Black Country Historic Landscape Characterisation (HLC)

The Creation of Character Area Boundaries through the Analysis of HLC Polygons: A Technical Paper

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The data collection phase of the Black Country Historic Landscape Characterisation, one of English Heritage's urban historic landscape characterisation projects, was completed in 2006[1]. The Black Country has been divided into over 12,000 HLC polygons describing the present and past land use of each individual area.

In a process presented by this report, this data has now been used to create larger Character Areas as a way of producing wider generalisations based on the smaller polygons. These generalisations are designed to assist in the presentation and understanding of the distinctive landscape of the Black Country.

We were anxious that this process of definition of Character Areas be undertaken in as objective and transparent manner as could be achieved. Character Area boundaries have been generated initially through a partially automated simplification of the polygons of the HLC - more specifically, through an aggregation of clusters of adjacent polygons of similar modern use into larger areas. These first draft boundaries have then been refined by analysing the 'performance' of individual Character Area boundaries and by taking into account the relevant administrative area and the period of the surviving landscape.

Stage 1: The Association of Different Categories of Land Use

The earlier process of defining HLC polygons resulted in the creation of 12,664 records, covering an area of 356 square kilometres. These have been used as the building blocks of the larger Character Areas.

Taking into account the fact that, by both number and area, *settlement* is by far the largest Broad Type of polygon in the Black Country HLC (illustrated by Appendix 1), this category of polygon was taken as the starting point of the aggregation process.

Settlement polygons were first combined with some of the smaller categories most directly related to it, i.e. polygons classified as being used for *recreation*, *public services*, and *religious* purposes. The *recreation* category was split so that only those HLC types were used which could usefully be associated with settlement[2].

Thus, as shown in Appendix 2, those HLC types which were considered as being connected to the immediately adjacent housing were tagged as 'settlement-associated'. These were, in general, those which either had an average area smaller than about 0.05 sq km or which were relatively numerous. Conversely, those *recreational* HLC types which consisted of larger, fewer polygons were generally kept separate.

[1] The data collection phase and definition of HLC polygons was undertaken, over a period of two years, by Debbie Langley, now Landscape Archaeologist with Staffordshire County Council.
[2] Consideration was also given as to whether the Commercial HLC types should be divided in order to associate some of these categories with settlement. After trialling this approach, however, it did not appear to make a significant difference to the shape of the draft Character Area boundaries, and was therefore not considered to be necessary in the circumstances.

As Table 1 shows, the grouping of *settlement* with these other associated categories of land use accounted for 207 sq km - almost three fifths of the area of the Black Country.

Table 1: Settlement-related Polygons within the Black Country HLC

Broad Type	Number of Polygons	Total Area in Sq Km	% of Black Country Accounted for by Broad Type
Settlement	7,490	168.7	47.4%
Recreational (settlement-related)	474	15.1	4.3%
Public Services	754	18.4	5.2%
Religious	340	4.4	1.2%
Total	9,058	207	58.1%

Source: Black Country HLC

Stage 2: The Simplification of Polygon Layers (Broad Type: Settlement)

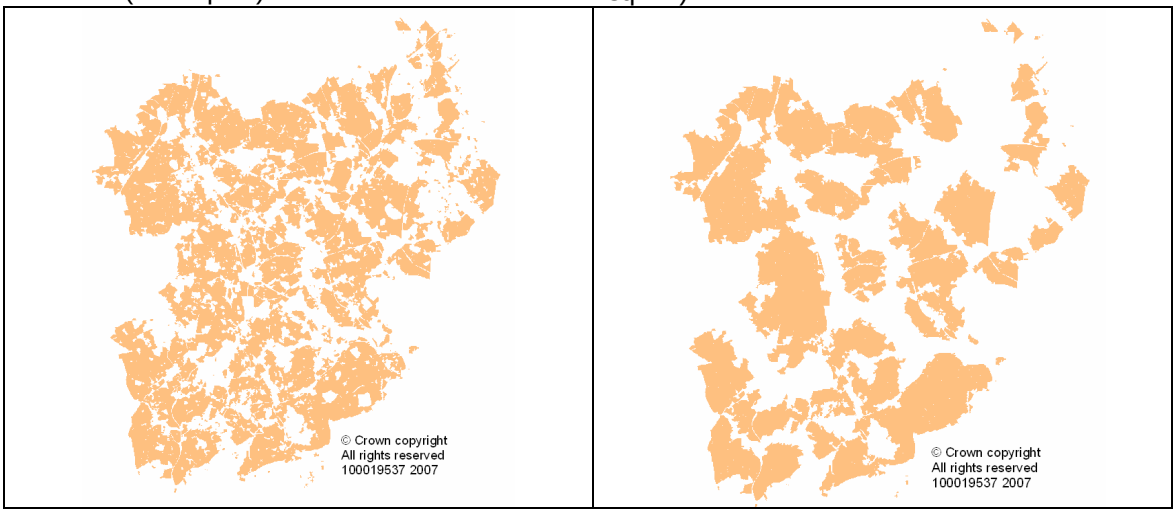
This layer of settlement-related polygons was simplified by removing both those areas inside (i.e. surrounded by) settlement-related polygons (i.e. erasing 'gaps') and also those settlement-related areas which were generally isolated (i.e. erasing 'islands'). The technique which was used to achieve this was the application of a function within MapInfo Professional v7.5 which enables a layer to be 'cleaned' of selected objects.

The process is illustrated in Figure 1, which shows the area before and after 'cleaning'. In this case, it resulted in a notional settlement-related area, seen in Figure 1(ii), which was smaller (by 11%) than the original (and real) area.

Figure 1. Simplification of the Area of the Black Country HLC Covered by Settlement & Related Polygons

(i) The Combined Area Covered by *settlement*, *recreational* (part), *religious*, and *public services* (207 sq km)

(i) The Area Covered by the Same Categories Simplified (Using MapInfo Clean Objects) (185 sq km)

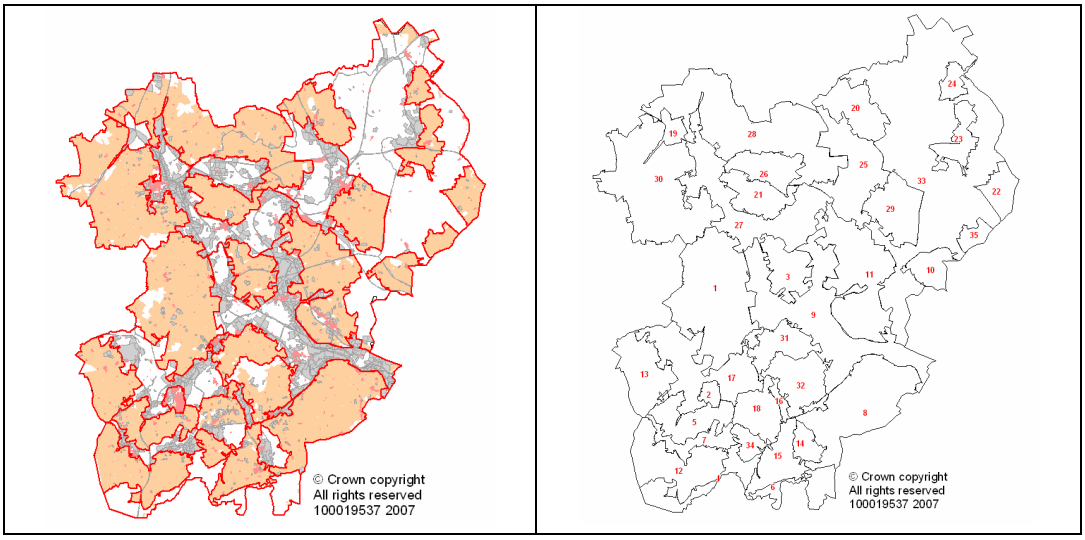


Source: Black Country HLC

Stage 3: Delineation of First Draft Character Area Boundaries

The area in Figure 1(ii) was then used, along with representations of commercial, industrial and communications functions, as a layer over which broad, 'first draft' Character Areas could be delineated (Figure 2). This process actually created 35 areas. It had previously been thought that around 60 Character Areas in total would be an appropriate final number (i.e. an average of 15 for each of the four Black Country districts), and so this interim total of 35 appeared to be acceptable – taking into account that further divisions would need to be created in order to account for modern local authorities and differing periods of origin (see below).

Figure 2. The First Draft Character Areas Based on Simplified Settlement & Related Polygons



Source: Black Country HLC

Stage 4: Assessing Homogeneity & Amending Boundaries

As a general point, it could be argued that the success of a system of Character Areas might be measured by the extent to which each Area captures the distinctive feature or features of an individual part of the landscape. For any particular criterion (e.g. Broad Type, Period, or Previous Type) this can also be quantified by measuring the extent to which a single category of this classification dominates any particular Character Area.

An earlier process (in 2006) which was used to generate Character Areas for the northern part of the Black Country (i.e. Walsall and Wolverhampton only) produced 32 areas (illustrated here in Appendix 3). In 23 of these the dominant Broad Type was *settlement*, in 4 it was *industrial*, a further 4 *field system*, and in one *commercial* (Wolverhampton city centre). Looking at the extent of this dominance in each area, we can see that in 23 (72%) of the 2006 Character Areas one Broad Type accounted for more than half of the area and, in an average Character Area, the dominant classification accounted for 57% of the land surface.

Turning our attention to our new first draft Character Areas for the Black Country as a whole, we can see that in 21 out of 35 the dominant Broad Type is *settlement*. The remaining Character Areas are dominated by *industrial* (8), *field system* (4),

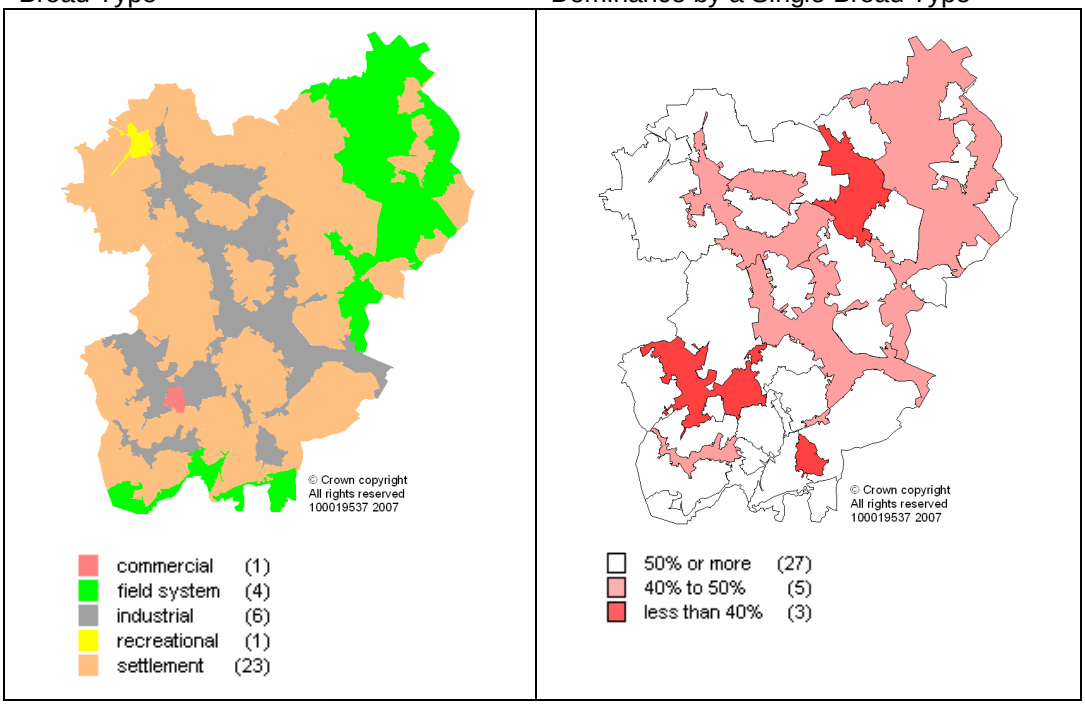
commercial (1) and *utilities* (1). This distribution is illustrated in Figure 3(i). In 27 (77%) of the 35 Character Areas one Broad Type accounts for more than half of the land area and, in an average Character Area, the dominant classification accounts for 64% of the land area. So, although the two processes were aimed at Characterising different areas, it seems that at this stage, and by this measure only, the new first draft areas appeared to offer at least comparable performance to those produced by the earlier process in 2006.

Nevertheless, it proved possible to improve on our first draft boundaries. Figure 3(ii) shows (in red) those Character Areas which function least well within this system in terms of capturing a single Broad Type within their boundaries. It is these particular Character Areas, therefore, which were the subject of attention and amendment during the redrafting process.

Figure 3. Analysis of the First Draft Character Areas

(i) Character Areas by Dominant Broad Type

(ii) Character Areas by Extent of Dominance by a Single Broad Type



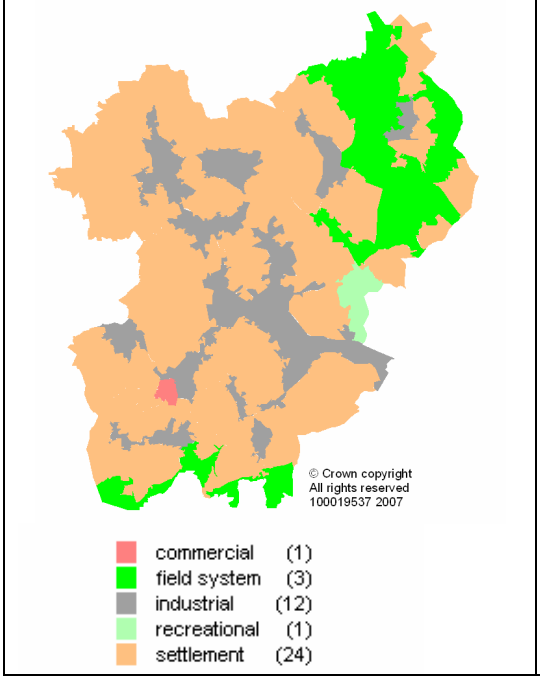
Source: Black Country HLC

The result of this process, i.e. the second draft of the Character Area boundaries, was an increase in the number of Areas from 35 to 41. Figure 4 illustrates the application of the same analysis used in Figure 3 to the second draft boundaries.

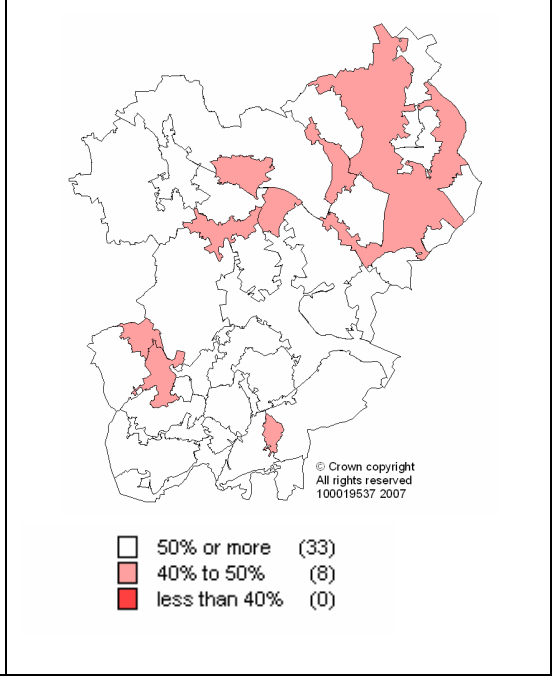
In some ways, the redrafting did little more than maintain a similar performance to that of the first set of boundaries: one Broad Type accounted for more than half of the land area in 80% of the 41 Character Areas and, in an average Character Area, the dominant classification accounted for 63% of the land area. Nevertheless, in the new draft there were other improvements. For example, none of the new Character Areas had less than 40% of their area accounted for by their dominant Broad Type. As part of the same process, the area covered by less 'successful' Character Areas was substantially reduced. These changes are illustrated in Figure 4(ii).

Figure 4. Analysis of the Second Draft Character Areas

(i) Character Areas by Dominant Broad Type



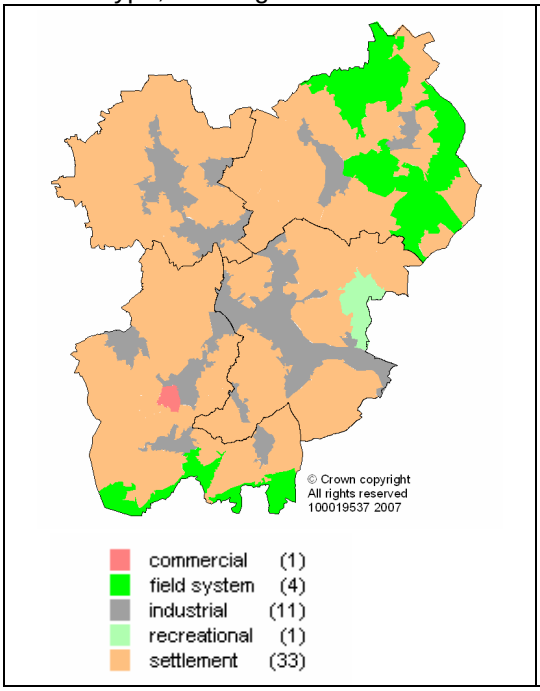
(ii) Character Areas by Extent of Dominance by a Single Broad Type



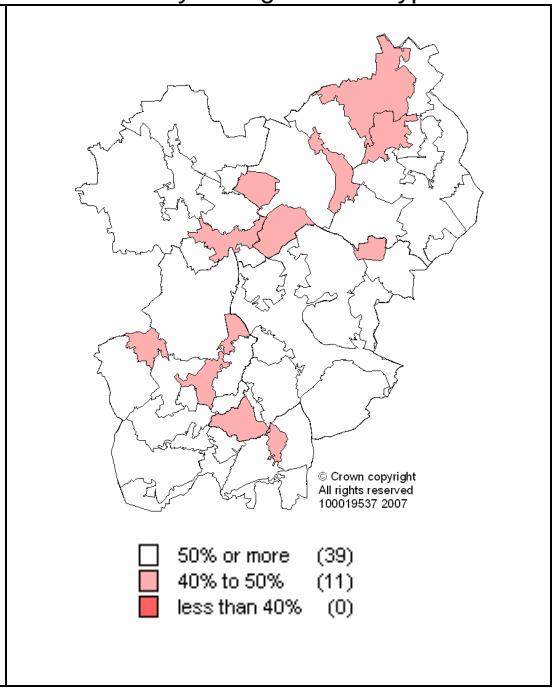
Source: Black Country HLC

Figure 5. Analysis of the Third Draft Character Areas

(i) Character Areas by Dominant Broad Type, showing District Boundaries



(ii) Character Areas by Extent of Dominance by a Single Broad Type



Source: Black Country HLC

Stage 5: Incorporation of Administrative Boundaries

In addition to representing the key features of an area, one of the other prerequisites of the definition of Character Area boundaries was that they should be coterminous with the boundaries of the four Black Country authorities of Dudley, Sandwell, Walsall and Wolverhampton. The next stage of the process which was adopted sought to address this question. It was hoped that this would involve little more than dividing some of the Character Areas created in the second draft. However, in the event, the irregular nature of the District boundaries and the need to maintain the effectiveness of Character Areas on either side of them caused some redrafting.

The incorporation of administrative boundaries, together with some redrafting to further improve performance of the second draft Areas, increased the number of Areas from 41 to 50, as shown in Figure 5. These changes did not reduce the ability of the Character Areas to represent the pattern of modern use across the Black Country: after the change, one Broad Type still accounted for more than half of the land area in 78% of the Character Areas and, in an average Character Area, the dominant classification accounted for 62% of the land area. As with the creation of the previous draft, the area covered by less 'successful' Character Areas was again reduced.

Stage 6: Accounting for the Period of the Surviving Landscape

It was desired that the Character Areas should not only reflect the modern land use but also the period from which the landscape dates. Figure 6(i) shows the third draft Character Area boundaries superimposed the most reliable sub-division of the Black Country landscape into periods, a division into four periods based on the historic Ordnance Survey mapping (see Table 2). Alongside, in Figure 6(ii), is a revised, fourth draft of the boundaries which increase their number from 50 to 56. This increase is as a result of dividing Areas to take account of the dominant period of origin of the landscape within them. Figure 7 shows how these changes affect the same analysis used in Figures 3, 4 and 5.

Table 2: HLC Polygons by Period of Origin

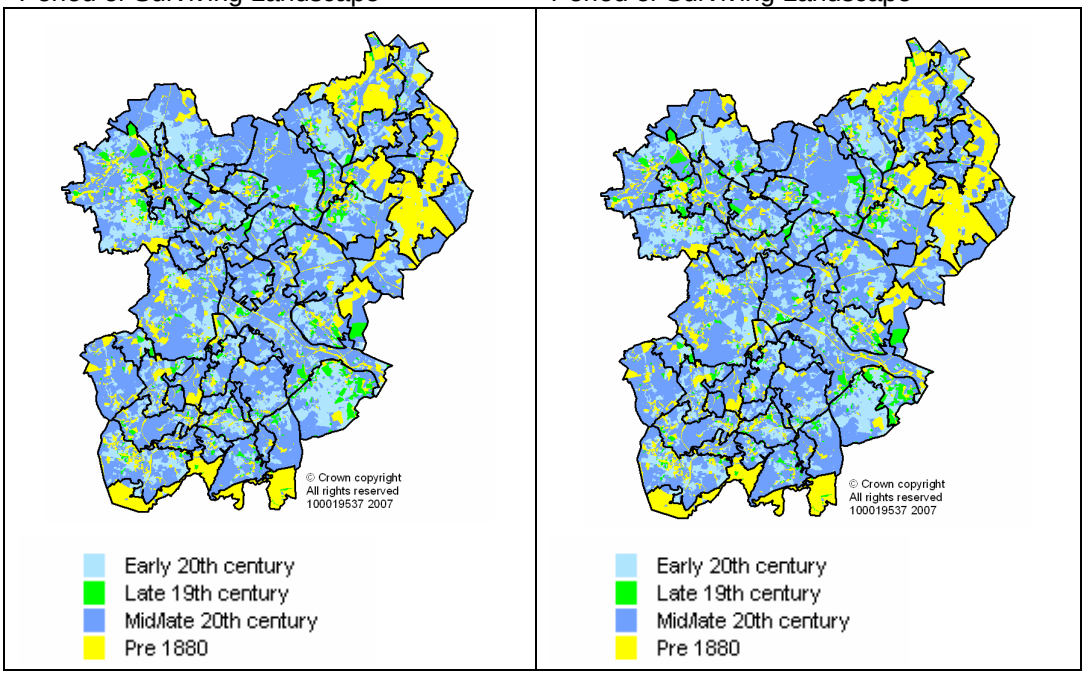
Broad Type	Number of Polygons	Total Area in Sq Km	% of Black Country Accounted for by Broad Type
Pre 1880	1,763	69	19%
Late 19th century	715	15	4%
Early 20th century	2,748	75	21%
Mid/late 20th century	7,419	197	55%
unknown	19	-	-
Total	12,664	356	100%

Source: Black Country HLC

Figure 6. Character Areas and Period of Surviving Landscape

(i) Third Draft Character Areas, showing Period of Surviving Landscape

(ii) Fourth Draft Character Areas, showing Period of Surviving Landscape

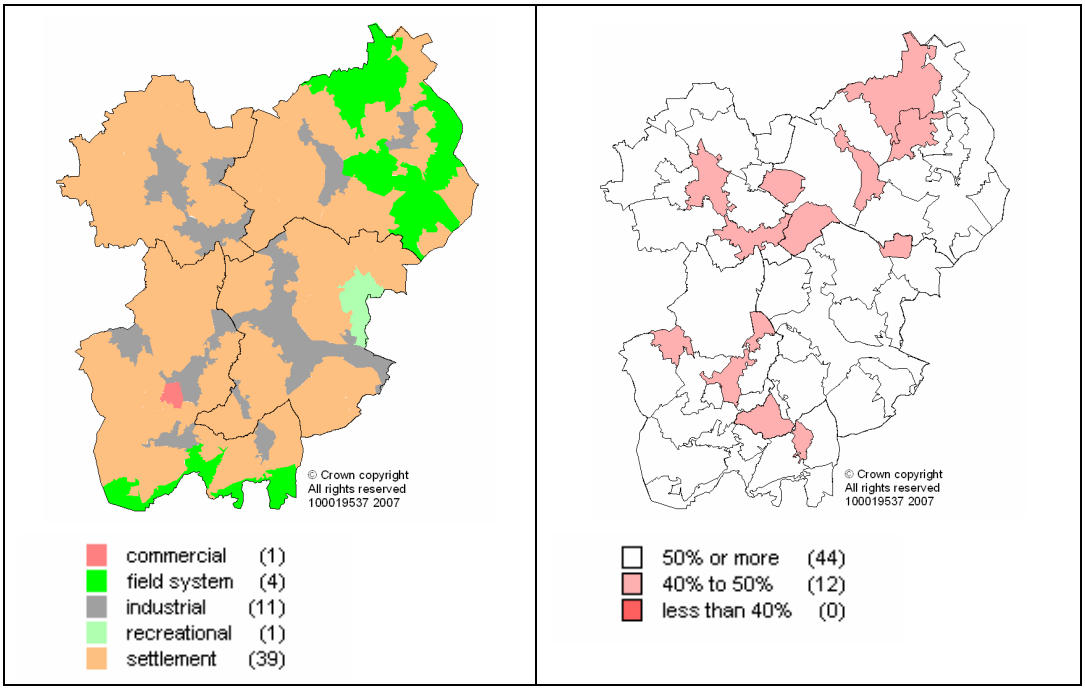


Source: Black Country HLC

Figure 7. Analysis of the Fourth Draft Character Areas by Broad Type

(i) Character Areas by Dominant Broad Type, showing Local Authority District Boundaries

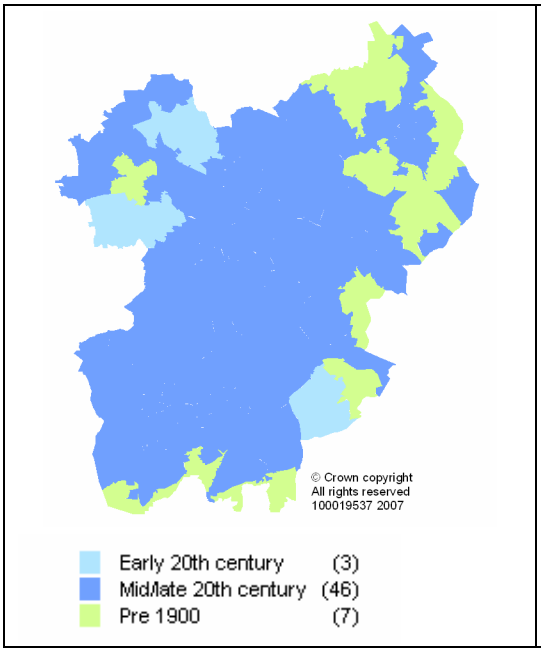
(ii) Character Areas by Extent of Dominance by a Single Broad Type



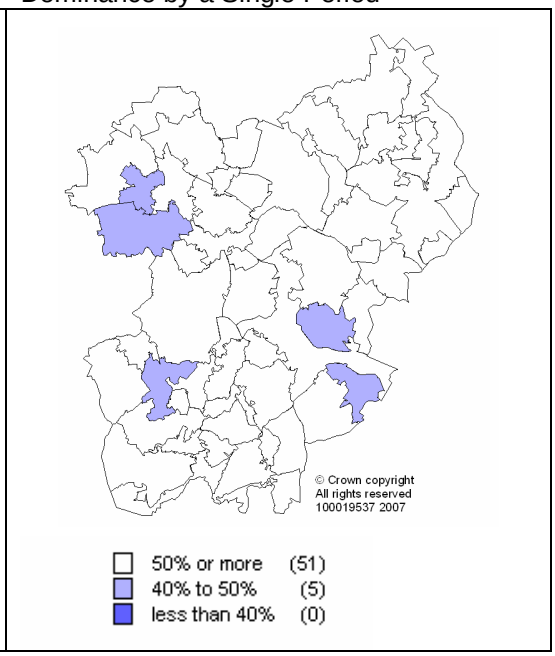
Source: Black Country HLC

Figure 8. Analysis of the Fourth Draft Character Areas by Period of Origin

(i) Character Areas by Dominant Period



(ii) Character Areas by Extent of Dominance by a Single Period



Source: Black Country HLC

In a similar way to the one in which these previous figures illustrated the representation of modern land use (or Broad Type), Figure 8 illustrates the dominance of each Character Area by a particular period of origin[3]. It shows that, in addition to being dominated by a single period, this set of Character Areas are, in general, also dominated by one of these three periods. As Figure 8(ii) illustrates, only 5 of the 56 Areas do not have one period of origin accounting for at least half of its area.

Stage 7: Results and Future Work

As a description of the results of the process we have adopted, Table 3 lists all 56 Character Areas along with a summary of their period of origin and modern use. Table 4 also shows the provisional names given to the areas in Walsall and Wolverhampton; this will be updated and added to as work proceeds. Short descriptions of the Character Areas summarising their modern and historic character are now being written.

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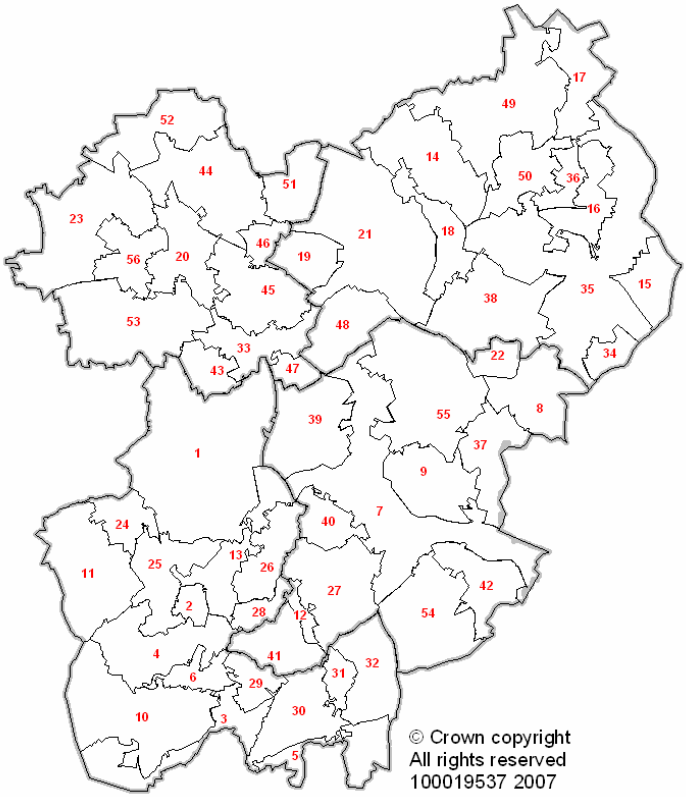
[3] In this analysis the categories of 'Pre 1880' and 'Late 19th century' used in Table 2 were merged.

Table 3: Black Country HLC Character Areas (4th Draft)

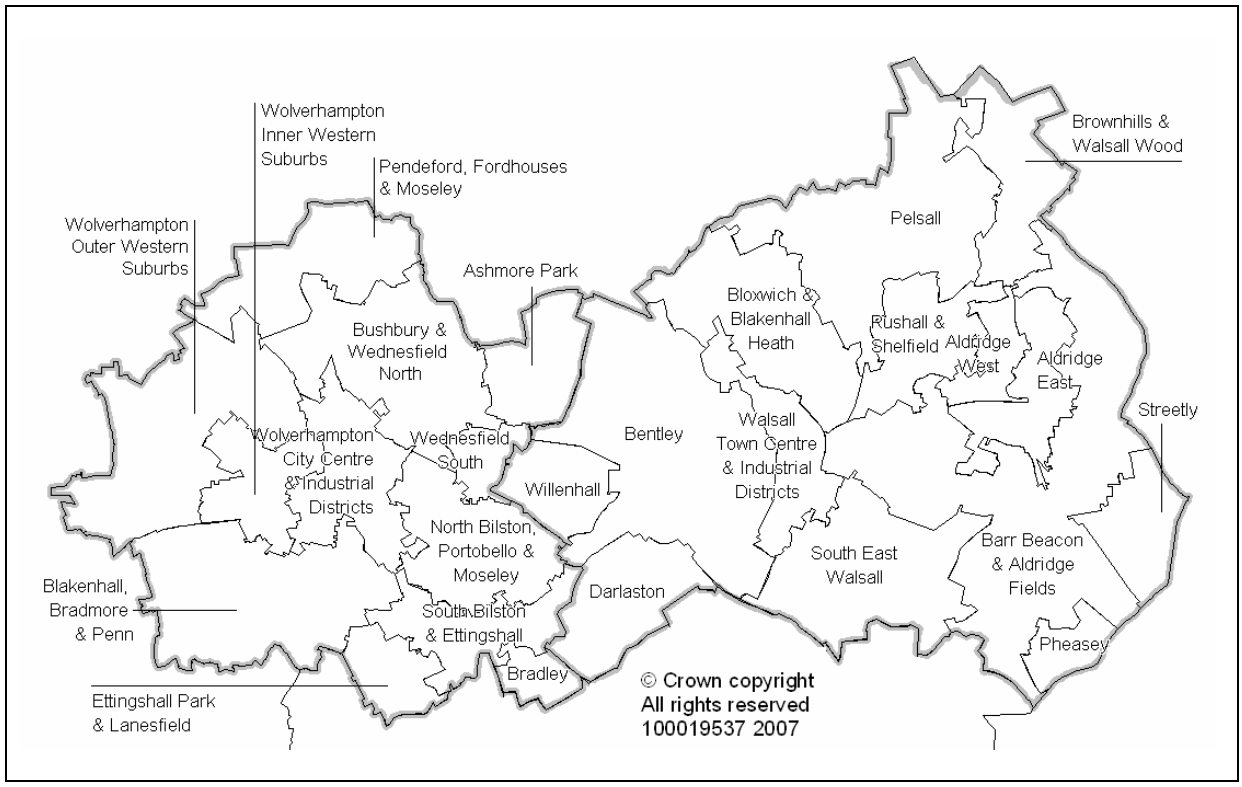
ID	Dominant Period & Type
1	Mid/late 20th century settlement
2	Mid/late 20th century commercial
3	Pre 1900 field system
4	Mid/late 20th century settlement
5	Pre 1900 field system
6	Mid/late 20th century industrial
7	Mid/late 20th century industrial
8	Mid/late 20th century settlement
9	Mid/late 20th century settlement
10	Mid/late 20th century settlement
11	Mid/late 20th century settlement
12	Mid/late 20th century industrial
13	Mid/late 20th century industrial
14	Mid/late 20th century settlement
15	Mid/late 20th century settlement
16	Mid/late 20th century settlement
17	Mid/late 20th century settlement
18	Mid/late 20th century industrial
19	Mid/late 20th century settlement
20	Mid/late 20th century industrial
21	Mid/late 20th century settlement
22	Mid/late 20th century settlement
23	Mid/late 20th century settlement
24	Mid/late 20th century industrial
25	Mid/late 20th century settlement
26	Mid/late 20th century settlement
27	Mid/late 20th century settlement
28	Mid/late 20th century settlement
29	Mid/late 20th century settlement
30	Mid/late 20th century settlement
31	Mid/late 20th century industrial
32	Mid/late 20th century settlement
33	Mid/late 20th century industrial
34	Mid/late 20th century settlement
35	Pre 1900 field system
36	Mid/late 20th century industrial
37	Pre 1900 recreational
38	Mid/late 20th century settlement
39	Mid/late 20th century settlement
40	Mid/late 20th century settlement
41	Mid/late 20th century settlement
42	Pre 1900 settlement
43	Mid/late 20th century settlement
44	Early 20th century settlement
45	Mid/late 20th century settlement
46	Mid/late 20th century industrial
47	Mid/late 20th century settlement
48	Mid/late 20th century settlement
49	Pre 1900 field system
50	Mid/late 20th century settlement
51	Mid/late 20th century settlement
52	Mid/late 20th century settlement
53	Early 20th century settlement
54	Early 20th century settlement
55	Mid/late 20th century settlement
56	Pre 1900 settlement

Map



Source: Black Country HLC

Table 4: Draft Names of Character Areas in Walsall & Wolverhampton



Walsall:

ID	Code	Name
14	WL01	Bloxwich & Blakenhall Heath
15	WL02	Streetly
16	WL03	Aldridge East
17	WL04	Brownhills & Walsall Wood
18	WL05	Walsall Town Centre & Industrial Districts
19	WL06	Willenhall
21	WL07	Bentley
34	WL08	Pheasey
35	WL09	Barr Beacon & Aldridge Fields
36	WL10	Aldridge West
38	WL11	South East Walsall
48	WL12	Darlaston
49	WL13	Pelsall
50	WL14	Rushall & Shelfield

Wolverhampton:

ID	Code	Name
20	WV01	Wolverhampton City Centre & Industrial Districts
23	WV02	Wolverhampton Outer Western Suburbs
33	WV03	South Bilston & Ettingshall
43	WV04	Ettingshall Park & Lanesfield
44	WV05	Bushbury & Wednesfield North
45	WV06	North Bilston, Portobello & Moseley
46	WV07	Wednesfield South
47	WV08	Bradley
51	WV09	Ashmore Park
52	WV10	Pendeford, Fordhouses & Moseley
53	WV11	Blakenhall, Bradmore & Penn
56	WV12	Wolverhampton Inner Western Suburbs

Appendix 1: Analysis of Broad Types

Thirteen different Broad Types distinguish the HLC records. The distribution of the polygons between these Broad Types reflects the role of the modern Black Country as a place for living and working. As shown in Table A4, 'settlement' and 'industry' account for almost three quarters of the polygons by number (9,032 of the 12,664), and almost three fifths of the surface area of the Black Country (58.5%).

Perhaps surprisingly, the next largest categories by land area are largely associated with open space: 'field system'; 'recreational'; and 'open land'. Between them these account for 1,312 records (10.4% of the total) and quarter (26%) of the land area.

With the addition of 'public services', these six Broad Types account for almost 90% of the area characterised.

Table A4: Black Country HLC Polygons by Broad Type

Broad Type	Number of Polygons	Total Area in Sq Km	% of Total Area Accounted for by Broad Type	Average Polygon Area in Sq Km
Settlement	7,490	168.7	47.4%	0.023
Industrial	1,542	39.5	11.1%	0.026
Field System	239	36.4	10.2%	0.152
Recreational	608	34.7	9.8%	0.057
Open Land	464	21.2	6.0%	0.046
Public Services	754	18.4	5.2%	0.024
Communications	248	10.9	3.1%	0.044
Commercial	692	9.3	2.6%	0.013
Woodland	138	4.8	1.4%	0.035
Religious	340	4.4	1.2%	0.013
Extractive	61	4.1	1.2%	0.067
Utilities	82	3.3	0.9%	0.040
Military	6	0.1	0.0%	0.011
Grand Total	12,664	355.9	100.0%	0.028

Source: Black Country HLC

Appendix 2: Analysis of Recreational HLC Types

Among the HLC polygons categorised with a Broad Type of 'recreational', six categories of HLC type were tagged as being associated with adjacent areas of settlement in order to assist the creation of Character Areas. Table A5 details the result of this process.

Table A5: Recreational Polygons within the Black Country HLC

HLC Type	Number of Polygons	Total Area in Sq Km	Average Area in Sq Km	Associated with Adjacent Settlement
Sports ground	221	9.41	0.043	Yes
Public open space	126	3.55	0.028	Yes
Allotments	97	1.56	0.016	Yes
Public park	81	6.47	0.080	-
Golf course	20	6.53	0.327	-
Leisure centre	19	0.42	0.022	Yes
Country Park/nature reserve	14	3.36	0.240	-
Cinema complex	7	0.17	0.024	Yes
Stadium	5	0.28	0.055	-
Private parkland	5	1.15	0.231	-
Theatre	4	0.03	0.006	Yes
Country Park	4	1.03	0.258	-
Castle	1	0.03	0.029	-
Nature Reserve	1	0.12	0.116	-
Open air museum	1	0.12	0.118	-
Zoo	1	0.12	0.118	-
Racecourse	1	0.39	0.392	-
Total	608	34.73	0.057	-

Source: Black Country HLC

Appendix 2: The 2006 Character Areas

In 2006 Character Areas were defined with the District boundaries of Walsall and Wolverhampton (Figure A9, Table A6). HLC Types, period and historic maps were used to define the Areas.

Figure A9. The Character Area Boundaries Defined for Walsall and Wolverhampton in 2006

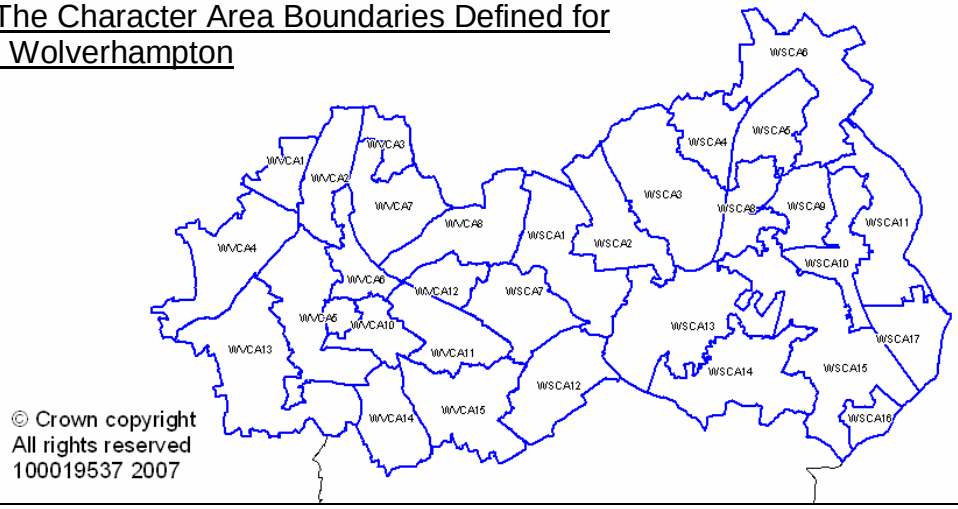


Table A6: 2006 Character Areas & their Predominant Broad Type

WOLVERHAMPTON			WALSALL		
Character Area (2006)	**Dominant Broad Type**	**% of Area Accounted for by Dominant Broad Type (descending order)**	**Character Area (2006)**	**Dominant Broad Type**	**% of Area Accounted for by Dominant Broad Type (descending order)**
WVCA7	settlement	0.77	WSCA16	settlement	0.80
WVCA8	settlement	0.73	WSCA10	settlement	0.77
WVCA11	settlement	0.70	WSCA17	settlement	0.75
WVCA13	settlement	0.68	WSCA15	field system	0.73
WVCA4	settlement	0.68	WSCA1	settlement	0.70
WVCA14	settlement	0.64	WSCA11	field system	0.66
WVCA10	industrial	0.63	WSCA5	field system	0.65
WVCA5	settlement	0.63	WSCA8	settlement	0.64
WVCA2	settlement	0.53	WSCA3	settlement	0.59
WVCA9	commercial	0.52	WSCA14	settlement	0.58
WVCA12	industrial	0.51	WSCA4	settlement	0.48
WVCA1	settlement	0.49	WSCA9	industrial	0.48
WVCA6	industrial	0.36	WSCA13	settlement	0.47
WVCA15	settlement	0.34	WSCA12	settlement	0.44
WVCA3	field system	0.32	WSCA6	settlement	0.37
			WSCA7	settlement	0.36
			WSCA2	settlement	0.33

Source: Black Country HLC