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Green Spaces: Interactively Mapping the Results of a Public Consultation

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Introduction

Leicestershire County Council (LCC) ran a public consultation between January and April in 2011 to find which green spaces in the county are of value to its citizens and why they are valued, to help conform to legislation that allows communities to protect green spaces (CLG, 2010) and to contribute to an evidence-base for planning application decisions. LCC wanted respondents to identify *any* "green space" considered of value, regardless of size or official designation, and then answer questions about why it was of value. This is the first time LCC have collected such detailed geographical information from a public consultation.

We produced a web-based tool to collect data for the consultation. The tool (http://lsr-online.org/green spaces/) allows respondents to draw polygons identifying green spaces on a zoomable map of Leicestershire and then to answer multiple choice and free-text questions about them. To widen participation, the 27 local 'Community Forums' in Leicestershire also ran public meetings at which attendees could identify and comment upon in person.

As a result of this exercise, 3112 green spaces were identified, a third (1110) of which were submitted online from members of the public and the remaining two thirds (2002) submitted face-to-face at Community Forum meetings.

LCC wanted to make the results available in a form that the public could explore and use to comment upon or challenge planning decisions.

This paper describes the design of this tool – at http://lsr-online.org/greenspacesresults/ – and further ideas for exploring the results visually.

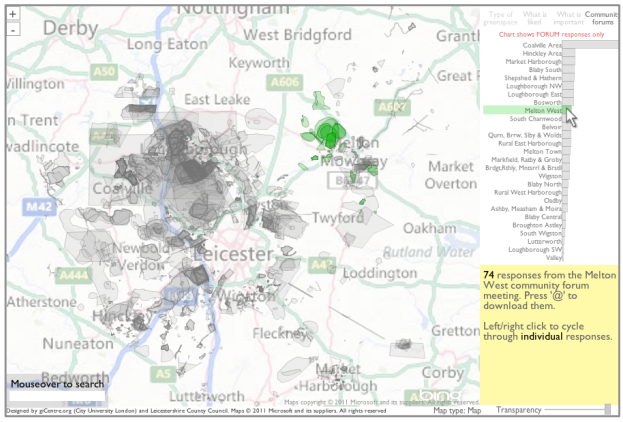

Fig 1. Screenshot, with responses from the Melton West Community forum in green. Interactive version at http://lsr-online.org/greenspacesresults/

Design

Our design brief was to provide an easy-to-use interactive map to explore the results of the public consultation. Each response had a polygon and free-text comments about the green space it represents. Online respondents were asked to classify the *type* of green space and what they *liked* about it as multiple-choice questions. Both types of respondent were asked to classify its importance in terms of nature, landscape, recreation or community. Shneiderman's "overview first, zoom and filter, then details-on-demand" mantra (Shneiderman, 1996) was used in our design.

Overview

To help make generalisations, responses are summarised spatially and by category.

Spatially, the level of accumulated opacity that results from drawing green spaces as semi-transparent polygons on a base map indicates the number of times areas were identified as valued green spaces. The semi-transparent outlines subsequently drawn using the tool show the extents of each green space. Note that green spaces could only be marked for the area administered by LCC; this is why Leicester City has no green spaces marked.

Responses are summarised by *category* using barcharts, according to (a) greenspace type (online only), (b) what is liked (online only), (c) importance (both) and (d) community forum (forum only), selectable using the tabs above. Counts relate to those green spaces in view, so charts dynamically respond to any zooming and panning of the map.

Filter

Mouse brushing highlights responses filtered by space (Fig. 2), category (Fig. 1) or keyword (Fig. 3), depending on whether the mouse is over the map, barcharts or keyword lookup. The highlighted set is shown in the map and in the barcharts in green with the others in grey, using Dykes *et al*'s (2010) idea. Fig. 1 shows 74 highlighted green spaces from the Melton West Community forum using barchart-based filtering and Fig. 2 shows 5 spatially highlighted green spaces. And Fig. 3 shows responses which mentioned "dog walking".

Details on demand

Details of individual responses in any highlighted set can be cycled-through and viewed, important to enable individual comments to be acted upon. In Fig. 2, free-text comments on response '2 of 5' labelled "Thornton Reservoir" can be seen and an impas-

sioned plea for the protection of green spaces can be seen in Fig. 3. This represents a quick and convenient way to identify areas of interest and read the detail of all those that have commented on it. The blue background to the text indicates that the response was from a community forum (red is used to indicate the comment was elicited online).

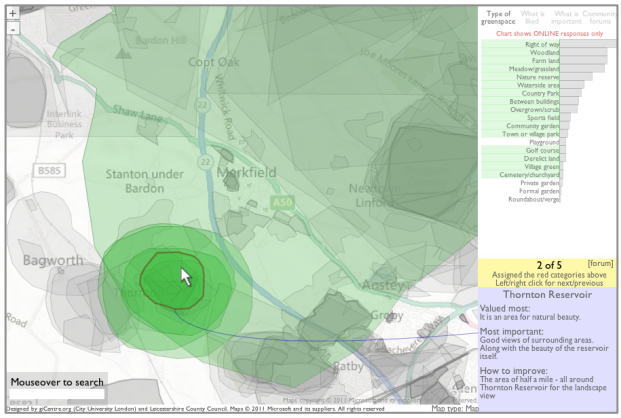

Fig 2. Five greenspaces where the mouse cursor is. Left/right clicking cycles forward/backwards through the individual responses.

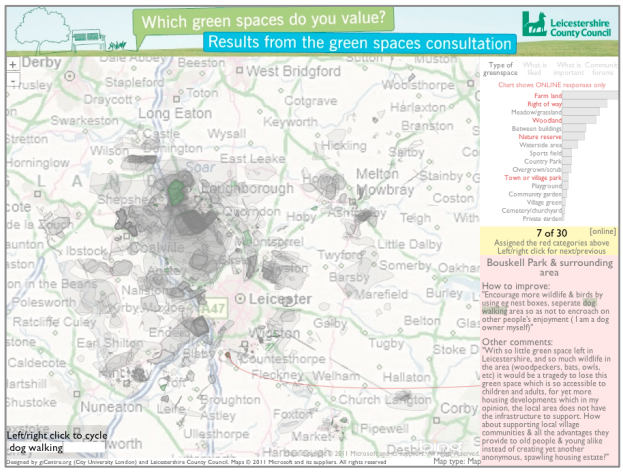

Fig 3. Green spaces filtered on the phrase "dog walking" with response 7 of 30 shown.

Other design details

A number of design details help make this interface intuitive. Always using grey for all and green for the highlighted set gives a consistency of visual encoding. There is a consistency of interaction, where mouseover brushing to filter a highlighted set is applied consistently across the map, barchart and keyword lookup and left/right clicking cycles through the set of highlighted comments, regardless of how they were highlighted. The context-sensitive instruction on a yellow background, reminiscent of a Post-it note, was more noticeable to users that the white background previously used.

Further ideas

The public-facing tool has been available since mid-2011, but we are experimenting with further ideas for interactively visually characterising responses.

Top verb and adjectives

To help characterise comments, the top 20 verbs and adjectives (Wordnet, 2012) in the free-text comments for the current highlighted set are shown in Fig. 4, calculated on-the-fly in response to mouse brushing. A measure of word importance with respect to the corpus rather than frequency (e.g. TF-IDF) would reduce the dominance of common words.

Where respondents live

Online respondents could optionally submit home postcodes. We cannot publish these, but can use them to study the spatial relationship between home and valued green space. Fig. 4 shows point locations (for whom we had postcodes) and a summary of these as a standard ellipse. This indicates they live locally.

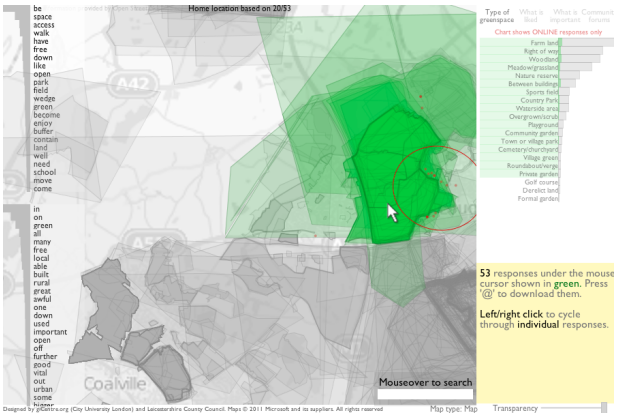

Fig 4. Highlighted green spaces, with frequencies of top 20 verbs (top left) and adjectives (bottom left), home locations of respondents (perturbed) and standard ellipse summary.

Conclusions

We supported a public consultation and made results available to the public. Our tool allows the 3112 results to be filtered, mapped and for individual comments to be browsed, in an interface that is appealing and easy-to-use. These design ideas are applicable to other similar public consultations, particularly with the current emphasis the accountability of public services. Other visual analysis design ideas are suggested for helping further characterise responses.

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