Appendix G.4 TN001 Traffic Analysis

TECHNICAL NOTE

Job Name:	Land at Water Lane, Exeter
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Prepared By:	Natasha Lovell, Peter Snell
Subject:	**Traffic Analysis**

1 Introduction

1.1.1 Stantec UK Ltd are commissioned by Cildara Group (Exeter) Ltd to provide transport support in relation to an outline planning application for a residential-led redevelopment of land at Water Lane, Exeter.

1.1.2 As part of this, a suite of traffic analysis and assessment has been completed to inform the supporting Traffic & Transport chapter of the Environmental Statement (ES). This Technical Note (TN) therefore seeks to set out this assessment in full with regards to the methodological approach and results.

2 Methodology

2.1 Proposed Development

Development Quantum

2.1.1 Outline permission is being sought for the following description of development:

"*Demolition of existing buildings and structures and residential-led mixed use development providing new dwellings and workspace, retail, café/restaurant, community and cultural / leisure / education / hotel uses and associated infrastructure, including vehicular access and servicing, mobility hub, energy plant; alteration of ground levels; drainage and public open space; landscaping and public realm works, including pedestrian and cycle routes, with all matters reserved for future consideration, with the exception of access*".

2.1.2 The vision for Water Lane is for a liveable, waterside community, within a distinctive new city quarter of character and identity, well connected to and integrated with its surroundings, that is a place people enjoy being in for living, working and community life and, which helps to protect and enhance the natural environment.

2.1.3 The outline planning application therefore proposes a sustainable new waterside community providing 900 to 980 homes and 36,000 to 40,000sqm of other uses to help create a '15 minute neighbourhood', with a range of services and amenities (employment / retail / leisure / health) easily accessible by walking and cycling. The Proposed Development will be connected to other areas, including the city centre and the newly opened Marsh Barton railway station, along with a variety of local facilities, by an electric bus service with a mobility hub providing shared electric cars and bikes.

2.1.4 An illustrative masterplan demonstrating how the proposals could come forward is included in **Appendix A**. The analysis undertaken in support of the outline application has been based on a robust assumption of the development having a gross external area (GEA) of 119,898sqm, comprising of a range of land uses including residential, employment, education, leisure, and retail.

In terms of the education use, this is intended to comprise of a new construction faculty building for Exeter College.

2.1.5 For the purposes of this assessment, the following quantum of development has been identified.

Building Number	Use	Area (m²)
A1	Commercial	690
	Market Flats	4,410
B1	Commercial	499
	Boat Store	919
	Market Flats	7,792
C1 & C2	Commercial	2,281
	Bike Hire	530
	Market Flats	15,494
D1	Food & Beverage	251
	Co-working	470
	Market Flats	4,332
E1 & E2	Food & Beverage	470
	Delivery Hub	340
	Car Club	177
	Retail	630
	Shared Parking	703
	Co-working	1,650
	BTR / PRS Flats	5,448
F1 & F2	Car Club	553
	Shared Parking	1,655
	Hotel	5,165
	BTR / PRS Flats	9,911
G1 & G2	Commercial	296
	Shared Parking	1,937
	Gym / Pool	2,544
	Community Use	245
	Affordable Flats	10,490
	Retirement Flats	8,304
H	Shared Parking	3,385
	Further Education College Facility	11,041
K	Commercial	1,810
	Student Accommodation	6,535
L	Commercial	973
	Student Accommodation	5,838
M	Commercial	480
	Student Accommodation	1,920

Table 2-1: Assessed development quantum

Car Parking Provision

2.1.6 As previously established, it is proposed that the development will be 'low car' in light of the combination of the Site's accessible location, supporting sustainable access strategy, and the adopted or emerging policy / guidance documents and studies that are supportive of this approach. This is outlined in Devon County Council's (DCC) '*Haven Banks Transportation Access Strategy*', Exeter City Council's (ECC) '*Sustainable Transport Supplementary Planning Document*), the *'Liveable Exeter Vision*', and the '*Exeter Plan Outline Draft*'.

2.1.7 The 2021 Census confirms that there are areas within the vicinity of the Site that already do not have high levels of car ownership / dependency, such as those within the E00101096 Census output area (OA) which covers an area immediately to the east of the A377 Alphington Road from Willeys Avenue to the south, and to the River Exe in the north. In this area, the Census identifies that 50.8% of households do not have a car or van. This therefore demonstrates the existing potential to reside in the local without owning a car or van, with the existing transport context. Areas beyond this in St Thomas and to the south of the city centre have been shown to have even lower levels of vehicle ownership.

2.1.8 The 'low traffic' or 'car-free' approach to the Proposed Development is additionally consistent with trends elsewhere in the UK and Europe, where there has the been the introduction of car-free developments in big cities and towns alike. In the UK, there are a growing number of developments in areas such as London, Edinburgh, Leeds, and Bristol. In these developments, areas that would have been traditionally used to accommodate large areas of car parking are now being used to deliver a higher density and / or aspects such as additional landscaped areas and play facilities, thereby adding value to developments whilst improving the quality of life for local residents.

2.1.9 A combination of changing attitudes amongst different generational groups (such as 'millennials'), and those brought about by the recently declared climate change emergency and zero emissions policies amongst numerous local authorities, are therefore expected to make 'low car' and 'car-free' developments more prevalent. In order for these types of developments to be successful, however, comprehensive sustainable transport and 'low car' parking strategies need to be developed to inform masterplans at the outset to ensure that residents can reside within them without the need to own a car.

2.1.10 In summation, 'car-free' developments are often deemed to comprise of residential or mixed-use developments which:

- Usually provide a traffic-free immediate environment;
- Offer no parking or limited parking separated from the residence; and
- Are designed to enable residents to live at the development without owning a car.

2.1.11 'Low car' developments in comparison are usually deemed to be residential or mixed-use developments which:

- Offer limited parking; and
- Are designed to reduce car use by residents.

2.1.12 Based on the two loose definitions highlighted above, the proposed approach to 'low car' will be a hybrid one as it is intended to involve aspects of both. This is on the basis that the Proposed Development will not be entirely traffic-free environment in places, and there will be instances where parking will not be separate to residences.

2.1.13 In total, up to 276 shared undercroft off-street parking bays are proposed to be provided across the site in three central locations (buildings F2, G2, and H1). This excludes mobility hub spaces, on-

street disabled and EV charging bays, and the five drop off / disabled bays that are intended to be provided for the student accommodation (on the basis that the latter will only be used at the start or end of a term / academic year, with only disabled students permitted to use the bays outside of this period).

2.1.14 It should be noted that 12 car parking spaces will also be provided to the rear of building M1, however, these spaces are not proposed to be allocated to or be for the use of the building in any way. This is on the basis that it is understood that these spaces will essentially represent a reprovision of the existing spaces present on the existing former Willeys Social Club Plot which are utilised by a local housing association, and will be therefore be for their continued use.

2.1.15 The total parking allocation is proposed to be split amongst the different land uses as shown in **Table 2-2**.

Land Use Type	Specific Use	Ratio / Assumptions	Parking Spaces
Residential	Market Flats	1 space per 5 dwellings	116
	Affordable Flats		
	BTR / PRS Flats	1 space per 7 dwellings	46
	Retirement Flats		
	Student Accommodation	5 accessible / drop off bays (not incl. in 276 parking total)	5
Non-residential	Hotel	Based on consented hotel on edge of Plymouth City Centre (app ref: 18/01014/OUT)	35
	Further Education College Facility	1 space per 3 staff Up to 300 students on site at any one point 1 staff member per 10 students incl. admin / support staff	15 (up to 5 spaces for visitors)
	Boat Store	64 shared parking spaces	2*
	Food & Beverage		11*
	Gym / Pool		14*
	Retail		4*
	Co-working Space		9*
	Commercial		20*
	Community Use		4*

Table 2-2: Proposed parking assumptions

*Note: Notional allocation for the purpose of follow-on trip analysis, with spaces proposed to be unallocated / shared between these uses and site visitors.

2.1.16 As the Proposed Development will be 'low car' in terms of its approach to parking provision, it will not be in keeping with normal adopted ECC parking standards as allowed for in both adopted and emerging planning policy.

2.1.17 The proposed residential car parking ratios that have been informed by the trip credit exercise, that has been undertaken within the submitted TA, to determine what the site could have realistically generated in the past on the basis that the existing site is no longer fully occupied. This is a valid comparison given the site still has the ability to operate at a similar level given the consented use of the site.

2.1.18 The above exercise informed pre-application discussions with both DCC and ECC where an in principle agreement was confirmed with regards to the intent to provide a ratio of 1 car parking space for every 5 market / affordable flats. This led to a further in principle agreement that this could lead to similar proportionate provisions being provided for other residential / non-residential land uses.

2.1.19 To inform the reduction in non-residential parking to 'low car' provision, reference was originally made to the ECC standards which were adopted in 2004 as part of the Exeter Local Plan First Review. Considering their age, reference was also made to a recently consented hotel scheme to evidence the proposed hotel, and to more contemporary parking standards included in the Plymouth and South West Devon Supplementary Planning Document (2020), to act as a benchmark.

2.1.20 The Plymouth and South West Devon Planning Document was also referred to as it presents a methodology for determining non-residential parking provision based on the overall accessibility of sites, with regards to public transport accessibility and journey times.

2.1.21 In terms of their distribution, it is proposed that residential car parking spaces would not automatically be allocated to particular properties. The intention is that the residential parking provision is distributed relatively evenly between phases / buildings and that they are offered on a lease basis to support the 'low car' concept by providing flexibility as to their use going forwards. The rationale for this is that it will focus prospective residents' minds as to whether they really need to own their own car given the sustainable access / mobility strategy options that will be available. If a resident did decide that they needed to own a car and a space is available, they could lease it out and if in future they wished to sell their car, they would have the option not to renew the lease and the parking space will become re-available.

2.1.22 The spaces set out in the above table are proposed to be allocated to the land uses identified in terms of the residential, student, hotel, and further education college provision. In terms of spaces for the latter, they will only be provided for use by staff and visitors, with students strictly forbidden from using them given the variety of sustainable travel choices that will be available. This could also include the option to drive and park at either the Matford, Sowton, Exeter Science Park, or Digby Park & Ride / Change facilities from where bus or rail services can be accessed.

2.1.23 The spaces for the remaining uses identified are intended to be shared / unallocated, and therefore available to be used by general visitors to the site. This shared provision is to be delivered as a 'pay and display' parking facility in order to influence whether non-residents need to drive to the site instead of travelling by a sustainable mode of transport or using the Park & Ride / Change facilities.

2.1.24 No on-street parking is proposed to be provided on internal roads within the development except for the provision of loading, disabled, and EV car charging bays in order to keep streets largely clear of parked vehicles, with restrictions put in place to enforce this. With regards to the EV bays, six dedicated on-street bays are proposed to be provided on King Street. To serve them, it is intended to provide rapid chargers capable of charging an electric car to 80% full in as little as 20 minutes based on current technology.

2.1.25 Existing on-street parking already occurs along Cotfield Street and Water Lane, with parking along the latter mainly linked with the current operation of the site and that associated with the existing residents of both streets. Therefore, in order to prevent residents and non-residents of the Proposed Development from parking along Cotfield Street, it is proposed to fund the implementation of a residential parking zone (RPZ) so that only existing residents can park along it given most of the properties do not have any off-street parking.

2.1.26 In relation to Water Lane, it is currently difficult to determine how much of the residential parking that occurs is associated with residential properties at Cotfield Street and Gabriels Wharf given there is the potential for it to be subject to overspill parking from surrounding residential streets which are already covered by a RPZ. At this stage, it is also unknown how well the undercroft

parking and garages are used within the Gabriels Wharf site, as some residents may choose to park on-street for convenience.

2.1.27 In light of the above the three options proposed are either to:

i. Seek to introduce an RPZ and supporting parking restrictions to allow for parking by existing residents along the eastern side of Water Lane, next to the frontage of the existing Gabriels Wharf development;

ii. Seek to introduce parking restrictions along Water Lane to prevent any on-street parking and re-provide some of the existing on-street parking within the proposed Site for use by existing residents.

iii. Combination of options 1 and 2.

2.1.28 As parking restrictions would not necessarily need to be implemented for some time following an outline planning consent being granted, it is proposed to engage with the local residents of these properties with regards to the options and to determine what their existing / future parking demands could be given they will also benefit to a large degree from the sustainable access strategy that is proposed in terms of walking, cycling, and public transport improvements along with the proposed mobility hub provision.

2.1.1 As part of the above process DCC and ECC would be engaged with prior to settling on one of the options outlined above. However, in order to help manage any transition / assess the parking demands, consideration could also be given to the provision of a temporary car park within the Site on a later phase area.

2.1.2 This exercise could therefore be used to inform the detailed design / Reserved Matters process in advance of a formal consultation process being undertaken to support the provision of any parking restrictions along Water Lane and Cotfield Street. As part of this process, a review of parking restrictions within the entire Haven Banks area is proposed to be undertaken in order to see if any gaps in provision need to be addressed or whether stricter ones are required to ensure that overspill parking from the site does not occur in the local area.

2.1.3 In order to ensure that overspill car parking from the Proposed Development does not occur once additional and enhanced RPZ restrictions are implemented, restrictions would be put in place to prevent residents of the Site from being eligible to park in these zones.

2.1.4 This would therefore provide an effective deterrent for residents of the Site who may initially consider the prospect of continuing to own their own car and parking it off-site. These restrictions would also provide an effective deterrent to prospective employees, students, and visitors to the Site from also trying to park off-site on the surrounding streets.

2.2 Total Development Trip Generation

Person Trip Generation

2.2.1 Multi-modal trip rates for the Proposed Development have been derived from the TRICS database; TRICS is an industry standard database that contains thousands of traffic surveys for different development types across different locations in the UK. TRICS enables suitable surveys of similar sites, in similar locations, to be used to be compare and analytically derive the likely trip generation of a development through the use of trip rates.

2.2.2 For the purposes of this assessment, each land use type to be delivered by the Proposed Development has been assessed with reference to total persons trip rates, and the TRICS output report for each land use provided in **Appendix A**.

2.2.3 The specific assumptions used to filter sites within TRICS are detailed in each output report, but the general specifications applied are as follows:

- Surveys undertaken between Monday to Friday;
- Edge of town centre locations (or town centre when edge of town centre is not available); and
- Sites only in England (excluding greater London)

2.2.4 The derived total person trip rates are thererfore set out in **Table 2-3** below.

Land Use	AM Peak Hour		PM Peak Hour	
	Arr	Dep	Arr	Dep
Residential Use				
Market, Affordable and BTR / PRS Flats	0.12	0.53	0.41	0.22
Retirement Flats	0.12	0.24	0.16	0.08
Student Accommodation	0.03	0.22	0.17	0.11
Non-residential Use				
Hotel (per 100m2)	0.51	0.68	0.66	0.43
Gym (per 100m2)	1.09	0.98	3.12	3.29
Boat Store (per parking space)	0.28	0.07	0.09	0.26
Community Centre (per 100m2)	4.45	0.16	7.31	3.02
Office Co-working (per 100m2)	2.01	0.18	0.16	1.65
Commercial (per 100m2)	0.09	0.03	0.07	0.07
College (per 100m2)	0.99	0.18	0.28	0.65
Food and Beverage (per 100m2)	0.00	0.00	4.82	6.97
Retail (per 100m2)	17.38	15.01	46.93	45.42

Table 2-3: Total person trip rates

2.2.5 Using the information above, the total person traffic generation for the Proposed Development has been calculated by multiplying the trip rates against the quantum provided in **Table 2-1**. The results of this exercise are presented in **Table 2-4**.

Land Use	Number of Dwellings / Sqm	AM Peak Hour		PM Peak Hour	
		Arr	Dep	Arr	Dep
Residential Use					
Market and Affordable	569	68	302	234	123
BTR / PRS Flats	207	25	110	85	45
Retirement Flats	112	14	27	18	9
Student Accommodation	286	7	62	50	32
Non-residential Use					
Hotel (per 100m2)	5,165	26	35	34	22
Gym / Pool (per 100m2)	2,544	28	25	79	84
Boat Store (per parking space)	891	1	0	0	1
Community Centre (per 100m2)	245	11	0	18	7
Office Co-working (per 100m2)	2,120	43	4	3	35

Commercial (per 100m2)	7,096	6	2	5	5
College (per 100m2)	9,000	89	16	25	59
Food and Beverage (per 100m2)	721	0	0	35	50
Retail (per 100m2)	630	109	95	296	286
Total Development					
Total Person Trips		427	678	882	758

Table 2-4: Weekday total person trip generation (excluding servicing)

2.2.6 In total, the Proposed Development is expected to generate approximately 1,105 two-way person trips during the AM peak hour and 1,640 two-way person trips during the PM peak hour. The difference between the two peak hours is attributed to the development proposal incorporating land uses such as Food & Beverage and Retail, which will contribute towards establishing a night time economy.

Servicing and Car Club

2.2.7 Given the mixed-use nature of the Proposed Development, a significant amount of servicing trips (e.g., delivery, management, and trades) will occur on site. For the residential element of the Site, an initial delivery and servicing trip generation profile has been produced based on the assumption of the development comprising 1,156 residential units. The trip generation exercise is based on delivery and servicing trip rates derived from a Transport for London (TfL) residential delivery and servicing study of over 5,000 households in London.

2.2.8 The study obtained information from households across London including both houses and flats and covered a wide variety of delivery, servicing and collection trips including:

- **Deliveries:** Milk, groceries, takeaways, post, parcels (small and large), white goods and furniture;
- **Servicing:** Utilities engineer, cleaners, childcare, medical visit, pet walker; and
- **Collections:** Refuse and recycling, specialist i.e., garden waste.

2.2.9 The trip generation profile was then refined based on the parameters of the development i.e., proximity to supermarkets, availability of concierge service or local parcel collection points, provision of white goods etc.

2.2.10 For the non-residential element of the site, servicing trip rates (including LGV and OGV trip rates) have been extracted from the multi-modal TRICS outputs and applied to the development quantum identified in **Table 2-1** of this TN. For the purposes of this assessment, it is assumed that all servicing related trips will be car / van vehicles.

2.2.11 **Table 2-5** presents the servicing trip rates associated with the development proposal.

Land Use	AM Peak Hour		PM Peak Hour	
	Arr	Dep	Arr	Dep
Residential Use				
Market, Affordable and BTR / PRS Flats	0.01	0.01	0.01	0.01
Retirement Flats	0.01	0.01	0.01	0.01
Student Accommodation	0.01	0.01	0.01	0.01
Non-residential Use				

Hotel (per 100m2)	0.07	0.03	0.02	0.00
Gym (per 100m2)	0.03	0.04	0.02	0.01
Boat Store (per parking space)	0.02	0.01	0.01	0.02
Community Centre (per 100m2)	0.00	0.00	0.00	0.00
Office Co-working (per 100m2)	0.04	0.02	0.00	0.01
Commercial (per 100m2)	0.04	0.02	0.04	0.03
College (per 100m2)	0.02	0.01	0.01	0.01
Food and Beverage (per 100m2)	0.00	0.00	0.04	0.04
Retail (per 100m2)	0.09	0.19	0.47	0.28

Table 2-5: Servicing trip rates

2.2.12 Using **Table 2-5** above, the servicing trip generation for the proposed development has been calculated and this is provided in **Table 2-6** below.

Land Use	Number of Dwellings / Sqm	AM Peak Hour		PM Peak Hour	
		Arr	Dep	Arr	Dep
Residential Use					
Market and Affordable	569	3	3	4	4
BTR / PRS Flats	207	1	1	1	1
Retirement Flats	112	1	1	1	1
Student Accommodation	286	2	2	2	2
Non-residential Use					
Hotel (per 100m2)	5,165	4	2	1	0
Gym (per 100m2)	2,544	1	1	0	0
Boat Store (per parking space)	891	0	0	0	0
Community Centre (per 100m2)	245	0	0	0	0
Office Co-working (per 100m2)	2,120	1	1	0	0
Commercial (per 100m2)	7,096	3	2	3	2
College (per 100m2)	9,000	1	1	0	0
Food and Beverage (per 100m2)	721	0	0	0	0
Retail (per 100m2)	630	1	1	3	2

Table 2-6: Total servicing trip generation

2.2.13 In addition to the servicing trip rates, consideration need to be given to the proposed car club spaces across the Site. In total 15 bays will be provided and to provide a worst-case scenario, it is assumed that all vehicles will be in operation during the AM and PM peak hours.

2.2.1 The following trip rates for the car club spaces are provided in **Table 2-7** below.

Land Use	AM Peak Hour		PM Peak Hour	
	Arr	Dep	Arr	Dep
Car Club trip rates	0.2	0.8	0.8	0.2

Table 2-7: Car Club trip rates

2.2.2 This results in the following car club trip generation:

Land Use	AM Peak Hour		PM Peak Hour	
	Arr	Dep	Arr	Dep
Car Club trip generation	3	12	12	3

Table 2-8: Car Club trip generation

Parking-led Modal Share

2.2.3 To determine the proportion of trips made by vehicles, cycles, and pedestrians, TEMPRo 8 has been interrogated to calculate the percentage modal share of the Proposed Development. To achieve this, the Exeter 014 MSOA, within which the Site is located, has been utilised.

2.2.4 The modal share profile identified establishes the proportion of trips made by either single occupancy vehicle (SOV), multi-occupancy vehicle (MOV), by bike, on foot, or by bus or rail within the local Site area. The modal share identified is referred to as the 'unadjusted' modal share and has been applied to the levels of parking identified in **Table 2-2**.

2.2.5 To address the proposed 'low car' development approach, an 'adjusted' modal share has been calculated that proportionally redistributes SOV and MOV trips onto the remaining non-car modes, given the restricted number of parking spaces that are proposed in support of this approach. The modal share profiles are provided in **Appendix B**.

Total Development Trip Generation

2.2.6 The modal share profiles identified above have been applied to the total person trip generation previously identified in order to determine the number of trips forecast to be undertaken by each mode. As previously stated, trips associated with servicing and the car club vehicles are assumed to be either car or van trips, and have therefore been added to the SOV / MOV trips.

2.2.7 **Table 2-9** below presents the total persons trips generated from the site across all modes, including servicing and car club vehicles.

Mode	AM Peak Hour			PM Peak Hour		
	Arr	Dep	Tot	Arr	Dep	Tot
SOV and MOV	134	139	273	200	188	388
Pedestrian	192	346	538	451	374	825
Cycle	26	52	78	56	46	102
Rail	16	29	45	33	27	60
Bus	61	123	184	154	126	280
Total	**430**	**690**	**1,120**	**895**	**761**	**1,656**

Table 2-9: Weekday total development person trip generation

2.2.8 The above table indicates that that approximately 273 and 388 two-way vehicle trips are forecast to be generated during the AM and PM peak hours respectively. Use of a parking led approach means that, in line with the local modal trend, those who will not have access to a parking space are expected to undertake journeys by a sustainable mode of transport given the combination of the transformational access strategy set out and the supporting on/off site parking restrictions that will be put in place; this is reflected in the total person trip generation outlined above.

2.3 Traffic Distribution and Assignment

Traffic Flows

2.3.1 To establish the existing traffic flows on the local highway network, an Automatic Traffic Count (ATC) and three Manual Classified Count (MCC) surveys were undertaken between the 23rd February to the 1st March 2023.

2.3.2 The ATC was installed on Water Lane between the 23rd February and 1st March 2023, in order to take account of additional trips using Water Lane due to a road closure elsewhere on the network, and MCC's were undertaken on the 23rd February 2023 at the following junctions to establish turning movements:

- Water Lane / Tan Lane crossroads junction;
- A377 Alphington Road / Haven Road signalised junction; and
- A377 Alphington Road / Willeys Avenue.

2.3.3 Queue length surveys were also undertaken alongside the MCC surveys to determine the typical queue length and durations at each of the junctions set out above.

2.3.4 During the survey period, Clapperbrook Lane East (which is located approximately 600 metres south of the Site centre) was closed whilst construction work was being carried out on the Marsh Barton railway station. This meant that traffic wanting to route across Clapperbrook Bridge was re-routed via Water Lane.

2.3.5 As previously stated, an ATC was installed towards the north of Clapperbrook Bridge on Water Lane during this period; any additional movements recorded at the ATC were deemed to be likely due to the road closure and were therefore removed from the Water Lane / Tan Lane turning counts.

Committed Development

2.3.6 Cumulative traffic impacts of the following committed developments have been considered and incorporated into the traffic analysis:

- Haven Banks (22/1145/FUL): Comprehensive redevelopment to deliver a new, mixed-use neighbourhood, comprising demolition of existing buildings and construction of four residential-led mixed-use buildings of 2 to 6 storeys, including retail, café / restaurant and flexible commercial units (Class E), residential (Class C3) and co-living (Sui Generis) accommodation, pedestrian square and public realm, amenity areas, landscaping, access, parking, servicing and associated works (revised plans)
- Water Lane Northern Regeneration Zone (NRZ): Residential-led mixed-use development within Northern Zone of Water Lane regeneration area.

2.3.7 For the Haven Banks redevelopment, traffic flow information present in the respective TA has been used to establish the redevelopments impact on the highway network, and for the NRZ, a high-level trip generation exercise has been used to determine an approximate trip generation for the site. This trip generation has then been distributed across the network based on the analysis discussed later in this TN.

Background Growth

2.3.8 To calculate growth to the future assessment years of 2028 (construction traffic scenario) and 2033 (planned completion of proposed development), reference has been made to the National Trip End Model (NTEM) figures obtained and calculated using TEMPro 8. These can be used to provide overall weekday AM and PM peak hour growth rates which reflect conditions within a specified

local area. As previously set out, the site is located in the 'Exeter 014' MSOA which covers the Marsh Barton and Alphington residential area.

2.3.9 Currently, TEMPro 8 does not provide functionality to calculate growth factors as the Department for Transport (DfT) are in the process of updating the software with the National Road Traffic Projections 22 (NRTP 22). Notwithstanding this, the DfT have published guidance on predicting future growth using TEMPro 8 and calculating growth factors externally.

2.3.10 In May 2023 the DfT published 'TAG Unit M4: Forecasting and Uncertainty', a guidance document for forecasting the impact of transport project, and outlined how traffic forecasting can be approached without using a formal model. Specifically, section 9.1.4 provided the calculation which can be used to calculate growth factors and the example provided is shown in Figure 2-1 below.

Example:

Estimating AM peak period traffic growth from 2010 to 2017 on an uncongested rural trunk dual-carriageway road which in the judgement of the user primarily serves County B within Region A.

NTM growth on rural trunk & principal dual carriageway roads in Region A = 1.15

TEMPRO AM peak hour car driver trip end growth for County B = 1.097 (average of origins and destinations)

TEMPRO average day car driver trip end growth for the Region A = 1.086 (average of origins and destinations)

Adjusted local peak period growth factor = 1.15 x 1.097 / 1.086 = 1.162

Figure 2-1: Using NTEM without a formal model – example[1]

2.3.11 TAG Unit M4 states that promoters should use TEMPro 7.2c whilst the functionality is disabled in TEMPro 8. However, Stantec have been advised by the DfT that the NRTP 22 is sufficiently different to National Road Traffic Flows 18 (NRTF 18), and that if new analysis was to begin now it would be difficult to argue that NRTF 18 is still a reasonable basis for forecasting.

2.3.12 Therefore, the outlined approach in TAG Unit M4 has been used to calculate growth factors using TEMPro 8 and NRTP 22. It should be noted that to avoid double counting of the vehicle movements already considered discretely as part of the committed development flows, the planning assumptions informing the growth factors are normally adjusted to remove a proportion of future household growth. These adjustments cannot be calculated using TAG Unit M4, however, so these growth factors are unadjusted and can be considered robust.

2.3.13 The growth factors utilised within this assessment are therefore summarised in **Table 2-10**.

[1] Source: DfT, TAG Unit M4: Forecasting and Uncertainty, May 2023, TAG Unit M4 Forecasting and Uncertainty (publishing.service.gov.uk)

Year	Growth Rates	
	AM Peak Hour	PM Peak Hour
2023 - 2028	1.0426	1.0417
2023 - 2033	1.0894	1.0881

Table 2-10: TEMPro 8 / National Road Traffic Projection growth rates

2.3.14 The growth factors identified in **Table 2-10** have been applied to the 2023 observed traffic flows to establish the 2028 and 2033 future baseline year traffic flow scenarios (prior to committed developments or the Proposed Development from coming forward).

Development Trip Distribution

Journey Purpose

2.3.15 The likely journey purpose for the car driver trips generated across the network peak hours can be identified using the National Travel Survey (NTS). The DfT publish the proportion of peak hour trips by journey purpose, with the most recently available data not impacted by the COVID-19 pandemic being published in 2019.

2.3.16 **Table 2-11** below identifies the journey purpose share of car drivers during the AM and PM peak hours.

Trip Purpose	AM Peak Hour (08:00-09:00)	PM Peak Hour (17:00-18:00)
Commuting / Business	36.8 %	43.2%
Other Journey Purposes	63.2 %	56.8%
Total	**100.0%**	**100.0%**

Table 2-11: Start time by trip purpose for car / van drivers only (Monday to Friday only); England 2015/2019[2]

2.3.17 Approximately 37% of the total vehicle trips generated will be for employment journeys during the AM peak period, with the remaining 63% being attributed to all other purposes including retail, leisure, healthcare, and education. During the PM peak hour, 43% of journeys are employment related with the remaining 57% attributed to other purposes.

2.3.18 For the purposes of assessing the distribution of the Proposed Development, the analysis has utilised the PM peak hour split between commuting and other journey work purposes for both peak periods. This provides a robust estimate as it assumes a greater proportion of non-local journeys.

Trip Distribution

2.3.19 To provide an accurate assessment of the probable distribution of traffic generated by the Proposed Development, separate methodologies have been applied which considers destinations of commuting / business trips and other journey purposes. These methodologies are as follows:

- Commuting / business trips – the 2011 Census journey to work statistics for car drivers, which identifies existing residents of the Exeter 014 MSOA's employment locations, has been used.
- For other journey purposes – a gravity model has been produced using the population data of key urban areas (from the 2011 Census) within a 35-minute drive time of the proposed site location.

[2] [2] Five year surveys combined

2.3.20 These two datasets have been combined, using the proportional trip purpose share outlined in **Table 2-11**, to generate a single distribution profile by destination to inform the development trip assignment.

2.3.21 The percentage distribution of trips arising from the Proposed Development is provided in **Appendix C**.

Trip Assignment

2.3.22 To determine the routing of vehicle trips to the destinations identified in the trip distribution profile, trips have been assigned to the road network based on the quickest route from the site to the destination location, which has been identified using an online route planner. Within the route planner, an 08:00am start time for journeys has been utilised to reflect peak period traffic conditions.

2.3.23 In some cases, a single route option is identified, however for some destinations, the assessment identifies multiple routes. In these cases, development trips have been assigned to the possible routes based upon the journey times identified, with the quickest route assigned a larger number of trips.

2.3.24 The vehicle trip generation identified in **Table 2-9** (and the vehicle trip generation identified for the NRZ committed development) has been applied to the percentage distribution in order to assign development to the local highway network.

2.3.25 **Appendix D** provides figures showing the observed and future year baseline flows, along with the future assessment scenarios (plus committed development, and plus committed development + Proposed Development).

2.4 Summary and Conclusion

2.4.1 In summary, this TN identifies the traffic analysis methodology that has been undertaken in support of the Proposed Development, and seeks to demonstrate that a robust approach has been undertaken.

2.4.2 This work additionally seeks to inform the submission of the Traffic & Transport ES Chapter, which has been prepared for inclusion within the overarching ES report, as one of a suite of supporting technical documents.