

Appendix 2a

Calculating the Needs Assessment Score and Overall Priority

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Calculating the Needs Assessment Score and Overall Priority

This document outlines the way in which the library needs assessment ranking and overall priority score was produced for the 11 static libraries in Southampton. The library needs assessment had two different components: “Use of library service” and “Demographic need”.

Unless otherwise specified, the library data for analysis was obtained from library records for the financial year 2013/14. All library users in this dataset were termed “active library users” as they had either borrowed an item or used a People’s network (PN) session at least once within the year 13/14. This represents a proportion of the total number of registered library users but it was decided that the analysis should focus on those who used the library service the most.

1.0 Needs Assessment Score

1.1 Calculating library catchment

Firstly, for every active library user, the library which they used most often was calculated. This was the library that they borrowed the highest number of items and used the highest number of PN sessions.

Lower Super Output Areas (LSOA) were used as building blocks to form library catchments. Southampton is divided into 148 LSOAs, which were originally created for the output of census data and usually have a population in the range of 1000-3000. For every LSOA, the most commonly used library by the largest proportion of active library user population living within that LSOA was calculated. Each LSOA then became part of the library catchment which was most commonly used within it (See Figure 1).

Millbrook library had no LSOA in the city where it was the most commonly used library by the active library user population. Therefore, Millbrook had no catchment as the majority of active library users in the area surrounding Millbrook preferentially travelled to Shirley Library.

Library catchments

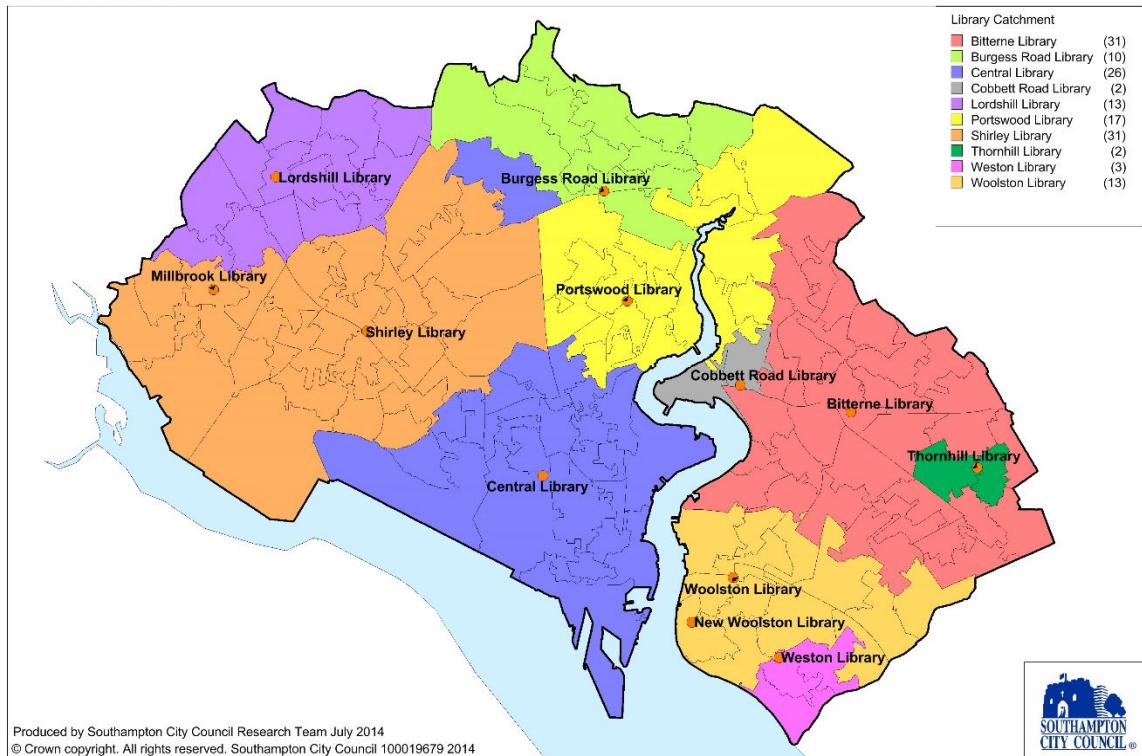


Figure 1 – Map of the catchment areas of the libraries decided by which library is the most commonly used library in each LSOA. The LSOA boundaries are outlined in grey.

1.2 Use of Library Service

The “use of library service” component consisted of eight different criteria which are described below.

1.2.1 Number of registered library users

This was the total number of active library users that had registered with each library.

1.2.2 The percentage of the population within each library catchment that are active library users.

The total population for each library catchment was obtained using LSOA level data from the 2011 census data. All of the active library users in the year 13/14 were totalled in each library catchment and then the percentage of active users as a proportion of the total population was calculated. The equation for each library catchment was:

Percentage of population that are active users

$$= \frac{\text{Total number of active library users}}{\text{Total population}} \times 100$$

1.2.3 The number of visits made to each library

This was the total number of people recorded by door sensors as visiting each library throughout the year 13/14 or based on a full manual count at smaller libraries over the same period.

1.2.4 The average number of items borrowed every hour

The total number of hours that the libraries were open in 13/14 were calculated for each library which included the changing opening hours in May 2013. The total number of items borrowed at each library throughout the same period was also required. The following equation was then used to calculate the average at each library:

Average number of items borrowed per hour open.

$$= \frac{\textit{Total number of items borrowed in } \frac{13}{14}}{\textit{Total number of hours library open in } \frac{13}{14}}$$

1.2.5 People's Network (PN) utilisation

The total time available to use the computers was calculated for each library throughout the year 13/14 along with the total time that was used for the same time period. The percentage of computer time that was utilised was then calculated using the following equation:

$$\textit{PN utilisation (\%)} = \frac{\textit{Total amount of time used for PN sessions}}{\textit{Total amount of PN time available}} \times 100$$

Care should be taken when interpreting the utilisation percentage for both Millbrook and Thornhill as computers are still available to use outside of normal library opening hours.

1.2.6 Number of regular library users at each library

A regular library user was defined as a person who had visited a library on 6 or more occasions throughout the year 13/14 and had borrowed an item or used a PN session. For each library the total number of people that had been regular users to that library in the year 13/14 were calculated.

1.2.7 Cost per visit

The cost per visit was calculated by using the total budget for each library in the year 13/14 and the number of visitors recorded by the door sensors or full count in the same year in the following equation for each library:

$$\text{Cost per visit (£)} = \frac{\text{Total budget for each library (£)}}{\text{Total number of visits}}$$

1.2.8 Cost per item borrowed or PN session

The cost per item borrowed or PN session was calculated for each library by using the total budget for each library in the year 13/14 and the total number of items borrowed and PN sessions at that library throughout the same year. The following equation was used for each library:

Cost per item borrowed or PN session

$$= \frac{\text{Total budget for each library (£)}}{\text{Total number of items borrowed and PN sessions}}$$

1.3 Demographic Need

The demographic need component consisted of 6 criteria which are outlined below.

1.3.1 The proportion of primary school pupils deemed “low performers” within the library catchment

For each catchment the total number of pupils deemed “low performers” were totalled from early years foundation stage (EYFS), key stage 1 (KS1) and key stage 2 (KS2) school years. The term “low performer” was given to children achieving less than a score of 1 in EYFS, less than level 2 in KS1, and less than level 4 for KS2. The numbers of primary school children aged 3-11 was collected from the 2011 Census data for each library catchment and then the following equation used for each library catchment.

Percentage of primary school pupils low performers”

$$= \frac{\text{Total number of low performers \ primary pupils}}{\text{Total number of children aged 3 – 11}} \times 100$$

1.3.2 The proportion of Black or Minority Ethnic (BME) residents within the library catchment

The total numbers of BME residents were collected from 2011 Census data. BME residents were defined as all people which did not describe themselves as White British. The percentage was calculated from the total number of people living within the catchment using the following equation for each library catchment:

$$\text{Percentage BME residents} = \frac{\text{Total number BME residents}}{\text{Total Population}} \times 100$$

1.3.3 The proportion of people receiving adult social care within the library catchment

The total number of people receiving adult social care within each library catchment was calculated. Then using the total adult population from the 2011 census the percentage was calculated using the following equation for each library catchment:

Percentage of people receiving adult social care

$$= \frac{\textit{Total number people receiving adult social care}}{\textit{Total adult population}} \times 100$$

1.3.4 The proportion of children aged 0-11 within the library catchment

Both the total number of children aged 0-11 and the total population for each catchment was collected from 2011 Census data. The percentage of the population which were aged 0-11 was then calculated for each library catchment using the following equation:

$$\textit{Percentage aged 0 – 11} = \frac{\textit{Total number children aged 0 – 11}}{\textit{Total population}} \times 100$$

1.3.5 The average Index of Multiple Deprivation (IMD) overall score

Each LSOA was assigned a score for IMD in 2010. Rather than just averaging the score across the entire catchment for each library, each LSOA score was weighted proportionally to the population of that LSOA to create a more representative average score. The following equation was then used for each catchment:

$$\textit{Average IMD score} = \frac{\textit{Total IMD score}}{\textit{Total population of catchment}}$$

1.3.6 The average IMD education score

The data was collected and processed in the same way as for the overall score but for the IMD “education, skills and training” scores for each LSOA instead.

1.4 Library needs assessment score

For every criteria in both the “use of libraries” component and the “demographic need” component, the libraries were ranked from 1-11 using the conditions described for each criteria in the tables.

The rankings for each library in the two components were totalled. This produced one overall score for “use of libraries” and one for “demographic need”. These scores themselves were subsequently ranked. For “use of libraries” a score of 1 was given to the highest scoring (highest performing) library up to a ranking of 11 for the lowest scoring (lowest performing) library.

For “demographic need” a score of 1 was given the highest scoring (highest need) library up to a ranking of 11 for the lowest scoring (lowest need) library.

The overall needs assessment score was calculated for each library using the two rankings from the two components. The following equation was used where the “use of libraries” and “demographic need” were given different weightings.

Needs Assessment Score

= (Use of libraries x weighting) + (demographic need x weighting)

The needs assessment score itself was then ranked to give rank of 1 for the highest performing/ highest need catchment library to a ranking 11 for the lowest performing/lowest need catchment library. For an example of the process to calculate the needs assessment score see the scenario outlined below.

<u>Example of needs assessment calculation</u>			
	Use of library service ranking	Demographic need ranking	
Library A	1	2	
Library B	2	1	
Library C	3	4	
Library D	4	3	
Use of libraries weighting = 0.33 Demographic need weighting = 0.67			
	Calculation of needs assessment score	Needs assessment score	Needs assessment ranking
Library A	= (1 X 0.33) + (2 X 0.67)	1.67	2
Library B	= (2 X 0.33) + (1 X 0.67)	1.33	1
Library C	= (3 X 0.33) + (4 X 0.67)	3.67	4
Library D	= (4 X 0.33) + (3 X 0.67)	3.33	3
	Needs assessment ranking	Best performing / highest need catchment ↓ Lowest performing/ lowest need catchment	
Library B	1		
Library A	2		
Library C	4		

2.0 Overall Priority

The equation to produce the overall score for each library to establish a priority ranking was:

Priority Score = Number of active library users which use that library the most often x

The number of active library users which use each library the most often:

This was chosen to represent the number of people which would be affected and have to move should that library close.

The Needs Assessment score:

This was the score calculated from the previous section for each library which takes into account each library performance and the demographic need of the library catchment.

Proximity (miles) to next nearest library:

This was the distance between libraries using bus transport and the walking distance required to and from the bus stops to the libraries. The distances were calculated by the transport department. This was to represent the additional distance library users would have to travel to visit a library should that library close.

After the priority score for each library was calculated, they were then ranked from 1-10 with 1 being the library with the highest score and highest priority and 10 being the library with the lowest score and lowest priority. Millbrook library could not be included within the priority calculation as it did not have a needs assessment score as a result of having no library catchment. So that no library users were left out of the calculation, the users which used Millbrook library more than any other library were transferred to different libraries before the priority scores were calculated. The users which used more than one library were transferred to their second most used library and those users which only used Millbrook were transferred to the next closest library; Shirley.

2.1 Removing Libraries from the calculation

The lowest library was then removed from the list and its users and needs assessment score transferred by using the following equation:

Library 1 – Library being removed from the list
Library 2 – Library where users will be moved

Library 2 revised score
= (Library2 proximity to next nearest library X ((Library1 needs score X Library 1 users) + (Library 2 needs score X Library 2 users)))

Example

	Needs score	Users	Proximity to next library (miles)	Original Priority score
Library 1	1	300	1	300
Library 2	2	600	3	3600

Revised Library 2 score = 3 X ((1 X 300) + (2 X 600))
= 4500

Libraries were continually removed from the bottom of the rankings after new priority scores were calculated to investigate the changing priorities of libraries left at each stage. The key assumption within the equation was that all users were transferred to the next nearest library. Another point to remember is that any libraries where their next nearest library was the one removed, would then use the distance to their second closest library.

Table 1 - Methodology Summary

Criteria for “Use of library services”	Highest Performing (Rank of 11)	Lowest Performing (Rank of 1)
1) Number of registered library users.	The library with the highest number of active library users registered.	The library with the lowest number of active library users registered.
2) The percentage of the population within each library catchment that are active library users.	The library with the highest percentage of its catchment population as active library users.	The library with the lowest percentage of its catchment population as active library users.
3) The total number of visitors to each library.	The library with the highest number of visitors recorded in 13/14.	The library with the fewest visitors in 13/14.
4) The average number of items borrowed every hour.	The library with the highest average number of items borrowed every hour.	The library with the lowest average number of items borrowed every hour.
5) People’s Network (PN) utilisation	The library with the highest percentage PN utilisation.	The library with the lowest percentage PN utilisation.
6) Number of regular library users at each library	The library with the highest number of regular library users.	The library with the lowest number of regular library users
7) Cost per visit	The library with the lowest cost (£) per visit.	The library with the highest cost (£) per visit.
8) Cost per item borrowed or PN session	The library with the lowest cost (£) per item borrowed or PN session.	The library with the highest cost (£) per item borrowed or PN session.

Criteria for “Demographic need”	Highest Need (Rank of 11)	Lowest Need (Rank of 1)
1) The proportion of primary school pupils deemed “low performers” within the library catchment.	The library catchment with the highest percentage of low school performers.	The library catchment with the lowest percentage of low school performers.
2) The proportion of Black or Minority Ethnic (BME) residents within the library catchment	The library catchment with the highest percentage of BME residents.	The library catchment with the lowest percentage of BME residents.
3) The proportion of people receiving adult social care within the library catchment	The library catchment with the highest percentage of residents receiving adult social care.	The library catchment with the lowest percentage of residents receiving adult social care.
4) The proportion of children aged 0-11 within the library catchment	The library catchment with the highest percentage of children aged 0-11.	The library catchment with the lowest percentage of children aged 0-11.
5) The average Index of Multiple Deprivation (IMD) overall score	The library catchment with the highest IMD overall score.	The library catchment with the lowest IMD overall score.
6) The average IMD education score	The library catchment with the highest IMD education score.	The library catchment with the lowest IMD education score.

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Southampton City Council like to acknowledge the work of Sheffield City Council in developing a methodology for a library needs assessment.

The methodology set out a clear statistical model where both library performance and the demographic need of the surrounding areas are taken into account to show relative performance and need for a library. It also set out the impact on each library if a service point is removed.