5.14 The medical staff may live further afield and as such the majority would expect a car parking spaces, particularly if there is a requirement for home visits. We would initially propose to provide eight car parking spaces within Block 2 car park, although this number will be reviewed once the operator's requirements are known. If the demand for car parking exceeds the number of spaces provided then the overspill would have to use town centre car parks or alternatively the operator could potentially rent any spare commercial car parking spaces which are available.

5.15 It is expected that the majority of patients will live either within the new development or within the immediate surrounding residential areas. As such the vast majority of patients will be within walking distance of the facilities and will not require car parking. Those who opt to drive to the site would have to use the parking along Hydeway or town centre car parks.

Retail / Restaurants / Cafes

5.16 The scheme would provide a 572m^2 convenience / comparison store along with a total of 1,928m^2 of restaurants and cafes, which is likely to be split between five units. The maximum parking which could be provided for these land uses is in excess of 400 spaces, which should be reduced to between 100 and 200 given the site location.

5.17 It has always be envisaged that the A1 and A3 land uses within the scheme would complement the existing town centre and as such the intention has been for customers using these facilities would either use the town centre car parking or the limited parking being provided along Hydeway. Subject to the take up of use by the commercial units of there is potential that some of the car parking spaces within Block 2 car park could be made available to customers during the evening, although this would need to be monitored and the parking restrictions strictly enforced.

5.18 It is unlikely that those working within the A1 and A3 units will travel significant distances, with most living in the local area. As such the demand for staff car parking is likely to be limited and it is currently proposed to provide nine car parking spaces within Block 2 car park for the

A1 and A3 units. The nine car parking spaces will be allocated with four to the A1 unit and one per each of the A3 units. If the demand for car parking exceeds the number of spaces provided then the overspill would have to use town centre car parks or alternatively the operators could potentially rent any spare commercial car parking spaces which are available.

Gym / Community Building

5.19 The proposed development would provide a 746m^2 community building and a 703m^2 dance/gym studio. These land uses could be provided with a maximum of 84 car parking spaces for the community building plus staff parking and 47 car parking spaces for the dance/gym studio, reduced to 25-50% which equates to 42 spaces plus staff parking and 23 spaces respectively.

5.20 It is envisaged that those using the gym and community building would be required to either park on Hydeway or in the town centre car parks. However, there would be a small number of car parking spaces provided for staff working at these facilities. While the exact number of staff is currently unknown it is currently proposed that the gym would have four car parking spaces allocated for staff and a further four spaces would be provided for staff at the community building, although this number will be reviewed once the operator's requirements are known. If the demand for car parking exceeds the number of spaces provided then the overspill would have to use town centre car parks or alternatively the operator(s) could potentially rent any spare commercial car parking spaces which are available.

Summary

5.21 The proposed brake down of car parking for the commercial uses is as follows:

- Offices/Research 106 car parking spaces
- Crèche Staff 3 car parking spaces
- Hotel Staff 6 car parking spaces
- Health Care Staff 8 car parking spaces
- Retail / Restaurant Staff 9 car parking spaces
- Dance/Gym Studio Staff 4 car parking spaces
- Community Building Staff 4 car parking spaces

6 CAR PARK MANAGEMENT

6.1 The Management Company will be responsible for managing the use of the car parking provision and will take appropriate enforcement action if and when residents/visitors, or employees/guests do not abide by the rules of the various areas of the car parking facilities identified above.

6.2 A *Car Park Management Plan* will provided to residents and employers within the proposed scheme so that everybody concerned is fully aware of the management and operation of the car parking provision.

6.3 The Management Company will also be responsible for the management of the licencing of the rentable spaces to residents and will ensure that sufficient spaces (up to 27) are made available for the car club operator.

7 SUMMARY

7.1 It was originally proposed to provide 1,236 spaces allocated to the 827 residential units, including car club, visitor and rentable spaces. The number of residential units has now been increased to 850 and the number of residential car parking spaces reduced to 866 spaces.

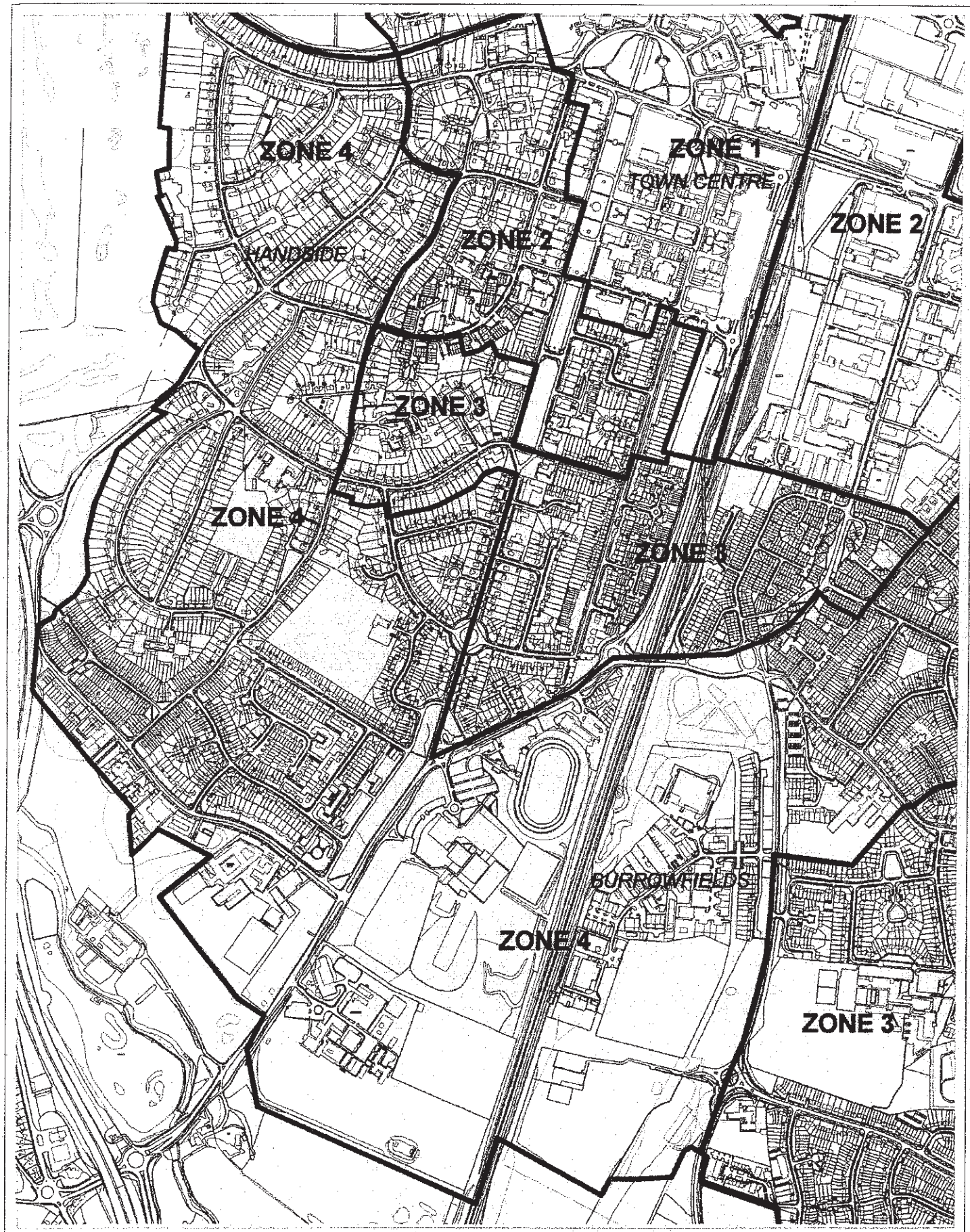
7.2 The residential units will now have an average of 1.02 spaces per unit across the site, reduced to 0.93 spaces per unit if car club and rented spaces are excluded. Parking provision was revised so that it is now in line with local parking standards.

7.3 The occupiers of the individual units will be aware of which are their allocated car parking space(s), with the space(s) being located as close as possible to the unit.

7.4 An initial allocation of the proposed commercial car parking results in all the land uses having a parking provision which is less than the local parking standards, except for the offices/research which will be in accordance to the maximum levels.

7.5 By providing commercial car parking at a level lower than the maximum parking standards, for the majority of the commercial land uses, it is felt that the scheme is promoting the use of sustainable modes of transport, ensures a connectivity to the town centre and is in keeping with the principles of a garden city.

7.6 The car parks will be managed by the Management Company who will ensure that the use of the car parking spaces is not abused by residents, employees or visitors.



WELWYN HATFIELD COUNCIL

Council Offices, The Campus,
Welwyn Garden City, Herts. AL8 6AE

Zonal Maps: Welwyn Garden City - Map 4

SCALE: 1:10000 DRAWN BY: JPG DATE 28th January 2003

DOCUMENT SIGNATURE AND REVIEW SHEET

	Prepared By:	Checked By:	Approved for issue
Name	D Ford	G Di Guardo	D Ford
Signature	DEF	GDG	DEF
Date	24 July 2015	29 July 2015	30 July 2015

Document Review

Revision	Date	Description	Checked By
A	28/01/16	Revised Parking Provision	DEF
B	17/02/16	Revised Number of Units (850)	DEF
C	24/02/16	Team Comments	DEF
D	11/03/16	Team Comments	RTBL

Appendix F

Parking calculations

Wheat Quarter - Residential Parking Calcualtions

Standard based on WHBC; allocation based on Census proportion; Car Club equivalence set to 6 spaces

Spaces per dwelling 0.60

	Std	Allocated	CC	Visitor	Provided	Equiv
1-bed	0.75	0.45	0.06	0.1	0.61	0.91
2-bed	1.00	0.60	0.06	0.1	0.76	1.06
3-bed	1.50	0.90	0.06	0.1	1.06	1.36
4+ bed	2.00	1.20	0.06	0.1	1.36	1.66

Total spaces

811	Std + v	Allocated	CC	Visitor	Prov	Equiv
1-bed	396	210	28	47	284	424
2-bed	345	188	19	31	239	333
3-bed	50	28	2	3	33	42
4+ bed	0	0	0	0	0	0
	791	**426**	**49**	**81**	**556**	**799**
Ave alloc	0.975				0.685	0.985
Incl vis	1.075					

Schedule	NORTH	
1b	466	57%
2b	314	39%
3b	31	4%
4+b	0	0%
	811	

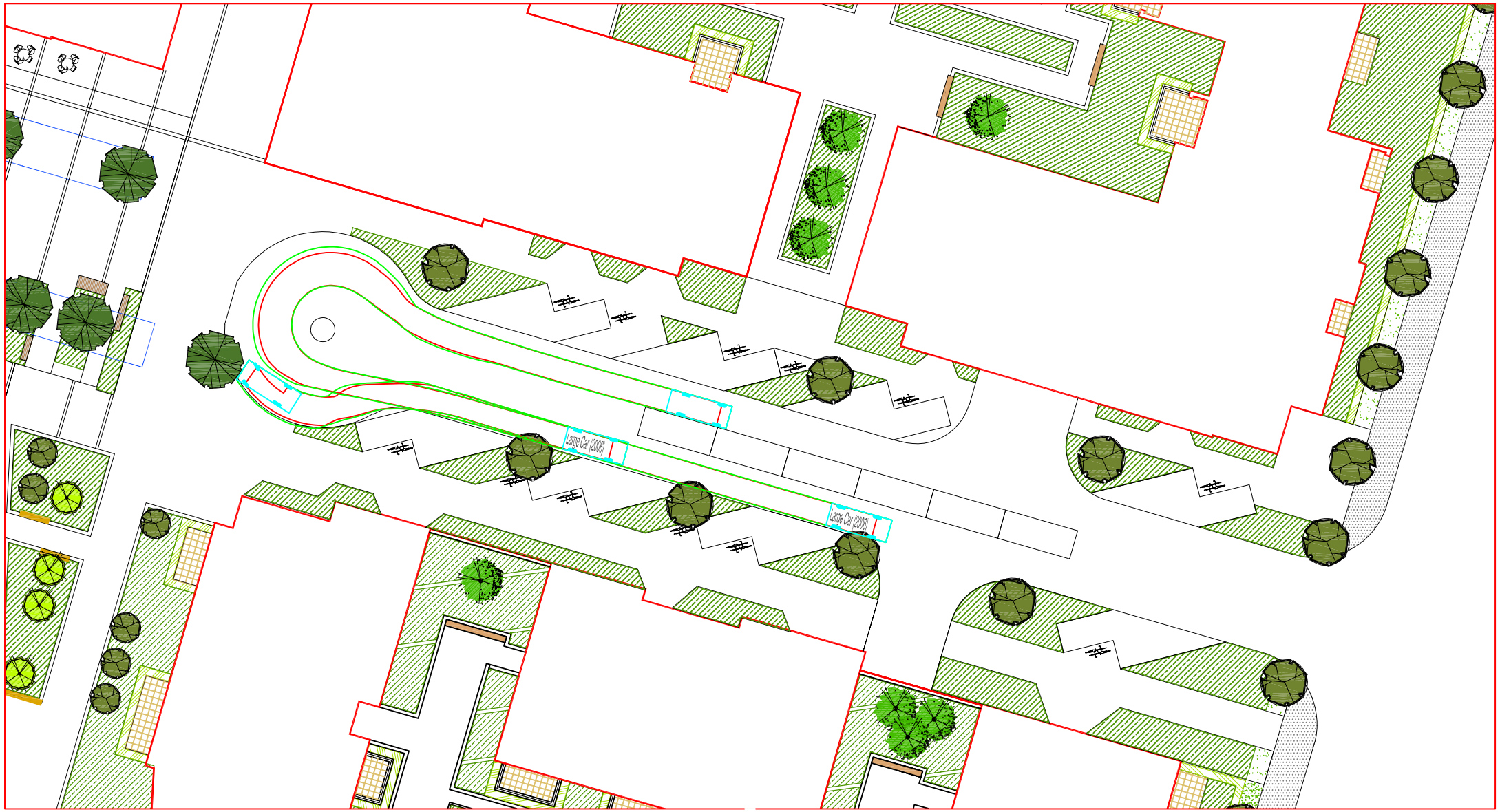
Total spaces

643	Std + v	Allocated	CC	Visitor	Prov	Equiv
1-bed	203	108	14	24	146	217
2-bed	374	204	20	34	258	360
3-bed	102	58	4	6	68	87
4+ bed	0	0	0	0	0	0
	680	**369**	**39**	**64**	**472**	**665**
Ave alloc	1.057				0.734	1.034
Incl vis	1.057					

Schedule	SOUTH	
1b	239	37%
2b	340	53%
3b	64	10%
4+b	0	0%
	643	

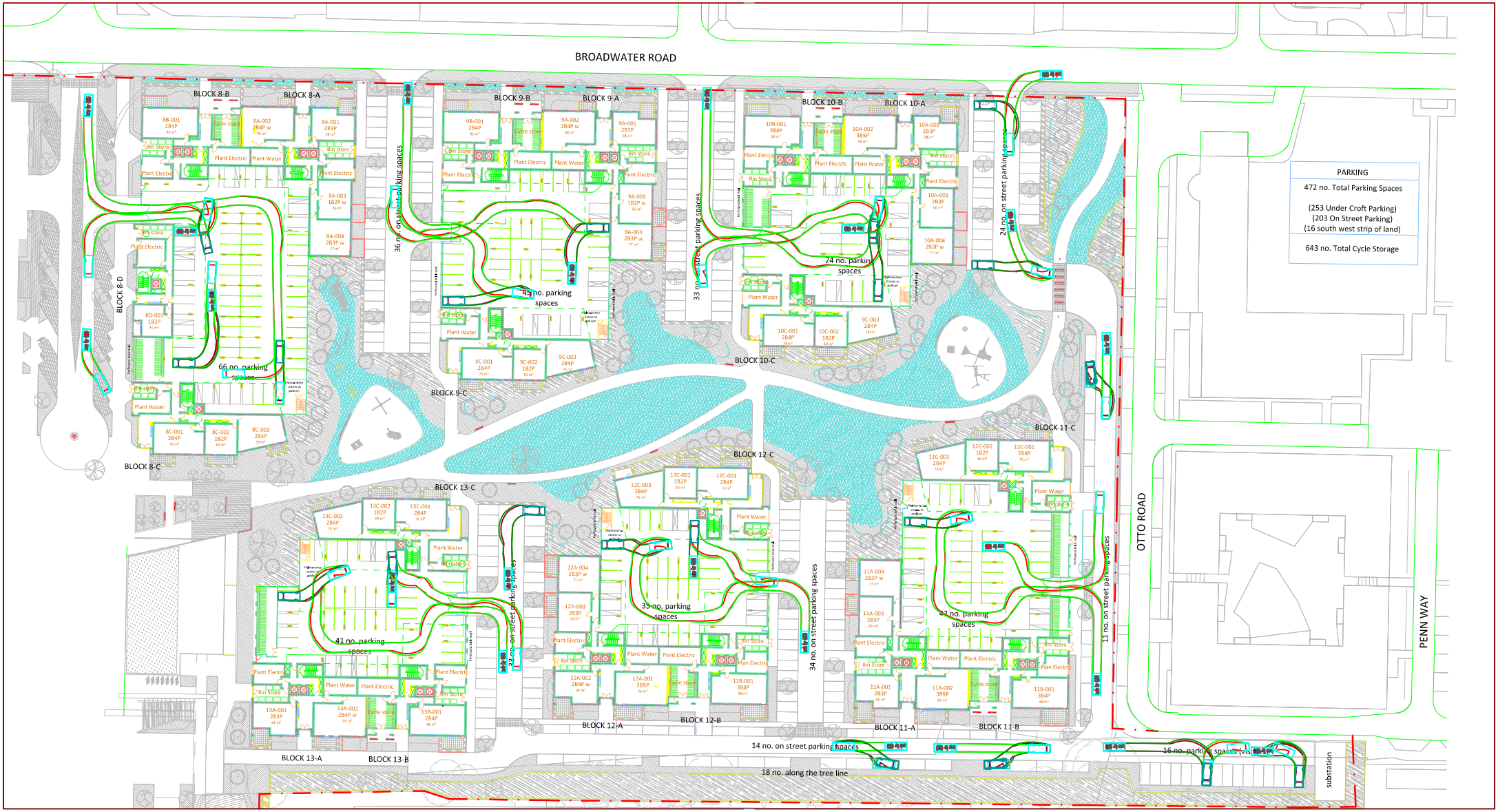
Appendix G

Car parking swept path analyses



entran
environmental & transportation
7 Greenway Farm | Bath Road | Wick | Bristol | BS30 5RL
TELEPHONE : 0117 937 4077

PROJECT TITLE	Welwyn Garden City - North Site	
DRAWING TITLE	Swept Path Analysis - Turning Head Drop Off Large Car	
DATE Jan 2018	SCALE NTS AT A4	STATUS
DRAWN SA	CHECKED RAF	APPROVED RAF
DRG SIZE A4	DRAWING NUMBER SK103	REV -



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7 Greenway Farm | Bath Road | Wick | Bristol | BS30 5RL
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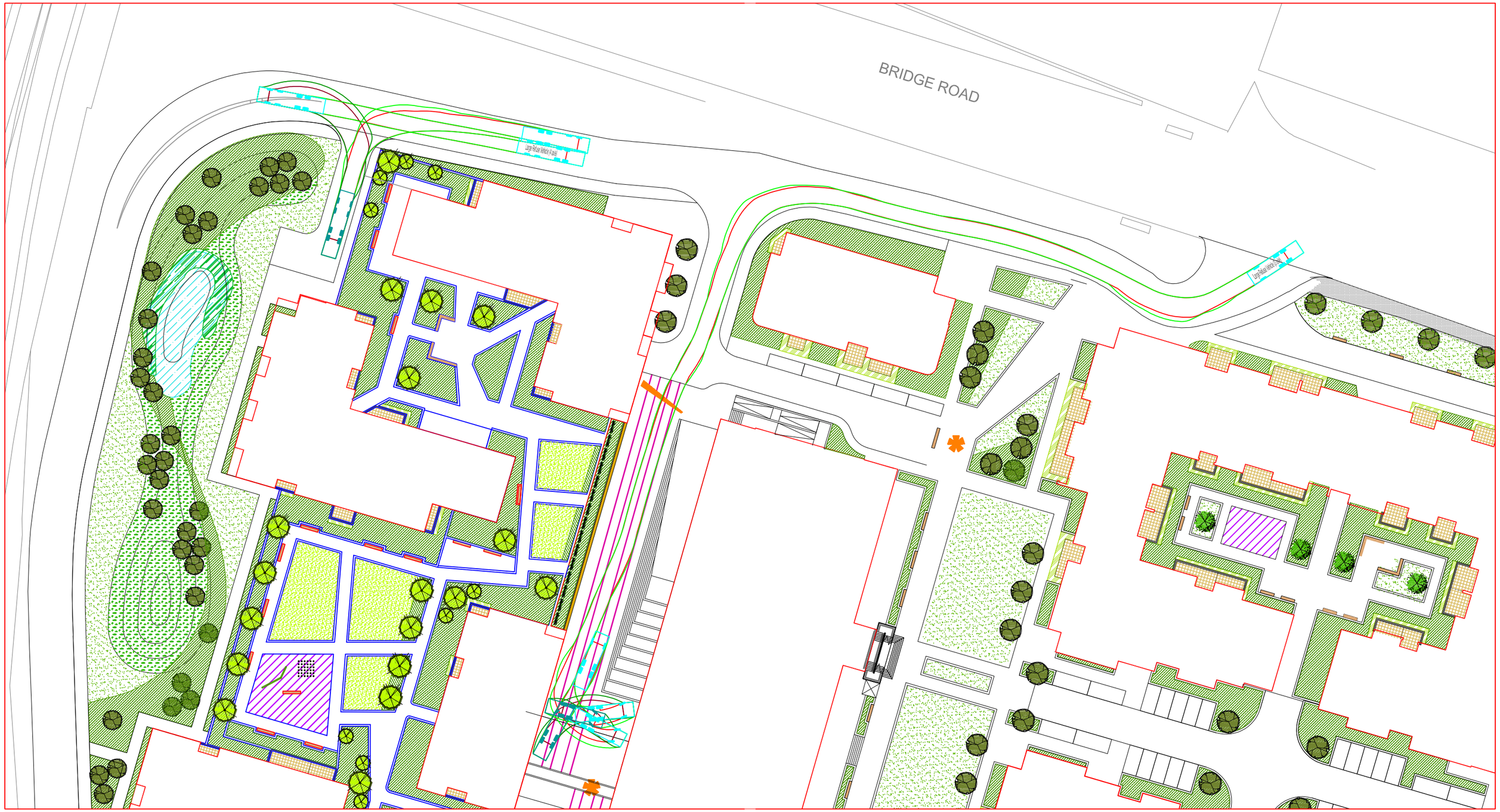
PROJECT TITLE Welwyn Garden City - South Site

DRAWING TITLE Swept Path Analysis - Large Car

DATE Jan 2018	SCALE NTS AT A4	STATUS
DRAWN SA	CHECKED RAF	APPROVED RAF
DRG SIZE A4	DRAWING NUMBER SK105	REV -

Appendix H

North area servicing swept path analyses



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PROJECT TITLE	Welwyn Garden City - North Site		
DRAWING TITLE	Swept Path Analysis - 4 Axle Refuse Vehicle		
DATE Jan 2018	SCALE NTS AT A4	STATUS	
DRAWN SA	CHECKED RAF	APPROVED RAF	
DRG SIZE A4	DRAWING NUMBER SK106	REV -	

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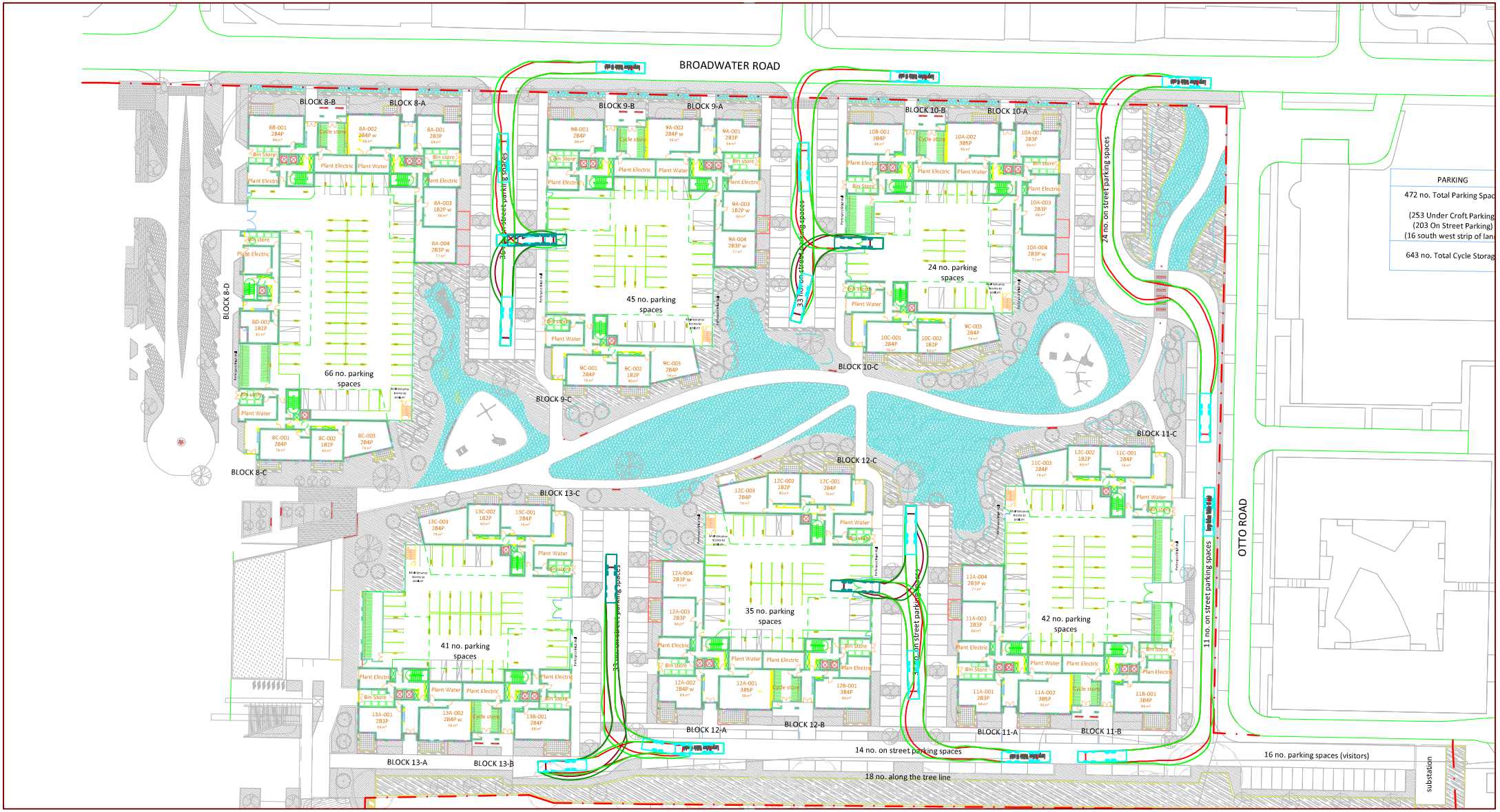
PROJECT TITLE	Welwyn Garden City North Site	
DRAWING TITLE	Swept Path Analysis - 4 Axle Refuse Vehicle	
DATE Jan 2018	SCALE NTS AT A4	STATUS
DRAWN SA	CHECKED RAF	APPROVED RAF
DRG SIZE A4	DRAWING NUMBER SK104	REV -

Appendix I

South area refuse vehicle swept path analyses



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7 Greenway Farm | Bath Road | Wick | Bristol | BS30 5RL
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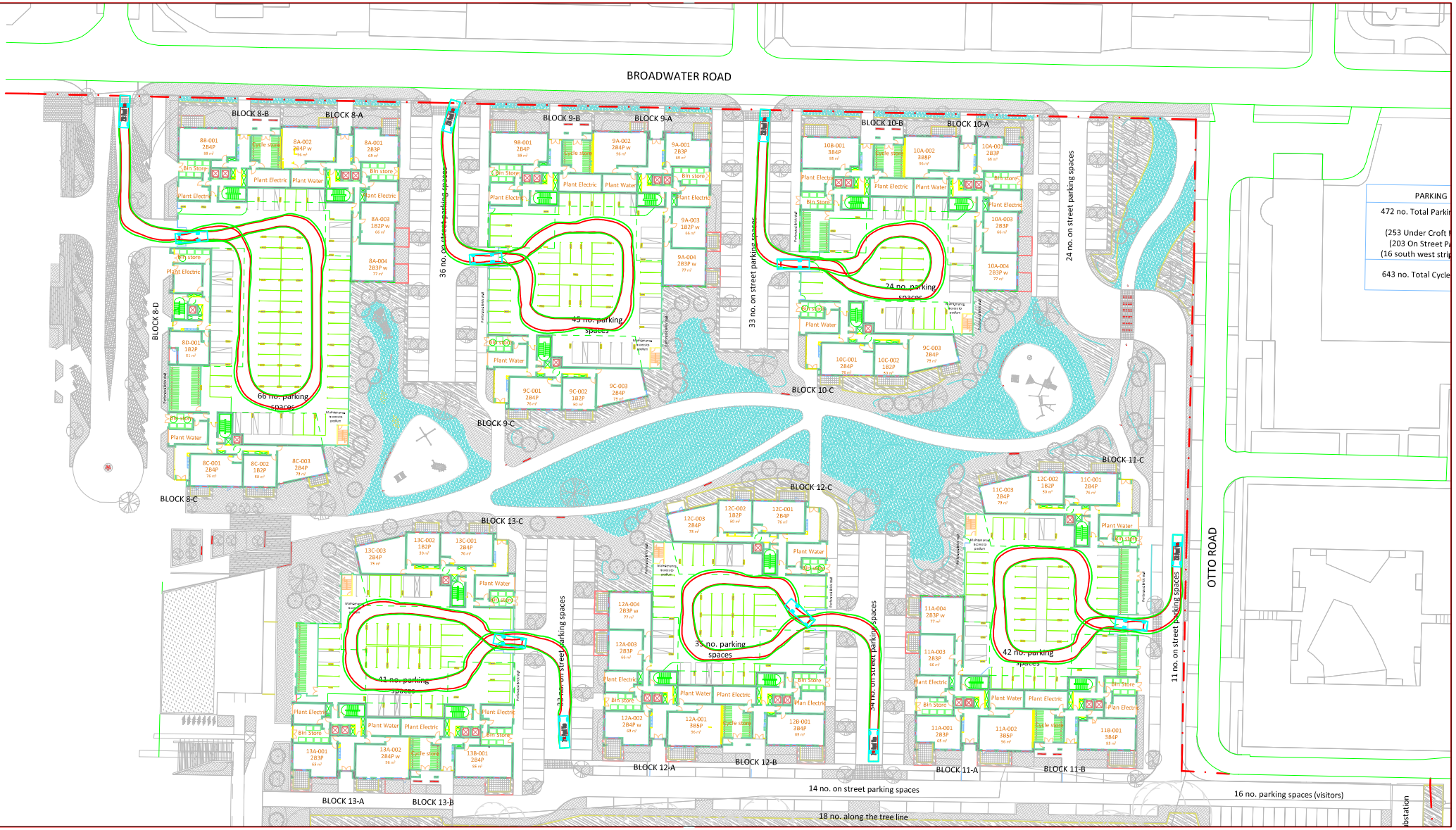
PROJECT TITLE Welwyn Garden City - South Side

DRAWING TITLE Swept Path Analysis - 4 Axle Refuse Vehicle

DATE Jan 2018	SCALE NTS AT A4	STATUS
DRAWN SA	CHECKED RAF	APPROVED RAF
DRG SIZE A4	DRAWING NUMBER SK101	REV -

Appendix J

South area daily delivery swept path analyses



entran
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7 Greenway Farm | Bath Road | Wick | Bristol | BS30 5RL
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PROJECT TITLE Welwyn Garden City - South Side

DRAWING TITLE Swept Path Analysis - 7.5t Panel Van

DATE Jan 2018	SCALE AT A4	STATUS
DRAWN SA	CHECKED RAF	APPROVED RAF
DRG SIZE A4	DRAWING NUMBER SK102	REV -

Appendix K

TRICS data

TRICS 7.2.3
Trip Rate F Gross floor area

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use 07 - LEISURE
Category C - LEISURE CENTRE
VEHICLES

Selected regions and areas:

2	SOUTH EAST		
	BU	BUCKINGH	1 days
	OX	OXFORDSH	1 days
	WS	WEST SUS	1 days
3	SOUTH WEST		
	BR	BRISTOL CI	1 days
	DC	DORSET	1 days
5	EAST MIDLANDS		
	LE	LEICESTER	1 days
	LN	LINCOLNSH	1 days
6	WEST MIDLANDS		
	WO	WORCESTH	1 days
7	YORKSHIRE & NORTH LINCOLNSHIRE		
	NY	NORTH YO	1 days

This section displays the number of survey days per TRICS® sub-region in the selected set

Filtering Stage 2 selection:

This data displays the chosen trip rate parameter and its selected range. Only sites that fall within the parame
Parameter Gross floor area
Actual Ran 360 to 1700 (units: sqm)
Range Sele 360 to 2000 (units: sqm)

Public Transport Provision:
Selection b Include all surveys

Date Rang 01/01/07 to 13/10/11

This data displays the range of survey dates selected. Only surveys that were conducted within this date range
Selected survey days:
Monday 3 days
Tuesday 3 days
Wednesda 2 days
Thursday 1 days
This data displays the number of selected surveys by day of the week.

Selected survey types:
Manual co 9 days
Directiona 0 days
This data c the total a whilst ATC surveys are undertaking using machines.

Selected Locations:

Town Cent	0
Edge of To	2
Suburban /	2
Edge of To	5
Neighbour	0
Free Stand	0
Not Known	0

This data c Edge of Tc Suburban Neighbou Edge of Tc Town Centre and Not Known.

Selected Location Sub Categories:

Industrial Z	1
Commerci	0
Developm	0
Residentia	3
Retail Zone	0
Built-Up Zc	0
Village	0
Out of Tow	0
High Stree	0
No Sub Cat	5

This data c Industrial Developm Residentia Retail Zon Built-Up Z Village Out of Tow High Street and No Su

Filtering Stage 3 selection:

Use Class:

D2	9 days

This data c which can be found within the Library module of TRICS®.

Population within 1 mile:

1,001 to 5	1 days
5,001 to 1	3 days
10,001 to :	1 days
15,001 to :	2 days
20,001 to :	1 days
25,001 to !	1 days

This data displays the number of selected surveys within stated 1-mile radii of population.

Population within 5 miles:

5,001 to :	2 days
25,001 to	1 days
100,001 tc	2 days
125,001 tc	2 days
250,001 tc	2 days

This data displays the number of selected surveys within stated 5-mile radii of population.

Car ownership within 5 miles:

0.6 to 1.0	1 days
1.1 to 1.5	8 days

This data c within a radius of 5-miles of selected survey sites.

Travel Plan:
No 9 days
This data c and the number of surveys that were undertaken at sites without Travel Plans.

LIST OF SITES relevant to selection parameters

1 BR-07-C-0: SWIMMIN BRISTOL CITY
JUBILEE ROAD
KNOWLE
BRISTOL
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Gross floor area 900 sqm
Survey dat MONDAY ######## Survey Typ MANUAL

2 BU-07-C-0: SWIM. PO BUCKINGHAMSHIRE
TICKFORD STREET

NEWPORT PAGNELL
Edge of Town
No Sub Category
Total Gross floor area 1020 sqm
Survey dat TUESDAY ######## Survey Typ MANUAL

3 DC-07-C-0 LEISURE CE DORSET
MILLDOWN ROAD

BLANDFORD FORUM
Edge of Town
No Sub Category
Total Gross floor area 1119 sqm
Survey dat MONDAY ######## Survey Typ MANUAL

4 LE-07-C-01 SWIMMIN LEICESTERSHIRE
STATION ROAD
WIGSTON
LEICESTER
Edge of Town
No Sub Category
Total Gross floor area 1200 sqm
Survey dat WEDNESD ######## Survey Typ MANUAL

5 LN-07-C-0: LEISURE CE LINCOLNSHIRE
BIRCHWOOD AVENUE
BIRCHWOOD
LINCOLN
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Gross floor area 1600 sqm
Survey dat MONDAY ######## Survey Typ MANUAL

6 NY-07-C-0: SWIMMIN NORTH YORKSHIRE
MILL LANE

PICKERING
Edge of Town Centre
No Sub Category
Total Gross floor area 1100 sqm
Survey dat THURSDAY ######## Survey Typ MANUAL

7 OX-07-C-0 SWIMMIN OXFORDSHIRE
BLACKBIRD LEYS ROAD
BLACKBIRD LEYS
OXFORD
Edge of Town
Residential Zone
Total Gross floor area 360 sqm
Survey dat WEDNESD ######## Survey Typ MANUAL

8 WO-07-C-(SWIMMIN WORCESTERSHIRE
WEIR LANE

WORCESTER
Edge of Town
Industrial Zone
Total Gross floor area 850 sqm
Survey dat TUESDAY ######## Survey Typ MANUAL

9 WS-07-C-0 LEISURE CI WEST SUSSEX
STATION ROAD

BILLINGSHURST
Edge of Town Centre
No Sub Category
Total Gross floor area 1700 sqm
Survey dat TUESDAY ######## Survey Typ MANUAL

This sectio it displays the select the day of and whether the survey was a manual classified count or an ATC

TRIP RATE for Land Use 07 - LEISURE/C - LEISURE CENTRE
Calculation Factor: 100 sqm
Count Type: VEHICLES

	ARRIVALS			DEPARTURES			TOTALS		
Time Rang	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:(	8	1031	0.618	8	1031	0.036	8	1031	0.654
07:00-08:(	8	1031	0.715	8	1031	0.582	8	1031	1.297
08:00-09:(	8	1031	0.849	8	1031	0.643	8	1031	1.492

09:00-10:0	8	1031	0.776	8	1031	0.461	8	1031	1.237
10:00-11:0	9	1094	0.731	9	1094	0.65	9	1094	1.381
11:00-12:0	9	1094	0.802	9	1094	0.792	9	1094	1.594
12:00-13:0	9	1094	0.802	9	1094	0.589	9	1094	1.391
13:00-14:0	9	1094	1.076	9	1094	1.117	9	1094	2.193
14:00-15:0	9	1094	0.934	9	1094	0.63	9	1094	1.564
15:00-16:0	9	1094	1.411	9	1094	0.985	9	1094	2.396
16:00-17:0	9	1094	2.01	9	1094	1.787	9	1094	3.797
17:00-18:0	9	1094	2.802	9	1094	2.112	9	1094	4.914
18:00-19:0	9	1094	2.701	9	1094	2.904	9	1094	5.605
19:00-20:0	9	1094	1.949	9	1094	2	9	1094	3.949
20:00-21:0	9	1094	0.761	9	1094	1.625	9	1094	2.386
21:00-22:0	8	1186	0.263	8	1186	1.739	8	1186	2.002
22:00-23:0	1	1200	0.25	1	1200	0.417	1	1200	0.667
23:00-24:00									
Daily Trip Rates:			19.45			19.069			38.519

Parameter summary

Trip rate p	360 - 1700 (units: sqm)
Survey dat	01/01/07 - 13/10/11
Number of	9
Number of	0
Number of	0
Surveys ma	0

This sectio followed b the total r the number of survey days that have been manually removed from the selec

TRICS 7.2.3
Trip Rate F Gross floor area

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use 02 - EMPLOYMENT
Category A - OFFICE
VEHICLES

Selected regions and areas:

2	SOUTH EAST		
	BD	BEDFORDS	1 days
	ES	EAST SUSS	2 days
	HC	HAMPSHIF	1 days
	HF	HERTFORD	2 days
	KC	KENT	5 days
	SC	SURREY	1 days
	SO	SLOUGH	2 days
3	SOUTH WEST		
	BR	BRISTOL CI	1 days
	CW	CORNWAL	1 days
	DC	DORSET	1 days
4	EAST ANGLIA		
	CA	CAMBRIDG	2 days
	NF	NORFOLK	1 days
	SF	SUFFOLK	2 days
6	WEST MIDLANDS		
	WK	WARWICK	1 days
	WM	WEST MID	1 days
7	YORKSHIRE & NORTH LINCOLNSHIRE		
	WY	WEST YOR	1 days
8	NORTH WEST		
	GM	GREATER M	1 days
	LC	LANCASHII	1 days
	MS	MERSEYSII	1 days
9	NORTH		
	DH	DURHAM	2 days
	TV	TEES VALL	1 days
	TW	TYNE & WI	3 days

This section displays the number of survey days per TRICS® sub-region in the selected set

Filtering Stage 2 selection:

This data displays the chosen trip rate parameter and its selected range. Only sites that fall within the parame
Parameter Gross floor area
Actual Ran 186 to 9000 (units: sqm)
Range Sele 186 to 10000 (units: sqm)

Public Transport Provision:
Selection b Include all surveys

Date Rang 01/01/07 to 02/10/14

This data displays the range of survey dates selected. Only surveys that were conducted within this date range
Selected survey days:
Monday 4 days
Tuesday 9 days
Wednesda 5 days
Thursday 12 days
Friday 4 days
This data displays the number of selected surveys by day of the week.

Selected survey types:
Manual co 34 days
Directiona 0 days
This data c the total a whilst ATC surveys are undertaking using machines.

Selected Locations:
Town Cent 7
Edge of To 12
Suburban / 7
Edge of To 8
Neighbour 0
Free Stand 0
Not Known 0
This data c Edge of Tc Suburban Neighbou Edge of Tc Town Centre and Not Known.

Selected Location Sub Categories:
Industrial Z 4
Commerci 9
Developm 0
Residentia 6
Retail Zone 0
Built-Up Zc 12
Village 0
Out of Tov 0
High Stree 1
No Sub Cat 2
This data c Industrial Developm Residentia Retail Zon Built-Up Z Village Out of Tov High Street and No Su

Filtering Stage 3 selection:

Use Class:
A1 1 days
B1 33 days
This data c which can be found within the Library module of TRICS®.

Population within 1 mile:
1,001 to 5 1 days
5,001 to 1 7 days

10,001 to : 8 days
15,001 to : 7 days
20,001 to : 1 days
25,001 to ! 10 days
This data displays the number of selected surveys within stated 1-mile radii of population.

Population within 5 miles:
25,001 to 5 days
50,001 to 2 days
75,001 to 4 days
100,001 tc 1 days
125,001 tc 14 days
250,001 tc 4 days
500,001 o 4 days
This data displays the number of selected surveys within stated 5-mile radii of population.

Car ownership within 5 miles:
0.5 or Less 2 days
0.6 to 1.0 14 days
1.1 to 1.5 16 days
1.6 to 2.0 2 days
This data c within a radius of 5-miles of selected survey sites.

Travel Plan:
Yes 12 days
No 22 days
This data c and the number of surveys that were undertaken at sites without Travel Plans.

LIST OF SITES relevant to selection parameters

1 BD-02-A-0 OFFICES BEDFORDSHIRE
BROMHAM ROAD

BEDFORD
Edge of Town Centre
No Sub Category
Total Gross floor area 1469 sqm
Survey dat MONDAY ######## Survey Typ MANUAL

2 BR-02-A-0 PLANNING BRISTOL CITY
ST THOMAS STREET

BRISTOL
Town Centre
Built-Up Zone
Total Gross floor area 5736 sqm
Survey dat FRIDAY ######## Survey Typ MANUAL

3 CA-02-A-0 OFFICE CAMBRIDGESHIRE
NEW ROAD

PETERBOROUGH

Edge of Town Centre
Built-Up Zone
Total Gross floor area 5750 sqm
Survey dat THURSDAY ######## Survey Typ MANUAL
4 CA-02-A-0 OFFICE CAMBRIDGESHIRE
BRETTON WAY

PETERBOROUGH
Edge of Town
Commercial Zone
Total Gross floor area 6483 sqm
Survey dat THURSDAY ######## Survey Typ MANUAL
5 CW-02-A-C INLAND RE CORNWALL
TRINITY STREET

ST AUSTELL
Edge of Town Centre
Built-Up Zone
Total Gross floor area 4850 sqm
Survey dat FRIDAY ######## Survey Typ MANUAL
6 DC-02-A-0 OFFICE DORSET
STATION APPROACH

DORCHESTER
Edge of Town Centre
No Sub Category
Total Gross floor area 1550 sqm
Survey dat THURSDAY ######## Survey Typ MANUAL
7 DH-02-A-0 RPMI OFFI DURHAM
BRINKBURN ROAD

DARLINGTON
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Gross floor area 3372 sqm
Survey dat FRIDAY ######## Survey Typ MANUAL
8 DH-02-A-0 CONSTRUC DURHAM
DURHAM ROAD
BOWBURN
NEAR DURHAM
Edge of Town
Industrial Zone
Total Gross floor area 2000 sqm
Survey dat TUESDAY ######## Survey Typ MANUAL
9 ES-02-A-0 HOUSING (EAST SUSSEX
THE SIDINGS
ORE VALLEY
HASTINGS
Suburban Area (PPS6 Out of Centre)
Residential Zone

Total Gross floor area 186 sqm
Survey dat WEDNESD. ######## Survey Typ MANUAL
10 ES-02-A-1(DISTRICT C EAST SUSSEX
VICARAGE LANE

HAILSHAM
Edge of Town Centre
Built-Up Zone
Total Gross floor area 3640 sqm
Survey dat TUESDAY ######## Survey Typ MANUAL
11 GM-02-A-(LAW OFFIC GREATER MANCHESTER
MOSELEY STREET

MANCHESTER
Town Centre
Built-Up Zone
Total Gross floor area 4200 sqm
Survey dat WEDNESD. ######## Survey Typ MANUAL
12 HC-02-A-0! ERICSON HAMPSHIRE
MAPLEWOOD
CHINEHAM BUSINESS PARK
BASINGSTOKE
Edge of Town
Commercial Zone
Total Gross floor area 9000 sqm
Survey dat THURSDAY ######## Survey Typ MANUAL
13 HF-02-A-0: OFFICE HERTFORDSHIRE
60 VICTORIA STREET

ST ALBANS
Edge of Town Centre
Built-Up Zone
Total Gross floor area 610 sqm
Survey dat WEDNESD. ######## Survey Typ MANUAL
14 HF-02-A-0(OFFICES HERTFORDSHIRE
STATION WAY

ST ALBANS
Edge of Town Centre
Residential Zone
Total Gross floor area 5000 sqm
Survey dat THURSDAY ######## Survey Typ MANUAL
15 KC-02-A-0(LAND REG KENT
FOREST ROAD
CAMDEN PARK
TUNBRIDGE WELLS
Edge of Town
Residential Zone
Total Gross floor area 5677 sqm
Survey dat TUESDAY ######## Survey Typ MANUAL

16 KC-02-A-07 KCC HIGHV KENT
KAVELIN WAY
HENWOOD IND. ESTATE
ASHFORD
Edge of Town
Commercial Zone
Total Gross floor area 2525 sqm
Survey dat MONDAY ######## Survey Typ MANUAL
17 KC-02-A-08 KCC HIGHV KENT
ST MICHAEL'S CLOSE
CLAY WOOD
AYLESFORD
Edge of Town
Industrial Zone
Total Gross floor area 3168 sqm
Survey dat MONDAY ######## Survey Typ MANUAL
18 KC-02-A-09 COUNCIL C KENT
SANDLING ROAD

MAIDSTONE
Edge of Town Centre
Built-Up Zone
Total Gross floor area 1500 sqm
Survey dat WEDNESD. ######## Survey Typ MANUAL
19 KC-02-A-10 COUNCIL C KENT
SANDLING ROAD

MAIDSTONE
Edge of Town Centre
Built-Up Zone
Total Gross floor area 2900 sqm
Survey dat WEDNESD. ######## Survey Typ MANUAL
20 LC-02-A-09 OFFICES LANCASHIRE
FURTHERGATE

BLACKBURN
Suburban Area (PPS6 Out of Centre)
Built-Up Zone
Total Gross floor area 2600 sqm
Survey dat TUESDAY ######## Survey Typ MANUAL
21 MS-02-A-0 OFFICES MERSEYSIDE
CASTLE STREET

LIVERPOOL
Town Centre
Commercial Zone
Total Gross floor area 9000 sqm
Survey dat TUESDAY ######## Survey Typ MANUAL
22 NF-02-A-0: COUNCIL C NORFOLK
CHAPEL STREET

KING'S LYNN
Edge of Town Centre
Built-Up Zone
Total Gross floor area 5500 sqm
Survey dat THURSDAY ######## Survey Typ MANUAL
23 SC-02-A-15 ACCOUNTA SURREY
BOXGROVE ROAD

GUILDFORD
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Gross floor area 1896 sqm
Survey dat TUESDAY ######## Survey Typ MANUAL
24 SF-02-A-01 COUNCIL C SUFFOLK
BEETONS WAY

BURY ST. EDMUNDS
Suburban Area (PPS6 Out of Centre)
Industrial Zone
Total Gross floor area 8000 sqm
Survey dat MONDAY ######## Survey Typ MANUAL
25 SF-02-A-02 OFFICES SUFFOLK
BATH STREET

IPSWICH
Edge of Town Centre
Commercial Zone
Total Gross floor area 6505 sqm
Survey dat FRIDAY ######## Survey Typ MANUAL
26 SO-02-A-0 COUNCIL C SLOUGH
HIGH STREET

SLOUGH
Town Centre
High Street
Total Gross floor area 1800 sqm
Survey dat THURSDAY ######## Survey Typ MANUAL
27 SO-02-A-0 COUNCIL C SLOUGH
BATH ROAD

SLOUGH
Edge of Town Centre
Built-Up Zone
Total Gross floor area 5050 sqm
Survey dat THURSDAY ######## Survey Typ MANUAL
28 TV-02-A-04 COUNCIL C TEES VALLEY
CORPORATION ROAD

MIDDLESBROUGH

Town Centre
Commercial Zone
Total Gross floor area 3950 sqm
Survey dat TUESDAY ######## Survey Typ MANUAL
29 TW-02-A-C DEVELOPM TYNE & WEAR
KINGFISHER BOULEVARD
LEMINGTON
NEWCASTLE UPON TYNE
Edge of Town
Commercial Zone
Total Gross floor area 6480 sqm
Survey dat THURSDAY ######## Survey Typ MANUAL
30 TW-02-A-C HOUSING (TYNE & WEAR
EARLSWAY
TEAM VALLEY TRAD. EST.
GATESHEAD
Edge of Town
Industrial Zone
Total Gross floor area 2500 sqm
Survey dat TUESDAY ######## Survey Typ MANUAL
31 TW-02-A-C TELEVISIOI TYNE & WEAR
DELTA BANK ROAD
METRO RIVERSIDE PARK
GATESHEAD
Suburban Area (PPS6 Out of Centre)
Commercial Zone
Total Gross floor area 1500 sqm
Survey dat TUESDAY ######## Survey Typ MANUAL
32 WK-02-A-C OFFICES WARWICKSHIRE
WARWICK ROAD

COVENTRY
Town Centre
Built-Up Zone
Total Gross floor area 960 sqm
Survey dat THURSDAY ######## Survey Typ MANUAL
33 WM-02-A- BANK ADM WEST MIDLANDS
BRUNSWICK STREET
BRINDLEY PLACE
BIRMINGHAM
Town Centre
Commercial Zone
Total Gross floor area 8200 sqm
Survey dat THURSDAY ######## Survey Typ MANUAL
34 WY-02-A-C OFFICE WEST YORKSHIRE
VICTORIA ROAD
HEADINGLEY
LEEDS
Suburban Area (PPS6 Out of Centre)
Residential Zone

Total Gross floor area 2696 sqm
Survey dat THURSDAY ######## Survey Typ MANUAL

This sectio it displays the select the day of and whether the survey was a manual classified count or an ATC

TRIP RATE for Land Use 02 - EMPLOYMENT/A - OFFICE
Calculation Factor: 100 sqm
Count Type: VEHICLES

	ARRIVALS			DEPARTURES			TOTALS		
Time Rang	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00-00:30									
00:30-01:00									
01:00-01:30									
01:30-02:00									
02:00-02:30									
02:30-03:00									
03:00-03:30									
03:30-04:00									
04:00-04:30									
04:30-05:00									
05:00-05:30									
05:30-06:00									
06:00-06:30									
06:30-07:00									
07:00-07:3	34	4007	0.206	34	4007	0.023	34	4007	0.229
07:30-08:0	34	4007	0.457	34	4007	0.058	34	4007	0.515
08:00-08:3	34	4007	0.754	34	4007	0.102	34	4007	0.856
08:30-09:0	34	4007	0.878	34	4007	0.113	34	4007	0.991
09:00-09:3	34	4007	0.707	34	4007	0.153	34	4007	0.86
09:30-10:0	34	4007	0.42	34	4007	0.173	34	4007	0.593
10:00-10:3	34	4007	0.258	34	4007	0.162	34	4007	0.42
10:30-11:0	34	4007	0.186	34	4007	0.176	34	4007	0.362
11:00-11:3	34	4007	0.165	34	4007	0.175	34	4007	0.34
11:30-12:0	34	4007	0.181	34	4007	0.169	34	4007	0.35
12:00-12:3	34	4007	0.185	34	4007	0.244	34	4007	0.429
12:30-13:0	34	4007	0.219	34	4007	0.248	34	4007	0.467
13:00-13:3	34	4007	0.237	34	4007	0.245	34	4007	0.482
13:30-14:0	34	4007	0.239	34	4007	0.197	34	4007	0.436
14:00-14:3	34	4007	0.184	34	4007	0.162	34	4007	0.346
14:30-15:0	34	4007	0.159	34	4007	0.233	34	4007	0.392
15:00-15:3	34	4007	0.12	34	4007	0.233	34	4007	0.353
15:30-16:0	34	4007	0.146	34	4007	0.245	34	4007	0.391
16:00-16:3	34	4007	0.139	34	4007	0.553	34	4007	0.692
16:30-17:0	34	4007	0.097	34	4007	0.605	34	4007	0.702
17:00-17:3	34	4007	0.115	34	4007	0.934	34	4007	1.049
17:30-18:0	34	4007	0.065	34	4007	0.534	34	4007	0.599
18:00-18:3	34	4007	0.033	34	4007	0.263	34	4007	0.296

18:30-19:0	34	4007	0.016	34	4007	0.131	34	4007	0.147
19:00-19:30									
19:30-20:00									
20:00-20:30									
20:30-21:00									
21:00-21:30									
21:30-22:00									
22:00-22:30									
22:30-23:00									
23:00-23:30									
23:30-24:00									
Daily Trip Rates:			6.166			6.131			12.297

Parameter summary

Trip rate p 186 - 9000 (units: sqm)
Survey dat 01/01/07 - 02/10/14
Number of 34
Number of 0
Number of 0
Surveys ma 5
This sectio followed b the total r the number of survey days that have been manually removed from the selec

TRICS 7.2.3
Trip Rate F Gross floor area

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use 05 - HEALTH
Category E - CLINICS
VEHICLES

Selected regions and areas:

3	SOUTH WEST	
	CW	CORNWAL 1 days
5	EAST MIDLANDS	
	LN	LINCOLNSI 2 days
9	NORTH	
	TW	TYNE & WI 1 days

This section displays the number of survey days per TRICS® sub-region in the selected set

Filtering Stage 2 selection:

This data displays the chosen trip rate parameter and its selected range. Only sites that fall within the parame
Parameter Gross floor area
Actual Ran 75 to 1400 (units: sqm)
Range Sele 75 to 1790 (units: sqm)

Public Transport Provision:
Selection b Include all surveys

Date Rang 01/01/07 to 10/06/13

This data displays the range of survey dates selected. Only surveys that were conducted within this date range
Selected survey days:
Monday 2 days
Tuesday 1 days
Wednesda 1 days
This data displays the number of selected surveys by day of the week.

Selected survey types:
Manual co 4 days
Directiona 0 days
This data c the total a whilst ATC surveys are undertaking using machines.

Selected Locations:

Town Cent	0
Edge of To	3
Suburban /	1
Edge of To	0
Neighbour	0
Free Stand	0
Not Known	0

This data c Edge of Tc Suburban Neighbou Edge of Tc Town Centre and Not Known.

Selected Location Sub Categories:

Industrial Z	0
Commerci	0
Developm	0
Residentia	3
Retail Zone	0
Built-Up Zc	1
Village	0
Out of Tov	0
High Stree	0
No Sub Cat	0

This data c Industrial Developm Residentia Retail Zon Built-Up Z Village Out of Tov High Street and No Su

Filtering Stage 3 selection:

Use Class:

C3	1 days
D1	3 days

This data c which can be found within the Library module of TRICS®.

Population within 1 mile:

1,001 to 5	1 days
10,001 to :	1 days
20,001 to :	1 days
25,001 to !	1 days

This data displays the number of selected surveys within stated 1-mile radii of population.

Population within 5 miles:

5,001 to :	1 days
25,001 to	1 days
50,001 to	1 days
125,001 tc	1 days

This data displays the number of selected surveys within stated 5-mile radii of population.

Car ownership within 5 miles:

0.6 to 1.0	1 days
1.1 to 1.5	3 days

This data c within a radius of 5-miles of selected survey sites.

Travel Plan:

No	4 days

This data c and the number of surveys that were undertaken at sites without Travel Plans.

LIST OF SITES relevant to selection parameters

1 CW-05-E-0 CHIROPRA CORNWALL
FALMOUTH ROAD

TRURO
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Gross floor area 75 sqm
Survey dat MONDAY ######## Survey Typ MANUAL

2 LN-05-E-01 CLINIC LINCOLNSHIRE
AVENUE ROAD

GRANTHAM
Edge of Town Centre
Built-Up Zone
Total Gross floor area 1400 sqm
Survey dat WEDNESD ######## Survey Typ MANUAL

3 LN-05-E-02 CHIROPRA LINCOLNSHIRE
NORTH PARADE

GRANTHAM
Edge of Town Centre
Residential Zone
Total Gross floor area 210 sqm
Survey dat MONDAY ######## Survey Typ MANUAL

4 TW-05-E-0 ALTERNAT TYNE & WEAR
HAWKEY'S LANE
CHRITON
NORTH SHIELDS
Edge of Town Centre
Residential Zone
Total Gross floor area 215 sqm
Survey dat TUESDAY ######## Survey Typ MANUAL

This sectio it displays the select the day of and whether the survey was a manual classified count or an ATC

TRIP RATE for Land Use 05 - HEALTH/E - CLINICS
Calculation Factor: 100 sqm
Count Type: VEHICLES

	ARRIVALS			DEPARTURES			TOTALS		
Time Rang	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:0	1	1400	0	1	1400	0	1	1400	0
07:00-08:0	2	808	0.124	2	808	0	2	808	0.124
08:00-09:0	4	475	1.474	4	475	0.263	4	475	1.737
09:00-10:0	4	475	1.895	4	475	1.105	4	475	3

10:00-11:0	4	475	0.947	4	475	1.947	4	475	2.894
11:00-12:0	4	475	1.368	4	475	1	4	475	2.368
12:00-13:0	4	475	1.368	4	475	1.474	4	475	2.842
13:00-14:0	4	475	1.368	4	475	1.263	4	475	2.631
14:00-15:0	3	608	0.932	3	608	0.986	3	608	1.918
15:00-16:0	3	608	0.877	3	608	1.096	3	608	1.973
16:00-17:0	3	608	0.986	3	608	1.205	3	608	2.191
17:00-18:0	3	608	0.438	3	608	1.096	3	608	1.534
18:00-19:0	3	608	0.055	3	608	0.219	3	608	0.274
19:00-20:0	2	805	0	2	805	0	2	805	0
20:00-21:00									
21:00-22:00									
22:00-23:00									
23:00-24:00									
Daily Trip Rates:			11.832			11.654			23.486

Parameter summary

Trip rate p	75 - 1400 (units: sqm)
Survey dat	01/01/07 - 10/06/13
Number of	4
Number of	0
Number of	0
Surveys ma	0

This sectio followed b the total r the number of survey days that have been manually removed from the selec

TRICS 7.2.3
Trip Rate F Gross floor area

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use 07 - LEISURE
Category Q - COMMUNITY CENTRE
VEHICLES

Selected regions and areas:

2	SOUTH EAST		
	EX	ESSEX	1 days
4	EAST ANGLIA		
	CA	CAMBRIDG	1 days
5	EAST MIDLANDS		
	NT	NOTTINGH	1 days
9	NORTH		
	DH	DURHAM	1 days
	TV	TEES VALL	1 days
	TW	TYNE & WI	1 days

This section displays the number of survey days per TRICS® sub-region in the selected set

Filtering Stage 2 selection:

This data displays the chosen trip rate parameter and its selected range. Only sites that fall within the parame
Parameter Gross floor area
Actual Ran 225 to 800 (units: sqm)
Range Sele 210 to 1000 (units: sqm)

Public Transport Provision:
Selection b Include all surveys

Date Rang 01/01/07 to 04/10/13

This data displays the range of survey dates selected. Only surveys that were conducted within this date range
Selected survey days:
Monday 1 days
Wednesda 1 days
Thursday 2 days
Friday 2 days
This data displays the number of selected surveys by day of the week.

Selected survey types:
Manual co 6 days
Directiona 0 days
This data c the total a whilst ATC surveys are undertaking using machines.

Selected Locations:
Town Cent 0
Edge of To 1

Suburban A 2
Edge of To 0
Neighbour 3
Free Stand 0
Not Known 0
This data c Edge of Tc Suburban Neighbou Edge of Tc Town Centre and Not Known.

Selected Location Sub Categories:
Industrial Z 0
Commerci 0
Developm 0
Residentia 3
Retail Zone 0
Built-Up Zc 0
Village 1
Out of Tov 0
High Stree 0
No Sub Cat 2
This data c Industrial Developm Residentia Retail Zon Built-Up Z Village Out of Tov High Street and No Su

Filtering Stage 3 selection:

Use Class:
D2 6 days
This data c which can be found within the Library module of TRICS®.

Population within 1 mile:
5,001 to 1 1 days
15,001 to 1 days
20,001 to 1 days
25,001 to 2 days
50,001 to 1 days
This data displays the number of selected surveys within stated 1-mile radii of population.

Population within 5 miles:
75,001 to 1 days
100,001 to 1 days
125,001 to 1 days
250,001 to 2 days
500,001 or 1 days
This data displays the number of selected surveys within stated 5-mile radii of population.

Car ownership within 5 miles:
0.6 to 1.0 5 days
1.6 to 2.0 1 days
This data c within a radius of 5-miles of selected survey sites.

Travel Plan:
No 6 days

This data c and the number of surveys that were undertaken at sites without Travel Plans.

LIST OF SITES relevant to selection parameters

1 CA-07-Q-0 COMMUN CAMBRIDGESHIRE
HIGH STREET

COTTENHAM
Neighbourhood Centre (PPS6 Local Centre)
Village
Total Gross floor area 500 sqm
Survey dat MONDAY ######## Survey Typ MANUAL

2 DH-07-Q-0 COM. CEN DURHAM
JUTLAND ROAD

HARTLEPOOL
Suburban Area (PPS6 Out of Centre)
No Sub Category
Total Gross floor area 500 sqm
Survey dat FRIDAY ######## Survey Typ MANUAL

3 EX-07-Q-0 COMMUN ESSEX
BORDERS LANE

LOUGHTON
Neighbourhood Centre (PPS6 Local Centre)
Residential Zone
Total Gross floor area 352 sqm
Survey dat THURSDAY ######## Survey Typ MANUAL

4 NT-07-Q-0 COMMUN NOTTINGHAMSHIRE
61B MANSFIELD ROAD

NOTTINGHAM
Edge of Town Centre
Residential Zone
Total Gross floor area 800 sqm
Survey dat THURSDAY ######## Survey Typ MANUAL

5 TV-07-Q-0 COM. CEN TEES VALLEY
FULBECK ROAD

MIDDLESBROUGH
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Gross floor area 225 sqm
Survey dat WEDNESD ######## Survey Typ MANUAL

6 TW-07-Q-(COMMUN TYNE & WEAR
HIGH STREET
WREKENTON
GATESHEAD
Neighbourhood Centre (PPS6 Local Centre)
No Sub Category
Total Gross floor area 450 sqm

Survey dat FRIDAY ######## Survey Typ MANUAL

This sectio it displays the select the day of and whether the survey was a manual classified count or an ATC

TRIP RATE for Land Use 07 - LEISURE/Q - COMMUNITY CENTRE
Calculation Factor: 100 sqm
Count Type: VEHICLES

	ARRIVALS			DEPARTURES			TOTALS		
Time Rang	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:00									
07:00-08:0	1	450	0	1	450	0	1	450	0
08:00-09:0	6	471	0.672	6	471	0.389	6	471	1.061
09:00-10:0	6	471	1.203	6	471	0.495	6	471	1.698
10:00-11:0	6	471	0.495	6	471	0.354	6	471	0.849
11:00-12:0	6	471	0.743	6	471	0.955	6	471	1.698
12:00-13:0	5	520	1.153	5	520	0.999	5	520	2.152
13:00-14:0	5	520	0.5	5	520	0.423	5	520	0.923
14:00-15:0	5	520	0.461	5	520	0.5	5	520	0.961
15:00-16:0	5	520	1.191	5	520	1.345	5	520	2.536
16:00-17:0	5	520	0.115	5	520	0.922	5	520	1.037
17:00-18:0	5	520	0.576	5	520	0.269	5	520	0.845
18:00-19:0	5	520	0.615	5	520	0.269	5	520	0.884
19:00-20:0	5	520	0.5	5	520	0.461	5	520	0.961
20:00-21:0	5	520	0.154	5	520	0.653	5	520	0.807
21:00-22:0	5	520	0	5	520	0.384	5	520	0.384
22:00-23:00									
23:00-24:00									
Daily Trip Rates:			8.378			8.418			16.796

Parameter summary

Trip rate p 225 - 800 (units: sqm)
Survey dat 01/01/07 - 04/10/13
Number of 6
Number of 0
Number of 0
Surveys ma 0
This sectio followed b the total r the number of survey days that have been manually removed from the selec

TRICS 7.2.3
Trip Rate F Gross floor area

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use 07 - LEISURE
Category C - LEISURE CENTRE
VEHICLES

Selected regions and areas:

2	SOUTH EAST		
	BU	BUCKINGH	1 days
	OX	OXFORDSH	1 days
	WS	WEST SUS	1 days
3	SOUTH WEST		
	BR	BRISTOL C	1 days
	DC	DORSET	1 days
5	EAST MIDLANDS		
	LE	LEICESTER	1 days
	LN	LINCOLNSI	1 days
6	WEST MIDLANDS		
	WO	WORCESTI	1 days
7	YORKSHIRE & NORTH LINCOLNSHIRE		
	NY	NORTH YO	1 days

This section displays the number of survey days per TRICS® sub-region in the selected set

Filtering Stage 2 selection:

This data displays the chosen trip rate parameter and its selected range. Only sites that fall within the parameter range are included in the trip rate calcul
Parameter Gross floor area
Actual Ran 360 to 1700 (units: sqm)
Range Sele 360 to 2000 (units: sqm)

Public Transport Provision:
Selection t Include all surveys

Date Rang 01/01/07 to 13/10/11

This data displays the range of survey dates selected. Only surveys that were conducted within this date range are included in the trip rate calculation.
Selected survey days:
Monday 3 days
Tuesday 3 days
Wednesda 2 days
Thursday 1 days
This data displays the number of selected surveys by day of the week.

Selected survey types:
Manual co 9 days
Directiona 0 days
This data c the total a whilst ATC surveys are undertaking using machines.

Selected Locations:

Town Cent	0
Edge of To	2
Suburban /	2
Edge of To	5
Neighbour	0
Free Stand	0
Not Known	0

This data c Edge of Tc Suburban Neighbou Edge of Tc Town Centre and Not Known.

Selected Location Sub Categories:

Industrial Z	1
Commerci	0
Developm	0
Residentia	3
Retail Zone	0
Built-Up Z	0
Village	0
Out of Tov	0

High Stree 0
No Sub Ca 5
This data c Industrial Developm Residentia Retail Zon Built-Up Z Village Out of Tov High Street and No Sub Category.

Filtering Stage 3 selection:

Use Class:
D2 9 days
This data c which can be found within the Library module of TRICS®.

Population within 1 mile:
1,001 to 5 1 days
5,001 to 1 3 days
10,001 to 1 days
15,001 to 2 days
20,001 to 1 days
25,001 to 1 days
This data displays the number of selected surveys within stated 1-mile radii of population.

Population within 5 miles:
5,001 to 2 days
25,001 to 1 days
100,001 to 2 days
125,001 to 2 days
250,001 to 2 days
This data displays the number of selected surveys within stated 5-mile radii of population.

Car ownership within 5 miles:
0.6 to 1.0 1 days
1.1 to 1.5 8 days
This data c within a radius of 5-miles of selected survey sites.

Travel Plan:
No 9 days
This data c and the number of surveys that were undertaken at sites without Travel Plans.

LIST OF SITES relevant to selection parameters

1 BR-07-C-0 SWIMMIN BRISTOL CITY
JUBILEE ROAD
KNOWLE
BRISTOL
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Gross floor area 900 sqm
Survey dat MONDAY ######## Survey Typ MANUAL

2 BU-07-C-0 SWIM. PO BUCKINGHAMSHIRE
TICKFORD STREET

NEWPORT PAGNELL
Edge of Town
No Sub Category
Total Gross floor area 1020 sqm
Survey dat TUESDAY ######## Survey Typ MANUAL

3 DC-07-C-0 LEISURE CI DORSET
MILLDOWN ROAD

BLANDFORD FORUM
Edge of Town
No Sub Category
Total Gross floor area 1119 sqm
Survey dat MONDAY ######## Survey Typ MANUAL

4 LE-07-C-01 SWIMMIN LEICESTERSHIRE
STATION ROAD
WIGSTON
LEICESTER
Edge of Town
No Sub Category
Total Gross floor area 1200 sqm
Survey dat WEDNESD ######## Survey Typ MANUAL

5	LN-07-C-0:	LEISURE CI	LINCOLNSHIRE						
			BIRCHWOOD AVENUE						
			BIRCHWOOD						
			LINCOLN						
			Suburban Area (PPS6 Out of Centre)						
			Residential Zone						
			Total Gross floor area	1600	sqm				
			Survey dat MONDAY	########	Survey Typ	MANUAL			
6	NY-07-C-0:	SWIMMIN	NORTH YORKSHIRE						
			MILL LANE						
			PICKERING						
			Edge of Town Centre						
			No Sub Category						
			Total Gross floor area	1100	sqm				
			Survey dat THURSDA\	########	Survey Typ	MANUAL			
7	OX-07-C-0	SWIMMIN	OXFORDSHIRE						
			BLACKBIRD LEYS ROAD						
			BLACKBIRD LEYS						
			OXFORD						
			Edge of Town						
			Residential Zone						
			Total Gross floor area	360	sqm				
			Survey dat WEDNESD	########	Survey Typ	MANUAL			
8	WO-07-C-(	SWIMMIN	WORCESTERSHIRE						
			WEIR LANE						
			WORCESTER						
			Edge of Town						
			Industrial Zone						
			Total Gross floor area	850	sqm				
			Survey dat TUESDAY	########	Survey Typ	MANUAL			
9	WS-07-C-0	LEISURE CI	WEST SUSSEX						
			STATION ROAD						
			BILLINGSHURST						
			Edge of Town Centre						
			No Sub Category						
			Total Gross floor area	1700	sqm				
			Survey dat TUESDAY	########	Survey Typ	MANUAL			

This sectio it displays the select the day of and whether the survey was a manual classified count or an ATC count.

TRIP RATE for Land Use 07 - LEISURE/C - LEISURE CENTRE
Calculation Factor: 100 sqm
Count Type: VEHICLES

	ARRIVALS			DEPARTURES			TOTALS		
	No.	Ave.	Trip	No.	Ave.	Trip	No.	Ave.	Trip
Time Rang	Days	GFA	Rate	Days	GFA	Rate	Days	GFA	Rate
00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:(	8	1031	0.618	8	1031	0.036	8	1031	0.654
07:00-08:(	8	1031	0.715	8	1031	0.582	8	1031	1.297
08:00-09:(	8	1031	0.849	8	1031	0.643	8	1031	1.492
09:00-10:(	8	1031	0.776	8	1031	0.461	8	1031	1.237
10:00-11:(	9	1094	0.731	9	1094	0.65	9	1094	1.381
11:00-12:(	9	1094	0.802	9	1094	0.792	9	1094	1.594
12:00-13:(	9	1094	0.802	9	1094	0.589	9	1094	1.391
13:00-14:(	9	1094	1.076	9	1094	1.117	9	1094	2.193
14:00-15:(	9	1094	0.934	9	1094	0.63	9	1094	1.564
15:00-16:(	9	1094	1.411	9	1094	0.985	9	1094	2.396
16:00-17:(	9	1094	2.01	9	1094	1.787	9	1094	3.797
17:00-18:(	9	1094	2.802	9	1094	2.112	9	1094	4.914
18:00-19:(	9	1094	2.701	9	1094	2.904	9	1094	5.605

19:00-20:0	9	1094	1.949	9	1094	2	9	1094	3.949
20:00-21:0	9	1094	0.761	9	1094	1.625	9	1094	2.386
21:00-22:0	8	1186	0.263	8	1186	1.739	8	1186	2.002
22:00-23:0	1	1200	0.25	1	1200	0.417	1	1200	0.667
23:00-24:00									
Daily Trip Rates:			19.45			19.069			38.519

Parameter summary

Trip rate p	360 - 1700 (units: sqm)
Survey dat	01/01/07 - 13/10/11
Number of	9
Number of	0
Number of	0
Surveys m	0

This sectio followed b the total r the number of survey days that have been manually removed from the selected set outside of the standard filtering pro

TRICS 7.2.3
Trip Rate F Gross floor area

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use 07 - LEISURE
Category I - ART GALLERIES/MUSEUMS/EXHIBITIONS
VEHICLES

Selected regions and areas:

3	SOUTH WEST		
	DC	DORSET	1 days
5	EAST MIDLANDS		
	DS	DERBYSHIF	1 days
16	ULSTER (REPUBLIC OF IRELAND)		
	DN	DONEGAL	1 days

This section displays the number of survey days per TRICS® sub-region in the selected set

Filtering Stage 2 selection:

This data displays the chosen trip rate parameter and its selected range. Only sites that fall within the parame
Parameter Gross floor area
Actual Ran 790 to 2090 (units: sqm)
Range Sele 790 to 3000 (units: sqm)

Public Transport Provision:
Selection t Include all surveys

Date Rang 01/01/07 to 16/09/09

This data displays the range of survey dates selected. Only surveys that were conducted within this date range
Selected survey days:
Wednesda 1 days
Thursday 1 days
Saturday 1 days
This data displays the number of selected surveys by day of the week.

Selected survey types:
Manual co 3 days
Directiona 0 days
This data c the total a whilst ATC surveys are undertaking using machines.

Selected Locations:

Town Cent	2
Edge of To	1
Suburban /	0
Edge of To	0
Neighbour	0
Free Stand	0
Not Known	0

This data c Edge of Tc Suburban Neighbou Edge of Tc Town Centre and Not Known.

Selected Location Sub Categories:

Industrial Z	0
Commerci	0
Developm	0
Residentia	0
Retail Zone	0
Built-Up Zc	1
Village	0
Out of Tov	0
High Stree	1
No Sub Cat	1

This data c Industrial Developm Residentia Retail Zon Built-Up Z Village Out of Tov High Street and No Su

Filtering Stage 3 selection:

Use Class:

D1	3 days

This data c which can be found within the Library module of TRICS®.

Population within 1 mile:

1,001 to 5	1 days
10,001 to	1 days
25,001 to	1 days

This data displays the number of selected surveys within stated 1-mile radii of population.

Population within 5 miles:

5,001 to 2	1 days
125,001 to	2 days

This data displays the number of selected surveys within stated 5-mile radii of population.

Car ownership within 5 miles:

0.6 to 1.0	1 days
1.1 to 1.5	2 days

This data c within a radius of 5-miles of selected survey sites.

Travel Plan:

No	3 days

This data c and the number of surveys that were undertaken at sites without Travel Plans.

LIST OF SITES relevant to selection parameters

1 DC-07-I-02 MUSEUM DORSET
HIGH STREET

POOLE
Town Centre
No Sub Category
Total Gross floor area 2000 sqm

Survey dat THURSDAY ######## Survey Typ MANUAL
2 DN-07-I-01 COUNTY M DONEGAL
HIGH ROAD

LETTERKENNY
Edge of Town Centre
High Street
Total Gross floor area 790 sqm
Survey dat WEDNESD. ######## Survey Typ MANUAL
3 DS-07-I-01 ART GALLE DERBYSHIRE
THE STRAND

DERBY
Town Centre
Built-Up Zone
Total Gross floor area 2090 sqm
Survey dat SATURDAY ######## Survey Typ MANUAL

This sectio it displays the select the day of and whether the survey was a manual classified count or an ATC

TRIP RATE for Land Use 07 - LEISURE/I - ART GALLERIES/MUSEUMS/EXHIBITIONS
Calculation Factor: 100 sqm
Count Type: VEHICLES

	ARRIVALS			DEPARTURES			TOTALS		
Time Rang	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:00									
07:00-08:0	1	2090	0.096	1	2090	0.096	1	2090	0.192
08:00-09:0	2	2045	0.049	2	2045	0	2	2045	0.049
09:00-10:0	3	1627	0.205	3	1627	0.041	3	1627	0.246
10:00-11:0	3	1627	0.307	3	1627	0.184	3	1627	0.491
11:00-12:0	3	1627	0.41	3	1627	0.389	3	1627	0.799
12:00-13:0	3	1627	0.184	3	1627	0.246	3	1627	0.43
13:00-14:0	3	1627	0.389	3	1627	0.184	3	1627	0.573
14:00-15:0	3	1627	0.348	3	1627	0.389	3	1627	0.737
15:00-16:0	3	1627	0.246	3	1627	0.266	3	1627	0.512
16:00-17:0	3	1627	0.102	3	1627	0.369	3	1627	0.471
17:00-18:0	3	1627	0	3	1627	0.02	3	1627	0.02
18:00-19:00									
19:00-20:00									
20:00-21:00									
21:00-22:00									

22:00-23:00			
23:00-24:00			
Daily Trip Rates:	2.336	2.184	4.52

Parameter summary

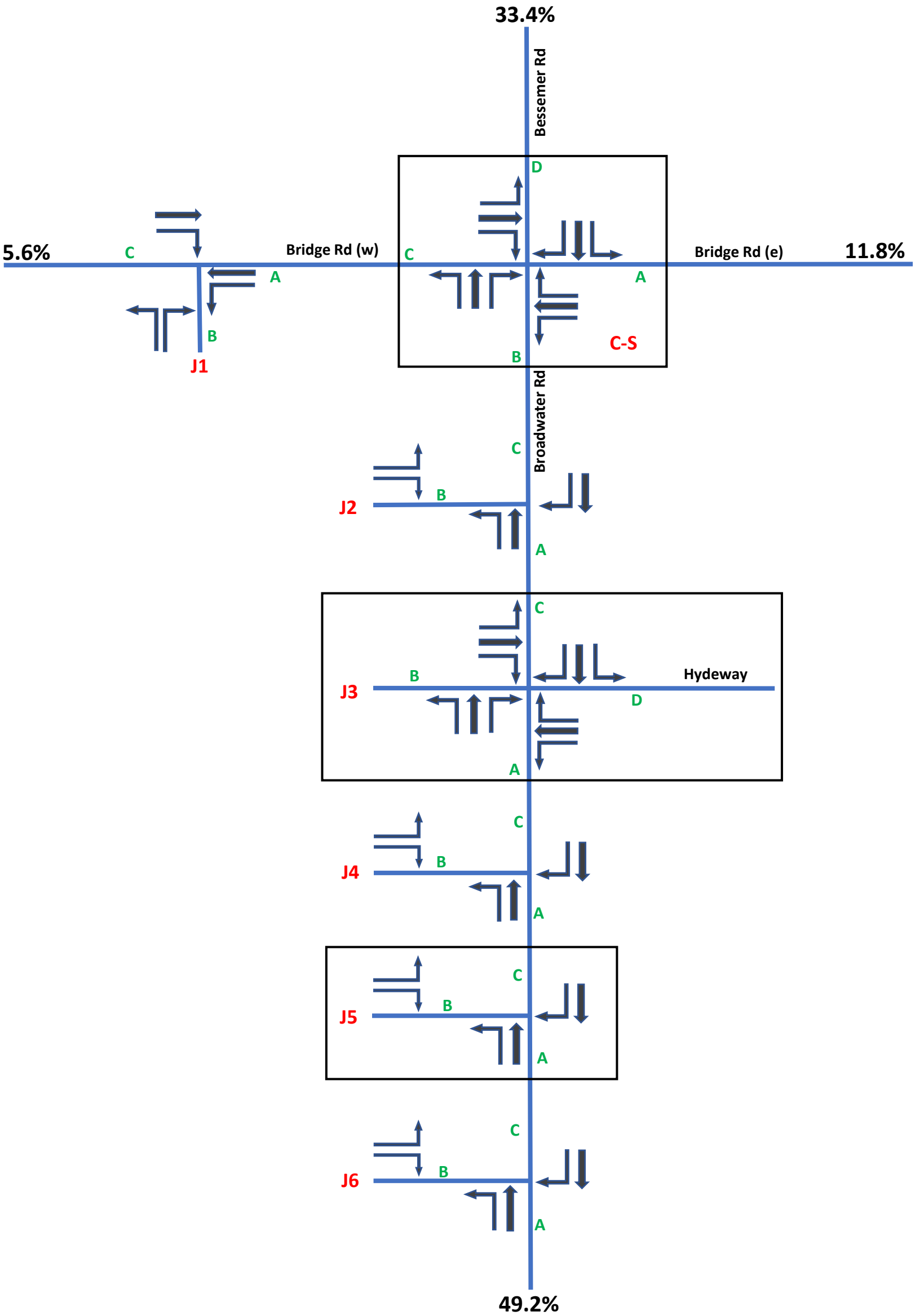
Trip rate p	790 - 2090 (units: sqm)
Survey dat	01/01/07 - 16/09/09
Number of	2
Number of	1
Number of	0
Surveys ma	0

This sectio followed b the total r the number of survey days that have been manually removed from the selec

Appendix L

Trip distribution

Network Vehicle Trip Distribution



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Wheat Quarter - Welwyn Garden City

Base AM Peak

J1

x	A	B	C
A	\	0	677
B	0	\	0
C	793	0	\

J2

x	A	B	C
A	\	0	632
B	0	\	0
C	488	0	\

J3

x	A	B	C	D
A	\	5	501	77
B	89	\	21	15
C	390	15	\	35
D	5	29	17	\

J4

x	A	B	C
A	\	0	578
B	0	\	0
C	484	0	\

J5

x	A	B	C
A	\	0	578
B	0	\	0
C	84	0	\

J6

x	A	B	C
A	\	0	578
B	0	\	0
C	484	0	\

C-S

x	A	B	C	D
A	\	126	416	140
B	108	\	30	494
C	323	122	\	317
D	47	240	231	\

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Wheat Quarter - Welwyn Garden City

Base PM Peak

J1

x	A	B	C
A	\	0	804
B	0	\	0
C	681	0	\

J2

x	A	B	C
A	\	0	597
B	0	\	0
C	583	0	\

J3

x	A	B	C	D
A	\	10	447	64
B	87	\	25	33
C	530	26	\	145
D	15	9	21	\

J4

x	A	B	C
A	\	0	521
B	0	\	0
C	632	0	\

J5

x	A	B	C
A	\	0	521
B	0	\	0
C	632	0	\

J6

x	A	B	C
A	\	0	521
B	0	\	0
C	632	0	\

C-S

x	A	B	C	D
A	\	115	395	63
B	131	\	86	380
C	303	67	\	287
D	63	401	323	\

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Wheat Quarter - Welwyn Garden City

Development AM Peak

J1

x	A	B	C
A	\	43	26
B	124	\	8
C	4	3	\

J2

x	A	B	C
A	\	6	252
B	1	\	2
C	81	1	\

J3

x	A	B	C	D
A	\	11	145	0
B	109	\	113	0
C	181	13	\	0
D	0	0	0	\

J4

x	A	B	C
A	\	1	132
B	23	\	24
C	204	2	\

J5

x	A	B	C
A	\	1	116
B	16	\	17
C	219	1	\

J6

x	A	B	C
A	\	5	38
B	77	\	79
C	291	5	\

C-S

x	A	B	C	D
A	\	5	5	0
B	55	\	49	154
C	15	70	\	44
D	0	17	16	\

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Wheat Quarter - Welwyn Garden City

Development PM Peak

J1

x	A	B	C
A	\	126	18
B	116	\	7
C	7	25	\

J2

x	A	B	C
A	\	3	178
B	5	\	6
C	261	3	\

J3

x	A	B	C	D
A	\	103	97	0
B	80	\	84	0
C	248	107	\	0
D	0	0	0	\

J4

x	A	B	C
A	\	22	183
B	16	\	17
C	244	22	\

J5

x	A	B	C
A	\	15	193
B	11	\	12
C	239	16	\

J6

x	A	B	C
A	\	72	152
B	54	\	56
C	219	74	\

C-S

x	A	B	C	D
A	\	51	16	0
B	40	\	85	115
C	14	85	\	41
D	0	146	44	\

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Wheat Quarter - Welwyn Garden City

Development + Base AM Peak

J1

x	A	B	C
A	\	43	703
B	124	\	8
C	797	3	\

J2

x	A	B	C
A	\	6	884
B	1	\	2
C	569	1	\

J3

x	A	B	C	D
A	\	16	646	77
B	198	\	134	15
C	571	28	\	35
D	5	29	17	\

J4

x	A	B	C
A	\	1	710
B	23	\	24
C	688	2	\

J5

x	A	B	C
A	\	1	694
B	16	\	17
C	303	1	\

J6

x	A	B	C
A	\	5	616
B	77	\	79
C	775	5	\

C-S

x	A	B	C	D
A	\	131	421	140
B	163	\	79	648
C	338	192	\	361
D	47	257	247	\

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Wheat Quarter - Welwyn Garden City

Development + Base PM Peak

J1

x	A	B	C
A	\	126	822
B	116	\	7
C	688	25	\

J2

x	A	B	C
A	\	3	775
B	5	\	6
C	844	3	\

J3

x	A	B	C	D
A	\	113	544	64
B	167	\	109	33
C	778	133	\	145
D	15	9	21	\

J4

x	A	B	C
A	\	22	704
B	16	\	17
C	876	22	\

J5

x	A	B	C
A	\	15	714
B	11	\	12
C	871	16	\

J6

x	A	B	C
A	\	72	673
B	54	\	56
C	851	74	\

C-S

x	A	B	C	D
A	\	166	411	63
B	171	\	171	495
C	317	152	\	328
D	63	547	367	\

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Appendix M

PICADY output files

Junctions 9

PICADY 9 - Priority Intersection Module

Filename: Junction 1.j9
Path: C:\clients\EnTran\Welwyn Gdn city\Jan 2018
Report generation date: 15/01/2018 14:55:01

Summary of junction performance

	AM						PM					
	Queue (PCU)	Delay (s)	RFC	LOS	Junction LOS	Network Residual Capacity	Queue (PCU)	Delay (s)	RFC	LOS	Junction LOS	Network Residual Capacity
	Base + Development											
Stream B-AC	1.1	28.83	0.54	D	A	5 % [Stream B-AC]	1.3	35.62	0.57	E	A	0 % [Stream B-AC]
Stream C-AB	0.0	8.18	0.01	A			0.1	8.78	0.07	A		

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Junction LOS and Junction Delay are demand-weighted averages. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

File summary

File Description

Title	Junction 1
Location	Welwyn Garden City
Site number	
Date	14/01/2018
Version	
Status	
Identifier	Broadwater Rd
Client	
Jobnumber	
Enumerator	AL
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	PCU	PCU	perHour	s	-Hour	perHour

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Calculate residual capacity	Residual capacity criteria type	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
5.75			✓	Delay	0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	Base + Development	AM	ONE HOUR	07:45	09:15	15	✓
D2	Base + Development	PM	ONE HOUR	16:45	18:15	15	✓

Analysis Set Details

ID	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	100.000	100.000

Base + Development, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs.

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	Junction 1	T-Junction	Two-way	2.28	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	5	Stream B-AC

Arms

Arms

Arm	Name	Description	Arm type
A	East		Major
B	South		Minor
C	West		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right turn bay	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C - West	7.84			75.0	✓	1.00

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor arm type	Lane width (m)	Visibility to left (m)	Visibility to right (m)
B - South	One lane	4.31	86	67

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
1	B-A	610	0.102	0.258	0.162	0.369
1	B-C	753	0.106	0.269	-	-
1	C-B	617	0.220	0.220	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	Base + Development	AM	ONE HOUR	07:45	09:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - East		ONE HOUR	✓	746	100.000
B - South		ONE HOUR	✓	132	100.000
C - West		ONE HOUR	✓	800	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A - East	B - South	C - West
From	A - East	0	43	703
	B - South	124	0	8
	C - West	797	3	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A - East	B - South	C - West
From	A - East	0	0	0
	B - South	0	0	0
	C - West	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-AC	0.54	28.83	1.1	D	121	182
C-AB	0.01	8.18	0.0	A	3	4
C-A					731	1097
A-B					39	59
A-C					645	968

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	99	25	380	0.261	98	0.0	0.3	12.685	B
C-AB	2	0.57	497	0.005	2	0.0	0.0	7.282	A
C-A	600	150			600				
A-B	32	8			32				
A-C	529	132			529				

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	119	30	334	0.355	118	0.3	0.5	16.592	C
C-AB	3	0.68	474	0.006	3	0.0	0.0	7.638	A
C-A	716	179			716				
A-B	39	10			39				
A-C	632	158			632				

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	145	36	270	0.539	143	0.5	1.1	27.945	D
C-AB	3	0.84	443	0.008	3	0.0	0.0	8.182	A
C-A	877	219			877				
A-B	47	12			47				
A-C	774	194			774				

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	145	36	270	0.539	145	1.1	1.1	28.833	D
C-AB	3	0.84	443	0.008	3	0.0	0.0	8.182	A
C-A	877	219			877				
A-B	47	12			47				
A-C	774	194			774				

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	119	30	334	0.355	121	1.1	0.6	17.057	C
C-AB	3	0.68	474	0.006	3	0.0	0.0	7.639	A
C-A	716	179			716				
A-B	39	10			39				
A-C	632	158			632				

09:00 - 09:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	99	25	380	0.261	100	0.6	0.4	12.883	B
C-AB	2	0.57	497	0.005	2	0.0	0.0	7.285	A
C-A	600	150			600				
A-B	32	8			32				
A-C	529	132			529				

Base + Development, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs.

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	Junction 1	T-Junction	Two-way	2.59	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	0	Stream B-AC

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D2	Base + Development	PM	ONE HOUR	16:45	18:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - East		ONE HOUR	✓	948	100.000
B - South		ONE HOUR	✓	123	100.000
C - West		ONE HOUR	✓	713	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A - East	B - South	C - West
From	A - East	0	126	822
	B - South	116	0	7
	C - West	688	25	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A - East	B - South	C - West
From	A - East	0	0	0
	B - South	0	0	0
	C - West	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-AC	0.57	35.62	1.3	E	113	169
C-AB	0.07	8.78	0.1	A	25	38
C-A					629	944
A-B					116	173
A-C					754	1131

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	93	23	357	0.259	91	0.0	0.3	13.468	B
C-AB	20	5	482	0.041	20	0.0	0.0	7.790	A
C-A	517	129			517				
A-B	95	24			95				
A-C	619	155			619				

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	111	28	306	0.361	110	0.3	0.5	18.230	C
C-AB	24	6	462	0.052	24	0.0	0.1	8.216	A
C-A	617	154			617				
A-B	113	28			113				
A-C	739	185			739				

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	135	34	236	0.574	133	0.5	1.2	34.021	D
C-AB	31	8	441	0.071	31	0.1	0.1	8.775	A
C-A	754	188			754				
A-B	139	35			139				
A-C	905	226			905				

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	135	34	236	0.574	135	1.2	1.3	35.621	E
C-AB	31	8	441	0.071	31	0.1	0.1	8.780	A
C-A	754	188			754				
A-B	139	35			139				
A-C	905	226			905				

17:45 - 18:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	111	28	306	0.361	113	1.3	0.6	18.917	C
C-AB	24	6	462	0.052	24	0.1	0.1	8.223	A
C-A	617	154			617				
A-B	113	28			113				
A-C	739	185			739				

18:00 - 18:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	93	23	357	0.259	94	0.6	0.4	13.703	B
C-AB	20	5	482	0.041	20	0.1	0.0	7.798	A
C-A	517	129			517				
A-B	95	24			95				
A-C	619	155			619				

Junctions 9

PICADY 9 - Priority Intersection Module

Filename: Junction 2.j9
Path: C:\clients\EnTran\Welwyn Gdn city\Jan 2018
Report generation date: 15/01/2018 14:55:45

Summary of junction performance

	AM						PM					
	Queue (PCU)	Delay (s)	RFC	LOS	Junction LOS	Network Residual Capacity	Queue (PCU)	Delay (s)	RFC	LOS	Junction LOS	Network Residual Capacity
	Base + Development											
Stream B-AC	0.0	0.00	0.00	A	A	170 % [Stream C-AB]	0.0	13.84	0.04	B	A	36 % [Stream B-AC]
Stream C-AB	0.0	8.96	0.00	A			0.0	8.29	0.01	A		

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Junction LOS and Junction Delay are demand-weighted averages. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

File summary

File Description

Title	Junction 2
Location	Welwyn Garden City
Site number	
Date	14/01/2018
Version	
Status	
Identifier	Broadwater Rd
Client	
Jobnumber	
Enumerator	AL
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	PCU	PCU	perHour	s	-Hour	perHour

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Calculate residual capacity	Residual capacity criteria type	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
5.75			✓	Delay	0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	Base + Development	AM	ONE HOUR	07:45	09:15	15	✓
D2	Base + Development	PM	ONE HOUR	16:45	18:15	15	✓

Analysis Set Details

ID	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	100.000	100.000

Base + Development, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs.

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	Junction 2	T-Junction	Two-way	0.01	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	170	Stream C-AB

Arms

Arms

Arm	Name	Description	Arm type
A	South		Major
B	West		Minor
C	North		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right turn bay	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C - North	6.75			104.0	✓	1.00

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor arm type	Lane width (m)	Visibility to left (m)	Visibility to right (m)
B - West	One lane	3.41	28	20

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
1	B-A	517	0.091	0.230	0.145	0.329
1	B-C	663	0.098	0.248	-	-
1	C-B	634	0.238	0.238	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	Base + Development	AM	ONE HOUR	07:45	09:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - South		ONE HOUR	✓	890	100.000
B - West		ONE HOUR	✓	3	100.000
C - North		ONE HOUR	✓	570	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A - South	B - West	C - North
From	A - South	0	6	884
	B - West	1	0	2
	C - North	569	1	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A - South	B - West	C - North
From	A - South	0	0	0
	B - West	0	0	0
	C - North	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-AC	0.00	0.00	0.0	A	0	0
C-AB	0.00	8.96	0.0	A	0.92	1
C-A					522	783
A-B					6	8
A-C					811	1217

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	0	0	375	0.000	0	0.0	0.0	0.000	A
C-AB	0.75	0.19	476	0.002	0.75	0.0	0.0	7.580	A
C-A	428	107			428				
A-B	5	1			5				
A-C	666	166			666				

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	0	0	333	0.000	0	0.0	0.0	0.000	A
C-AB	0.90	0.23	445	0.002	0.90	0.0	0.0	8.105	A
C-A	512	128			512				
A-B	5	1			5				
A-C	795	199			795				

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	0	0	272	0.000	0	0.0	0.0	0.000	A
C-AB	1	0.28	403	0.003	1	0.0	0.0	8.957	A
C-A	626	157			626				
A-B	7	2			7				
A-C	973	243			973				

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	0	0	272	0.000	0	0.0	0.0	0.000	A
C-AB	1	0.28	403	0.003	1	0.0	0.0	8.957	A
C-A	626	157			626				
A-B	7	2			7				
A-C	973	243			973				

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	0	0	333	0.000	0	0.0	0.0	0.000	A
C-AB	0.90	0.23	445	0.002	0.90	0.0	0.0	8.105	A
C-A	512	128			512				
A-B	5	1			5				
A-C	795	199			795				

09:00 - 09:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	0	0	375	0.000	0	0.0	0.0	0.000	A
C-AB	0.75	0.19	476	0.002	0.76	0.0	0.0	7.580	A
C-A	428	107			428				
A-B	5	1			5				
A-C	666	166			666				

Base + Development, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs.

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	Junction 2	T-Junction	Two-way	0.11	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	36	Stream B-AC

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D2	Base + Development	PM	ONE HOUR	16:45	18:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - South		ONE HOUR	✓	778	100.000
B - West		ONE HOUR	✓	11	100.000
C - North		ONE HOUR	✓	847	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A - South	B - West	C - North
From	A - South	0	3	775
	B - West	5	0	6
	C - North	844	3	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A - South	B - West	C - North
From	A - South	0	0	0
	B - West	0	0	0
	C - North	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-AC	0.04	13.84	0.0	B	10	15
C-AB	0.01	8.29	0.0	A	3	4
C-A					774	1162
A-B					3	4
A-C					711	1067

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	8	2	381	0.022	8	0.0	0.0	9.650	A
C-AB	2	0.57	498	0.005	2	0.0	0.0	7.263	A
C-A	635	159			635				
A-B	2	0.56			2				
A-C	583	146			583				

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	10	2	337	0.029	10	0.0	0.0	10.998	B
C-AB	3	0.68	472	0.006	3	0.0	0.0	7.665	A
C-A	759	190			759				
A-B	3	0.67			3				
A-C	697	174			697				

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	12	3	272	0.045	12	0.0	0.0	13.839	B
C-AB	3	0.84	438	0.008	3	0.0	0.0	8.287	A
C-A	929	232			929				
A-B	3	0.83			3				
A-C	853	213			853				

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	12	3	272	0.045	12	0.0	0.0	13.845	B
C-AB	3	0.84	438	0.008	3	0.0	0.0	8.289	A
C-A	929	232			929				
A-B	3	0.83			3				
A-C	853	213			853				

17:45 - 18:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	10	2	337	0.029	10	0.0	0.0	11.007	B
C-AB	3	0.68	472	0.006	3	0.0	0.0	7.668	A
C-A	759	190			759				
A-B	3	0.67			3				
A-C	697	174			697				

18:00 - 18:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	8	2	381	0.022	8	0.0	0.0	9.655	A
C-AB	2	0.57	498	0.005	2	0.0	0.0	7.266	A
C-A	635	159			635				
A-B	2	0.56			2				
A-C	583	146			583				

Junctions 9

PICADY 9 - Priority Intersection Module

Filename: Junction 3.j9
Path: C:\clients\EnTran\Welwyn Gdn city\Jan 2018
Report generation date: 15/01/2018 14:56:22

Summary of junction performance

	AM						PM					
	Queue (PCU)	Delay (s)	RFC	LOS	Junction LOS	Network Residual Capacity	Queue (PCU)	Delay (s)	RFC	LOS	Junction LOS	Network Residual Capacity
	Base + Development											
Stream B-CD	12.9	289.05	1.11	F	F	-20 % [Stream B-AD]	19.4	450.54	1.27	F	F	-23 % [Stream B-AD]
Stream B-AD	16.5	269.33	1.11	F			22.6	439.76	1.26	F		
Stream A-BCD	0.2	6.66	0.16	A			0.3	8.49	0.18	A		
Stream D-AB	0.1	15.03	0.09	C			0.1	14.84	0.09	B		
Stream D-BC	0.2	22.85	0.17	C			0.4	50.49	0.27	F		
Stream C-ABD	0.1	7.23	0.06	A			0.7	6.45	0.30	A		

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Junction LOS and Junction Delay are demand-weighted averages. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

File summary

File Description

Title	Junction 3
Location	Welwyn Garden City
Site number	
Date	14/01/2018
Version	
Status	
Identifier	Broadwater Rd
Client	
Jobnumber	
Enumerator	AL
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	PCU	PCU	perHour	s	-Hour	perHour

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Calculate residual capacity	Residual capacity criteria type	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
5.75			✓	Delay	0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	Base + Development	AM	ONE HOUR	07:45	09:15	15	✓
D2	Base + Development	PM	ONE HOUR	16:45	18:15	15	✓

Analysis Set Details

ID	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	100.000	100.000

Base + Development, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs.

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	Junction 3	Crossroads	Two-way	55.43	F

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	-20	Stream B-AD

Arms

Arms

Arm	Name	Description	Arm type
A	South		Major
B	West		Minor
C	North		Major
D	East		Minor

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right turn bay	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
A - South	6.75			250.0	✓	1.00
C - North	6.75			250.0	✓	1.00

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor arm type	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate flare length	Flare length (PCU)	Visibility to left (m)	Visibility to right (m)
B - West	One lane plus flare	10.00	4.75	3.04	3.02	2.93		1.00	32	36
D - East	One lane plus flare	10.00	4.74	4.06	3.78	3.62		1.00	60	31

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for A-D	Slope for B-A	Slope for B-C	Slope for B-D	Slope for C-A	Slope for C-B	Slope for C-D	Slope for D-A	Slope for D-B	Slope for D-C
1	A-D	719	-	-	-	-	-	-	0.269	0.385	0.269	-	-	-
1	B-A	549	0.097	0.244	0.244	-	-	-	0.154	0.349	-	0.244	0.244	0.122
1	B-C	680	0.101	0.255	-	-	-	-	-	-	-	-	-	-
1	B-D, nearside lane	532	0.094	0.237	0.237	-	-	-	0.149	0.338	0.149	-	-	-
1	B-D, offside lane	549	0.097	0.244	0.244	-	-	-	0.154	0.349	0.154	-	-	-
1	C-B	719	0.269	0.269	0.385	-	-	-	-	-	-	-	-	-
1	D-A	688	-	-	-	-	-	-	0.258	-	0.102	-	-	-
1	D-B, nearside lane	547	0.153	0.153	0.348	-	-	-	0.244	0.244	0.096	-	-	-
1	D-B, offside lane	547	0.153	0.153	0.348	-	-	-	0.244	0.244	0.096	-	-	-
1	D-C	547	-	0.153	0.348	0.122	0.244	0.244	0.244	0.244	0.096	-	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	Base + Development	AM	ONE HOUR	07:45	09:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - South		ONE HOUR	✓	739	100.000
B - West		ONE HOUR	✓	347	100.000
C - North		ONE HOUR	✓	634	100.000
D - East		ONE HOUR	✓	51	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		A - South	B - West	C - North	D - East
From	A - South	0	16	646	77
	B - West	198	0	134	15
	C - North	571	28	0	35
	D - East	5	29	17	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A - South	B - West	C - North	D - East
From	A - South	0	0	0	0
	B - West	0	0	0	0
	C - North	0	0	0	0
	D - East	0	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-CD	1.11	289.05	12.9	F	135	203
B-AD	1.11	269.33	16.5	F	183	275
A-BCD	0.16	6.66	0.2	A	82	122
A-B					14	22
A-C					582	873
D-AB	0.09	15.03	0.1	C	19	28
D-BC	0.17	22.85	0.2	C	28	42
C-ABD	0.06	7.23	0.1	A	27	41
C-D					32	48
C-A					523	784

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-CD	109	27	427	0.256	108	0.0	0.3	11.235	B
B-AD	152	38	326	0.467	149	0.0	0.8	19.975	C
A-BCD	63	16	637	0.099	62	0.0	0.1	6.263	A
A-B	12	3			12				
A-C	482	120			482				
D-AB	15	4	370	0.041	15	0.0	0.0	10.148	B
D-BC	23	6	313	0.074	23	0.0	0.1	12.407	B
C-ABD	22	5	579	0.038	22	0.0	0.0	6.453	A
C-D	26	7			26				
C-A	429	107			429				

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-CD	131	33	322	0.408	130	0.3	0.7	18.621	C
B-AD	181	45	275	0.658	177	0.8	1.7	35.623	E
A-BCD	78	20	636	0.123	78	0.1	0.2	6.459	A
A-B	14	4			14				
A-C	572	143			572				
D-AB	18	5	326	0.056	18	0.0	0.1	11.685	B
D-BC	27	7	266	0.104	27	0.1	0.1	15.103	C
C-ABD	26	7	557	0.047	26	0.0	0.1	6.778	A
C-D	31	8			31				
C-A	512	128			512				

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-CD	164	41	147	1.112	133	0.7	8.3	159.477	F
B-AD	218	55	199	1.095	185	1.7	10.0	147.699	F
A-BCD	104	26	644	0.161	103	0.2	0.2	6.655	A
A-B	17	4			17				
A-C	693	173			693				
D-AB	23	6	264	0.088	23	0.1	0.1	14.936	B
D-BC	33	8	199	0.166	33	0.1	0.2	21.588	C
C-ABD	33	8	532	0.063	33	0.1	0.1	7.226	A
C-D	38	10			38				
C-A	626	157			626				

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-CD	164	41	150	1.091	146	8.3	12.9	289.055	F
B-AD	218	55	197	1.109	192	10.0	16.5	269.329	F
A-BCD	104	26	644	0.161	104	0.2	0.2	6.661	A
A-B	17	4			17				
A-C	693	173			693				
D-AB	23	6	263	0.089	23	0.1	0.1	15.032	C
D-BC	33	8	190	0.173	33	0.2	0.2	22.852	C
C-ABD	33	8	531	0.063	33	0.1	0.1	7.231	A
C-D	38	10			38				
C-A	626	157			626				

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-CD	133	33	182	0.730	168	12.9	4.1	194.141	F
B-AD	179	45	242	0.741	227	16.5	4.5	179.508	F
A-BCD	78	20	635	0.123	79	0.2	0.2	6.470	A
A-B	14	4			14				
A-C	572	143			572				
D-AB	18	5	325	0.057	19	0.1	0.1	11.745	B
D-BC	27	7	252	0.109	28	0.2	0.1	16.092	C
C-ABD	26	7	557	0.047	26	0.1	0.1	6.785	A
C-D	31	8			31				
C-A	512	128			512				

09:00 - 09:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-CD	109	27	403	0.271	124	4.1	0.4	13.578	B
B-AD	152	38	321	0.473	166	4.5	0.9	25.114	D
A-BCD	63	16	637	0.099	63	0.2	0.1	6.275	A
A-B	12	3			12				
A-C	482	120			482				
D-AB	15	4	369	0.041	15	0.1	0.0	10.178	B
D-BC	23	6	309	0.075	23	0.1	0.1	12.632	B
C-ABD	22	5	579	0.038	22	0.1	0.0	6.462	A
C-D	26	7			26				
C-A	429	107			429				

Base + Development, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs.

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	Junction 3	Crossroads	Two-way	66.08	F

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	-23	Stream B-AD

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D2	Base + Development	PM	ONE HOUR	16:45	18:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - South		ONE HOUR	✓	721	100.000
B - West		ONE HOUR	✓	309	100.000
C - North		ONE HOUR	✓	1056	100.000
D - East		ONE HOUR	✓	45	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		A - South	B - West	C - North	D - East
From	A - South	0	113	544	64
	B - West	167	0	109	33
	C - North	778	133	0	145
	D - East	15	9	21	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A - South	B - West	C - North	D - East
From	A - South	0	0	0	0
	B - West	0	0	0	0
	C - North	0	0	0	0
	D - East	0	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-CD	1.27	450.54	19.4	F	127	191
B-AD	1.26	439.76	22.6	F	156	234
A-BCD	0.18	8.49	0.3	A	71	107
A-B					101	152
A-C					489	733
D-AB	0.09	14.84	0.1	B	19	28
D-BC	0.27	50.49	0.4	F	23	34
C-ABD	0.30	6.45	0.7	A	172	259
C-D					125	188
C-A					671	1007

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-CD	100	25	392	0.254	98	0.0	0.3	12.204	B
B-AD	133	33	288	0.461	130	0.0	0.8	22.266	C
A-BCD	53	13	541	0.098	52	0.0	0.1	7.357	A
A-B	84	21			84				
A-C	406	101			406				
D-AB	15	4	424	0.035	15	0.0	0.0	8.803	A
D-BC	19	5	253	0.075	19	0.0	0.1	15.341	C
C-ABD	122	30	690	0.177	121	0.0	0.3	6.321	A
C-D	106	26			106				
C-A	567	142			567				

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-CD	122	31	272	0.448	120	0.3	0.8	23.436	C
B-AD	156	39	229	0.680	152	0.8	1.9	44.243	E
A-BCD	67	17	525	0.128	67	0.1	0.2	7.869	A
A-B	100	25			100				
A-C	481	120			481				
D-AB	18	4	369	0.049	18	0.0	0.1	10.262	B
D-BC	23	6	194	0.116	22	0.1	0.1	20.899	C
C-ABD	161	40	722	0.223	160	0.3	0.4	6.410	A
C-D	124	31			124				
C-A	665	166			665				

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-CD	156	39	123	1.270	115	0.8	11.2	229.759	F
B-AD	184	46	148	1.245	140	1.9	12.7	228.542	F
A-BCD	94	24	519	0.182	94	0.2	0.3	8.461	A
A-B	120	30			120				
A-C	579	145			579				
D-AB	23	6	273	0.082	22	0.1	0.1	14.337	B
D-BC	27	7	113	0.239	26	0.1	0.3	41.336	E
C-ABD	235	59	796	0.295	234	0.4	0.6	6.409	A
C-D	146	36			146				
C-A	782	196			782				

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-CD	156	39	125	1.250	123	11.2	19.4	450.544	F
B-AD	184	46	146	1.259	145	12.7	22.6	439.764	F
A-BCD	94	24	519	0.182	94	0.3	0.3	8.485	A
A-B	120	30			120				
A-C	579	145			579				
D-AB	23	6	265	0.086	23	0.1	0.1	14.844	B
D-BC	27	7	98	0.275	27	0.3	0.4	50.491	F
C-ABD	235	59	796	0.295	235	0.6	0.7	6.433	A
C-D	146	36			146				
C-A	782	196			782				

17:45 - 18:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-CD	127	32	165	0.771	157	19.4	12.0	344.069	F
B-AD	150	38	194	0.776	186	22.6	13.8	345.755	F
A-BCD	67	17	524	0.128	68	0.3	0.2	7.899	A
A-B	100	25			100				
A-C	481	120			481				
D-AB	18	5	364	0.050	18	0.1	0.1	10.420	B
D-BC	22	6	167	0.134	23	0.4	0.2	25.121	D
C-ABD	161	40	722	0.223	162	0.7	0.4	6.448	A
C-D	124	31			124				
C-A	665	166			665				

18:00 - 18:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-CD	102	26	303	0.337	148	12.0	0.5	30.725	D
B-AD	131	33	269	0.485	182	13.8	1.0	62.258	F
A-BCD	53	13	541	0.098	53	0.2	0.1	7.387	A
A-B	84	21			84				
A-C	406	101			406				
D-AB	15	4	422	0.035	15	0.1	0.0	8.849	A
D-BC	19	5	236	0.080	19	0.2	0.1	16.606	C
C-ABD	122	30	689	0.177	122	0.4	0.3	6.356	A
C-D	106	26			106				
C-A	567	142			567				

Junctions 9

PICADY 9 - Priority Intersection Module

Filename: Junction 4.j9
Path: C:\clients\EnTran\Welwyn Gdn city\Jan 2018
Report generation date: 15/01/2018 14:56:54

Summary of junction performance

	AM						PM					
	Queue (PCU)	Delay (s)	RFC	LOS	Junction LOS	Network Residual Capacity	Queue (PCU)	Delay (s)	RFC	LOS	Junction LOS	Network Residual Capacity
	Base + Development											
Stream B-AC	0.2	13.71	0.16	B	A	41 % [Stream B-AC]	0.1	14.87	0.13	B	A	31 % [Stream B-AC]
Stream C-AB	0.0	8.23	0.01	A			0.1	7.85	0.06	A		

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Junction LOS and Junction Delay are demand-weighted averages. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

File summary

File Description

Title	Junction 4
Location	Welwyn Garden City
Site number	
Date	14/01/2018
Version	
Status	
Identifier	Broadwater Rd
Client	
Jobnumber	
Enumerator	AL
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	PCU	PCU	perHour	s	-Hour	perHour

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Calculate residual capacity	Residual capacity criteria type	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
5.75			✓	Delay	0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	Base + Development	AM	ONE HOUR	07:45	09:15	15	✓
D2	Base + Development	PM	ONE HOUR	16:45	18:15	15	✓

Analysis Set Details

ID	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	100.000	100.000

Base + Development, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs.

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	Junction 4	T-Junction	Two-way	0.46	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	41	Stream B-AC

Arms

Arms

Arm	Name	Description	Arm type
A	South		Major
B	West		Minor
C	North		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right turn bay	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C - North	6.76			73.0	✓	1.00

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor arm type	Lane width (m)	Visibility to left (m)	Visibility to right (m)
B - West	One lane	3.41	41	36

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
1	B-A	529	0.093	0.236	0.148	0.337
1	B-C	673	0.100	0.252	-	-
1	C-B	616	0.231	0.231	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	Base + Development	AM	ONE HOUR	07:45	09:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - South		ONE HOUR	✓	711	100.000
B - West		ONE HOUR	✓	47	100.000
C - North		ONE HOUR	✓	690	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A - South	B - West	C - North
From	A - South	0	1	710
	B - West	23	0	24
	C - North	688	2	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A - South	B - West	C - North
From	A - South	0	0	0
	B - West	0	0	0
	C - North	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-AC	0.16	13.71	0.2	B	43	65
C-AB	0.01	8.23	0.0	A	2	3
C-A					631	947
A-B					0.92	1
A-C					652	977

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	35	9	408	0.087	35	0.0	0.1	9.634	A
C-AB	2	0.38	494	0.003	1	0.0	0.0	7.305	A
C-A	518	129			518				
A-B	0.75	0.19			0.75				
A-C	535	134			535				

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	42	11	370	0.114	42	0.1	0.1	10.982	B
C-AB	2	0.45	471	0.004	2	0.0	0.0	7.671	A
C-A	618	155			618				
A-B	0.90	0.22			0.90				
A-C	638	160			638				

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	52	13	314	0.165	51	0.1	0.2	13.684	B
C-AB	2	0.56	439	0.005	2	0.0	0.0	8.235	A
C-A	757	189			757				
A-B	1	0.28			1				
A-C	782	195			782				

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	52	13	314	0.165	52	0.2	0.2	13.711	B
C-AB	2	0.56	439	0.005	2	0.0	0.0	8.235	A
C-A	757	189			757				
A-B	1	0.28			1				
A-C	782	195			782				

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	42	11	370	0.114	43	0.2	0.1	11.011	B
C-AB	2	0.45	471	0.004	2	0.0	0.0	7.671	A
C-A	618	155			618				
A-B	0.90	0.22			0.90				
A-C	638	160			638				

09:00 - 09:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	35	9	408	0.087	36	0.1	0.1	9.661	A
C-AB	2	0.38	494	0.003	2	0.0	0.0	7.308	A
C-A	518	129			518				
A-B	0.75	0.19			0.75				
A-C	535	134			535				

Base + Development, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs.

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	Junction 4	T-Junction	Two-way	0.41	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	31	Stream B-AC

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D2	Base + Development	PM	ONE HOUR	16:45	18:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - South		ONE HOUR	✓	726	100.000
B - West		ONE HOUR	✓	33	100.000
C - North		ONE HOUR	✓	898	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A - South	B - West	C - North
From	A - South	0	22	704
	B - West	16	0	17
	C - North	876	22	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A - South	B - West	C - North
From	A - South	0	0	0
	B - West	0	0	0
	C - North	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-AC	0.13	14.87	0.1	B	30	45
C-AB	0.06	7.85	0.1	A	22	33
C-A					802	1203
A-B					20	30
A-C					646	969

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	25	6	388	0.064	25	0.0	0.1	9.893	A
C-AB	17	4	512	0.034	17	0.0	0.0	7.268	A
C-A	659	165			659				
A-B	17	4			17				
A-C	530	133			530				

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	30	7	344	0.086	30	0.1	0.1	11.452	B
C-AB	21	5	499	0.042	21	0.0	0.0	7.533	A
C-A	786	197			786				
A-B	20	5			20				
A-C	633	158			633				

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	36	9	278	0.131	36	0.1	0.1	14.846	B
C-AB	27	7	486	0.056	27	0.0	0.1	7.848	A
C-A	961	240			961				
A-B	24	6			24				
A-C	775	194			775				

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	36	9	278	0.131	36	0.1	0.1	14.874	B
C-AB	27	7	486	0.056	27	0.1	0.1	7.852	A
C-A	961	240			961				
A-B	24	6			24				
A-C	775	194			775				

17:45 - 18:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	30	7	344	0.086	30	0.1	0.1	11.477	B
C-AB	21	5	499	0.042	21	0.1	0.0	7.536	A
C-A	786	197			786				
A-B	20	5			20				
A-C	633	158			633				

18:00 - 18:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	25	6	388	0.064	25	0.1	0.1	9.916	A
C-AB	17	4	512	0.034	17	0.0	0.0	7.272	A
C-A	659	165			659				
A-B	17	4			17				
A-C	530	133			530				

Junctions 9

PICADY 9 - Priority Intersection Module

Filename: Junction 5.j9
Path: C:\clients\EnTran\Welwyn Gdn city\Jan 2018
Report generation date: 15/01/2018 14:57:33

Summary of junction performance

	AM						PM					
	Queue (PCU)	Delay (s)	RFC	LOS	Junction LOS	Network Residual Capacity	Queue (PCU)	Delay (s)	RFC	LOS	Junction LOS	Network Residual Capacity
	Base + Development											
Stream B-AC	0.1	10.61	0.10	B	A	83 % [Stream B-AC]	0.1	13.92	0.09	B	A	35 % [Stream B-AC]
Stream C-AB	0.0	8.29	0.00	A			0.0	8.06	0.04	A		

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Junction LOS and Junction Delay are demand-weighted averages. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

File summary

File Description

Title	Junction 5
Location	Welwyn Garden City
Site number	
Date	14/01/2018
Version	
Status	
Identifier	Broadwater Rd
Client	
Jobnumber	
Enumerator	AL
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	PCU	PCU	perHour	s	-Hour	perHour

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Calculate residual capacity	Residual capacity criteria type	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
5.75			✓	Delay	0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	Base + Development	AM	ONE HOUR	07:45	09:15	15	✓
D2	Base + Development	PM	ONE HOUR	16:45	18:15	15	✓

Analysis Set Details

ID	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	100.000	100.000

Base + Development, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs.

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	Junction 5	T-Junction	Two-way	0.35	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	83	Stream B-AC

Arms

Arms

Arm	Name	Description	Arm type
A	South		Major
B	West		Minor
C	North		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right turn bay	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C - North	6.76			61.0	✓	1.00

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor arm type	Lane width (m)	Visibility to left (m)	Visibility to right (m)
B - West	One lane	3.40	45	47

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
1	B-A	536	0.094	0.239	0.150	0.341
1	B-C	680	0.101	0.255	-	-
1	C-B	609	0.228	0.228	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	Base + Development	AM	ONE HOUR	07:45	09:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - South		ONE HOUR	✓	695	100.000
B - West		ONE HOUR	✓	33	100.000
C - North		ONE HOUR	✓	304	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A - South	B - West	C - North
From	A - South	0	1	694
	B - West	16	0	17
	C - North	303	1	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A - South	B - West	C - North
From	A - South	0	0	0
	B - West	0	0	0
	C - North	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-AC	0.10	10.61	0.1	B	30	45
C-AB	0.00	8.29	0.0	A	0.92	1
C-A					278	417
A-B					0.92	1
A-C					637	955

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	25	6	449	0.055	25	0.0	0.1	8.487	A
C-AB	0.75	0.19	490	0.002	0.75	0.0	0.0	7.354	A
C-A	228	57			228				
A-B	0.75	0.19			0.75				
A-C	522	131			522				

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	30	7	418	0.071	30	0.1	0.1	9.263	A
C-AB	0.90	0.23	467	0.002	0.90	0.0	0.0	7.720	A
C-A	272	68			272				
A-B	0.90	0.22			0.90				
A-C	624	156			624				

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	36	9	376	0.097	36	0.1	0.1	10.601	B
C-AB	1	0.28	435	0.003	1	0.0	0.0	8.287	A
C-A	334	83			334				
A-B	1	0.28			1				
A-C	764	191			764				

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	36	9	376	0.097	36	0.1	0.1	10.607	B
C-AB	1	0.28	435	0.003	1	0.0	0.0	8.287	A
C-A	334	83			334				
A-B	1	0.28			1				
A-C	764	191			764				

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	30	7	418	0.071	30	0.1	0.1	9.270	A
C-AB	0.90	0.23	467	0.002	0.90	0.0	0.0	7.720	A
C-A	272	68			272				
A-B	0.90	0.22			0.90				
A-C	624	156			624				

09:00 - 09:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	25	6	449	0.055	25	0.1	0.1	8.500	A
C-AB	0.75	0.19	490	0.002	0.75	0.0	0.0	7.357	A
C-A	228	57			228				
A-B	0.75	0.19			0.75				
A-C	522	131			522				

Base + Development, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs.

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	Junction 5	T-Junction	Two-way	0.28	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	35	Stream B-AC

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D2	Base + Development	PM	ONE HOUR	16:45	18:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - South		ONE HOUR	✓	729	100.000
B - West		ONE HOUR	✓	23	100.000
C - North		ONE HOUR	✓	887	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A - South	B - West	C - North
From	A - South	0	15	714
	B - West	11	0	12
	C - North	871	16	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A - South	B - West	C - North
From	A - South	0	0	0
	B - West	0	0	0
	C - North	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-AC	0.09	13.92	0.1	B	21	32
C-AB	0.04	8.06	0.0	A	16	23
C-A					798	1197
A-B					14	21
A-C					655	983

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	17	4	394	0.044	17	0.0	0.0	9.539	A
C-AB	12	3	500	0.025	12	0.0	0.0	7.375	A
C-A	655	164			655				
A-B	11	3			11				
A-C	538	134			538				

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	21	5	350	0.059	21	0.0	0.1	10.934	B
C-AB	15	4	484	0.031	15	0.0	0.0	7.674	A
C-A	782	196			782				
A-B	13	3			13				
A-C	642	160			642				

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	25	6	284	0.089	25	0.1	0.1	13.902	B
C-AB	19	5	466	0.041	19	0.0	0.0	8.063	A
C-A	957	239			957				
A-B	17	4			17				
A-C	786	197			786				

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	25	6	284	0.089	25	0.1	0.1	13.917	B
C-AB	19	5	466	0.041	19	0.0	0.0	8.065	A
C-A	957	239			957				
A-B	17	4			17				
A-C	786	197			786				

17:45 - 18:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	21	5	350	0.059	21	0.1	0.1	10.948	B
C-AB	15	4	484	0.031	15	0.0	0.0	7.679	A
C-A	782	196			782				
A-B	13	3			13				
A-C	642	160			642				

18:00 - 18:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	17	4	394	0.044	17	0.1	0.0	9.553	A
C-AB	12	3	500	0.025	12	0.0	0.0	7.379	A
C-A	655	164			655				
A-B	11	3			11				
A-C	538	134			538				

Junctions 9

PICADY 9 - Priority Intersection Module

Filename: Junction 6.j9
Path: C:\clients\EnTran\Welwyn Gdn city\Jan 2018
Report generation date: 15/01/2018 14:58:22

Summary of junction performance

	AM						PM					
	Queue (PCU)	Delay (s)	RFC	LOS	Junction LOS	Network Residual Capacity	Queue (PCU)	Delay (s)	RFC	LOS	Junction LOS	Network Residual Capacity
	Base + Development											
Stream B-AC	1.1	23.70	0.53	C	A	11 % [Stream B-AC]	0.8	25.59	0.46	D	A	7 % [Stream B-AC]
Stream C-AB	0.0	7.73	0.01	A			0.3	7.34	0.19	A		

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Junction LOS and Junction Delay are demand-weighted averages. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

File summary

File Description

Title	Junction 6
Location	Welwyn Garden City
Site number	
Date	14/01/2018
Version	
Status	
Identifier	Broadwater Rd
Client	
Jobnumber	
Enumerator	AL
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	PCU	PCU	perHour	s	-Hour	perHour

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Calculate residual capacity	Residual capacity criteria type	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
5.75			✓	Delay	0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	Base + Development	AM	ONE HOUR	07:45	09:15	15	✓
D2	Base + Development	PM	ONE HOUR	16:45	18:15	15	✓

Analysis Set Details

ID	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	100.000	100.000

Base + Development, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs.

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	Junction 6	T-Junction	Two-way	2.40	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	11	Stream B-AC

Arms

Arms

Arm	Name	Description	Arm type
A	South		Major
B	West		Minor
C	North		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right turn bay	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C - North	6.75			79.0	✓	1.00

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor arm type	Lane width (m)	Visibility to left (m)	Visibility to right (m)
B - West	One lane	3.48	33	22

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
1	B-A	523	0.092	0.233	0.147	0.333
1	B-C	668	0.099	0.251	-	-
1	C-B	620	0.232	0.232	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	Base + Development	AM	ONE HOUR	07:45	09:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - South		ONE HOUR	✓	621	100.000
B - West		ONE HOUR	✓	156	100.000
C - North		ONE HOUR	✓	780	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A - South	B - West	C - North
From	A - South	0	5	616
	B - West	77	0	79
	C - North	775	5	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A - South	B - West	C - North
From	A - South	0	0	0
	B - West	0	0	0
	C - North	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-AC	0.53	23.70	1.1	C	143	215
C-AB	0.01	7.73	0.0	A	5	7
C-A					711	1067
A-B					5	7
A-C					565	848

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	117	29	413	0.285	116	0.0	0.4	12.066	B
C-AB	4	0.95	515	0.007	4	0.0	0.0	7.035	A
C-A	583	146			583				
A-B	4	0.94			4				
A-C	464	116			464				

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	140	35	376	0.373	139	0.4	0.6	15.161	C
C-AB	5	1	496	0.009	5	0.0	0.0	7.317	A
C-A	697	174			697				
A-B	4	1			4				
A-C	554	138			554				

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	172	43	323	0.531	170	0.6	1.1	23.154	C
C-AB	6	1	471	0.012	6	0.0	0.0	7.733	A
C-A	853	213			853				
A-B	6	1			6				
A-C	678	170			678				

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	172	43	323	0.531	172	1.1	1.1	23.702	C
C-AB	6	1	471	0.012	6	0.0	0.0	7.733	A
C-A	853	213			853				
A-B	6	1			6				
A-C	678	170			678				

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	140	35	376	0.373	142	1.1	0.6	15.516	C
C-AB	5	1	496	0.009	5	0.0	0.0	7.321	A
C-A	697	174			697				
A-B	4	1			4				
A-C	554	138			554				

09:00 - 09:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	117	29	413	0.285	118	0.6	0.4	12.258	B
C-AB	4	0.95	515	0.007	4	0.0	0.0	7.035	A
C-A	583	146			583				
A-B	4	0.94			4				
A-C	464	116			464				

Base + Development, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs.

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	Junction 6	T-Junction	Two-way	1.97	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	7	Stream B-AC

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D2	Base + Development	PM	ONE HOUR	16:45	18:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - South		ONE HOUR	✓	745	100.000
B - West		ONE HOUR	✓	110	100.000
C - North		ONE HOUR	✓	925	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A - South	B - West	C - North
From	A - South	0	72	673
	B - West	54	0	56
	C - North	851	74	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A - South	B - West	C - North
From	A - South	0	0	0
	B - West	0	0	0
	C - North	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-AC	0.46	25.59	0.8	D	101	151
C-AB	0.19	7.34	0.3	A	87	131
C-A					762	1142
A-B					66	99
A-C					618	926

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	83	21	376	0.220	82	0.0	0.3	12.170	B
C-AB	64	16	562	0.114	63	0.0	0.1	7.208	A
C-A	632	158			632				
A-B	54	14			54				
A-C	507	127			507				

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	99	25	330	0.299	98	0.3	0.4	15.484	C
C-AB	82	21	574	0.143	82	0.1	0.2	7.322	A
C-A	749	187			749				
A-B	65	16			65				
A-C	605	151			605				

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	121	30	262	0.463	119	0.4	0.8	25.048	D
C-AB	115	29	607	0.190	115	0.2	0.3	7.316	A
C-A	903	226			903				
A-B	79	20			79				
A-C	741	185			741				

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	121	30	261	0.463	121	0.8	0.8	25.592	D
C-AB	115	29	607	0.190	115	0.3	0.3	7.332	A
C-A	903	226			903				
A-B	79	20			79				
A-C	741	185			741				

17:45 - 18:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	99	25	330	0.300	100	0.8	0.4	15.788	C
C-AB	82	21	574	0.143	83	0.3	0.2	7.344	A
C-A	749	187			749				
A-B	65	16			65				
A-C	605	151			605				

18:00 - 18:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	83	21	376	0.220	83	0.4	0.3	12.318	B
C-AB	64	16	562	0.114	64	0.2	0.1	7.232	A
C-A	632	158			632				
A-B	54	14			54				
A-C	507	127			507				

Appendix N

Highway improvements

NOTES:

Based on EPR Masterplan 2455-T-00-0000-ZXX-005 (issued 10/02/16)

Includes Bridge Road Cross Section (BMD drawing 219.SK.008)

Rev	Date	Details	Drawn by	Checked by	Approved by
-	-	-	-	-	-

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CLIENT: Spenhill MAKING LIFE BETTER

PROJECT:
BROADWATER ROAD WEST,
WELWYN GARDEN CITY

TITLE:
BRIDGE ROAD
PROPOSED IMPROVEMENTS
WITH CENTRE LINE

STATUS:
FOR INFORMATION

SCALE:	DATE:	DRAWN:	CHECKED:	APPROVED:
1:500	22/02/16	GDG	DEF	RTBL

JOB NO:	DRAWING NO:	REVISION:
1309-14	PL138	-

STREET TREE SUGGESTION

Name	Form	Age/condition or x transplanted	Girth (cm)	Overall height (cm)	Clear stem (cm)	Root condition	Mature Spread (M)	Mature height (m)
Quercus robur 'Fastigiata'	Semi-mature	3x	30-35	min 550	200	RB	4m	15m
Acer campestre	Semi-mature	3x	30-35	600-650	200	RB	7m	10m
Carpinus betulus 'Frans Fontaine'	Semi-mature	3x	30-35	600-650	200	RB	2.5m	9m
Pyrus calleryana 'Chanticleer'	Semi-mature	3x	30-35	600-650	200	RB	3m	8m

HEDGEROW SUGGESTIONS

Name	Overall height (cm)	Root condition	Habit
Escallonia 'Apple Blossom'	60-80	15Lt	Bushy 7 Breaks
Lonicera pileata	40-60	15Lt	Bushy 9 Breaks

SCALE: 1:100@A3
0 2 4 8 12
METRES

WELWYN GARDEN CITY, BRIDGE ROAD - SKETCH SECTION AND PLAN

BMD.219.SK.008 | FEB 2016

Bradley Murphy Design Ltd, 1 The Courtyard, Hatton Technology Park, Dark Lane, Hatton, Warwickshire, CV35 8XB
| t: 01926 676496 | e: info@bradleymurphydesign.co.uk | www.bradleymurphydesign.co.uk

BMD LANDSCAPE DESIGN PLANNING

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PROJECT:
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WELWYN GARDEN CITY

TITLE:
BROADWATER ROAD PROPOSED IMPROVEMENTS WITH CENTRE LINE

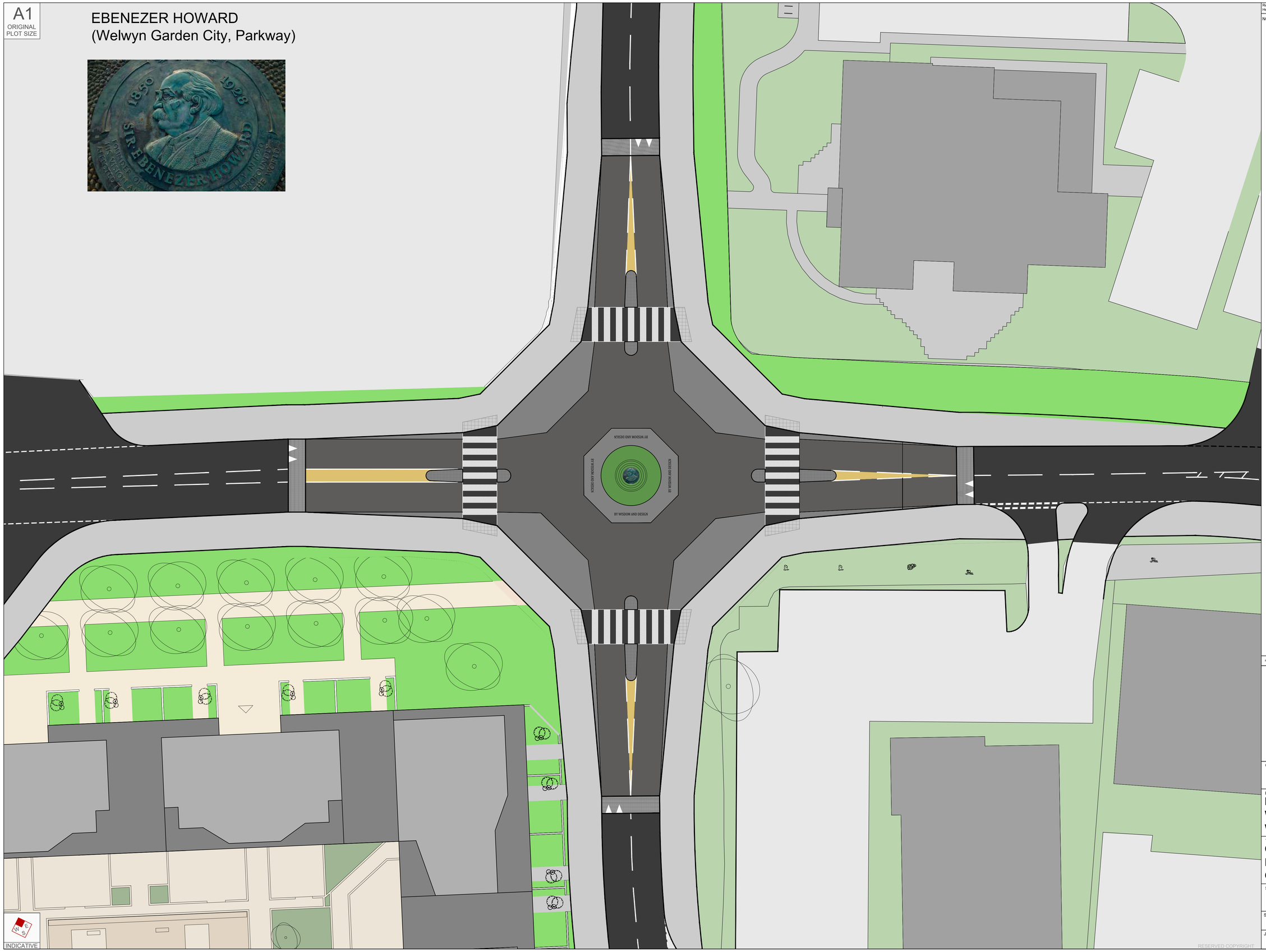
STATUS:
FOR INFORMATION

SCALE:	DATE:	DRAWN:	CHECKED:	APPROVED:
1:500	22/02/16	GDG	DEF	RTBL

JOB NO:	DRAWING NO:	REVISION:
1309-14	PL137	-

A1
ORIGINAL
PLOT SIZE

EBENEZER HOWARD
(Welwyn Garden City, Parkway)



INDICATIVE

NOTES:

Rev	Date	Details	Drawn by	Checked by	Approved by
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PROJECT:
BROADWATER ROAD WEST,
WELWYN GARDEN CITY

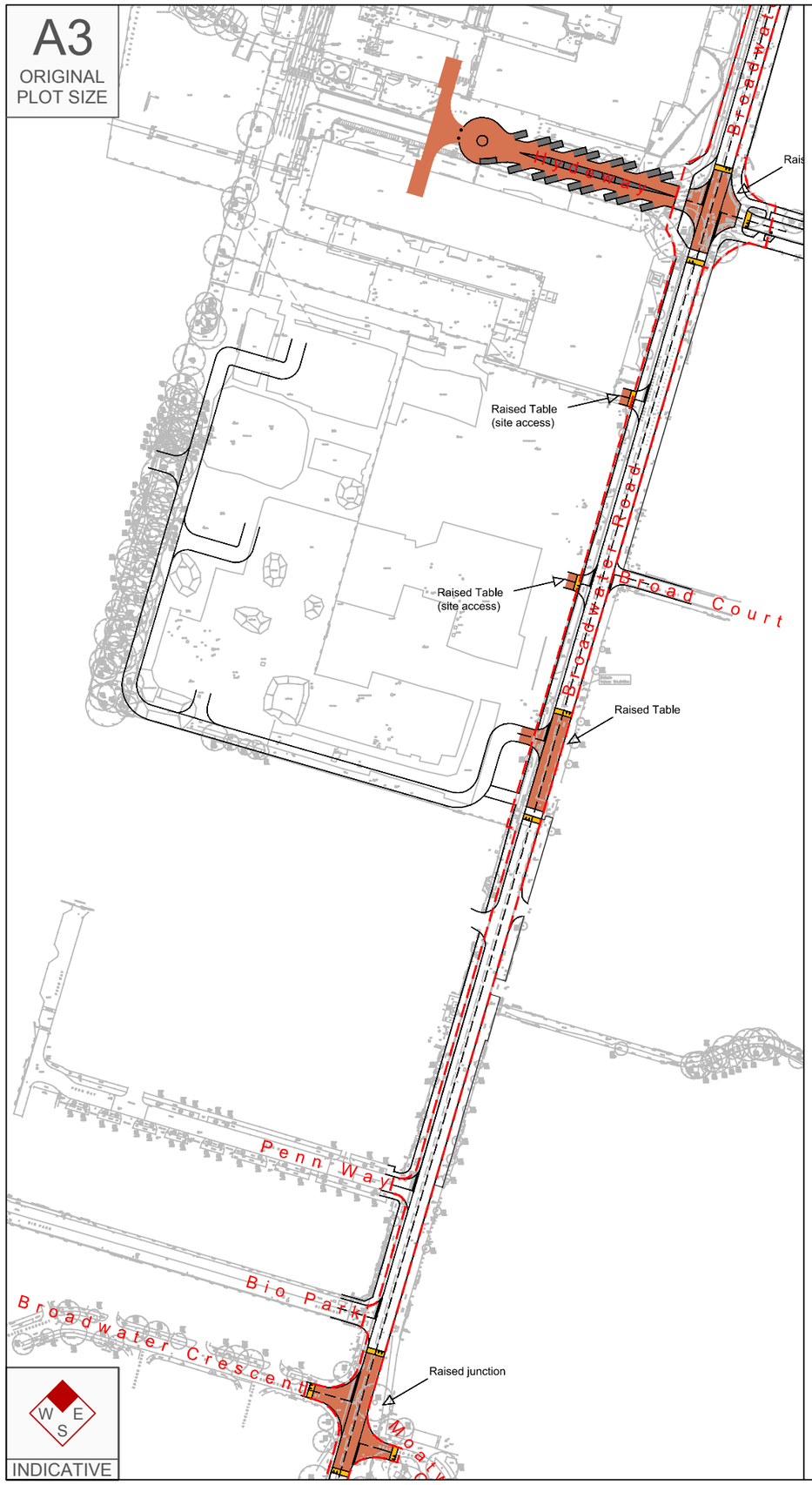
TITLE:
OCTABOUT
DESIGN PROPOSALS:
OPTION A

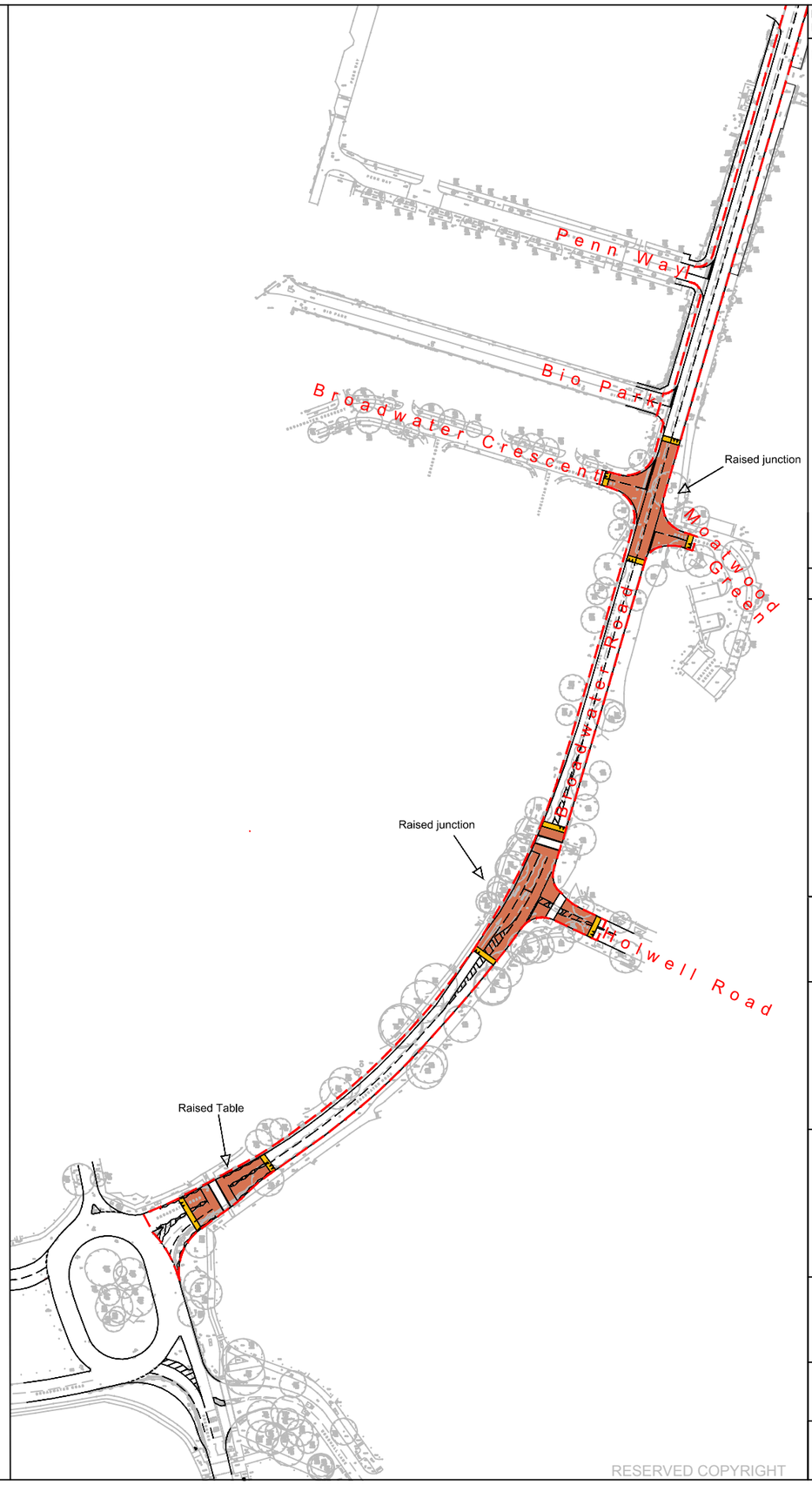
STATUS:
FOR INFORMATION

SCALE:	DATE:	DRAWN:	CHECKED:	APPROVED:
1:200	22/06/15	GDG	DEF	RTBL

JOB NO:	DRAWING NO:	REVISION:
1309-14	PL129	-

A3
ORIGINAL
PLOT SIZE





NOTES:

- Raised tables / junctions
- Landscaping
- Speed humps (ramps)
- Extent of highway works

Rev	Date	Details	Drawn by	Checked by	Approved by
C	21/01	Amended key	GDG	DEF	DEF
B	20/01	Key and Descriptions added	GDG	DEF	DEF
A	16/01	Revised boundaries	GDG	RTBL	RTBL

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PROJECT:
BROADWATER ROAD, WELWYN GARDEN CITY

TITLE:
HIGHWAY WORKS EXTENT (2/2)

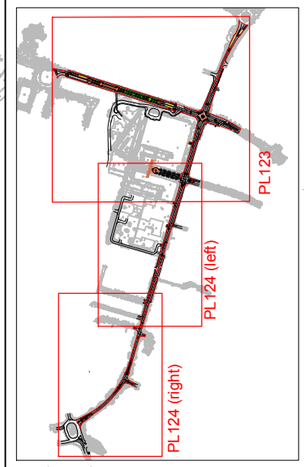
STATUS:
FOR INFORMATION

SCALE:	DATE:	DRAWN:	CHECKED:	APPROVED:
1:2000	06/01/15	GDG	RTBL	RTBL

JOB NO:	DRAWING NO:	REVISION:
1309-14	PL124	C

A3
ORIGINAL
PLOT SIZE

NOTES:



- Raised tables / junctions
- Landscaping
- Speed humps (ramps)
- Extent of highway works

Rev	Date	Details	Drawn by	Checked by	Approved by
C	21/01	Amended key	GDG	DEF	DEF
B	20/01	Key and Descriprions Added	GDG	DEF	DEF
A	16/01	Revised boundaries	GDG	RTBL	RTBL

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PROJECT:
BROADWATER ROAD, WELWYN GARDEN CITY

TITLE:
HIGHWAY WORKS EXTENT (1/2)

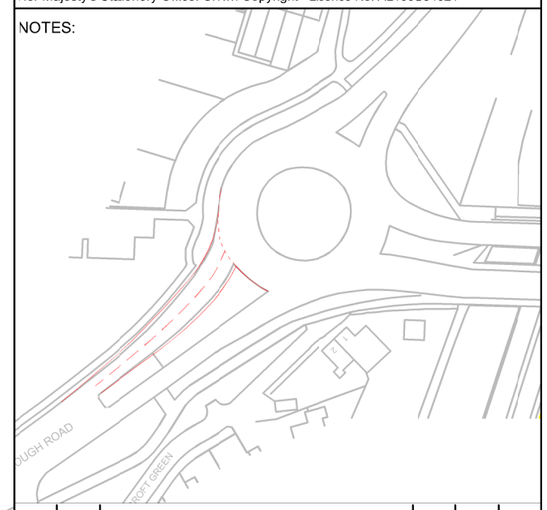
STATUS:
FOR INFORMATION

SCALE:	DATE:	DRAWN:	CHECKED:	APPROVED:
1:2000	06/01/15	GDG	RTBL	RTBL

JOB NO:	DRAWING NO:	REVISION:
1309-14	PL123	C

A3
ORIGINAL
PLOT SIZE

NOTES:



Rev	Date	Details	Drawn by	Checked by	Approved by
-	-	-	-	-	-

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CLIENT: Spenhill MAKING LIFE BETTER

PROJECT:
BROADWATER ROAD, WELWYN GARDEN CITY

TITLE:
BROADWATER RD / OSBORN WAY / STANBOROUGH RD PROPOSED LAYOUT

STATUS:
FOR INFORMATION

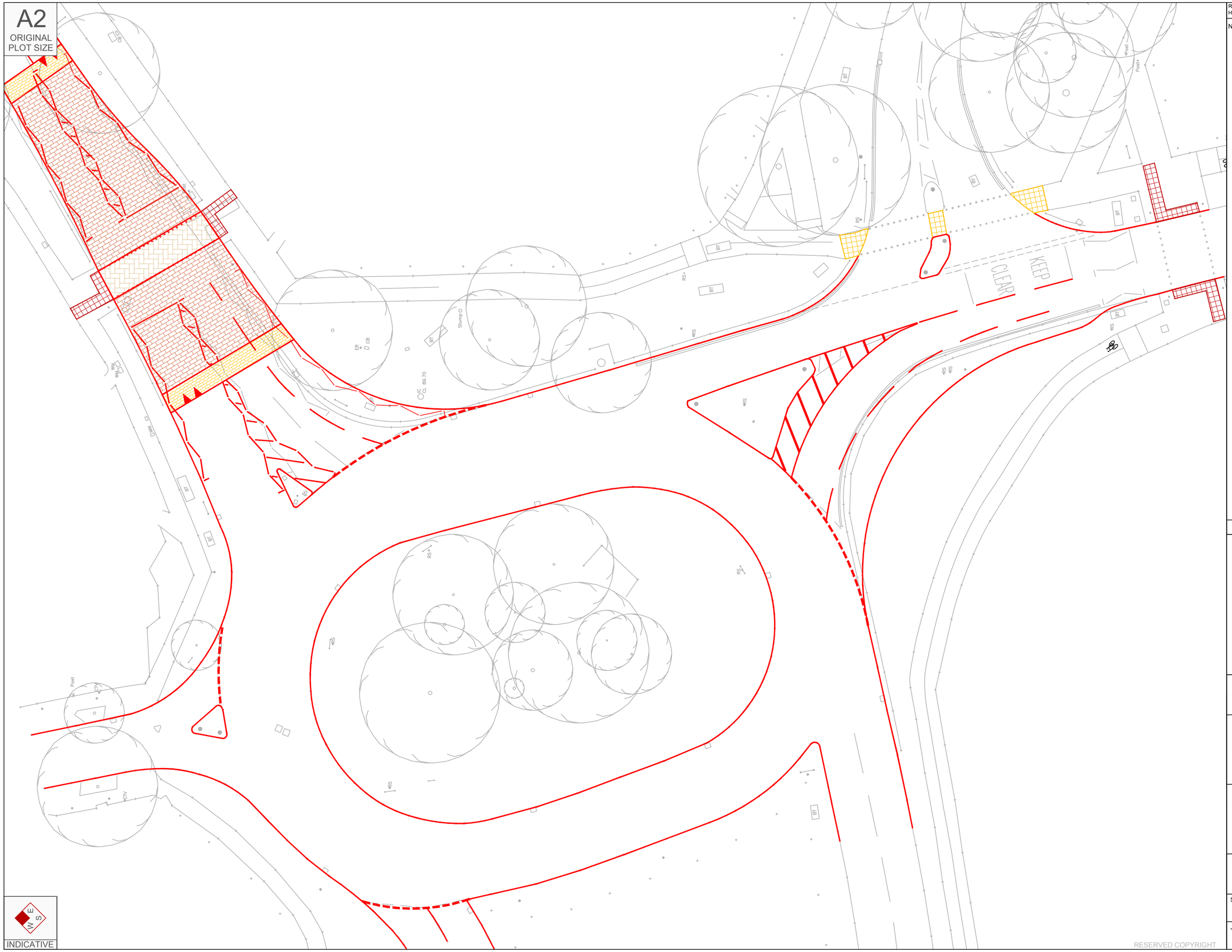
SCALE:	DATE:	DRAWN:	CHECKED:	APPROVED:
1:250	10/11/14	GDG	DEF	DEF

JOB NO:	DRAWING NO:	REVISION:
1309-14	PL120	-

W E S

INDICATIVE

A2
ORIGINAL
PLOT SIZE



INDICATIVE

NOTES:

Rev	Date	Details	Drawn by	Checked by	Approved by
-	-	-	-	-	-

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Transport Planning Associates

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020 7681 6514
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CLIENT: Spenhill MAKING LIFE BETTER

PROJECT:
BROADWATER ROAD,
WELWYN GARDEN CITY

TITLE:
BROADWATER RD /
CHE□UERS JUNCTION
PROPOSED LAYOUT

STATUS:
FOR INFORMATION

SCALE:	DATE:	DRAWN:	CHECKED:	APPROVED:
1:250	23/09/14	GDG	DEF	RTBL

JOB NO:	DRAWING NO:	REVISION:
1309-14	PL108	-