

Sport England's Facilities Planning Model (FPM)

Sports Hall Provision in Norwich

2011 Profile Report – October 2011

This paper and the accompanying maps present data from Sport England's National Facilities Audit Dataset as of January 2011, and an update summarising revised outputs for March 2011. The information contained within the paper should be read alongside the two appendices. Appendix 1 sets out the facilities that have been included within this dataset and analysis together with those that have been excluded. Appendix 2 provides background to the Facilities Planning Model (FPM), facility inclusion criteria and the model parameters.

As presented in Appendix 2 the FPM modelling and dataset builds in a number of assumptions regarding the supply and demand of provision. It is therefore recommended that the information contained within this paper should form part of a wider assessment of provision at the local level.

Where applicable the data outputs for Norwich will be compared with (a) national and regional averages, (b) neighbouring authorities (Broadland and South Norfolk), and (c) CIPFA 'nearest neighbour' authorities for Norwich (Exeter, Ipswich, Lincoln and Preston).

The paper is set out into the following sections:

- 1. Supply of Sports Hall Provision**
- 2. Demand for Sports Hall Provision**
- 3. Supply & Demand Balance**
- 4. Satisfied Demand**
- 5. Unmet Demand**
- 6. Used Capacity**
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Appendix 1 – Facilities Included/Excluded

Appendix 2 – FPM Background Information

The paper is also accompanied by four maps:

Map 1. Unmet Demand

Map 2. Aggregated Unmet Demand

Map 3. Relative Share

Map 4. Facility Location Base Map

1. Supply of Sports Hall Provision

Table 1 – Supply	Norwich
Number of halls and number of hall sites	14 halls at 10 sites
Supply of total hall space in courts	62.0
Supply of publicly available hall space in courts (scaled with hrs avail in pp)	55.44
Supply of total hall space in VPWPP	11228
Courts per 10,000	4.26

Commentary on supply:

- The FPM includes 14 sports halls on 10 sites within Norwich (i.e. within the boundaries of Norwich City Council). For clarification, this full assessment included the sports hall at Wensum Lodge (King Street) despite this facility closing in December 2010. However, this report also includes an update using revised data for March 2011 which excluded this facility.
- Of the 14 halls included within the assessment, 1 is a 12-court hall (UEA), 1 an 8-court (also at UEA), 1 is a 5-court (Wensum Lodge) and the remainder are 4 court facilities, except for where smaller halls on main hall sites have also been included (explaining why there are 10 sites but 14 halls in the assessment). The ancillary halls are usually 1 court size.
- The provision in the city equates to 55.44 courts (scaled to take account of the hours available in the peak period) with capacity to accommodate 11,228 visits per week in the peak period (vpwpp). The two halls at UEA have a combined capacity of 4,050 vpwpp, which equates to approximately 36% of the total capacity within the city. The smallest capacity of any 'main' hall is at Norwich School with 500 visits per week.
- All the sites are weighted for attractiveness based on factors such as age and management with the highest attractiveness weighting being 99% for the Recreation Road Sports Centre and the lowest being 31% at City of Norwich School.
- The newest facility is located at the Town Close House School (2009) with the oldest located at City of Norwich School (1970). The model takes account of refurbishment work at Notre Dame High School (2004) and Sewell Park College (2007). Any refurbished facility would have increased the attractiveness weighting afforded to them by the FPM. However, looking forward, the FPM would reduce these weightings at a quicker rate than for new build facilities as the benefits of the refurbishment wears off.
- The overall provision in the city equates to 4.26 courts per 10,000 residents, which is slightly above the average levels for England (3.95) and the East of England (4.05). This level is also above the figure recorded in the neighbouring district of Broadland (3.03), but below provision in South Norfolk (4.71). The level of provision within the City of Norwich is below three of three of its CIPFA 'nearest neighbour' areas – Exeter (6.66), Ipswich (6.32) and Preston (4.58), but is identical to the level of provision in Lincoln (4.26).

2. Demand for Sports Hall Provision

Table 2 - Demand	Norwich
Population	145,601
Visits demanded – vpwpp	7300
Equivalent in courts – with comfort factor included	45.06
% of population without access to a car	27.1

Commentary on Demand:

- The FPM calculates that the population of the city generates a demand for 7,300 vpwpp which equates to 45.06 sports hall courts.
- Just over 27% of the population within Norwich do not have access to a car in comparison to the average figures of 19.5% for England and 13.1% for the East of England.

3. Supply / Demand Balance

Table 3 - Supply/Demand Balance	Norwich
Supply - Hall provision (courts) scaled to take account of hours available for community use	55.44
Demand - Hall provision (courts) taking into account a 'comfort' factor	45.06
Supply / Demand balance	+10.38

Commentary on supply / demand balance

- When looking at a very simplistic picture of the overall supply and demand across Norwich the resident population is estimated to generate a demand for a minimum of 45.06 sports hall courts. This compares to a current available supply of 55.44 sports hall courts, giving a positive supply/demand balance of 10.38 sports hall courts.
- **Note:** This section only provides a 'global' view of provision and does not take account of the location, nature and quality of facilities in relation to demand; how accessible facilities are to the resident population (by car and on foot); nor does it take account of facilities in adjoining boroughs or cross-boundary movements which are likely to be significant for an authority like Norwich. This wider picture regarding the adequacy of provision is covered in the more detailed modelling set out in the following sections of this paper (Satisfied Demand, Unmet Demand and Relative Share).

4. Satisfied Demand - demand from Norwich residents currently being met by supply

Table 4 - Satisfied Demand	Norwich
Total number of visits which are met	6,660
% of total demand satisfied	91.2
% of demand satisfied who travelled by car	65.5
% of demand satisfied who travelled by foot	20.9
% of demand satisfied who travelled by public transport	13.6
Demand Retained	5380
Demand Retained -as a % of Satisfied Demand	80.8
Demand Exported	1280
Demand Exported -as a % of Satisfied Demand	19.2

Commentary on satisfied demand:

- The FPM calculates that 6,660 of the 7,300 vpwpp demanded by the residents of Norwich are currently being met, which equates to 91.2% of demand. This figure is slightly higher than the average figure recorded for England (90.7%) but slightly lower than the regional average (92.8%). It should be noted that it is practically impossible to achieve 100% satisfied demand as there will always be some residents who live outside the catchment areas of facilities.
- The level of satisfied demand in Norwich is above the levels recorded in the neighbouring authority of South Norfolk (87.2%), but below the figure for Broadland (92.6%). With regard to CIPFA nearest neighbour authorities, Norwich has higher levels of satisfied demand than Preston (91.0%), but lower levels than Lincoln (93.2%), Ipswich (94.9%) and Exeter (95.7%).
- Approximately 65.5% of the satisfied demand is by residents who travel by car to a facility, with approximately 20.9% travelling by foot and 13.6% by public transport. The percentage of people travelling by car is below the national average (75.3%) and the regional average (82.7%). The percentage of walkers is above both national (15.7%) and regional (11.4%) averages. The percentage of people using public transport is above the national average (9.1%) and regional average (5.9%).
- The FPM calculates that approximately 80.8% of the city's satisfied demand is met by provision within the borough i.e. retained, with 19.2% being exported to provision in neighbouring areas. The neighbouring authorities of Broadland and South Norfolk have very high figures for exporting demand to facilities in neighbouring areas (43.2% and 41.2% respectively and it is likely that much of this is exported to facilities within Norwich given the geographical distribution of residents of those authorities.
- The 19.2% of satisfied demand that is exported equates to 1,280 vpwpp.

5. Unmet Demand - demand from Norwich residents not currently being met

Table 5 - Unmet Demand	Norwich
Total number of visits in the peak, not currently being met	640
Unmet demand as a % of total demand	8.8
Equivalent in Courts - with comfort factor	3.95
% of Unmet Demand due to ;	
Lack of Capacity -	9.9
Outside Catchment -	90.1
Outside Catchment;	90.1
% Unmet demand who do not have access to a car	86.8
% of Unmet demand who have access to a car	3.3
Lack of Capacity;	9.9
% Unmet demand who do not have access to a car	9.4
% of Unmet demand who have access to a car	0.5

2%, Commentary on unmet demand:

- The FPM calculates that 640 vpwpp of the 7300 vpwpp demanded by the residents of the city are currently not being met. This level of unmet demand equates to 8.8% of the total demand and is equivalent to 3.95 sports hall courts. As shown on Map 1 (Unmet Demand) the 3.95 courts of unmet demand are spread relatively thinly across the city with a slight concentration in the north and north-west. This level of unmet demand is below the national average figure (9.3%), but above the regional average (7.2%).
- 90.1% of the unmet demand is from residents who live outside the catchment of a facility as opposed to a lack of capacity at those facilities (9.9%). This differs markedly from the national average which calculates that 21.6% of unmet demand is due to a lack of capacity at existing facilities, but is close to the regional average of 10.2%.
- The majority of this unmet demand (approximately 86.8%) is from residents who do not have access to a car and due to the distance and time involved would not walk to a facility. Approximately 3.3% is from residents who do have access to car but still live outside the catchment of a facility.
- The FPM aggregates the levels of unmet demand up to indicate whether additional provision would be justified in any one location. Map 2 presents the aggregated unmet demand for the borough and shows that all areas of the city record a figure of less than 2 sports hall courts, again with slightly higher figures recorded in the northern part of the city. However, there is not an obvious 'hot spot' within the city where unmet demand is heavily concentrated.

6. Used Capacity - How well used are the facilities.

Table 6 - Used Capacity	Norwich
Total number of visits used of current capacity	7982
% of overall capacity of halls used	71.1
% of visits made to halls by walkers	16.9
% of visits made to halls by road	83.1
Visits Imported;	
Number of visits imported	2602
As a % of used capacity	32.6
Visits Retained:	
Number of Visits retained	5380
As a % of used capacity	67.4

Commentary on use of facilities:

- The FPM calculates that 71.1% of the capacity of sports hall provision in the city is currently used. This figure is higher than the averages for England (65.3%) and the East of England (62.6%). The figure for the city is higher than those recorded for the geographical neighbouring areas (Broadland 69.1%, South Norfolk 44.2%), as well as three of the CIPFA nearest neighbour areas (Preston 69.0%, Ipswich 50.0% and Exeter 47.5%). The figure is lower than for Lincoln (86.9%).
- **Note:** The FPM builds in a comfort factor to the modelling and suggests that a figure around 80% indicates that a sports hall is operating at an uncomfortably busy level. If a figure of 100% is recorded this would suggest that the facility is theoretically full all the time in the peak period. The FPM calculates the maximum number of visits a facility can accommodate based on its size, the number of hours it is available for community use and an 'at one time capacity' figure for sports halls of 20 users per 4 court hall and 8 users per 144sqm of ancillary hall space. If a facility were full to its theoretical capacity based on the 'at one time capacity' then it is highly unlikely that there would be the space to undertake all activities comfortably. There is a need to take account of a range of activities that take place within sports halls which have different numbers of users and space requirements e.g. singles badminton may have significantly less participants per court space than fitness classes. To account for these factors the notion of a 'comfort factor' is applied by the FPM.
- Of the main sports halls included within the assessment, the highest figure for % of overall capacity used is for the Norwich School, Recreation Rd Sports Centre and Sewell Park College (all 100%). The lowest figure is for the City of Norwich School at 39%.
- Approximately 83.1% of visits to provision in the city are undertaken by road with 16.9% by foot. This breakdown is similar to the national average of 84.3% by road and 15.8% by foot. However, within the city the figure for road users varies from 90% at UEA Sportspark, to 71% at Recreation Road Sports Centre.
- Approximately 67.4% of the visits to the city's sports hall sites are from residents within Norwich with the remaining 32.6% (2602 vpwpp) imported from neighbouring districts.
- Norwich imports approximately twice as many visits from residents of neighbouring authorities (2602 vpwpp) compared to the number of visits by residents of Norwich exported to facilities in neighbouring authorities (1280 vpwpp).

7. Relative Share - equity share of facilities

Relative share helps to indicate which areas have a better or worse share of facility provision. It takes into account the size and availability of facilities as well as travel modes. It helps to establish whether residents within a particular area have less or more share of provision than other areas when compared against a national average figure which is set at 100.

This is a similar measure to facilities per 1000 population but also includes facility capacity and travel modes. It therefore helps to view 'provision' in an equity way, i.e. how much share of facilities do people have compared to each other. Relative Share is a good measure for showing the different levels of 'opportunity' to access facility space (function of facility size and hours available)

Table 7 - Relative Share	Norwich
Score - with 100 = national share	80
Regional Average	101
+/- from National share	-20%

Commentary on Relative Share:

- The borough records a relative share level significantly below both the England average (100) and the figure for the East of England (101, which is only slightly above the national average).
- The figure of 80 (-20%) for the district is lower than both neighbouring authorities (Broadland 84, South Norfolk 98) and two of the CIPFA nearest neighbours (Ipswich 113, Exeter 146). It is higher though than the figure for two of the CIFA authorities (Preston 90, Lincoln 74).
- District wide relative share figures can mask significant variations within any local authority area. Map 3 shows the relative share across Norwich and surrounding area with the poorest areas for Relative Share within Norwich being in the north-east sector of the city and the best being in the south-west. This trend continues outside the city's boundaries where access to sports halls is much better in the area south-west of Norwich (along the A11 corridor) and poorest to the north-east of the city (within Broadland District).

8. Summary and Conclusions

Norwich enjoys a reasonable supply of 14 sports halls on 10 different sites, generating a total supply of 62 courts, scaled down to 55.4 courts taking into account public availability during the peak period. This supply is able to accommodate 11,228 visits per week in the peak period.

The overall supply in terms of courts per 10,000 population (4.26 courts) is slightly higher than the national and regional average figure, but is lower than the figure for Broadland Council and three of the CIPFA nearest neighbour authorities. This figure does not take into account cross boundary movements, for example residents of Broadland and South Norfolk using facilities in Norwich, and it should be noted that Norwich is a net importer of visits from residents of neighbouring authorities for sports halls use.

Demand equates to 7,300 visits per week in the peak period, or 45.06 courts taking into account a 'comfort factor'. This results in an indicative over-supply of 10.38 courts when looking in isolation at the demand/supply balance (i.e. without factoring in additional net visits from residents of neighbouring authorities).

Satisfied demand equates to 6,660 visits in the peak period, or 91.2% of total demand generated. This figure is slightly higher than the average figure recorded for England (90.7%) but slightly lower than the regional average (92.8%).

Unmet demand is therefore calculated at 8.8%, or 640 visits per week in the peak period. This unmet demand equates to a total of 3.95 courts (with comfort factor added) but is spread fairly evenly throughout the city rather than be concentrated in a particular 'hot spot'. The vast majority of this unmet demand (90.1%) is due to people living outside the catchment area of halls rather than halls being full to capacity, and nearly all of this figure is due to people who do not have access to a car (unsurprisingly as most people with access to a car will live within the catchment area of a facility in an urban authority such as Norwich).

Halls in Norwich are operating at a relatively high level of utilised capacity (71.1%) which is above national and regional average figures and close to the nominal figure of 80% which indicates that a facility is uncomfortably full. This figure is also higher than for the two neighbouring authorities and three out of the four CIPFA nearest neighbour areas.

Norwich residents experience a poor relative share of access to halls, with a rating of 80, which equates to 20% below the national average, and 21% below the regional average.

In summary therefore all indicators from the outputs of the FPM model point to Norwich having a reasonable supply of sports halls with average levels of satisfied demand compared to national and regional averages and any unmet demand being spread thinly across the city. However, halls at present are operating at high levels of utilised capacity which will likely be exacerbated further if the closure of the Wensum Lodge facility is factored into the outputs. Some facilities are already operating at a theoretical figure of 100% capacity and therefore would not be able to accept any additional displaced demand.

There is not a strong case for additional sports hall facility provision in Norwich at the present time, but there is stronger evidence for not losing any existing facilities as this is likely to result in additional strain on existing facilities and potentially increased levels of unmet demand.

9. March 2011 update

Below is the summary table for outputs generated following a revised national run dated March 2011 (available September 2011). For Norwich this excluded two facilities included within the January 2011 run – the Wensum Lodge facility and a small ancillary hall at the Open Academy.

Table 1 - Supply	Norwich
Number of halls	12
Number of hall sites	9
Supply of total hall space in courts	55
Supply of publicly available hall space in courts (scaled with hrs avail in pp)	47.2
Supply of total hall space in VPWPP	9558
Courts per 10,000	3.78

Table 2 - Demand	Norwich
Population	145601
Visits demanded –vpwpp	7300
Equivalent in courts – with comfort factor included	45.06
% of population without access to a car	27.1

Table 3 - Supply/Demand Balance	Norwich
Supply - Hall provision (courts) scaled to take account of hours available for community use	47.2
Demand - Hall provision (courts) taking into account a 'comfort' factor	45.06
Supply / Demand balance	2.14

Table 4 - Satisfied Demand	Norwich
Total number of visits which are met	6601
% of total demand satisfied	90.4
% of demand satisfied who travelled by car	66.3
% of demand satisfied who travelled by foot	19.8
% of demand satisfied who travelled by public transport	13.9
Demand Retained	4976
Demand Retained -as a % of Satisfied Demand	75.4
Demand Exported	1625
Demand Exported -as a % of Satisfied Demand	24.6

Table 5 - Unmet Demand	Norwich
Total number of visits in the peak, not currently being met	700
Unmet demand as a % of total demand	9.6
Equivalent in Courts - with comfort factor	4.31
% of Unmet Demand due to ;	
Lack of Capacity -	15.6
Outside Catchment -	84.4
Outside Catchment;	84.4
% Unmet demand who do not have access to a car	81.3
% of Unmet demand who have access to a car	3.1
Lack of Capacity;	15.6
% Unmet demand who do not have access to a car	14.7
% of Unmet demand who have access to a car	0.9

Table 6 - Used Capacity	Norwich
Total number of visits used of current capacity	6984
% of overall capacity of halls used	73.1
% of visits made to halls by walkers	17.5
% of visits made to halls by road	82.5
Visits Imported;	
Number of visits imported	2008
As a % of used capacity	28.8
Visits Retained:	
Number of Visits retained	4976
As a % of used capacity	71.2

Table 7 - Relative Share	Norwich
Score - with 100 = national share	73
+/- from National share	-27

The main changes to the outputs from the model following the removal of the Wensum Lodge facility from the supply are as follows:

- Overall supply is reduced to 12 halls on 9 sites, equivalent to 55 courts, or 47.2 courts when scaled down to take account of public availability during peak hours
- This has the effect of changing the supply/demand balance by reducing the notional 'over-supply' of courts to only +2.14 courts
- Satisfied demand falls slightly from 91.2% of all demand generated to 90.4%, though this can only be achieved through an increase in demand satisfied by facilities outside the Norwich City area of 24.6% of total demand, compared to 19.2% when Wensum Lodge was included within the assessment.
- Unmet demand, when expressed as an equivalent in courts, rises from 3.95 courts to 4.31 courts.
- Utilised capacity of halls rises from 71.1% to 73.1%
- Relative share falls from 80 (20% below national figure) to 73 (27% below national figure).

Appendix 1 – Halls Included

Site	Dim.	Cts	Year Built	Refurb	Wtg	Capacity VPWPP	Utilised C'pacity (Jan 2011)	Utilised C'pacity (Mar 2011)
City of Norwich School	33m x 17m	4	1970		31%	1020	39%	45%
City of Norwich School	18m x 10m	0						
Norwich HSG	33m x 18m	4	2000		48%	710	75%	88%
Norwich School	33m x 17m	4	2001		48%	500	100%	100%
Notre Dame HS	33m x 17m	4	1984	2004	47%	780	82%	100%
Notre Dame HS	18m x 10m	1						
Open Academy	33m x 17m	4	1995		46%	1,170	95%	100%
Open Academy	18m x 10m	1						
Recreation Road Sports Centre	30m x 18m	1	2006		99%	608	100%	100%
Sewell Park College	594m ²	4	1996	2007	98%	780	100%	100%
UEA Sportspark	54m x 34m	12	2000		48%	4050	49%	53%
UEA Sportspark	40m x 32m	8	2009					
Town Close House School	33m x 18m	4	2009		50%	660	81%	98%
Wensum Lodge Sports Hall and Squash Club	810m ²	5	1975		60%	950	94%	N/A

Halls Excluded

The audit and assessment excludes facilities that are deemed to be either for private use, too small or there is a lack of information, particularly relating to hours of use. The following facilities were deemed to fall under one or more of these categories and therefore excluded from the modelling:

<i>Name of Facility</i>	<i>Reason for Exclusion</i>
Angel Road Junior School	Too small
City Academy	Too small/currently closed
Hewett School	Too small
YMCA Norwich	Private Use

Appendix 2 FPM Background Information - Model description, Inclusion Criteria and Model Parameters

Included within this appendix are the following:

- A. Model description
- B. Facility Inclusion Criteria
- C. Model Parameters

A. Model Description

Background

The Facilities Planning Model (FPM) is a computer-based supply/demand model, which has been developed by Edinburgh University in conjunction with sportscotland and Sport England since the 1980s. The model is a tool to help to assess the strategic provision of community sports facilities in an area. It is currently applicable for use in assessing the provision of sports halls, swimming pools, indoor bowls centres and artificial grass pitches.

Use of FPM

Sport England uses the FPM as one of its principal tools in helping to assess the strategic need for certain community sports facilities. The FPM has been developed as a means of:

- assessing requirements for different types of community sports facilities on a local, regional or national scale;
- helping local authorities to determine an adequate level of sports facility provision to meet their local needs;
- helping to identify strategic gaps in the provision of sports facilities; and
- comparing alternative options for planned provision, taking account of changes in demand and supply. This includes testing the impact of opening, relocating and closing facilities, and the likely impact of population changes on the needs for sports facilities.

Its current use is limited to those sports facility types for which Sport England holds substantial demand data, i.e. swimming pools, sports halls, indoor bowls and artificial grass pitches.

The FPM has been used in the assessment of Lottery funding bids for community facilities, and as a principal planning tool to assist local authorities in planning for the provision of community sports facilities. For example, the FPM was used to



help assess the impact of a 50m swimming pool development in the London Borough of Hillingdon. The Council invested £22 million in the sports and leisure complex around this pool and received funding of £2,025,000 from the London Development Agency and £1,500,000 from Sport England¹.

How the model works

In its simplest form, the model seeks to assess whether the capacity of existing facilities for a particular sport is capable of meeting local demand for that sport, taking into account how far people are prepared to travel to such a facility.

In order to do this, the model compares the number of facilities (supply) within an area, against the demand for that facility (demand) that the local population will produce, similar to other social gravity models.

To do this, the FPM works by converting both demand (in terms of people), and supply (facilities), into a single comparable unit. This unit is 'visits per week in the peak period' (VPWPP). Once converted, demand and supply can be compared.

The FPM uses a set of parameters to define how facilities are used and by whom. These parameters are primarily derived from a combination of data including actual user surveys from a range of sites across the country in areas of good supply, together with participation survey data. These surveys provide core information on the profile of users, such as, the age and gender of users, how often they visit, the distance travelled, duration of stay, and on the facilities themselves, such as, programming, peak times of use, and capacity of facilities.

This survey information is combined with other sources of data to provide a set of model parameters for each facility type. The original core user data for halls and pools comes from the National Halls and Pools survey undertaken in 1996. This data formed the basis for the National Benchmarking Service (NBS). For AGP's, the core data used comes from the user survey of AGP's carried out in 2005/6 jointly with sportscotland.

User survey data from the NBS and other appropriate sources are used to update the models parameters on a regular basis. The parameters are set out at the end of the document, and the range of the main source data used by the model includes;

- National Halls & Pools survey data –Sport England
- Benchmarking Service User Survey data –Sport England
- UK 2000 Time Use Survey - ONS
- General Household Survey - ONS
- Scottish Omnibus Surveys – Sport Scotland
- Active People Survey - Sport England
- STP User Survey - Sport England & sportscotland
- Football participation - The FA
- Young People & Sport in England – Sport England
- Hockey Fixture data - Fixtures Live

¹ Award made in 2007/08 year.

Calculating Demand

This is calculated by applying the user information from the parameters, as referred to above, to the population². This produces the number of visits for that facility that will be demanded by the population. Depending on the age and gender make up of the population, this will affect the number of visits an area will generate. In order to reflect the different population make up of the country, the FPM calculates demand based on the smallest census groupings. These are Output Areas (OA)³. The use of OA's in the calculation of demand ensures that the FPM is able to reflect and portray differences in demand in areas at the most sensitive level based on available census information. Each OA used is given a demand value in VPWPP by the FPM.

Calculating Supply Capacity

A facility's capacity varies depending on its size (i.e. size of pool, hall, pitch number), and how many hours the facility is available for use by the community. The FPM calculates a facility's capacity by applying each of the capacity factors taken from the model parameters, such as the assumptions made as to how many 'visits' can be accommodated by the particular facility at any one time. Each facility is then given a capacity figure in VPWPP. (See parameters in Section C)

Based on travel time information⁴ taken from the user survey, the FPM then calculates how much demand would be met by the particular facility having regard to its capacity and how much demand is within the facility's catchment. The FPM includes an important feature of spatial interaction. This feature takes account of the location and capacity of all the facilities, having regard to their location and the size of demand and assesses whether the facilities are in the right place to meet the demand.

It is important to note that the FPM does not simply add up the total demand within an area, and compare that to the total supply within the same area. This approach would not take account of the spatial aspect of supply against demand in a particular area. For example, if an area had a total demand for 5 facilities, and there were currently 6 facilities within the area, it would be too simplistic to conclude that there was an over supply of 1 facility, as this approach would not take account of whether the 5 facilities are in the correct location for local people to use them within that area. It might be that all the facilities were in one part of the borough, leaving other areas under provided. An assessment of this kind would not reflect the true picture of provision. The FPM is able to assess supply and demand within an area based on the needs of the population within that area.

² For example, it is estimated that 10.45% of 16-24 year old males will demand to use a AGP, 1.69 times a week. This calculation is done separately for the 12 age/gender groupings.

³ Census Output Areas (OA) are the smallest grouping of census population data, and provides the population information on which the FPM's demand parameters are applied. A demand figure can then be calculated for each OA based on the population profile. There are over 175,400 OA's across England & Wales. An OA has a target value of 125 households (300 people) per OA.

⁴ To reflect the fact that as distance to a facility increases, fewer visits are made, the FPM uses a travel time distance decay curve, where the majority of users travel up to 20 minutes. The FPM also takes account of the road network when calculating travel times. Car ownership levels, taken from Census data, are also taken into account when calculating how people will travel to facilities.

In making calculations as to supply and demand, visits made to sports facilities are not artificially restricted or calculated by reference to administrative boundaries, such as local authority areas. Users are generally expected to use their closest facility. The FPM reflects this through analysing the location of demand against the location of facilities, allowing for cross boundary movement of visits. For example, if a facility is on the boundary of a local authority, users will generally be expected to come from the population living close to the facility, but who may be in an adjoining authority

Calculating capacity of Sports Hall – Hall Space in Courts (HSC)

The capacity of sports halls is calculated in the same way as described above with each sports hall site having a capacity in VPWPP. In order for this capacity to be meaningful, these visits are converted into the equivalent of main hall courts, and referred to as 'Hall Space in Courts' (HSC). This "court" figure is often mistakenly read as being the same as the number of 'marked courts' at the sports halls that are in the Active Places data, but it is not the same. There will usually be a difference between this figure and the number of 'marked courts' that is in Active Places.

The reason for this, is that the HSC is the 'court' equivalent of the all the main and ancillary halls capacities, this is calculated based on hall size (area), and whether it's the main hall, or a secondary (ancillary) hall. This gives a more accurate reflection of the overall capacity of the halls than simply using the 'marked court' figure. This is due to two reasons:

1. In calculating capacity of halls, the model uses a different 'At-One-Time' (AOT) parameter for main halls and for ancillary halls. Ancillary halls have a great AOT capacity than main halls. See below.
2. Marked Courts can sometimes not properly reflect the size of the actual main hall. For example, a hall may be marked out with 4 courts, when it has space for 5 courts. As the model uses the 'courts' as a unit of size, it is important that the hall's capacity is included as a 5 'court unit' rather than a 4 'court unit'

The model calculates the capacity of the sports hall as 'visits per week in the peak period' (VPWPP); it then uses this unit of capacity to compare with the demand, which is also calculated as VPWPP. It is often difficult to visualise how much hall space is when expressed as vpwpp. To make things more meaningful this capacity in VPWPP is converted back into 'main hall court equivalents', and is called in the output table 'Hall Space in Courts'.

Facility Attractiveness – for halls and pools only

Not all facilities are the same and users will find certain facilities more attractive to use than others. The model attempts to reflect this by introducing an attractiveness weighting factor, which effects the way visits are distributed between facilities. Attractiveness however, is very subjective. Currently weightings are only used for hall and pool modelling, with a similar approach for AGP's is being developed.

Attractiveness weightings are based on the following:

1. Age/refurbishment weighting – pools & halls - the older a facility is, the less attractive it will be to users. It is recognised that this is a general assumption and that there may be examples where older facilities are more attractive than newly built ones due to excellent local management, programming and sports development. Additionally, the date of any significant refurbishment is also included within the weighting factor; however, the attractiveness is set lower than a new build of the same year. It is assumed that a refurbishment that is older than 20 years will have a minimal impact on the facilities attractiveness. The information on year built/refurbished is taken from Active Places. A graduated curve is used to allocate the attractiveness weighting by year. This curve levels off at around 1920 with a 20% weighting. The refurbishment weighting is slightly lower than the new built year equivalent.
2. Management & ownership weighting – halls only - due to the large number of halls being provided by the education sector, an assumption is made that in general, these halls will not provide as balanced a program than halls run by LA's, trusts, etc, with school halls more likely to be used by teams and groups through block booking. A less balanced programme is assumed to be less attractive to a general, pay & play user, than a standard local authority leisure centre sports hall, with a wider range of activities on offer.

To reflect this, two weightings curves are used for education and non-education halls, a high weighted curve, and a lower weighted curve;

- High weighted curve - includes Non education management - better balanced programme, more attractive.
 - Lower weighted curve - includes Educational owned & managed halls, less attractive.
3. Commercial facilities – halls and pools - whilst there are relatively few sports halls provided by the commercial sector, an additional weighing factor is incorporated within the model to reflect the cost element often associated with commercial facilities. For each population output area the Indices of Multiple Deprivation (IMD) score is used to limit whether people will use commercial facilities. The assumption is that the higher the IMD score (less affluence) the less likely the population of the OA would choose to go to a commercial facility.

Comfort Factor

As part of the modelling process, each facility is given a maximum number of visits it can accommodate, based on its size, the number of hours it's available for community use and the 'at one time capacity' figure (pools =1user /6m² , halls = 5 users /court). This gives each facility a "theoretical capacity".

If the facilities were full to their theoretical capacity then there would simply not be the space to undertake the activity comfortably. In addition, there is a need to take account of a range of activities taking place which have different numbers of users, for example, aqua aerobics will have significantly more participants, than lane swimming sessions. Additionally, there may be times and sessions that, whilst being within the peak period, are less busy and so will have fewer users.

To account of these factors the notion of a 'comfort factor' is applied within the model. For swimming pools, 70% and for sports halls 80% of its theoretical capacity is considered as being the limit where the facility starts to become uncomfortably busy. (Currently, the comfort factor is NOT applied to AGP's due to the fact they are predominantly used by teams, which have a set number of players and so the notion of having 'less busy' pitch is not applicable.)

The comfort factor is used in two ways;

1. Utilised Capacity - How well used is a facility? 'Utilised capacity' figures for facilities are often seen as being very low, 50-60%, however, this needs to be put into context with 70-80% comfort factor levels for pools and halls. The closer utilised capacity gets to the comfort factor level, the busier the facilities are becoming. You should not aim to have facilities operating at 100% of their theoretical capacity, as this would mean that every session throughout the peak period would be being used to its maximum capacity. This would be both unrealistic in operational terms and unattractive to users.
2. Adequately meeting Unmet Demand – the comfort factor is also used to increase the amount of facilities that are needed to comfortably meet the unmet demand. If this comfort factor is not added, then any facilities provided will be operating at its maximum theoretical capacity, which is not desirable as a set out above.

Utilised Capacity (used capacity)

Following on from Comfort Factor section, here is more guidance on Utilised Capacity.

Utilised capacity refers to how much of facilities theoretical capacity is being used. This can, at first, appear to be unrealistically low, with area figures being in the 50-60% region. England figure for Feb 2008 Pools was only 57.6%.

Without any further explanation, it would appear that facilities are half empty. The key point is not to see a facilities theoretical maximum capacity (100%) as being an optimum position. This, in practise, would mean that a facility would need to be completely full every hour it was open in the peak period. This would be both unrealistic from an operational perspective and undesirable from a users perspective, as the facility would completely full.

For examples:

A 25m, 4 lane pool has Theoretical capacity of 2260 per week, during 52 hour peak period.

	4-5pm	5-6pm	6-7pm	7-8pm	8-9pm	9-10pm	Total Visits for the evening
Theoretical max capacity	44	44	44	44	44	44	264
Actual Usage	8	30	35	50	15	5	143

Usage of a pool will vary throughout the evening, with some sessions being busier than others though programming, such as, an aqua-aerobics session between 7-8pm, lane swimming between 8-9pm. Other sessions will be quieter, such as between 9-10pm. This pattern of use would give a total of 143 swims taking place. However, the pool's maximum capacity is 264 visits throughout the evening. In this instance the pools utilised capacity for the evening would be 54%.

As a guide, 70% utilised capacity is used to indicate that pools are becoming busy, and 80% for sports halls.

Travel times Catchments

The model use travel times to define facility catchments. These travel times have been derived through national survey work, and so are based on actual travel patterns of users. With the exception of London where DoT travel speeds are used for Inner & Outer London Boroughs, these travel times are used across the country and so do not pick up on any regional differences, of example, longer travel times for remoter rural communities.

The model includes three different modes of travel, by car, public transport & walking. Car ownership levels are also taken into account, in areas of low car ownership, the model reduces the number of visits made by car, and increases those made on foot.

Overall, surveys have shown that the majority of visits made to swimming pools, sports halls and AGP's are made by car, with a significant minority of visits to pools and sports halls being made on foot.

Facility	Car	Walking	Public transport
Swimming Pool	70.0%	18.8%	11.2%
Sports Hall	74.6%	15.5%	10.0%
AGP			
Combined	89.0%	9.0%	2.0%
Football	87.1%	10.7%	2.1%
Hockey	95.4%	2.6%	1.9%

The model includes a distance decay function; where the further a user is from a facility, the less likely they will travel. The survey data show the % of visits made within each of the travel times, which shows that almost 90% of all visits, both car borne or walking, are made within 20 minutes. Hence, 20 minutes can be used as a rule of thumb for catchments for sports halls and pools.

	Sport halls		Swimming Pools	
Minutes	Car	Walk	Car	Walk
0-10	57%	55%	58%	56%
10-20	33%	30%	34%	30%
20 -40	9%	12%	7%	11%

NOTE: These are approximate figures, and should only used as a guide.

B. Inclusion Criteria used within analysis

Sports Halls

The following inclusion criteria were used for this analysis;

- Include all Operational Sports Halls available for community use i.e. pay and play, membership, Sports Club/Community Association
- Exclude all Halls not available for community use i.e. private use
- Exclude all Halls where the main hall is less than 3 Courts in size
- Where opening times are missing, availability has been included based on similar facility types.
- Where the year built is missing assume date 1975⁵.

Facilities in Wales and the Scottish Borders included, as supplied by sportscotland and Sports Council for Wales. All facilities weighted 75% due to no data on age of facilities.

C. Model Parameters used in the Analysis

Halls parameters

At one Time Capacity	20 users per 4-court hall, 8 per 144 sq m of ancillary hall.					
Catchments	Car: 15 minutes Walking: 1.6 km Public transport: 15 minutes at about half the speed of a car NOTE: Catchments use a distance decay function. Times and distances above are indicative.					
Duration	60 minutes					
Participation -% of age band		0-15	16-24	25-34	35-44	45-59
	M	9.55	15.04	14.96	11.08	5.68
	F	6.03	9.31	11.66	9.40	5.40
Frequency - VPWPP						
	M	0.85	0.88	0.88	0.90	0.92
	F	0.99	0.85	1.03	0.90	1.02
Peak Period	Weekday: 17:00 to 22:00 Saturday: 09:30 to 17:30 Sunday: 09:00 to 14:30, 17:00 to 19:30 Total: 40.5 hours					
Percentage of demand in Peak Period	60%					

⁵ Choosing a date in the mid '70s ensures that the facility is included, whilst not overestimating its impact within the run.