CL:AIRE

SUB 4
(October 2007)

subr:im bulletin

CL:AIRE's SUBR:IM bulletins present practical outcomes of research by the SUBR:IM consortium which have direct application to the brownfield and contaminated land communities. This bulletin considers the sustainability evaluation of brownfield projects.

Measuring Sustainability: What's in a number?

The only way in which a human being can make some approach to knowing the whole of a subject is by hearing what can be said about it by persons of every variety of opinion, and studying all modes in which it can be looked at by every character of mind. No wise man ever acquired his wisdom in any mode but this; nor is it in the nature of human intellect to become wise in any other manner.

John Stuart Mill, On Liberty

To address the practical need for a process that allows decision-makers to understand and improve the sustainability of a site across its life-cycle, a framework to do precisely that is needed. Such a framework is also needed to critically assess the equation of brownfield regeneration and sustainability. However, there are already many indicators systems – for example, SUE-MoT (2004) lists more than 600 tools – virtually none of which have seen practical application or evaluation. As a result, rather than retracing others' steps and inventing another (underused) indicator system, the Redevelopment Assessment Framework (RAF) was contrived to use as much existing decision-making and practitioners' influence as possible.

SUSTAINABILITY EVALUATION OF BROWNFIELD PROJECTS

There are a wide variety of sustainability indicators available, it remains unclear which will prevail, and little is known how widely they are used (SUE MoT, 2004 and Deakin *et al.*, 2002). In consultation with practitioners, the essential characteristics of such a tool have been established as (see Pediaditi *et al.*, 2006 for more details):

- Holistic: Assessing environmental, social and economic aspects of a Brownfield Regeneration Project (BRP) in an integrated manner that still allows the evaluation of tradeoffs between these aspects;
- Site and Project Specific: Assessing the sustainability of a site, its conditions and the proposed project, as opposed to focussing on building structures, organisations or wider, regional concerns;
- Long term: The sustainability of a BRP throughout its land use life-cycle, spanning the planning and design, the construction and remediation and eventual operation phases;
- Participatory: Enabling users and stakeholders to make their values and risk perceptions explicit as well as to develop their own sustainability indicators;
- Integrated within existing decision-making processes: To avoid duplication, offer the opportunity to use existing activities and resources, and dovetail the tool with existing (compulsory as well as voluntary) activities and policies.

Despite the existence of several hundred often closely related indicator systems that look at sustainability in some form or another, there is currently no tool which is capable of assessing the sustainability of a BRP throughout is land use life-cycle (Pediaditi *et al.*, 2005). This is due to these tools being neither holistic nor long term and focussing on building performance and environmental issues. Likewise, existing tools tend to be top-down, leading to limited ownership by users and the wider public. This is serious in redevelopment projects as process transparency is an essential criterion of 'good' participatory decision-making as well as risk communication (Wehrmeyer, 2001).

We concluded that (a) a practical sustainability assessment framework for BRPs is needed, and (b) it should have the following features. It should be simple, structured, and integrated within existing planning and development processes. It must assess and monitor the environmental, social and economic implications of a site's redevelopment throughout its life-cycle. The framework must be flexible, participative and ensure that public perceptions of risk are taken into account. Quite a challenge!

THE REDEVELOPMENT ASSESSMENT FRAMEWORK

The overall aim of the Redevelopment Assessment Framework (RAF) is to inform stakeholders about the sustainability profile of a site across its life-cycle in a practical way. The RAF facilitates the development of site-specific sustainability indicators in a participatory manner. However, the RAF is not designed to make decisions about the viability, fit with existing policies, or general suitability of the project. The RAF is also not designed to compare different proposals or to assist their design. The RAF process is a supplement to the planning application process and is directed at large or complex developments, which would require an Environmental Impact Assessment (EIA) or Statement of Community Involvement (SCI). A balance needs to be struck between starting the RAF early and having sufficient clarity and certainty about what the future site and its land use should look like.

Table 1: Barriers to Brownfield Regeneration Project sustainability evaluation.

Adoption Barriers	Procedural barriers	Barriers of the tool itself
▪ Lack of understanding of sustainability ▪ Lack of market demand ▪ Lack of enforcement/ resources & skills ▪ Too many tools resulting in lack of confidence in them ▪ Build & Forget development culture	▪ Lack of time ▪ Lack of a structured process to follow ▪ Lack of communication ▪ Lack of ownership of the assessment process ▪ Lack of integration of existing tools with planning processes eg planning application process, EIA, SEA, SA	▪ Scope of assessments lim ited to building performance ▪ Scope of assessments mostly covering environmental issues ▪ Lack of context specific assessments ▪ Lack of measurable benchmarks ▪ Output approach to monitoring

To overcome local authority (LA) resource limitations, the RAF should be led by the developer/owner (here called the lead partner). As the RAF is aimed at large developments, the developer is likely to hire a consultant to coordinate the process. To ensure the RAF process does not delay the planning application, it has been designed to be undertaken with two half-day stakeholder workshops and one meeting, following background research by the lead partner. The lead partner should have a basic understanding of sustainability, be seen to be independent, and have facilitation training and skills.

To ensure that the recommendations are implemented and post-development monitoring takes place, the RAF uses S106 agreements and planning conditions, which are determined in the initial planning phase of a BRP. As illustrated in schematic form in Figure 1, the RAF is a simple procedure divided into six Steps. The first three Steps cover the preparatory stages undertaken by the lead partner and include information gathering and stakeholder identification.

The steps of the process are:

Step 1: Team building

Step 1 is the selection of stakeholders to be involved. They form an 'evaluation task force' which should primarily be the evaluation users. The lead partner is required to identify all relevant stakeholders involved in the BRP and make a preliminary list of potential participants. This is a subjective and sensitive process. Therefore the lead partner should consult with the development control officer to ensure an equitable, appropriate, manageable and functioning set of representative stakeholders are selected. The list should then be circulated to all identified stakeholders as part of the invitation to participate, with the request to add further potential stakeholders if found deficient.

There are no definite rules to ensure a representative and manageable set of stakeholders, as some sites are more complex, diverse or politically sensitive than others. However, based on facilitation guidance in situations like this, which require specific questions and detailed tasks to be undertaken in a limited time frame, small groups of 10-15 individuals are preferable. This is an artificial range, but more consultees do not necessarily make for a better decision. As long as the larger stakeholder groups – local residents for example – are represented effectively, there

	Tasks To be carried out by: Lead Partner (L), Local Authority (LA) or Stakeholder Group (S)	Comments
Step 1 Team Building	Identifying stakeholders: create a group of approximately 12-14 stakeholders: (L)	A checklist with potential stakeholders is needed to aid stakeholder group identification. However, relevant stakeholders will vary between BRP.
Step 2: Getting The facts right	Gather site & project Information, community survey: (L) with input from (LA)	Extent & Nature of information required can be determined following Guidelines developed, and will be specific to each BRP. Survey standardised
Step 3: Prepare the ground	Identify & research existing relevant evaluation documents & procedures (L) with input from (LA)	Identify parameters the BRP needs to consider and existing indicators and sustainability criteria. This will allow their consideration when developing indicators to avoid monitoring duplication.
Step 4 Setting Priorities	What do we want to do? (S) Identify & Rank sustainability principles for the BRP What are the issues? (S) Identify BRP Impacts & ranking risks What is Important? (S) Identify criteria to choose from a set of indicators	Using a specially developed tool based on government sustainability principles, stakeholders agree on a vision for the BRP which they can base indicators on. Considering community survey and following a developed exercise stakeholders agree on the main issues of concern which indicators should monitor for. Using the compiled Indicator Criteria Checklist, criteria are selected to evaluate developed sustainability indicators in Steps 5 & 6
Step 5: Designing the indicators	What is already monitored? (LA&L) Identify existing monitoring data already available. What do we want to monitor? (LA & L) What indicators monitor this?(LA & L) Select & develop indicators and SEEDA criteria	Look for relevant data gathered by LA & various monitoring organisations. Establish topics & themes through which indicators can be developed based on results of questions a & b (Step 4). From the SEEDA checklist identify relevant assessment criteria and from existing LA monitoring indicator identify initial list of relevant indicators for development and where necessary develop new ones.
Step 6: Putting it all together	Final selection & evaluation of sustainability indicators using criteria from task c & tool f. (S)	Stakeholders deliberate following a structured process and select final set of indicators and set targets for each indicator. Agreement is achieved over details of data collection, funding and results utilisation and S106 agreement requirements.

Figure 1. The Redevelopment Assessment Framework.

is no reason why the Group can not be kept small. Although the RAF by definition does not claim to be a participatory tool, but is rather an evaluation process which uses participatory methods, this set-up limits public participation to representation. The RAF incorporates methods for community representation as well as mechanisms for information exchange (Figure 2) which are elaborated further below.

To ensure the process is meaningful and its outcomes can and will be used, it is strongly recommended to include as a minimum these essential participants:

- Developer(s): They are needed to fund the RAF and their presence is necessary to ratify any decisions as well as enable the participation of private consultants. Given that, in the end, it is "their" project, they also have a moral duty and right to lead, let alone be involved.
- Architect or project manager(s): They are needed to provide insight into the nature of the development as well as to act upon changes which may emerge from the RAF process.
- Councillor(s): They are required to democratically represent local community views.
- Sustainability or relevant policy officer(s): At the minimum, they need to facilitate Step 3 and to ensure indicators will feed into policy.
- Development Control Officer(s): They lead the statutory consultation process and process the planning application, and thus can inform stakeholder selection as well as coordinate the S106 agreements.

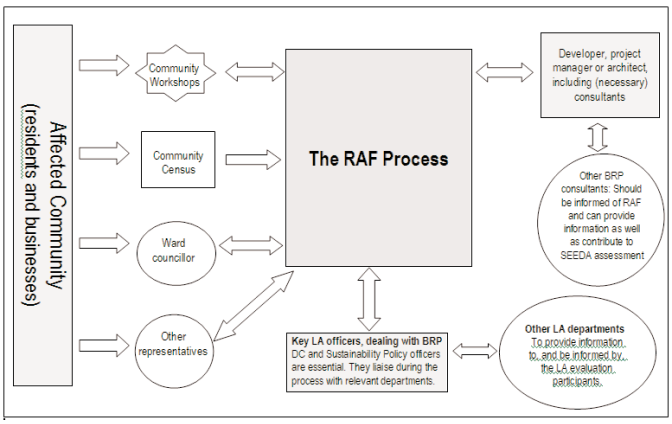

Figure 2. RAF process incorporating community representation and information exchange.

Step 2: Getting the facts right

Step 2 involves two information gathering tasks: Firstly, the lead partner needs to collate information on the BRP proposal; secondly, the community needs to be consulted to identify and document their main concerns and aspirations for the development.

Task 1: Data gathering

The list of useful information about the site is potentially vast. It is recommended here that the Environmental Impact Statement (EIS) review criteria (Table 2) are used to guide what information should be collated. The lead partner should circulate a non-technical summary to all participating stakeholders.

The information requirements specified in Table 2 are deliberately designed not to be solely for the RAF, but would be required, in different degrees of detail, for large planning applications. Therefore, this Task does not add additional financial or time burdens for such sites.

Task 2: Consulting the community

The community's views on the proposed development and their aspirations for their area should guide the evaluation task force in Step 4. The minimum requirement is a questionnaire sent to all residents in the catchment area, as specified in the relevant regulations on planning application consultation. The lead partner is typically responsible for funding and carrying out the survey, but this should be done in close consultation with the relevant LA. This is a cost-effective and straightforward process as addresses are available on all LA Geographical Information Systems.

The survey should cover standardised specific questions for all BRPs. It should be devised so that its results feed in easily to Step 4. Briefly, it contains the same exercises of impact identification as well as sustainability objective prioritisation which is undertaken in the Step 4 workshop outlined below. This allows the stakeholder workshop to compare its and the community's perceptions, thus highlighting potential differences and facilitating the inclusion of community views.

This survey however, should not be mistaken for two-way communication, and does not replace community input into the planning application process. Best practice literature proposes the use of a variety of methods, including community workshops, open days, local press publicity and so forth. Therefore, RAF best practice includes separate workshops which are carried out in combination with the survey in order to obtain community input. It makes sense for the community workshops to follow the same format as those conducted in Step 4.

Since the implementation of the Planning and Compulsory Purchase Act (2004), developers are required to provide Statements of Community Involvement (SCI) to

Table 2. Sample information requirements to describe the development.

Criteria (extended from Weston, 2000)
Principal features of the project: ▪Description of the development (site details, design, size, purposes and objectives), incl. map ▪Nature and status of the decision(s) for which the information has been prepared. ▪Timeplan of the construction, operation and where appropriate, decommissioning of project ▪Number of people affected (net influx of people, number of jobs, etc) ▪Impact of the development on services, e.g. public transport, schools, health care. ▪Methods of construction; nature / methods of production or other activities during future use. ▪Additional services (water, electricity, emergency services etc) and developments needed ▪Describes the projects potential for accidents hazards and emergencies.
Land requirements: ▪The land area taken, the future land uses and boundaries with adjacent land use areas. ▪Reinstatement and after-use of land taken during construction.
Project inputs ▪Nature and quantities of materials needed during construction and operation. ▪Number of workers and visitors (construction and operation), their access & transport mode. ▪Means and scope of transporting materials and products to and from the site.
Residues and Emissions ▪Types and quantities of waste water, energy (noise, vibration, light, heat radiation etc) and residual materials generated during construction and operation. ▪Management approach to handling treating of these materials and their disposal routes ▪Special / hazardous wastes, their disposal methods and main environmental impacts.
Description of the area occupied by and surrounding the project ▪Where are areas expected to be significantly affected by the project and their timing ▪Land uses on the site(s) and in surrounding areas. ▪Social indicators for the area (age, class, unemployment, crime) and development impact. ▪How sufficient are existing services and facilities (schools, recreational, retail) for the future ▪Impact upon the wider surroundings
Baseline conditions ▪Which components of the affected environment are potentially affected by the project? ▪Which baseline data are available that lend themselves towards monitoring? ▪Changes reflected in local, regional and national plans and policies and other data collected as necessary. Where does the proposal conform, where is departure form plans justified?

demonstrate their efforts to consult the community with regard to their proposals at a pre-application phase. The RAF is designed to be incorporated as part of the SCI, thus minimising expenditure.

The process output of Step 2 is two-fold: a non-technical summary with information regarding the site and the proposed development; and a report representing the views of the community. Both documents should then be passed on by the lead partner to all the RAF stakeholder participants for their consideration prior to the Step 4 workshop.

Step 3: Preparing the ground

Many evaluation procedures, frameworks and guidelines exist which are directly or indirectly relevant to a BRP (Table 3). In Step 3, the lead partner needs to consider all the existing obligations to provide information or monitor the sustainability profile of the BRP to ensure that they will be covered by the sustainability indicators the RAF aims to produce. This avoids data duplication and demonstrates the volumes of information that needs to be collected anyway. In addition, considering existing LA relevant indicators assures their policy relevance.

Table 3. Sources of BRP monitoring requirements, indicators and baselines.

	Monitoring / assessment tools or potential sources of data	How to use / things to consider	Limitations	Case study use
Development sustainability monitoring & assessment requirements.	**Project funders' sustainability criteria or monitoring requirements** (eg Millennium communities fund sustainability criteria)	Does the project receive external or government funding? If so, are monitoring obligations (benchmarks etc) attached to the grant? Does it require the disclosure of confidential information?	Funders monitoring is usually output and financially based which may not be suitable for publicising. Some funders require / use sustainability statements / objectives, which the RAF can provide if it incorporates these in Phase4	NA
	LA development sustainability checklist	Does the LA have its own checklist? Benchmarks included? Are the topics changeable? Involve relevant LA officer.	Some LA have checklist others don't. They vary a lot in structure, requirements and relevance. Some lack benchmarks and read more like wish lists.	The case study LA did not have a sustainability checklist.
	Developers or partners own sustainability indicators	Does the developer or partners company have sustainability? Are they relevant here?	Some of the developer indicators are very general, and focus on the company, not the site.	The developer did not have a sustainability policy / indicators.
	EIA post monitoring requirements	Does the development require an EIA? What post monitoring requirements have the different consultants specified for each significant effect?	Timing is an issue. These requirements are known towards the end of the process, and may have to be obtained late in the RAF process. In some cases performance benchmarks are not specified.	EIA long-term monitoring was included in monitoring strategy. RAF ensured consistency, specified benchmarks.
	Other planning application assessments eg Traffic Impacts	Are assessments required for the planning application? Long-term monitoring?	As above	All assessments were included within the EIA.
	Other? (Code for Sust. Buildings)	NA	Still to be developed	NA
Existing sustainability indicator data and baselines of potential use	**Community Strategy Indicators**	Does the LA have a community / LA21 strategy? Are its indicators consistent? – do they have baselines?	From experience, the quality in particular of the indicators varied. They often report on the LA performance instead of the site.	The group agreed that they were not relevant and lacked baselines.
	SEA & SA LDF indicators	Has an SEA or SA scoping report been carried out for the LDF or a relevant area plan? What are the indicators/ are they consistent? (discuss with policy officer)	LA are currently in the process of collating existing monitoring information for the purpose of SEA and SA. However, from discussions with policy officers inconsistencies in data collection were an issue.	SEA and SA indicators were collated for selection in Phase 5. Policy officer indicated inconsistencies.
	Annual LDF monitoring report indicators	Has a LDF annual monitoring report been prepared? What are the indicators/ which ones are consistent?	As above. Similar if not identical indicators are being utilised for AMR as for SEA and SA. They can change to reflect specific policies (lack of consistency) and are subject to political pressures.	AMR was in process of preparation. However, the indicators were almost identical to SEA and SA indicators.
	Best Value Performance Indicators (BVPIs)	Are the indicators relevant to the state of the environment? Do they only focus on LA performance? If so they shouldn't be used.	BVPIs often focus purely on LA performance in delivering services and lack focus on baseline conditions – relevance?	BVPIs focused on LA performance and were considered non applicable.

Step 4: Setting priorities

Sustainability, and its sibling, sustainable development, is a value-based concept which is difficult to define and evaluate. Therefore, before we can develop indicators, relevant stakeholders need to define what is meant by sustainability in the context of a site. This is to counter all-too frequent phenomenon that the implied definition of sustainable development can be identified only from the indicators, leading to a convoluted and often misguided process. Therefore, Step 4 is designed to define a sustainability vision for the BRP as well as put forward aspirations and concerns regarding the development proposals.

In Step 4 the group of relevant stakeholders (see Step 1) is brought together in a workshop where participants consider the outcomes of Step 2 (background information and community consultation) and undertake collectively three tasks (Figure 1). This is a large programme of work but experience has shown that this can be done in a half-day workshop. Of course, more time would be better and larger projects may well need longer, so this is a minimum. The workshop is divided into three sessions to reflect the three tasks:

Task 1: Identifying a vision, concerns, and benefits

In Session 1, the evaluation task force should be split up into small groups, typically 3-6 participants each. Participants are then asked to state confidentially their main individual short-term and long-term concerns, visions and benefits for the site and proposed development. These then should be grouped and interpreted by participants into themes (for example, design visions, employment visions, environmental visions). The results are disseminated to all participants. Then, the results of the community consultation should be presented – doing this earlier may influence the group – to discuss possible differences between the community and those of the group. The outcome of this task is some agreement on the main benefits and concerns which need to be monitored.

Task 2: Prioritising sustainability objectives

In Session 2, a prioritisation or voting exercise on the general sustainability objectives should be undertaken. Here participants prioritise between objectives within each category to reduce the opportunity for trade-offs between the social, environmental and economic objectives and to ensure an equitable weighting between these three.

A comparison of these results with those of community consultation and the sustainability objectives of the LA Community Strategy should follow. This allows participants to see possible differences between their priorities and those of the community. At the end of this Task, participants can combine the themes of Task 1 with the agreed objectives identified in Task 2 to produce a list of site-specific objectives for which they feel indicators should be developed. Box 1 shows some objectives developed for the pilot study.

Box 1. Example sustainability objectives developed for case study.

1. Improved image and integration of the area in terms of architecture, design and social aspect as well as the combination of all.
2. A safe environment for people to work and live in.
3. Improved education in terms of academic achievement and infrastructure and d esign.
4. Improved local economy, particularly with regard to small businesses and the creation of quality employment opportunities.
5. Improved mix between housing and businesses as well as types of housing. The need to create a new housing balance - a property ladder enabling people to stay in the area.
6. Improved biodiversity in terms of habitat creation and water management.
7. Improved accessibility (traffic management and transport links).
8. Ensure safety with regard to contamination.

Task 3: Agree on the nature of the evaluation (procedural issues)
Practical aspects have to be addressed with regard to the nature and function of the final indicators. Task 3 consists of a discussion to agree a small number of procedural and logistical issues: Who should manage the monitoring? Who should collect the data? Who should utilise the results? Who should pay for additional work? These procedural issues will affect the nature of the indicators and prescribe the future set of indicators, which, in turn, will increase its practicality, feasibility and utility. This task completes Step 4, and the facilitator should disseminate the results to the group.

Step 5: Designing the indicators

In this Step, an initial set of long-term sustainability indicators and the selection of sustainability criteria are considered. Due to the limited time available for the RAF process, this step can be undertaken in a meeting between the lead partner, his/her planning consultant and relevant development control and policy officers. However, where time and resources permit, this should be expanded. In each case, accountability and the need for information sharing with the wider stakeholder group remains. Step 5 answers three distinct questions: a) What is already monitored? b) What do we want to monitor? and c) What indicators monitor this?

These questions require the following material:

- The Step 3 list of relevant indicators and monitoring (Table 3);
- The updated potential EIA post-monitoring requirement;
- The stakeholder-ratified Step 4 report, including agreed objectives for which indicators should be developed;
- The complete SEEDA or other Regional Development Agency sustainability checklist;
- Where remediation has been identified as a priority objective, the RESCUE remediation sustainability criteria (RESCUE, 2005).

The meeting is usefully divided into two sessions: the first consists of identifying assessment criteria, the second deals with development of long-term monitoring indicators:

Session 1: Selecting BRP sustainability assessment criteria
In Session 1 the thematic topics or priority sustainability objectives identified in Step 4 are put to the group for consideration. The SEEDA development sustainability checklist, which contains a number of predefined sustainability criteria, is used for the selection of criteria relevant to the specific BRP's sustainability objectives. The SEEDA checklist is provided for the following reasons:

- It considers the development as a whole rather than purely building performance;
- It provides benchmarks relevant to policy and government guidance;
- It addresses holistically environmental, social and economic issues;
- It requires a justification of the attributed benchmark performance;
- Criteria are transparent; and
- Use of the checklist is free.

In summary, Session 1 involves the identification of development relevant sustainability assessment criteria from the SEEDA and RESCUE checklist for consideration by the whole group in Step 6. In this Step 5 meeting and at the Step 6 workshop there is the flexibility and opportunity to add additional criteria where considered relevant.

Session 2: Developing long-term BRP sustainability indicators
Step 4 objectives should be put forward for consideration; i.e. the question: 'What do we want to monitor?' together with the list of existing indicators identified in Step 3, which deal with the question of 'what is already monitored'. Session 2 usefully starts by identifying which of the Step 3 indicators are relevant to the sustainability objectives, so asking the question: 'What indicators monitor this?' Participants can then examine the chosen indicators and assess their suitability, and whether additional indicators are required.

The result is a report listing the sustainability assessment criteria and long-term indicators developed which should be presented to the whole stakeholder group for further deliberation (Step 6).

Step 6: Putting it all together

The stakeholder group meets for the final half-day workshop – again, more is better, but we feel this is a viable minimum. They review the proposed indicators and criteria and agree on a final set and monitoring strategy. Prior to this workshop, all stakeholders should have had the opportunity to provide individual feedback. Step 6 is divided into three aspects:

Sessions 1 and 2: Agreeing on sustainability criteria and indicators
In Sessions 1 and 2 a combined Nominal Group Technique and "Carousel" are recommended to divide the consensus-building task into smaller parts, and allow for meaningful rotation of stakeholders across different tasks and sustainability objectives. These groups discuss and propose the final set of indicators.

Session 3: Agreeing on the procedural issues
Finally, in Session 3, procedural issues need to be discussed and agreed upon, notably:

- Should the developer or the LA should be responsible for monitoring and reporting, and who is going to pay?
- Should the results of the assessment be reported in a sustainability assessment for the LA?
- How public should the results of the assessment and monitoring surveys be made?

CONCLUSION

Finding out what sustainable development means for a site is likely to remain a tricky, vexing question. This process is proposed by which some aspects of a site's sustainability can be evaluated in a participatory manner, with the advantage that it includes questions about the meaning of sustainability and the relative priorities of those affected by the development. The proposed process appears complex precisely because it tries to minimise work and time delays by making use as much as possible of existing processes and information sources. The experience with the process so far has shown that, rather than complicating things, it has simplified the development of site-specific indicators. It has also allowed a collaborative spirit to emerge between stakeholders who have engaged in a constructive dialogue throughout. The RAF process has been designed to enable use of existing indicators to assess the sustainability of redevelopment projects. There is a need for, and opportunity to, adopt the RAF much more widely through government guidance. This would feed into regional and local planning policies, preferably at the pre-application phase of a development as at this point decisions are made on future sustainability. This would allow a much wider dialogue about sustainability and a greater grassroots consensus on what this actually may mean in concrete (pun intended), a better integration of the diverse policies on sustainability, apart from the obvious advantage of having better information about the sustainability profile of a site.

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This bulletin is based on work carried out under the SUBR:IM project at the Centre for Environmental Strategy at the University of Surrey and was written by Walter Wehrmeyer; Kalliope Pediaditi and Kate Burningham.

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