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Environmental Justice and the City: Full Report

Simin Davoudi and Elizabeth Brooks
October 2012

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School of Architecture, Planning and Landscape

Newcastle University

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Institute for Local Governance to inform the work of Newcastle City
Council's Fairness Commission*



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24 November 2011 Workshop

- Chair: Professor Simin Davoudi (NIReS Justice and Governance Theme)
- Philip Hunter (Head of Policy and Research, Newcastle City Council)
- Dr Paul Crawshaw (Social Futures Institute, Teesside University)
- Dr Lucy Grimshaw (School of Social Sciences and Law, Teesside University)
- Dr Jane Midgley (School of Architecture Planning and Landscape, Newcastle University)
- Professor David Schlosberg (University of Sydney, Visiting Professor, SAPL, Newcastle University)

22 March 2012 Workshop

- Chair: Professor Paul Younger (Newcastle Institute for Research on Sustainability, NIReS)
- Professor William Rees (University of British Columbia, Visiting Professor, SAPL, Newcastle University)
- Adrian McLoughlin (Newcastle City Council)
- Professor Tanja Pless-Mulloli (Institute of Health and Society, Newcastle University)
- Dr Derek Bell (School of Geography, Politics and Sociology, Newcastle University)

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Disclaimer

The opinions expressed in this report are entirely the responsibility of the authors and do not necessarily reflect the views of those acknowledged above.



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Fair share

Fair play

Fair go

Fair say

Report of the
Newcastle
Fairness Commission
July 2012

Newcastle
City Council

 Newcastle
University

Photo by Minh Dung Le

SECTION 1

INTRODUCTION

The current financial crisis is driving many government policies in the UK and elsewhere. However, economics alone cannot decide what policy changes the government should make. At its best, economics can tell us the effects of seeking alternative policies, but without being guided by a set of normative principles, it cannot provide guidance on which policy to pursue. At the heart of such normative principles is the pursuit of justice and fairness. This is acknowledged by Newcastle City Council (NCC) which has established a Fairness Commission to develop a set of guiding principles for the governance of the City at a time of financial austerity. This stems from a desire to ensure equitable access to services while continuing to prioritise those most in need. It will entail understanding the nature of the challenges ahead and exploring how the powers and resources of the Council alongside those of other public agencies and the private and voluntary sectors can be deployed to address them in an innovative and effective manner. The focus of the Fairness Commission is on socio-economic issues. However, it is strongly recognised by the Council that these issues cannot be examined fully without considering fairness in

environmental terms in Newcastle. To fill the gap, this study has been commissioned by the Council and funded by the Institute for Local Governance. It aims to examine a range of issues in relation to environmental justice in order to inform and complement the work of the Fairness Commission.

The report has seven main sections. Following this introduction, Section Two briefly outlines different interpretations of justice and fairness and clarifies the position adopted in this study. Section Three provides an overview of the history of environmental justice, and its definitions and perspectives. In Section Four a brief profile of Newcastle upon Tyne is presented, focusing particularly on spatial differentiations and inequalities in the city. Sections Five and Six present our empirical work in relation to the socio-spatial distribution of, respectively, environmental burdens and benefits in Newcastle. Section Seven focuses on procedural justice and the significance of participation both in decision-making processes and in contributing to sustainability. A full bibliography is provided in Section Eight.

1.1 Why does environmental justice matter?

Environmental justice is conceptually broad, addressing the fair distribution of environmental impacts, goods and services within and between generations, and between people and the natural world. (Mitchell and Norman, 2012: 44).

Environmental justice matters because it is a critical component of social justice; because environmental inequalities, like other forms of social inequality, worsen health and well-being, hamper economic performance and diminish social cohesion. There is a proven link between health (and its relation to deprivation) and environmental factors. However, the extent to which economic disadvantage and social exclusion may be compounded or compensated by a polluted or favourable environment, which in turn affects health and well-being, is not yet fully examined (Pless-Mulloli and Phillimore, 2001). It is suggested that Peter Townsend himself, who developed a widely-used deprivation index that bears his name, recognised that a missing dimension of deprivation indices is the quality of the environment and exposure to pollution (*ibid.*). The current indices of deprivation for England (ILD) provided by the UK Office for National Statistics have begun to fill that gap by adding a 'Living Environment Deprivation Domain' to the other six main domains of deprivation. However, the weighting attached to the environmental domain is 9.3% compared with 22.5% for the income and employment domains.

Environmental justice also matters because access to environmental benefits,

and protection from environmental harms, constitute basic human rights. This is mentioned in the first principle of the 1972 Declaration of the UN Conference on the Human Environment, held in Stockholm:

Man has the fundamental right to freedom, equality and adequate conditions of life, in an environment of a quality that permits a life of dignity and well-being, and he bears a solemn responsibility to protect and improve the environment for present and future generations. (UNEP, 1972).

In April 2001, human and environmental rights were brought together when the UN Commission on Human Rights agreed that "everyone has the right to live in a world free from toxic pollution and environmental degradation" (UNEP, 2001). Since the late 1990s, concern about environmental justice has increasingly been incorporated into the UK government's environmental priorities. It appeared in the 1999 national Sustainable Development Strategy, with the recommendation that,

Everyone should share in the benefits of increased prosperity and a clean and safe environment. We have to improve access to services, tackle social exclusion and reduce the harm to health caused by poverty, poor housing, unemployment and pollution. Our needs must not be met by treating others, including future generations and people elsewhere in the world, unfairly. (DETR, 1999).

In the UK's third Sustainable Development Strategy it is acknowledged that, "environmental equality and social justice

are key areas for which we may need to establish further indicators” (DEFRA, 2005:22) and that,

The public sector needs to work together better in tackling issues of social and environmental justice and use existing structures to provide local services, planning and regeneration... that mixed messages from national government, for example on ‘sustainable communities’, ‘sustainable development’, ‘wellbeing’ and ‘sustainability’ can make delivery of sustainable development very difficult at the local level. (DEFRA, 2005:119).

The Environment Agency, the main environmental regulatory agency in the UK, has since become engaged with this agenda, producing a report on its discussions on Achieving Environmental Equality (EA, 2000), issuing a position paper on Addressing Environmental Inequalities (EA, 2004), and including environmental justice in its strategic priorities (Chalmers and Colvin, 2005). There has also been an increase in support for environmental justice research programmes by the Environment Agency and Scottish Executive as well as various research funding bodies (for example the Joseph Rowntree Foundation’s research programme on climate change and justice).

1.2 Assessing environmental justice

There is nothing so finely perceived and finely felt as, injustice.

(Charles Dickens, Great Expectations, 1861/2003:63)

Questions of justice and fairness are not technical or statistical questions; they are rather ethical and political questions, as mentioned above. Like social justice, defining and assessing environmental justice is not straightforward. The United States Office of Environmental Justice, for example, has admitted that, “no reliable and definitely no single measurement existed for assessing environmental justice ... and furthermore, no single method for assessing environmental justice existed, or is ever likely to exist”

(Rhodes, 2003: 120). Furthermore, indicators themselves may not be sufficient for measuring the degree, presence, or absence of environmental justice because what they often measure are “indirect outcomes, often several degrees removed from the possible environmental injustice situation” (Rhodes, 2002:89).¹ They measure the “conditions that may be symptomatic of an underlying environmental justice problem” (Spaul, 2009:21).

1 Similarly, in the UK National Sustainable Development Indicators, “social justice” is listed as a “phenomenon” for which “social measures” are yet “to be developed” (DEFRA, 2012, <http://sd.defra.gov.uk/progress/national/> accessed 05/03/2012).

For example, the 'Living Environment Deprivation Domain' of the English Indices of Multiple Deprivation, measures "the quality of individuals' immediate surroundings both within and outside the home" (DCLG, 2011: 15-16). The domain is divided into two sub-domains: the 'indoors' and the 'outdoors' living environment. The former measures the quality of housing using two

indicators: social and private housing in poor condition, and homes without central heating. The latter also uses two indicators: air quality and road traffic accidents. The four indicators are then combined to calculate the environmental deprivation domain. This provides a very limited understanding of people's environmental experience and its impact on their quality of life and wellbeing.

1.3 About this report

This report should be read with the above preamble in mind. Our focus is on the distributive dimension of environmental justice in the City of Newcastle. Like most distributive studies, we attempt to assess the socio-spatial patterns of environmental benefits and burdens in the city, drawing on secondary sources as well as primary analysis of existing data sources. We are aware of the limitations of distributive approaches and acknowledge that a full understanding of environmental justice cannot be achieved without considering issues of recognition, capabilities, and participation as discussed in Section Seven. However, a more comprehensive approach which takes into account these dimensions of environmental justice was beyond the time and resources available to this study. We are also aware of three other limitations of this study, as follows.

The first is its predominantly top-down approach, analysing environmental justice on the basis of expert views, survey data and quantitative mapping rather than a more qualitative, inclusive and interpretive perspective which would involve detailed narrative of a particular place and of people's perceptions of the

environment and the meaning and values they attach to that. Such an approach would have provided a situated view of environmental justice and engaged with the contested nature of, and the inherent power relations in, environmental justice processes and outcomes (Hillman, 2006).

The second limitation is the spatial scale of the study which is confined to the administrative boundary of the city of Newcastle. Such a tight and arbitrary boundary makes it difficult to analyse and understand the wider environmental justice issues that cut across the local authority's jurisdiction. Two pertinent examples are the relationship between the city and its rural 'hinterland' and between justice at the local and global levels. Our brief places these questions outside the remit of our study and hence does not incorporate such questions as: is what is just for Newcastle also just for the rest of the region? How do Newcastle's policies and actions affect the environmental experiences of its neighbouring areas and vice versa?

The third limitation of this study relates to the temporal dimension of justice.

Although in some instances the study provides a dynamic view of how environmental qualities have changed over time, it deals predominantly with the present time and does not engage fully with the question of how differentiated, and sometimes inequitable, environmental distributions have come about and remained persistent. Neither does it deal with the question: is what is just for the present generation also just for future generations?

Despite all these limitations, we believe that the report provides a valuable contribution to the current debate on fairness and particularly the deliberations of the Newcastle Fairness Commission by:

- Defining the environmental dimension of justice and fairness
- Mapping the distributional patterns of environmental benefits and burdens in the City and their relationship with deprivation and vulnerability
- Identifying what has been done about it in national and local policy
- Offering ideas about what can be done about it in the context of local political and budgetary constraints.

The report is also a valuable contribution because as Arne Naess (the Norwegian environmentalist) suggests, “there is an immense need patiently to disseminate information, to dwell repeatedly on the concrete cases of injustice and on the concrete cases of ecological unsustainability” (Naess, 1999: 28). We hope that this study is a useful step towards this goal.



Photo by Minh Dung Le

SECTION 2

ON JUSTICE

Justice removed, then, what are kingdoms but great bands of robbers?

(St. Augustine, quoted in Miller, 2003:74)

This ancient quote evokes the notion that justice is not merely an individual virtue of the kind advocated by Plato and Aristotle.² It is also a set of principles that are fundamental to the institutions that turn a mass of individuals into a political community. This means that the pursuit of justice is central to the justification of political authority and political obligation. In this sense, justice has a

legal connotation and relates to concerns about individuals' rights and duties. It is about how people are treated (treatments received) and in what ways (procedures followed).³ Another meaning of justice is how the benefits and burdens of societal activities are distributed and how this distribution is decided upon. The former is known as substantive or *distributive* justice and the latter as *procedural* justice.

- 2 Justice as a virtue concerns the characteristics of individuals. For Plato, for example, the Republic's conception of individual justice is distinctively virtue-ethical, even more so than Aristotle who is widely known as a virtue ethicist par excellence, because Aristotle situates his account of justice in a context largely external to just individuals. He argues that communities are just if individuals receive benefits according to their merits or virtue (Miller, 2003).
- 3 This means that everyone should be treated equally unless there are relevant reasons for treating them differently. Ensuring 'fair' treatment requires that rules are impartially followed and consistently applied in order to generate an unbiased decision.

2.1 Distributive justice and the question of a 'fair' share

The most influential theory of distributive justice has been developed by John Rawls who interpreted justice as fairness. According to Rawls, a just society is one in which everyone receives a 'fair' share of the benefits and resources that are available. While the principle is acceptable to most, there is much disagreement about what counts as 'fair'. Rawls argues that a just society must fulfil three conditions (Rawls, 1971, 1993):

- *Equal liberty*: everyone should have basic liberties, consistent with the same liberty for everyone else
- *Equality of opportunity*: everyone should have the same opportunity to fulfil their potentials
- *Difference principle*: inequalities of income are justified only if they benefit the worst off.

For Rawls, therefore, the default is an equal distribution of, mainly, income and wealth. The only inequalities that can be considered as just are those that can best improve the long-term prospects of the least advantaged. The difference principle constitutes a public recognition of the principle of reciprocity. This means that the basic structure of society should be arranged in such a way that no social group advances at the cost of another (Rawls, 2001: 122-24).

Since the publication of *A Theory of Justice* in 1971, Rawls' *Difference Principle* has been subject to numerous criticisms by other theories of distributive justice. For

example, 'pure' *egalitarians* who advocate equality of outcome (i.e. everyone having an equal share of resources produced by an economy or society) argue that inequalities permitted by the difference principle are unacceptable even if they do benefit the least advantaged. The *Utilitarian* objection is based on the ground that it does not maximize utility defined as pleasure, happiness, or preference-satisfaction in qualitative terms. The utilitarian perspective⁴ held the claim that an act is morally right only if it maximizes the good, and causes the greatest happiness for the greatest number. *Libertarians* argue that the difference principle involves unacceptable infringements on liberty through, for example, redistributive taxation to the poor which involves the immoral taking of 'just holdings'. For them, there is no need to devise a particular distributive pattern to achieve just outcomes because such outcomes can be achieved through the separate just actions of individuals.⁵ For Robert Nozick, the most well-known contemporary libertarian and advocate of *Entitlement Theory*, distribution is just if everyone is entitled to the holdings they possess under the distribution (Nozick, 1974). The Difference Principle has also been criticized by advocates of the *Desert-Based Principle* on the grounds that it pays little attention to claims that people deserve certain economic benefits because of their actions. Accordingly, scholars such as David Miller (2003: 90) have replaced Rawls' Difference Principle with two other principles:

4 Jeremy Bentham (1789), John Stuart Mill (1861), and Henry Sidgwick (1907).

5 As advocated by Fredrick Hayek (1960).

- Guaranteed social minimum that changes over time and in different societies and provides a decent life for every citizen
- Principle of desert: inequality of incomes to be proportional to the relative contributions that people make measured by success in producing goods and services that people want.

The brief summary presented above shows that what constitutes *fair or just varies* depending on what philosophical and political stance is adopted. In a two-part article Ronald Dworkin (1981a&b), a follower of Rawls, raises the question: ‘what is equality’? He suggests that “Equality is a popular but mysterious political ideal” because people can become more equal in one way with the consequence that they become more unequal in others (Dworkin, 1981a:185). In simple terms, there are three criteria that are often used to define fairness: *equity* (what people receive from society should be based on what they contribute to it), *equality* (everyone should receive the same amount regardless of their input or need), and *welfare* (what people receive should be based on their need). In practice, it is difficult to envisage how the first and second definitions of ‘fairness’ can be practically used to achieve justice in the context of contemporary unequal societies. As suggested by Lamont and Christi (2008) principles of justice need to be implemented in real societies, taking

into account the problems and constraints inherent in such application.

We concur with the position taken by the Chair of the Commission on Fairness and Newcastle City Council that in unequal societies, like ours, “those who are most disadvantaged should receive greater benefit, and that more effort should go towards creating opportunities for them”; that in such societies “unequal allocation of resources can be regarded as fair” (Brink 2011: 4; NCC, 2012:15). Thus, for the purpose of this study we adopt a welfare-based principle of distributive justice while acknowledging that social and environmental justice, like democracy, is an unfinished business and an essentially political project. This means that the current distributive patterns are the results of particular socio-economic processes and particular political institutions. They are not a given, neither are they ‘normal’. They can indeed be changed through political decisions and actions so that justice can be advanced, even if perfectly just institutions are not in place. In his seminal work, *The Idea of Justice*, Amartya Sen suggests that one can define the principles of justice not in terms of ‘just institutions’ but rather in terms of “the lives and freedoms of people involved” (Sen, 2009, xii). He advocates practical reasoning which includes ways of judging how to reduce injustice and advance justice, rather than “what would be perfectly just institutions” (ibid.:9).

2.2 Beyond distributive justice: recognition, capabilities and responsibilities

The multiple interpretations of social justice, briefly outlined above, have one thing in common: they are all concerned with just redistribution of resources and goods and how they are channelled from those who have to those who have not. These egalitarian redistributive claims for social justice have framed the debate for the last 150 years. However, in an influential study, Nancy Fraser, drawing on the work of Amartya Sen, observes that there is a second type of claim for social justice which has emerged from consciousness of difference and within the politics of recognition. Its goal is “a difference-friendly world, where assimilation to majority or dominant cultural norms is no longer the price of equal respect” (Fraser, 1996: 3). While most redistributive justice theorists acknowledge the significance of status, they tend to “assume a reductive economic-cum-legalistic view of status, supposing that a just distribution of resources and rights is sufficient to preclude misrecognition” (28). In response to the lack of connection between these two types of claims Fraser puts forward “a bivalent conception of justice [that] encompasses both distribution and recognition *without reducing either one of them to the other*” (Fraser, 1996:30 original emphasis). What links the two parts together is the ‘parity of participation’ in society, suggesting that “justice requires social arrangements that permit all (adult) members of society to interact with one another as peers” (ibid.; see also Fraser, 2000). We expand on this in Section 7.

Fraser’s dual approach is particularly

pertinent in the context of the current reform of the welfare system in the UK. Means-tested benefits which target the very poor as the ‘beneficiaries’ of the redistribution tend to impinge on the recognition of their self-esteem because these measures “stigmatize recipients ... invidiously distinguishing them from ‘wage-earners’ and ‘taxpayers’ who ‘pay their own way’” (Fraser, 1996:48). This challenges the idea that, “fairness means giving people ‘what they deserve’ and warn[ing] benefit claimants they will not be allowed to live off taxes paid by working families if they are able to work themselves” (*The Guardian*, 2010, quoting the UK Prime Minister).⁶ Such targeting often leads to antagonistic group differentiations with the end result often “add[ing] the insult of misrecognition to the injury of deprivation” (ibid., 48). Instead, policy should seek to combine recognition with redistribution by seeking approaches that enhance the standing of claimants as full participants in social interaction (ibid., 49); that is, enhancing the status of the claimants as full citizens.

Another major departure from an exclusive focus on distribution has come from Amartya Sen. In line with his emphasis on practical reasoning and the pursuit of the social realisation of justice, Sen (2009:231) suggests that in judging a society and assessing justice or injustice, we should focus not so much on individuals’ happiness or pleasure (utility-based) or their income and wealth (resources-based), but on their freedom and capabilities. He advocates a “freedom-based capability approach” (2009:231) where capability is “an aspect

6 H el ene Mulholland and Patrick Wintour, 2010, ‘Fairness means giving people what they deserve, Cameron to tell Tory conference’, *The Guardian*, Wednesday 6 October 2010 (<http://www.guardian.co.uk/politics/2010/oct/06/david-cameron-fairness-people-deserve> accessed 05/03/ 2012).

of freedom, concentrating in particular on substantive opportunities” (p.287). Sen proposes “a serious departure from concentrating on the *means* of living to the *actual opportunities of living*” (Sen, 2009:233 original emphasis). By placing the emphasis on people’s capability and freedom, Sen also highlights the need for accountability and responsibility which are particularly pertinent in relation to environmental care and sustainability. As he puts it,

Freedom to choose gives us opportunity to decide what we should do, but with that opportunity comes the responsibility for what we do... since capability is the power to do something, the accountability that emanates from that ability - that power - is part of the capability perspective, and this can make room for demands of duty. (Sen, 2009:19).

Thus, the political project of social justice is informed by values, rights, and the acceptance of difference and diversity. Its aim is to: achieve fairness and equality of

outcomes; fully recognise dignity and self-worth and encourage the self-esteem of all; meet people’s basic needs and reduce inequalities in wealth, income and life chances; and ensure greater participation in political processes (Craig *et al.*, 2001). All this may be seen as ideal, but in a non-ideal world we need a strong ethical compass, or what Rawls (1999) calls ‘realistic utopia’, for being able to identify potential alternatives beyond the political reality of the moment. The decision by Newcastle City Council to ‘create a fairer city’ is an example of such an aspiration and is reflected in the following extract from a Briefing Paper for the Council’s Cabinet meeting of 11 January 2012:

The current economic reality is one in which inequality has the potential to become significantly worse, not better. However, if we make the right decisions then we could make significant progress in reducing inequalities – in these difficult economic times we can choose to become a more equal city. (NCC, 2012b:4, emphasis added).

2.3 A Framework for understanding and advancing fairness

Based on the discussion presented above, we suggest the following set of guiding

principles in approaching the issues of fairness.

Table 2.1 Fairness principles **Source:** The authors

Understanding fairness is about knowing:	
Who gets what?	Distribution
Who counts?	Recognition
Who gets heard?	Representation
What matters?	Capability
Who contributes?	Responsibility and reciprocity
Advancing fairness is about knowing:	
Why things are unfair?	Practical judgement
What can be done about it?	Actions



*Demonstration for climate justice, San Francisco, Sept. 21st, 2009.
Photo courtesy of Mobilisation for Climate Justice West*

SECTION 3

ENVIRONMENTAL JUSTICE

The question at the centre of the environmental justice debate is whether there is an association between people's socio-economic position and their exposure to environmental burdens, such as air pollution, waste disposal sites and rundown neighbourhoods. More recently the discussion of environmental justice has broadened from the original focus on people's socio-economic position and – particularly in the US – their ethnicity, to look at other kinds of issues affecting the personal impacts of environmental quality, for example, cultural factors, health conditions and factors connected with being a younger or an older person.

Increasingly, it has become clear that environmental justice is not only about exposure to harms but about people's ability to access benefits such as green space, blue space and nature reserves. In its concern for access to the wider environment and benefits of the city, it also includes the issue of affordable and safe transport links. In connection with the latter, since neither the environment, nor people within it, can be viewed as static, environmental justice also looks beyond the environment in the place of residence to explore the dynamic nature of both flows in natural systems and in people's movements, which expose them to environments beyond the home, in the course of education, work and play.

3.1 Origin and history

The history and origin of environmental justice go back to the environmental justice movements (EJM) and their intricate links with the civil rights movements of the 1950s and 1960s in the United States (Bullard, 1999). EJM grew organically from hundreds of local struggles against environmental discrimination. It was based on the recognition that it is the poorest and non-white groups who suffer most from environmental pollution and have least access to environmental resources. To some extent these grassroots campaigns were happening outside mainstream environmental activism in the USA which was largely focused on the ecological concerns of white, middle class Americans and did not engage with the unfair socio-spatial distribution of environmental pollution and contamination (Hofrichter, 1993). One notable exception is Rachel Carson's book *Silent Spring* whose publication in 1962 raised the visibility of EJM because she drew on a justice framework to question the use of pesticides and other chemicals by industry and government and their impacts on the environment and human health.

A defining moment in EJM was the protest against the State of North Carolina's decision in 1982 to locate a hazardous waste landfill for contaminated soil in the Shocco Township in Warren County, where nearly 70% of the population was non-white and which had the lowest per capita income in the States. The protest saw prominent civil rights leaders joining with the local community in opposition to what was seen as environmental racism (Alston, 1990) and the disproportionate burden of toxic waste being born by

minority groups (Bullard, 1990). This claim was later confirmed by a number of studies, notably a landmark report by the *United Church Commission for Social Justice* which concluded that race was a key determining factor in the distribution of chemical hazard exposure in America (UCC, 1987). By the 1990s, EJM began to widen its political and ethical perspective and to incorporate concerns for both distributive justice - or 'who gets what' - and procedural justice—or how 'individuals are treated during a social transaction' (Taylor, 2000: 537).

An important marker of this change was the formulation of the *17 Principles of Environmental Justice* by hundreds of local grassroots groups who attended the *First National People of Color Environmental Leadership Summit* in 1991 in Washington DC (Goldman, 1996). The Principles moved beyond the anti-toxic waste association of EJM and included a much wider range of environmental issues (Taylor, 2000). They also transcended ethnicity and race to include all "who are deprived of their environmental rights, such as women, children and the poor" (Cutter, 1995:113). As Gleeson and Low (2008) suggest, the widening of the political community also extended the institutional reach of EJM "from street-level protests to federal commissions, corporate strategies, and academic conferences" (Goldman, 1996:13). This became evident through the establishment of an Office of Environmental Equity in the US Environmental Protection Agency, followed by the Environmental Justice Act 1992, and President Clinton's signing of an Executive Order directing Federal

Agencies to “make environmental justice a part of all that they do”.⁷ The latter mandated all federal agencies to make environmental justice part of their mission,

focusing primarily on the environmental effects of their policies on minority and low income groups.

3.2 Continuing injustices

The institutionalisation of environmental justice has not necessarily led to the elimination of environmental injustices, as shown in a number of recent studies. For example, Boardman *et al.* (1999) demonstrate that 75% of toxic waste in the southern US is disposed of in black communities who make up 25% of the population. Faber and Krieg (2001) have shown that ‘communities of colour’ are 19 times more likely to be near contaminated areas than are wealthy white people.

In the UK, it is socio-economic profile rather than race which has tended to determine environmental injustices. For example, 662 polluting factories were found to be in areas where the average household income was less than £15,000, and only five were in areas where the average household income was more than £30,000. In London, more than 90% of polluting factories were in areas with below average incomes. In the North East of England, this figure was more than 80% (Boardman *et al.*, 1999). A study carried out by Friends of the Earth (2001) compared pollution data from the Environment Agency with the Government’s Index of Multiple Deprivation and concluded that “deprived communities bear the brunt of factory pollution” (FoE, 2001:1) because

66% of carcinogen emissions to air are in the most deprived 10% of wards while only 8% are in the least deprived 50% of wards (FoE, 2001). This, however, does not suggest that race plays no part in environmental injustices in the UK. The work carried out by Stephens *et al.* (2001), for example, has shown that a disproportionate number of ‘hazardous substances consent sites’ are located in wards with a higher proportion of ethnic minority populations.

According to the most up to date information (July 2010) available from DEFRA’s Sustainable Development Indicators on ‘Environmental inequality’ (Indicator 60):

Analysis of ten selected environmental conditions or characteristics⁸ shows that a higher proportion of people in the most deprived areas in England may live in areas with multiple environmental conditions that are in relative terms the ‘least favourable’, compared with populations living in less deprived areas. Around 0.2 per cent of people living in the least deprived areas may experience 4 or more environmental conditions that are ‘least favourable’. This rises to around 17 per cent of

7 Quote from Washington Post (1994). Clinton, William J., Executive Order 12898, ‘Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations’, February 11, 1994, Federal Register 59, No. 32: 7629.8 As advocated by Fredrick Hayek (1960).

8 These include: river water quality, air quality, green space, habitat favourable to biodiversity, flood risk, litter, detritus, housing conditions, road accidents and registered sites (e.g. landfill)

people living in the most deprived areas. Around 36 per cent of people living in the least deprived areas may experience at least one environmental

condition that is 'least favourable'. This rises to 81 per cent of populations in the most deprived areas. (DEFRA, 2010).

3.3 Definition and substantive scope

The brief history outlined above shows that while the political reach of environmental justice has moved beyond race, its substantive scope has until recently been dominated by concerns about the distribution of toxic and hazardous sites and their disproportionate proximity to disadvantaged groups. This is clearly reflected in the earlier studies on environmental justice in the US and elsewhere as shown by Bullard *et al.* (2007). It is also embedded in the much cited definition of environmental justice by the US Environmental Protection Agency in which environmental justice is defined as:

the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. (US EPA, no date, a).

Here, 'fair treatment' means that no group of people should bear a disproportionate share of "the negative environmental consequences" resulting from industrial, governmental, or commercial operations and policies. 'Meaningful involvement' means that the public should have opportunities to participate in decisions that could affect their environment and decision-makers should seek to empower communities to speak for themselves

(US EPA, no date, b). The substantive emphasis is clearly on environmental hazards. As noted in the previous section, however, the substantive scope of environmental justice has moved "beyond toxics" (Agyeman and Warner, 2002:8-9); it increasingly incorporates the distributional patterns of a diverse range of both environmental 'bads' (burdens and hazards) and environmental goods (benefits and resources). For example, Benford (2005) identified 50 distinct environmental themes on the websites of American environmental activist groups. The widening of the substantive scope of EJ is also captured by the American EPA which has expanded the concept of 'fair treatment' to consider not only how burdens are distributed, but also how environmental and health benefits are shared (US EPA, 2010). This suggests that,

all people, regardless of race, ethnicity, or economic status, should have the opportunity to enjoy the positive outcomes of environmentally related decisions and actions, such as cleaner air and water, improved health, and economic vitality. (US EPA, 2012:7).

In the UK, this broader understanding of EJ can be found in the work of the Sustainable Development Research Network (2004) which identified 21 topics covering both environmental benefits

and burdens (Walker, 2009: 616-617). Similarly, Stephens *et al.* (2001:3) incorporated global environmental

issues such as climate change as well as intergenerational justice in their report.

3.4 Sustainability and justice

Another important development has been the attempt to highlight the links between environmental and social policy. A notable early example is the above-mentioned report by Boardman *et al.* (1999) *Equity and the Environment: Guidelines for Green and Socially Just Government*, which draws on evidence from transport and energy policy. The connection is also embedded in the notion of 'just sustainability' developed by Agyeman and Evans (2004). This advocates that "it is necessary to place the discourse of justice firmly within the framework of sustainability" (op. cit.: 156). The message is that environmental policies should aim to reduce social inequalities,

while social policies should aim to enhance environmental sustainability. A pertinent and topical example of how such synergies can be achieved is the use of energy efficiency measures which can at the same time reduce fuel poverty. Gleeson and Low (2008) consider the recent developments in the environmental justice debate as the "second wave" of ecological politics in which the notion of environmental justice has provided "a potent ground for conceptualizing the environmental crisis and the relationship between social justice and environmentalism", and for addressing "global problems of 'sustainability'" (p.459).

3.5 Beyond distribution: recognition, capabilities and participation

Drawing on a number of theorists, notably Nancy Fraser, Amartya Sen and Martha Nussbaum, David Schlosberg highlights the significance of recognition in achieving environmental justice, arguing that lack of recognition exacerbates distributional inequalities. He also stresses the importance of participation and suggests that, "Environmental justice groups consistently demand a 'place at the table' and the right to speak for" themselves (Schlosberg, 2004: 522). He, therefore, concludes that the definitions used by environmental justice activists in the US

and worldwide incorporate the following major ideas (Schlosberg, 2007):

- equitable distribution of environmental risks and benefits
- fair and meaningful participation in environmental decision-making
- recognition of community ways of life
- local knowledge, and cultural difference
- capability of communities and individuals to function and flourish.

These developments clearly show

how the framing and understanding of environmental justice has moved from its origin and extended beyond a concern with the geographical distribution of environmental goods and bads to consideration of the particular circumstances of places and people and their vulnerabilities and capabilities. All this suggests that the same level of burdens can have profoundly different impacts on different localities and groups of people, not just because of their differential income level, but also because of the differences in their culture, health, life experiences, values and wellbeing.

Thus, “environmental injustice arises not simply from unevenness in the spatial distribution of risk...but from how this interacts with unevenness in socio-spatial distribution of vulnerability and wellbeing” (Walker, 2009:620). Furthermore, distributional inequalities per se are not necessarily an indication of injustices or a cry for policy intervention. The following key principles provide guidance on when an uneven distribution of environmental burdens and benefits becomes unfair. They are also explained in greater detail in the Introductions to Sections 5 and 6.

Table 3.1 A test of fairness

Principles	Environmental burdens	Environmental benefits
Distribution	People in deprived communities have an unfair share of the environmental burden	People in deprived communities have disproportionately less access to the environmental benefit
Vulnerability	People in deprived communities are more vulnerable to the impacts of environmental burden	People in deprived communities are more vulnerable to the impacts of having less access to the environmental benefit
Cumulative	Environmental burden adds to other environmental and social inequalities	Lack of access to environmental benefits adds to exclusion from other environmental and social benefits
Representation	The decision making processes for locating the environmental burden are unfair	The decision making processes for locating the environmental benefit are unfair
Mobility	People in deprived communities are less able to exercise free choice in where they live and how to protect themselves against potential risks	People in deprived communities are less able to exercise free choice in where they live and how to gain access to environmental benefits
Compensation	People experiencing a disproportionate environmental burden are not adequately compensated by the benefits from it	Lack of access to environmental benefit is compounded by the environmental burden attendant upon this
Contribution	People experiencing a disproportionate environmental burden are the least contributors to its cause	People experiencing lack of access to environmental benefit are deprived from contributing to it

Source: Adapted and considerably expanded from Walker *et al.* (2005:373)

Like social justice, defining and assessing environmental justice is not straightforward. What is certain is that questions of justice and fairness are not technical or statistical questions, but rather ethical and political questions. As mentioned earlier, because of the limited

time and budget available for this report, this report's analysis of environmental justice in Newcastle has a largely distributional focus. However, we have highlighted the broader issues discussed above wherever data and information were available.



Photo by Minh Dung Le

SECTION 4 NEWCASTLE CITY

Newcastle upon Tyne is the historic regional capital of the North East of England and part of the metropolitan area of the former county of Tyne and Wear. Located at the northern bank of the River Tyne and at a short distance from the North Sea, it has an area of about 113

km² and a population of approximately 285,400 in 2012 (ONS population projections for 2012 ⁹) (NCC, 2012). The city is governed by 72 councillors, directly elected for a 4-year term, to represent 26 electoral wards in the city.

⁹ Newcastle's population in 2011 was estimated at 280,200 according to 2011 Census data.

4.1 From cradle of the industrial revolution to green capital

Newcastle grew from a provincial English town to become one of the birthplaces of the Industrial Revolution, increasing in wealth and population and reaching its peak at the end of the nineteenth century. While industrialisation brought wealth for some, it created hardship and poverty for others. Industrialisation flourished through massive exploitation of fossil fuel and left major environmental scars that included air and river pollution and loss of wildlife and habitats.

The booming coal trade and related industries during the nineteenth century shaped the geography of the Tyneside conurbation along the river: port activities along Quayside; chemical, tanning and glass manufacture nearby; shipbuilding and armaments downstream towards Wallsend and upstream at Elswick; and coal export wherever the wagon ways from the mines met the river. The banks of the river were occupied by dense streets of working class housing while middle class suburbs were developed away from these industrial sites, to the north of the city centre in Jesmond and Gosforth. This division has to a large extent continued to be a feature of the social geography of the city.

With the decline of the heavy industries, such as coal mining, shipbuilding and manufacturing, Newcastle, like other industrial cities of the north, gradually lost some of its population during the twentieth century. The most important economic restructuring took place in the 1960s when a long dependence on the coal industry ended and employment began to shift to government-sponsored manufacturing in

places such as the Team Valley. Around the same time the city was radically 'modernised' through major programmes of slum clearance, rebuilding unfit housing, large scale redevelopment of the city centre, construction of the central motorway and the metro system. The redevelopment both helped and hindered CO₂ reduction. While 78% of shoppers at Eldon Square (developed in 1977) access it through public transport (far higher than the UK average), the building of the central motorway in 1973 through the urban core and the later the western bypass (1990) contributed to substantial increase in car usage. The oil crisis of the 1970s led to a downturn in the economy; a trend which culminated in the 1980s' decline of the traditional engineering companies and the loss of the 1960-70s' inward investors.

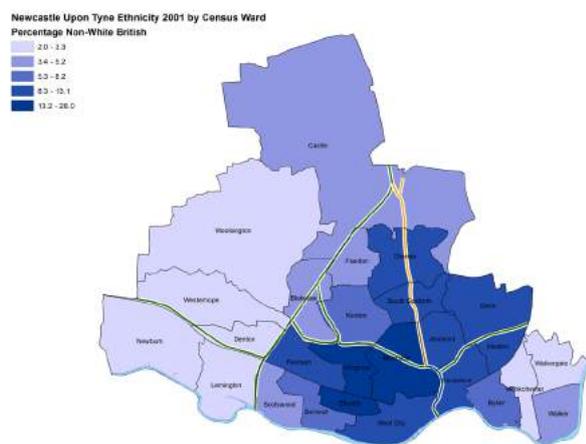
Today, Newcastle's economy is made up of a mix of industries, financial and businesses services, retail and wholesale and public administration, health and media services. The city has also attracted a number of small firms related to the cultural and media industry. More importantly, in relation to the environment, Newcastle has changed from a city which was the cradle of carbon-based industrialisation to one that is at the cutting edge of the low-carbon revolution. In the former shipyards, for example, offshore wind installations for the North Sea are manufactured and serviced. In the last few decades there has been a great improvement in the city's and the region's built and natural environment. Scars from heavy industry have been erased, rivers and coastal waters have been cleaned up

and the air is much less polluted. The city has made major progress with reducing its energy use and tackling climate change impacts. In fact, the city has been twice (2009 and 2010) recognised by Forum for the Future (a national environmental charitable organisation) as the greenest city in the UK.

Over the following sections it should be borne in mind that a proportion of the data available to this analysis dates back to the last Census in 2001. Some data from the 2011 Census is still not publicly available for the topics under discussion.

4.2 Demography

In 2001, Newcastle's population was 259,536, which implied a loss of 15,500 people (5.6%) over the previous decade (ONS, 2001). However, since then the city has experienced a rise in population mainly due to in-migration. The latest ONS population projection shows a population of 285,400 at the time of writing (NCC, 2012a).



This raises two important issues: over the period in question, the city's population is estimated to have grown by 10%, and at the same time, its electoral geography was altered. The effect of the latter is that two sets of ward names need to be used in the discussion – those dating from before changes to wards in 2004¹⁰ (see Figure 4.1) and those adopted subsequent to this (see Figure 4.2). Where it is not obvious from the context, the analysis therefore refers to both 'new' and 'old' Newcastle wards, clarifying which set of wards are under discussion.

Regarding ethnicity, from a very low proportion in the 1990s, the city's ethnic minority population rose to 7% in 2001, and 12% in 2009 (ONS, 2010a; NCC, 2012a: 21), with a higher proportion in the younger age groups. Significant minorities are made up by people of Pakistani, Indian, Bangladeshi and Chinese origin, with the highest proportion living in (the pre-2004) Newcastle wards of Elswick, Wingrove and Moorside in 2001.

Figure 4.1 Ethnicity in Newcastle by Census Ward (pre-2004 ward names due to date of statistical data)

Source: Authors' analysis based on data from 2001 Census

¹⁰ Newcastle's wards were changed on 10th June 2004 for the purpose of improving electoral equality (see <http://www.newcastle.gov.uk/your-council/statistics-and-census-information/definitions-terms>).

Based on the 2011 census data, younger people (0-14 years old) living in Newcastle account for 16.1% of its population (45,000), while older people (aged 65 and over) account for about 13.8% (NCC, 2012a). These figures show a slightly lower proportion of under 15s than for the rest of the North East and England (16.6% and 17.7% respectively); as well as a lower proportion of pensioners (compared with 17.3% for the North East and 16.3% for England) (most recent ONS figures, cited in NCC, 2012a). However, both groups are projected to increase by 2035, with numbers of 5-14 year old

children expected to rise by 15% and numbers of older people projected to rise by 37% (15,500 people) (ibid.). Another distinctive characteristic is that currently, due to its two universities and consequent student population, Newcastle has a high proportion of 'transition years' (15-24) people, who make up almost 21%, of the population, compared with 13.6% for the North East and 13.1% for England. About 2% of the population are over 85 years old with the highest proportion living in the wards of Dene, Denton, East Gosforth, Westerhope and West Gosforth (new wards; NCC, 2012c).

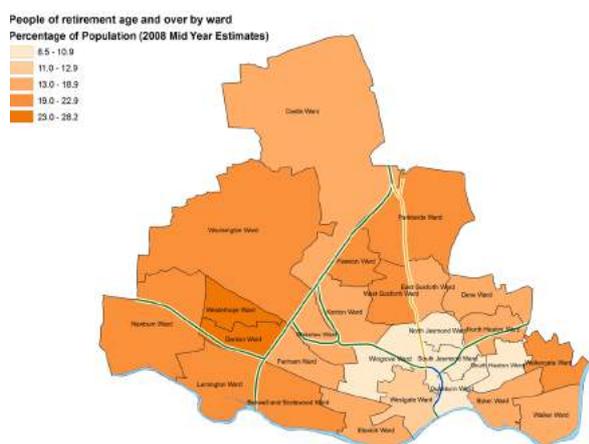


Figure 4.2: Distribution of people aged 65 and over in Newcastle upon Tyne (post-2004 wards)

Source: Own analysis, based on ONS 2008 Mid-Year Estimates

4.3 Income, employment and qualifications

Income level in Newcastle (£441.0 per week) is lower than the average (£450.9) for the North East, which is the region with the lowest income per head in England ¹¹ (ONS, 2011b). In addition, poor families pay on average a £1,000 annual 'poverty premium' for essential goods and services such as gas, electricity and insurance (NCC, 2012b). Income levels vary significantly across the city with 25%

of the city's LSOAs being among the 10% most income-deprived in England and 11% of LSOAs being among the 10% least income deprived in England (NCC, 2012a: 61).

About 70.1% (141,900) of the city population (aged between 16-64) are economically active, of whom 63% are in employment. This remains below

¹¹ Average weekly earnings in Great Britain are £503.1.

the proportion for the North East region (65.8%) and substantially below the figure for Great Britain (70.3%) (ONS, 2011a). Proportionally, fewer black and minority ethnic people are in employment compared with white people.

The number of those claiming out-of-work benefits in the city rose from 7% in 2004-2005 to 10.7% in 2009-2010 and was about 9.5% in 2010-2011. During this time, unemployment and the number of claimants have remained persistently higher than the North East Region (with the exception of 2009-2010) and substantially higher than the national average (ONS, 2011a). There is a paradox here in that Newcastle's residents have levels of worklessness which are above the regional average even though the city is the relatively successful core of a declining region. In effect, there are jobs in Newcastle but some Newcastle residents are not getting them. Over 50% of Newcastle's workforce commutes from neighbouring authorities.

4.4 Deprivation, inequalities and neighbourhood health differentials

The 2011 Baseline Assessment carried out for the Newcastle Future Needs Assessment stated that,

The city as a whole is relatively deprived, and some parts of the city continue to suffer from multiple forms of deprivation that severely restrict the life chances, and indeed the life

Of people of working age, 14.3% receive 'key out-of-work' benefits, of whom 4.8% are on jobseekers benefits; and 7.2% receive Employment and Support Allowance and incapacity benefits (a proportion which is lower than the North East figure of 8.2% but higher than 6.5% for Great Britain); and 1.7% receive lone parents benefits (lower than 1.8% in the North East, but higher than 1.5% for GB); while 1.1% receive other 'key out of work' benefits (ONS, 2012).

Despite the fact that Newcastle is home to two universities (Newcastle and Northumbria) and a College offering both further and higher education, only 28% (24,600) of its resident population of working age have HND or degree qualifications. Some 12.5% have no qualifications at all compared with 13% in the North East and 11.3% nationally (ONS annual population survey, 2010, cited in NOMIS, 2010:3). The proportion of pupils achieving 5 GCSEs in 2009/2010 was lower in black (34.3%) and Chinese / other (28.6%) ethnic groups than in white (50%), mixed (51.5%) and Asian (53.3%) groups (NHS, 2011).

expectancy, of the people who live in them. Whichever aspect of inequality or lack of social justice is being considered, it is at its worst in Benwell and Scotswood, Elswick, Byker and Walker, together with parts of Kenton. (NCC, 2012c: 2).

According to the Index of Multiple

Deprivation (IMD) (ONS, 2010),¹² Newcastle is ranked 40th most deprived among 354 local authorities, with 43 out of its total 173 Lower Layer Super Output (LSO) Areas¹³ in the 10% most deprived nationally. This means over 72,000 people in Newcastle live in the most deprived areas in England (over a quarter of the population) while 102,000 live in the 50-100% most affluent areas in the country. There is a high level of deprivation at the two ends of the demographic spectrum. Almost a third of the younger population (32.3% or 15,000 compared to an England

average of 20%); and a quarter (24.8% or 11,830) of older people are in the 10% most deprived LSO Areas. Of the school population, 26% is entitled to receive free school meals (ONS, 2010).

One striking observation is that 41 of these LSO Areas were also in the 10% most deprived nationally in 2007, indicating that “in most deprived areas, area based investment schemes have maintained the ‘status quo’ at best over this period” (NCC, 2011a:4).

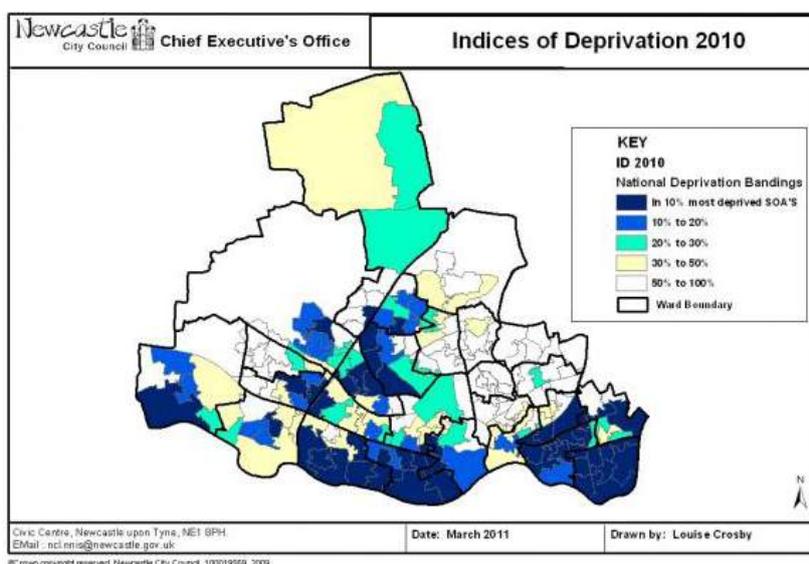


Figure 4.3: Level of Deprivation by Lower Layer Super Output Level, 2010

Source: NCC, 2012a

About 47% of households have no car, compared with 22% in England as a whole and 28% across metropolitan districts in England. This partly explains the higher than the national average bus travel in Newcastle, where 11% of trips per person per year are made on local buses (representing the highest levels

outside London) compared with 6% for Great Britain as a whole. It is also because nearly 98% of residents live within 400m of bus services with a half-hourly frequency, which is significantly above the national average (NCC, 2012d). The city also benefits from a highly successful Tyne and Wear Metro light rail system.

12 The English Indices of Deprivation 2010 use 38 separate indicators, organised across seven distinct domains of deprivation which can be combined, using appropriate weights, to calculate the Index of Multiple Deprivation 2010 (IMD 2010). The domains are: Income, Employment, Health and Disability, Education Skills and Training, Barriers to Housing and Other Services, Crime, and Living Environment.

13 Lower Layer Super Output Areas are homogeneous small areas of relatively even size (around 1,500 people) of which there are 32,482 in England.

4.5 Health

In terms of health indicators, Newcastle has high levels of deprivation, with 74 (rising from 66 in 2007) of its LSO Areas in the 10% most deprived nationally. One in five people in Newcastle have a limiting long-term illness, and one in six people are likely to be affected at some point in their lives by common mental health problems such as stress, anxiety and depression.

Men have an average disability-free life expectancy at birth of 56.8 years, which is 4.0 years shorter than the England average. However the city average masks the 19.3 year gap between the affluent (e.g. South Gosforth) and deprived (e.g. Byker) areas. A similar

picture emerges for women, who have an average disability free life expectancy at birth of 60.8 years, which is 3.3 years shorter than the England average, with a range of 16.4 years in the city (see Figure 4.4 below). This means that, “compared to those in the richest areas, women and men in the poorest areas of Newcastle die younger and live a larger proportion of their shorter lives with a disability” (NCC, 2012c). Teenage pregnancy in Newcastle is 52.1 per 1,000 females aged 15-17, compared with a 40.2 England average (NHS, 2011). This figure is “a lot higher in the more deprived areas of the City”.¹⁴

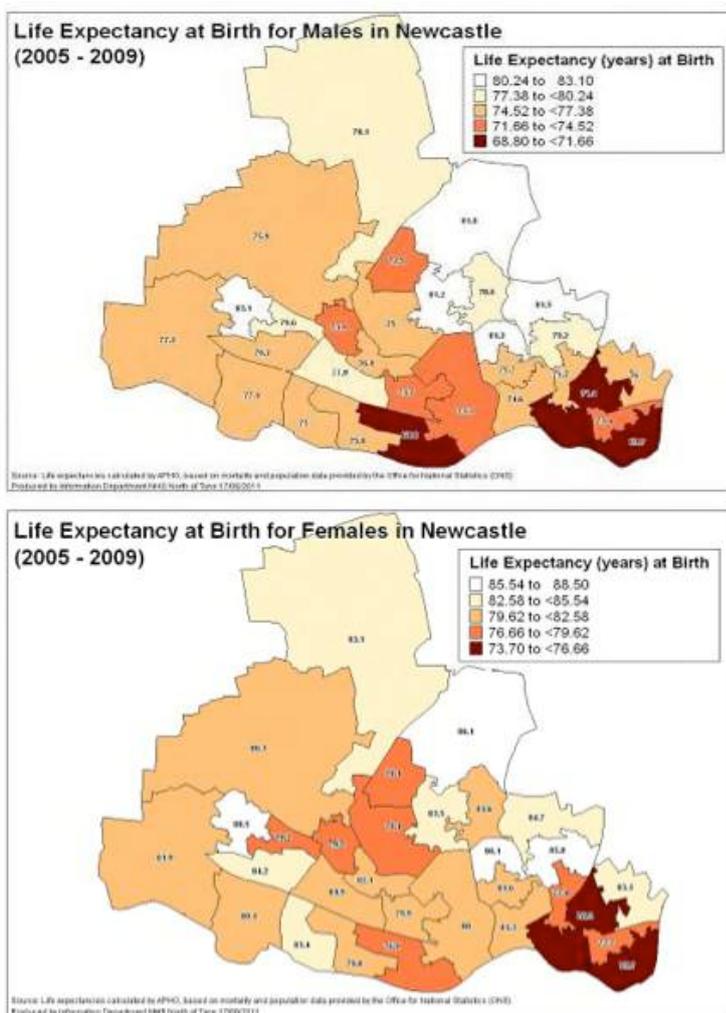


Figure 4.4: Life expectancy for males and females in Newcastle, 2005-2009

Source: NCC, 2011b:21

¹⁴ NCC, 2011, 'Equalities statistics', available from: <http://www.newcastle.gov.uk/your-council/statistics-and-census-information/equalities-statistics> (accessed 9/3/2012).

4.6 Crime

The level of violent crime in the city is higher than the England average (17.1 per 1,000 population compared with 15.8) (NCC, 2012c). A high proportion of crime takes place in “a handful of areas, and some groups are significantly more likely to be victims of crime..., over 50% of victims are between 17 and 27” (NCC, 2012b:7),

A report commissioned by the Home Office in 2001 (HO, 2001) examined violent disorder in cities and concluded that residential segregation was partly responsible for the disconnection between people of different cultural, religious and racial backgrounds. The State of English Cities report (DCLG, 2006) used an ‘Index of Dissimilarity’ to measure segregation and argued that Newcastle has a ‘moderately high’ level of segregation, particularly between White and Asian and White and Black communities, compared with cities such as Bradford with ‘very high’ levels of segregation. Incidents of ‘hate crime’ reported to the Newcastle ARCH¹⁵ system increased by 461% between 2003 and 2010 (NCC, 2011a:3).

4.7 Environment

Newcastle has a distinctive landscape rising from the deep gorge of the River Tyne to the south. As mentioned above, in the past few decades the scars of the industrial past have been substantially erased. For example, the cleaning of the River Tyne has restored its biodiversity and re-established otters and salmon,

The above summary clearly points to the problem of deprivation in the city as a whole compared with the rest of the country and also problems of disparities within the city. A new City Council initiative, called Decent Neighbourhood Standards, which aims to improve Newcastle’s neighbourhoods, sums this situation up as an “uncomfortable truth” because:

Newcastle remains a city with contrasts of wellbeing, health and wealth. It is a stark fact that inequalities within and between different parts of our city severely reduce the life chances of people from cradle to grave. Children born in poorer neighbourhoods do less well at school than those in better off areas, although programmes like Sure Start are making a positive impact. People born in our most disadvantaged areas are also likely to earn less, suffer more ill health and disability, and ultimately die at a younger age than those born in more affluent areas. (NCC, 2011b:4).

to the extent that the Tyne is now the best salmon river in England with the highest rod returns. Water quality has also improved in the last 20 years as a result of better treatment of sewage and industrial waste water. Today, the city is faced with a relatively new challenge of climate change. The 2009 climate change

¹⁵ This is a reporting system for incidents of racist, religious, homophobic and transphobic harassment/persecution and bullying.

projections for the North East indicate that the region is likely to become wetter in the winter and drier in the summer, leading to an increased risk of extreme weather events such as storms, floods and droughts. Sea levels have risen by 10-20 cm in the last 100 years and will continue to rise, further increasing the risk of flooding in low lying coastal areas (ClimateNE, 2008). As will be discussed in Section 6 below, major initiatives have been undertaken nationally and locally to mitigate the effects of climate change.

In terms of global sustainability measures, the region's (and presumably the city's) consumption of environmental resources remains high. It is estimated that the average person in the North East has an ecological footprint of about five hectares (EA, 2009). This implies that if everyone in the world used this amount of land, we would need three planets to

live on, while we only have one. It means that we are consuming more than our planet can provide. Regarding the justice dimension, the environmental indicators used in the IMD suggest that on this level, Newcastle is among the least deprived English cities with only one LSO Area in the 10% most environmentally deprived. However, as mentioned above, the IMD uses a very limited range of indicators. A closer and more comprehensive look at the distribution of environmental benefits and burdens (presented in the next two sections of this report) confirm what is acknowledged in the briefing paper for Newcastle's Policy Cabinet; that, "Environmental quality varies across the city, with poorer neighbourhoods tending to experience lower standards than wealthier neighbourhoods" (NCC, 2012c: 4).



Photo courtesy of Skyscraper Page

SECTION 5

DISTRIBUTION OF ENVIRONMENTAL BURDENS

It is widely acknowledged that environmental hazards and pollution affect our health and wellbeing. The question which is at the centre of the justice debate is whether there is an association between people's socio-economic position and their exposure to environmental burdens. As mentioned earlier in this report, the initial claims to environmental injustice which led to the American EJM were based on the premise that environmentally polluting activities tended to concentrate in areas where deprived (and often Black) people lived. Since then, numerous studies have shown patterns of unequal distribution of environmental burdens, particularly environmentally polluting activities. These studies are often based on proximity to such burdens which although an important variable, does not explain a number of other equally significant factors which determine the extent to which people living in proximity to these burdens may be affected and harmed by them. Neither does it explain why these burdens are where they are. Both sets of issues raise critical questions about environmental

justice. While these go far beyond the scope of this report, it is important to mention the complex interplay of different factors which lead to the impact of environmental burdens on human wellbeing and some of the potential reasons for their unequal distribution.

Regarding the former, epidemiological studies have shown that "perceived excessive noise, heavy traffic, inadequate lighting, and limited access to public transportation were associated with increased risk of physical impairment among older adults" (Balfour and Kaplan 2002 quoted in O'Neill et al., 2003). Regarding the latter, potential contributory factors include: the operation of housing and land markets over long time scales; planning policies which cluster polluting activities in particular zones with existing polluting uses, historic patterns of linking housing to employment areas, and deliberate siting of polluting activities in deprived areas perceived as being less resistant (O'Neill et al., 2003; Walker, 2012).

Unequal versus unfair

As Walker *et al.* (2005) observe the identification of the existence of inequalities in the distribution of environmental burdens is not, per se, an argument for public intervention. Experience from the US and recent methodological advancement (e.g. Mitchell and Walker, 2006) suggest a number of complexities that imply the need to proceed with caution. These include the impossibility, in most cases, due to the dynamics of environmental flows, of associating location of a burden with a catchment area of people who are most impacted by it; the difficulty of moving from the identification of a distributional

injustice to its causation; and the mistake of equating an identified inequality with an injustice. In an earlier paper, Walker *et al.* (2005) propose six grounds on which an inequality can be considered as an injustice which then requires policy intervention. Although they are writing specifically in relation to hazardous industrial sites, their approach can be applied to the range of environmental burdens which are covered in this report. Therefore, for each environmental burden examined, we have used the following seven grounds as a guide for assessing the claim of injustice.

Table 5.1: A test of fairness for environmental burdens

Principles	Environmental burdens
Distribution	People in deprived communities have an unfair share of the environmental burden
Vulnerability	People in deprived communities are more vulnerable to the impacts of environmental burden
Cumulative	Environmental burden adds to other environmental and social inequalities
Representation	The decision making processes for distributing the environmental burden are unfair
Mobility	People in deprived communities are less able to exercise free choice in where they live and how to protect themselves against potential risks
Compensation	People experiencing a disproportionate environmental burden are not adequately compensated by the benefits from it
Contribution	People experiencing a disproportionate environmental burden are the least contributors to its cause

Source: Adapted and considerably expanded from Walker *et al.* (2005:373)

This section of the report provides detailed analyses of the socio-spatial distributions of the city’s environmental burdens including:

- Air pollution
- Landfills and hazardous sites
- Rundown neighbourhoods

- Poor housing conditions
- Road traffic accidents

While we recognise the interdependencies between different environmental burdens and their cumulative impacts, looking at such interdependencies is beyond the scope of this report. For each burden,

we provide some background information and discuss the link between a particular environmental burden and people's wellbeing. Here, we have drawn heavily on the Sustainable Development Research Network's (SDRN) 2004 'Environment and Social Justice Review' which we found a very useful and reliable source. We will then map the socio-spatial distribution of the burden in Newcastle. Each 'environmental burden' section is concluded with some reflections on data limitations and a number of key messages. It is important at the outset,

however, to highlight one key limitation of the original GIS mapping of differences between Newcastle wards that has been undertaken for this report, which is that it has not in most cases been possible within the constraints of the study and the data available to it, to move on from GIS mapping of differences and associations identified to analysing these for statistical significance.

The following table summarises the distributional justice for selected most and least deprived Newcastle wards.

Table 5.2: Environmental burdens in wards with high and low ILD scores in Newcastle

Section	Topic	Selected least deprived wards			Selected most deprived wards			Comments
	New ward names (pre-2004 ward name in brackets)	East and West Jesmond (Jesmond)	North and South Gosforth (South Gosforth)	Castle	Benwell and Scotswood (Benwell and Scotswood wards)	Byker	Walker	
5.1	Air pollution							Byker and Walker also have highest levels of respiratory admissions and long-term illness, and lowest levels of car ownership in city.
5.2	Landfills and contaminated land							Waste processing stations are in all three deprived wards and likely to increase in size; Walker also has a significant site of contamination
5.3	Rundown neighbourhoods							Benwell and Scotswood scored lower for environmental standards, and also had the highest level of problematic vacant properties. The latter was also the case for Byker. Jesmond had environmental problems arising from the student population
5.4	Poor housing conditions							Stippling indicates less reliable data, due to age (2001) and variability of readings in different parts of ward (i.e. data is only provided at Super Output Area level).
5.5	Road traffic accidents							As above.

Code: Red = a problem Amber = intermediate Green = not a problem White = no data
 Stippled texture = data are older than 10 yrs and/or no aggregate ward level data available.

5.1 Air pollution ¹⁶

As the birthplace of the Industrial Revolution, Newcastle enjoys the benefit of a highly skilled engineering workforce, now deployed in the renewable energy industry, but also bears the scars of past environmental damage. Up to the middle of the twentieth century, coal was the most significant source of air pollution in the city, through its use as a fuel for both industrial and domestic purposes. The kind of pollution associated with coal-burning, known as particulate matter, continued to be a problem up to the point where the 1956 and 1968 Clean Air Acts converted the city into a smokeless fuel zone, area-by-area. Aided by the decline in industrial activity on the banks of the river Tyne and the shift away from coal for domestic use, the result was a massive reduction in air pollution from several hundred micrograms/m³ at the height of the coal era to around 20 micrograms/m³ in the 1990s.

The improvements continued over the following decades. According to the Environment Agency's State of the Environment Report (2009), polluting emissions from the Agency's regulated industries in the North East had reduced between 1999 and 2009 by 26% for small particles (known as PM₁₀), 43% for nitrogen oxides (NO_x) and 59% for sulphur

oxides.¹⁷ Over the same period, however, the flow of traffic on the North East Region's roads and motorways increased by 9.1%. By the early twenty-first century, pollution of a traffic origin had come to replace coal as the main problem for the city's air. The causes are likely to include the rise of car ownership, the dieselization of the fleet (see Carslaw et al., 2011), and the particular road infrastructure of the city, whose central area is traversed by major traffic routes, including the motorway through the urban core constructed in 1973.

By 2008, air pollution was moderate or higher on 20 days in Newcastle centre (Environment Agency, 2009). This figure was reported to be typical of the situation at that time, although numbers varied from year to year depending on weather conditions. Under the Environment Act, 1995 those areas that fail the government-set air quality standards are designated as Air Quality Management Areas (AQMAs), with nitrogen dioxide from road traffic being the main reason for designation. Four local authorities in the North East, including Newcastle upon Tyne, have designated AQMAs. They allow the city to investigate the nature and causes of the problems and take action to tackle them.

Air quality and wellbeing

Good air quality is important for human health, the natural environment, and quality of life. Air pollution causes

significant harm to both public health and the natural environment (DEFRA, 2011a). In 2006 a report from the Institute

16 This section focuses largely on the levels of background and local area pollution caused by road transport, while industrial pollution, which is characterised by different kinds of distributions and flows will be covered in the next subsection (5.2) on landfills and hazardous sites.

17 These pollutants affect the biosphere and have various harmful impacts on microorganisms, insects and wildlife. The airborne pollutants that are most harmful to human health are: sulphur dioxide, nitrogen dioxide, ozone and particulate matter.

of Occupational Medicine identified that eliminating air pollution would have more impact on extending life years than either eliminating road traffic accidents or secondary cigarette smoke (Miller and Hurley, 2006). In 2010, a DEFRA report on air quality stated that just one of the human-made components of air pollution reduces the average life expectancy of people living in the UK by six months, at an annual cost £15 billion (DEFRA, 2010). Emissions from traffic and industry can also harm the natural environment through deposits of acid rain or nutrient nitrogen. This can damage or change vegetation in sensitive locations. Natural England reports that air pollution is a reason for 7.8% of Sites of Special Scientific Interest (SSSI) in England being in an adverse condition and this is regarded as an underestimate of the damage (Natural England, 2009).

According to the Department for Transport, transport-related emissions have increased nationally in recent decades and are now a major cause of pollutants particularly in urban areas (DfT, 2011). These emissions result from various kinds of combustion processes and include: oxides of nitrogen (NO_x); fine particulate matter such as PM_{10} ; carbon monoxide (CO); and volatile organic compounds (VOCs) such as benzene and 1,3-butadiene (ibid.). Within these categories, particulate matter emissions

are largely from tyre, break wear and engine emissions, and nitrogen dioxide is emitted by petrol or diesel combustion. The stop-start pattern during congestion on roads is a particular source of such emissions.

The impact of poor air quality on life expectancy is largely established, and there is also a disproportionate impact on older people, and some evidence of an association with asthma of a childhood origin. Although such an association is controversial in the UK, studies in Europe and the US have identified a significant link with exposure to heavy transport emissions in early infancy (Brauer *et al.*, 2002; Zmirou *et al.*, 2004; Jerrett *et al.*, 2008). Poor air quality in terms of particulate matter has also been shown to have a disproportionate impact on the unborn child in terms of birthweight (Pearce *et al.*, 2012). Particular weather conditions which lead to poor atmospheric dispersion, combined with heavy emissions, can also affect those with existing health conditions, such as asthma, heart and lung conditions. Furthermore, a raft of studies have identified place stigmatisation associated with poor air quality (Bickerstaffe and Walker, 2003; Bush *et al.*, 2001; Howel *et al.*, 2003). Thus for both human and environmental well-being, air quality is clearly an important issue.

Air quality and environmental justice

For most pollutants, with the exception of ozone, concentrations are higher in urban areas, where there is also more concentrated deprivation. A report commissioned by DEFRA notes that not only are deprived communities likely to

be disproportionately exposed to the risks of air pollution, simply by virtue of the fact that the most deprived environments are urban, but they are also disproportionately vulnerable to its effects (SDRN, 2004: 15). Several studies have found a strong

link between air pollution and deprivation (Jerret, 2009; Laurent *et al.*, 2007) and some suggest that low socio-economic status in itself creates worse outcomes for exposure to air pollution, prompting various attempts to explain why this should be (O'Neill *et al.*, 2003).

In the UK, for example, Walker *et al.* (2003) looked at five types of pollutant and found that those exposed to the highest pollutant concentrations are also the most deprived. Similarly, Mitchell and Dorling (2003) showed that over half of the wards (representing a total population of 2.5 million) where NO₂ concentrations exceed the annual mean standard¹⁸ were among the most deprived 10% of wards nationally. However, the association is not uniform, because there are many sources and types of air pollution and policies around transport routes and greenspace can have important impacts.¹⁹

There is also an age effect, whereby infants tend to live nearer to the city centre and older people further away, meaning that the former are exposed to higher doses of NO₂ and the latter have the lowest exposure (Mitchell and

Dorling, 2003). Studies by Brainard *et al.* (2002) and McLeod *et al.* (2000) found a connection between ethnicity and air pollution exposure, with the latter establishing that this is independent of the effects of deprivation.

Furthermore, the incremental improvements in car emissions also mean that although there may be a higher number of car owners in more advantaged areas, their vehicles may be less polluting than fewer, but more polluting vehicles affordable to the residents of lower income areas. At the same time it should not be forgotten that air pollution with a road traffic source near to the place of residence is not the only type that individuals are exposed to (e.g. Watt *et al.*, 1995; COMEAP, 2004). Other factors may have greater effects on exposure to airborne pollutants than location of residence in relation to busy roads, such as: the air pollution indoors, where people may spend most of their time; exposure to tobacco smoke; exposure to traffic emissions within public and private transport vehicles; and in places where exercise is taken.

Distribution of air quality in Newcastle

In 2003 the impacts of rising car ownership and congestion led to the designation of Newcastle City Centre as an Air Quality Management Area (AQMA), because the annual air quality objective for NO₂ was likely to be exceeded. A more detailed review in 2005 identified Quayside, Jesmond Road and Blue House Roundabout as additional AQMAs (AQRC

and AQCL, 2005). These four AQMAs are closely linked, and the excessive NO₂ broadly covers the City Centre and its link roads along 2km, including in the Gateshead direction. Tables 1 and 2 below show two types of air quality exceedence: of the hourly mean objective (18 exceedences are permitted per year – DEFRA, 2007:20); and of the annual

¹⁸ Set by the National Air Quality Strategy, (DEFRA, 2007.)

¹⁹ Most notably some highly affluent areas also have higher than average air pollution, as has been found to be the case in parts of London and Cardiff

mean concentration of NO₂, which is not supposed to exceed 40 ug/m³.

The Tyne and Wear Local Transport Plan (TWITA, 2011) shows awareness of these problems and the various options that can be taken to tackle them. Furthermore, in October 2011, Newcastle in partnership with Gateshead was awarded £60,000 by DEFRA to conduct a Low Emission Zone feasibility study, specifically to

combat NO₂ emissions (DEFRA, 2011b), which can include either exclusion or charges levied on high-emitting vehicles, but the results of the study are not yet in the public domain. However, it should be borne in mind in this regard that the effects of introducing a Low Emission Zone are not always conducive to furthering environment justice (for example, see Cesaroni *et al.*, 2012).

Table 5.3: Results of Automatic Monitoring for Nitrogen Dioxide: Comparison for One Hour Mean Objective

Source: NCC, 2012:46

Location	Within AQMA?	Relevant public exposure?	Number of exceedences of hourly UK National Mean (200 ug/m ³)		
			Y/N	2008	2009
AURN, St Mary's Place	Y	N	0	0	N/A
Percy Street	Y	Y	0	0	2
Swan House, Pilgrim Street	Y	Y	0	0	1
Forster Street, Quayside	Y	Y	0	0	0
Jesmond Road, Cradlewell	Y	Y	0	0	5
High Street, Gosforth	Y	Y	N/A	N/A	0
Leazes Lane	N	Y	0	0	1

Table 5.4: Annual Mean Concentration of NO₂

Source: NCC, 2012: 44

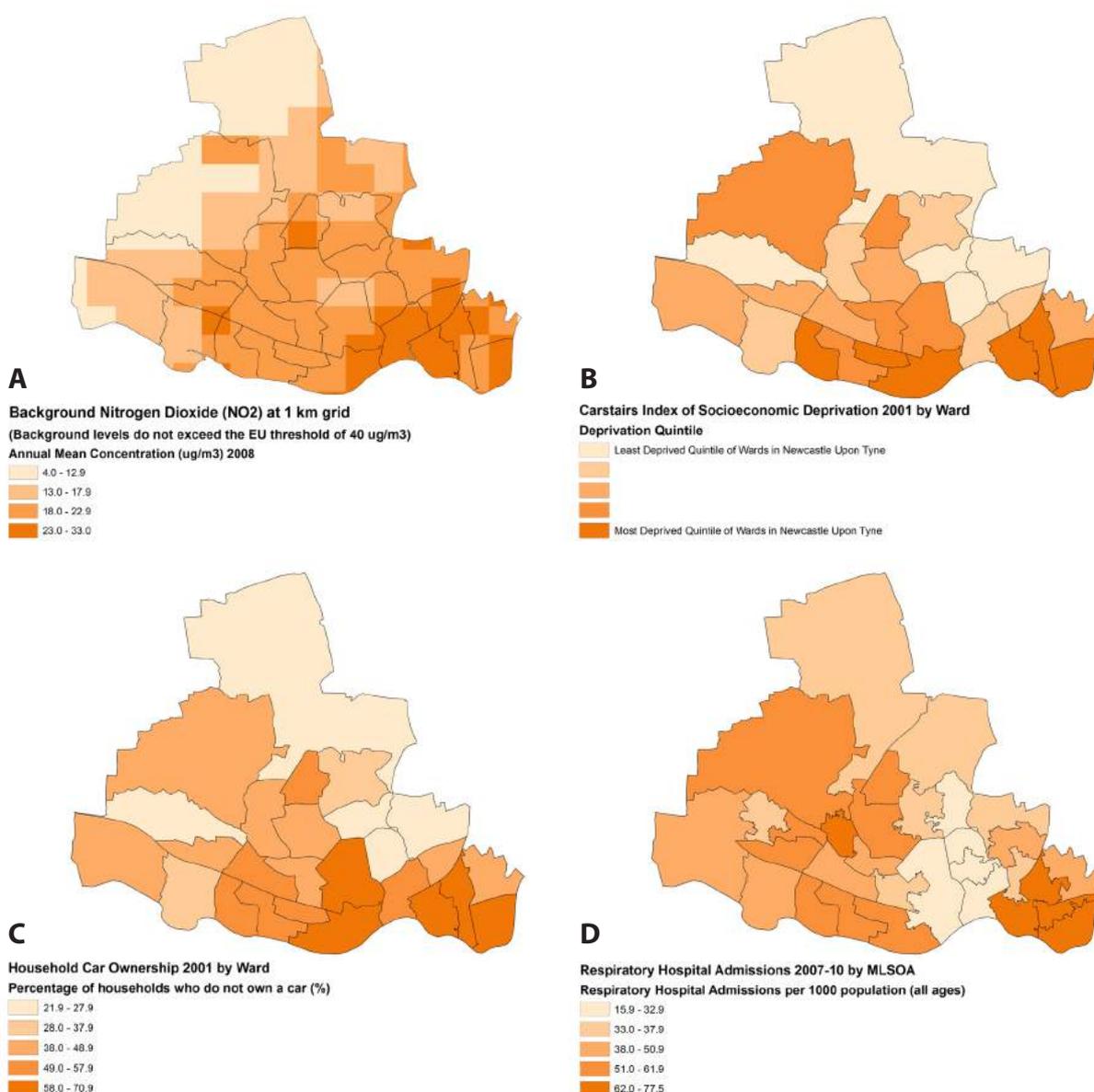
Location	Within AQMA?	Relevant public exposure?	Annual Mean Concentrations UK objective, 40 ug/m ³		
			Y/N	2008	2009
AURN, St Mary's Place	Y	N	35.0	34.0	31.9
Percy Street	Y	Y	41.1	56.2	55.7
Swan House, Pilgrim Street	Y	Y	48.5	49.6	48.9
Forster Street, Quayside	Y	Y	37.9	31.6	36.6
Jesmond Road, Cradlewell	Y	Y	45.8	42.4	41.0
High Street, Gosforth	Y	Y	N/A	N/A	25.9
Leazes Lane	N	Y	28.7	28.1	33.1

However, it is not only exceedences that are significant to human health, but background air pollution. In this report, in line with an academic approach which looks beyond the policy focus on thresholds and exceedences in order to highlight that any level of air pollutants is potentially harmful, we have selected NO₂

as a proxy for background air pollution.²⁰ Although here, as is generally the case in the UK, background, as opposed to locally-monitored levels, do not go above the set thresholds,²¹ some areas have much higher levels of annual mean concentration of NO₂ than others.

Figure 5.1: Comparing NO₂ levels (A), Deprivation (B), Car Ownership (C) and Respiratory Illness (D) in Newcastle

Source: Own analyses based on data obtained from Office of National Statistics.²²



20 The background levels of particulate matter can also be analysed and mapped.

21 The EU average threshold for NO₂ is an annual mean of 40 ug/m³ (DEFRA, 2007, p.20).

22 The Census data used in B and C is out of date, and detailed data for the 2011 Census will not be available until 2013.

Based on the approach used by Stephens *et al.* (cited in O'Neill *et al.*, 2003) Figure 5.1, above, provides a comparison of NO₂ emissions, deprivation, respiratory illness and car ownership in Newcastle. The intention in this juxtaposition is not to suggest a causal relationship between air pollution and respiratory illness, but to indicate the vulnerability of the populations encountering this environmental burden.

Firstly, Figure 5.1A shows that the city centre and south east Wards suffer more pollution than the more rural north west Wards. Secondly, when comparing Figures 5.1A and 5.1B it becomes clear that the south east Wards which have higher levels of pollution also suffer from multiple deprivation. These include: parts of Fawdon, Fenham, Benwell and Scotswood, and the city centre parts of Walker and Byker (of which the former ward of Monkchester is now part). Some of the least deprived, such as Castle and Westerhope wards, are least affected by

NO₂ emissions. Thirdly, comparison of Figure 5.1A with 5.1C shows that many of the areas where least people own a car are most affected by NO₂ emissions. These include parts of (the current wards of) Elswick, Westgate, Walker and Byker. Finally, the same wards show a high incidence of admissions for respiratory illness^{23,24} (see Figure 5.1D and also Table 5.5 on long-term illnesses).

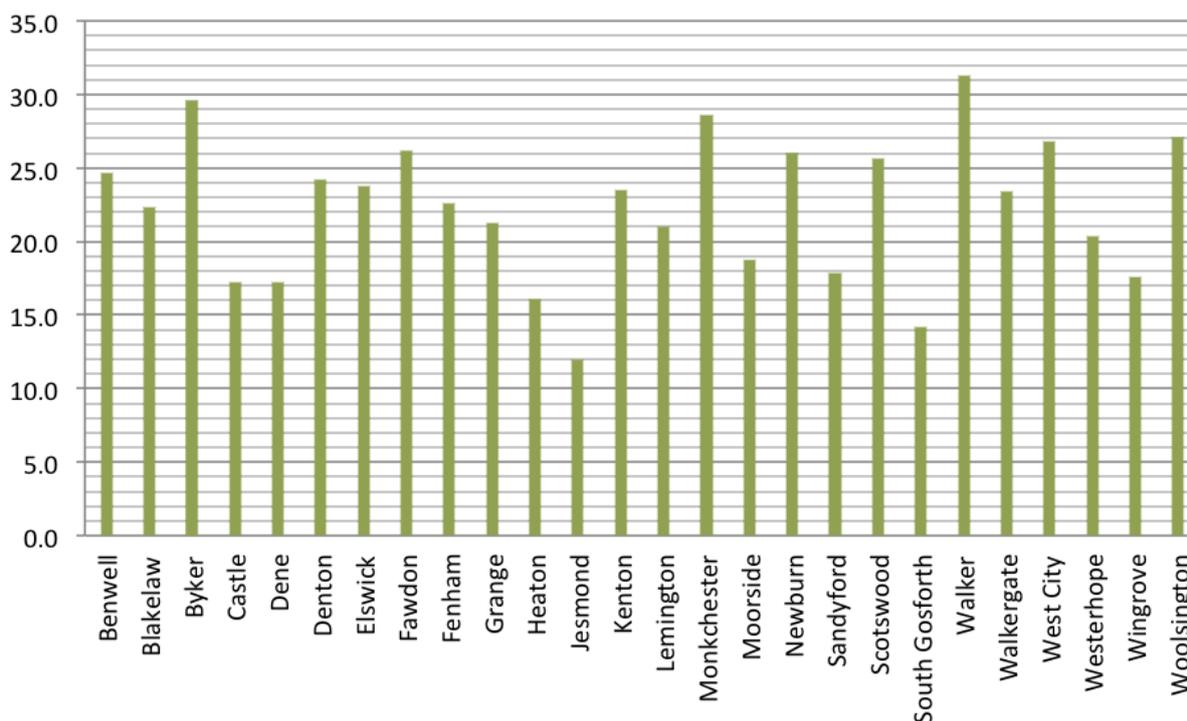
Overall, the emerging picture is one of clear inequalities, which (pending the availability of contemporaneous data and further statistical analysis) appear to meet most of Walker *et al.*'s (2005) list of grounds for interpreting an inequality as an injustice that requires policy intervention (see Table 5.1). Thus, the most deprived wards in the city with the lowest level of car ownership and larger incidence of respiratory illnesses receive a higher level of traffic-related air pollution, compared with the least deprived wards with higher level of car ownership.

23 It has not been possible to get data on admissions for respiratory illness at ward level, so the nearest approximation, the Middle Layer Super Output Area, has been selected.

24 Respiratory diseases causing hospital admissions cover a wide range of conditions affecting the respiratory system, with initial causes ranging from poor working conditions, smoking, and infection. The types of respiratory disease that can cause a hospital admission include inflammatory and obstructive lung diseases (the latter including COPD), pleural cavity diseases, pulmonary vascular disease, and tumours. The point being made by juxtaposing map D, showing respiratory admissions by MSA, with the other maps is that more people in these areas are under respiratory stress. There is no claim to the effect that the air pollution has directly caused the respiratory illness or even, necessarily, the respiratory admission.

Table 5.5: Long-term limiting illness by Newcastle City Ward (2001) (Pre-2004 wards)

Source: Own analysis based on data from Office of National Statistics



Data limitations

As may be observed from the Figures used in this section, some of the obstacles to better information on this issue are contributed by the variety of geographical levels at which statistical data is available for different measures, as well as the different measuring intervals. Were more congruent data available, differences and associations could then be subjected to tests of statistical significance. These limitations mean that

any conclusions drawn about the current environmental justice of air pollution in Newcastle must remain fairly tentative, although confidence will be increased with the release of the latest wave of relevant Census data in 2013. It would be a powerful, but also quite a substantial project, to model and map the small area levels of NO₂ emissions surrounding Newcastle’s main transport routes, as has been carried out for the city of Durham.

Key messages

- Air quality is important. It reduces life expectancy in the UK by 6-9 months at present levels, is linked with low birthweights and possibly with childhood-onset asthma, and aggravates existing health conditions.
- There is evidence of a close link between deprivation indices in the UK and higher

- levels of NO₂ with a traffic origin.
- In Newcastle some of the more deprived wards also have higher levels of NO₂.
- Without claiming a causal link, but instead emphasising the vulnerability of the population affected, some of the most polluted wards are those where there

are high levels of hospital admissions for respiratory illness and a high proportion of the population report a limiting long-term illness.

- Some of the most polluted wards are those where there are the lowest levels of car ownership.
- Pending further statistical analysis, it is argued that at least five out of six of the Walker *et al.* criteria for an environmental justice calling for policy intervention listed in Table 5.1 of this report are likely to be met.
- Levels of NO₂ do not appear to be improving in Newcastle City Centre which is visited regularly by many people and is the work place for thousands of residents.
- A Low Emission Zone feasibility study for Newcastle and Gateshead, where higher emission vehicles are either charged or banned from entering the LEZ was awarded £60,000 in October 2011.

• However, the measure is yet to be decided upon and the environmental justice impacts of LEZ strategies have been questioned.

- Without radical measures for reducing car travel and traffic congestion, tackling air quality will inevitably have a slow and gradual impact.
- Greater coordination and joint efforts between transport, land use and climate change planning is necessary. In particular a joint air quality strategy that combines policy on greenhouse gas and road transport emissions would be a positive way forward, tackling, for example, the adverse effects in terms of other kinds of pollutants resulting from the drives to reduce CO₂ from road traffic through dieselisation.

5.2 Landfills and hazardous sites

While landfill can contribute to a number of visible ills ranging from industrial vehicles, noise, odour and attraction of vermin, the dangers from hazardous industries sited in urban areas can be less palpable. The location of air pollution caused by waste incineration and other industrial processes may be largely non-local, depending on weather conditions – particularly if the emissions are channelled away from the source, for example, through a chimney structure. At local level, long term effects on land and water quality that could cause harm to human health or the ecosystem may only become clear after the industry has ceased to operate and the land is put to other uses. If it is held by a public body, it will be classified as contaminated land and a programme for remediation set in place; if privately held, the responsibility falls to the landowner and conditions will be placed on developers prior to conversion to a new usage.

Newcastle has a difficult legacy in this respect, having in the past hosted numerous contaminating industries such as tar works, lead works, ironworks, glass making, ship-building and armaments. It also still bears the traces of coal extraction at a shallow level which continues to pose risks in terms of gas emissions and subsidence (NCC, 2012:24). Not only do sites of contamination in the city reach double figures, but they are still being identified – for example, in public parks and in sites given over to allotment gardens, some of which have had to be closed down while the soil is reconditioned. Remediation of this kind of land is expensive and proceeds slowly. On a positive note, with the raft of legislation and guidance on protecting the environment

that has been issued since the introduction of the 1990 Environmental Protection Act, (including the retrospective insertion in 1995 of Part IIA on contaminated land), and the ‘greening’ of industry (see Section 6.6 below), the scale of pollution inflicted on the city in its industrial past is unlikely to be repeated.

The situation with landfill in Newcastle also appears to be moving in a positive direction. There are currently only two small landfill sites on the periphery of the city, one near to Shiremoor and one to High Callerton (Environment Agency, 2012 – see Figure 5.2 below). In fact, due to locational factors such as the existence of suitable (as yet unfilled) old quarries in Gateshead and the situation of treatment plants outside the authority’s boundaries in Teeside, much of the city’s waste is now disposed of beyond its boundaries. However, as can be seen from the Figure 5.2, many old landfills underlie the city’s infrastructure, having over the centuries served to level the city’s naturally valley-riven geology (Interview, 2012). Most of these are non-hazardous and dating from a time when household waste largely consisted of coal ash and glass, but a small number, such as the City Stadium Site in Shieldfield, have been classified as contaminated land and subjected to remediation procedures (ibid. and NCC, 2006:21).

Due to recycling initiatives, the amount of waste that has to be sent to landfill has reduced considerably in recent years: in England and Wales, the figure reduced from 69 million tonnes in 2006 to 47 million tonnes in 2009 (EA, 2009, cited in HPA, 2011:5). In Newcastle, waste produced has been lower than forecast, which is

thought to be due to a combination of waste reduction and recycling initiatives and economic conditions (Newcastle/Gateshead, 2011:82). Current regulation requires sorting of waste to different kinds of landfill as well as picking out recyclables from household waste. Newcastle hosts several waste management sites where items are sorted for recycling or transfer. It is considered that needs for waste facilities at least up to 2024 can be met within the joint facilities in Newcastle and its sister authority Gateshead and there is no need to increase landfill sites. At the same time, waste management sites in the city are likely to increase, as there are plans for up to 80% of municipal waste to be diverted

from landfill and put to electricity generation usage - partly in Teeside and partly through export to combined heat and power plants in Sweden. To protect Newcastle's waste processing capacity, the major waste management facilities at Benwell and Byker (in Newcastle) and at Blaydon (in Gateshead) are to be safeguarded (Newcastle/Gateshead, 2011:83). The Benwell plant may also be upgraded and expanded to increase the city's capacity to extract recyclable waste from bulky items such as furniture (Newcastle City Council, 2011). Thus it is expanding waste processing facilities rather than landfill that are likely to pose future challenges for environmental justice in the city.

Figure 5.2: Current (brown) and historical (pink) landfill sites in Newcastle upon Tyne

Source: The Environment Agency, 2012



Landfills, hazardous sites and wellbeing

Hazardous sites. Industrial installations have been linked with a wide range of polluting elements, which have impacts on human health, although the extent and nature of these is disputed (see Dunn and Kingham, 1996; Bhopal *et al.*, 1998; Pless-Mulloli *et al.*, 1998, all cited in Walker *et al.*, 2005). Impacts may be subtle or only visible over long periods of exposure, and it has often been hard to prove a direct link relating to physical proximity. For instance, a Teeside study (Bhopal *et al.*, 1998) did not find a consistent link between the current industrial pollution levels and acute respiratory problems or other non-specific symptoms. However, it did identify a long term association between death from lung cancer and past emissions. A study of the Byker waste incinerator in Newcastle was not able to identify any link with congenital abnormalities at birth (Cresswell *et al.*, 2003). A comprehensive review of the health impacts of incinerators (DEFRA, 2004) was also unable to find any clear link between the cleaner modern incinerators and health impacts, although such links have been found for populations living near to the older generation of incinerators and polluting industries.

Landfill. The disadvantages of living near a landfill site have in the past included industrial traffic, noise and unpleasant odours, although sites are now subject to strict regulatory control to mitigate such nuisances (in the UK the Environment Agency is the main authority for open sites and closed sites with permits, while Local Authorities or landowners are required to manage other closed sites). Landfill is a source of greenhouse gases, including approximately equal quantities of carbon

dioxide (CO₂) and methane (CH₄) produced by the fermentation of organic material (which has become a problem since landfill began to include kitchen waste; this was formerly mainly fed to animals and composted). Increasingly, landfill gas emissions can be harnessed for energy. However, leachate – substances flowing in the ground water from the landfill – is the major contaminant of ground water in the UK (Environment Agency, no date). Leachate can be high in heavy metals, ammoniacal nitrogen and organic compounds and de-oxygenates the water supply.

Because of the number of confounding factors, it has been almost impossible for studies to show that living near a landfill site causes higher rates of birth defects, although there is some evidence of a possible association (Dolk *et al.*, 1998; Eliot *et al.*, 2001). Overall, however, the evidence for harm due to proximity to all waste sites (apart from sewage treatment plants) tends to be somewhat contradictory and inconclusive (Giusti, 2009). Recent guidance from the UK Health Protection Agency states that living close to a landfill does not pose a significant threat to human health (HPA, 2011). Furthermore, any such threats are likely to decrease in the future, as the standard measures to reduce waste at source, inspired by such measures as the European Directive on Landfill, the Landfill Tax and the requirements on households to separate recyclable waste, as well as pressure on industry to reduce packaging waste through various means, can fortuitously have a disproportionate positive impact on those living near to landfill and waste transfer and incineration plants (SDRN, 2004:16).

Hazardous sites, landfills and environmental justice

The issue has been more prominent in the US (see Section 3.1), where various measures have as a consequence been introduced to reduce the distributional disadvantages of siting polluting plant of various kinds – alongside which has grown a body of evidence about their relative effectiveness. The concern with waste management dates back to the earliest grassroots protests from which the environmental justice movement emerged (Agyeman, 2002). In Europe, recent transformations in the industry have led to significant changes in the way waste is managed and disposed of, based on EU waste management legislation (Davoudi and Evans, 2005) addressing both inter and intra-generational justice issues (Watson and Bulkeley, 2005).

Hazardous sites. In the UK, harmful or large industrial sites fall under the Integrated Pollution Prevention and Control system (formerly the Integrated Pollution Control Regulations).²⁵ These kinds of sites can contribute intangible harm, such as stigmatising an area, as well as causing tangible problems such as poor quality air, impacts to water quality, or simply noise and unpleasant odours. A number of studies have shown a strong relationship between the siting of facilities falling under the Integrated Pollution Prevention and Control System (IPPC sites) and deprivation in England, for example, Environment Agency (2002), Friends of the Earth (2000, 2001), Walker *et al.*, 2003 and 2005, and Wheeler *et al.*, 2004. The effect is strongest in relation to the location of waste incinerators (Friends of the Earth,

2004). Walker *et al.* (2005) not only found that significant pollution sources were disproportionately located in more deprived areas, but that they tended to be clustered there as well, so that the proportion of people in deprived areas living within 1km of multiple sites was higher than in affluent areas. Furthermore, in deprived areas the industrial installations had more frequent and more offensive pollutants. The reason for this siting bias seems to be that good quality environments tend to be protected under the norms of planning decision-making or by articulate and well-connected communities with the time and capacity to influence planning decisions. Thus, areas that are already deprived and degraded tend to be seen as a more logical location for polluting and unpopular functions (SDRN, 2004:15). Formal environmental impact assessment procedures tend not to take account of distributional issues.

Landfill sites. The EU 1999 Landfill Directive and the consequent UK Waste Strategy 2000 established a hierarchy of waste management approaches, at the top of which is reducing waste, followed by reusing sources, then recovering value from waste (recycling, composting, energy recovery) and actual disposal (incineration without energy recovery and landfill) as the least-favoured option. The approach is informed by the inter-generational justice principles of conserving finite resources and preventing pollution of the environment from landfill (e.g. methane released into the air, or other pollutants leaching into the water supply).

²⁵ Landfill sites do not fall under this regulation.

Waste Strategy 2000²⁶ was also informed by a proximity principle, requiring that wastes be disposed of as near to source as possible to avoid 'passing the environmental costs of waste management to communities that are not responsible for its generation' as well as reducing the environmental costs of waste transportation. This included an explicit recommendation that waste generated in the UK should be disposed of in the UK rather than exported (although the most recent Waste Strategy, 2007, moves the emphasis to tightening regulation on exports – DEFRA, 2007). One result of the increasing legislation on these issues is that in order to be compliant within the available resources, waste disposal has been concentrated between fewer and larger facilities, with the result that fewer communities are now exposed, but to higher risks (Davoudi, 2000). At the same time the waste hierarchy also suggests the need for more intermediate processing facilities (transfer stations, recycling centres), which goes somewhat counter to this trend (Watson and Bulkeley, 2005, p.419). The authors note how the multiplication of smaller sites, from bottle banks to small transfer stations, had inspired a raft of 'NIMBY' style protests that has the potential to impede the implementation of more sustainable waste management approaches. That community action can also enhance the local authority approach is shown by the example of protests against the siting of a major boiler plant, running on refuse-derived fuel, in the Byker area. The protest soon shifted from simple opposition to the strategy of proposing an alternative waste strategy for the city, centred on recycling

rather than incineration (BAN, 2003, cited in Watson and Bulkeley, 2005:419).

Although the evidence is not yet conclusive, some studies show a link between the siting of landfill locations and deprivation. For example a 2002 study for the Environment Agency concluded that more deprived communities have larger areas devoted to landfill compared with less deprived ones. Studies by Wheeler (England and Wales), Eliot *et al.* (England) and Dolk *et al.* (Europe) all found weaker associations for urban areas, although Wheeler's study identified quite a strong association in partly or wholly rural areas in England and Wales. It should be considered that although many studies have been proximity based, impacts are not linked in a simple way to distance from the environmental burden. Thus, a polluting industry or incinerator will "follow complex pathways of dispersion and population exposure" (SDRN, 2004:13), with dispersion pathways depending on local air currents and water systems.

Similarly, the benefits accruing from 'unclean' industries and operations in terms of employment and expenditure cannot necessarily be assumed to benefit local people, as some of these industries can demand particular skills that may not be available in the immediate population, and their spending power may mean they can choose providers from a wide geographical catchment. Furthermore in common with all kinds of industrial processes, due to technological advance, they are largely able to run with a minimal staff and thus their capacity to increase employment either locally or on a wider scale, can not be automatically assumed.

26 Updated with a new Waste Strategy in 2007 (see <http://archive.defra.gov.uk/environment/waste/strategy/strategy07/documents/waste07-strategy.pdf>).

Distribution of landfills and hazardous sites in Newcastle

Waste management. The city currently recycles or composts 46% of its waste and plans to raise this to 50% (Newcastle City Council, 2011). A significant proportion of the city’s waste is sent to a Teeside plant for energy extraction. While several waste transfer stations, clinical waste and metal recycling facilities are sited along the river Tyne (see Figure 5.3 below), there are no large scale municipal landfill sites on the Newcastle side. The landfill sites in Gateshead include former large-scale mineral extraction sites (quarries) which have a high potential capacity. It is the positioning of waste reception centres and waste transfer facilities in some of the city’s most deprived wards such as Benwell and Byker that seems to confirm the tendency noted in the environmental justice literature to site waste facilities in deprived communities.

Parallel to The Big Green Pledge, where the city is asking its residents to sign up to commit to increasing energy efficiency at home and reducing car use, there are ‘Prevent and Reduce’ and ‘Recycle More’ public information campaigns to encourage citizens to both reduce waste and recycle. Newcastle has had considerable success in this area, reducing household waste by 6% between 2008/9 and 2009/10 (NCC, 2012:64). While recycling is facilitated by doorstep collections in most parts of the city (although high rise flats are not covered by this scheme) recycling points tend to be clustered in areas of more dense population, and from Figure 5.3 below, some of the more rural north west wards do not seem to be well provided.

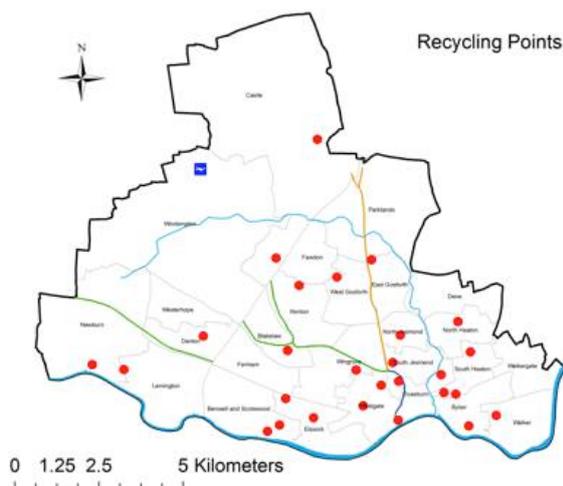


Figure 5.3: Recycling Points in Newcastle upon Tyne

Source: Author’s analysis based on data provided by Newcastle City Council

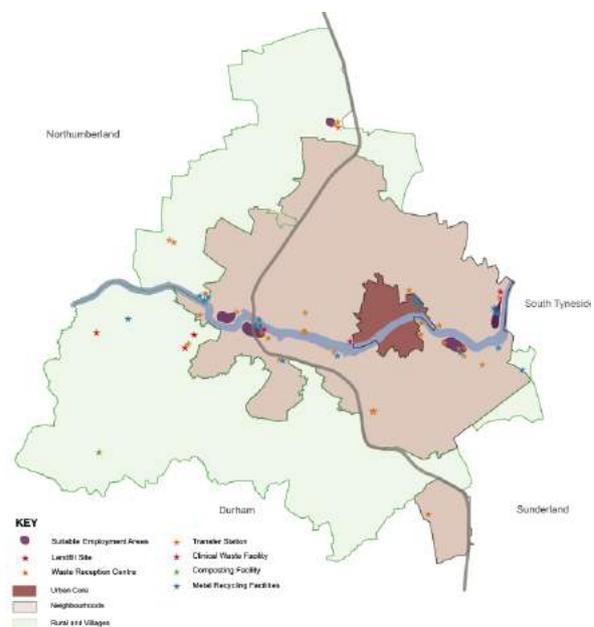


Figure 5.4: Map of Newcastle and Gateshead authorities’ landfill sites, waste facilities and waste reception centres

Source: Newcastle/Gateshead, 2011:84

Newcastle's first Contaminated Land Inspection Strategy dates back to 2001, and has received regular updates up to 2006. The city was a significant centre for lead manufacturing in the nineteenth and twentieth centuries, and five former sites have been identified as having high levels of contamination, of which remediation is said to be complete for only three. One is in process and the other is in private hands (Interview, 2012). While the remediation of contaminated land in private hands is effected by the city council's enforcement of development management conditions, publicly-held land is targeted through the Contaminated Land Inspection Strategy for the city (2006). The latter identifies six sites of various types due for remediation of which four have since been made safe, and one is in the process of remediation (NCC, 2012:26). These include a set of allotments in Walker Road and two sets of allotments in Branxton which had received ash from the Byker heat and power plant (NCC, 2006:22) and a former tar

distillery, also in Walker, which continues to pollute the river Tyne (ibid.). The distillery produced creosote, naphthalene and benzene, by-products of the gas manufacturing industry. Large quantities have seeped underneath the manmade well designed to hold them, below a layer of imported chalk ballast. This material is held back by the river at high tide, but can be observed escaping into the water at low tide. Progress on this latter site, which is on the Hadrian's Wall National Trail, has been held up both by the volume and position of the pollutant below the water level. There have already been two failed attempts to remediate this site which have foundered due to the nature of the pollutants and difficulty of the task. The cost of the new remediation plan is said to be equivalent to a major proportion of the DEFRA's yearly allocated funds for England, and is thus currently considered unlikely to attract the necessary funding in the near future (Interview, 2012).



Figure 5.5: Warning sign on Hadrian's Wall National Trail, by St Anthony's Tar Works, Newcastle

Source: Robinson and Zass-Ogilvy, 2009

It can be seen from this brief resume that while contaminated land is largely sited in the city's more deprived areas, the city has been proactive in dealing with these environmental burdens up to the current economic downturn, when progress became impeded by lack of funds.

There is, however, a significant displacement issue with regard to waste management, whereby Newcastle's landfill sites are actually in Gateshead, the reprocessing of a proportion of its waste for energy takes place in Teeside and is projected to include export to the

Stockholm region. There is evidence of awareness of this concern in a recent waste strategy (Tyne and Wear Councils, 2011:6), from which the following citation is taken.

The exporting of residual waste to landfill sites outside the Borough was supported although concerns have been expressed around the ethics and costs associated with transporting waste across the Borough and the availability of existing landfill 'spare capacity' within neighbouring authorities. (ibid.)

Data limitations

What is currently known about contaminated land and in the public domain may not be comprehensive and other sites and issues that exist may only

emerge in the future, for example, when further development on brownfield sites takes place.

Key messages

- In line with national policy, Newcastle's waste disposal strategy means less waste is currently directed to landfill and more is diverted to recycling and conversion to energy.
- This is likely to improve in the future; however,
- Most waste-processing facilities are situated in the more deprived riverside wards in the city and
- It is at present unclear to what extent any inconvenience experienced by local residents may be increased with more concentration of waste treatment facilities in these locations, e.g. at the projected expansion of the Benwell plant to include a facility for extracting recyclables from bulky items.
- Contaminated land has been a significant issue in the city, largely due to its role as a cradle for the industrial revolution, before long-term impacts of polluting industries were fully understood or protected against.
- Sites of contamination were also largely in the deprived riverside industrial wards.
- A long-term process of remediation has restored many of the main contaminated sites, but the current economic conditions have meant that plans for a site of significant contamination in the deprived Walker ward have had to be put on hold.
- This site is adjacent to the Hadrian's Wall National Trail and the panel warning people of the contaminated land is visible to visitors to the World Heritage Site of Hadrian's Wall, as well as to local residents using the trail.

5.3 Rundown neighbourhoods

Rundown neighbourhoods are associated with problems such as empty or derelict buildings, litter and flytipping, vandalism, noise and odour. It is a well-established phenomenon, known as the 'broken window effect' that once such conditions take hold, they can have self-reinforcing consequences, attracting anti-social, illegal and unhealthy behaviours (Cohen *et al.*, 2000) and driving out anyone in a position to relocate. When people move out of a blighted neighbourhood, it may be hard to find new occupants for the homes left behind. This can lower property values, rents and 'eyes-on-the-street', further entrenching the problem. Environmental and social disorder can join together in a self-perpetuating spiral of decline.

The recognition that deprivation was concentrated in certain areas in urban settings led to the development of several area-based funding streams under the previous government, including the Area-based Grant, Neighbourhood Renewal Fund and Safer and Stronger Communities Fund, all of which have now been sharply curtailed or withdrawn. However, an area-based approach has long been embedded in the governance of Newcastle, through the city's system of Ward Committees. These provide an avenue for neighbourhood-level action on problems of concern to residents. Each Ward Committee has a dedicated ward officer employed by the City Council whose role is to support the wards in allocating and administering these funds and also to make more targeted grant applications from central government and charitable trust programmes (for example, towards tackling loan sharks or binge

drinking) (Interview, 2012a). Not only is a sizeable Highways Budget devolved to the Ward Committees, enabling local people and their representatives to have an input into the quality of their road infrastructure, but wards are also allocated a yearly budget from the city council, based on their population headcount (20%), deprivation levels (40%) and a further 40% set amount split equally between all wards. This is intended to be spent on improvements to the area that are broadly in line with the council's objectives in terms of social cohesion and inclusion, safety and environmental improvement ('cleaner, greener, safer'). There is also a £10 million resource (spread over three years) for the voluntary and community sector called the Newcastle Fund which can be spent on either area-based or city-wide initiatives (*ibid.*).

At city council level, the problems associated with rundown neighbourhoods are broadly split between crime and safety policy (Safe Newcastle 2008, 2011) and environmental services policy. Besides standard crime and safety issues such as burglary and assault, the former deals with matters such as drugs, alcohol, domestic violence and bullying, as well as anti-social behaviour and terrorism. The latter addresses physical infrastructure issues such as street cleansing and green spaces. In terms of anti-social behaviour, the city's 'SafeNewcastle' strategies have specific aims focused on communities: to "create confident, cohesive and safe communities" and to "reduce vulnerability and promote healthy communities". The policy is directed not only towards crime but towards the perception of crime and aims to draw partnership approaches

such as training volunteers to help prevent, identify and manage community conflict and working with the Newcastle Safe Neighbourhoods Action and Problem Solving groups (SNAPs) that now exist in all wards.

The map in Figure 5.6 below shows the incidence of crime in the city from 2006/7 (the most recent such map identifiable), clearly indicating the concentration of the problem in the disadvantaged riverside wards.

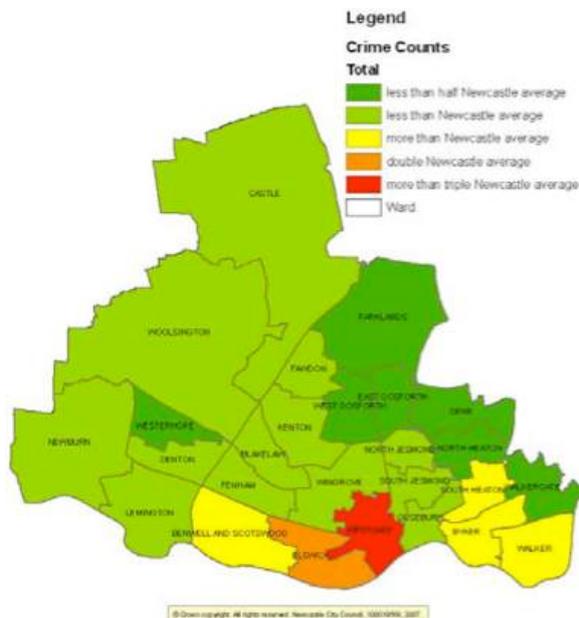


Figure 5.6: Proportions of recorded crime in Newcastle wards, 2007-8 (post-2004 wards)

Source: NCC, 2008:99

In terms of environmental services, Newcastle City Council is attempting to achieve city-wide Decent Neighbourhood Standards, the selection and monitoring methods for which have recently been put out to a wide-ranging consultation (NCC, 2011a). The consultation has found almost unanimous approval of the standards, although some have questioned whether, when a neighbourhood is rated higher than the standard, its standard will drop so that other neighbourhoods can raise their own standards – to which the council’s answer is ‘yes’ (NCC, 2012a:6). The Standards supersede the ‘Neighbourhood Charters’ of the previous council administration, which allowed each ward of the city

(around 12,000 people per ward) to determine its own priorities and implement ways of realising them in partnership with a network of council officers. In contrast to this area-based approach, the new proposals are concerned to generalise a set of quality standards across the city, so that wherever people live, they can expect clean and tidy, and well-lit, streets, well-maintained roads and pavements,²⁷ well-maintained green spaces and parks, access to activities for children and young people, access to recycling, and safe neighbourhoods.²⁸ Already, since 2007/8, the council has engaged in thrice-yearly surveys of these conditions across the city’s residential neighbourhoods,

27 As emphasised by many older people’s organisations, including the national charity Age UK, well-maintained roads and pavements are particularly important for older people, who are at the greatest risk from falls and their longer-term health impacts (Help the Aged, 2008).

28 A further dimension being considered is access to childcare arrangements where needed (NCC, 2012a: 4).

reported in its Local Environmental Quality Indicator.²⁹ The results of the most recent

survey are shown in Figure 5.7 below.

Rundown neighbourhoods and wellbeing

Poor quality neighbourhoods can have a range of impacts on people's wellbeing, depending on the nature of the blight. The various aspects of the environment that make up a poor quality neighbourhood have been described as 'environmental incivilities' and links have been drawn between these and poor health outcomes (Ellaway *et al.*, 2009). People with a perception of high levels of what the authors describe as 'street-level' incivilities (litter, graffiti, dumped cars/fridges, broken glass, uneven pavements) were more than twice as likely to report frequent anxiety and depression than those who perceived low levels of these problems. The impacts of different kinds of dereliction are noted in more detail below. As with many kinds of environmental burden, the most vulnerable groups may be more affected by these problems. In particular, older people, who are likely to spend more of their time in their neighbourhood, will have their quality of life significantly impaired by local blight and dereliction (Bowling *et al.*, 2006; Mottus *et al.*, 2012).

Litter and flytipping. The difference between litter and flytipping is a matter of size and scale. Both refer to items that have been discarded outdoors in the wrong place, but while items of litter can range from cigarette ends, dog excrement and chewing gum, through to plastic carrier bags and fast food packaging,

flytipping generally concerns either large accretions of such small items or bulky items of waste matter including indoor items such as fridges, garden waste and abandoned cars. Flytipping often results from individuals or contractors displacing waste materials from a domestic or commercial setting at the lowest possible cost to themselves. It is an environmental burden that affects advantaged and disadvantaged areas alike. The SDRN report (2004:9) notes that it may have been caused or aggravated in many cases by recent waste management legislation that requires people to make a payment for disposing of certain kinds of waste. Problems from litter and flytipping each continue along a similar scale of gravity from a simple eyesore, damaging the amenity value of open spaces, to a health hazard, and may even instigate a spiral of decline in an area. A 2002 report by ODPM entitled 'Living Places' notes that vermin and disease may be attracted by litter and rubbish and that they may drive people, business and investment away (ODPM, 2002:11-12).

Vandalism. Although vandalism has sometimes been taken to mean alteration to another person's or to public property with a destructive intent, it can also be extended to include non-destructive alterations such as flyposting and graffiti, where people appropriate the public realm for advertising or self-expression.

29 Available from <http://www.intelligenceonline.co.uk/Viewdata.aspx?P=Meta&referer=RealmDataBrowser.aspx%3ffilterDatasetID%3d296>

The three phenomena can be grouped together as illegitimate alterations to private and public property. The SDRN report notes both literature review and qualitative studies that suggest fear of crime is associated with a poorly cared-for public realm. It also observes that fear of crime prevents people from feeling free to circulate in their neighbourhood which can have a detrimental impact on their quality of life (SDRN, 2004:26).

Noise and odour. What counts as noise pollution can be a question of timing (whether or not it takes place in waking hours, for example), of volume (number of decibels), or of personal or psychological characteristics (see Guski, 1999). Noise can emanate from neighbours, businesses and industries, or transport. With odour, what counts as an unacceptable level is harder to define, and its impacts are less subject to research and legislation. Noise is associated with increased blood

pressure and heart rate, and evidence is pointing to wider health impacts relating to stress (Ising and Kruppa, 2004). These may have similar consequences in terms of propelling those who are able to relocate, to do so.

Derelict Buildings. The quantity of derelict land has been used as a key indicator of the quality of a locality (Scottish Government, 2005). A study of facilities and amenities in different neighbourhoods of Glasgow found that while there were, against the usual assumptions, a number of desirable facilities more associated with deprived than with affluent areas in the city, at the same time deprived areas had higher numbers of vacant and derelict buildings (McIntyre *et al.*, 2008). Derelict industrial and residential buildings can present a hazard for adjoining properties and attract anti-social and illegal behaviour as well as vermin and other health risks.

Rundown neighbourhoods and environmental justice

Litter. In 2004, quoting the English House Condition Survey, Power identified dumped litter as a problem for about 2 million people in England. Duffy in 2000 found that not only did people in more deprived areas have lower than average levels of satisfaction with street cleaning in their area but also that local authorities in deprived areas had generally lower standards of street cleaning and refuse collection. The results of an annual national survey of environmental quality undertaken by ENCAMS which reviews a sample of local authorities based on a range of geographical and deprivation criteria were inconclusive about the

association with deprived areas. A study by Joseph Rowntree did, however, establish an association between littering and deprived areas (Hastings *et al.*, 2005). Of equal significance to its actual incidence is the concern shown by people in deprived areas for the issue of litter. For example, Burrows and Rhodes in 1998 found that while high levels of dissatisfaction were found in all housing tenure groups, the highest concentrations were found in wards with the following classifications: social housing in London, high rise housing, deprived industrial areas with large minority ethnic populations and areas of low amenity

housing in deprived areas. The SDRN study (2004:19) cites three qualitative studies from the UK that show litter is high on the list of concerns expressed by people living in disadvantaged areas.

Vandalism. A 2004 literature review found a distributive dimension to vandalism, which was noted as a problem for 27.9% of households in deprived areas, compared with only 6.6% in other districts (Williams and Green, 2001: 12). Another literature review notes that surveys for the Tidy Britain group identified vandalism as a top concern for 96% of respondents (Stafford, 2002). The main perpetrators are younger age groups and the causes are likely to range from a lack of sanctioned activities to peer pressure to engage in behaviours with perceived risk.

Noise. Noise is generally more likely to be a problem in dense, urban environments – where there are also higher concentrations of deprivation (SDRN, 2004:15). The SDRN report notes that it is likely to be a particular problem for people with young children (especially at night); older people; and people with mental illness (SDRN, 2004:31). Causes can range from the location of dwellings on a traffic through-route, poorly-insulated dwellings, lack of consideration by neighbours or neighbouring businesses and a particular personal sensitivity to sound or to some types of sound. There is however, a general lack of evidence on the social distribution of noise pollution. A study of noise contributed by industry and transport with a distributive dimension did not find any clear evidence of an association with deprived areas (Brainard *et al.*, 2003).

Distribution of rundown neighbourhoods in Newcastle

As can be seen in Figure 5.7 below, based on the council's own data-gathering for its composite Local Environmental Quality Indicator, wards that are lower-performing in terms of neighbourhood standards more or less coincide with the wards that have a higher disadvantage rating on the Carstairs deprivation index (selected because it is available at ward level). The Woolsington ward in the west of the city, one of its more rural/village areas, also performs less well on both indicators. However, examined in detail, the differences between wards are not great, with the lowest scoring areas still achieving an overall quality rating of 87 out of 100. According to the information

supplied with the data, the rating is based on inspection of multiple parts of the ward, administered three times per year. The 16 dimensions measured (for which separate data can also be obtained at ward level) include litter, vandalism, flyposting, flytipping, graffiti, weeds, street furniture and dog fouling. There is a guarantee that at least 270 separate areas of Newcastle will be inspected per year. The score therefore represents the percentage of inspections that were passed in any one year. According to an interview carried out for this study (Interview, 2012a), for several components of the standard – such as roads, pavements, street lighting – basic standards are set out in service

agreements with contractors as conditions for payment. This could be linked to some of the strong positive ratings for the 2010-

11 period, prior to the introduction of the Decent Neighbourhood Standards.

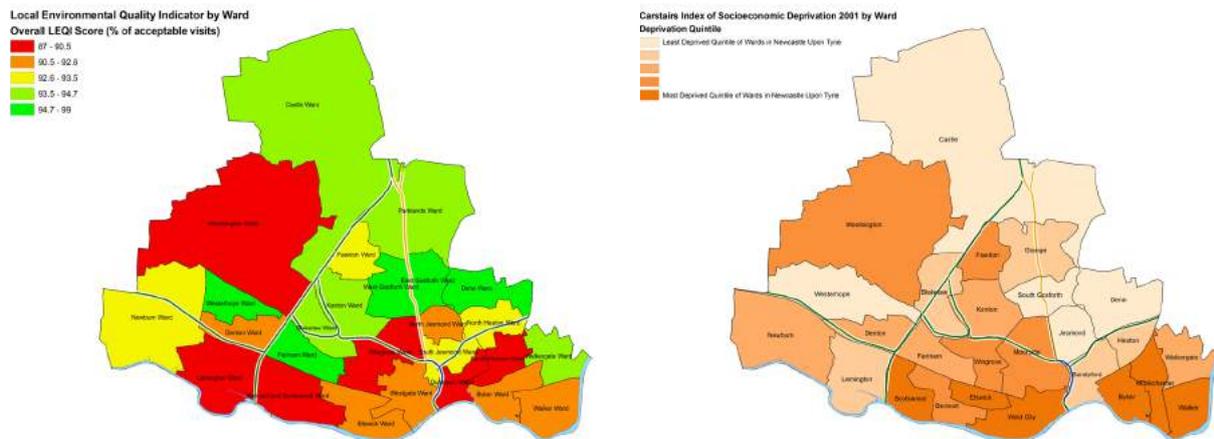


Figure 5.7 Local Environmental Quality in Newcastle 2010/11, compared with Carstairs deprivation index (2001) (post-2004 wards in right-hand map; pre-2004 wards in left-hand map). Darker areas on the left are those with lower environmental quality; and on the right, with greater deprivation)

Source: Authors own analysis from data supplied by www.intelligenceonline.co.uk

Another interviewee, however, suggested another reason why the LEQI does not show great discrepancies in environmental quality between different areas of the city, which is that the city is already inputting supplementary levels of resource (such as a more frequent street cleaning service) to maintain standards in disadvantaged city neighbourhoods. According to the interviewee, the more intensive street-cleaning services were not provided at ward level but to the neighbourhood areas into which the council has divided its residential streets. Within these, services can be targeted at particular problem streets within wards (Interview 2012b).

There was a similar profile for empty properties, which tended to cluster together on a small number of streets. Newcastle has a slightly lower proportion of its housing left vacant for six or more

months than nationally (3.7% as opposed to 4.6%), amounting to 3,500 properties (NCC, 2011b). At the time of writing, the council was applying for empty property funding from central government. Empty properties in the city were identified from a combination of council tax records, environmental health call-outs and neighbours' complaints. However, many such properties are largely unproblematic, that is, not being visibly empty or abandoned, such as unlet student properties. Only a few hundred "visible voids" were considered candidates for council intervention.

According to one interviewee, some of the hard-to-let and void properties in the Benwell area were in the past let to new migrants to the UK, which initially led to a degree of social tension between the established and incoming communities. This ultimately declined after the dispersal

of the migrant communities around the city and the North East. Some of the migrants also managed to improve their standard of living and were no longer so dependent on the support of their community of origin (Interview, 2012b).

Social tensions do not just arise in the less well-off wards in the city: a major source of complaints from residents concerns the behaviour of the city's population of approximately 54,000 students, who are mainly housed in the wards that ring the city centre area (where the two main campuses are located). Littering and noise are two main issues that arise from the student population. In response to the incidence of complaints about noise, the council offers a night-time noise response service ('Nightwatch') from 8pm to 4am, 7 days per week. It is empowered by antisocial behaviour powers and nuisance legislation which enable interventions such as seizing sound equipment. In 2010/11 around 6,500 complaints were received and dealt with (NCC, 2012b:57). The council also operates patrols of the city centre entertainment venues to monitor noise and under separate legislation, the Licensing Act 2003, can take action against offending businesses.

The main noise monitoring that occurs is however related to noise from transport, in line with the Environmental Noise (England) Regulations (2006). This has resulted in a Noise Action Plan for Tyneside, which includes maps showing areas of Tyneside where EU noise regulations are not met. Around 2,500 dwellings with around 5,300 inhabitants are to be investigated due to excessive noise from roads; while for rail noise around 100 homes with 200 occupants will be investigated, most of them

affected by noise from the Metro system rather than the East Coast (national) rail service (NCC, 2012b:55-6). New developments that may be affected by noise from transport are assessed for this under the planning regulations. The kind of mitigating interventions that can be offered include noise barriers, low-noise surfaces, improved sound insulation and local traffic management. Industrial noise falls under different regulations including Statutory Nuisance Regulation, and is a lesser problem in the city.

According to some interviewees, the recent reforms in welfare benefits are likely to have an adverse impact in terms of rundown neighbourhoods in the city. One interviewee suggested that this had already led to rising levels of crime and infrastructure damage in the more deprived neighbourhoods, reflecting national trends in terms of, for example, increased incidence of metal theft.

Similarly, community activities are also being affected, as the economic downturn and its consequences in terms of funding cuts have begun to affect people's ability to take up local opportunities for social and sporting activities. Another issue raised in the interviews was that due to declining incomes and worklessness, some people would find themselves without the resources to maintain their properties to a decent standard (see Section 5.4 on poor housing conditions). At the same time, a pilot scheme was about to launch to renew a housing estate in the deprived Byker ward that offered a model for attracting commercial investment into the city's most problematic and rundown neighbourhoods. The Byker Community Trust, supported by the city council and Your Homes Newcastle (the council's

Arms Length Management Organisation), has succeeded in raising £12 million from the Yorkshire Building Society to invest in upgrading the 18,000 homes of the Byker Estate (a Grade II* listed building by the architect Ralph Erskine), as well as the public realm around it (Interview, 2012a). This had become possible under a new scheme, whereby the government wrote off the estate's debt charge (monies outstanding on the initial loan taken out to construct the estate) on the basis of an attractive business plan drawn up by the Trustees:

So the Trust can borrow against the asset and the revenue stream to invest in the asset.[...] It's quite a strong business opportunity there, but if the Trust then employs people locally from the bottom of the ladder, you start to create a virtuous circle of improvement, don't you? (Interview, 2012a)

At the time of the interviews, the Trust was also bidding for funds to develop a Community Interest Company, a type of not-for-profit organisation, to provide services across its own boundary, possibly at a lower cost than other agencies, also increasing employment opportunities in the area. The success or otherwise of this pilot will not be evident for a number of years and even if a successful outcome leads to replication, this can only address a small proportion of the city's rundown neighbourhoods (e.g. those with significant assets such as listed buildings against which capital can be raised). In a time of austerity the council is counting on Newcastle residents to take co-ownership of the city's environmental problems and work in partnership towards achieving Decent Neighbourhood Standards (NCC, 2011a). We will discuss this in more detail in Section 7 on participation.

Data limitations

Only limited information about the LEQI indicator is available from the data provider (www.intelligenceonline.co.uk) so without further research to go beyond the information that is publicly accessible, it is difficult to gauge what the inspection

standards are, or on what criteria areas would fail. Without this information, the degree of current disparities in neighbourhood quality between different wards in the city is difficult to estimate.

Key messages

- Rundown neighbourhoods have an impact on people's mental health.
- Several aspects of rundown neighbourhoods appear to have an environmental justice dimension.
- The environmental aspects of rundown neighbourhoods are connected with the

prevalence of social problems such as crime and anti-social behaviour.

- The information available from Newcastle's Local Environmental Quality Indicators suggests that the more deprived wards of the city perform slightly less well on environmental indicators.

- In the absence of more information on how the LEQI has been generated, it is difficult to estimate the extent of the disparities in environmental quality between different parts of the city.
- Information from interviews suggests that, in advance of the introduction of Decent Neighbourhood Standards, considerable potential disparities are already being levelled out to some extent through standards set for contracted out services, and through supplementary input to services provision in the city's more deprived areas.
- These compensate for higher levels of littering and flytipping in some areas of the city.
- The council's Decent Neighbourhood Standards initiative, currently integrating the consultation phase, suggests that the next step in addressing this problem may be gaining greater involvement from people at street level in the upkeep of their neighbourhoods.
- Certain demographic and social characteristics of the city, including low levels of home ownership in the city (50%) and greater proportions of mobile student and ethnic minority populations, as well as a fear of reprisals for complaints (see section 7), may present obstacles to achieving equal levels of co-ownership of the Decent Neighbourhood Standards in all areas of the city.
- The impacts of the recent welfare reforms are likely to reduce the resources people have for investing in maintaining their environments and may already be increasing damage to essential infrastructure through motivating opportunistic crimes such as metal theft.

5.4 Poor housing conditions

This section focuses on poor housing conditions in general, while affordable warmth and fuel poverty in particular are covered in Section 6.5. People's housing conditions, in interaction with the wider environment mediate health and mental health, which themselves have impacts on performance at work and school and thus employability. Housing conditions have long been the objective of social reformers. They were picked out by Sir Donald Acheson in his influential review of Health Inequality in England as one of the six key 'living and working conditions' that influence health (Acheson, 1998). While the 12 most recent countries to join the European Union have considerably worse housing conditions and differentials than the EU15 member states including the UK, there is still a great deal of room for improvement (Braubach and Fairburn, 2010).

With regard to housing conditions, Newcastle has a mixed heritage. Housing stock in Newcastle is older than the England average, as well having a lower proportion of detached houses and a larger proportion of purpose built flats. The older stock includes miners' houses, tenement buildings and a sort of low-rise purpose built flat distinctive to the area and known as the Tyneside flat, which pose particular risks in terms of their steep stairways. There is also a lower level of home ownership in the city than nationally (50% as compared to 69%) and a higher level of private renting (22% as compared to 13%). Almost half of the privately rented stock dates from 1919 or earlier and over a third of the non-decent private sector housing in the city

is of this age (NCC, 2011a and Randall, 2011). Privately-rented also stock has the poorest conditions of any sector in England (Randall, 2011).

Newcastle has high concentrations of low income families living in estate-based social housing, the highest being in Walker ward at 49.9% (NCC, 2011b). In 2000, the Housing Green Paper, *Quality and Choice: A Decent Home for All*, announced the government's intention to raise all social housing up to meet its new 'Decent Homes Standard' by 2010 (DETR, 2000). In 2012 the Homes and Communities Agency (the successor to the Housing Corporation) announced that 92% of social housing now meets the standard of being warm and weatherproof with reasonably modern facilities (HCA, 2012). This is the result of a massive programme of public investment from which Newcastle's social housing has also benefited. An Arms-Length Management Company called 'Your Homes Newcastle' was set up in 2004 to make sure all the social housing stock would conform to Decent Homes standards (see below) by 2011/2. Your Homes manages the former council housing in the city and runs a choice-based lettings scheme where available properties are shown online and people can bid for them. As noted in Section 6.5 on Affordable Warmth, social housing tenants in Newcastle are supported by schemes that help them to maintain thermal comfort at home, improve their energy efficiency and deal with energy suppliers. Social housing remains in high demand, with 9,000 people currently waiting for a transfer or their first council home (Interview, 2012a).

Another potential issue for the city's housing is the mobility of the population and the proportions on low incomes. Newcastle has a considerably higher proportion of heads of household aged between 16 and 24, reflecting the high student population in the city. Reflecting this demography, higher levels than nationally are found of both multi-person households (mainly students) as well as single person households (of which almost half are pensioners). It may also be reflected in the finding that the annual income of the heads of households (added to that of their partners, where partners were also earning) was relatively low, with 77% earning below £30,000. This was also reflected in the higher ranges: for example the proportion of households earning £50,000 or more was only around 4%, compared with 22% nationally. The

Poor Housing Conditions and Wellbeing

It has been established that the quality of housing has a direct influence on the health of the inhabitants (Power *et al.*, 2009). People who spend more time in the home, such as older people (particularly those aged 80 and over) will be particularly affected by poor housing conditions. The housing stock is not adapted to the physical capacities and requirements of the ageing population in most European countries and contributes to older people's problems with activities of daily life, health problems and accidents such as falls (Braubach and Power, 2011). With the ageing population, falls are an increasingly prevalent form of accident. The average annual falls in the home between 2000 and 2002 was almost 1,248,000, and falls accounted for 46% of accidents in the home requiring

2011 Private Sector Stock Survey carried out by the city council observed that:

The proportion of households within Newcastle with an income of less than £15,000 (38.3% compared with 23.0% nationally), suggests that affordability will be an issue potentially affecting repair and improvement in the private sector dwelling stock. (NCC, 2011a:20).

Furthermore, 29% of private sector households were in receipt of a benefit, considerably higher than the 17% for the private sector nationally. This figure includes both owner-occupiers and tenants, but when just those living in private rented housing are taken into consideration, 34% were in receipt of a benefit.

medical attention (Gilbertson *et al.*, 2006). Around one third of people aged 65 years and over will fall at least once per year. This rises to around half of adults aged 85 and over. This is important because falls are the most common cause of death and injury for people aged over 75 years. Reflecting the ageing population, in 2010 falls took over from transport accidents as the most common cause of accidental death in the UK (ONS, 2010). Indoors and outdoors, trips and falls are a particular hazard for visually-impaired older people (Parkinson and Pierpoint, 2000; Thomas Pocklington Trust, 2007). A survey of Sheffield's social housing found that most of the kitchen and bathroom floor surfaces represented falls hazards (Gilbertson *et al.*, 2006). In this regard, it should also be noted that the quality of the public realm,

including well-maintained surfaces and street lighting that is elder-friendly also affects older people's ability to remain active outside the home (as noted in Section 5.3). At the other end of the age spectrum, Power *et al.* (2009) found that children were particularly affected by lack of safe outdoor play spaces, so tended to be confined to the indoor area, where they would be more exposed to the effects of poor housing conditions. The authors summarised the recent situation with regard to housing conditions as follows:

Poor housing conditions such as damp and cold are problematic but are limited and falling. However, rising fuel prices may impact further on the problem of poorly insulated and energy inefficient homes causing more serious fuel poverty and related health impacts. Well designed and well laid out housing helps. It can be high density and highly urban as in the older flatted blocks in the centres of European cities. Poor quality private renting is a major problem, but so is concentrated poverty in social housing. (Power *et al.*, 2009:8).

Successive governments have tried to find ways to raise the quality of housing across sectors, particularly focusing on the private sector where standards are known to be worse, and on housing for vulnerable groups of people, such as older people and people with existing health conditions. The standard way of classifying the quality of housing up to 2002 was in terms of 'fitness'. Fitness standards were primarily focused on the state of repair of a property. Rather than the material state of repair, the four criteria of the Decent Homes Standard laid out by the ODPM in 2002 are centred on outcomes for the inhabitants. Hence,

to meet the Decent Homes Standard, a property should:

A - be above the legal minimum standard for housing,

B - be in a reasonable state of repair,

C - have reasonably modern facilities (such as kitchens and bathrooms) and services, and

D - provide a reasonable degree of thermal comfort (effective insulation and efficient heating).

Failing any one of these criteria means that a home is categorised as non-decent. Since 2006, the way of calculating thermal comfort has been simplified and the way to calculate part A has been changed to the Housing, Health and Safety Rating System, which assesses hazards within dwellings and ranges them under the heading of a Category 1 Hazard or a Category 2 Hazard (the latter being a hazard that does not score high enough to be considered within Category 1). Hazards come in 29 varieties, ranged under four headings as follows:

- *Physiological Hazards*: including mould, damp, asbestos, carbon monoxide and extreme cold
- *Psychological Hazards*: crowding and space, safety from intruders, noise
- *Infection Hazards*: domestic and personal hygiene, food safety, water supply
- *Accident Hazards*: falls, electrics, fire, collision.

Each hazard is rated according to its likelihood and severity: thus a very likely accident that would lead to serious injury

or death would score a very high rating. A Category 1 Hazard means the housing fails the Decent Homes Standard part A, and the local housing authority has an obligation under the Housing Act 2004 to act to amend that hazard. The Department

of Communities and Local Government had a Departmental Strategic Objective that the homes of 70% of vulnerable households (defined as those in receipt of indicative benefits) should meet the decency standard by 2010/11.

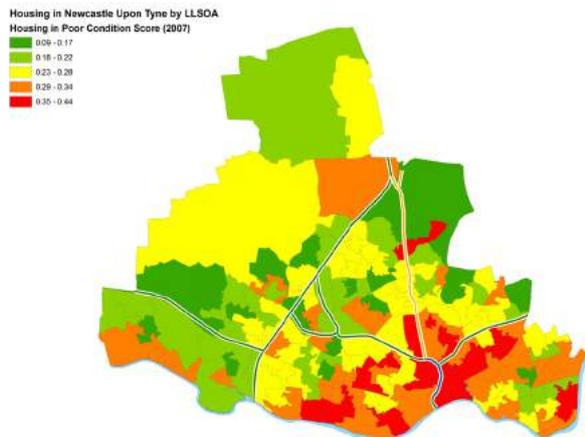
Poor Housing Conditions and Environmental Justice

Because of the way the housing market operates, cheaper housing tends to be found where environmental quality is low (and vice versa) so people with fewer resources are less likely to be able to choose good quality environments (SDRN, 2004:15). A WHO study which surveyed self-reported housing conditions in eight European cities between 2002 and 2003 found that a number of conditions impacting on people's health were reported in far greater prevalence in the homes of low income than high income people (Braubach and Savelsburg, 2009). For example, damp was found in only 10% of homes of those with the top fifth of income while it was perceived in over 35% of those in the lowest quintile. Population exposure to mould growth was almost three times higher in the lowest income group than in the highest. People with a low socio-economic status (a composite of nine variables) were more likely to experience problems with cold in the winter and to suffer acute bronchitis and pneumonia. The authors of the report note that multiple exposure to different housing environment problems is a major factor in health problems and

analysing multiple exposure found it to be around three times as high in low income as in high income groups. In a review of European studies on social inequities in housing and location, the authors found that on several measures, twice or three times the proportion of the lowest income households had exposure to housing problems such as damp or leaks as highest income ones (Braubach and Fairburn, 2010). A study of social housing in Sheffield found that the main cause of damp was condensation, due partly to lifestyle factors, partly to lack of ventilation, but mainly to cold temperatures. Mould grows in damp conditions and airborne mould spores are one of the causes of asthma. While cold temperatures are related to health problems in the elderly, damp conditions are linked with childhood health problems (Gilbertson *et al.*, 2006). Furthermore, the rate of childhood accidents in the home appears to be strongly related to living in an area with low owner occupation, living in an area with a high concentration of poverty, and living in housing built before 1950 (Shenassa *et al.*, 2004).

Poor Housing Conditions in Newcastle upon Tyne

Based on ONS figures for 2007, the distribution of housing in poor condition in Newcastle appears to be concentrated in the former industrial riverside wards (see Figure 5.8 below). The ONS use



Former council housing managed by Your Homes Newcastle (YHN) amounts to around 29,000 out of the city's 36,000 social housing units (the rest are managed by RSLs). The Arms-Length Management Organisation, has been incrementally updating the city's social housing stock to meet Decent Homes standards since it was set up in 2004, with a target for all homes to meet the standard by 2012 (YHN, 2009). Considerable investment has been made to raise the quality of public sector housing to meet Decent Homes standards in recent years. By the end of the 2011/12 financial year, YHN was said to have upgraded 94% of its stock to these standards (Interview, 2012b). Corresponding with this, interviewees expressed the view that most social housing in city is now in good condition (Interviews 2012a and 2012b). The main problem is thought to be in the private sector, although in this regard it should be noted that Newcastle has a

a different set of criteria for estimating housing quality than the Decent Homes Standard, namely, a composite of 'houses without central heating' and 'social and private housing in poor condition'.

Figure 5.8 Housing in Poor Condition in Newcastle by LSOA, 2007

Source: Author's own analysis based on ONS data

lower rate of non-decent housing in the private sector than the national average (23.4% compared to 34.4%: NCC, 2011a). This includes around one third of private rented dwellings in the city that fail the Decent Homes Standard. Of the private sector homes failing the Decent Homes Standard in Newcastle, some failed on more than one criterion. Around half had a Category 1 Hazard and 45% failed on thermal comfort, while 33% were not in a reasonable state of repair, a classification fitting an estimated 10% of private rented housing in the city.

The main type of Category 1 Hazard recorded (43%) was excess cold, which thus has considerable overlap with the thermal comfort criterion. The next most common Category 1 Hazard (31%) was falls on stairs, which was particularly associated with the Tyneside flat type of dwelling (Interview, 2012a). In the figures for England, the order of these

two Hazards is reversed, with Falls on Stairs the highest category. However, it should also be noted that there were two other falls categories: falls on a level and falls between levels, which respectively accounted for around 18% and 8%. This suggests that added together in a falls risk aggregate category, this would be the highest reason for a Category 1 Hazard in Newcastle's private sector housing. Falls also outrank excess cold as the highest proportion of Category 2 hazard. Put together with the slightly higher than average level of retired people, this represents a distinctive environmental issue in the city. This was reflected in the observations of one of the interviewees for this report who noted the prevalence of slips, trips and falls as a significant type of Category 1 hazard for private sector housing in the city (Interview, 2012a).

In line with the shift in the way the quality of housing is calculated nationally, from focusing on the physical infrastructure per se to monitoring its potential impact on the human inhabitants, housing initiatives in the city are moving from a largely area-based, regeneration approach to incorporate more streams of assistance targeted to vulnerable people. For example, the council has a scheme called 'Helping Hand' which supports homeowners with grants for repairs, which is available anywhere in the city. Eligibility for the scheme depends on being on a low income and an owner occupier. Because it is not area-based, the main problem faced by the council in making it work is successfully promoting it to the kinds of people who would be eligible (Interview, 2012a). A similar approach is used by the private rented service team within the council, whose role is to support

both tenants and landlords and work with either party where there is a problem. Their focus is on people on local housing allowance and benefits. They also provide an information service to landlords and run training courses to help them improve their management practices. Bringing together the area-based and social group-based criteria to look at the places where vulnerable people are in most need of support, then the housing survey's 'North Central' area (parts of Kenton, Blakelaw and Fawdon wards) emerges as a key area for intervention, having the lowest proportion of vulnerable households in homes that met the Decent Homes Standard (NCC, 2011a).

Implying a more transient population in certain parts of the city, the highest rates of people who had been in private sector housing for five years or under (considerably higher than the proportion found in the rest of the city), were found in the Byker and Elswick areas (NCC, 2011a). Tentative estimates of overcrowding found elevated levels in both Elswick, and Benwell and Scotswood wards (ibid.) although due to the low incidence of overcrowding generally, it is hard to draw clear inferences from the small-scale survey undertaken by the city council. The highest proportion of private sector homes classed as non-decent was in Elswick (36%) and Walker Riverside (32%) areas. But the acute problems tend to occur at lower than ward level, and in these 'hotspot' areas the council is able to introduce a 'selective licensing area' where landlords apply to let out property in the area and the council then assess the condition of the building and the management capacity of the landlord and can refuse a licence

where these do not meet their required standards. There are selective licensing areas in Benwell and Byker and a similar scheme is applied to some 'Homes in Multiple Occupation' which covers hostel-style accommodation. In practical terms

however, such schemes can only cover a small proportion of the city's housing stock – the officer interviewed estimated 2,500 out of a total of 27,000 private rented properties in the city (Interview, 2012a).

Data Limitations

The Private Sector House Condition Survey from 2011 is hard to correlate with other information about deprivation and vulnerability in the city because of the way it divides the city up into six areas that do not always coincide with census or council geographies of the city. The

division into six areas was a statistically-motivated decision based on achieving sufficient numbers of survey responses in each area to achieve valid statistical analysis (NCC, 2011a:7). These six areas appear mainly to overlap both current and pre-2004 ward boundaries.

Key Messages

- Housing conditions have an important relationship with health and mental health of residents, and so indirectly, school achievements and employability.
- People at both ends of the age spectrum are particularly vulnerable to poor housing conditions, with older people being confined to the home with increasing age due to health issues and poor conditions out of doors; and children in being increasingly constrained to stay indoors because of a lack of safe play spaces.
- People on the lowest incomes tend to experience the worst housing conditions and are more likely to experience multiple poor housing conditions which have stronger health impacts.
- Poor housing conditions cluster in the deprived riverside wards of the city, but the highest proportion of private sector housing with vulnerable householders that fails Decent Homes Standards is in

parts of Kenton, Fawdon and Blakelaw.

- In Newcastle, much has been invested in raising the public sector housing to meet Decent Homes standards, but the private sector remains a problem, in particular the private rented sector.
- Inadequate thermal comfort is a major reason that homes fail the Decent Homes Standards, but almost equally significant is the prevalence of various Category 1 Hazards relating to falls inside the home.
- Interventions with the private sector include a Helping Hand scheme supporting homeowners to make repairs, and schemes to control who is allowed to operate as a landlord for houses in multiple occupation and areas with low income populations.
- There is an aspiration to target older householders in the future, which seems appropriate given the high level of falls risk in the private sector, the severe

consequences of falls for older people, and the predicted rise in the proportion of retirees in the Newcastle population.

- Given children's vulnerability, families with children in the private rented sector might also be an appropriate focus of future interventions.
- Interventions to improve the quality and accessibility of greenspace and the public realm which are being undertaken

by other council departments could lessen the impact of substandard housing conditions on children.

- It may be that due to the effectiveness of interventions in raising the quality of social housing in the city, which is concentrated in some of the city's most deprived wards, this issue is henceforth more appropriately targeted by sector and by vulnerable group.

5.5 Road traffic accidents

Newcastle's road system has some positive features, such as the city centre areas where there is a disabled-accessible streetscape and an extensive pedestrianized area. The city centre has even incorporated the 'shared space' approach to traffic management in pedestrian areas, which aims, by making traffic and pedestrian areas less distinct from each other, to improve mutual vigilance and safe behaviour. There is a good and increasing provision of cycle and bus lanes in the city as well as a programme of traffic calming areas for 'hotspots' (see TWITA, 2011), but at the same time, some of the major trunk roads that were driven through the urban core in the 1970s contribute fast and dangerous roads running alongside major office complexes and entertainment venues. It

is as yet unclear whether this is related to the elevated rate of accidents among young adults.

However, in terms of trends, Newcastle follows the national picture, where, in the last few decades, road traffic accidents have fallen year-on-year, by an average of 4% a year. Falls over the recent years in Great Britain are shown in Table 5.6 below. This continues a trend in reductions from the 1990s, so that in 2010, the number killed or seriously injured was 40% less than the 1994-8 average and the number of children killed or seriously injured was 64% lower. This record is the more impressive in that, over the same period, road traffic itself increased by around 13%.

Table 5.6: Road Traffic Accidents in Great Britain year ending September 2011

Source: Department for Transport, 2012:2

All casualties	Number/percentage change compared to previous 12 months and 2005-2009 average					
	2005-9 average	Oct 09 to Sep 10	Oct 10 to Sep 11	Percentage change over 2005-9 average	Percentage change over previous 12 months	Traffic percentage change over previous 12 months
Killed	2,816	1,906	1,900	-33	0	-0.7
Killed or Seriously Injured (KSI)	30,041	25,320	24,430	-19	-4	-0.7
Slightly injured	216,010	189,828	179,920	-17	-5	-0.7
All casualties	246,050	215,148	204,350	-17	-5	-0.7

Nevertheless, in 2010, there were around 35,000 emergency hospital admissions due to road traffic accidents, 1,850 lives were lost, and the economic welfare cost of road accidents was estimated at around £15 billion (DfT, 2011). Unintentional injury is the highest cause of death among children aged 0-14 and of these, 44% are due to a road traffic accident, either as a pedestrian, cyclist or passenger (ONS, 2009).

A systematic review by Towner *et al.* (2001) established evidence for the effectiveness in reducing accidents of interventions such as area-wide engineering schemes and traffic calming

Impacts of Road Traffic Accidents

While part of the reduction in fatalities from road traffic accidents in recent years can be attributed to advances in trauma medicine, accidents continue to take a major toll on population health. Road traffic accidents account for 50% of all traumatic brain injuries and for more than 50% of spinal cord injuries. Other common injuries are lower limb injuries, which result in particular from side-on collisions (ETSC, 2007). Besides the costs to the NHS of treating what are often long-term injuries, there are psychological costs. Post-traumatic stress disorder is related to the incidence of other health problems and impairment of quality of life (Haagsma *et al.*, 2012). It does not appear to be related to the severity of the injury received so much as to the perceived threat to life. Ursanov *et al.*, (1999) and Bryant *et al.* (2004) found that 25% of people were suffering from PTSD three months after a traffic accident, while six months on, 18% had the condition (cited

measures (20mph home zones) and the use of seat restraints. Such measures were found to be cost effective and to benefit vulnerable road users such as child pedestrians, car passengers and cyclists. In 2010, however, the most common cause of road traffic accidents was 'failing to look properly' (40% of all accidents and 60% of accidents in which a pedestrian was injured or killed), suggesting the continued relevance of other approaches including skills training; general traffic education programmes, including school travel plans and the use of cycle training programmes; high visibility clothing and cycle helmet campaigns.

in ETSC, 2007:21). Children are more likely than adults to suffer post-traumatic stress after an accident (Stallard *et al.*, 1998). Matthews (2005, cited ETSC, 2011:22) looked at the experience of returning to work for 48 people who had been in a traffic accident. Those with PTSD experienced worse problems, including higher levels of depression, reduced time-management ability and an excessive concern or anxiety related to physical injuries.

Looking at long-term impacts across types of injury, Haukeland (1996, cited in ETSC, 2007) found that while there are few reports of negative impacts on activities of daily life, phenomena such as loss of concentration and memory loss were commonly reported.

In terms of economic outcomes, one study found that six years after an accident, men's earnings were 10% lower than they would have been if not

involved in the accident. Although this did not apply to young adults, the effect was even greater for older adults involved in accidents (ETSC, 2007). Relatives of accident victims also experienced psychological and economic impacts. Of those who changed occupation following

the accident, the majority did so due to its effects. Among those who lost their jobs, psychological causes were the reason for 65% of relatives of dead victims and 33% of relatives of disabled victims (Haegi and Chaudhry, 1995, cited in ETSC, 2007:25).

Road traffic accidents and environmental justice

The SDRN (2004) report notes that in comparison with other environmental burdens (and in common with flooding) the impacts of road traffic accidents are relatively clear cut and easily attributable. Disproportional impacts to children in the case of road traffic accidents have been clearly shown in quantitative studies so far. Other vulnerable groups that have been suggested are disabled and elderly people. Towner *et al.* (2005) however (writing about injuries to children) point out that while our national injury data systems provide information on age, gender, social and economic factors, and place, they do not routinely provide data on ethnicity or belonging to a vulnerable group such as being disabled or homeless. This makes it harder to determine where interventions are best directed. Towner *et al.* talk about three aspects of the child's environment that interact in causing accidents: the (1) proximate tier, immediate conditions that result in exposure to hazard; (2) the intermediate tier, such as childcare practices; (3) ultimate tier, the wider social, economic, political and cultural processes that might influence exposure to hazardous environments and access to information and services. The third tier is the tier that relates most directly to environmental justice.

Accidents to pedestrians may be assumed to have a distributional dimension because people on low incomes are more likely to live near a main road and travel on foot. They are also less likely to have a garden and thus their children may play in or near the road. Based on research by the SEU (2003), the likelihood of a child dying in a road accident appears to be five times greater for children from households in the lowest socio-economic groups than for those from households in the highest. White *et al.*'s study (2000) found that unsupervised and unsafe behaviours, including risk-taking, were behind a significant proportion of traffic accidents affecting children in deprived communities. A study by Graham *et al.* (2005) looking at pedestrian casualties for children between 0-15 years of age in 1999-2000 found that the most deprived ward had a rate 4.07 times higher than the least deprived ward. There was also an inflated rate of casualties for adult pedestrians in the most deprived ward, which was 2.28 times the rate in the least deprived ward. The disparity was even greater when just those killed or seriously injured (KSI) were included in the comparison.

The SDRN report also notes that simply by virtue of the fact that more deprived communities are found in urban areas, they will also be more likely to suffer from elevated levels of road traffic accidents. However, countering this effect, levels of car ownership will also be a factor (SDRN, 2004:15); and car speeds may sometimes be higher, and thus more dangerous for pedestrians, in more affluent suburban areas than in disadvantaged inner city ones (Morgan, Bardsley and Lowdell, 2001). However, the outcome of accidents also depends on factors such as ambulance arrival time which may be worse in rural than urban areas. There appears to be a particular disadvantage for minority ethnic children which is independent of their socio-economic group (Thomson, Tolmie and Mamoon, 2001).

In 2000, a number of targets for reducing casualties from road accidents were set by the Department of Transport. These were to be achieved by 2010 (DfT, 2000). They included a 40% reduction (from the 1994-8 yearly average) in numbers killed or seriously injured ('KSI') in road traffic collisions. For children, the target was set higher at 50%. In fact, as noted in the introduction to this section, these targets have not only been reached, but in the case of children, considerably exceeded nationally. Such approaches may succeed in reaching the most deprived communities because they are targeted on the areas of worst severity of the problem, which also often happen to be the most deprived (SDRN, 2004:16).

A study undertaken for the Department of Transport in 2008 (Lowe *et al.*, 2011) aimed to improve the targeting of interventions to prevent the excessive casualties among

disadvantaged communities. The study identified the main factors that put people in disadvantaged areas at risk of being involved in road traffic accidents through comparing findings from a research review with those from research undertaken in five case study areas. The risk factors included the following: living in more hazardous environments, such as living near traffic and with high levels of street parking; lifestyle factors such as lacking a car, so being more likely to walk; lacking safe and supervised facilities for children and young people to socialise and play in, so they are more likely to use the streets; speeding and aggressive driving; low levels of seatbelt wearing (particular in the rear of cars); a lack of child restraints and booster seats; and ad hoc and dangerous parking (e.g. near schools)

Most notably, the problem was not with the attitude of the people living in disadvantaged areas, who

had detailed knowledge of road safety risks, but [...] this often had to compete with concerns over issues about personal safety, given that their local area had neglected and/or vandalised buildings and high rates of criminality and anti-social behaviour. It also found that facilities in the local area (such as parks, sports and community centres) are often considered inaccessible, inappropriate for local people's needs or unaffordable. (Lowe *et al.*, 2011:6).

Overall people living in disadvantaged areas had to deal on a daily basis with various aspects of unsafe and run-down environments; when compared with children in better-off areas, their children had fewer safe places to play (Lowe *et al.*, 2011). This suggests the overlap between

the environmental justice aspects of road traffic accidents and the issues around living in a rundown neighbourhood, described in Section 5.3. There is also a relationship with children's greater

vulnerability to poor housing conditions, due unsafe external areas meaning they spend a greater amount of time playing indoors, as described in Section 5.4.

Road Traffic Accidents in Newcastle upon Tyne

Newcastle has a slightly higher rate of road accidents than Tyne and Wear, which itself is higher than the England average (Tyne and Wear Traffic Accident and Data Unit, 2011: 46). According to the Local Transport Plan (TWITA, 2011), Newcastle City Centre is the main area for adult pedestrian casualties, as well as adult cycling accidents. The area in the vicinity of the river Tyne (where some of the city's most deprived wards are located) has the highest density of collisions due to speeding. Drink drive accidents tend

to be focused in the city centre. While in 2010 there were 41 child pedestrian casualties up to the age of 16, there were 66 for young people between the ages of 17 and 29, suggesting that the city's high population of young people (including the city's high student population) may also be a significant group to target with road safety education. The launch in 2012 of a programme called 'Green Travel', which included road safety education for students has addressed this issue.

Accident Rates in Newcastle Upon Tyne by LLSOA
Indices of Deprivation 2010 Figures (Persons)

0.27 - 0.58

0.59 - 0.91

0.92 - 1.25

1.26 - 2.03

2.04 - 3.00

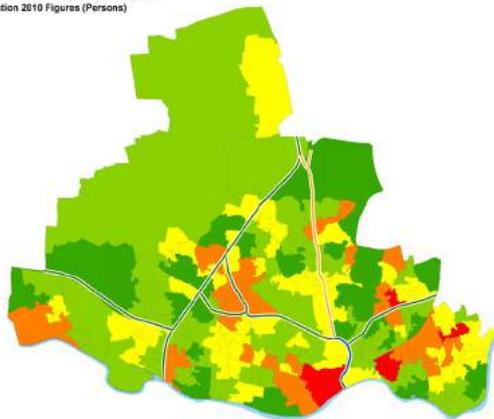


Figure 5.9: Accident rates in Newcastle upon Tyne, 2010 (map showing major roads)

Source: Authors' own analysis based on ONS data

The map in Figure 5.9 above shows the prevalence of accidents in Newcastle by Lower Layer Super Output area. While two of the 'hotspot' areas are in the deprived riverside wards, there also appears to be a relationship with proximity to a major road and more generally, to population density, with higher accident rates in the more densely inhabited parts of the city. An analysis of the relationship

between having a postcode in a deprived part of the North East region and fatalities and serious injuries due to road traffic accidents found a weak, but positive, association for adults, but, in accord with the studies described in the preceding section, a strong positive association for child pedestrian casualties, who have a high representation in the most deprived areas (see Figure 5.10 below).

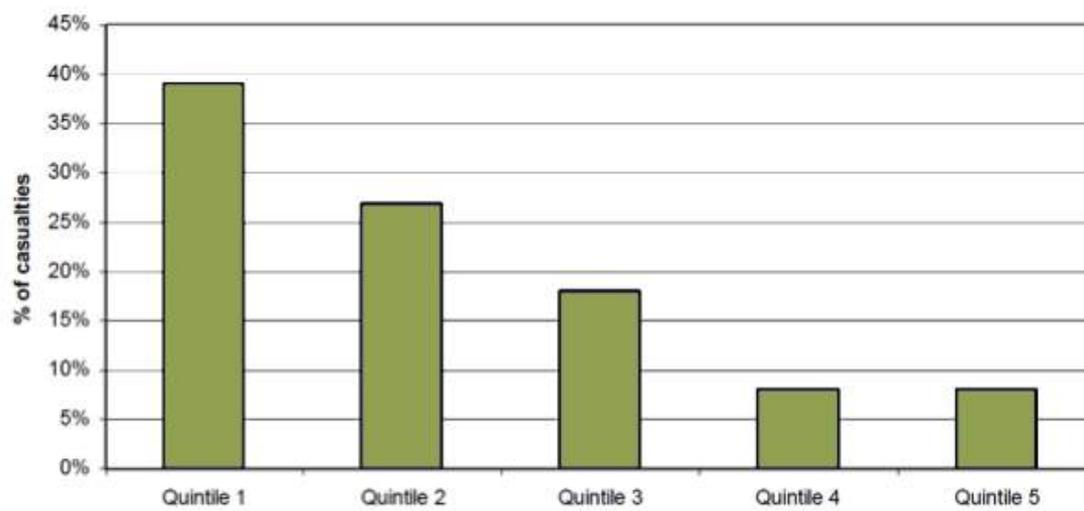


Figure 5.10: Child pedestrian casualties in the North East by deprivation quintile (1=Most Deprived)

Source: Barker, 2009:8

A closer analysis of the types of areas in the North East with higher child pedestrian casualties found that they tend to occur in large council estates where larger families live in cramped conditions in small housing. As car ownership is low, there is a dependence on walking and public transport to connect with schools and amenities, both of which are located at a distance from these residences. Due both to housing conditions and access issues, more children tend to be out in the streets in these areas (Barker, 2009:9). Similar conditions in terms of the location of amenities and low car ownership account

for the lesser, but still evident, association between elderly pedestrian accidents and living in a deprived area.

In terms of ‘hot spots’, child pedestrian casualties are more dispersed around Tyne and Wear, but occur ‘especially in the busy centres, where pedestrian flows are high’ (TWITA, 2011:84). In line with national and regional trends, they nevertheless appear to be decreasing, the most recent figure for the city of Newcastle showing a 62% decrease on the 1994-8 figure, as shown in Table 5.7 below.

Table 5.7: Child casualties (KSI) in Newcastle and Gateshead against baseline average

Source: Tyne and Wear Traffic Accident and Data Unit, 2011:15.

Local Authority	Baseline average (1994-8)	2006	2007	2008	2009	2010
Newcastle	141	103	90	105	104	88
Gateshead	118	69	76	79	86	77

Although the Department for Transport's targets for reductions in road traffic accidents were successfully met in the North East region by 2010, road safety does not appear to be an area of high public satisfaction. The 2010 Public Satisfaction Survey for the district of Tyne and Wear reports that while 61% of residents are satisfied with road safety overall, only 54% of residents are satisfied with road safety education and 57% are satisfied with road safety environmental measures (cited in TWITA, 2011: 85).

Contrasting with this picture, the council's own Road safety webpage details a raft of road safety programmes, including 20 mph zones, speed bumps, monitored crossings, education in schools, school travel plans and pedestrian and cyclist training as well as a reporting mechanism ('Envirocall') that allows people to report dangerous roads and junctions (NCC, no date). The new Decent Neighbourhood Standards (currently under consultation) that will replace the Neighbourhood Charters in the city include a standard on well-lit

streets that is intended to reduce road accidents (NCC, 2011). Road safety is also within the remit of the 'SNAPS' partnerships (Safe Newcastle Action and Problem-solving Partnerships) that operate in each of the city's wards. The SNAPS group for Elswick ward (one of the deprived riverside, former industrial wards in the city) took various actions to address parking and road safety issues in the area, including introducing a 20mph speed zone for a central route and surrounding residential areas (Safe Newcastle, 2011).

Echoing these neighbourhood interventions, a recent, wide-ranging public consultation on Decent Neighbourhood Standards across the city raised the idea of including city-wide measures on enforcement of parking regulations, monitoring of traffic speed and 20mph zones in residential areas (NCC, 2012:8). To do so would raise the issue of road safety improvements in the city from numerous isolated interventions to an expected generalised standard.

Data limitations

Due to most of the data on road traffic accidents being collected at the level of the Integrated Transport Authority, which covers the five authorities included in Tyne and Wear (see Figure 6.12 in section on 'Local public transport') it has not been possible for this report to determine the specific relationship

between road traffic accidents, age and socio-economic deprivation in the city of Newcastle. In line with the national picture identified by Towner *et al.* (2005), data on ethnicity and factors for vulnerability such as disability and homelessness do not appear to be collected.

Key messages

- The road safety trends in the UK are generally positive, with the Department of Transport's goals for reducing road traffic accidents more than achieved between the date when they were set in 2000 and the target date of 2010.
- The impact of road traffic accidents on individuals and the economy is nevertheless still substantial, in 2010 costing almost 2,000 lives and an estimated £15 billion to the economy.
- Not only do accident victims themselves suffer high physical, psychological and economic consequences, but a substantial psychological and economic price is also paid by their relatives.
- A clear disparity in incidence of road traffic accidents for people from different socio-economic circumstances has been identified, whereby people from more deprived areas are more likely to be injured.
- This effect is especially strong for children, and in particular, child pedestrians.
- A number of causal factors underlying the higher accident rates in poor areas have been pinpointed, including poor driving and parking habits, poor enforcement of the 'rules of the road', less safe play areas for children, children less likely to travel by car, and adult drivers less likely to use child restraints and safety belts.
- Newcastle has a large pedestrianized area in its city centre, but nevertheless most adult road traffic accidents take place in the city centre area, and many offices and entertainment venues adjoin the fast, dangerous roads that run through the urban core.
- The riverside area has the most speeding accidents.
- Newcastle's rate of child casualties has reduced since 1994-8 in line with national trends.
- It has not been possible to disaggregate a socio-economic analysis of accident victims for the city.
- It does not appear that data is collected concerning accidents and ethnicity or disability.
- However, at the Tyne and Wear level, a strong link between child pedestrian casualties and living in a deprived area has been found.
- Newcastle City Council's road safety interventions are targeted at children, students and adults.
- At present, action on road safety issues seems to be based on local initiatives, such as the ward-level SNAPS partnership in Elswick, noted above. Given the serious impacts noted in this section, there is a strong case for taking up the suggestion from the recent consultation on Decent Neighbourhood Standards to include enforcement of parking regulations, traffic speed monitoring and 20mph residential zones as Decent Neighbourhood Standards across the city.



Photo by Behnaz Jabarouti

SECTION 6

DISTRIBUTION OF ENVIRONMENTAL BENEFITS

In 2000, the then United Nations Secretary-General Kofi Annan called for a Millennium Ecosystem Assessment (MA). The study, which was carried out between 2001 and 2005, demonstrated the importance of environmental (ecosystems) benefits to human well-being (MEA, 2005). Its message was echoed in the UK National Ecosystem Assessment which “provides a first attempt at understanding the connection between the environment and people, considering both the ecosystem (Broad Habitat) from which ecosystem services are derived and the people who depend on, and are affected by changes in, the supply of such services” (UK NEA, 2011: 3). Ecosystems provide the basic infrastructure for life, regulate air and water quality, provide material goods and fulfil cultural inspirations. If the environment plays such crucial roles in our lives, it is crucial that its benefits are accessible to all and are distributed fairly. Attention to this aspect of environmental justice is relatively new, because until recently, the debate was largely focused on environmental hazards and their disproportionate effect on disadvantaged people.

Today, a growing number of studies show that the distribution of environmental goods remains unequal and access to them inequitable. The causes of restricted access to environmental benefits are

interlinked and mutually reinforcing (SDRN, 2004:11-12). Among them are, for example, the location of these benefit services in ‘hard to reach’ areas, the erosion of local environmental benefits in deprived areas, personal constraints in accessing the benefits (e.g. low income, disability), low mobility (e.g. lack of access to car and/or public transport), and limited access to information. As suggested by the Marmot Review (2010: 25), achieving healthier and more sustainable communities involves choosing to invest differently. The review refers to the work of the Commission for Architecture and the Built Environment which estimates that “the budget for new road building, if used differently, could provide 1,000 new parks at an initial capital cost of £10 million each – two parks in each local authority in England”. One thousand new parks could save approximately 74,000 tonnes of carbon, based on a 10 hectare park with 200 trees (Bird, 2009).

As mentioned in Section 5, the identification of the existence of inequalities in the distribution of environmental benefits is not, per se, an argument for inequality and public intervention. So, to assess when unequal distribution becomes a case of injustice, for each environmental benefit examined, we have used the following seven grounds as a guide for assessing the claim of injustice.

Table 6.1: A test of fairness for environmental benefits

Source: The authors

Principles	Environmental benefits
Distribution	People in deprived communities have disproportionately less access to the environmental benefit
Vulnerability	People in deprived communities are more vulnerable to the impacts of having less access to the environmental benefit
Cumulative	Lack of access to environmental benefits adds to exclusion from other environmental and social benefits
Representation	The decision making processes for locating the environmental benefit are unfair
Mobility	People in deprived communities are less able to exercise free choice in where they live and how to gain access to environmental benefits
Compensation	Lack of access to environmental benefit is compounded by the environmental burden attendant upon this
Contribution	People experiencing lack of access to environmental benefit are deprived from contributing to it

Source: Adapted and considerably expanded from Walker *et al.* (2005:373)

This section of the report provides detailed analyses of the socio-spatial distributions of the city’s environmental benefits, including:

- Urban green and open spaces
- Natural places: nature reserves, woodland and allotments
- Blue spaces and water
- Local public transport
- Affordable warmth
- ‘Green’ Jobs

While we recognise the interdependencies between different environmental benefits

and their cumulative impacts, looking at such interdependencies is beyond the scope of this report. For each benefit, we provide some background information and discuss the link between a particular environmental benefit and people’s wellbeing. Here, we have drawn heavily on the Sustainable Development Research Network’s (SDRN) 2004 ‘Environment and Social Justice Review’ which we found a very useful and reliable source. We will then map the socio-spatial distribution of the benefit in Newcastle. Each ‘environmental benefit’ section is concluded with some reflections on data limitations and a number of key messages.

The following table summarises the available information on this area, and where possible, the main concerns. It emerges clearly from this second table, which echoes the structure of that provided for the table in the introduction to the Environmental Burdens section, that there is less information about the environmental benefits in Newcastle than about the burdens. This is reflected in the forthcoming 'Know Your Newcastle' study, produced by Newcastle City Council, where it is noted that:

Unfortunately, like elsewhere in the UK, our historic focus on deficit based approaches means that we have more information about deficiencies and needs, than about assets.

Work is taking place in Newcastle to introduce ways of working that support communities to use tools to identify and map their assets. This will mean there will be new opportunities to appreciate and build on those assets in the future. (NCC, 2012:4).

Table 6.2: Environmental benefits in wards with high and low ILD scores in Newcastle
Source: The Authors

Section	Topic	Selected least deprived wards			Selected most deprived wards			Comments
		East and West Jesmond (was Jesmond)	North and South Gosforth (was South Gosforth)	Castle	Benwell and Scotswood (was two separate wards)	Byker	Walker	
6.1	Urban green and open spaces							This relates to scores for satisfaction with greenspace, 2010-11.
6.2	Natural places							Disaggregated data on this dimension at ward level is currently unavailable.
6.3	Blue spaces and water							It has not been possible to identify systematic data on any of the dimensions of water quality, blue spaces quality or flooding
6.4	Local public transport							It has not been possible to identify relevant data.
6.5	Affordable warmth							Data is from 2006 and variable across the wards (only provided at Super Output Area level)
6.6	'Green' Jobs							Data is not yet collected on green jobs at any level

Code: Red = a problem Amber = intermediate Green = not a problem... White = no data

Stippled texture = data are older than 10 yrs and/or no aggregate ward level data available.

6.1 Urban green and open spaces

The city of Newcastle upon Tyne is well-provided with greenspace of various origins. The city covers an area of 151km², of which around 68 km², or 55%, is greenspace (see Figure 6.1, below). Furthermore, around one quarter of Newcastle’s greenspace, or 17km², is publicly accessible.

Over 20% of the publicly accessible greenspace in the city is accounted for by one large piece of protected pasture, the Town Moor. This 4km² of greenspace has an historic origin in the twelfth century and is regulated by its own Act of Parliament (originally by 1774 Town Moor Act, and now by the 1988 Newcastle upon Tyne Town Moor Act³⁰). The Moor is managed through a partnership between the Freemen of the City and Newcastle City Council. Its importance for the city relates not just to its size, but also to the rental income that it generates from grazing, used to protect the city’s other greenspaces and parks. Another distinctive feature of Newcastle City is the parkland that lines parts of the Ouseburn, the main tributary of the Tyne in the city, joining it in the city’s south.

Figure 6.1 shows the land coverage in Newcastle and share of green areas (both public and private), blue areas (water areas), and built up lands which ‘seal the soil’ (roads, housing, etc.). Broadly speaking the greater the proportion of soil sealing (covering land with materials such as concrete) relative to greenspace, the more vulnerable a city is to flooding and heat waves. The average built up area in European cities ranges from 20-80% (EEA, 2010:14), so Newcastle with its 40% built up area is positioned in the middle (ibid.:26). However, Newcastle has a particularly dense built environment compared with both the wider region and the other Tyne and Wear local authorities: only 7.5% of homes in Newcastle are detached, compared to an England average of 22.5%; while over 30% consist of flats (compared to a North East average of 13.8% and an England average of 19.3%) (NCC, 2011a). These characteristics suggest the importance of publicly accessible greenspace in the city.

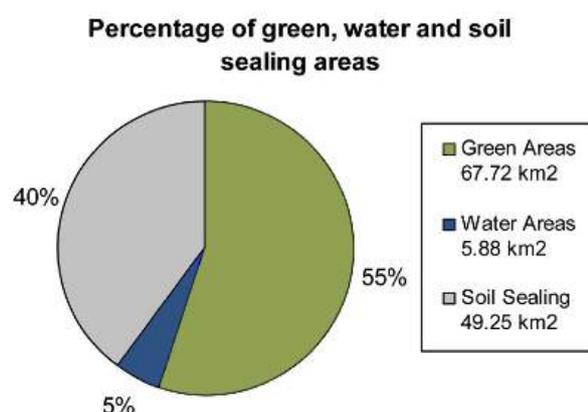


Figure 6.1 Land coverage in Newcastle
Source: NCC, 2012:128.

30 See <http://www.freemenofnewcastle.com/themoorhistory.html>

Greenspace and wellbeing

There is a growing body of literature which underwrites the multiple benefits of urban greenspace. Under the heading of 'ecosystem services' a raft of such benefits are increasingly recognized (e.g. Farber *et al.*, 2002; Heynen, 2006), including the functions of greenspaces as carbon sinks, cooling the temperature, reducing surface water runoff and providing green corridors for wildlife. Greenspace is a good example of an environmental benefit which can reduce the effect of an environmental burden, in this case, air pollution in the city, through biogenic regulation. Vegetation can act as an enhanced deposition sink for gaseous and particulate pollution (Fowler *et al.*, 1989; Freer-Smith *et al.*, 1997), with tree canopies effectively capturing particles (Manning and Feder, 1980). It is suggested that urban trees have reduced a form of particulate matter pollution, atmospheric PM₁₀, by 0.4% and 0.72% in Philadelphia (Nowak *et al.* 1998; Nowak 2006) and in Chicago (McPherson, 1994) respectively. More recently, dispersion modelling has predicted potential PM₁₀ reduction by increasing tree cover in Glasgow, the West Midlands (McDonald *et al.* 2007) and London (Tiway *et al.*, 2009). By lowering urban air temperature, trees can help to reduce localised particulate concentrations (Moll, 1996).

In addition to these environmental benefits, a growing body of research has shown that urban greenspace is important for peoples' physical and mental health throughout their lives (e.g. Kahn, 1999; Frumkin, 2001, 2005; de Vries *et al.*, 2003; Maas *et al.* 2006, 2008). Epidemiological studies have found strong links between health and greenspace in large cities (de

Vries *et al.* 2003) including longevity in the elderly (Takano *et al.*, 2002; Mitchell and Popham, 2008) and healthy childhood development (Sadler *et al.*, 2010). Some studies have found a connection between proximity to certain types of greenspace and children's levels of physical activity (e.g. Lachowycz *et al.*, 2012; Coombes *et al.*, 2010) with implications for their health as well as their familiarity with and confidence in natural surroundings. Living in close proximity to greenspace has been shown to encourage people to make short trips on foot or by bicycle (Bird, 2004). Equally established is the link between urban greenspace, where properly managed, and neighbourhood image and property values. Bird (2007) found that natural settings provide inclusive places to meet that can improve social interaction and cohesion. The capacity of parks and open spaces to become a positive focus for community activity and identity fits well with the current Localism agenda and the drive towards a more engaged citizenship.

Urban public parks and open spaces in Britain have a variety of origins including traditional common grazing land; amenities provided for and by the wealthy for their urban residences (shared urban residential squares; parks for riding and hunting) that are increasingly made available to the public as a result of popular pressure; and endowments arising from the philanthropic tradition, where land owners would gift or bequeath the municipality with land for public use, sometimes as a kind of personal memorial (Lasdun, 1992). Partly as a result of these origins, the distribution of greenspace in cities is not uniform, although altering this situation is a difficult and long-term project.

Research has shown that there has been a continual decline in the quality of greenspace, due to incremental underfunding. For example, the *Urban Task Force report, Greenspaces, Better Places* (2006) noted that funding for greenspaces over the preceding 20 years had declined from 44% to 31% of local authority expenditure, related to the tendency to spread funding over an ever-increasing range of desirable amenities. Rather than focus on parks and gardens, Local Authorities tended to divert funding to 'Arts, Theatres and Museums' and 'Country Parks, Nature Reserves and Tourism' – in particular tourism. However, in recent years, awareness of greenspace provision has risen up the policy agenda, both nationally and locally. The recent investment in greenspaces

has been accompanied increasingly by an appreciation of their multiple functions in an urban area, supporting both human and environmental well-being. However, recent cuts to local authority budgets are likely to represent a threat to greenspace quality. This is reflected in a recent survey of councils, undertaken by a voluntary sector organisation (Greenspace, 2011) about the likely impact of the 2010 Comprehensive Spending Review on standards in greenspace. The vast majority of respondents reported that their budget on greenspace was to be cut, anticipating results including a freeze on new projects and skills shortages. This context will be borne in mind as the background for the discussion of greenspace in the next sections.

Greenspace and environmental justice

There are two closely-linked aspects of environmental justice relating to greenspace: access to it and its quality. Access in turn includes availability and proximity of greenspace as well as its appeal to potential users. Regarding availability and access, a comparison between Newcastle and Coventry helps illustrate the point. Greenspace provision in Newcastle City is 8.42 ha per 1,000 people, much higher than the 5.68 ha per 1,000 people in Coventry. However, over 20% of the publicly accessible greenspace in Newcastle is concentrated in the Town Moor. The distribution of the remaining greenspace in Newcastle is much less uniform than within Coventry. So, in considering the environmental justice aspect of greenspace, "evenness, location, and the implications for access need to be taken into account" (UK NEA, 2011: 367). Moreover, the city's

Greenspace Strategy (NCC, 2004) includes golf courses and school playing fields in its outdoor sports facilities category, while these are generally not freely accessible to the public. "This is important in an assessment because cultural benefits will largely arise where there is public access" (ibid.). Regarding quality and appeal, a 'let's talk' Decent Neighbourhood event organised by the Council on 10 October 2011 in which 41 residents from across the city took place, highlighted that keeping 'parks and greenspaces welcoming and accessible' was the fourth (out of 6) top priorities for residents, following in rank order: 'streets and back lanes are rubbish free', 'environmental crime is tackled', 'roads and pavements are well maintained'. The lowest priority was 'helping residents to use sustainable energy in their home' (NCC, 2011b).

Access to Greenspace

From an environmental justice perspective, access to greenspace is largely defined by its physical availability and its proximity to potential users. The UK National Ecosystem Assessment (2011) suggest that the extent to which people benefit from greenspaces (in term of recreation, aesthetics, physical and mental health, neighbourhood development, noise regulation and air pollution reduction) depends on the distance of their home from them. “On average, people living closer to a park typically derive more benefits from its presence than those living further away” (ibid.: 390) because, for example, the proportion of people using greenspaces for recreational purposes decreases with distance from them (Bateman *et al.*, 2006), and their impacts on noise abatement and pollution reduction tend to be greater the closer people live to them (UK NEA, 2011: 390). In addition, there is evidence that certain qualities in greenspace (not to be confused with the quality of greenspace discussed below) can repel or attract different groups of users and hence affect access. These relate to social and cultural barriers, rather than physical and spatial barriers, to accessibility.

Availability of greenspace. Natural England has provided standards against which local provision of greenspace can be compared and access can be evaluated. These are called the Accessible Natural Greenspace Standards (ANGSt),³¹ which form part of the UK government guidance on open space provision (Urban Greenspaces

Task Force, 2002). They recommend the provision of at least 2 hectares (ha) of accessible natural greenspace per 1,000 population in local authority areas, with the following thresholds:

- No person should live more than 300m from their nearest area of natural greenspace of at least 2ha in size
- There should be at least one accessible 20 ha site 2 km from home
- There should be one accessible 100 ha site within 5 km
- There should be one accessible 500 ha site within 10 km. (Natural England, 2010).

Some research in the US has suggested that the availability of greenspace is strongly associated with higher socio-economic groups (e.g. Heynen *et al.*, 2006). In Britain, however, Comber *et al.* (2008) suggest that although qualitative research on the access of different demographic groups to greenspace exists, there are few quantitative studies and “there have been no studies of the actual access of the British population to urban greenspaces; there have been no studies of the actual access to greenspace by ethnic and religious groups” (Comber *et al.*, 2008). Attempting to fill this gap using a GIS method (which they suggest should be taken up in other localities) the authors identify that in their case study area of Leicester, Indian, Hindu and Sikh groups are particularly disadvantaged in the availability of 20ha plus greenspaces within 2km of their homes (ibid.:112).

31 The standards are derived from Harrison *et al.* (1995, cited in Handley *et al.* 2003) and in A Space for Nature (English Nature, 1996).

Appeal of available greenspace. A strand of US research has focused on the different uses made of parks by age, gender and ethno-racial groups. The way these users interact with their greenspace is beginning to be the focus of research that looks at how appropriation by particular users might attract or repel use by other groups (e.g. Byrne and Wolch, 2009). The authors cite studies that have distinguished different ways of perceiving the same space by different groups of users, which affects their park use. For example the park may be perceived as

either intolerant and unwelcoming, or as a safe and welcoming place for ethnic minorities (ibid., p752). With regard to safety, some research has shown that fear of violence and gangs is likely to discourage women in particular from using external space (e.g. Roman and Chalfin, 2008). Other studies confirm that gender can play a major role in accessing greenspace. Furthermore, the combination of gender, race and class characteristics can have a strong negative impact on people's ability to take advantage of parks and other such environmental services.

Quality of Greenspace

People care deeply about the quality of the environment in which they live, work and play. The general upkeep of parks seems to have a particular interaction with use by vulnerable groups, with several studies finding that vulnerable groups were less likely to use run-down parks. A 2001 literature review by Williams and Green found that older, disabled, ethnic minority and female residents were less likely to use parks than other groups, and gave reasons for this that connected with park quality, including poor conditions, poor access, lack of toilet and other facilities, and safety. As noted in the section on 'Rundown neighbourhoods' in this report, the perception of an unsafe area affects people's freedom of circulation, and in inhibiting their access to greenspace, can harm their quality

of life. A "Greenspace and Quality of Life" study carried out in Scotland found that where there was the greatest need for open space, its low quality meant it did not make a positive contribution to quality of life (James, cited in SDRN, 2004:30).

Duffy in 2000 found that parks run by local authorities in deprived areas had lower standards of maintenance than parks run by wealthier local authorities, suggesting that greenspace quality is at least partly an issue of resources. At the same time, greenspace is an issue where community-based initiatives have been found to be particularly effective (Church and Elster, 2002), so effective use of human resources should be taken into account as well as financial ones.

Distribution of greenspace in Newcastle

As part of its Greenspace Strategy (NCC, 2004), Newcastle City Council decided not to follow the Natural England policies for greenspace access and instead developed its own standards of access from home, school or workplace, summarised below:

- 1) Greenspace within 300 metres (around 5 minutes' walk) of minimum 0.1 hectare.
- 2) Where there are no gardens, doorstep greenspaces should be within 50 metres of the home.
- 3) In high density areas over 30 homes per hectare, which are less likely to have housing for families, spaces should be within 100 metres of the home.
- 4) Children aged 5 or under should not have to cross a road with permitted speeds of 20 mph or over to reach this space.
- 5) Greenspace within 600 metres (around 10 minutes' walk) of minimum 2 hectares.
- 6) Greenspace within 1 km of minimum 6 hectares; and within 1.5km of 10 hectares
- 7) Walking and cycling route connecting city greenspaces within 1km of the home

(adapted from NCC, 2004:52-53)

These standards are differently articulated in different strands of council policy and the most recent (2011) 'Greenspace

Strategy Report', a collaboration between Newcastle and Gateshead City Councils, does not make any reference to specific standards for Newcastle or to the Natural England ANGSt standard (except in relation to woodland: Newcastle/Gateshead, 2011). Newcastle's earlier standards are given here because the Greenspace strategy which includes them still figures prominently on the NCC website and has been used as a basis for evaluation of the city's greenspace in the section which follows. The old Newcastle standard is considerably less ambitious than the Natural England ANGSt standard, while showing sensitivity for the requirements of people in different types of housing that is relevant to the characteristics of the city's built environment.

Different accounts of the distribution of greenspace in the city in comparison with these standards will depend on the definition of greenspace used, as will be explored in more detail below. An initial issue concerns what kinds of publicly accessible areas should be counted as 'greenspace'. The table below shows the breakdown of areas classified by the city of Newcastle as greenspace, illustrating the many different kinds of land this description can embrace including playing fields in schools (see also Figure 6.5 below).

Table 6.3: Greenspace by type in Newcastle

Source: NCC, 2012:21.

Type of greenspace	Area (km2)	Percentage coverage of publicly accessible greenspaces (%)
Allotments, Community Gardens and Urban Farms	1	5.87
Amenity greenspace	4.22	24.75
Cemetery or churchyard	0.68	3.99
Green corridor	0.16	0.94
Natural and Semi Natural Greenspaces	5.49	32.20
Outdoor sports facility (inc. schools)	2.94	17.24
Parks and gardens	2.54 14.90	14.90
Provision for Children and Young People	0.02	0.12

The process for developing a greenspace strategy in the city (NCC, 2004) appears to have been steered by a wide consultation and involvement of different groups of greenspace users in the city. Evidence presented for the recent Green Capital Bid (NCC, 2012) shows that the ambitions regarding greenspace developed in the 2004 strategy have been developed in the ensuing eight years and that practice in this area continues to evolve within the Council. The Council notes substantial investment in its greenspaces and parks over the last decade, including major investment at Leazes Park, Gosforth Central Park, Nunsmoor Park, Elswick Park, the Ouseburn Parks, Exhibition Park, Hodgkin Park and Walker Park. Ten parks in the city have been awarded the 'Green Flag' for quality, including parks in the deprived wards of Elswick and Walker.³² A government grant

has supported improvements to 28 Playspaces across the city and further grants have been secured from a variety of bodies to regenerate and improve four parks and woodlands within the city (NCC, 2012).

The Groundwork NGO has played a significant role in supporting deprived communities to take control of their local parks and open spaces in recent years (Fordham et al., 2002). In Newcastle, Groundwork has supported Newcastle City Council and Community Groups in renovations and improvements to over 40 parks, open spaces and school grounds; 15 of these projects included Green Gyms, with outdoor exercise equipment for all (NCC, 2012:27). The ongoing 'Greening Wingrove' project brings people together in this ward to work collectively on a range of issues from making more use of trees and plants, cracking down on refuse and

32 The complete list is as follows: Benwell Nature Park, Gosforth Central Park, Nunsmoor Park, Elswick Park, Tyne Riverside Country Park, Brandling Park, Heaton Park, Leazes Park, Paddy Freeman's Park and Walker Park.

reducing energy bills. The project also encourages residents to monitor local services and put forward new ideas to

improve their local environment (NCC, 2011b:15).

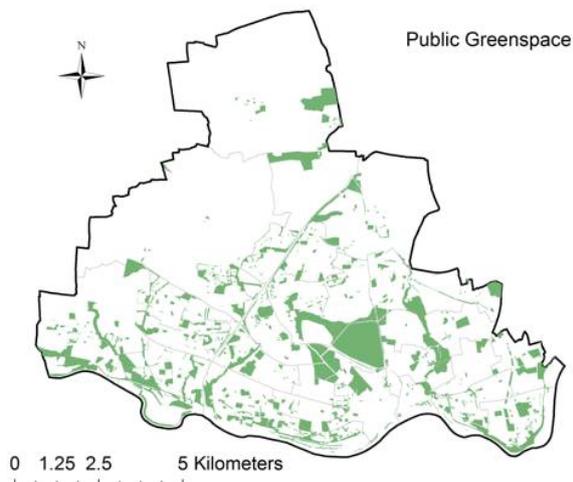


Figure 6.2 Distribution of Greenspace in the City of Newcastle upon Tyne

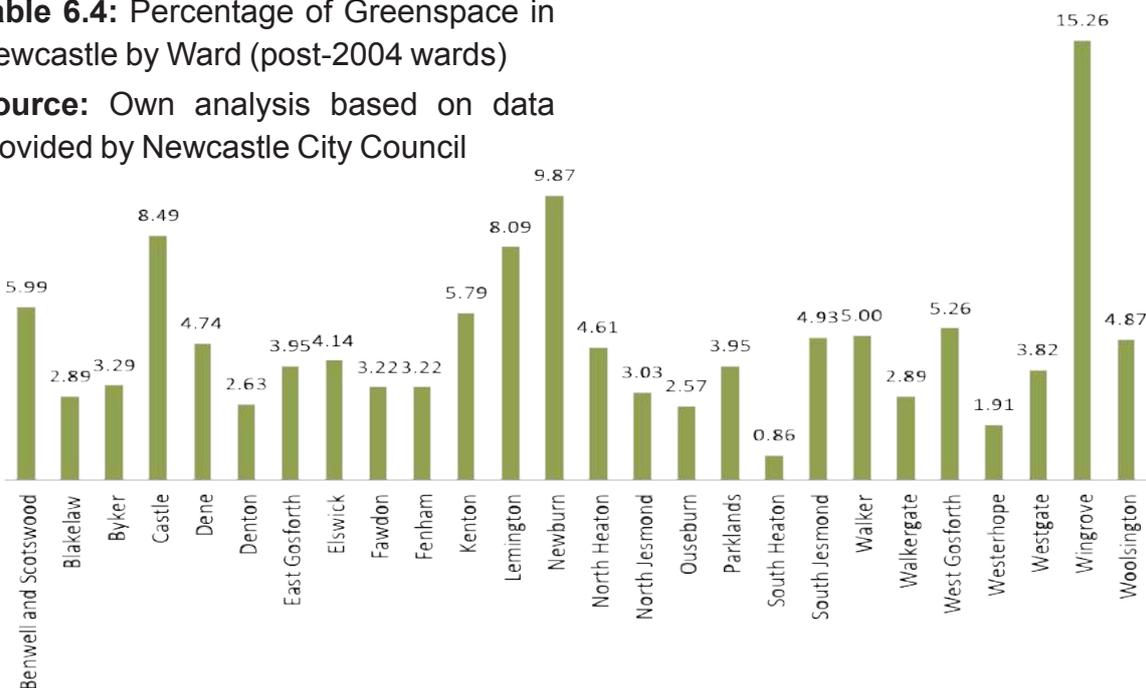
Source: Authors' analysis based on data provided by Newcastle City Council

The map in Figure 6.2 above shows all categories of greenspace listed in Table 6.3. Here it can be seen that some of the outlying 'village and rural' wards to the North West of the city have quite low provision of publicly accessible greenspace; that the southernmost wards appear to have multiple small spaces; and the Town Moor is identifiable as a large mass of greenspace in a central position in the town.

In Table 6.4, below, the discrepancies between the various wards in terms of provision of greenspace can be seen more clearly, with Wingrove, Newburn and Castle particularly well-provided, while South Heaton and Westerhope have particularly small proportions of the city's provision. Furthermore, the City Council notes that some greenspaces are isolated and poorly linked to the wider network of spaces, especially those to the East and West of the city (NCC, 2012:24).

Table 6.4: Percentage of Greenspace in Newcastle by Ward (post-2004 wards)

Source: Own analysis based on data provided by Newcastle City Council



Nevertheless, comparing Figure 6.2 with Figure 6.3, it becomes clear that if a different area threshold or access to all sizes of greenspace were taken into consideration, a somewhat different picture of the distribution of greenspace and claims of environmental injustice might emerge. Figure 6.4, below, from Newcastle’s Green Capital Bid, attempts such a portrayal by mapping areas within 300 metres of a public open area

(relating to the EU indicator standard) in Newcastle. From this perspective, areas deprived of greenspaces stand out quite clearly as lying in the North and North West of the city and in a ring of patches 3-5 km from the Town Moor. Some of the underprovided areas, such as the southern wards are relatively deprived in socio-economic terms; while some, like Castle to the North West, are relatively affluent.

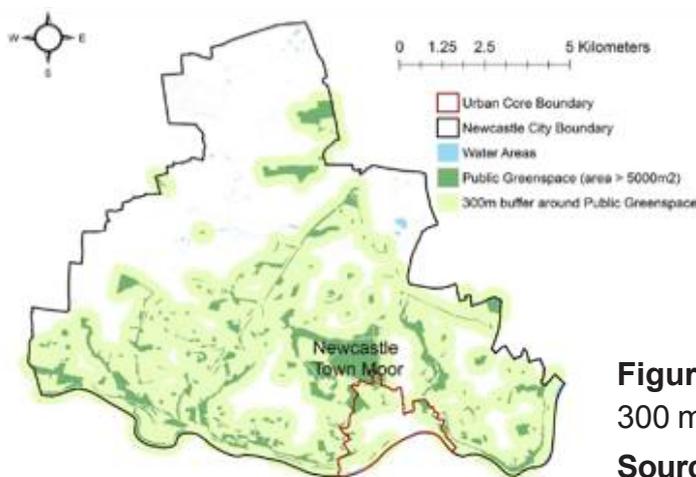


Figure 6.4: Map showing areas within 300 m of a public open area in Newcastle
Source: NCC, 2012:130

All in all, it emerges from these three rather different approaches of establishing the distribution of greenspace in the city that some of the deprived areas of Newcastle

are also poorly provided with public parks and gardens, suggesting a possible way of prioritising greenspace strategy in favour of these areas.

Types of green space

Not only greenspace quality, but type of greenspace is important for evaluating access to greenspace in the city. We saw in Table 6.3 that what is categorised as greenspace in Newcastle, besides the various types of natural space, parks and gardens, includes outdoor sports facilities, cemeteries and churchyards. The latter in particular might present barriers to people not of the Christian religion, while

the former does not suggest a tranquil or necessarily welcoming space that everyone can use. Figure 6.5 below which shows the breakdown of greenspace in Newcastle by category, suggests that the availability of generally accessible greenspace may be more limited than the impression given in the various interpretations presented in Figures 6.4.

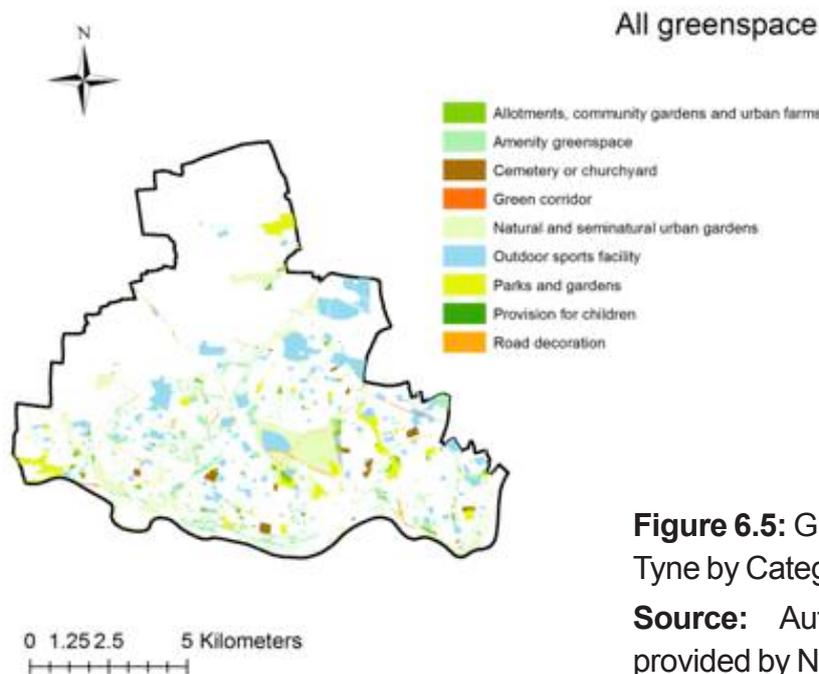


Figure 6.5: Greenspace in Newcastle upon Tyne by Category

Source: Authors’ analysis from data provided by Newcastle City Council

Quality of greenspace

With regard to the quality dimension, a local audit conducted in 2004 sought the views of users on the quality of greenspace in the city. The result points out the variability of greenspace conditions between and within greenspace categories. In Newcastle, public parks and cemeteries still open for burials typically achieved the highest quality ratings. Amenity greenspace, outdoor sports facilities and

natural and semi-natural greenspace received the lowest scores (NCC, 2004). The 2011 residents’ survey undertaken³⁴ by the Council, showed that, on the whole, people living in more affluent areas were significantly more satisfied about the quality and maintenance of parks and open spaces than those living in more deprived wards – with some exceptions (e.g. Castle Ward, see Table 6.5 below).

Ward	Ward 2010/2011
Fawdon	51%
Denton	53%
Byker	54%
Westerhope	54%
Woolsington	68%
Castle	60%
Kenton	61%
Lemington	61%
Dene	82%
South Heaton	83%
West Gosforth	85%
North Heaton	85%
South Jesmond	87%
North Jesmond	88%
East Gosforth	92%

Satisfy with parks and open spaces

Table 6.5: Differentiated satisfaction with parks and open spaces

Source: Newcastle City Council, 2011c:27

34 16,688 questionnaires were sent out to a random sample of households of which 5,222 (31.3%) responses were received (NCC, 2011a).

Data limitations

The increasing sophistication of GIS methods that can establish spatial and social dimensions also suggests the possibility of an analysis that takes into account greenspace of all sizes – although perhaps not of all types. It should also be able to calculate the distance to the various access points (park entrances, gates, car parks and cycle parks) and establish how these affect access by different neighbourhoods around the greenspace. Finally, it could be possible to factor in the type of housing in the neighbourhood of

the greenspace (e.g. percentage with private gardens). Although it would initially be complex to generate the algorithms for such a study, once established, the process of updating over time would be simpler. The confidence that could be placed in a more accurate account of access to greenspace by Newcastle City residents could enable clarification of the priorities for greenspace in the city and to what extent greenspace is an issue of simple inequality or one of environmental injustice.

Key messages

- The city of Newcastle appears to be well-provided with greenspace although it is not well-distributed across the city
- The council is concerned with the allocation and quality of its greenspace and sets its own high standards for access, although achieving these is difficult.
- In terms of the continued improvements to quality of the existing provision, considerable gains have been achieved over the past 10 years, including support deriving from successful bids to public and charitable funds.
- Community groups such as Groundwork have played an effective role in developing Newcastle's greenspace.
- Empowering local people to take responsibility is another effective way of improving greenspace, as shown by Greening Wingrove Project.
- Some quick wins can be gained through the current efforts to connect up the poorly-connected greenspaces to the east and west of the city.
- Given the influence of greenspace quality on making it accessible to various vulnerable and minority groups, maintaining recent gains in quality and upkeep should be a priority.
- Based on current analysis at various levels, there appears to be an environmental justice dimension in that some of the city's more deprived communities are underprovided with greenspace and have to traverse longer average distances to access the 2 hectare and over level of greenspace.
- Using GIS, and a more fine-grained analysis according to different types of greenspace, it is likely to be possible to create a more sophisticated account of access that could give greater confidence in whether this is an issue of inequality or actual injustice.
- In the mid-term, better data analysis methods could support a targeted approach to improving greenspace provision and access for the city's most deprived neighbourhoods.

6.2 Natural places: nature reserves, woodlands and allotments

Nature reserves and woodlands

Woodlands, National Trust lands and nature reserves are partly intended for conservation of habitats and wildlife, but at the same time serve a recreational and educational purpose for people. They have been found to share similar health and well-being benefits with urban greenspace, and similarly provide climate change defence in terms of urban cooling, flood alleviation and acting as a carbon sink. However, compared with standard greenspace they might be said to have a stronger claim to connect urban dwellers with the natural world than formal parks and gardens.

As mentioned earlier, Newcastle's industrial past was associated with high levels of pollution that affected both human inhabitants and the natural world. Gradually, derelict industrial sites have been reclaimed for new industries and housing as well as agriculture, forestry and amenity uses. Following the considerable loss of habitats in past decades, the city has begun to witness a restoration of biodiversity through, for example, the efforts to make Newcastle a cleaner and friendlier place for wildlife.

In all, the city includes 5 nationally important Sites of Special Scientific Interest (SSSI), 28 Local Wildlife Sites (of which 6 are Local Nature Reserves) which have a regional and local value, 22 wildlife corridors and 36 Sites of Local Conservation Interest (NCC, 2012:32). The city's Local Wildlife

Sites support locally and nationally threatened species such as the great crested newt, and provide habitats such as grasslands and semi-natural ancient woodlands, offering wildlife refuges, corridors linking sites and buffers protecting open spaces. The City Council has programmes for red squirrel conservation; bird, bat and bee box installation; and butterfly, amphibian, fish, otter and wildfowl habitat support. It also works with schools through the Enviro-schools programme with the joint benefits of enhancing children's environmental understanding and creating and improving biodiversity sites in schools. As well as hosting some rare forms of wildlife, Newcastle is quite well-provided with natural spaces across the city, although it is hard to separate these from the more human-centred greenspaces in the council's own policies and documentation. An exception is the the Green Capital Bid (NCC, 2012:34) which notes that the city has around 16m² per resident of publicly accessible land whose primary function is for nature and biodiversity.

The city also has several claims to environmental distinction, for example, it hosts the furthest inland breeding colony of kittiwakes in the world, the birds having chosen the Tyne Bridge and surrounding buildings for their nesting site; and it is also the only city in England to have a native population of red squirrels. It is also one of the few urban areas in the country where

ground-nesting birds thrive (the Town Moor site has been chosen by skylarks for their breeding ground). Council interventions towards protecting the natural world can be said to date back to 1988, when the first Tyne and Wear Conservation Plan was issued. This was followed up by Newcastle City Council's Biodiversity Action Plan in 2001 and further development of biodiversity Policy in the 2004 Greenspace strategy. The following year, the council issued Biodiversity Guidelines and in 2010 a Bee Strategy for the city was published.

However, in spite of the improvements in the city's natural spaces over recent years, the continuing development pressures have contributed an encroachment on grassland habitats,

which has had an inevitable impact on reducing the numbers of some species, including grey partridges, skylarks and brown hares (NCC, 2012:39). The sites demarcated for further development in the Draft Newcastle/Gateshead Local Development Framework (LDF) entail a reduction in green areas (Newcastle/Gateshead, 2011), including a plan within the same framework to build 600 new homes on the buffer zone of a popular nature reserve and SSSI in Gosforth (Henderson, 2012). This has evoked considerable public resistance as revealed in the press coverage as well as in the recent report on the consultation on the Draft LDF (Newcastle/Gateshead, 2012).

Allotments

Allotments are also included in this section because they not only represent places where people can connect with nature in a more direct, 'hands-on' way, but also enable people to use their free time to create a supply of cheap, healthy food, simultaneously reducing the packaging and food miles associated with purchased fruit and vegetables, and their consequences for carbon emissions and landfill. Allotments contribute to the 'Food Security' of the city by creating local sources of produce that could play a small role in sustaining people in times of shortage. On the eve of World War II, there were 110,000 ha (740,000 plots) of allotments in England and Wales of which just over half were in urban areas (Thorpe 1969; Crouch 1997). By the end of the 1940s, this

number rose to 1.4 million as a result of the 'Dig for Victory' campaign that encouraged people to grow their own food (Hope and Ellis, 2009). During the War, 10% of all UK-produced food (1.3 million tonnes) came from allotments, private gardens and plots cultivated by service personnel (UK NEA, 2011:375). Allotments also serve an important educational purpose particularly for children. Although the number of allotments contracted considerably between the 1970s and 1990s, recent trends have shown many councils introducing new plots (totalling 15 ha in 2011) in response to the intensification of demand – at the latest count about 57 people on the waiting list for every 100 plots (Campbell and Campbell, 2011).

Natural places and wellbeing

The evidence for the mental and physical health benefits of nature reserves is similar to that for greenspace generally, although a small number of studies (Bird, 2007, Fuller *et al.*, 2007) make a particular claim for the benefits of exposure to biodiversity in natural places. With regard to allotments, three additional benefits can be mentioned. The first one is the benefit of access to cheap fresh produce for at least part of the year (with increasingly affordable technologies for extending the season, including polytunnels and horticultural fleece). Second is the gentle

physical exercise that cultivation implies, which can be particularly helpful for flexibility. Indeed, allotment gardening can become the main form of physical exercise taken by some older people, while some research finds it to be a protective factor against dementia (Etgen *et al.*, 2010). The third benefit is the community of place and interest provided by fellow allotment gardeners, which enhances opportunities for social contact (Sullivan *et al.*, 2004), learning and exchange through the 'gift economy', whereby allotment holders share excess seedlings and produce.

Natural places and environmental justice

The Woodland Trust and Forestry Commission completed an inventory of woodland with public access by county across the UK, (reported in Woodland Trust, 2004:29-46). Based on this survey, a programme of improving access to existing woodland and creation of new woodland was initiated, focusing on neighbourhood regeneration areas and the 40% most deprived wards. As well as identifying areas deficient in this resource, research has noted particular groups who make less use of these resources including young adults, women, older people and ethnic minorities. The main reasons appeared to be safety concerns, access issues, and lack of information (Burgess, 1995; Alison Chapman Consultancy, 2000). Another group that has been identified as under-using these amenities are low income groups. Specific reasons for low use by these groups might include lack of car ownership (SDRN, 2004:15), longer hours worked due to low

pay, lack of confidence and information.

Allotments have a further justice dimension that is related to widening access to cheaper food to those without growing space of their own. A survey of allotments in England run by the Liverpool Victoria Friendly Society in 2009 estimated an approximate number of 280,000 allotments in England with around 120,000 people on the waiting lists (cited in NCC, 2010). Regarding people's motivation, online interviews with 2,000 adults, demographically weighted, found that around 50% were motivated by saving on the cost of fruit and vegetables (estimating a saving of around £950 per year). A third were motivated to produce crops without the use of pesticide, while a further third wanted to educate their children about the origins of food. Perhaps reflecting this mix of motivations, around one third of those who did not have a plot but wanted one were single parents.

Distribution of natural places in Newcastle

The Woodland Trust, in its inventory of publicly accessible woodland mentioned above, found Newcastle to be one of the less well-provided authorities, with less than 3% of the population able to access a 2 hectare wood within 500 metres and less than 19% with a 20 hectare wood within 4km (Woodland Trust, 2004:35).

The Council’s own standards aim that all city residents should have access to a local nature area or woodland of at least 2 hectares within a 2km (30 minutes) walk from their home, a goal which has been largely met in terms of local nature areas, at least for the city’s urban core (see Figure 6.6 below).

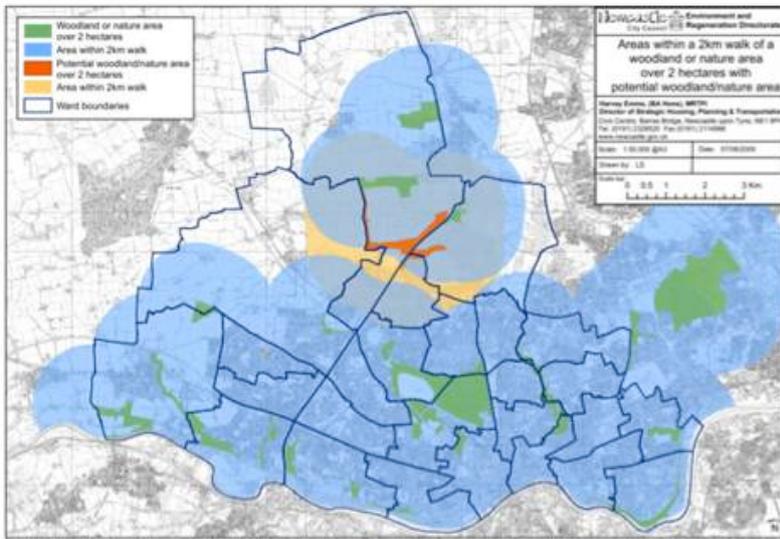


Figure 6.6 Areas in Newcastle that are within 2km of a Natural or woodland areas over 2 ha (also showing a potential future woodland area in red)

Source: NCC, 2012:134

As can be seen from Figure 6.6, deprived areas with least access to natural and greenspace of over 2 ha are Woolsington and Castle wards in the city’s North West. However, as emerges more clearly from Figure 6.7, which focuses on woodland alone (and of any size), what these wards lack in large areas of woodland, they

appear to make up for in smaller plots, with regard to which they appear to be among the city’s best-provided wards. The contrast again illustrates the point made in the section on greenspace, that depending on the size of amenity focused upon, the environmental justice issues can look completely different.

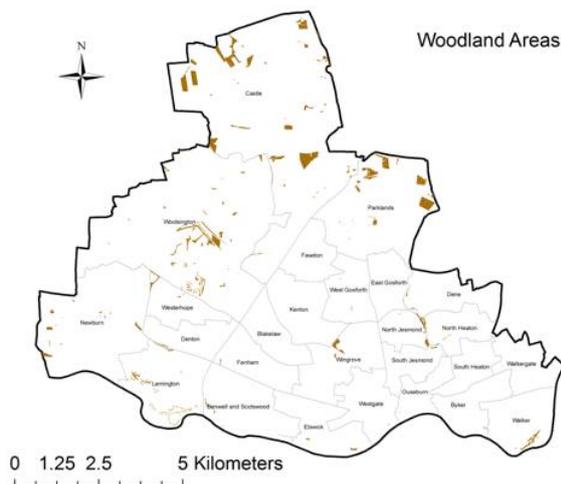


Figure 6.7: Sites of Woodland (brown areas) in the city of Newcastle upon Tyne

Source: Authors’ own analysis based on data provided by Newcastle City Council

In terms of allotments, Newcastle has around 3,000 allotment plots located on over 80 sites around the city, representing a per capita provision of 0.26 ha per 1,000 population (0.3ha = 12 plots). This meets the National Standard recommended in the 1969 'Thorpe Report' – the only public enquiry that has taken place into allotments – of 0.2 hectares per 1,000 population (Thorpe, 1969). The plots are both publicly and privately owned and managed, with the latter accounting for about 32% of the total. Around half of the privately owned sites are on the Town Moor and run by the Freemen of the City (NCC, 2010:9). Not all are of the highest quality, with many being prone to flooding and some having historical problems of contamination (ibid.:11 and 33). Nevertheless there are long waiting lists and demand far outstrips supply (ibid.:24), for reasons that may suggest a strong 'social justice' element. As noted in the city's Allotment Strategy (2010):

The direct economic benefit of growing one's own fruit and vegetables has remained important, especially in North-East England and especially in times of recession and hardship. It is significant that the main reason given for the huge interest in allotments in the 2010 community survey 'Awareness of, and Interest in, Allotments in Newcastle upon Tyne' was growing one's own fruit and vegetables as a cheap source of food. (NCC, 2010:5).

Figure 6.8 below shows that in spite of this potential link between deprivation and demand, allotments are fairly unevenly distributed in the city. Some of the more deprived wards are without sites, while some less deprived wards (e.g. North Jesmond and East Gosforth) have several sites.

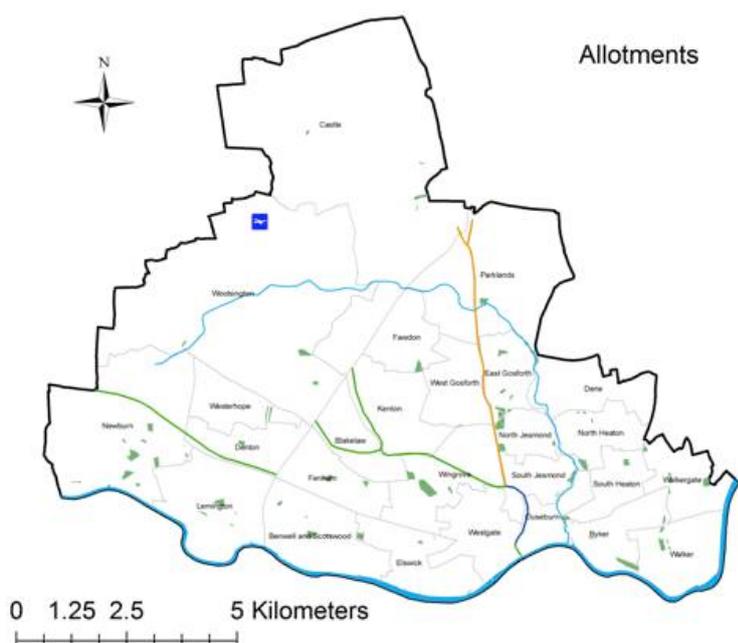


Figure 6.8: Distribution of Allotments in Newcastle upon Tyne

Source: Authors' own analysis based on NCC data

Access to allotments in Newcastle can be seen more clearly in Figure 6.9 which

shows distance thresholds depending on the number of plots in the site.

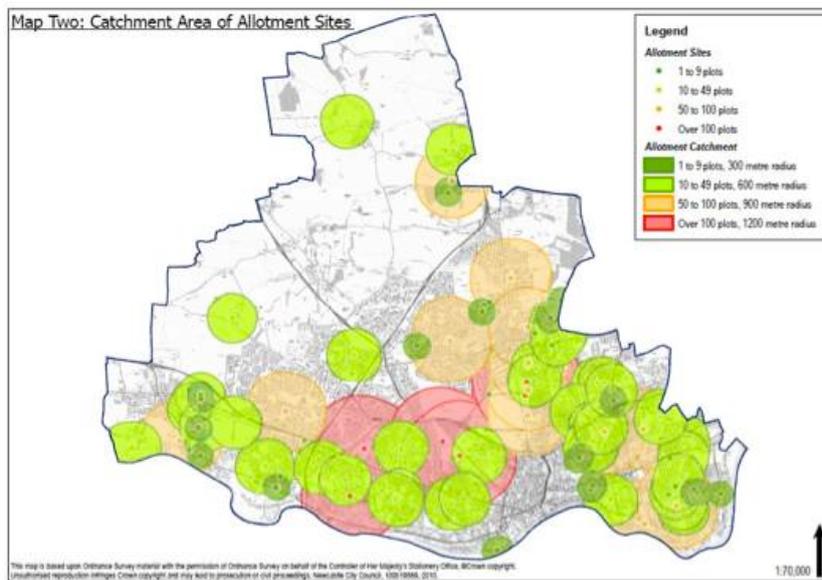


Figure 6.9: Access to allotments in Newcastle upon Tyne

Source: NCC, 2010:10.

The Council's Allotment Strategy seeks to protect existing sites against development pressures and create new sites to meet the high demand. It identifies that between 2001 and 2005, a total of 302 plots were lost in the city (NCC, 2010:11). Although the strategy notes that another 132 were gained, some of these were created by splitting existing plots in two, so it is likely that in terms of hectares of land available for plot holders, there was a net overall loss. The reasons for loss of plots were quite diverse, ranging from remediation work, following identification that the land was contaminated (e.g. Walker site, loss of 126 plots) to a return to a grazing use (the Fenham site). The problem of contaminated allotment land is probably more widespread than recognised, due to the former practice of treating the soil with ash from domestic coal fires, which introduced a small lead and arsenic content to the soil. The impact on the health value of the produce is, however, said to be negligible, as long as people

follow safe practices such as washing hands and peeling vegetables before use. In the case of the Newcastle sites, the contamination – now remediated – was on a greater scale, caused by a former council practice of creating paths using ash from a local incinerator plant (Interview, 2012).

Both nationally and in Newcastle, demand has increased greatly over the last decade and is outstripping supply. In Newcastle, in 2001, there were 320 plots vacant and only 138 people waiting for plots. By 2008, there were 18 vacancies, and the number waiting for plots had risen to 394. Over the same time period, the percentage of male plot holders has fallen from 85% to 70%, reflecting wider cultural changes. There are also fewer retirees and more people aged under 40. However, the composition of plot holders has remained predominantly White British (98% in 2008 – NCC, 2010:14), thus failing to reflect the ethnic composition of the city.

Data limitations

It has not been possible for the purposes of this report to separate out the distribution of 'Natural Spaces' as opposed to 'Green Spaces' across Newcastle. In particular, maps showing nature reserves and local wildlife sites combine these with general provision of greenspace over 2ha. However, the two maps commissioned for this report which looked specifically at Woodland and Allotments, illustrate that distribution within the city is patchy and uneven and does not correspond to areas where there may be the greatest need.

Key messages

- Natural places are places where people encounter nature, as opposed to greenspaces which are often artificial or designed for other purposes such as sport and recreation.
- Access to natural places is likely to have a positive impact on people's physical and mental health.
- The majority of Newcastle wards are within 2km of a woodland or natural space of 2 ha or over.
- Only the north west rural wards of Castle and Woolsington appear to be underprovided with natural spaces of 2 ha. They are, however, well-provided with smaller plots of woodland.
- To gain a greater understanding of access to different kinds of natural places, it would be helpful to complete the exercise of GIS mapping of different kinds of natural spaces separate from overall greenspace provision
- Having an allotment keeps people active

Indeed, most woodland (although smaller sites) appears to be available in the city's rural periphery, while some of the most deprived wards appear to have a low or no provision of allotments. Bearing in mind the high proportion of homes in Newcastle that are flats (as noted in the section on Greenspace) it would be particularly interesting to compare provision of allotments with the proportion of homes with gardens per ward, which is potentially feasible using publicly accessible data.

and connected and provides a source of healthy, fresh food.

- Although traditionally a male preserve, allotments have increasingly greater appeal to younger people and women.
- In response to rising demand nationally, councils are increasingly creating new allotment sites
- Allotment sites have been lost in Newcastle for a number of reasons
- Allotments are notably scarce in some of the more deprived wards, including Elswick and Woolsington the former being in the city's built-up riverside area, the latter in the less dense rural north west of the city.
- The question of more or less urban locations within the city suggests that it may be relevant to examine the provision of allotments compared with the proportion of homes with gardens by city ward in order to gain further insight into environmental injustice implications of the current distribution.

6.3 Blue spaces and water

In this section we discuss two related environmental benefits, water (both drinking and household) and blue spaces. The latter is defined as a combination of standing water and watercourses in an area, including lakes and reservoirs, rivers, ponds, brooks and streams which together create the aquatic environment in the city. The White Paper 'The Natural Choice' (HMG, 2011) underlined the interdependency of healthy rivers, lakes, groundwater, estuaries and wetlands and good quality water, recreational opportunities, flood protection and biodiversity. For this reason, it makes sense to discuss the water management

system, blue space and flooding together in this section.

While only 0.8% of the UK is classified as 'urban freshwater', in Newcastle, the extent of land classified as such is 1.8% (200 ha) (UK NEA, 2011). The city's southernmost boundary is defined by its main watercourse, the River Tyne, which separates it from the neighbouring authority of Gateshead. The most important tributary in the city, the Ouseburn, arcs through the residential and industrial areas, as shown in Figure 6.10 below.

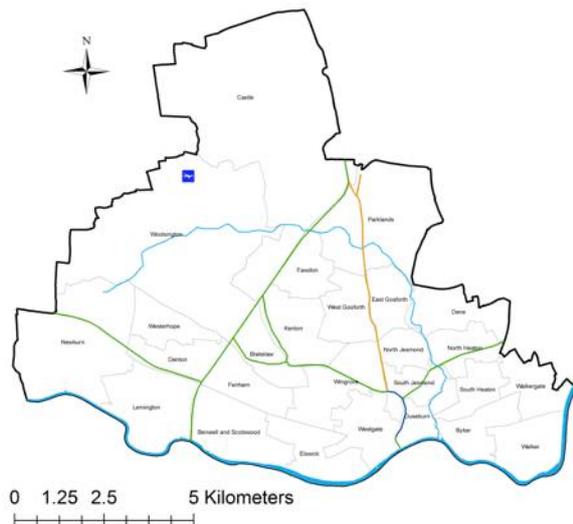


Figure 6.10 The Tyne and Ouseburn Rivers in blue colour, Newcastle

Source: Authors

Today the Quayside on the northern bank of the river Tyne and bordering the city centre is famous for its distinctive high and low level bridges, enjoys thriving cultural and leisure activities and offers a variety of clubs, restaurants and visitor attractions. However, until the late twentieth century, the area was a decaying post-industrial site with polluted land and waters. Historically, Newcastle's watercourses were adversely affected by the great upsurge in the population during

the Victorian era when sewage flows were combined into a single outlet with surface water and discharged directly into the River Tyne. The heavy industrialisation along the banks of the River Tyne exacerbated the pollution. By 1970, the river was the destination of almost all sewage, of which only about 5% received some form of treatment. At the same time, the complex flow pattern of the river prevented sewage from discharging into the sea. Instead, sewage was shunted

upstream, reducing the river's oxygen content and creating a hostile environment for aquatic life. The action of the local authorities in commissioning the Tyneside Sewage Treatment scheme in the 1970s progressively minimised the discharge of untreated sewage into the river and restored the water quality. A further initiative has been the Clean Tyne project, a collaborative project between the councils in the region that also draws on

armies of volunteers to achieve its goals. This has seen the removal of 950 tonnes of debris from the river between 2007 and 2011, of which 98% has been recycled. One result of these interventions has been a surge in fish stocks. While in the 1950s less than 10 salmon were caught with fishing rods each year, in recent years, the river has become the best salmon fishery in England and Wales, as shown in Figure 6.11 (NCC, 2012).

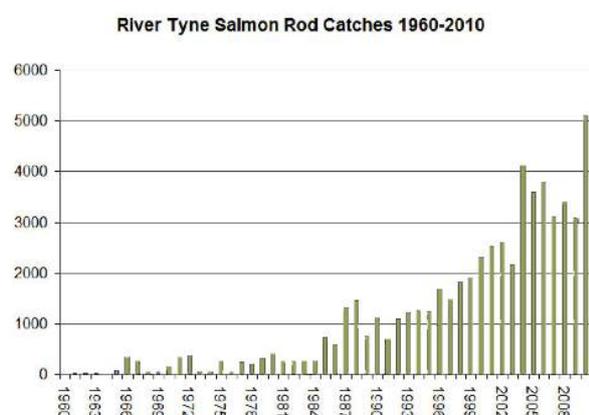


Figure 6.11: River Tyne Salmon Rod Catches 1960-2010

Source: NCC, 2012

In tandem with such interventions, watercourses, as well as water bodies, in the city have benefited from the programme for supporting biodiversity across Local Wildlife Sites, Nature Reserves and Sites of Local Conservation Interest (see section on Natural Spaces). Particular projects have included the installation of otter holts and floating reed beds on the Ouseburn, and two otter crossings on busy roads, as well as measures to improve fish habitats and spawning grounds in Leazes Park (NCC, 2012:36). A key driver has been European regulation such as the EU Water Framework Directive which requires all water bodies to meet 'good status' or 'good ecological potential' by 2015.

and localised. The risk from floods in the present day is by contrast estimated to be high, due to the regional importance of the Tyneside infrastructure and urban environment, the lack of a flood plain and flood defences in the city and the combined threats of estuarial and fluvial flood (JBA, 2011:13). The city is also at a disadvantage in terms of its type of subsoil, which is classified as slowly permeable clay soil that tends to impede natural drainage and becomes waterlogged during periods of heavy rainfall (as seen in the flash floods of Summer 2012). However, Newcastle's flood risk is not rated as significant by comparison with that in other English cities (Environment Agency, 2009a)

The geology and geography of the city mean that with one or two exceptions, historical flooding events have been small

In terms of drinking and household water, Newcastle is now exceptionally well-provided with good quality water

for household and commercial use, due largely to the considerable investment made in the water system over recent decades. There are three main sources of water: the Kielder Reservoir in west Northumberland, the Catcleugh Reservoir in the Northumberland National Park, and the River Tyne. The Kielder Reservoir

– the largest manmade lake in northern Europe and initially built for industrial use
 – is the main reason that water shortages are not predicted to be a problem for the region in the foreseeable future, even taking into account high-impact climate change scenarios (NCC, 2012:80).

Water, blue spaces and wellbeing

It goes without saying that the availability of water and its quality are essential for human sustenance. Similarly, household water for washing and sanitation is important for health, hygiene and a general sense of wellbeing. While domestic water demand has increased, partly due to new technologies (such as the power shower) and lifestyles (taking a daily shower), in more recent years, domestic demand in the UK has been fairly stable. Between 2000/01 and 2007, the Environment Agency reported little change in the amount of water abstracted (nearly 60,000 mega-litres per day). The per capita usage between 2002 and 2007 varied between 148 and 152 litres per day (Water UK, 2008). It is, however, important to emphasise that these average figures mask substantial variation between different places and different households. Reducing water consumption is not only about assuring a sustainable supply, but is also a question of energy efficiency, given the emissions impacts of treating water for domestic use and of having hot water on tap in the home. Policies to reduce water use to 120 litres per day are proposed by the Department for Environment, Food and Rural Affairs as part of its Future Water Strategy (Defra, 2008). Public education

campaigns have targeted water efficiency and encouraged customers to participate in a free water audit and retrofitting with water-efficiency devices. These measures, however, are taken in the context of a major problem with leakages in the water distribution system in the UK as a whole. While in some countries there has been considerable investment in reducing leakages (for example Denmark, which has achieved a leakage rate of only 6-7% – EEA, 2009), the UK continues to lose 20- 25% in this way – although it has reduced leakages significantly since their 1995 highpoint (OfWat, no date). Water loss from the distribution pipelines of Northumbrian Water (water provider for Newcastle city) was average for UK water companies, at nearly 22% in 2011. Although losses were down by 20% since 1990, they have again increased in recent years due to the severe winters.

Urban blue spaces have a wide range of environmental and human benefits. For example, rivers are frequently used as receiving bodies for stormwater discharges reducing flood risk. They provide a habitat for a variety of flora and fauna both in-channel and within associated riparian corridors (Petts *et al.*, 2002), which themselves provide

habitats that can help reduce pollution, noise, and sequester carbon (UK NEA, 2011). They also have major amenity value for the city's residents as well as visitors. Large-scale water bodies such as river banks and lakes can attract visitors from far afield, drawn by aspects such as long perspectives, cooler temperatures, wildlife and in some cases leisure pursuits

Blue spaces, water and environmental justice

As discussed in greenspaces, the environmental justice dimensions of water and blue spaces are related to

Access to and quality of blue spaces

The distribution of water bodies in an urban area is largely a question of geography and history and outside local authorities' control. While this may imply an absence of environmental justice issues, it is important to note that historical and contemporary patterns of land and property ownership have a significant impact on access to, and benefits from water bodies (e.g. fishing and angling), in the same way that such rights affect access to, for example, the countryside (e.g. rambling). In addition to proximity

Access to and quality of water

Environmental justice dimensions are paramount in relation to access to good quality water, because this affects people's health, the amenity value of waterways, and the vitality and viability of the fishing industry in the wider region (given the importance of estuaries as spawning grounds for marine fish). At the global scale and particularly in the

such as swimming, boating and water sports. Similar functions are provided on a smaller scale by water bodies such as streams and ponds in parks and gardens, with the latter being considered safer for visits with small children. For these smaller blue spaces, proximity is a more important factor of accessibility.

both access and quality. With regard to flooding, the issues concern the impact of flood on already vulnerable households.

and rights, two other factors affect the accessibility of blue spaces. One is the quality of the water, as mentioned above, and the other is the quality of the setting of the water body, including the upkeep of the structures that channel, enclose or bridge it, the maintenance of waterside and aquatic plants and bordering greenspace, support for wildlife, and availability and quality of facilities (ranging from benches to lavatories), all of which have justice implications, as was discussed with regard to greenspace quality.

context of climate change, access to good quality drinking and household water has become one of the most pressing environmental justice concerns. However, in the UK, because of the existence of ample supplies and strong national and European regulation water supply and quality have not been high on the environmental justice agenda. This may

change in the future due to the impacts of climate change, increasing levels of domestic water consumption, leakages in the distribution network and the rising cost of provision. A major change which is already underway is the introduction of compulsory metering in areas of shortage which – if appropriate safeguards are not put in place – may discriminate against

larger, but not necessarily affluent, households with higher consumption requirements. More generally, the introduction of metering coupled with rising water bills may raise issues of affordability for lower income groups, leading to the rise of ‘water poverty’ in the UK.

Flooding

Walker *et al.* (2003) identified a different distributive profile depending on whether flooding was from rivers or from a tidal source. While wards on a tidal flood plain were eight times more likely to be in the 10% most deprived category than in the least deprived, for river flooding the effect is reversed, and living by a riverside tends to be associated with greater affluence, although the effect is less extreme. At the level of vulnerabilities, it is clear that lower-income households will be particularly disadvantaged when it comes to recovery from the impacts of flooding, having fewer financial resources and less insurance cover (Whyley *et al.*, 1998). According to the Association of British Insurers,³⁵

low-income families are eight times more likely to live in a high-risk flood area and 1.5 million people in social housing do not have contents insurance. The elderly and disabled are also disadvantaged in the way they can recover from such events. In terms of preparation, particular groups such as single mothers, ethnic minorities and people with mental illness will tend to experience different kinds of barriers in receptivity to flood warning information, and preparation. As the risk of flooding from a range of sources increases through climate change, the inequities that are implicit in flood defence strategy and insurance coverage will need to be urgently addressed.

Distribution of water and blue spaces in Newcastle

Drinking and household water for the city is supplied by the Northumbrian Water Group and costs to consumers are maintained at comparatively low levels for the UK. Newcastle benefits from high quality of household water, from mainly reservoir and river sources, that undergoes treatment at plants in Horsley and Whittle Dean. The quality has been attested as meeting a very

high standard over the last few decades, although due to increasing levels of pesticides from industrial farming, a higher level of treatment has become necessary than in the past (NCC, 2012) with clear implications for greenhouse gas emissions. This means that although Newcastle City does not face water shortages (in the way the South East does), the need for reducing consumption,

³⁵ www.abi.org.uk

treatment-related emissions and costs has led to compulsory metering in all new housing since 1989. The installation of a meter is also advised as an economising measure in single-person households, who will use less than the standard allocation made by the water companies. As a result, levels of metered households have been steadily rising, and in the period from 2010-2011, about 22% of households in Newcastle were subject to water metering, while 74% of businesses had water meters. The average per capita

water consumption for a household without a meter was around 4,000 litres more than for a metered household in 2011 (NCC, 2012:72). In order to assess the socio-spatial distribution of water consumption in the city, we need disaggregated data. We also need to know the proportion of household incomes spent on their water bill (metered and non-metered) in order to identify potential water poverty; however, it has not been possible to access such data within the timetable for this report.

Quality of blue spaces

In terms of blue spaces, as noted in earlier, there has been considerable improvement in the city's rivers and standing water. This is partly due to the actions of the Northumbrian Water company which has invested in a high-quality urban wastewater management system. This provides secondary treatment and UltraViolet disinfection, with an extended system of interceptor sewers, which has

created a healthy estuary environment. The Tyne Outfalls project will extend interceptor sewers to the low lying sewage outfalls in the Tyne, so that ultimately 100% of sewage is treated. The impact of such improvements has been positive on beaches at the mouth of the river Tyne, five of which received a Blue Flag award in 2010.

Quality of setting of blue spaces

As mentioned above, at present the main environmental justice issue for blue spaces in Newcastle is not water quality and biodiversity (which have improved significantly), but the access to and the amenity value of the blue spaces in deprived areas of the city compared with those in more affluent areas. While data limitations have prevented us from a systematic comparison, a simple contrast between Jesmond Dene Park, in one of

the least deprived wards of the city,³⁶ and the Walker Riverside Park,³⁷ in one of the city's most deprived wards, highlights the constraints on access imposed by poor quality natural environments. The Riverside Park in Walker ward was reclaimed in the 1980s and includes the final stretches of the coast-to-coast Hadrian's Wall route. However, in spite of its larger role in the city's tourism, the area still gives a sense of insecurity as it

36 See <http://www.newcastle.gov.uk/leisure-libraries-and-tourism/parks-and-countryside/jesmond-dene-and-pets-corner> and <http://www.jesmond-dene.org.uk>

37 See <http://www.newcastle.gov.uk/leisure-libraries-and-tourism/parks-and-countryside/walker-riverside-park>

is largely obscured by foliage from tree cover and the steep escarpment rising over it. The tree cover, from planting in a sealed off area where a former leadworks operated, was an economical solution to the problems that public access to the highly contaminated land would have presented. Rainbow-coloured effluent from the former tar distillery, still unremediated due to a history of failed attempts, defeated by the scale and corrosive nature of the pollutants left behind when the industry closed down, can be seen at low tide from the Hadrian's Wall path (Interview, 2012). The park also faces an unattractive prospect of industrial buildings and a south bank wall across the river in Gateshead that is continuously

covered by graffiti. By contrast, the park and structures around Jesmond Dene are long-established and carefully tended, including attractive paths, historic bridges, and well-maintained flora. It is also rich in wildlife, including red squirrels and kingfishers.

In the recent Green Capital Bid, the council declared its intention to designate the whole of the River Tyne, the tidal reaches of its tributaries and the adjacent banks in Newcastle/Gateshead as a Local Wildlife Site (NCC, 2012:42). While this is welcome, it does not address the limited appeal of the Riverside Park in Walker and the continued blight represented by the untreated tar works in its vicinity.

Flood risk

Based on data collected since 2000, historic flood risk in Newcastle has not reached DEFRA's threshold for significance (which is 200 residents affected, 20 non-residential properties or 1 critical service such as a hospital).³⁸ Historical flood information collected for the Preliminary Flood Risk Assessment (NCC, 2011), identified three main flood incidents over this period, resulting from a range of sources that included surface

water, sewers, groundwater, fluvial flows, blocked or damaged culverts and interactions between drainage networks and rivers. The incidents took place in: October 2000, June 2005 and September 2008. Overall the Environment Agency has identified over 20,000 city residents and more than 100 critical services as being at current risk from flood (see Table 6.6 below)

Table 6.6: Environment Agency assessment of numbers at flood risk in Tyne and Wear area
Source: NCC, 2011:41

Location	Residential Properties	People	Critical Services	Non-residential properties
Newcastle	8906	20840	104	1975
South Shields	3216	7525	19	391
Tynemouth	1349	3157	16	733

³⁸ Although this status may be altered by the flash floods of Summer 2012.

It seems flood risk occurs across both the disadvantaged and the relatively privileged wards within the city (NCC, 2011:36). Although this may not seem to present a distributive justice issue, it is important to note that disadvantaged groups are more vulnerable to the impacts of flooding. In terms of future risk, however, the Environment Agency Tyne Catchment Flood Management Plan indicates the following changes in flows resulting from climate change:

- A 20% or more increase in peak flows for future flood levels

Data limitations

As has been seen in some parts of this section, information on water systems and river systems will generally be at a different geographical level than that of the local authority. In terms of water treatment, most water authorities cover regions that comprise a number of authorities, as is the case with Northumbria Water. River systems are also described at a regional level, although reporting tends to be limited to particular dimensions targeted in UK and European policy which are highly focused and requiring specialist interpretation. Some reports, such as the River Basin reports produced by the Environment Agency, inevitably focus on watercourses at a regional level, from which it is hard to deduce information at a local authority level. The most recent report on River Habitats in the Northumbria

- Increasing rainfall intensity, increasing risk of surface water and urban watercourse flooding

- A 2.5-13mm/yr or more rise in sea-levels (EA, 2009b:9).

The EA advises preparation in terms of a programme of flood defences for the city. The decisions about where these are to be placed (for example to protect valued infrastructure or communities) could have environmental justice implications.

River Basin District (EA, 2010), looks at changes to river boundaries, river shading and invasive plants. In terms of blue spaces, there is as yet no separate audit of the quality and accessibility of such spaces to different groups of users. Such an audit might be able to reveal whether the extremes identified between the Walker Riverside Park and Jesmond Dene Park reflect a general trend with wider environmental justice implications.

With the rising domestic water charges and the wider introduction of water metering systems, there is also an urgent need for data on the socio-spatial distribution of water consumption in the city and the cost of water as a proportion of household income, to enable an early identification of potential water poverty.

Key messages

- Water quality and water management are one of the assets of living in Newcastle. Investment in resources such as the capacious Kielder Reservoir, constructed in anticipation of industrial needs that never materialised, have secured the region against even the more severe predictions of climate change impacts.
- Since its nadir in the later part of the twentieth century, where 95% of sewage was discharged untreated into its waters, the initiatives of the local authority and water companies have served to restore the quality of the River Tyne, so that it is now the best salmon-fishing river in England and Wales.
- The city's parks and gardens are enhanced by a range of blue space features ranging from Victorian-style circular duck ponds to the 3km chain of Ouseburn Riverside parks that include Jesmond Dene Park.
- In the more deprived areas, such as Walker, the riverside appears neglected, facing onto graffiti-ed banks across the water and with dark, overhung riverside walks that could discourage vulnerable users.
- More systematic data is needed on the quality of blue space environs in the city in order to judge whether this is an environmental justice issue.
- There are also questions regarding the level of water consumption by different social groups and the need to detect early signs of potential water poverty in the city, particularly following the introduction of metering system for all new homes.
- Although due to the effects of climate change, future flood risk is estimated to be high, it is dispersed over the city. Nevertheless, disadvantaged groups are likely to be more vulnerable to its impacts.
- Further environmental justice implications may arise from future decisions about where to invest in flood defences.

6.4 Local public transport

The quality of a city's public transport can transform the connectivity between different parts of the city, improve access for people on low incomes, support the evening economy, and enhance visitor appeal. As noted in the Section on air pollution, vehicle emissions have replaced emissions from heating and industry as the chief source of air pollution in Newcastle. Public transport has a major role to play in the city's air quality. The outreach of the system, its attractiveness and convenience for users, as well as its emissions levels are all important in whether public transport can make a positive contribution to environmental justice in the city.

According to Newcastle Council's Green Capital Bid, Tyne and Wear (see Figure 6.12) as a whole has the highest level of bus use outside London, at 11% of trips per person (NCC, 2012:12-13). The number of bus journeys taken in Newcastle per year gradually increased from 2006, reversing the general long term decline in bus use in the UK since 1947, at least up to the current recession. Almost 98% of Tyne and Wear residents live within 400m of a bus service to the city centre running at half-hourly intervals, which is significantly better than the national average (NCC, 2012). However, a more relevant comparison would be the one with other similarly compact cities, because the national average includes rural areas whose access to bus services may be significantly lower.

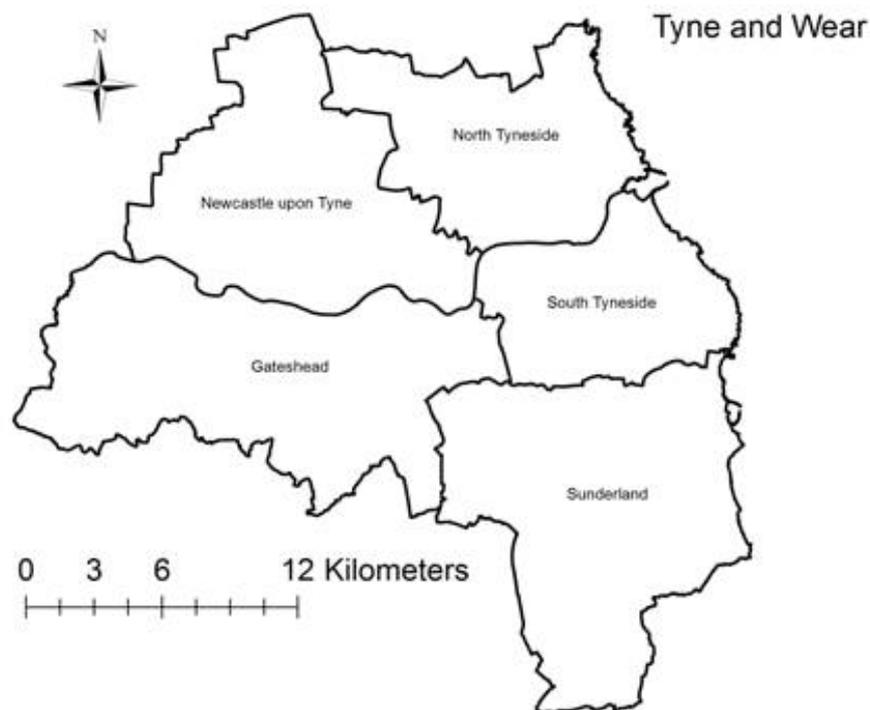


Figure 6.12: The Tyne and Wear area which consists of five local authorities covered by Local Transport Plans.

Source: Authors

Due to considerable investment in recent decades, the efficiency of fuel and emissions of the bus fleet has improved. The fleet now includes 35 hybrid buses, 222 EURO IV and 233 EURO V buses operating in Tyne and Wear. In addition to investment in fuel efficiency, there has been

recent investment in the infrastructure, most notably the construction of a new, high-quality central bus station in the city centre and a regular service linking key points in the city with the arts and leisure amenities on the Quayside area – the ‘QuayLink’ service, shown in pale yellow in Figure 6.13.

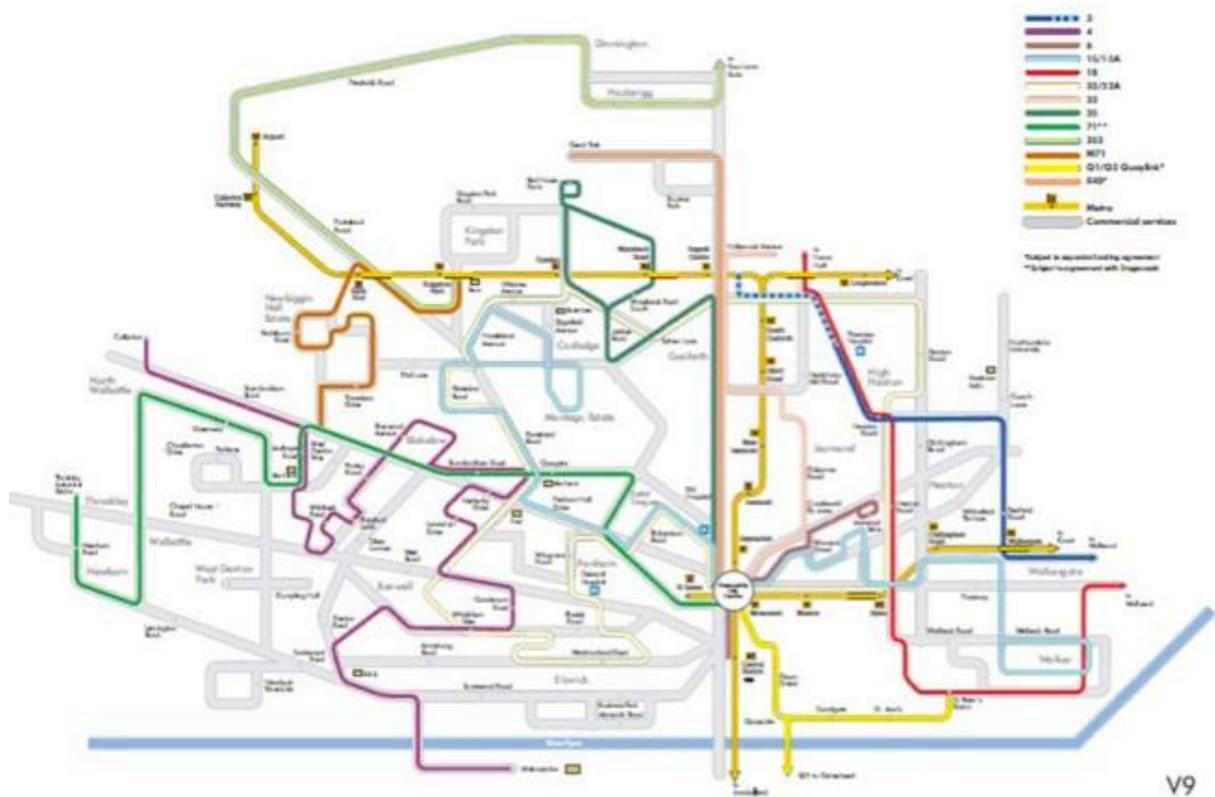


Figure 6.13: Map of the Newcastle Bus Network

Source: NCC, 2012:124

Newcastle also has the benefit of a successful Metro Light Rail system that connects the city with the rest of the Tyne and Wear conurbation, one of only two ‘tube’ style rail services outside London in England, the other being in Merseyside. The Newcastle City Station provides connections across the country and is among the busiest 2% of stations nationally. Overall, the city is considered by the Campaign for Better Transport as coming 4th in England for the quality and uptake of public transport.

Part of the success of Newcastle’s public transport system is due to the siting of its core amenities within the City Centre. For example, 78% of shoppers visiting the Eldon Square Mall – the largest city-centre mall in the UK – do so by public transport (NCC, 2012:3). However, reciprocally it should be noted that the immense out-of-town mall, the Metro Centre in Gateshead, although on train and bus routes, is (ironically) not accessible by the Metro system. Methods by which Newcastle residents access that amenity should also be taken into account in assessing the success of the city’s public transport system.

Local public transport and well-being

It is generally accepted that, in urban areas, walking and public transport are the predominant modes of transport for low income groups. The majority (65%) of the poorest fifth of people will not have access to a car, and yet the need to travel has increased considerably over the last 50 years as new developments have been organized around the car. This raises two issues, both of which have important equity implications. The first relates to transport policies and includes the availability, accessibility, safety and affordability of good quality public transport. The second relates to spatial planning issues and is about proximity to key locations such as, work, education, healthy food and healthcare (Social Exclusion Unit, 2003). There is also a third factor which, although it attracts less attention – is of direct relevance to the link between public transport and wellbeing: the quality of the passenger experience. This is a highly complex issue, composed of frequency of services (which seems to underlie perceptions of a ‘good’ or ‘bad’ service), their reliability and punctuality, the sense of comfort and security provided by the journey, and the cost of the fare. Not all of these are in the control of even the most conscientious operator – for example, punctuality largely depends on congestion levels within a city and what is being done to mitigate this. Rising fuel costs and more expensive (environmentally friendly) vehicles are

likely to lead to fare rises beyond inflation. A survey by MORI found that fear of other passengers discouraged people from using public transport after dark (UWE, 2008). While such anxieties can be reduced by measures such as bus-stop and vehicle CCTV and better staff levels, they may also partly reflect high levels of crime and public disorder in the locality.

With relatively low and decreasing public subsidy, public transport providers have a large raft of requirements to meet if they are to create a service that is popular and does not exclude particular vulnerable groups of users. These include older people and disabled people but also children and young adults, and people with infants in prams and push chairs. With regard to the latter, the Public Service Vehicle Regulations, which emanate from part V of the Disability Discrimination Act, require that all buses are accessible to disabled people by 2017. This basically means that the bus floor is capable of being lowered to admit passengers with lower mobility or using wheeled vehicles. A survey in 2002 found that 33% of disabled passengers found buses hard to use (DPTA, 2002), but this is likely to have been improved in the intervening years as companies have upgraded their fleets to comply with the new standards. There is also a benefit to the reliability of the bus service, as newer buses are introduced.

Public transport and environmental justice

As noted in the SDRN (2004:41) since the 1970s, there has been a growing body of evidence, especially from the US transport and environmental justice movement, on disadvantaged people's access to transport as well as examples of good practice. In the UK, the work of the Social Exclusion Unit (SEU) is noteworthy because it established the link between living in a poor community and a lack of transport options, including a lack of public transport and low car ownership.³⁹ A 2002 SEU publication reviewing both qualitative and quantitative studies, found that older people, younger people, ethnic minorities, women and lone parents were particularly affected by transport inequality.

People's difficulties in accessing transport are perceived as being a significant barrier to getting a job, if unemployed; to accessing medical care; to visiting supermarkets and friends and family (SEU, 2003); and to accessing green and blue spaces. In recent years, studies have focused on the impact of transport provision with the ability of particular vulnerable groups to take part in activities, including: the elderly (Paez *et al.*, 2010), those living on low incomes

(e.g. Lucas, Tyler, and Christodoulou, 2009), women (e.g. Turner and Grieco, 2000) and people with disabilities (e.g. Church and Marston, 2003). Beyond the role of public transport in assuring that people are able to participate in vital economic and personal networks, there is an argument that goes beyond this, in claiming that access to the main facilities and amenities of a city is the fundamental right of every citizen. The French sociologist Henri Lefebvre, argued this point in his seminal book, *The Right to the City* (1968). In part the right is that of every tax-payer to draw benefit from the monies invested by the city on their behalf. But in another sense, it is the citizen's right to the varied life opportunities of the urban experience – a notion that can be linked with Amartya Sen's concept of capabilities development as an aspect of justice, as explained in the introduction to this report. *The Right to the City* is about people's access to what is creative and fulfilling in urban life. The city and all its social, cultural and environmental amenities are seen as an asset which all citizens have a right to access for their capabilities development.

The impact of privatization

The 1985 Transport Act introduced privatisation and Bus De-regulation in the UK (excluding Northern Ireland and Greater London). For the first time since

the 1930s, competition on local bus services was introduced, with two kinds of bus service allowed – 'commercial' and 'subsidised'. Although the commercial

39 For a summary of SEU publications over its 13 years of existence, see http://webarchive.nationalarchives.gov.uk/+http://www.cabinetoffice.gov.uk/social_exclusion_task_force/publications.aspx.

operators receive a Bus Service Operating Grant (which aims to offset the cost of fuel duty) and must accept concessionary fares, they can operate their service on an entirely commercial basis and can change or withdraw any service (providing 56 days notice is given). While in the old system, profits from the more successful routes could be used to subsidise the less profitable ones, there is no obligation under the current system to cross-subsidise to keep low-use services in operation. Instead, gaps can be filled by local authorities with subsidised bus services (to do this councils are normally required to seek competitive tenders). In urban areas, these will be evening, morning and/or Sunday services on routes that are run on a commercial basis Monday to Saturday and in hours of business. This system has several diseconomies in that genuine competition is eroded over time, and where it does exist, is not necessarily in the customer's interest, diminishing complementary scheduling (TWITA/Nexus, 2009).

The difficulties of coordinating the different agencies involved in delivering transport and in getting them to be responsive to users' needs are exacerbated by a lack of formal accountability from governance bodies to make sure people can get to their key required destinations (SEU, 2003:40-45). These issues were supposed to be addressed and overcome by Local Transport Plans (LTPs), introduced in the Transport Act 2000, as well as in the

Accessibility Planning approach that is intended to characterize the LTPs. However, despite the existence of more than one generation of LTPs since their introduction, certain transport problems persist, suggesting that a more fundamental barrier may lie in the privatization of key public transport provision. Newcastle's Green Capital Bid (2012:12) notes that:

National competition legislation can mean providing citywide access by bus is difficult as individual operators offer cheaper fares on their own routes than the public sector can offer across different operators.

Distributional analysis has also been included in the policy for some standard procedures, such as Transport Appraisal and Health Impact Assessment. However, it is not clear how successfully such appraisals have taken into account environmental issues (SDRN, 2004:16). Some greater leverage for the local authority over the nature and quality of its bus services was introduced by the Local Transport Act 2008. This introduced the opportunity for transport authorities to adopt Quality Bus Schemes, which is a statutory and binding scheme whereby a company can access certain publicly provided facilities, such as bus shelters and bus lanes, in return for agreeing to provide a certain level of service. It also allowed the option of Quality Contract Schemes, where the transport authority can effectively franchise its services to companies.

Distribution and quality of public transport in Newcastle

With only 63% of the population having at least one car, levels of car ownership in Newcastle are lower than the England average (78%) and the average for urban areas (72% across England's Metropolitan districts) (NCC, 2012:12). As much as this suggests the need for investment in a good public transport system, it can also be seen as partly resulting from one. However, the latter suggests an element of choice in car ownership (people choose not to own a car because of good public transport), while it needs to be borne in mind that low car ownership may rather be an indication of high deprivation leading to lower mobility.

Part of the success of Newcastle's public transport system is due to the siting of its core amenities within the City Centre. For example, 78% of shoppers visiting the Eldon Square Mall - the largest city-centre mall in the UK - do so by public transport (NCC, 2012:3). However, reciprocally, as noted earlier, the immense out-of-town mall, the Metro Centre in Gateshead (once itself the largest in Europe), is accessible only by train and bus - there is no stop on the Metro system. The success of the city's public transport system is about how residents access edge and out-of-town facilities as well as those at their centre.

As noted in the previous subsection, the impact of public transport on social exclusion became a focus of policy and research in the early twenty-first century. 'Reducing Social Exclusion' has been one of the four defining objectives adopted by the Tyne and Wear Integrated

Transport Authority (TWITA/Nexus, 2009). Newcastle's Bus Strategy reflects this awareness:

The local bus network also needs to contribute to a reduction in social exclusion. For most individuals and households without access to a car, the bus is the main means of accessing employment and a range of other essential services and facilities. Maintaining and improving this necessary accessibility requires us to protect and develop the network of services currently available (TWITA/Nexus, 2009:19).

One indicator of success in this goal is that in 2009 some 80% of the city's bus fleet consisted of 'low-floor' vehicles and could be accessed by older and disabled people and people in wheelchairs. Although not all were fully compliant with the requirements of the Disability Discrimination Act, progress was said to be in line with meeting the requirements of the DDA for a 100% low floor compliant fleet ahead of the 2015 deadline (TWITA/Nexus, 2009:24).

Bus use in Tyne and Wear was on the decline up to 2006, coinciding with higher operating costs due to above inflation rises in fuel prices and salaries and congestion-related delays. These pressures resulted in fare increases of around 7.8% a year since 2002 (TWITA/Nexus, 2009:24), reflected in low (around 41% in 2008) levels of customer satisfaction with the cost of travel. Fare increases are nevertheless projected to continue in line with the particular

pressures on operating costs. However, around 2006, the long term decline began to turn around with the introduction of Free Concessionary Travel and paying passenger numbers also began to pick up in 2008 (TWITA/Nexus, 2009:21). This seems to have been just a brief anomaly in the trend, as bus use in Tyne and Wear was down again by 6% in the financial year from April 2011 – March 2012 (Interview, 2012). The reason for the recent decline was thought to be the economic downturn, with less people needing to travel to get to work (and possibly, being less inclined to go out if unemployed) (ibid.).

The investment by local authority, central government and Integrated Transport Authority in Tyne and Wear buses was estimated at £70 million in 2009 (TWITA/Nexus, 2009:20) of which £61 million was given to Bus Operators, including subsidies for concessionary fares and socially necessary services, while the remainder was invested in infrastructure, information and marketing. In 2010, central government funding for buses was cut by around £1 million, and bus service operators have continued to axe services deemed ‘unprofitable’ or ‘marginal’ in the city. The Accessible Bus Strategy, which aims to channel support towards ‘socially necessary services’, funds about 10% of bus routes but will be increasingly hard pressed to compensate for the effects of a shrinking grant pot. It would be helpful to know which routes have been subject to such service cuts and whether the disadvantaged neighbourhoods / wards in the city have been subject to disproportionate loss of service. According to the transport officer interviewed for this study, arterial

routes, those ‘on the way to somewhere’, are largely preserved, but it is the orbital routes, that connect peripheral areas of the city avoiding the city centre that are being lost. Such trips include the journey of a person with a medical condition or their carer from one of the city’s more deprived wards to one of the main city hospitals such as the Freeman in High Heaton. Such trips increasingly cannot be achieved without changing buses and extending the journey time (Interview, 2012).

This should be borne in mind when considering the environmental justice of the new Bus Network Design Project, which is making 99% of places in the city 400 metres or less from a 15 minute frequency daytime bus service to the main local centres, key employment sites and general hospitals. Although improvement is targeted on areas where accessibility is relatively poor, the city-link focus of this project ignores the problem highlighted above.

Another aspect of public transport quality besides the coverage of the area served and the number and frequency of services is their punctuality and reliability as well as the relative comfort of the journey, and the provision of waiting facilities and information, as mentioned above (TWITA/Nexus, 2009:84). These are measured in customer satisfaction surveys which indicate some improvement. On the downside, over a third of people surveyed felt unsafe waiting for a bus at night. While relatively few had experienced a crime, levels of vandalism to buses and bus shelters were high with 4,500 incidents in 2007/8. In spite of the continued problems in some areas, which have

included people throwing stones at bus windows, the city does not have any 'no-go' areas for bus services (unlike some other Metropolitan areas in England, for example Salford) (Interview, 2012). Relating to environmental justice for residents rather than transport customers, on routes coinciding with less affluent areas of the city, bus companies tend to run the older, more polluting buses in their fleet. The reason is said to be the lower profitability of the routes in these areas, meaning it has not been possible for the buses to upgrade to the Euro III-V standard buses with much lower emissions (Interview, 2012).

The third 10 year Local Transport Plan for Tyne and Wear was finalised in March 2011 (TWITA, 2011a). The Plan is implemented through three-year, rolling action plans. The aim is to increase access for all citizens through sustainable transport including public transport, walking and cycling. The council is dependent on external funding to further improve its transport networks, but its strategy is to aim for 80% of all trips under 5 miles to be undertaken using sustainable modes by 2021 (NCC, 2012:18). While this will meet the Council's sustainability objectives, it is not clear whether priority

will be given to increase the mobility of more disadvantaged groups with no access to car. Nexus, the city's public transport provider and coordinator, has embarked on an 11-year, £385 million Metro renovation programme which will refurbish the fleet of trains, modernise stations, introduce smart ticketing and overhaul infrastructure such as track and overhead power lines. It also aims to increase the size of the cycling and walking networks and increase the city's electric vehicle infrastructure and manufacturing base. Again, while this goes some way towards emission reduction, its benefit for lower income groups is less clear.

Perhaps the most promising direction for environmentally and socially just transport in Newcastle is the Tyne and Wear Integrated Transport Authority's proposal for a Quality Contract Scheme which, as explained above, if adopted, will put the Passenger Transport Executive organisation back in control over the quality and standards of the city's public transport offer. This is currently out to public consultation and whether to adopt it, or a rival voluntary scheme that TWITA has developed as an alternative, will be decided by the city council later in 2012 (TWITA, 2011b).

Data limitations

In spite of its name of public transport, and the continuing streams of central government and local government funding and administration, the companies operating public transport

services are essentially private businesses, which place restrictions on the data that can be gathered about quality of services and services cuts in different parts of the city.

Key messages

- Public transport has an important role to play in giving low income, disabled and young people access to their urban environment – for work, school and play.
- Public transport makes an important contribution to reducing emissions arising from personal mobility requirements.
- Public transport in Tyne and Wear is overseen by Nexus, a Passenger Transport Executive, which is one of six such bodies in English cities.
- Newcastle has a relatively good provision of public transport, including a ‘tube’ style light rail system, and has the highest level of bus use outside of London.
- Nevertheless after a brief surge at the beginning of the current downturn, bus use in Newcastle is again on the decline.
- There are two main environmental justice issues: quality of service, and distribution of service.
- In terms of distribution, while linking all areas of the city to the centre is prioritised by the administration authorities, cuts to bus subsidy in 2010 are said to have resulted in cuts in particular to orbital services, meaning, among other things, that non car users in peripheral areas may experience long and complex journeys to access some of the city’s hospitals.
- In terms of quality, older and more polluting buses are said to be deployed in the more peripheral areas, where the service generates less profit for the bus company (i.e. vehicle upgrades are less affordable).
- Data that might allow firmer conclusions to be drawn about the environmental and social justice of quality of services, and location of cuts is hard to access due to the fragmentation of the service between different providers, and the nature of the providers as commercial businesses.

6.5 Affordable warmth

The difficulty of achieving a balance between aspects of social and environmental justice is nowhere more in evidence than in policies directed at providing affordable levels of heat in the home, at the lowest possible cost to the environment. The social justice dimension arises through the fact that although low income households consume less energy, it accounts for a higher proportion of their overall expenditure. Current measures, such as the Warm Front campaign, have given out grants to help people improve the energy efficiency of their homes but also to be able to afford adequate levels of heating by reducing their energy bills. This may have the result of actually increasing people's energy consumption, where they were not able to afford adequate levels of heating prior to the adaptations. The forthcoming Green Deal, which is launched nationally in autumn 2012, and introduced in Newcastle in 2013, requires householders to borrow from the energy company to invest in energy efficiency measures against prospective future energy consumption savings. This may shift the balance away from social justice, given that poorer households may prefer to avoid the risk of the initial loan. In particular those in rented housing may be reluctant to take responsibility for borrowing to make improvements to their landlord's property against the promise that the loan will be recouped from savings on their energy bill. At the same time, the new Energy Company Obligation scheme, introduced alongside Green Deal, will fund insulation of difficult-to-insulate solid wall houses through a rise in prices that

will affect all customers. This may have an environmental justice benefit in a city such as Newcastle, where much of the housing stock (including a large proportion in the private rented sector) is pre-1929 and thus of the solid-wall type, but suggests less equitable outcomes for lower income consumers. This section will explore the two policy agendas side by side and the justice impacts in the city of Newcastle.

Energy efficiency. With regard to the energy efficiency agenda, the 2008 UK Climate Change Act is committed to reducing national emissions of CO₂ by 80% between 1990 and 2050; there is an interim goal of a 34% reduction by 2020, which is the end of the third carbon budget. According to the recent government Carbon Plan (HMG, 2011), "the UK is on track to meet its first three carbon budgets", reducing emissions to below their levels by 96, 132 and 87 million tonnes carbon dioxide equivalent (MtCO₂e) respectively, based on central forecasts" (p. 22). On 30 June 2011, the level of the fourth carbon budget for the years 2023–27 was set in law, committing the UK to reduce emissions to 50% below 1990 levels (ibid.). The level of the fourth carbon budget (1,950 MtCO₂e) assumes a split between emissions that will fall in the traded sector (690 MtCO₂e) and emissions that will fall in the non-traded sector (1,260 MtCO₂e). The traded sector is particularly relevant to the energy-intensive manufacturing sector in the North East. Although this has important justice implications at the regional level, addressing those concerns is beyond the scope of this report. Instead, we place our

emphasis on the non-traded sector and only one part of that sector which relates to domestic buildings.⁴⁰

In 2009, domestic buildings were responsible for 25% of the UK's emissions and just over 40% of its final energy use. Over three quarters of the energy used in homes is for space and hot water heating, most of which comes from gas-fired boilers. Lighting and appliances account for a smaller percentage of domestic energy demand. Emissions from these are expected to reduce due to decarbonisation of the electricity grid (HMG, 2011:29). Since 1990, there has been an approximately 9% reduction in emissions from buildings, partly due to government policies including Warm Front, the Energy Efficiency Commitment and the Carbon Emissions Reduction Target, which accelerated the deployment of cavity wall and loft insulation (*ibid.*:29-30), measures known as retrofitting of the existing stock. The government's vision is that, "by 2050, emissions from heating and powering our buildings will be virtually zero" (HMG, 2011:15).

Fuel poverty.

In England, adequate heating is defined as 21°C for the living room and 18°C for other occupied rooms. A household is deemed fuel poor if it would need to spend more than 10% of its income towards maintaining a satisfactory heating regime. It is deemed as being in extreme fuel poverty if more than 20% of household income would be required to maintain these levels of heating (DEFRA/

DTI, 2001). Low incomes, such as those relating to being in receipt of a pension and/or benefits, are a major factor in fuel poverty, but there are also links with an ageing housing infrastructure, connected with the prevalence of hard-to-insulate solid wall housing (most housing built prior to 1929 did not have cavity walls). The Warm Homes and Energy Efficiency Act (2000) requires the government to ensure that, as far as possible, people do not live in fuel poverty. In 2006, the DTI calculated that around 1.2 million households in England were fuel-poor (DTI, 2006:26). In spite of a policy goal formulated in 2001 of eradicating fuel poverty in vulnerable households by 2010, and in all households by 2016 (DEFRA/DTI, 2001), the figure has been found to have been rising since about 2004 due to the increasing cost of energy (Environment, Food and Rural Affairs Committee, 2009). The latter report noted that winter 2008/9 had seen 5 million UK households in fuel poverty.

There are a number of funding streams that aim to reduce fuel poverty, some of which are only available to those on low incomes, such as cold weather payments, and various funding streams to improve the energy efficiency of social housing. Others are universal, such as winter fuel payments. Somewhere between the two is the Warm Front initiative, which provides tenants in the private sector and owner occupiers with support to improve their home's energy efficiency. While for most of its history it has been available to people in broad age and vulnerability

40 This is in line with the Climate Change Committee's advice (on December, 2010) on how to achieve the fourth carbon budget, stressing "the need for greater energy efficiency, particularly from energy use in buildings; for greater electrification of both heat and transport; and for decarbonisation of the power sector" (HMG, 2011:23).

categories, it is now subject to stricter criteria, based on being in receipt of a means-tested benefit and with a home energy efficiency ('SAP') rating in the lower ranges.⁴¹

In spite of the different policy inputs to address the issue, the numbers of people in fuel poverty have continued to rise. In 2011, Professor John Hills of the LSE was commissioned by former Secretary of State Chris Huhne to carry out a nine month review into fuel poverty. He found various flaws with the current way of calculating fuel poverty, and in his final report, published in March 2012 notes that:

We have reached the clear conclusion that fuel poverty is a major social problem, causing considerable hardship and negative health

impacts, as well as impeding efforts to reduce carbon emissions. It is also widespread. Using the latest official data our recommended indicator shows that more than 7 million people were affected in England in 2009, living in nearly 3 million homes. (Hills, 2012:21).

Hills found that, due largely to the poor quality of their housing, the cost of home heating for poor households was around £1.1 billion higher than would be the case if their bills were at the level faced by typical households (generally living in larger homes and with bigger incomes) (Hills, 2011). His proposed new measure of fuel poverty is designed specifically to target the overlap between being in an energy-inefficient home and on a low income.

Energy Efficiency, Affordable Warmth and Wellbeing

Thermal comfort is an essential component of health and wellbeing. People at the extremes of the age scale, the elderly and the very young, are particularly affected by poor thermal comfort (Collins *et al.*, 1985). As with air pollution, people with prior health conditions are particularly vulnerable to the effects of underheating, including children with asthma (Free *et al.*, 2010), people with Chronic Pulmonary Obstructive Condition and other respiratory conditions (Rudge and Gilchrist, 2005; Osman *et al.*, 2008), and people already under stress (Hills, 2012). Due to daily and seasonal fluctuations,

there are a number of disparate approaches to the measurement of 'average' air temperature, meaning that critical review of existing research on the links between thermal comfort and health outcomes is problematic. To address this problem a recent large-scale study used people's perceptions of air temperature as a proxy. The WHO study of thermal comfort in eight European cities found that, after adjustment for age, gender, socio-economic status and smoking, there were significant correlations between self-reported health and perceptions of thermal discomfort (Ezratty *et al.*, 2009).

41 SAP means Standard Assessment Procedure and is the government's recommended system for measuring the energy rating of residential properties. To be eligible for Warm Front the SAP rating must be 55 or below. (www.direct.gov.uk)

Certain limitations to this study serve to highlight other important aspects of thermal comfort, for example, as reported in Ormandy and Ezratty (2012), several studies have indicated older people may not be as good at discriminating between different temperatures as younger people and may report feel comfortable

at temperatures outside a safe range. At the other end of the scale, the very young cannot report their perceptions and also have less physiological ability to self-regulate their body temperature. These findings underline the importance of assuring safe temperature ranges for these two age groups.

Energy efficiency, affordable warmth and environmental justice

For those on low incomes, energy efficiency initiatives that reduce energy wasted, by improving systems and housing and/or improving access to low cost energy sources such as renewables, mean that thermal comfort can be achieved at an affordable rate. At the same time, because such energy efficiency measures may increase the ability of people on low incomes to heat their homes to a comfortable temperature, they could ultimately have a positive impact on thermal comfort, while having a neutral or even negative impact on carbon emissions.

Outside of newer homes, which since 2006 have been built to comply with better energy efficiency regulations, improving energy efficiency and improving access to low cost energy sources is generally achieved through 'Retrofit'. This is a term that combines the words 'retroactive' and 'refit'. In the Oxford English Dictionary it is defined as to 'add (a component or

accessory) to something that did not have it when manufactured'. The term can be applied to a range of measures such as flood protection, ventilation and water-saving and energy efficiency. The latter includes measures such as: loft insulation, cavity wall insulation, double glazing, solid wall insulation, energy efficient lighting, combined heat and power biomass, biomass boilers, ground source heat pumps, wind turbines, hydro-electric power, anaerobic digesters, photovoltaic (PV) panels and solar thermal panels. In relation to retrofitting domestic buildings for renewable energy, one of the most popular approaches have been solar (direct heat) and photovoltaic (electricity-generating) panels,⁴² due to their simplicity of installation and maintenance. In relation to retrofitting homes for energy efficiency, the current approach focuses on double glazing, insulation of lofts and cavity walls.

42 The other main renewable approach is the 'Renewable Heat Incentive' launched in November 2011, through which, rather like the 'Feed-in Tariff' system, householders are paid a fixed amount for every kilowatt hour of heat they produce from renewable heating systems, such as solar (direct heating) panels, ground or air source heat pumps, or biomass boilers (http://www.decc.gov.uk/en/content/cms/meeting_energy/renewable_ener/incentive/incentive.aspx).

Retrofitting for renewable energy

Here a key question is who benefits from the 'feed-in' tariff, whereby those investing in PV panels⁴³ receive a set payment per unit of energy generated: those most in need of support with their fuel bills, or more privileged consumers? Three factors make the latter a more probable outcome. Firstly, for the current generation of PV panels, a large area of roof space is needed to collect enough energy to render the investment in the panels worthwhile (e.g. 15m² will generate 1800 kW per annum – Energy Saving Trust, 2011a). Logically, more roof space is likely to be available on the houses of people on higher incomes, while those on lower incomes would benefit most from reduction in their energy bill.

Secondly, households with higher income are more likely to be able to afford the upfront cost of installation than those with lower income. Thirdly, those in rented accommodation cannot demand such installations from their landlords due to 'split incentives' whereby the tenant will benefit from the reduced energy bill while the landlord will pay the cost of installation. Another related question is about the extent to which other energy company customers are subsidising these green initiatives through rises in their energy bills.

In March 2012 cuts in the feed-in tariff were implemented, and further cuts introduced in August of the same year (DECC, 2012). Furthermore, government grants for panels have now come to an end, giving adopters two options: they either can 'rent out' their roof space to the energy company, forfeit their feed-in tariff,

but nevertheless benefit from a proportion of their energy free of charge; or they can choose to make their own investment in the panels, on the basis of calculations that the feed-in tariff (currently in the region of 21p per unit of energy generated – Ofgem, 2012) will reimburse them for their investment over the lifetime of the system (feed-in tariff payments are index-linked and the first wave were guaranteed for 25 years – Energy Saving Trust, 2011a).

The Energy Company Obligation (ECO) and Green Deal that launch in the autumn of 2012, remove the need for upfront payment, apply to all types and housing tenures, and are specifically designed to include hard-to-insulate solid wall housing. Social housing providers are expected to be major beneficiaries of Green Deal, where the cost of the retrofit is deducted from the savings it produced in the energy bill each month (Energy Saving Trust, 2011b:4). The joint goals of the ECO are to reduce the UK's carbon emissions by around half a million tonnes of CO₂ per year, and to create a £3.4 billion reduction in lifetime heating costs for low income and vulnerable households (Energy Saving Trust, 2011b). The carbon reduction goal in ECO is specifically targeted at solid wall housing insulation, which would be too expensive to fund through the Green Deal system alone. Here, the energy company is obliged to make up the shortfall and such housing will receive a combined Green Deal and ECO funding package, to be presented 'seamlessly' to the householder by the

43 And from wind turbines, hydroelectricity, anaerobic digesters and Combined Heat and Power (www.energysavingtrust.org)

Green Deal provider. This should be particularly beneficial for Newcastle upon Tyne, which has a high proportion of older

housing of this type (see Table 6.7 below, which shows a projected 10,000 homes retrofitted in this way by 2020).

Retrofitting for energy efficiency

With regard to retrofitting homes for energy efficiency, the question arises as to what sections of society have the highest take-up rates, and why? Under the Energy Efficiency Commitment (EEC), which was in place until 2008, at least half of the energy efficiency savings were targeted at 'priority group' households - those in fuel poverty and with residents classed as vulnerable. This policy was replaced in 2008 by the Carbon Emissions Reduction Target (CERT), which placed the onus on the energy company rather than the customer to reduce emissions by targeted amounts. In his recent analysis of the various government initiatives to combat fuel poverty, Hills (2012) identifies how policy has focused on lower income and vulnerable households, and claims that homes for these groups are more energy efficient than those of other groups. At the same time, the initiatives have missed the

households with the highest emissions, which tend to have higher levels of energy consumption (Druckman and Jackson, 2008; Utley and Shorrocks, 2008).

A further dimension to be taken into consideration is that climate change mitigation measures are not always compatible with the requirements of climate change adaptation. Given past emissions levels, some temperature rise, due to global warming, is inevitable, even if dramatic emissions reductions were to be immediately put into effect. In this context, the higher summer temperatures predicted for the next 20 to 30 years (Solomon et al., 2007), coming in tandem with initiatives to insulate homes to the maximum, may mean a reduction in the ability of householders to maintain the homes at a comfortable temperature.

Distribution of domestic retrofitting measures in Newcastle

As noted in other sections of this report, historically Newcastle was at the forefront of fossil fuel exploitation and hosted the world's first coal export industry in the 16th century. It now aims to situate itself at the "at the cutting edge of the low carbon revolution" (NCC, 2012:3) using its legacy of technological and energy expertise. The city has also put considerable weight behind 'social marketing' initiatives to create awareness and behaviour change

in the population. In spite of these initiatives, Newcastle's emissions remain high compared to other English cities. In particular, emissions from gas use are above the England average. This is attributed to a number of factors including the city's northerly climate, compact urban form and ageing housing stock. The Met Office has reported that Newcastle has wider temperature variations than southern England and is on average 1-2

degrees colder (NCC, 2012:3). Some of the housing stock in Newcastle is of the solid-wall type, which is difficult and expensive to insulate. Equally, the older cavity wall housing is less energy efficient than its modern equivalent. An age profile of Newcastle’s housing stock in comparison to the England average is presented in Figure 6.15, below.

Another factor in Newcastle, as noted in the section on ‘Poor Housing Conditions’ is the relatively low proportion of the city’s stock that is owner-occupied (around 50%), and the correspondingly

high proportion that is in the private rented sector (22%) and the public or social housing sector (around 28%). Furthermore, much of the private rented housing was built pre-1929 and is thus harder to insulate. It can be particularly difficult for councils to have a significant impact on standards of thermal comfort in private rented housing, and there is often resistance from tenants to asking for council support to upgrade poor quality homes, fearing that they may be evicted, or that if improvements are carried out, their rents will rise (Interview, 2012a).

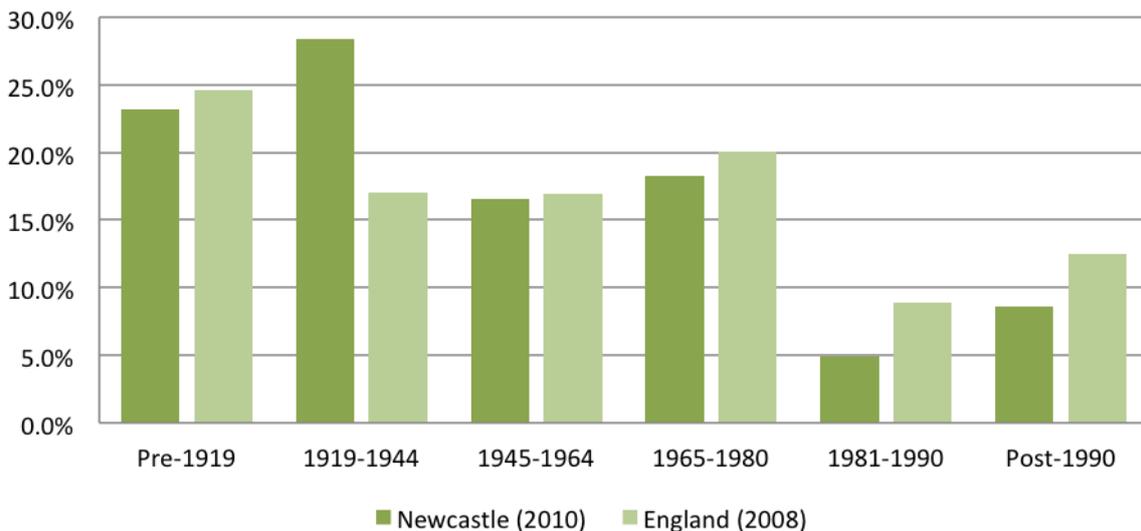


Figure 6.14: Age profile of Newcastle’s housing stock in 2010 compared with England average, 2008

Source: Adapted from NCC, 2011

This is the context in which the city council in partnership with the private sector has launched a programme of ‘retrofitting’ housing – that is, reconfiguring housing to improve its energy efficiency. In Newcastle, measures to reduce carbon emissions in domestic buildings go back to the Warm Zone Initiative⁴⁴ which has been operating in the city since 2004. In its initial years, the

programme’s emphasis was more on the social aspect of fuel poverty. In 2006, the city issued its own Energy Strategy and Action Plan and began to shift its attention towards emissions reduction, in line with UK climate change mitigation policy. The first Newcastle City Council Climate Change Strategy (2008) was mainly focused on reducing the Council’s carbon emissions. This was

44 Not to be confused with the more restricted government Warm Front programme.

followed by a city-wide Climate Change Strategy in 2010 which was supported by the Climate Change Partnership and accompanied by the Covenant of Mayors Sustainable Energy Action Plan.

Newcastle city has managed to reduce its per capita CO₂ by 16% between 2005 and 2009, significantly exceeding the 5.5% target for this period. It claims to be on course to achieve a 20% reduction on 2005 levels by 2020 (NCC, 2012:5). This reduction has been achieved through a combination of updating technology, retrofitting and social marketing to persuade behaviour change. Together, they have lowered gas and electricity consumption and emissions from the Council and public transport fleets while improving cycling and walking routes.

The 'Domestic Housing Workstream' is an important element of the city-wide Climate Change Strategy. The Strategy has identified that Newcastle's 122,000 domestic properties contribute 33% of the city's CO₂ emissions.⁴⁵ To reduce this, Newcastle Warm Zone partnership had, up to the end of the 2011-12 financial year, retrofitted over 40,000 homes and installed over 53,000 insulation measures. The scheme in Newcastle is not means-tested and offers an advice service "to every single household in the city, regardless of tenure or personal circumstances" (Interview, 2012b). The council estimates this to have saved over 31,000 tonnes of CO₂ per year. Part of Warm Zone's work has also been to support people in claiming benefits to increase their income (by reducing their energy bills) and lift them out of fuel poverty. In the period

between 2004 and the end of the 2011-12 tax year, the Strategy claims to have secured over £9.3 million in new benefits income for Newcastle households (NCC, 2010, figure updated in interview, 2012b). The scheme will however, only run for another year in the city, and the new Green Deal, which places the onus for energy efficiency adaptations on the energy consumer, will be introduced in 2013.

The city also operates a programme called 'Health through Warmth' in partnership with the Npower energy company and the Newcastle Primary Care Trust. This project, running since 2003 targets people with cold and damp related illnesses in the private sector (both owner-occupied and rented homes) mainly through service-provider referrals, but also through self-referral, with both advice and financial contributions towards improving their homes' energy efficiency. This has so far led to improvements to over 7,000 homes in the city and trained up 745 keyworkers to refer on to the service when they come into contact with a client with a cold-related illness (Interview, 2012b). Another initiative is the advice service offered by the main social housing provider in the city, Your Homes, which works in tandem with the council to support people to negotiate with their energy provider around aspects such as debt issues, payment problems, disconnections and faulty billing – more common than might be expected, with the complex charging structures used by many energy companies (Interview, 2012b).

45 In comparison, road transport is calculated to supply 25% of emissions in the city and Industry and commercial uses 42%. These figures exclude emissions from motorways, shipping, aviation and EU emissions trading schemes. They also exclude emissions incurred through materials consumed within the city but produced elsewhere (NCC, 2010, p.10).

The City Council continues to ‘green’ its own operations and staff behaviour, and is promoting ICT approaches to help people and businesses evaluate the impact of adaptations and visualize changes to their homes. The Newcastle Carbon Routemap Project has developed a database to improve building-level understanding of energy use and carbon emissions with the aim of evaluating future retrofit investment options (NCC, 2010). There are also ongoing plans to explore the likelihood of future changes to

energy supply and develop a programme to tackle their implications for the city (NCC, 2012:9). The pioneering nature of some of the city’s energy initiatives is explained in the ‘Green Jobs’ Section of this report. The existing interventions and planned future interventions for changing domestic energy use in the city are shown in Table 6.14 below. Particularly notable in the table is the plan to retrofit 10,000 solid wall homes by 2020, a new direction in retrofitting that will be enabled by the forthcoming Green Deal programme.

Table 6.7 Estimates for Domestic Energy Efficiency Measures in Newcastle – actual and projected

Source: Adapted from NCC, 2010, p12.

Intervention	2005-10	2005-2020
Photovoltaic Domestic	50 homes	3,000 homes
Solar Thermal Domestic	100 homes	5,000 homes
Wind Domestic	0 homes	100 homes
Biomass Boilers Domestic	50 homes	500 homes
Ground Source Heat Pump Domestic	10 homes	500 homes
Cavity Wall Insulation Domestic	17,000 homes	27,000 homes
Loft Insulation Domestic	26,000 homes	41,000 homes
Double Glazing Domestic	10,000 homes	20,000 homes
Solid Wall Insulation Domestic	20 homes	10,000 homes
Domestic Gas Use Reduction by Behavioural Change	5%	10%
Domestic Electricity Use Reduction by Behavioural Change	0%	10%

The new developments proposed in the draft Local Development Framework and the city’s projected rise in population are likely to raise its carbon footprint to some extent, although there is a commitment in the current draft Local Development Framework to make all new developments low carbon and to increase their usage of decentralised energy production such as renewables (Newcastle/Gateshead, 2011).

The changes in energy consumption in the city between 2001 and 2008 are shown in Table 6.8 below. While savings have been achieved in gas consumption, electricity has been more or less stable. The city-wide Climate Change Strategy explains that with regard to electricity consumption, savings achieved through energy efficiency measures have been counterbalanced by increased use of electricity by modern technology and consumer items.

Table 6.8: Domestic Gas and Electricity Use in Newcastle

Source: NCC, 2010:12

GWatt/ hours	2001	2002	2003	2004	2005	2006	2007	2008
Domestic Gas	2103	2122	2142	2164	2163	2069	1997.3	1992.1
Domestic electricity	-	-	490	494	491	485	476	454.2

The current data make it difficult to estimate the social justice impacts of retrofitting for domestic users in the city. While analysis of the 2008 data⁴⁶ shows that, in line with the national profile, the deprived riverside wards in Newcastle have a generally lower electricity and gas consumption (see Figure 6.15 and 6.16 below), it is unclear to what extent this reflects the impact of the Warm Zone and Health Through Warmth initiatives or simply reflects the lower consumption levels affordable to those on lower incomes in 2008.

However, a comparison of the fuel consumption maps with the map of homes with low SAP ratings (Figure 6.17)

suggests that a major factor in higher consumption is likely to be older, solid-wall housing, such as that found in the rural wards of in the city’s North West, and in a ring around the city centre area. Interviews (2012a and 2012b) for this study have suggested that social housing in the city is now largely energy-efficient. Most of the social housing (over 80%) is managed by Your Homes Newcastle which had raised 94% of its stock to the Decent Homes Standard by the end of the 2011/12 financial year. However, around 30% of the city’s private housing is pre-1929 or older and accounts for a proportion of the housing with poor thermal comfort shown in Figure 6.18.

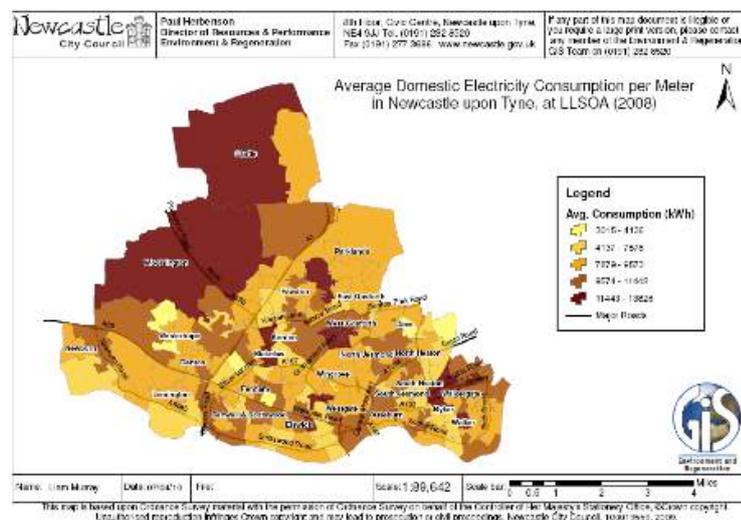


Figure 6.15: Domestic Electricity Consumption – average per meter in Kilowatt hours, 2008

Source: NCC, 2010:76

46 The last date for which national statistics are available at the time of writing.

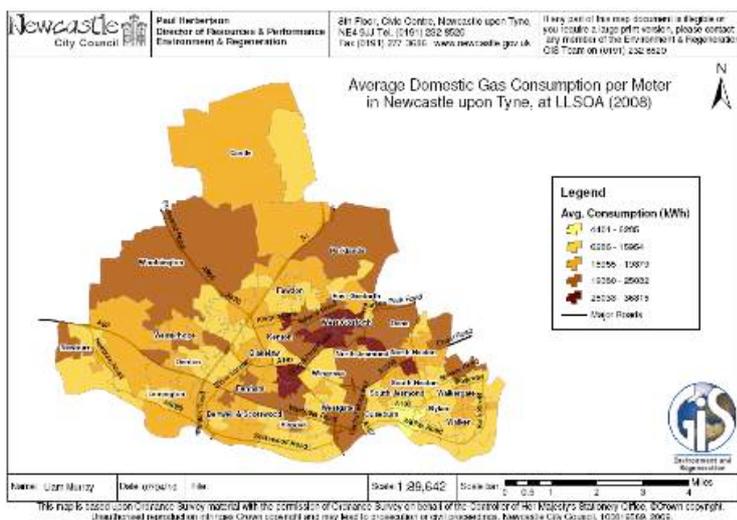


Figure 6.16: Domestic Gas Consumption - average per meter in Kilowatt hours, 2008

Source: NCC, 2010:24.

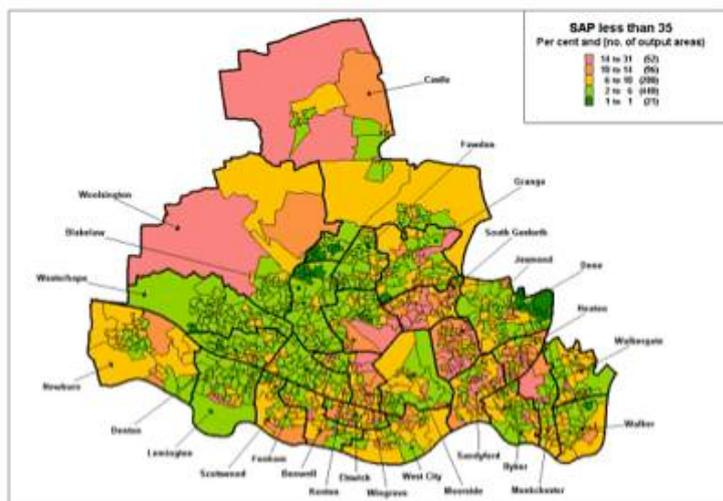


Figure 6.17: Private sector homes in Newcastle with SAP ratings lower than 35

Source: BRE, 2006:18

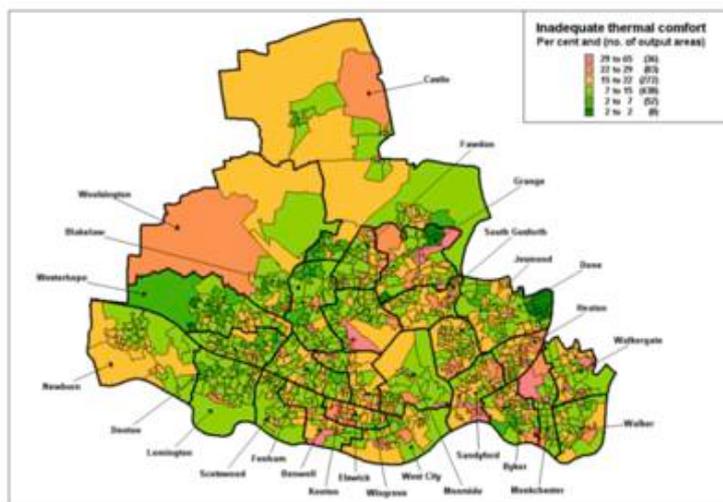


Figure 6.18: Private sector homes in Newcastle with inadequate thermal comfort

Source: BRE, 2006:16

Data limitations

To be confident about the distributive justice implications of retrofit in Newcastle, it would be necessary to have more data on which households have benefited from the fuel poverty reduction programmes, such as Newcastle's Warm Zone, so that these can be mapped onto Indices of Local Deprivation for the city. For conclusions to be drawn about the wider social and environmental justice implications of retrofit

in Newcastle, it would be necessary to have data on changes in energy consumption (GWatt/hour) for each household targeted with retrofitting measures. It might, for example be the case that given the smaller scale of retrofitting for PV panels and the northerly climate, the environmental impact is not large enough to justify the regressive social impacts of this intervention in benefiting wealthier households.

Key messages

- Newcastle, as a colder, northerly city with an ageing housing stock, has higher energy consumption for heating than other English cities.
- In the context of the high levels of deprivation in the city as described in the introduction to this report, this also entails high levels of fuel poverty.
- The city has several schemes that together support low income households in both the public and private sector with improving energy efficiency and affordability.
- The Warm Zone scheme, which has supplied government grants to meet, or partly-meet, the cost of energy efficiency adaptations since 2004, is now in its final year of running.
- With regard to renewables, apart from the initial wave of customers, whose feed-in tariff is guaranteed for 25 years, the value and duration of the feed-in tariff has been reduced in two stages in 2012.
- The new Green Deal and Energy Company Obligation initiatives, which will come into effect late in 2012 in England, and not until 2013 in Newcastle, are focused more on the characteristics of the

housing than those of the person.

- They will rely upon respectively, householders being prepared to take out loans for energy efficiency measures, and energy companies recouping their subsidy for solid wall property insulation from their customer base.
- This may be compromising to a social justice dimension of retrofitting measures, particularly in Newcastle, where the problems are mainly in the private sector (the vast majority of the social stock, managed by a housing association, has already been made energy efficient).
- Newcastle's large privately rented sector may be the area least likely to benefit from the new Green Deal programme, due to the tenant needing to take responsibility for a loan for improvements which will be made to the landlord's property. Although the tenant will recoup the cost through energy savings on their bill, they may be disincentivised by the fact that bills may nevertheless continue to go up due to projected energy price rises.
- This suggests the need to monitor the justice implications of the uptake of the new scheme in this sector.

6.6 'Green' jobs

'Green' jobs, or 'green-collar' occupations, are defined by the United Nations Environmental Programme as "work in agriculture, industry, services and administration that contributes to preserving or restoring the quality of the environment" (UNEP, 2008). They can be distinguished from 'green business' which means business run in a way that minimises environmental impacts, although there is clearly a connection between the two, through the numerous incentives for green employers to increase their own energy, resource and waste management efficiency. A great variety of 'green' jobs arise from the requirements on nations to reduce greenhouse gas emissions and other environmental problems that arise from industry, excess consumption, inefficient energy use and poor waste management. These range from the R&D domain (developing new, cleaner technologies) to production, installation, maintenance, advice and information. The setting of targets for environmental improvements in national policies has created an attendant need for monitoring and reporting outcomes.

Alongside this new stream of employment, older forms of industry have or are being rendered redundant, with the consequent potential loss of jobs and livelihoods – in the UK, this has affected the coalmining, ship building and high-polluting vehicle manufacture sectors. Green jobs are seen as a 'silver bullet', simultaneously solving a number of contemporary ills: reversing deindustrialisation, diversifying local economies, making up for the loss

of employment related to traditional industries and representing the opportunity for cleaner, less hazardous jobs and a more skilled workforce.

The rise in green jobs in the UK has largely been stimulated by its pioneering initiative to become a low carbon economy by reducing emissions to 34% of their 1990 levels by 2020, and by at least 80% by 2050, in line with its commitment in the Climate Change Act of 2008 (the first Act of its kind in Europe) (DECC, 2012). How this is to be achieved was laid out by the Low Carbon Transition Plan in 2009. The response has included developing strategies to reduce greenhouse gas emissions, in particular from the energy, built environment, transport and food sectors. Other areas representing opportunities for green jobs embraced by the UK climate change strategy are the long-recognised environmental issues of industrial pollution control, waste management, air/water quality, and flood defence.

The Low Carbon Industrial Policy (2009) gives details of how low carbon industry will be supported via initiatives and finance targeted to the following sectors: offshore wind; wave and tidal power; civil nuclear power; ultra low-carbon vehicles; renewable construction materials; renewable chemicals; and, low-carbon manufacturing. In 2006, Shell defined the business case for green jobs as follows:

A market in the UK could be worth over £30bn cumulatively over the next ten years. By 2010 the market will be double the current size. Concerted international action to avert climate

change could create a global market worth \$1 trillion in the first five years alone. (Shell Springboard, 2006, quoted in East Midlands CCP, 2009:25)

The former Prime Minister Gordon Brown looked further into the future to highlight the economic potential of green jobs in 2008:

“...by 2050 the overall added value of the low carbon energy sector could be as high as \$3 trillion per year worldwide and it could employ more than 25 million people. So, my goal is simple: I want

Britain to achieve a disproportionately large share of these new global jobs” (cited in East Midlands CCP, 2009:25).

In line with these goals, the UK government has created a number of Low Carbon Economic Areas (LCEA) in the UK, which focus on accelerating the growth of low-carbon industries and supply chains, thus increasing demand for low carbon skills. Each LCEA is designed to fit with the existing industrial and geographic assets of the area with the aim of increasing its global advantage.

Green Jobs and Wellbeing

The assumption that green jobs are necessarily decent ones, or that green industries are themselves non-polluting has been challenged. A 2008 report from the UN Environmental Programme, for example, finds that the processes used in many current recycling jobs are dirty and dangerous, producing damage to the environment and to human health. Pay is low and employment precarious in some sectors in both the developed and developing world:

Early adopters of green technologies and business practices among enterprises have to contend with pressures from financial markets for quick returns and with competing firms luring customers with low prices, albeit on the back of externalized environmental and social costs. (UNEP, 2008: 19).

From its global perspective, the report notes that the creation of green jobs thus needs to be accompanied by monitoring their effect on the labour market and to gender dimensions and the social inclusion of disadvantaged people and places. Attention should also be given to the greening of the workplace and the overall environmental contribution of the employer. Several authorities concur in concluding that it is likely that the boundaries between green, or low carbon, jobs and other jobs will become less and less distinct as more and more industries move to improve resource efficiency and waste management, and more workers get the appropriate relevant skills top-ups. In the current transitional period however, it still makes sense to talk about green jobs and the distributive justice issues associated with them.

Green jobs and justice

Green jobs are at the heart of the European strategy for sustainable growth and jobs, Europe 2020, which sets country-specific targets for improving rates of employment alongside reducing CO₂ emissions, improving energy efficiency and increasing the percentage of energy from renewables.⁴⁷ The area of green jobs is new, and the UK government does not yet

collect data on them at national or local level, although it is currently undergoing consultation about adopting the 'Eurostat' measure which collects such information for Europe. Green jobs give rise to both social and environmental justice implications. Some of the critical justice questions arising from the emergence of 'green jobs' are explored below.

Social justice aspects of green jobs

The following social justice aspects are raised by the growth in this new sector:

- Where are green jobs based? Are they in the same locations as more traditional forms of employment, or do they favour different kinds of area?
- Do they offer new opportunities to the former employees of older, less efficient or polluting industries? Or do they displace them, attracting a new, specially trained workforce from elsewhere in the country or from a younger demographic?
- Do green technologies generally increase the number of jobs or reduce them?
- Who gets the job? Do the skill demands for green jobs fit the skill supply of the existing unemployed population?

Numbers of jobs. In the UK, economic and regulatory drivers are supposed to produce jobs in wind, wave and tidal energy, carbon capture and storage, and ultra low carbon vehicles. In 2009, a consultancy commissioned by the UK government estimated that by 2015, 400,000 potential new jobs could be created if plans to reduce emissions were realised (Innovas,

2009). Some research in the US suggests that investment in renewable energy and energy efficiency produces up to four times as many jobs as investment in the oil industry (Pollin et al., 2009). A meta-review of fifteen studies in the US (Wei et al., 2010) which included renewable energy, energy efficiency, carbon capture and storage and nuclear power, found that all non-fossil fuel technologies create more jobs per unit of energy than coal and natural gas. A study from China, where there has been a massive and rapid transition from old-style industrial and domestic energy production to renewables, concludes that solar photovoltaic panels, biomass and wind all produce more employment than coal-fired energy units (Cai et al., 2011). Clearly these studies only address one dimension of green employment and there is a need for a detailed examination of the question across the various sectors, including waste management, education and services.

Jobs for whom? Problems in filling the new green jobs are considered more likely to be related to shortages in the STEM (Science, Technology, Engineering and Mathematics) type skills – which have

47 The EU 2020 targets are available from: http://epp.eurostat.ec.europa.eu/portal/page/portal/europe_2020_indicators/headline_indicators

been declining in popularity in secondary and tertiary education across Europe - rather than suggestive of the need for new 'green job' specific skills. For example, it is estimated that in 2008, 64,000 engineering jobs could not be filled in Germany due to such basic skills shortages, severely hindering the operation of the environmental sector in that country (CEDEFOP, 2010:8). Backing this up, a partnership of UK businesses, politicians and environmental groups, the Aldersgate Group, notes that most of the skills involved

in the new jobs are already available, and thus investment should be directed towards training that improves existing skills rather than creating new ones. For example, workers from the oil and gas and shipbuilding sectors already have skills in welding, surface treatment and outfitting that are much sought-after in the wind-turbine industry. The main conclusion to be drawn is that in most cases existing workers can be retrained, or upskilled, rather than having to draft in a whole new skilled personnel from elsewhere.

Environmental justice aspects of green jobs

The following are among the environmental questions that can be raised with regard to the new sector:

- To what extent, if any, do green industries introduce new sources of environmental injustice into their local environment?
- To what extent is the environmental injustice produced by green jobs displaced to developing countries (e.g. the recycling industry)?

Are green jobs clean jobs? While in developing countries, this may not be the case due to deficiencies in the institutional infrastructure assuring safe practices and worker protection, the levels of monitoring added to the growing awareness of advantages to be gained commercially through efficient use of resources and waste management make it highly likely that green jobs in the UK are on the whole, cleaner jobs. The hazards involved in the recycling industry may be more serious than those encountered in the traditional waste disposal industry, due to the requirement to process certain types of waste (e.g. green

waste) leading to greater exposure than would be involved in disposal. According to the UK Health and Safety executive, a high proportion of industry injuries are musculo-skeletal disorders, suggesting a problem with lifting training or procedures. The main hazards involved in recycling are listed on the Health and Safety Executive website, along with guidance about how to minimise them (e.g. HSE, 2007).

Do some green jobs produce environmental injustice elsewhere? There is mounting evidence that particularly in the waste management and recycling industries, environmental problems are often displaced to distant places, and people who have not benefited from the profits of the waste-producing activity are nevertheless exposed to its hazards. This is certainly the case with the recycling of toxic waste and of electronic waste, where several investigations have shown harm caused to host countries lacking the resources and knowledge to deal safely with its disposal (e.g. Wang *et al.*, 2011).

Distribution of green jobs in Newcastle

Developing the long association of the North East with energy supply and technologies, the (now withdrawn) Regional Spatial Strategy for the North East (2008) emphasised the role of the knowledge and Renewable Energy Sectors in the regional economy. The North East Regional Renewable Energy Strategy (March 2005) noted that onshore wind, followed by biomass, are the region's most significant energy resources. The Green Capital Bid (NCC, 2012a) stresses that the work of the Regional Development Agency over the last ten years has prepared the local economy to recover from deindustrialisation (and ensuing loss of population) through a skills and knowledge-based service economy: "Developing a low carbon economy building on our heritage of manufacturing and innovation is a key part of our economic vision for the future" (NCC, 2012a:93).

As no quantitative data is specifically collected on green jobs locally or nationally, the main source of information about green jobs in Newcastle upon Tyne is the Green Capital Bid (NCC, 2012a). This details the strategies, initiatives, businesses and educational institutions and programmes that have been set up with the aim of creating a green economy in Newcastle. These are outlined in turn below, giving some indication of what the new jobs are, where they will be located and who are likely to be the beneficiaries.

Strategies. The joint economic strategy with Gateshead, the 1PLAN (Newcastle/Gateshead, 2010), seeks to position the

cities at the forefront of developing a low carbon economy in a three-part action plan consisting of: growing low carbon business, sustainable urban planning and low carbon skills development. It notes existing assets of the cities which will be able to "attract workers and firms in the low carbon sector to the region" (ibid.). These include a clustering of relevant companies, large riverside sites, port facilities and skills as well as research skills in the two universities and the National Renewable Energy Centre.

Initiatives. The Local Enterprise Partnership's proposal to make Newcastle a Low Carbon Enterprise Zone was recently accepted, making this the only low carbon enterprise zone in the country specifically centred on renewables. The city was also recently awarded Accelerated Business Zone status, meaning the council can retain the business rates from enterprises in four key areas of the city, which will increase the revenues on which it can draw to invest in infrastructure to attract more business and employment. Many of the targeted employers are the so-called 'green industries' (NCC, 2012b). The key employment locations for investment and development in Newcastle (as identified in the Regional Spatial Strategy, 2008) were Newcastle Great Park, Newburn Riverside and the Baltic Business Quarter (GONE, 2008: 90).

Businesses. Low carbon business in Newcastle and Gateshead are listed as:

- Supply chain opportunities around electric vehicles and offshore wind turbines

- Maintenance and servicing
- Business services for the renewable energy sector
- Energy efficiency and retrofit opportunities
- Green services, for example energy saving consultancy
- Education, skills and training for new industries
- Low carbon opportunities derived from innovation within the Universities (ibid.).

As well as the renewable energy business, the city is aiming to focus in particular on electric vehicles and the manufacture of wind turbines. Furthermore, the location of a large projected offshore site for wind turbines on Dogger Bank, a site in a marine area in the North Sea to the east of the city, also presents future economic opportunities. Another company in the region is developing hydro-power technology. The city's Science Central sustainability research park is harnessing geothermal energy through a deep level borehole, on which drilling began in early 2011 and which hit a hot water source by the middle of that year. At the advice and service level, a raft of locally-based organisations advises industries on energy-efficiency, resource-efficiency and waste management.

Educational institutions and programmes.

At primary and secondary education level, the Enviroschools programme is delivering education on the environment to school children (636 sessions in 2010/11). At the further education level, in October 2011 Newcastle College launched a Renewable Energy Academy, believed to be the first of its kind in the UK. It is staffed with 10 lecturers able to support 150 students at a time, focusing on training, development and innovation for the renewable energy sector. At the level of higher education, Newcastle and Northumbria Universities have developed expertise in sustainability and climate change and respectively host the Tyndall Centre for Climate Change and the Sustainable Cities Research Institute. Newcastle University launched the Newcastle Institute for Research on Sustainability (NIReS) in 2010 and has 2,000 students per year enrolling on environmental and sustainable development courses, with funded research on sustainability bringing in £26.5 million in 2010/11. Outside of the city boundaries but notable as likely to enhance employment opportunities is the UK's National research centre for the grid integration of renewable energy systems and wind, wave and tidal energy generation technologies. The company Siemens Energy has also now sited its national low carbon skills training centre in the city.

Data limitations

It would support any conclusions on the environmental justice of so-called green-collar work in Newcastle if a broader definition of green jobs than that deployed in the city's Green Capital Bid (NCC, 2012a) were developed – including, for example, employment in NGOs focused on sustainable travel and good quality greenspace. Furthermore, to understand the justice implications of green jobs, it would be helpful if data were systematically collected on green jobs at a local level, pinpointing who is recruited for this kind of work, and where they come from, as well as the safety of the jobs and the local and distant environmental impacts of green

employers. To understand the social and environmental justice impacts of green jobs, better data needs to be collected on

- o The whole range of green employment in the private, public and voluntary sector
- o Who gets green jobs
- o What jobs, if any, are displaced by green employment
- o To what extent can the providers of green jobs be said to operate “green businesses”
- o Are there any local environmental impacts where people live, work and play from green employers?

Key messages

- Green jobs are increasing as countries commit themselves to reducing the past and present impacts of industry and energy generation.
- Much of the literature on green jobs focuses on major industrial sectors such as energy generation and waste management.
- However the concept of green jobs can be logically extended to include services, education and work in the public and voluntary sectors
- Although they may appear to provide a ‘silver bullet’ to many of the problems of deindustrialising counties, the potential of green industries to generate environmental injustice on a wider global scale cannot be discounted.
- Although data on green jobs is collected by some European countries, the UK

does not at present use this category, so there is as yet little accessible information on quantity and distribution.

- To be able to answer any questions about distributive justice and green jobs in the UK, or in Newcastle, more data is required.
- The main justice issues with green jobs are likely to be social ones, concerning where green employment is located in the city, and whether the existing workforce is reskilled to make it employable in the new roles; or displaced by skilled workers from elsewhere or younger age groups.
- The main environmental justice issues relating to green jobs are to what extent they coincide with green businesses, and to what extent they do not so much remove environmental harms as displace them elsewhere.

If you could change your local area, what would you do?

...uggestion of a road and ditto €... all.

Guide to the Build

...scenarios that will affect the planning and development of the town will appear on the screen... right. You should decide what features to add in response to these challenges.

Residence ratings



Photo by Irina Korneichuk

SECTION 7

PROCEDURAL JUSTICE, PARTICIPATION AND ACCESS TO INFORMATION

As mentioned in the introduction to this report, the pursuit of justice is central to the justification of political authority and political obligation. Indeed, within the normative democratic theory, justice as equality provides one way of justifying why democracy is a morally desirable method of decision making.

While distributive justice is about who gets what, procedural justice is about how the decisions are made and who gets involved. Procedural justice is concerned with making and implementing decisions according to fair processes; it is about the fair distribution of political power. Again while most people subscribe to this principle, there is much disagreement about what constitutes fairness. For some, fairness is about *equal* distribution of political power among the participants in a decision making process, while for others it is about *proportional* distribution of power based on the participants' stake in the outcome of decisions (Bell, 2012).

Dwelling on these philosophical debates is beyond the scope of this report but the guiding principle for advancing procedural justice is to ensure that those who are affected by a decision have the opportunity

and the capabilities to participate in making that decision. Encouraging and facilitating deliberative processes make a difference not only in instrumental terms, by leading to some form of consensus or a better outcome, but also in terms of their intrinsic value in enhancing democratic citizenship. For these to work, it is important that participants are treated and respected as equal citizens.

As regards environmental decision making a critical aspect of a meaningful participation is access to information, as highlighted in a number of national and international strategies and agreements. For example, one of the three strands of Principle 10 of the Rio Declaration (UNCED, 1992) is 'environmental democracy' which seeks to address inequalities of access to information, public participation in decision-making and access to justice in environmental matters. The UK is a founding partner of the Partnership for Principle 10, an international partnership open to governments, international organisations and civil society groups established at the World Summit on Sustainable Development (WSSD) in 2002, which aims to enhance and accelerate Principle 10 at the national level.

Furthermore, the international principles and standards of “environmental democracy” (access to information, public participation, and access to justice) set out in the UNECE (United Nations Economic Commission for Europe) Aarhus Convention have become embedded in the EU and UK systems of governance. The Convention states that,

Each party shall make appropriate practical and/or other provisions for the public to participate during the preparation of plans and programmes relating to the environment, within a transparent and fair framework, having provided the necessary information to the public. (UNECE, Aarhus Convention, 1998, Article 7)

Subsequent European Directives, such as Public Access to Environmental Information (EC, 2003a); Participation

in Environmental Decision Making (EC, 2003b); and the proposal on Access to Justice in Environmental Matters (EC 2003c) have strengthened the requirement for participation in environmental decision making. Similarly, the UK Sustainable Development Strategy (2005:140) confirms the significance of public participation in environmental and social justice stating that,

The Government seeks to promote human rights, democracy and good political, environmental and economic governance through its foreign policy. A key element of this agenda is to encourage civil society and broader public participation in decision-making; to promote freedom of information, including support for a free media; and to promote access to justice and the rule of law.

Barriers to participation

Since the seminal work of Sherry Arnstein’s ‘ladder of participation’ (1969), a large body of research and literature has focused on the critique of what often takes place in the name of participation. More specifically in relation to environmental issues, the UN Agenda 21⁴⁸ led to numerous studies focusing on how to enhance public participation and empower citizens to become involved in environmental decisions. A comprehensive review of that literature is beyond the scope of this study. Instead, we draw on the interviews which were

conducted for this study to briefly illustrate some of the challenges of engaging people in taking ownership of the quality of their neighbourhoods.

In a time of austerity the council is counting on Newcastle residents to take co-ownership of the city’s environmental problems and work in partnership towards achieving Decent Neighbourhood Standards (NCC, 2011). Towards this goal, in evolving both the Decent Neighbourhood Standards and the methods that will be used for monitoring them, there has been a considerable

48 Agenda 21 is an action plan and the outcome of the United Nations Conference on Environment and Development (UNCED) held in Rio de Janeiro, Brazil, in 1992. It is a comprehensive blueprint of action to be taken globally, nationally, and locally by organizations of the UN, governments, and major groups in relation to all environmental issues.

effort to engage with all sectors of the community, as far as is possible given the city-wide scale of the consultation and the resources available for it:

Wards did their individual consultations through our staff, we worked with key voices and partners, Wellbeing and Health Forum, BME groups, NCVS,⁴⁹ Elders Council, communities of interest and identity, the Children's Trust Board, the Children's Rights Team, the youth council, those dimensions, then you've got the granular ward stuff, then you've got the 'Lets Talk Newcastle' consultation programme, we put [the consultation] on there, people can respond online. (Interview, 2012a).

While the aspiration to gain greater citizen involvement in neighbourhood upkeep has a realistic basis in the city's strong existing neighbourhood governance through its Ward Committees, certain of the city's demographic and social characteristics suggest that this may be easier to achieve in some wards rather than others. Within the previous section have touched upon the greater than average transitory nature of the Newcastle

population, in terms high levels of students living in the residential areas around the city centre, as well as the new migrants to the UK settling in more deprived areas of the city. These less established residents may be harder to involve at the neighbourhood level. For example, one interviewee noted the difficulty of getting representative participation with regard to residents' committees, which generally attract established residents and owner occupiers, but find it difficult to include people in rented accommodation and students (Interview, 2012b).

Whereas the more confident and educated residents of the better-off wards in the city have no inhibitions about complaining, participation is lower in the deprived wards in terms of complaints. However, the same interviewee suggested that this could be attributed to resignation and fear of retaliation, rather than transience (*ibid.*, 2012).

These features of some neighbourhoods will need to be borne in mind when seeking to involve all neighbourhoods equally in achieving Decent Neighbourhood Standards in the city.

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