

# Flintshire HRC support: Phase 1



Phase 1: An independent options appraisal for HRC network reconfiguration

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**Front cover photography:** Sandycroft HRC

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# Executive summary

The WRAP Collaborative Change Programme (CCP) support Welsh Authorities to achieve the targets set out in the Welsh Government waste strategy. Resource Futures has been contracted under the CCP to support Flintshire County Council (FCC) to review the household waste recycling centre (HRC) network and provide an independent appraisal of the most efficient network configuration and review the performance of the sites.

The work is split into two phases: Phase 1 included conducting a spatial and drive time analysis and HRC network options appraisal to identify the most efficient delivery option. Phase 2, involves a performance assessment of the HRCs that will remain within the network from 1 November 2016. This report is focussed on Phase 1: An independent options appraisal for HRC network reconfiguration.

FCC has a large number of HRCs for the size of the county and the population. Reducing the number of sites will thereby reduce operating costs, make better use of the remaining facilities by improving performance and therefore make the network more cost effective.

Five scenarios have been considered in the spatial analysis and options appraisal. The factors considered by FCC and Resource Futures when developing the scenarios are:

- land ownership/designation
- type of facility: historic amenity site or purpose built to maximise recycling
- size of the site and capacity to accept more waste
- current throughput, and
- current recycling rate.

The scenarios are:

1. Scenario 1: Current provision of six sites
2. Scenario 2: Greenfield, Sandycroft, Buckley and Nercwys, Mold HRCs
3. Scenario 3: Greenfield, Sandycroft and Buckley HRCs
4. Scenario 4: Greenfield, Sandycroft and Nercwys, Mold HRCs
5. Scenario 5: Greenfield and Nercwys, Mold HRCs only.

Based on the results of the analysis, Scenario 4 would have been identified as being the most appropriate. Phase 2 of this study will involve conducting performance reviews of the sites, this will help to highlight the changes that are needed at specific sites to ensure they can accommodate the additional tonnage and number of site users and that the maximum amount of recycling and reuse is diverted from the waste stream.

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## 1.0 Introduction

The WRAP Collaborative Change Programme (CCP) is funded by the Welsh Government to support Welsh Authorities to achieve the targets set out in its waste strategy. Resource Futures has been contracted under the CCP to provide technical expertise to review household recycling centres (HRC) and Waste Transfer Stations (WTS). Support is provided to Flintshire County Council (FCC) to review the HRC network and provide an independent appraisal of the most efficient HRC network configuration and review the performance of the sites. This report is focussed on Phase 1: An independent options appraisal for HRC network reconfiguration.

In 2012, the average population per HRC was calculated for Wales. The result was 43,000 residents served per site. In Flintshire, the figure is currently 25,418 based on a population of 152,506<sup>1</sup>. Guidance produced by Resource Futures for the Welsh Local Government Association suggested as a guide sites should serve approximately 50,000 residents. This would suggest that with a population of just over 150,000 residents, three sites would be sufficient.

As with all local authorities budgetary constraints and increasing statutory recycling targets are encouraging departments to look at all their services, and many waste disposal authorities have considered or have already rationalised and improved the facilities offered at their network of HRC's. FCC is no different. If any changes are made, they will come into force on 1 November 2016, in order to make savings from financial year 2016/17. This independent assessment involves spatial analysis and an options appraisal to identify the most effective HRC network in Flintshire, i.e. a high level of provision, low travel times for the majority of residents and improved recycling performance.

However, the public expects even more from their services i.e. a wider range of materials recycled and reused, friendly and efficient staff, and a clean, modern, pleasant site. Therefore the sites that remain within the FCC HRC network need to be able to meet the expectations of the public as well as the operational requirements of the waste department.

## 2.0 Background

The table below considers the positive and negative aspects of each HRC in Flintshire.

	Positive aspects	Negative aspects
Buckley	<ul style="list-style-type: none"><li>• Central site</li><li>• Well known and used</li></ul>	<ul style="list-style-type: none"><li>• Small site, suffers congestion</li><li>• Surrounding land partially protected by SAC</li><li>• Low recycling rate due to lack of segregation when containers are full</li></ul>
Connah's Quay	<ul style="list-style-type: none"><li>• Near population</li></ul>	<ul style="list-style-type: none"><li>• Reduced opening hours</li><li>• Restricted access due to low level bridge</li><li>• Particularly suffers from theft and vandalism</li></ul>
Flint	<ul style="list-style-type: none"><li>• Near population</li></ul>	<ul style="list-style-type: none"><li>• Reduced opening hours</li><li>• Could not be redeveloped to accept more waste, due to location</li></ul>
Greenfield	<ul style="list-style-type: none"><li>• Large, purpose built site</li></ul>	<ul style="list-style-type: none"><li>• Potentially suffers cross border</li></ul>

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<sup>1</sup> Population from 2011 Census data.

	Positive aspects	Negative aspects
	<ul style="list-style-type: none"> <li>• High throughput but could accept considerably more</li> <li>• High recycling rate</li> </ul>	abuse from Denbighshire residents
Hope	Site already closed	
Nercwys, Mold	<ul style="list-style-type: none"> <li>• Long term lease</li> <li>• Large site, could be redeveloped within existing footprint - if required</li> </ul>	<ul style="list-style-type: none"> <li>• Rural location</li> </ul>
Sandycroft	<ul style="list-style-type: none"> <li>• Good size purpose built site</li> <li>• High recycling rate</li> <li>• Could accept more waste</li> </ul>	<ul style="list-style-type: none"> <li>• Potentially suffers cross border abuse from Cheshire residents</li> </ul>

### 3.0 Network reconfiguration

#### 3.1 FCC statutory duty

HRCs play a significant role in enhancing the recycling and waste management services that local authorities provide for the public. They accept large tonnages of waste and can achieve high recycling rates, providing a valuable service to local residents. However, financial pressures and the resources required to achieve ever-higher recycling rates are stretching ever decreasing local authority budgets. Managing an efficient and cost effective HRC network can contribute to financial savings.

HRCs are licensed under the Environmental Protection Act 1990. FCC has a statutory duty to provide these facilities. The legislation indicates that HRCs must be reasonably accessible and available at all reasonable times, for people resident in the area. There is no mention of the number of facilities needed.

National guidance<sup>2</sup> states there is no minimum acceptable level of provision. Suggested recommendations are:

- Maximum catchment radii of three miles in urban areas and seven miles in rural areas covering the great majority of residents.
- Maximum driving times to a site for the great majority of residents of 20 minutes in urban areas, and 30 minutes in rural areas; though preferably less than this by the order of 10 minutes in each case

#### 3.2 Justification for scenario selection

Greenfield and Sandycroft are relatively new sites, purpose built to provide an efficient and safe way for residents to dispose of waste. Greenfield is well used but has capacity to accept more waste and site users. Sandycroft is currently underutilised but is very high performing. Flint HRC is in close proximity to Greenfield and Connah's Quay is near Sandycroft. Flint and Connahs Quay have the lowest recycling rates.). Therefore, it would seem justified to encourage residents to use the larger sites at Greenfield and Sandycroft, which are more customer friendly and where more items can be segregated and higher recycling rates achieved (Sandycroft is the highest performing HRC in the county).

**Table 1** Flintshire HRCs

<sup>2</sup>

[http://www.wrap.org.uk/sites/files/wrap/2013%2003%2014%20INH0449\\_HRC\\_Guidance\\_Final%20LC%20RG%20comments%20\(2\).pdf](http://www.wrap.org.uk/sites/files/wrap/2013%2003%2014%20INH0449_HRC_Guidance_Final%20LC%20RG%20comments%20(2).pdf)

Site	Throughput (tonnes) <sup>3</sup>	Recycling Rate (%)
Buckley	6,797	68.8
Nercwys, Mold	5,103	75.1
Greenfield	6,322	77.9
Sandycroft	2,632	84.9
Hope (prior to closure)	477	51.5
Flint	1,680	60.7
Connah's Quay	2,048	55.9
<b>Total</b>	<b>25,059</b>	<b>72.6</b>

Buckley HRC is in the centre of the County with Nercwys, Mold to the south. Buckley is well used by residents (it has the highest total throughput of any site), but it has quite a low recycling rate, due to being a small site and lack of segregation when containers are full/ the site is busy. Nercwys, Mold is a large site which could be redeveloped if required. It is the third highest performing site (in terms of recycling rate) and receives the third highest total throughput.

Taking account of the guidance discussed above and the background information, a number of HRC network scenarios have been assessed. These scenarios are modelled to assess drive time for householders to access sites, spatial analysis and tonnage throughputs. The factors taken into account when developing the scenarios are:

- Land ownership/designation
- Historic amenity site or purpose built to maximise recycling
- Size of the site and capacity to accept more waste
- current throughput, and
- current recycling rate.

The five scenarios are:

1. Scenario 1: Current provision of six sites
2. Scenario 2: Greenfield, Sandycroft, Buckley and Nercwys, Mold HRCs
3. Scenario 3: Greenfield, Sandycroft and Buckley HRCs
4. Scenario 4: Greenfield, Sandycroft and Nercwys, Mold HRCs
5. Scenario 5: Greenfield and Nercwys, Mold HRCs

#### 4.0 Spatial analysis

The following spatial assessment section is based on accurate and current postcode data held by Flintshire County Council (FCC). The original data set (up to date in December 2015) comprised 4,067 postcode areas of which 3,887 (96%) had associated data on the number of households from the Office of National Statistics, equating to 63,821 households. Of all the postcodes, 23 were not included within the spatial assessment as they were not recognised by the GIS software. This equated to 218 households or 0.3% of the total number of households. In total 63,603 households were included in the analysis.

When plotted, six postcodes fell outside of the defined Flintshire boundary and were excluded. Using Mappoint software, the household and HRC location data were combined and a matrix of distances and driving times was produced. This formed the basis of the distance and driving time analysis, where driving times were calculated using the current

<sup>3</sup> Whole year (2015-16) estimate based on quarter 2 2015



road network and not 'as the crow flies' estimates. It doesn't however take account of short or long term roadworks.

Having closed Hope earlier in 2016, at present FCC operates six HRCs primarily located in the south and east of the authority and illustrated in Figure 1. Maps have been plotted to illustrate the existing service provision alongside additional maps showing the provision that would be offered in each of three different scenarios in which a smaller combination of sites were modelled, as follows:

1. Current provision
2. Greenfield, Sandycroft, Buckley and Nercwys, Mold HRCs
3. Greenfield, Sandycroft and Buckley HRCs
4. Greenfield, Sandycroft and Nercwys, Mold HRCs
5. Greenfield and Nercwys, Mold HRCs

**Figure 1** Location of current HRCs in Flintshire (Prior to Hope closure)

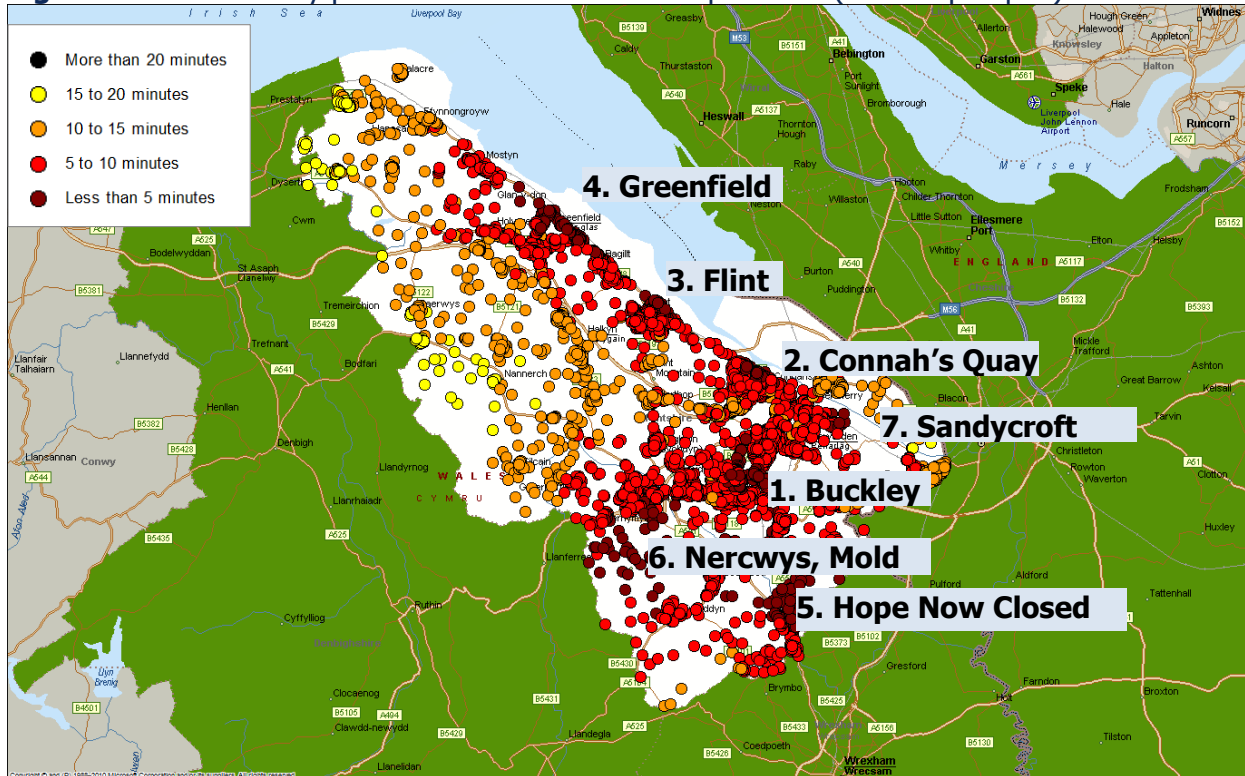




#### 4.1 Scenario 1 - Current provision

The following section gives the minimum driving times between households and the provision at the six sites in Flintshire, aggregated to postcode level for clarity. These figures show how travel times differ across the local authority. The density of the data points correlates broadly with household density and there are five time bands (see legend).

**Figure 2** Drive times by postcode under current HRC provision (With Hope open) Scenario 1



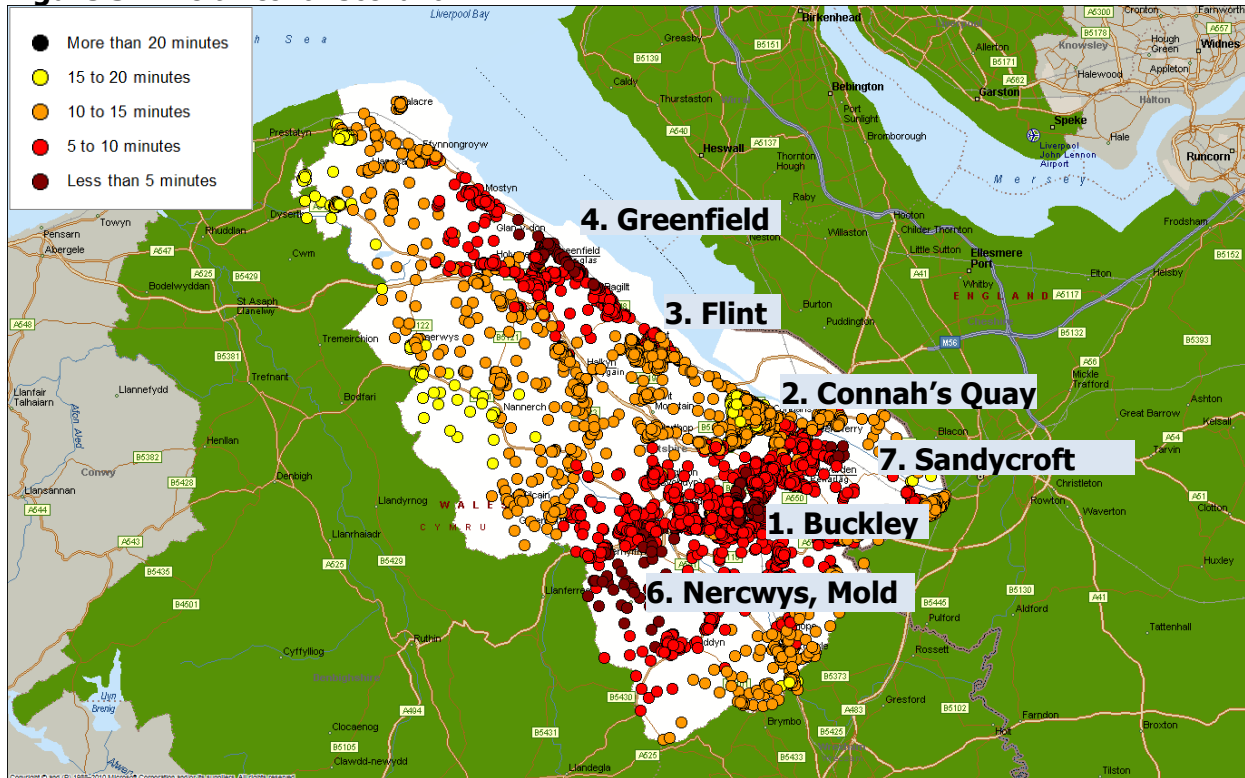
The provision offered by the current configuration is good; the majority of households (79.5%) are able to drive to an HRC in less than 10 minutes. Within 15 minutes 98.3% of the population can drive to the site and 100% of the population are able to drive to the site within 18 minutes.

The current configuration meets WRAP's recommendation on HRC provision which states that the great majority of residents, in good traffic conditions, should be able to drive to an HRC in less than 20 minutes. Referring to the **Figure 2**, households along the North East coast and to the South East are served well by the sites. A small number of households in the far North and West of the authority fall into the 15-20 minute driving time band but no households will have to travel for longer than 20 minutes to reach an HRC.

## 4.2 Scenario 2 - Greenfield, Sandycroft, Buckley and Nercwys, Mold HRCs

The following scenario gives an indication of the provision which would be offered if two further sites were closed and only Greenfield, Sandycroft, Buckley and Nercwys, Mold HRCs remained.

**Figure 3** Drive times for Scenario 2



In the above scenario, there are clear areas where more people would have to travel for longer times in order to reach an HRC. In particular, these areas lie in the regions where the HRCs have been removed i.e. in the area surrounding Hope, Flint and Connah's Quay HRCs.

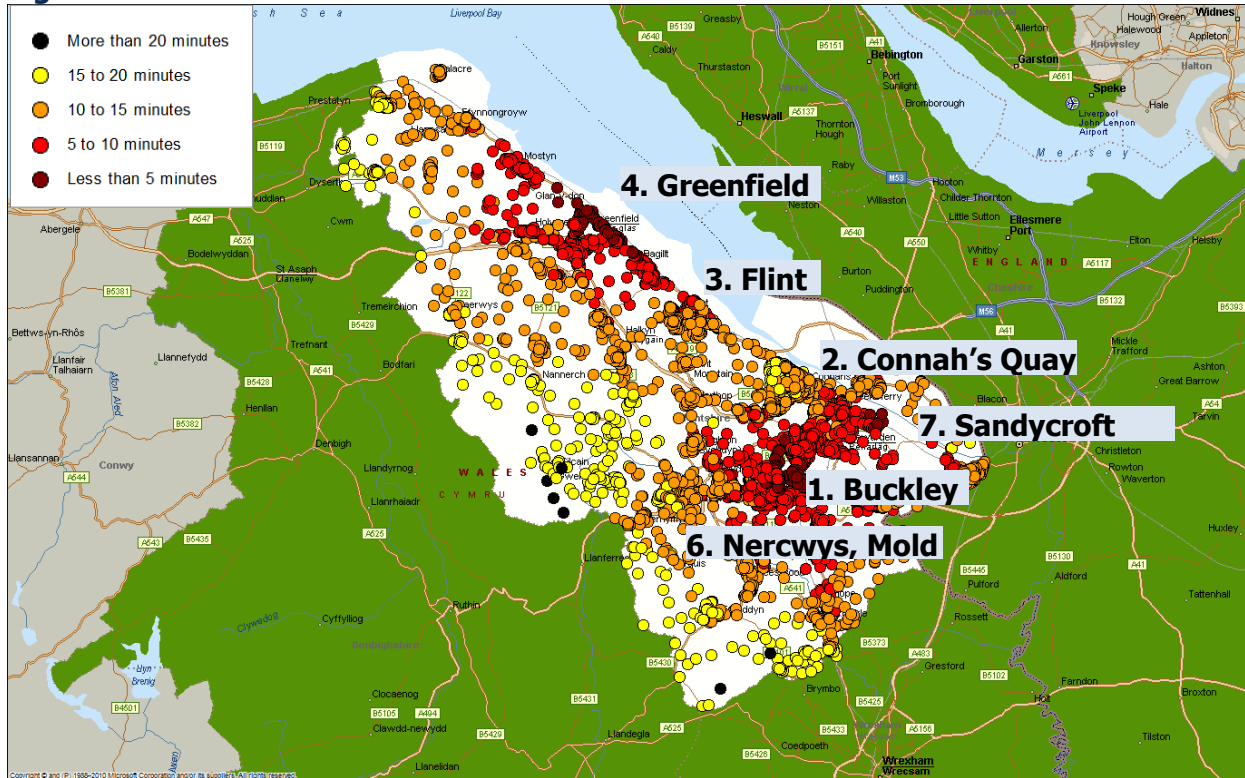
The removal of two further HRCs (plus Hope - which is already closed) in Scenario 2 (Flint and Connah's Quay) is estimated to reduce the proportion of households within 10 minutes' drive time to 56.1% from 79.5%. The proportion of household within 15 minutes reduces to 94.6% from 98.3% but importantly, all households are still within 18 minutes' drive of an HRC.

In summary, the configuration still lies within WRAP's guidelines; no household will have to travel for more than 20 minutes to reach an HRC. The impact of removing the three sites (in terms of drive times) is relatively small.

#### 4.3 Scenario 3 - Greenfield, Sandycroft and Buckley HRCs

In Scenario 3, provision has been assessed based on the removal of three further HRCs with only those at Greenfield, Sandycroft and Buckley remaining.

**Figure 4** Drive times for Scenario 3



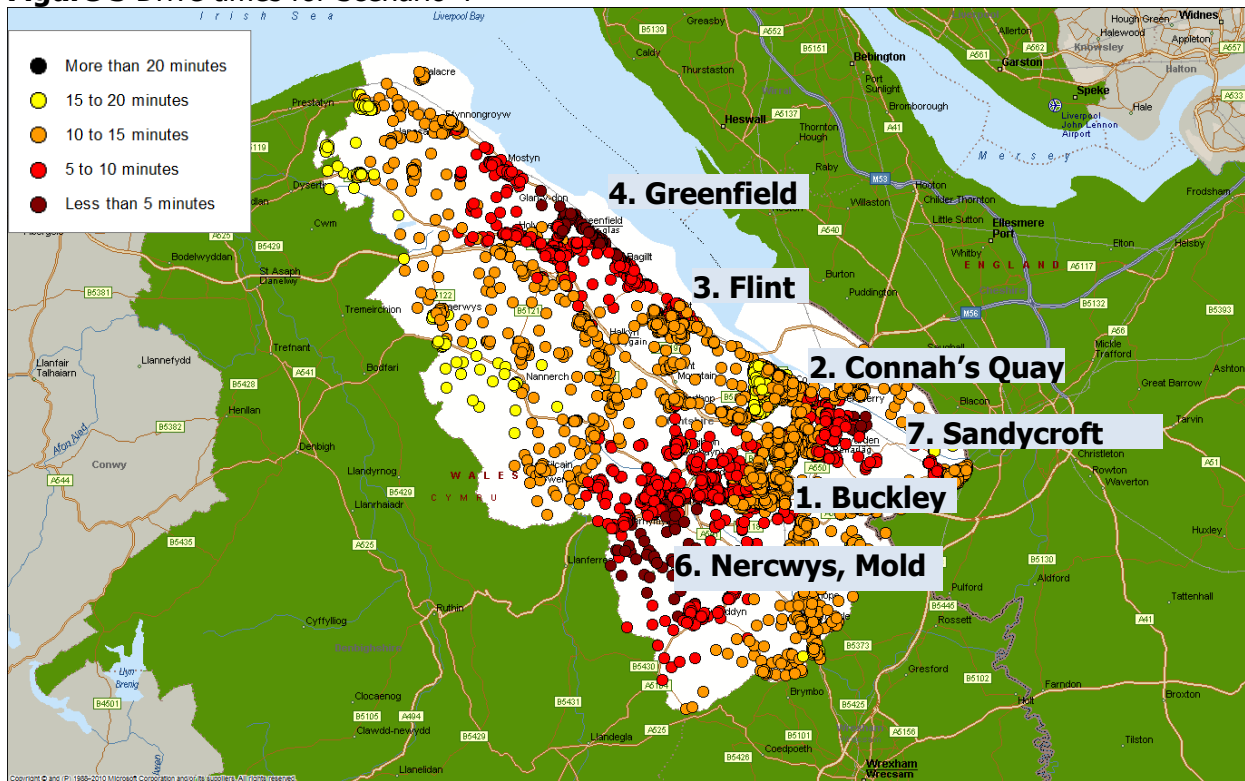
In Scenario 3 41.4% of households would be able to reach an HRC within 10 minutes compared to the current configuration (79.5%). However, the proportion of households within 15 minutes of an HRC rises to 89.4% and 99.9% of households are within 20 minutes' drive time of a site. The households (0.1% of the total) that fall just outside the 20 minute drive time radius are indicated in black on the above

In summary, this scenario meets WRAP's recommendations on HRC travel time, however, as would be expected drive times are longer for more households than in Scenarios 1 and 2.

#### 4.4 Scenario 4 - Greenfield, Sandycroft and Nercwys, Mold HRCs

Scenario 4 presents a configuration whereby three further HRCs are closed but those at Greenfield, Sandycroft and Nercwys, Mold remain.

**Figure 5** Drive times for Scenario 4



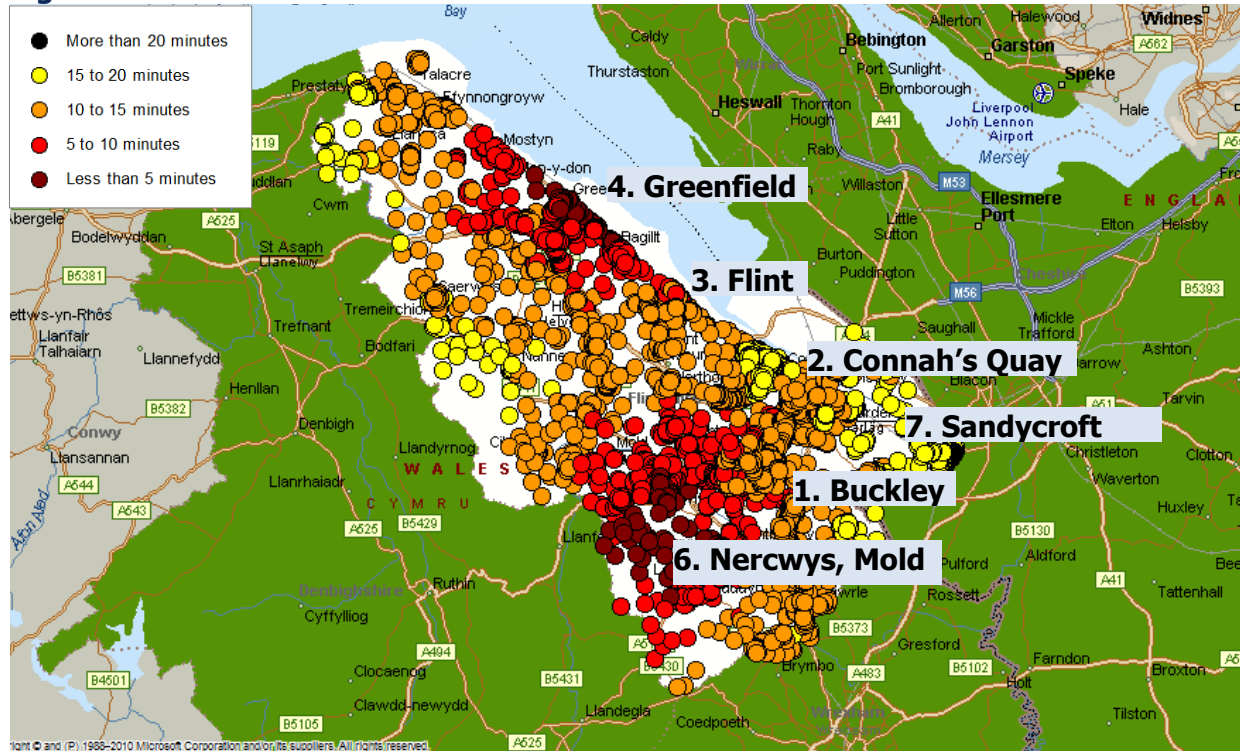
Referring to the map, the HRC network in Scenario 4 offers 39.8% of households less than a 10 minute journey to an HRC. This is lower than in Scenario 3 where 41.4% of households fell within 10 minutes of an HRC. This is likely due to the higher population density in the East of Flintshire. Approximately 92.1% of households fall within 15 minutes of a site and so although the configuration performs marginally worse than Scenario 3 for the lower drive times, it compensates for the shortfall within the 20 minutes time band. All households would be within 19 minutes of a site, again performing slightly better than Scenario 3.



#### 4.5 Scenario 5 – Greenfield and Nercwys, Mold HRCs

Scenario 5 presents a configuration whereby all but Greenfield and Nercwys, Mold HRCs have been closed.

**Figure 6** Drive times for Scenario 5



As might be expected, Scenario 5 with just two HRCs offers the least amount of coverage across Flintshire. However due to their locations this particular configuration is likely to offer the greatest coverage across the county should just two sites remain open. Figure 6 identifies that the majority of households in the south west of the authority are able to reach Nercwys, Mold HRC in under 10 minutes. This is also the case for a significant proportion of households along the north east coast. However, Scenario 5 clearly affects households along the north west border and in the east of the authority, the latter of which there are 343 households (0.5% of the total) having to travel more than 20 minutes to reach a site. It should be noted that Scenario 5 also fits within the WRAP guidance stating that the majority (in this case 99.5%) of households should fall within 20 minutes of an HRC.

## 4.6 Drive time analysis

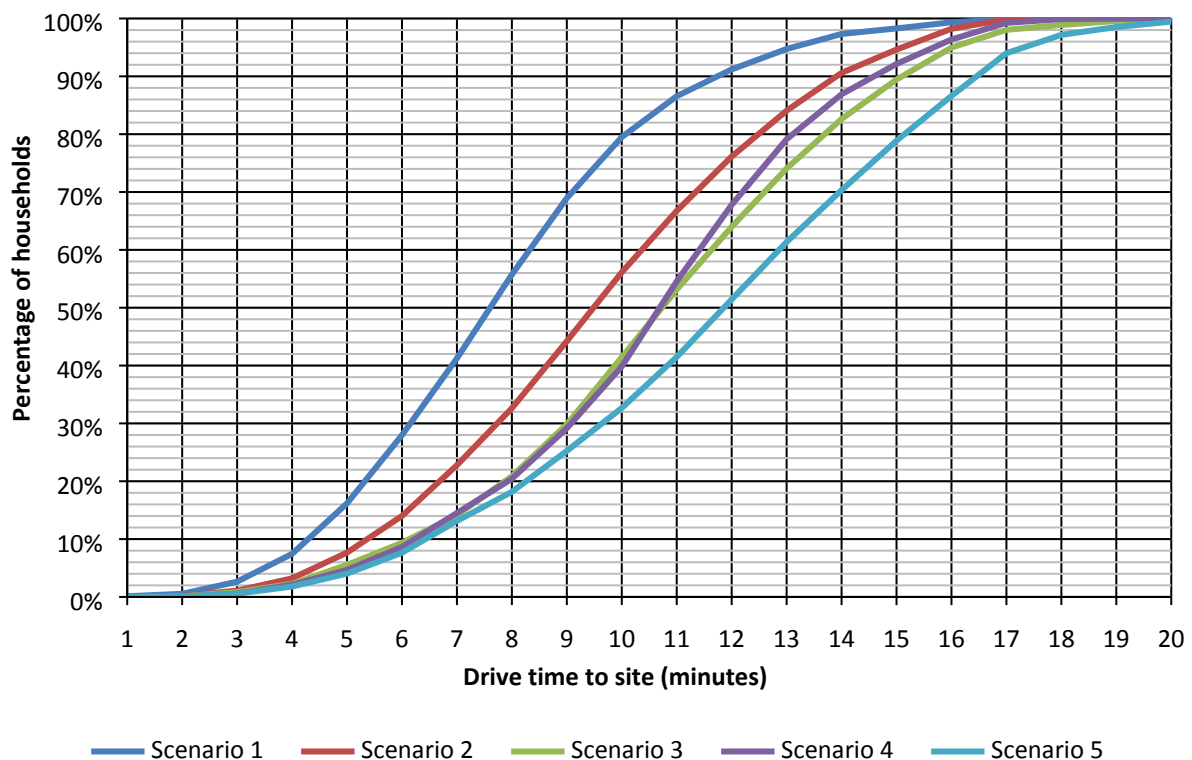
The following chart gives the number of households served within each minute of the nearest HRC, this provides an alternative indication of how each scenario could serve households in the county.

The current provision (Scenario 1) offers the best coverage of households within the shortest drive times as indicated in

Figure 7. Scenario 2 appears to offer the next best provision followed by Scenarios 3 and 4 which offer approximately similar provision. Scenario 5 offers the least provision as might be expected.

The figure below presents the modelled data in terms of cumulative coverage, whereby the proportion of the population served is plotted within each minute driving time from the site. The scenario with the leftmost cumulative percentage offers the best provision to households and the rightmost the worst.

**Figure 7** Cumulative percentage of households served within minutes of driving time



However, it should be noted that the analysis does not account for roadworks or areas of peak time congestion.

## 4.7 Households served per site

Although the drive time analysis is not a precise measure of how many people will use a site<sup>4</sup>, it provides a reasonable indication of which site should be most convenient for householders as the calculations are based on the existing road network. The facilities offered by each site will also have a bearing on the sites to which people choose to take their waste and recycling.

<sup>4</sup> For example it does not account for site users that prefer to use a site close to their place of work.

Table 2 below summarises the proportion of households in each of the five travel time bands for each of the modelled scenarios and confirms that scenario 1 (seven sites) provides the greatest coverage. As might be expected, scenario 2 with four sites covers the second greatest area and scenarios 3 and 4 show similar coverage with the latter performing marginally better. Scenario 5 shows the least coverage. All scenarios fit within the WRAP guidance stating that the majority of households should fall within 20 minutes of an HRC.

**Table 2** Proportion of households in each of the 5 travel time bands for each scenario

Scenario	Proportion of Households				
	Less than 5 minutes	5 to 10 minutes	10 to 15 minutes	15 to 20 minutes	More than 20 minutes
Scenario 1	16.2%	63.3%	18.8%	1.7%	0%
Scenario 2	7.7%	48.5%	38.5%	5.4%	0%
Scenario 3	5.5%	35.9%	48.0%	10.5%	0.1%
Scenario 4	4.7%	35.2%	52.3%	7.9%	0%
Scenario 5	4.0%	28.6%	46.2%	20.6%	0.5%

Based on the drive time analysis, the table below shows the number of households closest to a site in each scenario. The current provision (Scenario 1) in Table 3 shows that the Buckley, Connah's Quay, Greenfield and Nercwys, Mold sites are the closest sites to the largest proportion of households, each attracting approximately 20% or slightly below of all households, on the assumption that people will visit the closest site to their household.

**Table 3** Number of households closest to each site in each proposed scenario

Scenario	Number of households						
	Buckley	Connah's Quay	Flint	Greenfield	Nercwys, Mold	Sandycroft	
Scenario 1	12,530 (20%)	10,913 (17%)	6,300 (10%)	11,243 (18%)	12,103 (19%)	5,477 (9%)	
Scenario 2	20,215 (32%)	-	-	16,971 (27%)	14,467 (23%)	12,002 (19%)	
Scenario 3	34,084 (54%)	-	-	17,569 (28%)	-	12,002 (19%)	
Scenario 4	-	-	-	17,002 (27%)	28,716 (45%)	17,885 (28%)	
Scenario 5	-	-	-	17,874 (28%)	45,729 (72%)	-	

In all scenarios in which it is included, Buckley HRC is closest to the largest majority of households. In Scenario 2, the site would be required to serve an additional 7,500 households. In Scenario 3, Buckley would have to serve almost three times the number of households it currently serves at approximately 34,000 (compared to 12,500 currently). This will result in a wide variance across the three remaining sites with Buckley receiving almost twice as much material as Greenfield and three times as much as Sandycroft. Scenario 4 provides the best balance across all sites for the three site options.



Section 5 discusses the impact of the different scenarios on tonnage throughput, i.e. if three times as many site users visit Buckley, is there sufficient headroom for the site to accept the waste (as well as operational capacity).

The Greenfield HRC has been modelled in all five scenarios and would be required to serve an additional ~50% households in each. Nercwys, Mold HRC would have to serve just 2,000 additional households in Scenario 2 but would have to more than double its provision in Scenario 4 and almost quadruple it in Scenario 5. Sandycroft HRC would have to serve twice as many residents in Scenarios 2 and 3 and approximately three times as many in Scenario 4. The options appraisal considers whether the sites are likely to be able to cope with the additional tonnage and vehicles, and if not, whether they can be redeveloped to accept more waste. This will also be considered further in Phase 2 together with Traffic Impact Assessments for each of the proposed sites.

The percentage of households that falls into a given time band is shown in the table below. Scenario two offers the best level of provision where more people are served in the shorter time intervals.

**Table 4** Drive time group comparison for current and potential provision scenarios

HRC Configuration		Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 4
Percentage of households within	5 mins	16.2%	7.7%	5.5%	4.7%	4.0%
	10 mins	79.5%	56.1%	41.4%	39.8%	32.7%
	15 mins	98.3%	94.6%	89.4%	92.1%	78.9%
	20 mins	100.0%	100.0%	99.9%	100.0%	99.5%
Average driving time (minutes: seconds)		07:55	09:35	10:51	10:33	11:31

## 5.0 Task 4: Waste flows

### 5.1 Displacement of waste when sites are closed

There is little evidence as to where waste is displaced to when sites close. Anecdotal evidence from authorities that have rationalised their sites suggests flytipping does not increase. It is likely that some waste will be disposed of at the kerbside but the majority will be retained within the HRC network. Research conducted by Resource Futures on data from WasteDataFlow suggests that there is a 5–10% fall in total HRC throughput following closure of a site. However many factors will impact changes in HRC throughputs, therefore any expectation of reduced waste arisings should be treated with caution. For this reason, Section 5.2 below which examines the potential impact on HRC site throughputs assumes the same tonnage as 2015.

### 5.2 Potential impact on HRC site throughputs

The spatial analysis suggests which site householders would travel to if their nearest site closed. The model uses the principle that a householder would visit the next closest site to them (in terms of drive time). On the assumption that members of the public will continue to use the sites at their current rate and that they bring the same quantity of material to the site (e.g. kg/hh/year per site), this model can be used to predict the effect of site closures on the tonnage throughputs of the remaining sites. Table 5 presents the results of this modelling.

**Table 5** Estimated effect on tonnage throughputs<sup>5</sup>

Scenario		Buckley	Connah's Quay	Flint	Greenfield	Nercwys, Mold	Sandycroft	
<b>1</b>	No. of households	12,530	10,913	6,300	11,243	12,103	5,477	
	Tonnage (t)	<b>6,797</b>	<b>2,048</b>	<b>1,680</b>	<b>6,322</b>	<b>5,103</b>	<b>2,632</b>	
<b>2</b>	No. of households	20,215			16,971	14,467	12,002	
	Tonnage (t)	<b>10,966</b> (+61%)			<b>9,542</b> (+51%)	<b>6,099</b> (+20%)	<b>5,767</b> (+119%)	
<b>3</b>	No. of households	34,084			17,569		12,002	
	Tonnage (t)	<b>18,490</b> (+172%)			<b>9,878</b> (+56%)		<b>5,767</b> (+119%)	
<b>4</b>	No. of households				17,002	28,716	17,885	
	Tonnage (t)				<b>9,560</b> (+51%)	<b>12,106</b> (+137%)	<b>8,593</b> (+227%)	
<b>5</b>	No. of households				17,874	45,729		
	Tonnage (t)				<b>10,051</b> (+59%)	<b>19,281</b> (278%)		

The table shows that in Scenario 2, three of the four remaining sites would experience a significant rise of at least 50% in tonnage throughput, with the exception of Nercwys, Mold HRC which would see a 20% rise. The analysis suggests Sandycroft HRC would more than double (+119%) its annual throughput.

Unsurprisingly, the impact upon tonnage throughputs becomes even more significant in Scenario 3 with Buckley HRC almost tripling from 6,797 tonnes to 18,490 tonnes. The Sandycroft site may experience a 119% rise in throughput (i.e. more than double) and the Greenfield site shows a more modest 56% rise in throughput.

In Scenario 4, the analysis suggests Sandycroft HRC is modelled to experience a very large increase in tonnage from 2,632 tonnes to 8,593 tonnes, an increase of approximately 227%. Nercwys, Mold HRC shows a significant but smaller increase at 137% and the site at Greenfield shows the smallest increase at 51%.

Scenario 5 shows a similar increase in tonnage throughput of approximately 59% at the Greenfield site. The Nercwys, Mold site in this scenario however would experience the largest increase in tonnage throughput meaning that the site would have to deal with approximately 278% more material, or 14,178 tonnes. This is a huge increase and unless major works are carried out at the site, it is unlikely to cope.

## 6.0 Options appraisal

The options appraisal includes the scenarios modelled in the spatial analysis and waste flows tasks. The 'do nothing' (or baseline) option is the current provision of six sites and the other four options are appraised against this. Phase 2 of this work involves completing a

<sup>5</sup> Estimates based on quarter 2 2015 tonnage data

performance improvement site review for each HRC expected to form the reconfigured network.

The following criteria have been identified to evaluate the options:

- Deliver effective and efficient services
- Drive times
- Recover value from residual waste
- Contribute to a more resource efficient Flintshire
- Tenure of properties
- Deliverability and timescales (to provide a high quality<sup>6</sup> service)
- Manage waste according to the hierarchy
- Capacity to manage throughput
- Achieve/ maintain high levels of public satisfaction
- Increase public awareness

Table 6 discusses the evaluation criteria for each option. Each criteria is assessed using the following scale with Option 1 forming the baseline for reference:

5 = Highly satisfactory

3 = Satisfactory

1 = Unsatisfactory

Based on the above, the options have been scored and ranked. The results are in Table 8.

## 6.1 Development Potential

Resource Futures conducted site visits of the Nercwys, Mold, Buckley, Sandycroft and Greenfield HRCs. The site assessments will be formally documented in the Phase 2 report however the below table briefly discusses the development potential of the four sites in respect of the options appraisal.

**Table 6:** Development potential of Flintshire HRCs

Site	Development Potential
Nercwys, Mold	The Nercwys, Mold HRC is a single level site rurally situated around 1.5 miles to the south of Mold town centre. The site is furthest south west of all of the sites in the county. The layout of site is much less convenient for vehicle movements in comparison to the newer sites in Flintshire. The surrounding area is privately owned fields and woodland, but there may still be potential to expand the footprint of the site. The site could also be developed within its current footprint, improvements could be made to traffic flow and skip servicing in particular. The site would need to be redeveloped in order to manage higher waste throughputs, but there is potential to do so.
Buckley	The Buckley HRC is a single level site situated in a suburban location in between Buckley and Ewloe. Unfortunately there is limited potential for development at the Buckley HRC and the area surrounding the site is partially protected by a Special Area of Conservation (SAC) and is unlikely to be able to be developed for this reason. With regard to developing the site within its current footprint, this is also unlikely to produce worthwhile performance improvements due to the limited

<sup>6</sup> A high quality service is deemed by this study to be a site that prioritised the waste hierarchy, is high performing in terms of recycling rates, has good traffic management and minimum congestion, has excellent Health and Safety standards and is generally a good experience for the resident.

	space to develop whilst keeping the site open during servicing. It is unlikely the site would be able to cope with the significantly higher throughputs it could expect if nearby sites close. The site would need to be redeveloped but it is not feasible within the current footprint.
Greenfield	The Greenfield HRC site is a modern purpose built, split level site. The site is the most northerly in the county; it is located close to Holywell on the Greenfield business park and industrial estate on the edge of the Dee estuary. The modern design of the site does not require development to make improvements to its performance or efficiency. The site is located adjacent to a council run composting operation on land owned by the council; and so there is likely to be some space for expansion.
Sandycroft	The Sandycroft site is also a relatively new purpose built single level site situated in a suburban location on the edge of Sandycroft. The site has a modern design and is unlikely to require any further developments in order to improve efficiency or enhance performance. The site does however have room for expansion as it is located on a brownfield site next to the River Dee with ample space to expand out towards the river.

## 6.2 Cost Modelling

Cost modelling will be conducted in Phase 2. As with all cost modelling, the costs of developing the sites will be analysed alongside the predicted benefits of long-term cost savings associated with higher performing sites (additional revenue from recycling, reduced landfill tax from reduction of non-recyclable waste). Furthermore all sites will be exploring a re-use model which can bring additional revenue to the sites offsetting the initial capital outlay.

**Table 7** Option appraisal evaluation

	<b>Option 1</b>	<b>Option 2</b>	<b>Option 3</b>	<b>Option 4</b>	<b>Option 5</b>
	Current configuration of sites	Greenfield, Sandycroft, Buckley and Nercwys, Mold	Greenfield, Sandycroft and Buckley	Greenfield, Sandycroft and Nercwys, Mold	Greenfield and Nercwys, Mold
Drive times	This has the most acceptable drive times, i.e. The highest number of residents will travel the shortest distance to a site.	Whilst more residents have to travel further than in Option 1, the drive times are within advice provided in WRAP guidance.	Whilst residents have to travel further than in Option 1 and 2, the drive times are within advice provided in WRAP guidance.	Whilst residents have to travel further than in Option 1, the drive times are within advice provided in WRAP guidance.	Although this option still satisfies the advice provided in the WRAP guidance, the performance in terms of drive time is least favourable.
Recover value from residual waste	This option offers the least recovery from residual waste because there are a number of low performing sites. Whilst some improvements could be made, there are challenging barriers e.g. space restrictions at Buckley.	More value is expected to be recovered from the waste as these sites are generally high performing (with the exception of Buckley).	More value is expected to be recovered from the waste as these sites are generally high performing (with the exception of Buckley).	More value is expected to be recovered from the waste as these sites are high performing. Should waste be diverted to these sites it is likely that they would achieve a comparatively higher recycling rate and thus more value. The sites also have capacity to be developed or expanded and so further value could be recovered by efficiency improvements/re-development.	As Greenfield and Nercwys, Mold are two of the four highest performing sites, more value could be driven out of the material that would be diverted to these sites. However, as Nercwys, Mold would experience a much higher throughput, careful thought must go in to redeveloping the site to be able to cope with higher tonnages and maintain high recycling rates.
Manage waste according to the hierarchy	Re-use is not prioritised in the current configuration. Redeveloping sites to add re-use facilities will help manage waste more appropriately.	The large sites could prioritise re-use and thereby help Flintshire to be more resource efficient. However, there is limited ability to add re-use at Buckley.	The large sites could prioritise re-use and thereby help Flintshire to be more resource efficient. However, there is limited ability to add re-use at Buckley.	The large sites could, prioritise re-use and thereby manage waste according to the hierarchy and generate more value from recovered materials.	The larger Greenfield site could easily accommodate a re-use facility. However, In its current configuration it would be difficult for Nercwys, Mold to accommodate re-use.
Tenure of properties	Not all sites are owned by FCC or have a long term lease, which increases uncertainty in long term planning. Reducing sites to those that are owned or have newer leases will	There is less risk associated with this option as land is owned or long term leased.	There is less risk than with option 1, however a SAC is in place over part of the land where any extension may be required and would restrict the development of the site.	There is less risk associated with this option as land is owned or long term leased.	Land is either owned or long-term leased by FCC and so there is limited risk with this option.

	Option 1	Option 2	Option 3	Option 4	Option 5
	Current configuration of sites	Greenfield, Sandycroft, Buckley and Nercwys, Mold	Greenfield, Sandycroft and Buckley	Greenfield, Sandycroft and Nercwys, Mold	Greenfield and Nercwys, Mold
<b>Deliverability and timescales (to provide a high quality service)</b>	manage this risk This option is easy to deliver as it is the 'do nothing' approach.	This option is easy to deliver as the majority of waste is accepted at these sites. Some performance improvement will be required	This option will not allow FCC to deliver a high quality, waste hierarchy focused service compared to Options 2 and 4 due to the problems at Buckley.	This option can deliver a high quality service in the medium term, following performance improvement to ensure Nercwys, Mold can accommodate the additional tonnage.	This option would not allow FCC to deliver a high quality service in the short and medium term due to the reasons stated above.
<b>Capacity to manage throughput</b>	This option has capacity to manage the waste throughputs as all sites, with the exception of Buckley could attract more waste.	This option has capacity to manage the waste throughputs as all sites, with the exception of Buckley which would struggle to accommodate significant additional tonnage.	This option may struggle to manage the waste throughputs as Buckley is already a very busy site and cannot be easily redeveloped to accept more and reduce congestion. (due to SAC)	This option has capacity to manage the waste throughputs as all sites.	It is likely Greenfield could be developed or improved to manage an additional 50% of throughput but Nercwys, Mold is unlikely to be able to manage a four-fold increase as predicted by the 'Potential impact' table (Table 5).
<b>Achieve/ maintain high levels of public satisfaction</b>	The public are satisfied with their current service.	Closure of sites will be unpopular in communities surrounding the Flint and Connah's Quay sites, however once residents visit efficient and well managed sites and the benefits are clearly explained to them, it is likely they will be satisfied with the service, especially if the financial benefits are highlighted.	Closure of sites will be unpopular in Flint, Nercwys, Mold and Connah's Quay. Residents however are likely to be satisfied with the benefits of the larger sites e.g. greater efficiency, improved layout, better customer experience etc. However, the congestion problems at Buckley could be exacerbated in this scenario, causing complaints.	Closure of sites will be unpopular in communities surrounding Flint, Buckley and Connah's Quay, however once residents visit efficient and well managed sites, it is expected that they will appreciate the greater efficiencies and better experience they have at the purpose built sites, especially if Nercwys, Mold is redeveloped.	This scenario is likely to achieve the highest amounts of public dissatisfaction due to the largest amount of site closures. The Sandycroft site is only one year old and FCC will need to excellent management and communication regarding the reasons for closure to the public.
<b>Increase public awareness</b>	If the status quo is preserved, FCC may wish to plan a communications campaign to help raise awareness of the opportunities for recycling	Changing the network and focussing on high performing sites with greater ability to segregate will raise public awareness of recycling in general	Changing the network and focussing on high performing sites with greater ability to segregate will raise public awareness of recycling in general	Changing the network and focussing on high performing sites with greater ability to segregate will raise public awareness of recycling in general	Although a network change of this scale would go hand in hand with a public awareness campaign to promote the value of recycling, there is a risk that

	Option 1	Option 2	Option 3	Option 4	Option 5
	Current configuration of sites	Greenfield, Sandycroft, Buckley and Nercwys, Mold	Greenfield, Sandycroft and Buckley	Greenfield, Sandycroft and Nercwys, Mold	Greenfield and Nercwys, Mold
	and re-use at HRCs.				the additional time spend getting to the sites may reduce the amount of time available for segregation.



**Table 8** Scores of options evaluation

	Option 1 Current configur ation of sites	Option 2 Greenfiel d, Sandycr oft, Buckley and Nercwys , Mold	Option 3 Greenfiel d, Sandycr oft and Buckley	Option 4 Greenfiel d, Sandycr oft and Nercwys , Mold	Option 5 Greenfiel d and Nercwys , Mold
Deliver effective and efficient services	1	3	5	5	3
Drive times	5	5	5	5	3
Recover value from residual waste	3	3	5	5	5
Contribute to a more resource efficient Flintshire	3	3	3	5	5
Tenure of properties	3	3	5	5	5
Deliverability and timescales (to provide a high quality service)	1	3	3	3	3
Manage waste according to the hierarchy	3	3	5	5	5
Capacity to manage throughput	5	5	1	3	1
Achieve/ maintain high levels of public satisfaction	5	3	3	5	3
Increase public awareness	3	5	5	5	3
<b>TOTAL</b>	<b>32</b>	<b>36</b>	<b>40</b>	<b>46</b>	<b>36</b>
<b>RANK</b>	<b>5</b>	<b>=3</b>	<b>2</b>	<b>1</b>	<b>=3</b>

The criteria have differing importance to FCC. Weighting the priorities that are most important will help to differentiate between the scenarios. The priorities and the associated maximum weighted scores are in the table below.

**Table 9** Weighted scores of options evaluation

	Weighting	Option 1	Option 2	Option 3	Option 4	Option 5
		Current configuration of sites	Greenfield, Sandycroft, Buckley and Nercwys, Mold	Greenfield, Sandycroft and Buckley	Greenfield, Sandycroft and Nercwys, Mold	Greenfield and Nercwys, Mold
Deliver effective and efficient services	11	11	33	55	55	33
Drive times	9	45	45	45	45	27
Recover value from residual waste	8	24	24	40	40	40
Contribute to a more resource efficient Flintshire	7	21	21	21	35	35
Tenure of properties	6	18	18	30	30	30
Deliverability and timescales (to provide a high quality service)	8	8	24	24	24	24
Manage waste according to the hierarchy	4	12	12	20	20	20
Capacity to manage throughput	6	30	30	6	18	6
Achieve/ maintain high levels of public satisfaction	2	10	6	6	10	6
Increase public awareness	1	3	5	5	5	3
<b>TOTAL</b>		<b>182</b>	<b>218</b>	<b>252</b>	<b>282</b>	<b>224</b>
<b>RANK</b>		<b>5</b>	<b>4</b>	<b>2</b>	<b>1</b>	<b>3</b>

The results of the options appraisal suggests that the most favourable option is to close Flint, Connah's Quay, Hope and Buckley.

Rank	Option
1	Option 4: Greenfield, Sandycroft and Nercwys, Mold
2	Option 3: Greenfield, Sandycroft and Buckley
3	Option 5: Greenfield and Nercwys, Mold
4	Option 2: Greenfield, Sandycroft, Buckley and Nercwys, Mold
5	Option 1: Current configuration of sites

## **7.0 Summary**

Based on the research undertaken for this study, FCC could close a further three sites (and retain three) whilst still performing its statutory duty and providing a high quality and comprehensive service within an acceptable drive time of 20 minutes as per WRAP guidance.

The drive time analysis, spatial assessment and potential impact on tonnage throughput suggests that if FCC decide to reduce the network to a total of three sites, Nercwys, Mold HRC is likely to perform better than Buckley. Whilst FCC will need to ensure there is adequate headroom at all the remaining sites, it is likely that Buckley could not accommodate the scale of increase the analysis predicts. There may be further economic benefits to FCC if they are able to sell the land at Buckley.

As Buckley is the most heavily used site in the county (in terms of throughput) FCC will need to ensure that if this site is to close, there are adequate facilities in place. Residents can travel to Nercwys, Mold or Sandycroft, however the Nercwys, Mold site may require improvements before it could accept significant additional waste. A detailed performance review in Phase 2 will identify what is required.

The closure of the sites at Flint, Connors Quay should not have a detrimental impact on the community as they can be well served by alternative HRCs which are close to those locations and provide suitable facilities.

[www.wrapcymru.org.uk/relevant](http://www.wrapcymru.org.uk/relevant) link