GBE CAP'EM www.GreenBuildingEncyclopaedia.uk Cycle Assessment Procedure for Eco-impacts of Materials

Specification & Liability

RIBA Part 3 Seminar UWE 2010
DMA CPD 2015
BGY CPD 2016

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Specification in a context of liability

- **Context:**
  - General Contracting & D&B
  - RIBA Plan of Work stages
  - Case Law

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What is a Specification?

- **A recipe for a building (General Contracting)**
  - All the ingredients
    - Ingredients, materials, products, accessories, systems
    - Greener versions where available
  - All the utensils (tools, less so these days)
  - All the mixes (very important, strength, durability)
  - All the processes (workmanship)
  - All the finishing off (workmanship, tolerances)
  - The end result (appearance, finishes)
  - Taste test (site testing)
- **Or Employer's Requirements (D&B or CDP)**
  - Make me a nice cake
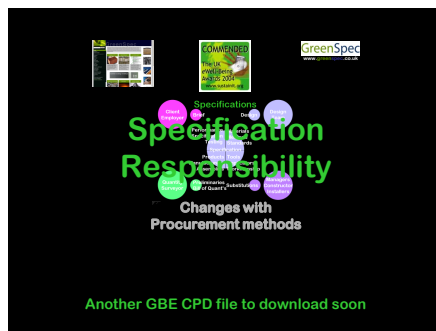
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Employer's Requirements

- **Anything from a brief for a building**
- **To a specification**
- **Usually Performance Specification**
  - Make me a nice cake
- **Some times prescriptive bits**
  - Smooth white icing
  - Or crumble detailing

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What else?

- **Preliminaries**
  - Architects responsibility
    - Infrequently by Architects
      - (especially with different procurement methods)
    - or standard departures from NBS issued to QS to include
  - Written by the QS? (No Responsibility?)
  - Checked by the Architect?
- **Schedules?**
  - Architects Finishes
  - Ironmongery, Sanitaryware
- **Specialist Contractor's Specifications?**
- **Manufacturer's Specification? Included after editing?**
- **Appendix?**

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Who's responsibility?

- **Your's unless you client gives permission to do otherwise**
  - No matter who actually writes it
- **If somebody else does you are responsible for reading, reviewing and getting it corrected by them, or adding to it**
- **Who else might right it?**
  - Other Consultants
  - Manufacturer's own
  - NBS (yes, even they have weaknesses)
  - Specialist constructors
  - QS: why? Cost Control Freaks
  - Developer's preferred products or methods
  - Clients preferred (who they do business with)
  - Industry/Sector National Specifications

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COMMENDED GreenSpec www.greenspec.co.uk

Specification Responsibility

Changes with Procurement methods

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At what stage?

- **As soon as you put 9B pencil to paper**
  - Specification choices are being made
  - Specification is Design, Design is Specification
- **Record your choices as you go**
  - So you do not have to remember later
  - Meet reps write spec (or get them to do it for you)
- **Outline spec to QS can be full of holes**
  - But full of nuggets of information
- **So the cost plan reflects**
  - what you are thinking of and hoping for
- **If you want a green building write a green outline spec to get a green cost plan**
  - Fail at this stage and you will get a violet building

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www.capem.eu CAP'EM COMPASS

Specification: at what stage?

RIBA Plan of Work Stages 0 to 7 (or 8)

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Quality & QA

- Not the difference between e.g. plastic and stone floors
- But about consistency
- Quality assurance
  - Procedures to get things right
  - Avoid getting it wrong
  - Never getting it wrong twice
- QA: Say what you do, do what you say, keep records that you did
- If there is one of you its all in your head, assuming you have a good memory
- if there are more than one then you need to communicate via paper or electronic records that can be found again

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Quality on Building Sites

NEDO report

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Liability Alerts

- Liability Alerts:
  - feedback from PII Insurance provider
- RIBA Journal
  - Regular input in legal pages
- Short statements
  - Learning from other peoples mistakes
- WREN run a technical forum where the greyhairs/techies in the practice share knowledge at their meeting
  - Dominated by a few outspoken

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Quotes

Liability Alerts

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Design responsibility

- Its yours until it is not
  - Not transferred without Client's permission
- Not "fit for purpose" (Contractors have to do that)
  - you are very privileged, its an easy life
  - Unless you are novated in D&B then 'fit for purpose' applies
- Design management
  - your responsibility in house
  - Lead Consultant? Your responsibility in project team
- If Lead Consultant
  - Co-ordination of Design of team
  - Briefing the design team an essential part if you are to achieve sustainable designs
- Sustainability
  - Coordinated integrated design essential for success

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Design Responsibility

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Output responsibility

- **Products**
  - Merchantable Quality & Fit for purpose
- **Design**
  - Due skill and care (try hard!)
- **Building**
  - Fit for Purpose
    - Default by UK law
  - But they try to negotiate it out of contracts
    - Do not be charmed by their smooth talk
    - Don't let your lack of knowledge be defeated

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Fit for purpose

- **Building Regulations**
  - Approved Documents
    - **Tertiary documents**
      - by industry and authoritative bodies
        » E.g. bats and birds in low to zero carbon buildings
    - **Codes or Practice & Standards**
    - **Authoritative documents, BRE, TRADA, etc.**
  - Interpretation
    - **Fire strategies for whole building**
      - E.g. Airport, luggage full of booze stacked against columns all set alight at the same time could not melt the columns so the design could reflects this fact, no fire protection

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Interpretation

- **Approved Inspectors**
  - Interpretation
  - Part of design team
- **NHBC certification**
  - Own rules more onerous than B.Regs in parts
- **Code for Sustainable Homes**
  - (now dispersing to other regulations)
  - Cites other standards: E.g. Life time homes
  - Own rules more onerous than B.Regs in parts
  - EcoHomes (Voluntary, Scotland)

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European Context

- EU Procurement Rules
- Government funded works
- Case Law
  - Irish project, Italian tender rejected because of Italian standards
    - EU wide CEN standards solves that
  - School Bus services, needed local provider
- Revision
  - Social and Environmental can be requirements
  - Must be relevant
  - Must be in specification
- Not used as a filter later

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EU procurement rules

A chink in the armour

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Construction Products Directive

- Construction Product Regulations
  - Building Regulations: Regulation 7
  - (11 in Scotland, different in Jersey etc.)
- Essential Requirements
  - Interpretive documents
- CEN standards
  - Replace National standards

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LCA Developments:

- CPD (Directive) embraces Environmental
- TC350 LCA Life Cycle Assessment
  - Manufacturers on committee dictate everything
- EU Consumer Council
  - Manufacturers profit motivated (fiduciary rules)
    - Use cheap hazardous materials
  - Surveys suggest LCA not understood
  - Embrace human issues or EUCC will block its adoption
- TC351 Hazardous materials in products
  - Will be embraced by TC350 in the long run

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Proper materials

- Regulations
  - Approved Documents
    - Codes of Practice
      - Standards (BS increasingly replaced by EN)
        » National Accreditations
          » BSI Kitemark
    - Non-compliance
      - BBA Agrément Certificate
        » Sets own rules
        » Defines limits
        » Stay within them
  - ETA European Technical Approval
    - Authoritative sector specialists/test houses
      - E.g. Reinforcement: CARES

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Proper Materials

- CE Mark (EC Mark renamed)
  - Essential requirements
  - If a standard exists
  - Product can be CE marked
  - Can be sold in the EU
- ISO 9000
  - Manufacturer
  - QA
  - But for what?
    - Accounts department?

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Proper Materials

Construction Product Directive
3rd Party Accreditation

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BCO's own LABC scheme

- Local Authority Building Control Officers
- Assessment of materials, products or systems
- On a Project approval basis or
- On a national approval

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Other Sector Schemes

- L20 Fire Doors
  - BWF Certifire
    - All the parts and processes are competent
    - Any permutation of the parts and process provide a competent fire door
    - Each contribution or contributor adds a label
  - TRADA door scheme
- L10 Windows
  - BWF windows scheme
  - TWAS window scheme
- L30 Staircases
  - BWF staircase scheme
- H21 Timber weatherboarding scheme
  - came to nothing

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Other Sector Schemes

- **FIRA Furniture Industry Research Association**
  - FIRA Club Green,
  - FIRA Ergonomic Excellence,
  - FIRA Gold Product,
  - FIRA Gold Installation,
  - FIRA Innovation Excellence,
  - FIRA Service Technicians,
  - FIRA Specification system
  - Furniture Ombudsman,

Design life UK (EU+INT)

- **Long Life 120 years (Int/EU: 100 years)**
- **Normal 60 years (Int/EU: 50 years)**
- **Short life 30 years (Int/EU: 25 years)**
- **Temporary Life 15 years**
  - Do the rules change for short life?
  - Not in my experience
  - But Earthships (semi-buried autonomous buildings) have been built in England and Scotland

In France

- **French Building Control**
- **They have technical approvals**
  - Conventional occupy this space
- **They have experimental approvals**
  - Self build and green occupy this one
- **Sadly not in the UK**

2 Approaches

1 Just do it
2 The status quo
+ Green

12/03/2010   Green is the Colour © 1999-2003 NGS Brian Murphy   1

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Prescriptive or performance Specification?

- **Brickwork is usually specified prescriptively**
- **Describe all the materials products, accessories and the workmanship**
- **But metalwork supports are often specified by a mixture of performance and prescription**
- **Curtain walling: performance with some prescription (e.g. syntha pulvin coating)**
- **Cleaning gantries: all Performance?**

Performance Drawings?

- **If you have not specified by prescription but by performance then your drawings should be too**
- **How?**
- **Show the outer and inner faces:**
  - position, profiles, joints and lines, perimeters, abutments, interfaces, penetrations,
  - materials, jointing, colours and textures
- **You may need to show the underlying structure if this is know/fixed**
- **Specify performance of elements from inner to outer face or visa versa or both**

Principles of Element Design

Performance Specification
Performance Drawings

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How do you choose between Performance or Prescription?

- **You may not be competent to design or specify difficult parts**
  - In whole or in part
  - You may elect that you are not (and ask permission of client)
  - Knowing your limitations is good
  - You are required to consider this
- **Multi discipline parts often are performance**
- **If procurement method dictates contractor is Design & Build**
  - The programme prevents design resolution at the early stage
  - Its left for the specialist trade to use their expertise to resolve design
    - **and client has agreed to permit this**
  - This is often out of your hands
  - The PM, QS or the D&B Contractor often decide

If we are not competent

- **Why do we think the contractor is?**
- **Constructors may not be**
- **Contractors will engage specialists**
- **Who is checking their competency?**
- **Kier had a major failure and now employ teams of design managers checking the competency of all involoved**

Performance Specification in Contract

- We write a performance specification
- The design responsible contractor writes a prescriptive spec in response to it
- We check it for compliance and competency

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Approving or reviewing?

- RIBA recommend we review and comment on inadequacy
- Request improvement until no further comments
- Do not approve or you claim back responsibility

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Performance Specification

- If your client has given permission for the responsibility for design to be passed on
- You can do it
- NBS has addressed performance in a piecemeal way
- GBE has a stand alone A90 Performance Spec to front any spec
- Republished it on GBE

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Specification Substitution

- Contractor habitually do this
- They change the specification
  - To save money, pocket the difference
- To use their favourite suppliers or subcontractors
  - To get the best deal, discounts, etc.
  - To maintain best working relationships they have built over projects
  - To delay payments beyond 30>60>90 days
- We invite it by adding: 'or equivalent'
- But do not manage it (equivalency)

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Surreptitious Substitution

- Contractors habitually do this
- Change the spec without letting you know or asking permission
- If they do, it might not be compliant with the spec
- Who is checking and who is responsible if it fails?
- They should be but its a bit late and hard to determine if its buried in the construction

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Ignoring the Specification

- And ignore the drawings
- D&B Contractors do this
- To simplify the job, save time and money
- Because some are incapable to design or understanding of construction beyond following a drawing
- They build it wrong
- You object, they ignore you,
- You redraw and respecify
- That's why specifiers call it B&D

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Specification Substitution

Case Law, practices & pitfalls

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Or equivalent

- EU Procurement Rule apply
  - in government funded work
  - UK agencies like WRAP say builders know best
- Must give the contractor an opportunity to be price competitive
- NBS Preliminaries include an Equivalency Clause
- If the spec says 'or equivalent' then the contractor can offer alternatives that are equivalent
- If the spec does not say 'or equivalent'
  - then assume it does!
- Private funded work:
  - no requirement, no need to include the clause

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Equivalency

- The substitutions must be equivalent to the requirements specified
- Have you specified the reasons why you chose it?
- If you follow NBS clause you probably did not
- If its prescriptive and you specified some characteristics they can be compared like with like, line by line of the clause
- If it is a performance spec it is harder
  - But not impossible

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If you specified it

- **Why do it twice?**
  - You earned your fee once, don't do it twice
- **1956 case law says you do not have to consider them**
- **In reality and 2015 we are not so clever or robust**
- **Make the contractor do the work**
- **They prove equivalency line by line**
- **If it does not meet the requirements:**
  - they may not even ask you to review it
  - If they ask, you reject it
- **Be Proactive about this: post tender meeting, ask the contractor to declare all proposed substitutions**
  - Show them you are in charge
  - Check everything then
  - GBE's A90 has a Substitution/Equivalency Management clause

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Or similar or equal or …

- **Architects habitual error**
  - Its rubbish
  - Used inconsistently, why for some and not others
  - Never never never use it
  - Never on a drawing, never in the notes
    - **Don't undermine the specification**
  - Never in a specification
- **Slates and concrete tiles do similar things**
  - But you will regard them as unequal
- **They have no legal meaning**
- **'Or equivalent' has EU legal definition**

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Or equivalent and approved

- **Here be dragons**
- **NBS clause defines equivalency**
- **If the clause is included, equivalency is permitted**
- **Substitution will happen with or without your permission or knowledge**
- **Surreptitious substitution will happen**
- **If replacement with inferior products occurs**
- **And you approve stage payments you approve the substitution**
- **It falls on your neck**

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Equivalency

Definitions

Case Law

NBS Clauses

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Cost Cutting v Value Engineering

- **We understand cost cutting**
- **What is Value Engineering (VE)?**
- **VE is a fancy name for cost cutting**
- **VE should be about value for money**
- **Getting equivalency for less money**
- **Looking at the bigger picture**
- **Replace 2 items with 1 that does 2 things**
- **Not removing one item and leaving it deficient**

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Value Engineering

Posh for 'Cost Cutting'

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Culture of Blame

Barriers & Excuses for Status Quo Prevails

down supply chain & up demand chain

Deadlock broken through education & awareness

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Language

- **Instruction not guidance**
  - Guidance is ambiguous
- **Robust, Specific,**
  - Specify the reason(s) for choosing it
  - Police it
  - Tell your directors not to interfere, unless they know what they are doing
- **Redundancy:**
  - The Contractor shall…do it
    - **Do it**
  - The Contractors attention is brought to….
- **No options**
  - They will price for the expensive
  - And install the cheapest
  - Pocket the difference

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No Redundancy

- **It is a 'Specification' not a 'Generalisation'**
- **So make it Specific**
- **Only include it if it is relevant to the job**
- **No 'we might use it so I will keep it in'**
- **If it is full of irrelevance the contractor does not trust it, it goes in the bin or it is never opened and never looked at**
- **This undermines the effort in adding the bits that are required**

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CPI Coordinated Project Information

- **Avoid QRE Quality Related Events**
- **Rationalise information**
- **Avoid potential for conflict**
  – One place gets revised another does not
- **Avoid repetition**
  – Say it once in a library then Link & Embed
    - Symbols, Blocks, Xrefs, hyperlinks, OLE
- **Say it in the Specification**
  – Cross reference to it from:
    - Drawings
    - Bill of Quantities

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CPI Coordinated Project Information
CPD topic

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Quality on Building Sites
NEDO report

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Classification

- **CPI**
  – Asked for one language between consultants
  – For simple cross referencing
  – CAWS Common Arrangement of Work Section
  – SMM7 Standard Methods of Measurement
  – Published in 1987
- **PSA & NBS adopted it 1991**
- **Not everybody uses it**
  – Structures and M&E often don't
- **SMM8 has arrived**
  – What next for specification?

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Computer coordination

- **3D modelling**
  – Objects, Elemental assemblies
  – E.g. REVIT by Autodesk
- **Elemental LCA BRE Green Guide**
  – TSB £1m + IES VE + BRE Envest = IMPACT
- **Elemental Cost modelling**
- **Elemental Specifications**
  – NBS Create and Uniclass 2012
  – BIM and Uniclass 2015
  – GBE GBS Ambition to do Elemental Specifications too

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Green Material Olympics
BRE Green Guide to Specification

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Elemental Specification

- **GreenSpec got there first MyGreenSpec then GreenSpecSTUDIO (but no longer)**
- **Readymade assemblies for:**
  – Greener & Violet construction
  – Greener & Violet materials
  – Greener Products
- **No longer in existence**
  – GBE will recreate its parts
  – GBE BEST, GBE BEACON & GBE 3D Studio

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MyGreenSpec '09

Assemble a building by choosing products for each component of its many elements
The specification assembles itself

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Other's specifications

- **Manufacturers (take care and incorporate in spec)**
  – Specs
    - Guidance
    - Literature cut and paste
    - Specifications
      – Terminology
- **Schedules (should all have a document number)**
  – Lintels
  – Stone features
  – Ironmongery
  – Sanitaryware
  – Kitchen equipment
- **Methods statements**
  – Are not specifications

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Other's Specifications

- **Consultants**
  - Often do their own
  - Sometimes only do a schedule
  - Sometimes incompetent specification
  - Use with care, rewrite if needed, take care
  - Seek approval of rewrites
- **Mixed discipline**
  - Signage & VMS
  - Water features
  - Smoke ventilation systems
  - Cleaning gantries

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Specialist Consultant's Specification
E.g. cladding consultant

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Choice of systems

- **Influences:**
  - Manufacturer's specification (often incompetent)
  - NBS written manufacturer's specifications (NBS competent)
  - NBS Plus (NBS competent)
  - GBE GBS (GBE competent)
    - See latest Product and Manufacturer Pages

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- **Brian Murphy BSc Dip Arch (Hons+Dist)**
- **Technician & Architect by Training**
- **Specification Writer by Choice**
- **Greening up my act since 1999**
- **Founder of NGS National Green Specification 2001**
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