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Testing time for sustainability and health

The Spectrum approach for collaborative refinement and assessment of built environment projects, plans and policies.

Hugh Barton & Marcus Grant

Abstract

There is a widespread recognition that cities, towns and villages have become increasingly dependent on motorised transport and a car-based land use pattern. This has led to a series of unintended consequences – in particular lack of regular exercise, the decline of local communities and excessive greenhouse gas emissions – with huge long term impacts on health and well-being. Official policies are trying to change the trend, with much rhetoric about ‘sustainable development’ and ‘sustainable communities’. Yet many of the decision processes that control change in the built environment have not caught up with the new agenda. This paper is concerned with the way new development proposals are tested for their health and sustainability credentials.

It reviews the theory and practice in this field, with a particular focus on Environmental Impact Analysis and Health Impact Assessment. It identifies the relative strengths and weaknesses of these tools, examining the degree to which they are systematic in their approach to health and sustainability, and include all those who have a legitimate interest in the outcomes. Then a new technique – Spectrum appraisal – is presented. Spectrum is a logical and very practical process that facilitates consensus-building and creativity in decision-making. Practical applications show how the technique can be used to help ensure a healthier, more sustainable urban environment.

INTRODUCTION: HEALTH, SUSTAINABILITY AND PLANNING

Concerns over public health in industrial cities led to the birth of modern planning in the nineteenth century. But during the twentieth century the umbilical link was severed. Town planners, environmental health officers and public health professionals went off in different directions. Planners’ priorities in the last part of that century have been dominated by the Thatcherite philosophies of economic development and narrowly-interpreted environmental protection. Health and well-being have been sidelined. The result has been that we have built - and are still building - unhealthy conditions into our towns and cities.

Examples of this can be found in everybody’s common experience. Recent housing estates have often been designed around the cul-de-sac principle, which provides a small safe area but increases the distance people have to walk to get to local facilities. New employment opportunities frequently take the form of low density edge-of-town ‘business parks’ predicated on high car use, while new retail, hospital and leisure facilities are of increasing scale and based on ‘campus’ development. The longer distances and poor adaptation to public transport leads to increasing car reliance and an overall reduction in ‘active travel’ (i.e. walking or cycling to get to somewhere). As a result the level of physical exercise for some groups in the population is falling, exacerbating obesity and health inequalities. The loss of local facilities which is part of this pattern leads to a decline in the local networks of friendship and support which are
important for the mental well-being of many vulnerable groups (Barton, Grant and Guise, 2003). At the same time the increased dependence on fossil-fuelled motorisation is exacerbating the problem of climate change which poses the biggest health threat of all (WHO Healthy Cities 2006).

The government’s response in terms of planning legislation and guidance has, by international standards, been quite strong. It has included new explicit responsibilities on local authorities to promote ‘sustainable development’ and well-being; partnership requirements (especially between health and local authorities in the context of Community Strategies); a revised ‘spatial planning’ system plus a raft of planning policy statements.

Central to this official strategy has been the concept of ‘sustainable development’. The UN definition of this much abused term is very interesting: ‘development that meets the needs of the present while not compromising the ability of future generations to meet their own needs’ (Brundtland Commission 1987). In other words it is a definition not primarily about the environment, as often presumed, but about people. It puts human well-being at its heart. In this context it has been recognised for some time by the World Health Organization (WHO), that health is not a bit player but central to sustainability.

The co-incidence of health and sustainability objectives is very clear (Barton and Tsurou 2000). Human well-being, now and in the future, is the ‘touchstone’ of sustainability (Barton, Grant and Guise 2003). Barton and Grant’s recent article in JRSH articulated the relationship between settlements and health diagrammatically. Drawing on Whitehead and Dahlgren’s model of the main determinants of health (1991) the ‘health map for planners’ expresses the interplay between individual health, lifestyle and physical activity, social networks, economic opportunities, educational, shopping and leisure activities, the spaces available for those activities and the channels to reach them, the process of urban development, the local and global environmental assets, all in the context of a sustainable human habitat (Barton and Grant 2006).

In this situation you might have expected that decisions about future building and infrastructure whether projects, plans or polices – including those affecting housing, business and retail or transport schemes etc - would now be taken on the basis of thorough-going sustainability assessments, putting human health at the centre. However this is far from the case. Old habits die hard! This article focuses on the nature of the appraisal of such planning decisions. It is about how to achieve more effective sustainability appraisal so that the unhealthy aspects of the environment we have created can be progressively transformed.

**SUSTAINABILITY APPRAISAL**

Sustainability appraisal is undertaken in order to support decision-making about the options for, or the refinement of, a course of action – a development project, plan or policy. It is carried out in a variety of different commercial, planning and local political contexts, and as such it can have a variety of relationships to specific decision-making. It usually performs an advisory role, supporting a final decision taken in a more formal political arena (Tonn et al 2000). It may also inform commercial decision-making by land owners and investors. The careful handling of the process, explicitly or implicitly, can have consequences for the quality and ease of implementation of the actions following on from the appraisal (Tonn et al 2000).
While many practitioners talk about sustainability appraisal, and it is now obligatory in relation to plan-making in the UK (ODPM 2005), the reality is rather different. A recent review of international experience, undertaken by IIED, found few examples so far of truly integrative sustainability appraisals (IIED 2005). In the field of project appraisal, indeed, there is a plethora of different kinds of appraisal each responding to a different political or institutional need. Dominant among these – because of its statutory status and associated professional industry – is Environmental Impact Analysis (EIA). Also critically important, especially for developers and in the transport field, are financial assessments, including Cost Benefit Analysis (CBA). Other forms of appraisal have sprung up partly in reaction to sectoral responses to perceived deficiencies in these two or as a result of government initiative. These include Equality Impact Assessment, Social Impact Analysis, gender and disability appraisals, aesthetic design assessments, and Health Impact Analysis (HIA). Different agencies are responsible for or have a sectoral interest in these varied assessments. Sometimes the issues substantially overlap. There is a real problem in moving from this disaggregated situation to one that is integrated and holistic in relation to health and sustainable development.

Given the UN definition of sustainable development (above), we take it as axiomatic, that sustainability appraisal and health appraisal of projects, policies and plans should be the same process. On the one hand, the explicit health angle helps to give sharpness and precision to sustainability assessment, keeping people firmly at the centre. Whilst on the other hand, sustainability provides a sense of global connectedness and appropriate concern for future generations. The need for an integrated health and sustainability appraisal is clear. But while there are many specific instances of good and innovative practice, the generality of decision-making, and more specifically the EIA process, has fallen behind.

There are at least four reasons for this apparent slothfulness: obligations, values, the changed planning process, and skills. Taking each in turn, official requirements to assess sustainability have been strong on rhetoric but weak on legal obligations. Only very recently have the official guidelines for sustainability appraisal of plans been published in the UK, and the sustainability appraisal of projects is still a long way off. Without an unambiguous requirement the incentive to come to terms with difficult innovations is not there. Turning to values, the difficulty is apparent if we look at the competing professional value-systems and their related conceptual frameworks (Bentivegna 1997). The prevailing economic assessments, and impact assessments that rely on quantitative predictions of direct environmental effects, are at odds with the social assessments that are more about (for example) social cohesion and community empowerment. Building conceptual bridges between these takes time. Thirdly, the planning process: there has been a profound shift in the way planners think about their work. While in the 1960s and 70s the ideal process was seen as very systematic and carefully rational (Chapin 1963, McLoughlin 1968), this was replaced in the 80s and 90s by a much more pragmatic, market-oriented approach emphasizing the importance of communication and collaboration (Forester 1989, Healey 1992). The pragmatic, partial perspective encapsulated by Linblom’s phrase “muddling through” (1959), does not sit easily with requirement to take a holistic, comprehensive and systematic view. So perhaps there is an existential resistance on the part of some theorists and practitioners to develop the integrative, spatial planning skills needed to tackle health and sustainability appraisal.

However, it is not really a question of either/or. Any worthwhile tool for such appraisal faces quite a challenge. It needs to work with the grain of inclusive, communicative decision-making while also emphasising the careful holistic rationality that has a
chance of identifying workable strategies for sustainable development. This is a tough agenda.

Gibbons et al (1994) articulate the nature of the two forms of knowledge that need to be spliced. There is expertise, both scientific and professional, which relies on evidence and scientific argument. This is often specialist and narrowly defined. Gibbons et al refer to this as Mode 1 knowledge. It is often contained in research and consultancy reports, it is delivered at presentations and discussed in formal debates that have implicit ground rules. Other expertise, referred to as Mode 2, can be found widely distributed in networks that operate to a large extent in informal and semi-formal relationship. This knowledge is often generated in a locality or within a particular culture, it may embody common histories, it is often shared and discussed in informal situations and operates outside the refereed scientific discourse. Any tool for decision making must address the pluralist notion that knowledge needed for an appraisal of possible action will reside in both Mode 1 and Mode 2 spheres.

The important concept of an ‘evidence base’ relies on notions of knowledge creation. But who determines what constitutes evidence; and what sorts of knowledge are permissible? The creation and validation of knowledge is an increasingly contested area (Berger and Luckmann, 1971, Gibbons et al. 1994, Nowotny et al., 2001) and nowhere more so than in the field of health and sustainability (Brown et al. 2005). Much knowledge essential to a satisfactory outcome may reside in local communities. Traditional assessment methodologies are not known for their recognition and use of local and community knowledge.

Communicative planning theory does, in fact, offer some handles for achieving what we call inclusive rationality. Bentivegna sees systematic evaluation more as a political than a technical process, a kind of “negotiation game” or evolving argument, informed by technical studies but not limited by them. Evaluation, he says, plays a complex role, with three practical needs to be fulfilled (Bentivegna 1997): improving the quality and effectiveness of decisions; legitimizing decisions; providing an incentive and opportunity for participation. Exactly so.

**CURRENT APPROACHES**

Given the various agendas outlined above, we can derive a set of principles which any sustainability appraisal should try to fulfil:

- **Explicit about objectives** – treating them not only as derived from superior authority or convention but open to debate and scrutiny
- **Holistic in relation to sustainable development** – encompassing all the relevant aspects of environmental sustainability, health, social inclusion and economic vitality
- **Inclusive of stakeholders** – facilitating the involvement of varied public, private and community interests and inviting and valuing their contribution
- **Tapping expertise of all kinds** – local, cultural, political, market, specialist, generalist
- **Focussing attention on key issues**, including cumulative and interactive issues, through effective scoping processes, so that resources are allocated wisely and appropriate expertise is used
- **Collaborative learning** – enabling the progressive, mutual development of understanding and ideas
- **Rational, and as rigorous as context allows** – analysing problems / opportunities, developing options, testing systematically and honestly against criteria
• Creative process – that helps develop and test options and provides a positive incentive to the professional team and the project initiators to improve the scheme
• Building towards legitimised, well supported decisions, effective implementation and collaborative action in related fields by other organizations.

As we shall see, current practice in a variety of assessment contexts does not match up to these aspirations. Looking broadly across the available techniques, there are ordinal, reductive, weighting and directional, threshold and participatory systems. *Ordinal* is the most basic, essentially involving the simple ranking of alternative schemes in relation to any given goal, thereby avoiding the need for precise measurement but still giving clear messages to decision-makers. The most well-known *reductive* method is Cost-benefit analysis (CBA), where all criteria are expressed in common terms, i.e. financial, thus allowing systematic summation and comparisons to be made. *Weighting* systems also allow systematic summation and comparison, ascribing relative values to the criteria without using common units such as £s, and is particularly adapted to stakeholder involvement in deciding what is valued most. *Directional* systems are very widely used in plan and policy appraisal; they apply a “moving towards” or “moving away” or “not sure” judgement to the impact of each policy on each criteria (this may be expressed as a “traffic light” system). *Threshold* techniques assess schemes against critical levels of impact: for example statutory acceptable levels of air pollution or target accessibility distances to the nearest bus-stop. *Participatory* approaches, such as one form of Health Impact Assessment (HIA), involve stakeholders not merely as consultees but as partners in round-table appraisal.

Clearly the choice of method is dependent partly on context: the resources available, the main outcomes needed. The ordinal and directional approaches do not require analysis to measure impacts precisely, instead relying on “professional judgement”, and are thus relatively quick to undertake. They have a role to play particularly in plan appraisal. However, they risk superficiality and lack of transparency: analysis of many plan appraisals undertaken for or by local authorities suggests that they get lost in tick-box processes, and avoid the main issues.

Environmental Impact Assessment (EIA) itself may be defined as a threshold approach. It identifies impact levels which require mitigation, or which require a rethink of the entire scheme. That is fine, but in some ways the EIA process does seem trapped in something of a time-warp. In terms of public and stakeholder participation, the UK official requirements and practice is half-hearted at best (Glasson et al 2005). The scope of EIA is geared to the environmental agenda of the late 1980s rather than the sustainable development agenda of today. Importantly, in relation to unintended health impacts, many EIAs fail to examine indirect, cumulative or interactive impacts in any depth at all (Morris and Therival 1995). The systematic evidence-based approach which is supposed to be the strength of EIA also falls down when assessed against the need for a process to respond to a normative stance, such as helping the stakeholders develop towards a shared vision of the future. The rational planning process (McLoughlin 1968) stipulates that viable alternative schemes should be evaluated – but this rarely happens in EIA. Instead there is reliance on the evidence selected and expert judgement; options, if there are any, have often been carefully selected before any participatory process by client or technical group.

‘Scoping’ is a particularly problematic stage of EIA (scoping is the obligatory stage early in the process which involves identifying those issues which need to be assessed in any particular case). Despite studies showing that good scoping is a very valuable and cost-effective part of EIA, inclusive and effective scoping remains sporadic (Glasson 1995). Where scoping does occur it often seems to reflect a rather blinkered...
environmental agenda which does not recognise health or sustainable development priorities. In the ranking of major concerns in recent project scoping opinions and reports, as analysed by the IAU (2003) and reported in Glasson et al (2005), the central environmental concern of climate was rated by only 8% of Local Planning Authorities; energy was not identified at all as a key issue. “Human” impacts are also an official part of the EIA agenda; however social impacts are of major concern to only 13% of Local Planning Authorities. This apparently narrow perspective of public authorities, echoed by private consultancies involved in EIA work, does not bode well since these agencies are now poised to extend their interests to Strategic Environmental Assessment and Sustainability Appraisal. It emphasises the need for much wider, more inclusive, processes.

Certain projects trigger a statutory requirement for formal EIA. Below this EIA-requirement threshold, practice is very diverse. Blum and Grant (2005) document the characteristics of 32 assessment tools for development in the built environment in use across Europe. For example, a commonly used evaluation technique is BREEAM – the Building Research Establishment Environmental Assessment Method. As the name implies it does not claim to be a comprehensive sustainability appraisal tool, but has nevertheless been progressively extended to encompass a fair range of sustainability criteria, without any explicit recognition of health impacts as an issue. It relies on a fixed weighting system to reach a conclusion.

Cost benefit analysis (CBA), like EIA, is an ‘expert’ process. Monetary valuation techniques are being applied to an increasing range of environmental and social as well as economic concerns. There is on-going debate about the applicability of economic values to social and environmental ‘capital’ (Deakin 1997). Placing a contingent valuation on factors like biodiversity, aesthetic quality or carbon emissions is a highly artificial process. To some stakeholders the results can seem arbitrary. The broad agenda of sustainable development is ill-served by such attempts which reduce everything to one common denominator and close down stakeholder debate. The real diversity of views is effectively denied.

By contrast another appraisal tool – Health Impact Assessment (HIA) – often expressly encourages the involvement of stakeholders in reaching qualitative judgements. According to McCarthy (2005) there are two forms of HIA: the quantitative/expert mode and the qualitative/participatory mode. Participatory HIA “gives prominence to stakeholder views, valuing the process as well as the product”, whereas in expert mode HIA relies on a science perspective. The WHO advocates a combination of the two, both for rapid and comprehensive appraisals. Where a comprehensive appraisal is undertaken, with new base-line surveys and comprehensive comparative studies to establish a sound basis for forecasting, WHO considers full involvement of stakeholders to be essential, to give the necessary breadth of insight and credibility to the results. Where a rapid appraisal is done, relying on evidence and knowledge already available, then WHO recommends a half-day stakeholder workshop designed to draw out the insights of those involved (WHO 2005). The rapid appraisal can act as a scoping exercise for a subsequent comprehensive appraisal. HIA does have the capacity, therefore, to encompass both the scientific and the participatory processes. Its main limitations are (i) its isolation from the statutory processes, hence a relative lack of local authority familiarity or use; (ii) sometimes a lack of integration with planning and design expertise; (iii) a lack of connectivity to ‘global’ sustainability – some aspects of which pose the greatest threat to health.

The relationship between these different techniques can be problematic. Essentially they have different starting points: EIA and BREEAM with an environmental agenda,
CBA and derivatives with an economic agenda, HIA (and others such as social impact analysis, access and gender audits) with a social agenda.

The question here is to what extent these techniques satisfy the principles identified earlier and provide a useful model for project appraisal generally.

<table>
<thead>
<tr>
<th>PRINCIPLES</th>
<th>EIA</th>
<th>BREEAM</th>
<th>CBA</th>
<th>HIA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Objectives open to debate</td>
<td>Partially</td>
<td>No</td>
<td>Very limited</td>
<td>Yes</td>
</tr>
<tr>
<td>Holistic in relation to sustainable development</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Inclusive of stakeholders</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>It can be</td>
</tr>
<tr>
<td>Tapping all kinds of expertise</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Effective scoping</td>
<td>Yes</td>
<td>Scope fixed</td>
<td>Can be</td>
<td>Yes - ‘rapid’ appraisal</td>
</tr>
<tr>
<td>Collaborative learning</td>
<td>Some opportunity</td>
<td>limited</td>
<td>No</td>
<td>Some opportunity</td>
</tr>
<tr>
<td>Rational and as rigorous as possible</td>
<td>Yes, partially - often lacking options</td>
<td>Yes, within set limits</td>
<td>Yes - within a reductionist stance</td>
<td>Yes, but short on evidence</td>
</tr>
<tr>
<td>Providing an incentive to creativity</td>
<td>Within strict limits</td>
<td>Within strict limits</td>
<td>Limited</td>
<td>Limited at present</td>
</tr>
<tr>
<td>Assisting collaborative implementation</td>
<td>To a limited extent</td>
<td>No</td>
<td>No</td>
<td>Limited</td>
</tr>
</tbody>
</table>

Figure 1: Table of the principles for health and sustainability assessment and some common assessment techniques

Government is now encouraging the development of integrated appraisals that embrace all three components of sustainable development (economic, environmental, social), and also take on board the need to involve stakeholders and build cross-sectoral understanding and partnerships (Eales et al 2005, Barton, Grant and Guise 2003). The Spectrum approach presents one way of doing this.

**THE SPECTRUM APPROACH**

Spectrum is a sustainability and health appraisal technique devised by the authors, Barton and Grant of the WHO Collaborating Centre for Healthy Cities, Bristol. This is one of only two WHO Collaborating Centres based in a university Built Environment faculty, hence the work focuses on the how the planning, design and development of settlements affects health outcomes. Spectrum provides a tool for improving the quality
of proposed development projects (e.g. a new estate or road scheme) or policies (e.g. a local authority housing strategy) or plans (e.g. a strategic spatial framework for a territory). It counters the deficiencies evident in most existing tools through rebalancing the relationships between community derived knowledge and technically derived knowledge, that is between professional analysts and specific public / private sector interests and community stakeholders, including the current residents or users. Moreover, Spectrum provides a powerful tool to frame and facilitate a creative assessment process in which all participants can contribute to a ‘better’ project, policy or plan. Its main aims are

- to encourage a comprehensive approach to health and sustainability
- to facilitate effective stakeholder involvement in appraisal
- to encourage mutual learning and trigger new ideas/options
- to focus attention on key issues or areas of uncertainty where more design work/investigation/appraisal is needed (‘scoping’)
- to enable an overview to be taken of the merits of a proposed project, policy or plan.

\textit{Spectrum} is expressly designed to recognise both the integrated agendas of health and sustainable development and the need for an inclusive communicative process. ‘Spectrum’ as a name has been chosen as it reflects three key features of the technique: the whole gamut of sustainable development and health criteria; the involvement of diverse stakeholders, often with contrasting views; and the use of the colour spectrum as a means of presentation.

The origins of the approach stem from work done in preparation for the publication of \textit{Sustainable Settlements: a guide for planners, designers and developers} (Barton, Davis and Guise 1995). This early version was a form of environmental capacity assessment. It was a reaction to the prevailing techniques of the time which took a narrow view of the environment (for example excluding the global climate), and saw the environment in terms of being a constraint on development rather than an asset to be valued (Barton 1995).

Subsequently the technique was adapted for use for the Environment Agency (EA) under the heading \textit{Sustainability Threshold Assessment: an approach to inform decision-making} (Carroll et al 2002). It was seen as a way of linking together the variety of spatial factors the EA is responsible for in a consistent way, and presenting them to local authorities for local planning. The form presented here under the title \textit{Spectrum} is a further development of the technique, with additional features: first, the agenda has been adapted to include social, health and economic criteria; second, the distinctive colour coding of impacts has been introduced; third, and most significantly, the process of stakeholder involvement has been refined and codified. Spectrum has now been used in two major project appraisals in South West England, the review of housing policy for a Welsh authority as well as in a wide range of student projects. In application, the usefulness and acceptability of the tool has been demonstrated.

\textbf{Spectrum in practice}

For purposes of the paper, the authors will focus on one use of the tool: The Houndwood project. The project was driven by a housing proposal for the 12ha Houndwood site in Street, Somerset. The land owner and project initiator was Clarks, the shoe company, the site being a former warehousing and factory site. Clarks saw Spectrum Appraisal as a cornerstone of public involvement in the proposals, promoting a supporting space for dialogue where all stakeholders could air their concerns, be heard and come to agreements on ways forward. In such a project the term
stakeholders does not equate with the term users – as it might in health service delivery. In terms of health and sustainability for a project proposal the stakeholders were taken to be the designers, the developer, the surrounding communities and civic partners who represented broad or sectoral interests in the outcome such as the parish council, local education interests, the police, nature conservation, planning and transport authorities. The site was significant in the context of the town of Street and the proposal was for about 400 homes. As such, although not triggering a formal EIA, the local planners took a keen interest in supporting a participatory approach and in ‘getting this development right’. They were important members of the stakeholder group formed and signed up with everyone else to the three meetings required. The appraisal follows a six stage format, as outlined in figure 2. The case study is presented below following the same format.

<table>
<thead>
<tr>
<th>Stage</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Decision to use Spectrum</td>
</tr>
<tr>
<td>2</td>
<td>Participatory criteria setting</td>
</tr>
<tr>
<td>3</td>
<td>Baseline assessment</td>
</tr>
<tr>
<td>4</td>
<td>Drafting proposals</td>
</tr>
<tr>
<td>5</td>
<td>Assessment of re-drafted proposal</td>
</tr>
<tr>
<td>6</td>
<td>Final report</td>
</tr>
</tbody>
</table>

**1. The decision to use Spectrum**

Clarks appointed the WHO Collaborating Centre at Bristol to work with their planning and design consultants to lead the appraisal using Spectrum. As investors and landowners, they wanted a process that would go beyond mere consultation and actively encourage participation of interested parties in their proposals. Clarks wanted a development that would support the local community whilst also displaying an exemplary commitment to the environment. They wanted a process that could achieve an excellent outcome whilst increasing ‘buy-in’ and ‘ownership’ by local people and satisfying the planning authority’s demand for local consultation.

The essence of Spectrum is that it is a whole process tool. It could (like other evaluation techniques) be just applied as a final assessment, but that would be to miss out on its potential as a bridge-builder between competing interests and a creative spur to the professionals involved. Spectrum may be handled in-house or by external advisors, but the basic requirement is that the facilitators of the process must be perceived by the various stakeholders as independent.

**2. Participatory criteria setting**

The first task is to agree health and sustainability criteria representing the whole range of social, economic and environmental issues for the development. This is the key agenda-setting stage. Getting the membership of the stakeholder group right is crucial. It should include influential representatives of all the critical public, private and voluntary/community sector interests. It is then the job of the facilitators to devise a carefully tailored list of distinctive criteria that can be subsequently modified by debate and agreed by all. In some ways this is the most important stage of the whole process. The different perspectives need to be properly reflected in the list of criteria so that

![Figure 2: The six stages of Spectrum appraisal](image-url)
each part can see clearly where their interest is registered. At the same time they are obliged to recognise the other values and interests and, eventually, accept them.

**Twelve Key Health Objectives for Planners (adapted from Barton and Tsourou 2000)**

<table>
<thead>
<tr>
<th></th>
<th>Health Objective</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Climate stability</td>
</tr>
<tr>
<td>2</td>
<td>Non-polluted soil and local fresh food</td>
</tr>
<tr>
<td>3</td>
<td>Water quality and sanitation</td>
</tr>
<tr>
<td>4</td>
<td>Housing access and quality</td>
</tr>
<tr>
<td>5</td>
<td>Accessibility to local facilities</td>
</tr>
<tr>
<td>6</td>
<td>Equity and social inclusion</td>
</tr>
<tr>
<td>7</td>
<td>Social networks and cohesion</td>
</tr>
<tr>
<td>8</td>
<td>Air quality and freedom from noise</td>
</tr>
<tr>
<td>9</td>
<td>A safe, secure and attractive environment</td>
</tr>
<tr>
<td>10</td>
<td>Opportunities for physical exercise</td>
</tr>
<tr>
<td>11</td>
<td>Local employment opportunities</td>
</tr>
<tr>
<td>12</td>
<td>Community engagement</td>
</tr>
</tbody>
</table>

**Houndwood site criteria**

**GLOBAL ECOLOGY**

1. Carbon emissions in buildings
2. Carbon emissions by transport

**NATURAL CAPITAL**

3. Wildlife habitats
4. Land and food.
5. Water.
6. Construction materials
7. Materials in use

**SOCIAL PROVISION**

8. Housing stock
9. Housing affordability
10. Social facilities
11. Open space

**ACCESS AND MOVEMENT**

12. Accessibility
13. Pedestrian/cycling routes

**LOCAL ENVIRONMENT**

15. Air quality and noise
16. Local heritage/values
17. Safety and privacy
18. Quality of the public realm

**ECONOMIC CAPITAL**

19. Project viability
20. Local job creation

**PROCESSES**

21. Stakeholder involvement
22. On-going management

Figure 3. Comparison tables, the 12 Health Objectives and the 22 Houndwood site criteria (All 12 health objectives are embedded in the Houndwood site criteria, the authors leave it to the reader to map the links.)

The twelve health objectives for planners were identified by the WHO Healthy Cities project (Barton and Tsourou 2000). The health objectives were translated into a list of project criteria relevant to the nature of the proposal (housing) in this location.

3 **Baseline assessment**

This is the assessment of the current state of the site and its context, ideally a facilitated workshop. The object is to identify current problems, areas of uncertainty, positive attributes and grade their significance, employing the agreed list of criteria as the agenda. Evidence and experience from participants who have specific knowledge or expertise will influence (but not always determine) the judgements reached. The five grades (across the rainbow) do not represent some arbitrary scoring system but are tied into subsequent action. Each of the 22 criteria is examined in turn. The Houndwood meeting was set in the evening to allow widest attendance and took about 3 hours.
<table>
<thead>
<tr>
<th>GRADE</th>
<th>DEFINITION</th>
<th>SAMPLE CRITERIA AND THRESHOLDS</th>
<th>Financial viability</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Quality of land &amp; soil</td>
<td>Pedestrian accessibility</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Grade 1 soils/long-term 'organic' soil</td>
<td>Local facilities within a five minute walk for 100% of the population</td>
</tr>
<tr>
<td>Blue</td>
<td>Critical capital</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sound soil conditions</td>
<td>Local facilities within a ten minute walk for 100% of the population</td>
</tr>
<tr>
<td>Green</td>
<td>Current state satisfactory</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Possible issue: needs investigative</td>
<td>Possible slight contamination</td>
<td>Local facilities within a ten minute walk depending on design</td>
</tr>
<tr>
<td>Yellow</td>
<td>Difficult situation – needs resolving</td>
<td>Heavy contamination</td>
<td>Facilities within a ten minute walk only if new facilities are provided</td>
</tr>
<tr>
<td>Orange</td>
<td>Im possible – irresolvable at present</td>
<td>Unstable land liable to slip</td>
<td>Facilities not accessible on foot</td>
</tr>
</tbody>
</table>

Figure 4: baseline assessment of a potential development site against Spectrum grades

4 Drafting proposals and capacity building
The design team and their clients are now in a position to respond creatively to the views and concerns that have been expressed during the workshops. Technical studies may be undertaken to reduce uncertainties – these could form part of an eventual environmental statement if that is required. Problematic aspects of any initial design concepts can be explored and better solutions found. Stakeholders can be consulted or involved as appropriate, with a better level of awareness of the whole picture. In the Houndwood project this period of some months was also used for a series of study visits. The design team together with stakeholders made two day visits encompassing a number of schemes that have been held up as regional or national best practise. As well as allowing for networking and development of trust, this raised the capacity for good design among the design team, raised the expectations and awareness of the client and enhanced the critical capacity of the stakeholders.

5 Assessment of the re-drafted proposal
This is the nub of the process. External stakeholders and the design team reconvened for a facilitated workshop, aimed at reaching agreement on the strengths and weaknesses of the proposal. Each criterion was again examined in turn, and evidence taken from participants who had particular knowledge. Conclusions were
reached (or not, as the case may be) about the grading of the scheme against the five-fold spectrum. This workshop is comparable to the half-day stakeholder event advocated for participatory HIA (see WHO 2005).

The grading at this stage needs to be carefully handled. The intention is to be very clear what the implications of the grading judgements are; and then to apply rigorous sustainability criteria. So at the top, blue indicates full achievement of sustainability in that aspect, without compromise or trade-offs. Green indicates a current good practice level, equivalent to “best practicable option”. Yellow indicates there is still work to do to achieve a good level, but it is possible to see how that could be done – i.e. related to variables that are within the means and the power of the developer. Orange implies something altogether more awkward, often in a situation where the whole orientation of the scheme needs a rethink, or where success depends on the co-operation of a third party in a related, but independent decision area. Red indicates that there is a fundamental and insoluble problem. The stakeholder assessment of options or draft proposals thus produces clear signposts for action, prioritising aspects which need further work or negotiation.

6 Final report
The outcome at Houndwood was an agreed masterplan and development brief that received outline planning permission and would then determine many of the sustainability parameters to which sub-plot developers and builders would need to adhere. The final report reviewed any technical material or studies done for the project against the agenda of the agreed list of criteria, and summarized the views expressed in the stakeholder workshop, before the authors also make a their own rounded judgement about the proposal, recognising the degree of improvement achieved since baseline assessment. The final report documents the grading and the rationale behind the grading.

Reflections on the case study
The Spectrum approach encouraged a consensual approach and the development of options for mutual benefit. The critical attribute of the Spectrum approach that allows this mutuality is the absence of weighting. Each criterion (or objective) is valued for itself. It is not a matter of declaring "my objective is more important than yours". That way lies contention and division.

The strength of the technique in practice lies in the way it is able to frame and signpost the developing agenda and hold the participants to a shared goal of achieving the best possible outcome across all the criteria. Of course there was dissention at Houndwood and hotly fought argument. But the emphasis within the grading workshops was to optimise the outcome of a criteria and then move on to optimise the next one – the absence of a focus on trade-offs enabled everyone to contribute suggestions for improving the scheme without having to use each suggestion as a negation stance in a bargaining game. With any sub-optimal grades, questions were asked of all participants of how a better outcome could be achieved. The answers offered then provided the design team with the raw material for an improved design. Complex issues of synergy and interaction were raised and explored in a way that was creative and innovative.

Confidence in success in the outcome of this appraisal can partly be gauged by the fact that all parties – planning authority, public, the developer and the expert WHO team were satisfied with the outcome. The draft proposals were all considerably improved in social, environmental and economic terms - the ‘triple bottom-line’ of
sustainability. The final Houndwood proposal is now, at the time of writing being presented to the planning authority.

CONCLUSIONS

In recent years there have been two major shifts in planning thinking that are creating new opportunities for incorporating health in planning decisions. The first is the widespread and growing support for the principle of sustainable development, driven in part by the threat of climate change, but also by other issues such as the obesity ‘epidemic’. In this holistic view development is considered wise only if it fulfils economic, socio-health and environmental priorities at the same time, both for current generations and safeguarding the interests of future generations. The determinants of human health provide one very useful and comprehensive perspective on sustainable development, as shown by the WHO book on ‘Healthy Urban Planning’ (Barton and Tsourou 2000). In this situation it is incumbent on health agencies to get actively involved in evaluating development decisions.

The problem is that the nature of planning decision-making does not necessarily make it easy to become involved. The processes of plan and project appraisal are shaped by complex legal and administrative requirements. The second major shift in thinking relates to the nature of this process. Planning theory has increasingly emphasized the critical importance in a pluralistic society of inter-agency communication, and the participation of public, private, voluntary and community sectors in planning decisions. In the UK, the obligation to form Local Strategic Partnerships and the new requirements of ‘spatial planning’ reflect this shift, and create opportunity for health and other interests to engage. However, some of the key decision-making tools at project level are not encouraging. EIA, in particular, seems trapped in outmoded assumptions: it neither takes a holistic view of the environment nor does it facilitate effective participation by stakeholders.

A careful review of the literature around the sustainability appraisal, recognizing both of the shifts in thinking, suggests some specific principles by which we might judge EIA and the other tools available. These principles fall into five main categories. First, the objectives of any proposal or plan need to be clearly spelt out and comprehensive in relation to sustainable development and health. Second, the process of appraisal should be open and inclusive, drawing on the different kinds of knowledge and expertise that are available. Third, the process should allow for iteration throughout the development of a proposal / plan, enabling effective scoping so that problematic issues are addressed, encouraging a creative, learning approach shared between the investors, professionals and stakeholders. Fourth, the appraisal should be as rational and systematic as feasible in the context, based on evidence where possible. Fifth, the whole process is justified if it successfully improves and legitimizes decisions, and ensures complementary action by others.

This paper assesses a number of decision aids against these principles and finds them wanting in scope and inclusivity. In particular, techniques that use weighting may not be able to hold the complexity and stimulate the quality of deliberative engagement required. A weighting system may pass over very serious impacts simply because that aspect or criterion has been given a low overall weighting. As such it does not always focus attention where it is most needed. There is no obligation to search for a better solution that achieves the triple bottom line of sustainability. In this way weighting systems build in attitudes which are opposed to the essential principles of sustainable development.
The area of search for techniques that meet the principles has moved away from reductionist and expert systems towards more inclusive and holistic frameworks. Health Impact Analysis, especially participatory 'rapid appraisal', points the way. A technique which learns from HIA, relating to the whole sustainability agenda, is Spectrum Appraisal. It is a form of sustainability threshold analysis, aiming for inclusive rationality, with stakeholders debating and contributing to improved outcomes. Spectrum can be used in a range of circumstances such as urban political/capacity studies, policy appraisal and development, site appraisal and sustainability impact assessment at the project level. It very clearly identifies thresholds of impact, agreed between participants, which trigger different kinds of response.

Spectrum appraisal has been tested, in a variety of contexts and forms. It measures up well against the principles previously identified:

- It is explicit about objectives – objectives may be first proposed by an expert group but are open to debate and scrutiny
- It is holistic in relation to sustainable development – through inclusion of a wide range of local interests against a background of global factors it encompasses all the relevant aspects of environmental sustainability, health, social inclusion and economic vitality
- It is inclusive of stakeholders – stakeholders, particularly those with a narrow sectoral interest or potential critiques are valued through the focussed way they can contribute to a better performing outcome.
- It taps expertise of all kinds – in one of the local case studies, valuable feedback on the design from three local residents led to a significant change in the way the design was subsequently developed.
- It focuses attention on key issues - the worst performing elements (graded yellow, orange and red) become the initial area of search for improvement.
- It supports collaborative learning – through the deliberative process in setting criteria and later in discussing the scores there is a progressive development of shared understanding and ideas
- It is rational, and as rigorous as context allows – the technique frames the stakeholder discussion helping participants to analyse problems / opportunities and develop options systematically
- It supports a creative process – this helps participants scope for options for mutual gain, where synergy (killing several birds with one stone) is the order of the day. The project initiators can later work up the ideas to improve the proposals
- It provides a stepping stone towards legitimized, well supported decisions. It has also been proven to assist with effective implementation and collaborative action in related fields by other organizations.

In assessing a wide range of techniques for community managed impact assessment, Runyan (1977) scores the techniques for usefulness. His judgement is based on three criteria. Firstly, the technique should be simple, not requiring complex
procedures, extensive preparation or large time commitments. Secondly, the technique should not rely on an extensive database. Finally, any technique should bring new insight and information and not just repackage information or opinion currently available. Through piloting and use with live projects, Spectrum appraisal has demonstrated its ability to meet these criteria and add value. It has the flexibility to be used at an appropriate level of depth suitable for the smallest of projects (say three to five houses) to a housing policy for the whole of a Welsh Authority. The creativity released has allowed project proposers to raise their game whilst engaging the community with a real sense of contribution.

Health has not been one specific criteria in the assessments. That would be to deny its pervasive significance. Instead health and well-being have been written in at all levels, so that sustainability appraisal and health appraisal of projects and plans are the same process. The explicit health angle is appreciated by participants and helps to give sharpness and precision to the concept of sustainable development. Integration of appraisal with project development ensures that positive health outcomes are built in as the project or policy proposals mature. The onus is therefore on those involved in health promotion activity, if they are to have credibility in this field, to be actively involved in ensuring that there is sound understanding of health determinants on the part of the professionals and decision-makers who are creating and judging projects, plans and policies.

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