

GREEN SPECIFYING – THE ROLE OF NATIONAL MASTER SPECIFICATION SYSTEMS 2

John Gelder

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SUMMARY OF

ACTIONS TOWARDS SUSTAINABLE OUTCOMES

Environmental Issues/Principal Impacts

- Refer to *BDP Environment Design Guide* PRO 17.

Basic Strategies

In many design situations, boundaries and constraints limit the application of cutting EDGe actions. In these circumstances, designers should at least consider the following:

- Be familiar with and work within the legislative context. This can vary from jurisdiction to jurisdiction, and national master specifications may not address this variation, though office masters should.
- Be familiar with and work within the contractual context. Some explicitly address environmental protection e.g. PC-1 and C21.
- Be familiar with available standards and their environmental implications e.g. some environmentally undesirable (or less desirable) products may be permitted or described in standards cited in specifications, such as HCFC refrigerants, toxic timber preservatives, or high-VOC solvents or heavy metals in paints.
- Be familiar with and work within the policy context. Policies impacting on the environment may be those of the client, the government, your office, your professional association, manufacturers, and so on.
- Subscribe to electronic-only versions of master specifications, specify on-screen as much as possible, and circulate project specifications electronically (in read-only formats,) so minimising the use of paper in the preparation of project specifications.

Cutting EDGe Strategies

- Give careful consideration to the default use of 'new' products imposed by some contextual documents.
- Make use of standards for recycling and reuse of material, where applicable.

Synergies and References

Legislation, contracts, standards and policies cited have been superseded in many cases. For example, of the contracts cited, AS 2124 has been replaced by AS 4000, and JCC by ABIC MW-1. 'Green' work sections in NATSPEC now include Monolithic stabilised earth walling, earth block walling, termite control and trees supply.

- Building Code of Australia website: www.abcb.gov.au/
 - RAI A contracts, under *Publications* on the website: www.architecture.com.au/
 - Standards Australia website: www.standards.com.au/catalogue/Script/Search.asp
 - RILEM publications: www.rilem.net/
 - NSW Government construction policies: www.cpssc.nsw.gov.au/
 - *BDP Environment Design Guide* PRO 17.
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This Note and PRO 17 review a number of issues which arise out of consideration of the natural environment and human health, and which affect the content of National Master Specification Systems (NMSs) and, therefore, their use by project specifiers. They also, incidentally, consider some of the general assumptions and limitations of NMSs. PRO 17 looked at choice, guidance and sources. This Note considers context and publishing, and offers some recommendations.

1.0 INTRODUCTION

The central issue is the NMS's obligation to provide for informed choice by users among all legal options, rather than simply compelling users to go green, or upmarket, or buy Australian, or whatever. This necessitates the provision of integrated objective advice, which should consider context, and which should be authoritative. This will assist in the selection and deselection of particular materials and components for a particular project.

2.0 CONTEXT

2.1 Legislative

Use of certain construction materials and components may be banned or restricted by legislation (e.g. maximum permitted amounts, limited applications), due to unwanted impact on the environment, occupational health and safety and/or public health. This may vary within a country. For example, use of PVC is restricted in some German states but not all. Likewise, use of organochlorine termiticides were banned in all states in Australia except in the Northern Territory (north of the Tropic of Capricorn) but is now banned completely.

Conversely, materials and components deemed good for the environment may be mandated in some jurisdictions, as in Leichhardt Municipal Council's (NSW) insistence on solar water heating for new houses. Nationally, legislative use of Standards such as SAA MP64 and SUSDP #10 (AHMAC 1995) drives the greening of some products. The first strongly encourages the use of 6/3 L dual flush cisterns for new installations (only these cisterns get a rating — for other products the rating system is open ended). The second, SUSDP #10 (Appendix P), tackles the toxics content of paints, and is getting progressively tighter. Just as national Standards should keep up with legislative banning or mandating of materials (surprisingly, they don't always) and components, so should NMSs.

Just because a material is known to be (very) hazardous does not mean that it will be banned — the decision whether or not to ban a material is more political than scientific. A good example is vinyl chloride monomer, a proven human carcinogen, but an unavoidable

intermediary in the manufacture of the utility plastic PVC. Very few jurisdictions have banned it — they are too pragmatic. The same applies to arsenic, which continues to be used in timber preservatives such as copper chromium arsenic (CCA), and formaldehyde (a probable human carcinogen, according to the International Agency for Research in Cancer (IARC)) used in wood adhesives. However, use of many of these materials is controlled, e.g. maximum exposure levels are set, procedures for safe handling may be defined. This may have cost implications and so affect usage this way. Accordingly, specifiers should be advised of such controls by NMSs. Specifiers may decide to consider alternatives.

In some jurisdictions legislation requires designers to consider construction hazards in design, in general terms. Examples include:

- South Australia's *Development Regulations 1993* Schedule 5, in which the specification is to "show that the building work will ... provide satisfactory levels of safety on or about the site";
- the UK's *Construction (Design and Management) Regulations 1994* (flowing from the EU's Temporary or Mobile Worksites Directive) in which e.g. "Every designer shall ... ensure that any design he prepares ... includes among the design considerations adequate regard to the need ... to avoid foreseeable risks to the health and safety of any person ... carrying out construction work or cleaning work in or on the structure at any time ..."; and
- New Zealand's *Building Code* Section F, in which, e.g. "Building materials which are potentially hazardous, shall be used in ways that avoid undue risk to people".

NMSs should help specifiers meet such legislative obligations, through provision of advice and 'safe' alternatives in specification text. For example, one consequence of the UK's *Construction (Design and Management) Regulations* (CDM) is that use of brittle roofing materials (perhaps including those that embrittle over time) is discouraged — but not actually banned — by the authorities (*RIBA Journal*, Practice Issue 142):

"The HSE [Health and Safety Executive] considers that designers should not specify fragile materials in their design unless they have a very clear justification for doing so."

Use of new construction materials may be a legislative default, as it is in the Australian *Local Government (Approvals) Regulation NSW 1993* Part 2 Division 1 Clause 7(5)(b), which states:

“The specification of the building is ... to state whether the materials will be new or second-hand and give particulars of any second-hand materials to be used”.

This, of course, militates against the use of recycled materials, a mainstay of green construction. In these circumstances, any proposed second-hand materials must be specifically identified at the time of seeking building approval — which may be too early in the design sequence for such decisions to have had proper consideration. Accordingly, designers may opt early on (consciously for simplicity, or inadvertently by failing to even think about the subject) to use new materials throughout, and find themselves stuck with these decisions when specifying later.

Project specifiers are generally expected, by NMSs, to be familiar with their local regulatory requirements, which often vary within countries. For example, via the *Building Code of Australia* Appendices, Victoria mandates thermal insulation for Class 2, 3 and 4 buildings, and the ACT mandates a maximum energy consumption rate for Class 2, 3 and 4 buildings. Other jurisdictions have no such requirement. Some local jurisdictions impose their own environmental requirements. It is difficult for NMSs to deal with these sorts of variations.

2.2 Contractual

Some widely-used standard forms of contract may have some impact on use of recycled materials, in a similar way to the NSW legislation mentioned above.

Examples include:

- AS 2124-1992, clause 30.1, which states: “In the absence of any requirement to the contrary, the Contractor shall use suitable new materials”; and
- JCC-D (1994), clause 6.08.02, which states: “Any materials not otherwise specified shall be new.”

Under these contracts one must specifically state which materials are to be reused. If these aren't so identified, then they must be new (and the contractor cannot reuse materials, unless a variation is issued and the local authority is notified).

What does this mean in practice? Must one schedule all possible recycled/second hand items, such as PVC pipe made from recycled PVC, or glassfibre insulation made from recycled glass waste (most is, in part), or secondhand reconditioned floorboards, or retained walls in an existing building? What about identifying retained paint coats under new paint? How far do we go, and how do we deal with this? Does one state “The following items are second-hand” or “The following items may contain components/materials which are recycled”? Or is it easier to state “The following items must not contain any second-hand or recycled material”? Just what does ‘new’ mean, in this context? These legislative and contractual defaults are increasingly meaningless and out-of-touch.

NMSs should offer advice to specifiers on these issues — in fact, thanks to the rise of recycling and the wording of the contracts and legislation, this is an issue of conflict which affects all specifiers, green or not.

2.3 Standards

Like building regulations and contracts, most standards assume that the products they describe will be made new. This is especially true of old-style prescriptive product standards such as AS 1535, which precludes the use of recycled resins, other than those generated by the manufacturer, in household garbage bins. The current generation of performance standards do not in themselves care whether materials and components used are new or recycled. Even so, there are some problem areas, being tackled by standards-producing agencies.

Standards, for example, generally are directed at use of virgin materials and creation of new products, not restoration or recycling. Standards are being developed for recycling, e.g. of aggregates — but progress is slow (see, for example, Collins ‘Reuse of demolition materials in relation to specifications in the UK’ and Henrichsen ‘Report on unified specifications for recycled concrete coarse aggregates for concrete’ in Lauritzen 1993).

2.4 Policies

The specifier is supposed to be acting in the best interests of the purchaser. Purchasers are generally interested in certain attributes of the finished building and its constituent components:

- capital cost;
- running cost, maybe (if client is owner or operator, or if tenants are canny enough to negotiate on this);
- fitness for purpose/functionality, including durability;
- appearance, in some cases (some hidden items can affect appearance through corrosion, staining, leaks, etc); and
- legislative compliance.

Attributes outside these, such as the construction and manufacturing processes, or product and labour sources, are usually of no interest to the purchaser. To spell these out, to constrain them, may limit choice, impacting on the successful satisfaction of the basic attributes which the purchaser is interested in. In the case of processes, their specification may even be in breach of the contract being used (as well as of common sense) because construction methods are generally regarded as the builder's affair (see JCC-D clause 6.03, for example).

Nevertheless, some purchasers may have policies in place which deal with some of these other attributes, including environmental considerations.

In Australia, purchasers with environmental policies influencing building procurement include the Olympic Co-ordination Authority (OCA), NSW Department of

Public Works and Services (DPWS), some universities (at least for demonstration projects), some private sector purchasers such as Greenpeace, and those environmentally aware individuals who seek out 'green' architects for their houses and offices. Some of these policies operate indirectly. For example, public works authorities generally, via their support for the Australian Paint Approval Scheme (APAS), are driving the voluntary progressive reduction of Volatile Organic Compounds (VOC) content in paints (to GPC-D-181).

Where the purchaser does not have such a policy in place, it could be argued that the designers (including the specifier) have no business unilaterally limiting selection of products to environmentally sustainable products. Such a restriction may be against the purchaser's best or expressed interests. The purchaser should be consulted.

Clearly then NMSs should provide for specifiers driven by purchaser preference to select green materials and components, but they must also allow specifiers to select non-green options where there is no such pressure. Choice is the key.

Some NMSs are owned by organisations which have environment policies. These may oblige NMSs to 'go green' in spite of any lack of specifier interest. For example, Construction Information Systems Australia (publisher of *NATSPEC*) has twenty industry shareholders, of whom at least two (the Institution of Engineers, Australia, and the RAIA) have environment policies. *NATSPEC* is beginning the process with a new worksection titled *Monolithic stabilised earth walling*, which is due out in November 1997.

All these individual policies need to be seen against the background of government, and even regional, environmental policy. Some will be much more advanced in respect of sustainable development than others. Sometimes international commitments drive such policies. For example, the 'Communiqué of 1st European Ministers Conference on Sustainable Housing Policies' announced that represented governments will look to improving the environmental quality of housing stock by measures such as:

- integrated urban planning;
- reduction of transport demands;
- water and energy savings;
- refuse handling;
- indoor climate improvements;
- development of community participation in planning;
- maintenance and adaptation of existing housing;
- use of sustainable new building materials; and
- free trade in building materials.

Clearly a number of these will affect European NMSs.

3.0 GREEN PUBLISHING

Having helped NMS users to design and build green buildings, it behoves NMSs to look to their own activities. NMSs should consider paperless publishing of national systems e.g. using CD-ROMs, floppy disks, and the Web.

Publishing on the Web, for instance, enormously reduces paper consumption and fossil fuel usage (by post and courier services). Users will only print what they need, so lesser used worksections such as 'wallpapering' may never be printed at all. This is preferred to sending all subscribers paper versions of worksections they may never, or rarely, use.

Similarly, publishing on CD-ROM, perhaps 'piggy-backing' on another publication (e.g. the national architecture and engineering magazines) rather than going out in its own mailout, saves paper and fossil fuel. It also promotes the material widely. Again, users will only print what they need to use.

Similarly, small worksections permit users to be more selective about what they want to print, so even less paper will be used. Printing a vast 'concrete' worksection — covering in-situ work, post-tensioning, precasting and so on — when all one wants to specify is precast panels is both annoying and wasteful. Small worksections make sense, at least in this respect.

4.0 RECOMMENDATIONS

Individual NMSs can deal with environmental issues in a number of ways. Primarily, they must provide for choice, both of environmentally preferred specifications, and of other specifications. Global bans will not work.

Having provided options, they should also provide sufficient information to guide specifiers in selection. This guidance must be of the highest quality. NMSs need to access raw information, and evaluate it for currency, relevance, and objectivity. This is not easy — in many cases there is no information meeting these criteria. What should the NMS do in these circumstances? One solution is for the NMS to contribute to the necessary research directly.

Environmental advice must be integrated with advice on other topics if environmental issues are ever to become mainstream. Few NMSs seem to be doing this.

Greening of an NMS is subject to some external constraints — some anti-environment, some pro-environment. Individual NMSs are often in a position to influence these externals, which include legislation, contracts, standards and policies. Meanwhile they must be worked with, or around.

NMSs are expected to be current, and in particular with regard to legal shifts. Over recent years many construction materials have been phased out or mandated nationally and internationally. NMS subscribers should be informed of such changes.

They also need to be aware of external sources of reliable information, such as building and construction product environmental assessment schemes. In particular, third-party environmental product certification will become more influential in future.

Through the International Construction Information Society (ICIS), NMSs could contribute internationally, e.g. by influencing the development of ISO Standards on this topic (such as those in the ISO 14000 series).

Finally, NMSs (and project specifiers) should consider greening their own publications and activities.

Minimising paper usage, and recycling paper where necessary, are some obvious examples (see GEN 5).

REFERENCES AND RESOURCE MATERIALS

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BIOGRAPHY

John Gelder was, until recently, Chief Editor of Construction Information Systems (CIS), publisher of *NATSPEC*. The original of this Note was presented at the 1997 ICIS Delegates' Assembly.

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