

## BREEAM International New Construction 2016

Technical Manual  
SD233 2.0



# Tra 01 Public transport accessibility

## (all buildings)

Number of credits available	Minimum standards
Building type dependent	No

### Aim

To recognise and encourage development in proximity of good public transport networks, thereby helping to reduce transport-related pollution and congestion.

### Assessment criteria

This issue is split into two parts:

- Accessibility Index (up to 5 credits - building type dependent)
- Dedicated bus service (1 credit)

The following is required to demonstrate compliance:

#### Up to five credits - Accessibility Index

- 1 The public transport Accessibility Index (AI) for the assessed building is calculated and BREEAM credits awarded in accordance with the building types, AI benchmarks and BREEAM credits in Table 30 below
- 2 The Accessibility Index is determined by entering the following information in to the BREEAM Tra 01 calculator:
  - 2.a The distance (m) from the main building entrance to each compliant public transport node
  - 2.b The public transport types serving the compliant node, e.g. bus or rail
  - 2.c The average number of services stopping per hour at each compliant node during the operating hours of the building for a typical day (see compliance notes and Table 31 on page 202)

OR

#### One credit - Dedicated bus service

- 3 For buildings with a fixed shift pattern, i.e. where building users will predominantly arrive or depart at set times, one credit can be awarded where the building occupier provides, or commits to providing a dedicated bus service to and from the building at the beginning and end of each shift or day.

This credit is only available in cases where a development is unable to achieve any of the available credits using the Accessibility Index criteria (i.e. its location has a low public transport Accessibility Index).

### Checklists and tables

Table 30. Credits available for each building type relating to the public transport Accessibility Index (AI) score.

Accessibility Index	≥ 0.5	≥ 1	≥ 2	≥ 4	≥ 8	≥ 10	≥ 12	≥ 18
Building type								BREEAM credits available

## Methodology

### Calculating the average number of services

For the purpose of the calculation, the frequency of public transport is the average number of services per hour. This is calculated by determining the number of stopping services at the node during the peak arrival or departure times for the building or the building's typical day's operating hours (see definition 'operating hours'), divided by the number of hours within that period. For example: the average number of services for an assessment of a building that operates between 08:00 - 19:00 hrs (11 hours) and is within proximity of a bus stop with 35 stopping services during this period is 3.2 (equivalent to an average service frequency of approximately 20 minutes).

### Multiple services

Services that operate from more than one node within proximity of the building, i.e. two separate bus stops served by the same bus, must be considered only once; at the node in closest proximity to the building. Different services at the same node can be considered as separate.

### Bidirectional routes

Routes will be bidirectional; however for the purpose of calculating the index, consider only the direction with the highest frequency.

## Evidence

Criteria	Interim design stage	Final post-construction stage
1, 2	Scale map highlighting the location of the building and all public transport nodes in proximity of the building. Timetables for each service at each public transport node considered. The calculated Accessibility Index below for the building. Where appropriate, information about the dedicated bus service. A completed copy of the Tra 01 calculator.	As design stage. Where relying on a calculation carried out at the design stage to demonstrate compliance post-construction, if the period between the design and post-construction stage reporting is greater than 12 months, then the AI must be recalculated using up-to-date public transport timetable information. As interim design stage.
3	A formal letter from the future building occupier confirming provision of and details for the dedicated bus services.	As interim design stage.

## Additional information

### Relevant definitions

#### Accessibility Index

A measure that provides an indicator of the accessibility and density of the public transport network at a point of interest (in the case of BREEAM, a building). The index is influenced by the proximity and diversity of the public transport network and the level or frequency of service at the accessible node. For example, a building that has a single public transport node 500m from its main building entrance with one service stopping every 15 minutes, i.e. four services per hour on average, will score an AI of approximately 1.90. Alternatively, the same node with one service every 15 minutes, but 300m from the building entrance will achieve an AI of 2.26. The same node with two

services stopping every 15 minutes will score an AI of 2.85. The greater the number of compliant nodes, services and their proximity to the building, the higher the AI.

### Additional building type classifications

#### Higher Education (H.E.)

Education that continues beyond the compulsory level, e.g. colleges and universities.

#### Higher education - Off campus

H.E buildings located on a campus where less than 25% of students are resident on the campus or within 1 km radius from the campus main entrance.

#### Higher Education - On campus

H.E buildings located on a campus where 25% or more of the students are resident on the campus or within 1 km radius from the campus's main entrance.

#### Other building - Staffed

A building predominantly occupied by staff or employees with occasional business related visitors.

#### Other building - Visitors

A building occupied by a number of core staff or employees with a larger number of consistently frequent visitors or users (either resident or non-resident).

#### Other building - Rural

Building types specifically required to be located rurally as a result of their function, i.e. a building which would never be located within an urban area, e.g. a national park visitor centre (see definition of rural and rural location sensitive buildings location).

#### BREEAM Tra 01 Calculator tool

A spreadsheet-based calculator used to determine the Accessibility Index for the assessed building and the number of BREEAM credits achieved.

#### Compliant transport node

A compliant node includes any bus service with a stop within 650m and any railway station within 1000m of the assessed building's main entrance, measured via a safe pedestrian route (not 'as the crow flies'). The service stopping at each node must provide transport from, or onward travel to, either an urban centre, major transport node or a community focal point, e.g. doctor's surgery, library, school or village centre. Only local services should be assessed and any national public transport services should be excluded from the analysis, unless such a service can be said to provide a local commuter service.

#### Main building entrance

The main building entrance is the entrance to the assessed building which is directly connected to the main building reception, circulation routes, lifts or stairs and is available to the majority of the building's staff and visitors on arrival. It is not the site entrance (unless the site entrance is also the building entrance, e.g. building with a boundary on a public highway).

#### Operating hours

BREEAM seeks to define the building's accessibility to the public transport network for the period during which the majority of building users will travel to and from the building. In most cases the normal operating hours of the building can be used. Where shift patterns see the majority of building users (over 80%) arriving or leaving during a certain period, for example an office building where the majority of office workers arrive between 8.00-10.00, then that period can be used as an alternative to the operating hours of the building. This accounts for some building types that operate a 24-hour day and on a shift work basis. During what typically would be deemed unsociable hours, and therefore periods where there is little if any public transport operating, such periods are not required to be accounted for in the assessment of this issue. Where the assessed building operates on a 24-hour basis or the operating hours are unknown at the time of assessment, then refer to and use the table of default operating hours, which can be found in the additional information section of this issue.

#### Rural location (Urban location)

## Tra 02 Proximity to amenities

### (all buildings)

Number of credits available	Minimum standards
Building type dependent	No

### Aim

To encourage and reward a building location that facilitates easy access to local services and so reduces the environmental, social and economic impacts resulting from multiple or extended building user journeys, including transport-related emissions and traffic congestion.

### Assessment criteria

The following is required to demonstrate compliance:

#### Up to two credits

- All building types, except Type 6, must be located within the stated proximity of at least two accessible core amenities ('C' in Table 32 below).
- The remaining number of amenities required, in Table 32 below, must be met using any other applicable amenities (including any remaining core amenities).

### Checklists and tables

Table 32 Credits available for Tra 02 for different building types

Criteria	Building types					
	Type 1	Type 2	Type 3	Type 5 (Two credits available)		Type 6
No. of BREEAM credits	1	1	1	1	1	1
No. of amenities required	3	3	4	4	7	2
Proximity (metres)	500	500	500	500	1000	500
Appropriate food outlet	C	C	C	C	C	✓
Access to cash	C	C	C	C	C	✓

Criteria	Building types					
	Type 1	Type 2	Type 3	Type 5 (Two credits available)		Type 6
Access to a recreation or leisure facility for fitness or sports	C	C	C	✓	✓	✓
Access to an outdoor open space (public or private, suitably sized and accessible to building users)	✓	✓	✓	C	C	✓
Publicly available postal facility	✓	✓	✓	✓	✓	✓
Community facility	✓	✓	✓	✓	✓	✓
Over the counter services associated with a pharmacy	✓	✓	✓	✓	✓	✓
Public sector doctor's surgery or general medical centre	-	-	✓	✓	✓	✓
Child care facility or school	✓	-	✓	✓	✓	✓
<p><b>Key:</b>            C - Core amenity for building type            ✓ - Amenity relevant to building type.</p> <p><b>Building Types:</b>            Type 1: Offices, retail, industrial            Type 2: Preschool, schools            Type 3: Higher education and university            Type 4: Healthcare (requires a bespoke assessment)            Type 5: Residential dwellings and residential institutions - long term stay (two credits are available and each can be awarded independently of the other)            Type 6: Hotels, residential institutions - short term stay, and other non-standard buildings</p>						
Criteria	Building types					
	Type 1	Type 2	Type 3	Type 4 (up to two credits available)		Type 5
No. of BREEAM credits	1	1	1	1	2	1
No. of amenities	2	2	2	2	4	2
Proximity (metres)	500	500	500	500	1000	500
Appropriate food outlet	✓	✓	✓	✓	✓	✓

## Compliance notes

Ref	Terms	Description
<b>Shell and core (non-residential and residential institutions only)</b>		
CN1	Applicable assessment criteria	Both options: All criteria relevant to the building type and function apply. Refer to Appendix D – Shell and core project assessments on page 399 for a more detailed description of the shell and core assessment options.
<b>Residential - Partially fitted and fully fitted</b>		
CN2	Applicable assessment criteria - Single and multiple dwellings	Both options: All criteria relevant to the building type and function apply. Refer to Appendix E – Applicability of BREEAM New Construction to single and multiple dwellings, partially and fully fitted on page 402 for a more detailed description of residential assessment options.
<b>General</b>		
CN3	Collective amenities	One type of amenity may also exist within or as part of other types of amenities, e.g. a grocery store in a petrol station, cash point or pharmacy in a supermarket etc. It is not a requirement of this issue that each amenity is 'standalone'.
CN3.1	Amenities within the assessed building or on site	An amenity within the building or on the same site as the proposed development, e.g. where the assessed building is part of a campus, retail or business park or centre, complies with the assessment criteria.
CN3.2	Phased developments	The guidance provided in BREEAM issue Tra 01 Public transport accessibility on page 197 concerning phased developments also applies to this issue.

## Methodology

None.

## Evidence

Criteria	Interim design stage	Final post-construction stage
All	Marked-up site plan or map highlighting: <ul style="list-style-type: none"> <li>— Location of assessed building</li> <li>— Location and type of amenities</li> <li>— The route to the amenities</li> <li>— Plan or map scale.</li> </ul>	Assessor's building or site inspection and photographic evidence confirming: <ul style="list-style-type: none"> <li>— The existence of the local amenities</li> <li>— The route and distance to the amenities.</li> </ul>

Criteria	Interim design stage	Final post-construction stage
All	<p>Where the amenities do not currently exist, but are due to be developed, a letter from the client or developer confirming:</p> <ul style="list-style-type: none"> <li>— The location and type of amenities to be provided</li> <li>— The timescale for development of the amenities.</li> </ul>	<p>Evidence as outlined at the design stage of assessment OR As above where amenities developed, or under development at the time of post-construction review or assessment.</p>

## Additional information

### Relevant definitions

#### Accessible amenities

Amenities (as listed) that are within the required proximity (distance in metres) of the building and accessible via safe pedestrian routes, e.g. pavements or paths and safe crossing points or, where provided, dedicated pedestrian crossing points. The distance should not be measured in a straight line.

#### Access to an outdoor open space (public or private, suitably sized and accessible to building users)

A space that enables building users to take an appropriate break from internal building activities, for example, an office building would benefit from a space to sit outside and have lunch. These spaces will need to be suitably sized to ensure that the space supports a reasonable number of building users associated with the project and should not form a part of the public highway.

#### Access to a recreation or leisure facility

A facility that will allow building users to exercise and maintain a healthy lifestyle. This could include a local leisure centre, tennis courts, an on site gym or, for a school, a local playground.

#### Appropriate food outlet

A means of accessing a food supply that is affordable to the majority of the building's users, as well as being appropriate for their day-to-day needs. For example, a small office building would benefit from having a small shop selling sandwiches or snacks, a residential dwelling and a residential institution would benefit from having a restaurant in the local area.

#### Child care or school

The intention of this amenity is to provide child support for potential building users; this could include a nursery, child minding facilities or a school local to the development. A school cannot be considered an amenity to a BREEAM assessment of the same school.

#### Community facility

An internal space that is inclusive to the majority of building users who will occupy the assessed building or development. The facility will serve to facilitate community activities for the assessed building and its users. For example, for a residential dwelling or a residential institution this could be a community hall or for an office building, a public house.

#### Other information

None.