

UTTLESFORD TRACC ANALYSIS - DATASETS AND PARAMETERS

INTRODUCTION

This note outlines the datasets and parameters used to undertake the Uttlesford TRACC Accessibility Analysis. The study assessed accessibility within Uttlesford to a range of destination types. In order to consider destinations outside of the district boundary a 10km buffer around the district boundary with an additional extension to capture key destinations within Cambridge.

The datasets and parameters used for the assessment were discussed and agreed within a working group with representatives from Uttlesford District Council and Essex County Council.

LIMITATIONS

When viewing the outputs of a TRACC accessibility analysis the context and purpose of use need to be considered. The Uttlesford TRACC analysis has been undertaken to provide an indication of the potential accessibility of areas within the district to a range of facility types. This provides a high-level indication of areas that are not currently accessible, those that are highly accessible, and those areas in between. It highlights areas which are accessible via the existing infrastructure, and some areas that may or may not be accessible dependent on the ability and suitability of being able to access areas of land.

Whilst catchments outline potential reachable extents, they do not necessarily reflect that there is a safe walking or cycling route at present. Mitigation measures may be required in some locations in order to achieve the level of accessibility shown via a safe route.

DESTINATION DATASETS

Destinations within the following categories were identified from the data sources listed in **Table 1**.

Table 1 – Summary of TRACC destination data sources

Facility Type	Data Source
GPs or health centres	Datacutter (118 Information, Wilmington Healthcare Ltd)
Retailers that sell fruit and vegetables	Datacutter (118 Information, Experian, Local Data Company, PointX)
Primary schools	www.get-information-schools.service.gov.uk (formerly Edubase)
Secondary schools	www.get-information-schools.service.gov.uk (formerly Edubase)
Further education	Datacutter (118 Information, Edubase)
Employment	Census 2011 and Uttlesford DC
The bus and rail network	National Public Transport Access Nodes (NaPTAN)
The bus and rail timetables	National Public Transport Data Repository (NPTDR)
Hospitals	NHS Choices

A dataset comprising ‘Local Centres’ was also defined. The definition was agreed by the working group as a location with both a Post Office and retailer selling fruit and vegetables within its store.

The ‘Employment Centres’ are based on locations that included town centres, industrial estates and business parks. The locations were cross-referenced with the 2011 Census workplace population data to ensure high job density locations were captured.

Within the Hospital dataset, both General Hospitals and Community Hospitals are included. It is acknowledged that Community Hospitals do not offer the same extent of services as a General Hospital. It was considered appropriate though that both are included, within the outputs they are identified by their type.

NETWORKS

TRACC creates the accessibility catchments using a provided network containing links that can be travelled along at defined speeds (links can be blocked to certain modes). The networks used within the TRACC analysis are based on data from Ordnance Survey (OS) and OpenStreetMap.

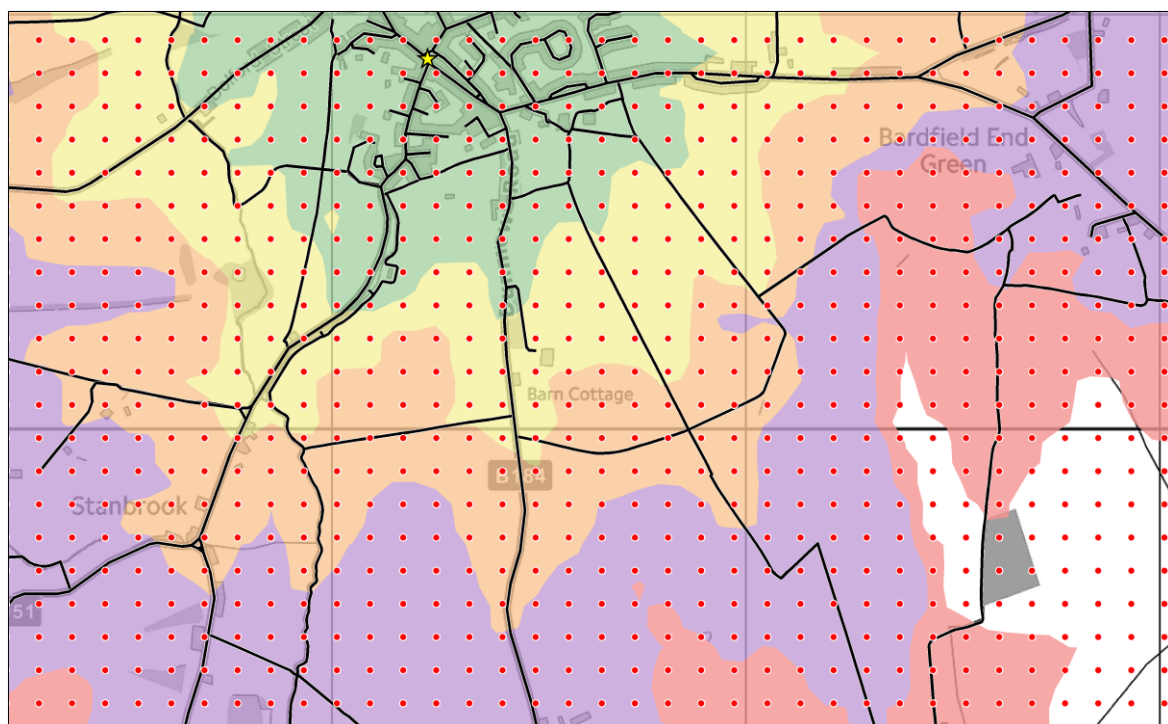
OpenStreetMap data was selected for the walking and cycling catchments as the dataset includes a greater amount of the footpath links, cycleways and public rights of way within the district. The OS data is limited to footpaths in urban areas. The network was verified against the OS data. Where missing links were identified within the network during the process of catchment generation these were manually coded into the network.

CATCHMENT GENERATION

TRACC generates accessibility catchments by calculating the travel time from a grid of points over a defined area to a set of destinations. The resolution of this grid has been set at 80m to provide a high level of accuracy for the size of the region being assessed. For this study the grid is comprised of 339,413 points, each of which has a journey time calculation made from it to the destinations within an assessed dataset.

Figure 1 below shows the grid as a series of red points overlaid on the base map. The network is shown as a series of black lines and generated catchments are coloured based on the travel time obtainable within each.

Figure 1: TRACC origin point grid



Contains OS data © Crown Copyright 2021

In some cases, the nature of the 80m grid may result in some areas appearing to have an odd boundary when compared to the underlying map features, such as buildings, this is a function of the resolution of the grid and the fact that the catchment journey times are based on following the digitised network that is not aware of the presence of buildings. The areas beyond the digitised network links connect to the origin points based on off-network assumptions that are outlined in the following sections of this note.

WALKING

A walking speed of 4.8 kilometres per hour (3 miles per hour) has been used for walking along all link types (e.g. footway, footpath, local street). This speed is commonly used for the purposes of transport planning within England and is based on the Manual for Streets (MfS) published by the Department for Transport (DfT). This is based on the guidance within para 4.4.1 of MfS of an average person walking 800 metres in 10 minutes. The value provides a consistent value that is used throughout accessibility assessments, including the Department for Transport's Journey Time Statistics.

To provide an indication of accessibility beyond the existing network (not along footways/footpaths), a walking speed of 2.4 kilometres per hour has been applied. This enables the generated catchments to extend beyond the digitised network and can give an indicative representation of the case of development taking place in the area and the route created not being a direct line from the existing network.

The catchments are displayed on the basis of travel time, **Table 2** below outlines the correlation between the walking times and distances based on the average speed of 4.8 km/h.

Table 2 – Walking Time and Distances

Walking Time	Walking Distance (km)	Walking Distance (miles)
10	0.8	0.5
15	1.2	0.75
20	1.6	1.0
30	2.4	1.5
40	3.2	2.0
50	4.0	2.5
60	4.8	3.0

References:

Manual for Streets:

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/341513/pdf/manforstreets.pdf

DfT Journey Time Statistics Note:

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/853603/notes-and-definitions.pdf

CYCLING

A cycling speed of 16.0 kilometres per hour (10 miles per hour) has been used for cycling along routes where cycling is permitted. This is at the lower end of quoted cycling speeds and was selected to represent an

average cycling speed that accounts for speed variations due to gradients, junctions and dismounting for some crossings.

A reduced speed of 12.0 kilometres per hour (7.5 miles per hour) has been applied to bridleways to represent the generally tougher riding conditions on these routes due to the surface. Network links where cycling is not permitted, such as footpaths, have a walking speed of 4.8 kilometres per hour (3 miles per hour) applied to represent a cyclist pushing their bike on that section of the journey.

As with the walking catchments, the map displays travel time catchments, **Table 3** below outlines the correlation between the cycling times and distances based on the average speed of 16.0 km/h.

Table 3 – Cycling Time and Distances

Cycling Time	Cycling Distance (km)	Cycling Distance (miles)
10	2.7	1.7
15	4.0	2.5
20	5.3	3.3
30	8.0	5.0
40	10.7	6.7
50	13.3	8.3
60	16.0	10.0

PUBLIC TRANSPORT

An extract from the National Public Transport Data Repository (NPTDR) was used for the public transport catchments. The extract was taken from January 2020 to represent the pre-Covid pandemic public transport network. This is considered more suitable for a baseline analysis than using current timetable data as the networks are still adapting to the changes in restrictions. The timetable data includes bus, rail and coach modes. Any bus services that operated during school term time only were excluded from any analysis of non-educational destinations.

Public transport catchments calculate a journey time made up of the walk to access the public transport network, the public transport journey time and then the walk to the final destination from the public transport alighting stop. Where a public transport journey transfer takes place between two services, there needs to be at least a 3 minute difference between the alighting and boarding times for that to be a selected route to ensure sufficient time for the interchange.

The timetable data used within the analysis is based on travel taking place during periods to reflect those journey types. Journeys for the purpose of employment or education were assessed during the morning peak period, representative of travel to work or school. Healthcare trips were modelled throughout the morning period, this is considered representative of trips to a location to attend an outpatient appointment. Retail and leisure locations were modelled during the interpeak period as these trips often have the flexibility to take place outside of the morning and evening peak periods.

All trips were modelled using a Wednesday timetable to be representative of weekday travel. The time periods are outlined below:

- Railway station, Wednesday 7am to 9am
- Employment, Wednesday 7am to 9am

- Retailers that sell fruit and vegetables, Wednesday 10am to 4pm
- Further education, Wednesday 7am to 9am
- GPs or health centres, Wednesday 9am to midday
- Hospital, Wednesday 9am to midday
- Local centres, Wednesday 10am to 4pm
- Secondary schools, Wednesday 7am to 9am

ACCESSIBILITY CATCHMENT RESTRICTIONS

In order to reflect observed practises with respect to travel by sustainable modes, a number of parameters within the analysis were configured as outlined below.

Network Access

A straight line distance of 2 kilometres has been set as the maximum distance that either the origin or destination of a journey can be from a network link (road or footpath). This prevents large areas of open space from being permeated by catchments any further than 2 kilometres.

Walking Catchments

The 2019 National Travel Survey (NTS) (published August 2020) identifies that walking is a favourable option for short trips, with the average person walking for an average time of 17 minutes. Based on the applied walking speed of 4.8 kilometres per hour, pedestrians are therefore likely to walk to areas within approximately 1.4km of their origin. The 2019 NTS (NTS0308 dataset) also identifies that 80% of all trips under 1.6km are made on foot, as are 31% of trips that are 1.6 to 3.2km. To ensure that the catchments are reasonable and in line with the NTS observations, a limit of 3 kilometres was placed on the maximum walk distance in the following situations:

- Walking only journeys to a destination

Public Transport

The Institution of Highways and Transport (IHT) guidance document 'Planning for Public Transport in Development' (March 1999) states that users of bus services prefer their origin and destination to be located within 400m of a bus corridor which originates from the Department of Environment Circular 82/73 (DOE, 1973). The National Travel Survey (NTS) 2014 (September 2015), recorded that pedestrians will walk on average 624m to bus stops, when using a local bus as the main part of a local trip.

For public transport network access, the data shows a preference for shorter walking distances, therefore a maximum walk distance of 2 kilometres is used for the following situations:

- Walking journey to a public transport stop from the journey origin point
- Walking journey from a public transport stop to the destination point

Where a public transport transfer takes place within a journey a 500m maximum walk between the public transport stops is allowed.

References:

National Travel Survey Statistics:

<https://www.gov.uk/government/collections/national-travel-survey-statistics>