

**YORKSHIRE & HUMBER  
ACCESSIBILITY CRITERIA  
TECHNICAL GUIDANCE ON USE OF THE  
CRITERIA TABLES**

**Final Report - April 2005**

**Prepared for:**

Yorkshire & Humber Assembly  
18 King Street  
Wakefield  
WF1 2SQ

**Prepared by:**

Steer Davies Gleave  
28-32 Upper Ground  
London  
SE1 9PD

[t] +44 (0)20 7919 8500  
[i] [www.steerdaviesgleave.com](http://www.steerdaviesgleave.com)



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## 1. INTRODUCTION

### Aim of the document

- 1.1 This document provides clear and detailed guidance on the use of public transport accessibility criteria as presented in tables 7.1 and 7.2 of the revised RSS (Regional Spatial Strategy) for the Yorkshire & Humber region.
- 1.2 Policy T2 of the Regional Spatial Strategy (RSS) states that local authorities, and other organisations as appropriate, should use the criteria to guide the allocation of sites in development plans and the provision of new transport services and infrastructure through Local Transport Plans (LTPs) and other available means.
- 1.3 The concepts and thresholds used are defined, and there is detailed consideration of the assumptions that underpin the criteria and guidance. Questions are answered such as how to build in waiting times, and about how the criteria would apply to development that falls into more than one category.
- 1.4 Also included is an ‘Accessibility Checklist’, which guides the user step-by-step through the process of using the tables.
- 1.5 The tables and this accompanying guidance do not specify accessibility standards (such as the number of people who should be within a certain journey time of a location in order for that location to qualify as having ‘good accessibility’). Such issues are regarded as being the responsibility of individual authorities.
- 1.6 Separate criteria tables have been prepared for **Origin Accessibility** (housing sites) and **Destination Accessibility** (employment, health, education and leisure sites). For each of the five main location types identified in the RSS - urban areas, extensions to main urban areas, extensions to market/coalfield towns, nodes in good quality public transport corridors radiating from main urban areas, and rural areas - there are recommendations on the accessibility criteria which can be used when measuring public transport accessibility to or from a development site or a particular location.
- 1.7 The aim is that the tables will be used to help identify those sites and locations where good accessibility already exists and where new developments, particularly those that are likely to generate significant travel demand, should be located. It will also provide a tool whereby locations with poor accessibility are identified such that new public transport can be provided prior to development.

### Contents

- Section 1** (this section) introduces the criteria tables and sets out the policy context
- Section 2** provides an explanation of the general concepts, thresholds and assumptions used in the tables
- Section 3** provides guidance to the use of the destination accessibility table
- Section 4** provides guidance to the use of the origin accessibility table
- Section 5** is an Accessibility Checklist, which provides guidance on the various stages of accessibility analysis

### Context

- 1.8 It is not the intention that these tables should be wholly prescriptive. Rather, their aim is to provide local authorities with broad guidelines on the kinds of criteria that should be applied in preparing development plans and local transport plans.
- 1.9 Local authorities will need to modify and develop the stated accessibility criteria, depending on the precise nature of the development and on the local conditions. The application of criteria should initially be regarded as something of a learning process. This approach conforms with the DfT's Guidance on Accessibility Planning For Local Transport Plans (2004), which stresses the need for modification of criteria to reflect individual authorities' needs.
- 1.10 The approach taken to measure accessibility here differs fundamentally from the traditional 'PTALs' (Public Transport Accessibility Level) approach to measuring accessibility, as it reflects the entire journey from door-to-door and not just getting onto the public transport network as is the case with PTALs.
- 1.11 For a comprehensive analysis of accessibility, reference should also be made to more qualitative factors such as personal perception, financial cost and service reliability, which all affect the ease of journey making. These are covered in the section on 'Journey Quality' in the companion volume ("Yorkshire & Humber Accessibility Criteria: General Guidance on Measuring Accessibility").

### Destination Accessibility

- 1.12 This table sets out accessibility criteria to guide the location of, and provision of public transport to, employment sites and social infrastructure facilities. Destination accessibility consists of measuring the accessibility of the population to these facilities, services and employment by sustainable transport. It is usually expressed in

terms of the number of people who can reach a development site in a given time (i.e. the catchment area). The guidelines set out in the table show, for each type of destination and location, the sustainable transport accessibility criteria and thresholds that could apply to a development or site.

1.13 The most important factors to measure are:

- For developments with a local catchment, the population within walking time of the development.
- For developments with a wider catchment, the population that has access to the development, taking into account walk distance to/from public transport services, wait time, frequency of public transport services, the origin/destination of public transport services, the availability and ease of interchange, and the overall journey time.

1.14 Here are two examples:

- For accessibility to an employment site in a main urban area extension, you could measure the number of people who can access the site within 40 minutes overall journey time, using a maximum walk time to the site of 5 minutes (10 minutes for rail/LRT), and allowing for a maximum of one interchange at a major public transport interchange.
- For accessibility to a hospital (a secondary health facility) in a main urban area extension, you could measure the number of people who can access the site within 60 minutes, either directly or with interchange. For a hospital in a market or coalfield town extension, the focus should be on the timing of public transport services, to ensure that they correlate with factors such as visiting hours.

### **Origin Accessibility**

1.15 This table sets out accessibility criteria to guide the location of, and provision of public transport to, housing development. Origin accessibility consists of measuring public transport accessibility from proposed housing developments to facilities, services and employment. It is usually expressed in terms of the number and size of facilities, services or jobs that can be reached from a housing development within a certain time. The guidelines show, for each type of destination and location, the public transport accessibility criteria and thresholds that could apply to a housing development or site.

1.16 The most important factors to measure are:

- For developments with a local catchment, the number/size of facilities within walking distance or overall journey time of the housing development.
- For developments with a wider catchment, the number/size of accessible facilities, taking into account the walk distance to/from public transport services, wait time, frequency of public transport services, the origin/destination of public transport services, the availability and ease of interchange, and the overall journey time.

1.17 Here are two examples:

- For access from housing developments in rural areas to employment sites, you could measure the number and size of facilities within 30 minutes journey time, using a maximum walk time to/from the site/facilities of 5 minutes (10 minutes for rail/LRT), and allowing a maximum of one interchange at a major public transport interchange.
- For access from a housing development in an urban area extension to tertiary education, you could measure the number and size of facilities within 60 minutes overall journey time of the housing site, using a maximum walk time to/from the site/facilities of 5 minutes (10 minutes for rail/LRT), and allowing a maximum of two interchanges at a major public transport interchange.

1.18 In selecting the most appropriate locations for housing in development plans, the full range of employment and social infrastructure facilities that future residents would need to travel to should be taken into account prior to any decision being made.

#### The Difference Between The Two Tables

**Destination Accessibility** looks at the accessibility of the entire population to one facility or facility type (the destination). This is a **many-to-one** relationship and is measured in terms of the population that can reach the facility within a certain journey time.

**Origin Accessibility** looks at the accessibility of a housing site (the origin) to all facilities or facility types. This is a **one-to-many** relationship and is measured in terms of the number and size of facilities that can be reached within a certain journey time.

## 2. CONCEPTS, THRESHOLDS AND ASSUMPTIONS

### Introduction

- 2.1 This chapter explains some of the general concepts which underpin the criteria tables. It includes thresholds and assumptions relating to both tables.

### Location

- 2.2 The location categories correspond with those used by the Yorkshire & Humber Assembly:

- urban areas
- extensions to urban areas
- extensions to market and coalfield towns
- nodes in good quality public transport corridors radiating from main urban areas
- rural areas.

### Facility Type

- 2.3 The facility types referred to in the tables have been chosen with reference to the Social Exclusion Unit's report 'Making The Connections' (<http://www.socialexclusionunit.gov.uk>), which states that accessibility should be measured to education, health, jobs and food shopping facilities. For the tables, these categories have been slightly modified to:

- distinguish between primary and secondary health and education.
- focus on local services as a source of food shopping and other services. For the purposes of these tables 'local services' are defined as small convenience shops, grocers, post offices, newsagents and so on.
- include Leisure and Retail, as this was considered to be an important facility type which warranted its own category.

### Journey Time

- 2.4 The journey time is the **door-to-door travel time**, including time spent walking to the service access point (bus stop or rail/LRT station) from home, time spent waiting for the service to turn up, time spent travelling in the vehicle, and time spent interchanging onto another service, if appropriate.
- 2.5 Journey time thresholds refer to the maximum door-to-door journey time. These correspond broadly with the thresholds quoted in the DfT's accessibility guidance core indicators, but have been modified and developed to take into account characteristics unique to the Yorkshire & Humber region – for example, there is a specific category for *extensions to market and coalfield towns*, in recognition of the unique character of such settlements.
- 2.6 As with the DfT thresholds, it is recommended that individual authorities further develop and modify the quoted thresholds as they see fit, to take into account local conditions and issues.

### Acceptable Walk Time

- 2.7 There are two types of walk time – walk time to and from public transport services **at either end of the journey**, and **direct walk time** where local trips are made entirely on foot.
- 2.8 Maximum acceptable walk times **at either end of the journey** are quoted as 5 minutes for access to bus stops and 10 minutes for access to rail or LRT. In rural areas these times may be doubled. These are standard maximum walk times to and from public transport, and are based on a walk speed of 80 metres per minute (4.8kph/3mph)
- 2.9 Journeys to **local services** may sometimes be made completely on foot, with no public transport involved. If this is the case, it is recommended that a maximum walk time of 20 minutes be set. If journeys are longer than 20 minutes in duration, it should be assumed that they will consist of a combination of walk (at either end of the journey), and public transport.
- 2.10 The maximum walk times quoted here may also need to be modified by individual authorities to account for local factors such as:
- Geography e.g. if it is a very hilly area, the walk speed will be slower and therefore maximum distance covered shorter. A commonly-used standard to take into account hills is to add 10m to the journey length for every 1m of rise.
  - The segment of the population that accessibility is being measured for e.g. older people will not be prepared to walk as far.

### Wait Time

- 2.11 Wait time can be considered in two different ways.
- 2.12 When public transport service frequency is **high** – say, a service every 10-15 minutes – people are less likely to plan their journeys according to a timetable, and more likely to just turn up and wait for the next service to arrive. This is known as a ‘turn up and go’ frequency. If people turn up at a stop at random, the average wait time should be expressed as half the service headway e.g. if a service runs every 10 minutes, the average wait time will be 5 minutes.
- 2.13 When public transport service frequency is **lower** than a ‘turn up and go’ frequency, people are more likely to plan their journeys according to a timetable. If this is the case, wait time should be expressed as a 5 or 10 minute period before the service arrives, to account for people’s behavioural patterns (safety margin), and public transport service reliability.

### In-Vehicle Time

- 2.14 This refers to the time spent travelling on board bus, rail or LRT. The in-vehicle time is usually sourced from timetable information. In-vehicle times may be modified to take into account traffic congestion, although this can be a time consuming exercise.

### Interchange

- 2.15 Interchange behaviour is complex and can be difficult to model for accessibility measuring purposes.
- 2.16 The simplest approach is to only include direct public transport services in the analysis. However, for most purposes this is insufficient as it does not take into account people's willingness to interchange, especially on longer journeys when they are accessing larger facilities such as hospitals or further education facilities.
- 2.17 For the criteria tables it is recommended that journeys should allow for a maximum of one interchange, taking place at a *major public transport interchange* i.e. a location such as a bus station or rail/bus interchange, where significant public transport interchange activity currently occurs.
- 2.18 Individual authorities will need to think about the places at which interchange currently occurs, and only allow for interchange at these points. Authorities may also want to think about whether allowing more than one interchange is feasible, for instance if the facility being accessed is a very large employment centre, hospital or university.
- 2.19 When dealing with interchange, authorities will also need to be aware of the frequency of connecting services, as this may affect people's willingness to interchange. This is especially true when both connecting services are of a low frequency.

### Good Quality Public Transport Corridors

- 2.20 *Good quality public transport corridors* have been defined as offering at least a 15 minutes combined frequency to a major public transport interchange (i.e. a 'turn up and go' frequency). The 'combined frequency' refers to the total number of services running down the corridor – for example, three different services running along the same stretch of road, each offering a frequency of 4 services per hour, would represent a combined frequency of 12 services per hour.

### Time Periods

- 2.21 Accessibility analysis should take into account the time periods during which people are most likely to use facilities:
- For employment uses this will usually be Monday-Friday, with a particular emphasis on access to employment in the morning (7-10am), returning in the evening peak (4-7pm).
  - Time periods for educational uses will vary depending on the type of establishment. Primary and secondary schools will require access to and from establishments in two peaks - which could typically be 8-10am and 3-5pm - while tertiary education might require access throughout the day.
  - For health care uses the time period is likely to also include weekends, which may make it necessary to carry out separate pieces of analysis in order to include access during weekdays, and also on Sundays, when public transport service provision is typically poorer.

- Depending on their exact nature, leisure uses may be concentrated in the evenings (for example, cinemas), or at other times - Stadia are likely to have particular peaks of activity before and after events. Fitness facilities are likely to be busiest during weekday evenings. The differences in time periods between these three examples illustrate the importance of considering *when* people are most likely to want to access such facilities.
- People will need access to local services throughout the day from Monday-Saturday, as a minimum. One might also want to think about including time periods during the evening and on Sundays.

2.22 In rural areas, rather than looking at time periods, you may instead want to look at whether it is possible to get to and from facilities at all i.e. is a particular site served by public transport at any time, and, if so, do arrival and departure times coincide with work hours, attendance hours, visiting hours etc?

2.23 Note that all these times are suggestions - you will need to adapt them to suit your local circumstances and the exact type of facility being looked at.

#### **Development That Falls Into More Than One Category**

2.24 Some developments may fall into more than one category – for example, large employment sites incorporating a significant amount of leisure uses such as cinemas and shopping.

2.25 Ordinarily - i.e. for two sites with different land uses – separate accessibility analysis would be undertaken on each, in order to calculate the accessibility to each site. However, in the case of mixed developments it is likely that the authority will want to measure the overall accessibility to one site, resulting in one calculation of the accessibility of that site.

2.26 For mixed uses, it is likely that people will want to access different uses at different times. For example, for a mixed use development involving employment and leisure uses it is likely that the site will be accessed mainly for employment uses during the day and, for leisure (e.g. cinema) uses during the evening. An accessibility analysis could take this into account by carrying out two separate analyses, one for daytime access and one for evening access. This will inevitably involve a degree of generalisation, but will result in a more focussed assessment of site accessibility.

2.27 For mixed developments involving housing, it is recommended that authorities use both the origin accessibility table, to measure accessibility to facilities from housing (expressed in terms of number and size of facilities), and the destination accessibility table, to measure accessibility to facilities located on that site (expressed in terms of the population within a certain journey time of the facility).

#### **The Relative Size Of Facilities**

2.28 When measuring origin accessibility from housing developments, both the number and size of facilities accessible from that location are taken into account in the origin accessibility criteria table.

- 2.29 The destination accessibility criteria table does not explicitly include the size of the facility as a factor to be measured. Authorities should however always be aware that the size of a facility can affect its catchment size, and should therefore modify their thresholds accordingly. For example, in the 'leisure' category, a large rugby league stadium will have a much bigger catchment than a small leisure centre, as people will be much more willing to travel for longer to access that facility.

### 3. DESTINATION ACCESSIBILITY

#### Introduction

- 3.1 This chapter provides guidance on issues specific to the Destination Accessibility criteria table. The table provides guidance on how to measure accessibility to employment and social infrastructure uses such as education, health and leisure facilities. The guidance also varies depending on where these facilities are located.
- 3.2 For all categories, the table measures **the population that can access a service within a certain journey time**. For some categories other conditions are also included, such as a minimum acceptable public transport service frequency, or that service arrival and departure times should coincide with working/opening/visiting hours.
- 3.3 The table differs from the Origin Accessibility table in that both the rows and the columns refer to the destination for which accessibility is being measured. For example - for employment land uses located within urban areas, the guideline is that accessibility analysis should measure the population within 20 minutes journey time of the employment site.

#### Urban areas

- 3.4 Facilities located in urban areas should be fairly easy to reach. The maximum journey time reflects this, ranging from 10 minutes for access to a primary school or GP, to 40 minutes for access to a hospital or secondary education establishment. As a general rule, the larger the facility, the higher the allowable maximum journey time.

#### Extensions to urban areas

- 3.5 Extensions to urban areas are located on the periphery of built-up areas and so one would not expect facilities located here to be reached as easily as those in urban areas – for example, industrial estates. Correspondingly, the maximum journey time is slightly higher here, ranging from 20 minutes for access to leisure, primary education and GPs, to 60 minutes for access to hospitals and secondary education.

#### Extensions to market and coalfield towns

- 3.6 Journey times here are generally similar to those for extensions to urban areas, except for access to employment where the maximum journey time is slightly shorter to account for the smaller distances one would expect people to travel by public transport to reach their workplace in market and coalfield towns.
- 3.7 For secondary health/secondary and tertiary education, the arrival and departure of services should coincide with attendance or visiting hours.

#### Nodes in good quality public transport corridors radiating from main urban areas

- 3.8 These areas generally have good accessibility and therefore people would not be expected to travel for a long time to get to facilities, although journey times will be longer than for the main urban areas.

**Rural areas**

- 3.9 Rural areas allow the longest journey times, and great importance is stressed on services coinciding with opening/closing times, attendance hours, work hours and visiting hours.

## 4. ORIGIN ACCESSIBILITY

### Introduction

- 4.1 This chapter provides guidance on issues specific to the Origin Accessibility criteria table. The table provides guidance on how to measure accessibility from housing sites, to a range of different facilities such as local services, employment, health, education and leisure.
- 4.2 The table differs fundamentally from the Destination Accessibility table in that it measures **the number/size of facilities that can be reached from a housing site within a certain journey time**. For some categories other conditions are also included, such as a minimum acceptable public transport service frequency, or that service arrival and departure times should coincide with working/opening/visiting hours.
- 4.3 The table also differs from the Destination Accessibility table in that the rows refer to the origin ('housing site location'), while the columns refer to destinations (facility types). For example – for housing sites in urban areas, the guideline is that accessibility analysis should measure the number and size of local services within 10 minutes walk of the housing site.

### Urban areas

- 4.4 Facilities should be fairly easy to reach from housing located in urban areas. The maximum journey time reflects this, ranging from 10 minutes for access to local services, to 40 minutes for access to employment and hospitals. As a general rule, the larger the facility, the higher the allowable maximum journey time.

### Extensions to urban areas

- 4.5 Extensions to urban areas are located on the periphery of built-up areas and so one would not expect facilities to be reached as easily from here compared to from housing sites in urban areas. Correspondingly, the maximum journey time is slightly higher from here, ranging from 15 minutes for access to leisure, to 60 minutes for access to hospitals and secondary education.

### Extensions to market and coalfield towns

- 4.6 Journey times from here are generally similar to those for extensions to urban areas, except for access to employment where the maximum journey time is slightly shorter to account for the smaller distances one would expect people to travel by public transport to reach their workplace from smaller settlements.
- 4.7 For secondary health/secondary and tertiary education, the arrival and departure of services should coincide with attendance or visiting hours.

**Nodes in good quality public transport corridors radiating from main urban areas**

- 4.8 These areas generally have good accessibility and therefore people would not be expected to travel for a long time to get from them to facilities, although journey times are longer than for urban areas.

**Rural areas**

- 4.9 Journeys from rural areas are the longest, and great importance is stressed on services coinciding with opening/closing times, attendance hours, work hours or visiting hours.

## 5. ACCESSIBILITY CHECKLIST

| Step | Question   | Example: new hospital site destination   |
|------|--|--|
| 1    | What do you want to measure accessibility for? If measuring for a housing site, use the Origin Accessibility table. If measuring for any other kind of site, use the Destination Accessibility table.  | Measuring accessibility to a hospital site destination   |
| 2    | Where is the site located? Is it located in an urban area, an extension to an urban area, an extension to a market/coalfield town, at a node, or in a rural area?  | Measuring accessibility to a hospital site in an extension to a main urban area (periphery of town)  |
| 3    | What are the criteria? Use the relevant table to find out  | The criteria is the population within 60 minutes journey time  |
| 4    | Do the criteria seem sensible? Use your local knowledge to decide whether the criteria should be modified to reflect local conditions and needs  | The criteria seem sensible   |
| 5    | Do the associated assumptions seem sensible? Use your local knowledge to decide whether the assumptions should be modified to reflect local conditions and needs. Refer to section 2 for an explanation of concepts, thresholds and assumptions. | <p>The hospital site is located on top of a hill, therefore the acceptable walk time between bus stops and the site should be lowered to 4 minutes (320m), and between rail/LRT stations and the site should be lowered to 8 minutes (640m).</p> <p>Allow a maximum of one interchange.</p>  |
| 5    | <p>Which public transport services currently serve the site, how close do they pass by, and what are their frequencies?</p> <p>Which public transport services should be included in the accessibility analysis?</p>                             | <p>Three bus routes pass close to the site:<br/>Route #13 1km away (2bph). Too far away, and therefore not included.<br/>Route #21 200m away (1bph). Included. Wait time is 5 minutes.<br/>Route #29 400m away (6bph). Although this is further than 320m away, I have decided to include it in the analysis as it is a high frequency 'turn-up-and-go' service and people are more likely to walk further to get to and from it. Average wait time is 5 mins (i.e. half the headway).</p> <p>There are no rail/LRT stations nearby.</p> |
| 6    | Which public transport services can people interchange from/onto in order to get to/from the site within the maximum journey time?   | Where can people interchange in order to get onto bus routes #21 and #29? From which public transport services? And how far can they get from/to within 60 minutes, including walk, wait and interchange time?   |
| 7    | How many people live within the walk catchment of those public transport services running to the site?   | From the Census, calculate the number of people within walking distance of those public transport services that can get to the hospital within 60 minutes journey time   |

**CONTROL SHEET**

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Other Contributors: DJP, BSL, SXM, MAS

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**DISTRIBUTION**

**Clients:**  
 Mike Padgett, Jason Copper Final 04/04/05

**Steer Davies Gleave:**  
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