

# Specification survey

## Foreword

NBS has authored and maintained the National Master Specification for the UK for nearly 40 years. During that time it has grown and developed from a slim, two-volume, printed publication to a digital information model covering building fabric, engineering services, landscape and structural specification. Over the course of those 40 years, we have seen substantial change in the construction industry, with cycles of growth and recession, new forms of contract and procurement and technological development. This survey provides a snapshot of our industry and its current attitude towards specification information and sets out what is expected of a specification system. The survey paints a clear picture of a diverse industry, using multiple procurement routes across a wide range of project types. This diversity requires a broad range of different approaches from performance to proprietary specification, and the flexibility to mix and match these approaches within a single project. There is no one-size-fits-all approach to the information requirements or method of specification and the specification system must work hard to meet the demands of industry both now and in the future.

Looking at that future, there seems little doubt that our industry is poised once again to see a major step-change with the widespread adoption of Building Information Modeling (BIM). The government has stated that it will require the adoption of BIM by 2016 for publicly funded projects over £5 million. Initially, what this means in practice is that the construction team will have to hand over structured information at key stages in the procurement process. This information is currently “locked” into 2d drawings, bills, specifications and reports, and the adoption of BIM will require significant changes to the systems and processes that we use to create, manage, maintain and share that information. The survey demonstrates that despite the diversity of the industry, there is clear agreement about the value and role of the specification within this BIM future. The industry recognises that specification information is a core component of BIM and that BIM is not an alternative to specification.

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a snapshot of our  
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The findings of this survey also serve to endorse the investment that RIBA Enterprises have made in developing a new, “built-for-BIM” specification system; NBS Create. We are confident that NBS Create meets both the current needs for a flexible specification system demonstrated by this survey and delivers information in the structured format required for BIM. These are exciting times for our industry and with NBS Create, we are putting the “I” into BIM. The findings of this survey indicate that this will be welcomed and embraced by industry.

**Richard Watson**  
Executive Director  
RIBA Enterprises

## Introduction

In spring, 2011 NBS carried out a research project to find out how people were creating and using specifications in the UK. We also wanted to find out how people saw specifications developing in the future. The research followed on from our research into BIM (Building Information Modelling), which confirmed that specifications were an integral part of BIM.

The people who took part in the survey were not just architects, and were not just those who use NBS specification tools. We had a good sample base of around 500 respondents from a range of professions, companies and organisation sizes.

**Adrian Malleson**

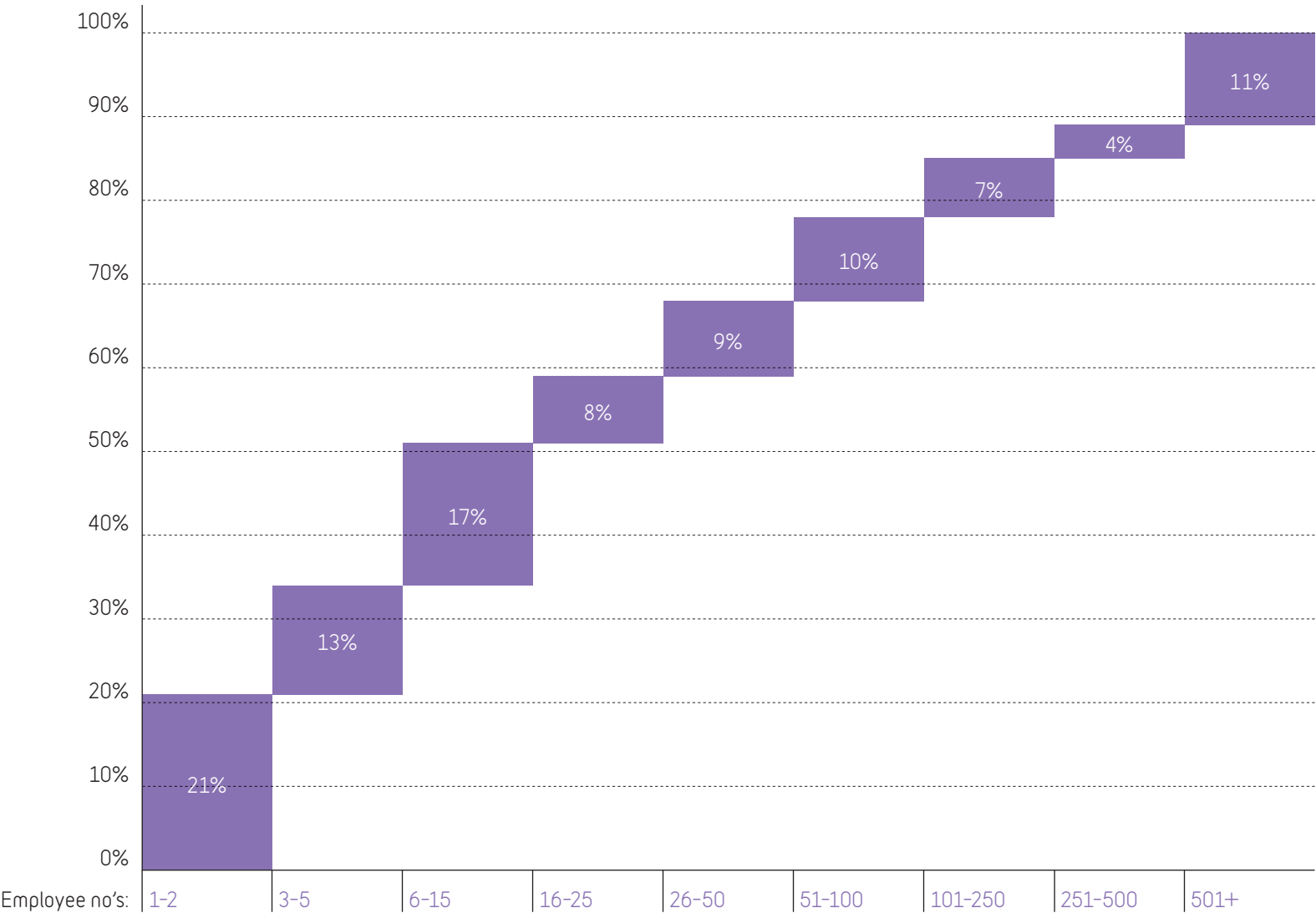
Research and Analysis Manager

# Who specifiers work with

How many people are employed at your place of work in total?

Over a third have five or fewer people at their place of work, though 11% of respondents worked in places with more than 500 employees.

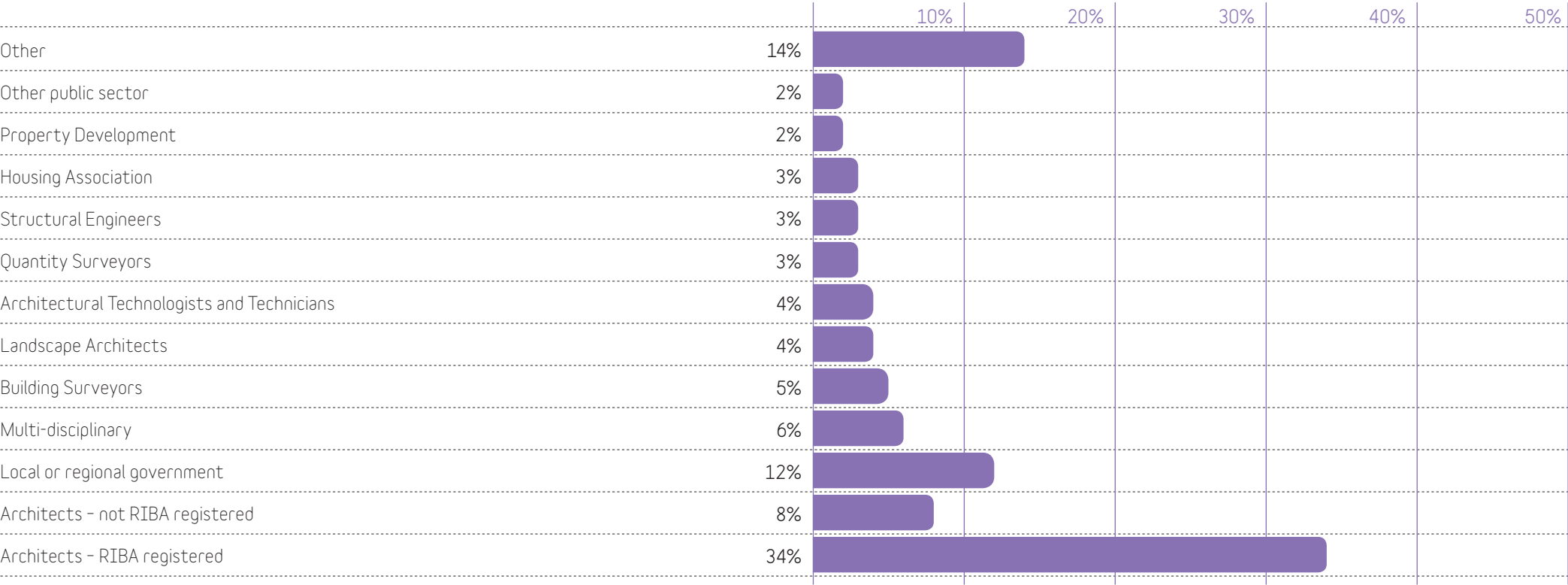
This graph shows that 42% of respondents were in architects' practices. Other business types were well represented, notably local and regional government, at 12%, and multi-disciplinary organisations at 6%. Among the "others" that made up 14% of respondents were contractors, building services engineers, quantity surveyors, interior designers and project managers.



# Where specifiers work

Which of the following best describes your organisation’s type of business?

So, a diverse sample. The one thing they all had in common, though, was that each respondent told us that they “produce specifications or are involved in the specification process”.



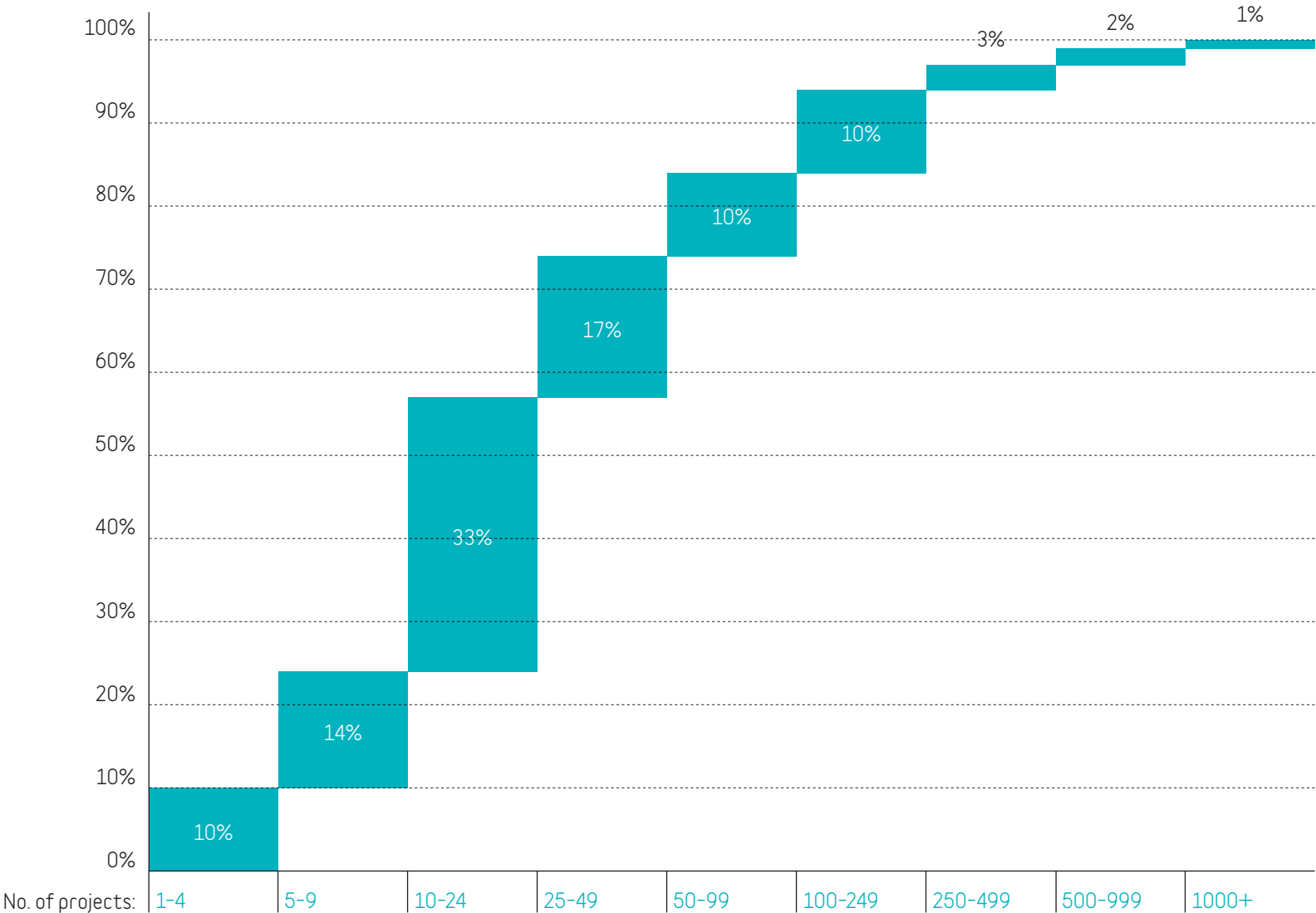
## Current work among specifiers

The current climate within the construction industry is tough. We wanted to get an idea of how many projects people are working on and what kind of projects they are.

# Volume of work

Approximately how many projects has your company been involved in over the last 12 months?

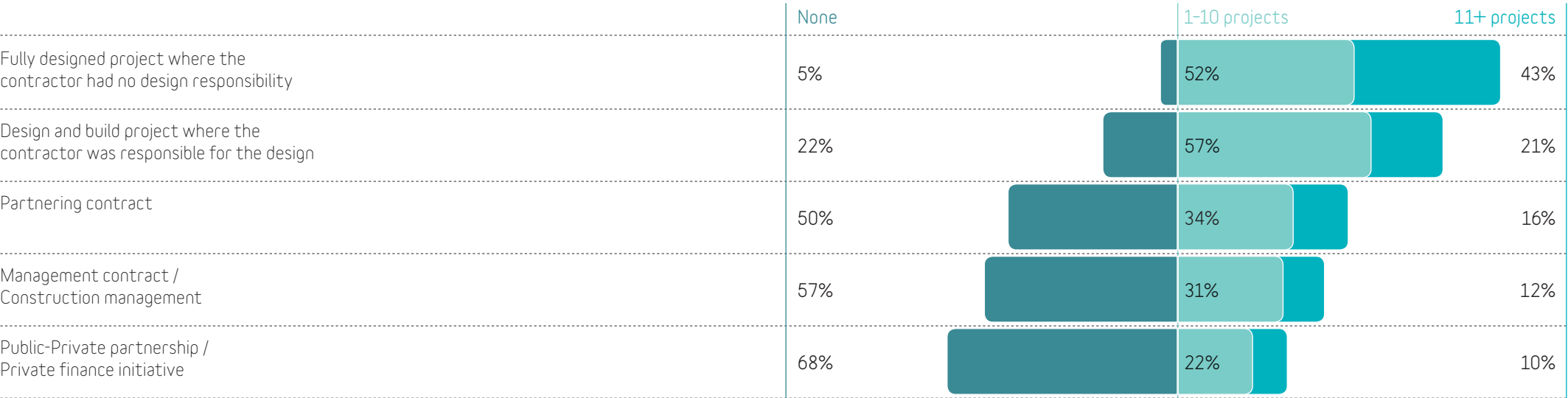
We found that a majority of companies have been working on fewer than 25 projects in the last year. The median number of projects is 20. Some companies have had very many projects, though, with 1% of respondents telling us their company has worked on more than 1,000 projects. This concentration of a great number of projects among larger companies has given us a mean number of projects of 64.



# Project funding

In the last 12 months, how many projects has your company been involved in using the following procurement methods....?

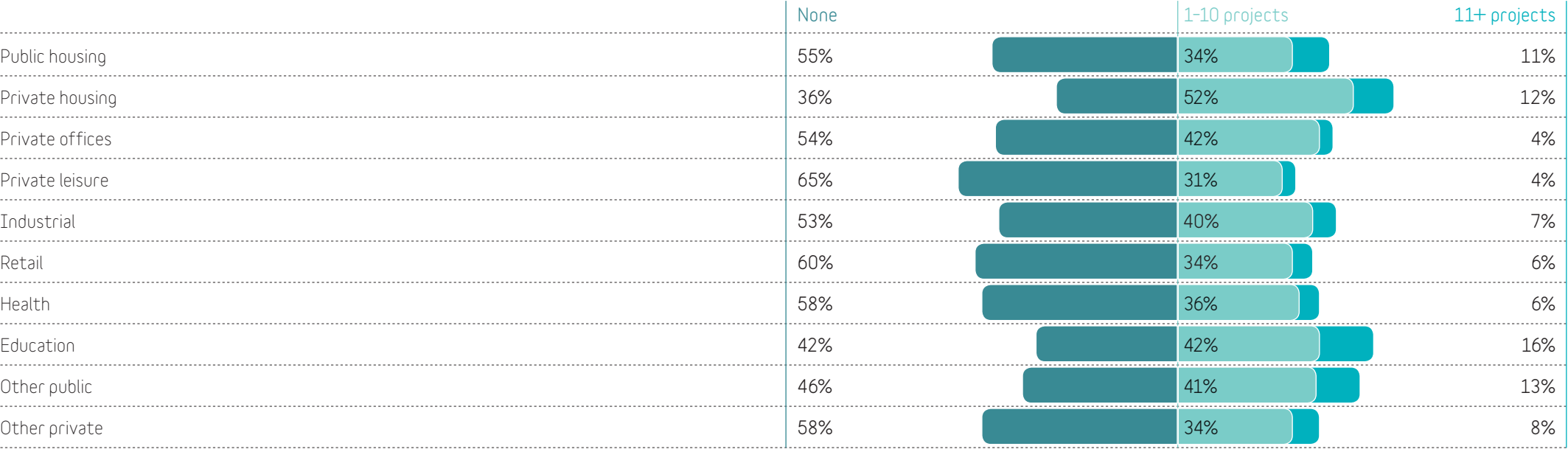
We found that respondents were involved in projects that used a range of procurement types, with fully designed projects being the most common. Three quarters of respondents have been involved in design and build projects, where the contractor has had responsibility for design.



# New build projects

In the last 12 months, how many projects has your company been involved in for the following types of work for new build?

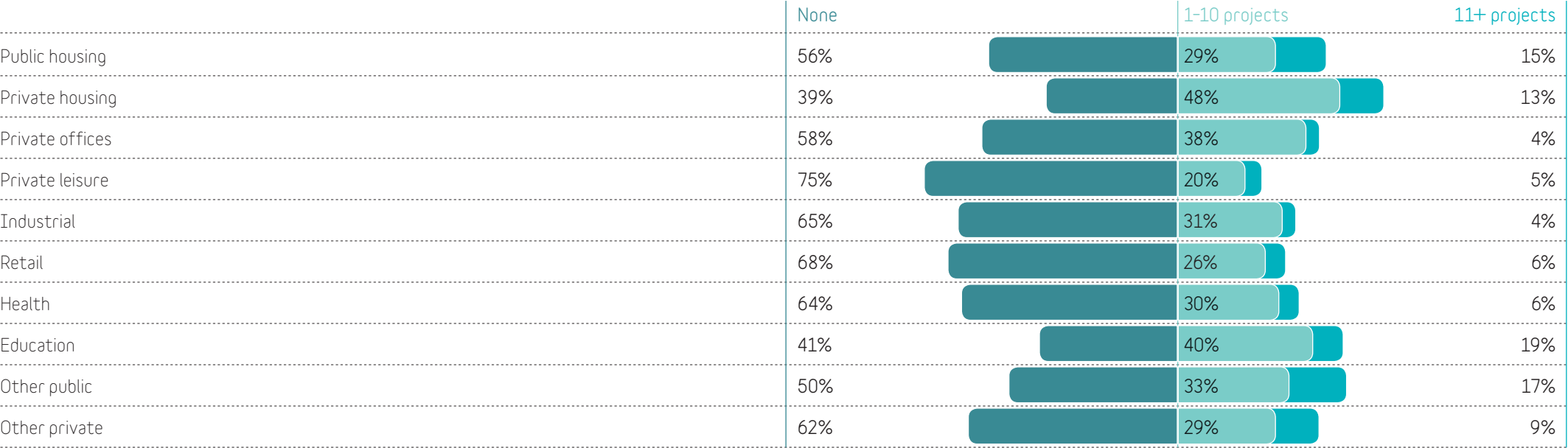
We also wanted to find out what kinds of work people are doing, for both new build and refurbishment.



# Refurbishment projects

In the last 12 months, how many projects has your company been involved in for the following types of work for refurbishment?

A majority of specifiers are involved in some kind of public sector work; whether housing, health, education or other. We might confidently say that the reduction in capital expenditure for public sector projects will adversely affect specifiers. Private housing is a mainstay and it is perhaps from the private sector generally that more new work will come.



# Types of specification

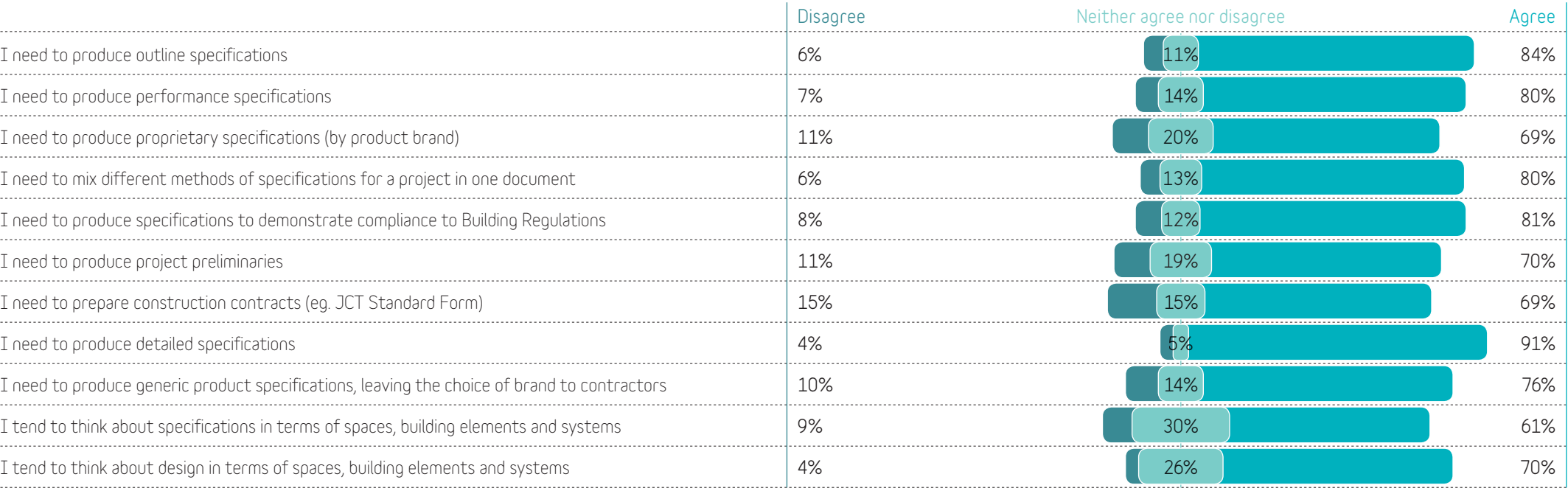
Regarding the types of specification you produce, how strongly do you agree or disagree with the following statements?

Aligned to the different types of procurement methods are different kind of specifications that people need to produce. The picture here is that specifiers need to be flexible in the ways they specify. From outline specifications through to performance and detailed specifications, via building regulations approval, the specification needs to have a life through the project.

“Ability of it to produce an outline specification for use at Stage D/E which can then form the basis of a full specification for the production information stage.” Indeed specifiers need to be able to mix different types of specification in one specification document. This may be performance and prescriptive specification.

“More clarity and better grouping between performance and prescriptive specification.” Or it may include either, or both, generic or propriety product specifications.

“The ability to write generic, product specific and performance specification in one document.” Given the range (if not quantity) of construction projects and procurement methods around now, there is no “one size fits all” method of specification.



## The future of specifications

We wanted to use this opportunity to gauge specifiers' views of the future of specifications. We've seen different work types and procurement methods. We can add the increasingly important roles played by the contractor, technology, BIM, environmental targets, legislation and government funding methods. The construction industry is in constant change; what does this mean for the specifier?

Well, specifications are not just for the design or pre-construction phases of a construction project. Sixty percent of specifiers feel that in the future specifications will have a life as long as the building.

“...transitions through the differing information requirements from RIBA Stage C/D (outline design) through to L (completion)”

The need for environmental performance requirements is clear, with 87% agreeing that in the future specifications include them. There may be a link here, with the potential for specifications being used to describe and control the lifetime environmental performance of a building.

The future of specifications

“performance specification would be useful”

“More ‘Green Performance’ integration”

There’s a suggestion that specifiers will be moving more towards standardisation, 66% telling us they will have to conform to a European standard for specification and 59% seeing themselves as having to comply with an office standard.

“we are doing projects in various countries where different standards are applied, it will be good if we could have a possibility to automatically transfer the main specification from one particular standard to another”

“If the company had a set of standard specification set up as templates that could be used for different types of jobs it would make things a lot easier and also more consistent throughout the company”

# The future of specifications

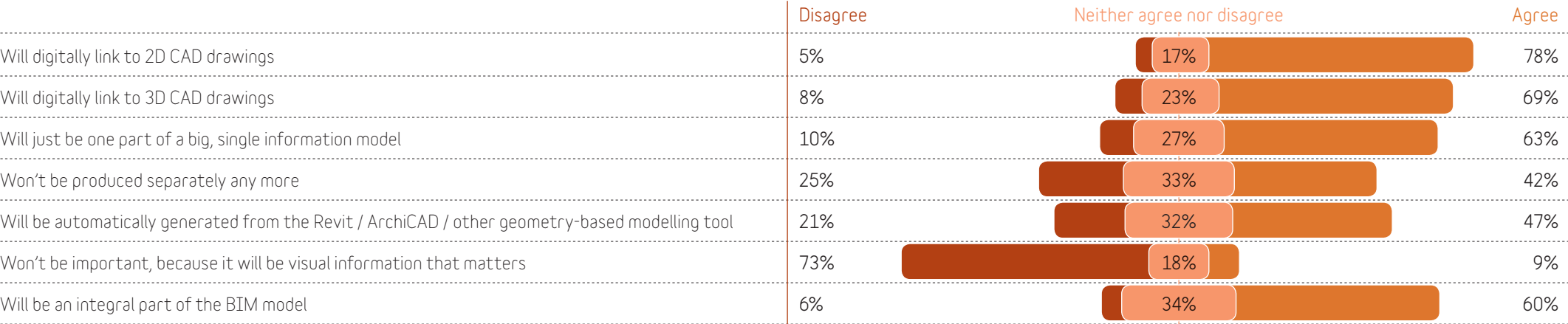
How strongly do you agree or disagree that in the future, specifications...

“Integrated with the drawings / model throughout the entire process” We also wanted to get an understanding of how respondents saw specifications linking with other building documentation.

We see that there is a strong expectation that specifications will link with CAD drawings, both 2 and 3D (though slightly more for 2D). “Linking into CAD systems is an excellent idea”

“Integral BIM and specification would speed up the process of design and provide more clarity before site progress so saving problems on site.” A majority see specifications being part of a larger information model, whether explicitly BIM or not. However, there is a strong disagreement that visual information could replace specifications, with 73% disagreeing.

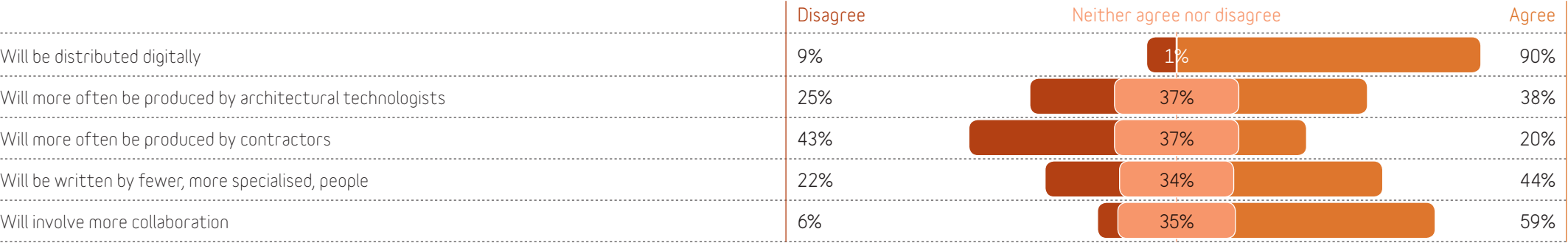
“The decision making process for specification is not the same as the drawing process and will probably remain separate for some time”



# The future of specifications

The respondents expect that specifications will be shared digitally and this feeds into an expectation that there will be more collaboration in specification writing (whether with other disciplines or the contractor).

Where the respondents begin to more clearly disagree is around the role of the contractor, with only 20% agreeing that specifications “will more often be produced by contractors” and 43% disagreeing.



## Conclusion

The findings of this survey were derived from 500 respondents – a diverse group that included a range of professions, companies and organisation sizes – so thank you to all who responded. The findings reflect the use of specification information today and provide insight into the future of specifications.

There is clear demand for a specification information tool that works throughout the project timeline. A range of procurement methods are in use today with fully designed being the most popular, closely followed by design and build. Specifiers need to adopt different approaches to suit their projects and they need flexibility to specify in different ways along the project timeline.

The government is reforming the way it procures construction, aiming to reduce costs by up to 20% by the end of this parliament. This is a challenging target but it supports their strategy of providing better value for money for the tax payer. To achieve this, efficiency improvements through better reuse of information and more effective collaboration is key. Construction projects produce a lot of documentation, and this content is created many times, by many individuals in many forms. Re-use of information throughout the plan of work is limited. One respondent summed up the need to improve procedures quite nicely:

“[The] ability of it to produce an outline specification for use at Stage D/E which can then form the basis of a full specification for the production information stage.”

The diverse range of specification types in use today, such as outline, performance and detailed, very much suggests a need for a tool that captures information without the need for any re-work, thereby providing efficient and effective information management throughout the life of the project.

The strongest opinion in the survey identified that future specifications will be distributed digitally, and this is not unexpected. But digital exchange of specification information is certainly not about sending emails with specifications attached, it's about:

- using the specification as a collaboration tool;
- allocating roles and responsibilities for systems; and
- tracking the status of work, amending, expanding and developing it, all as part of the project team community.

If practical ways to exchange the relevant aspects of the information model are provided, information flow becomes more effective, accurate and useful, resulting in buildings that not only match the brief but are maintained and used as intended too.

Unsurprisingly, top of the survey list of requirements for future specifications is the inclusion of environmental performance – 87% of respondents agreed with this. NBS is preparing environmental information as part of a new whole building performance section, supplementing the environmental requirements and characteristics that are already distributed throughout NBS.

Specifiers need to adopt different approaches to suit their projects and they need flexibility to specify in different ways along the project timeline.

Interestingly, the findings show a divided opinion in terms of whether future specifications will be generated from the Revit/ ArchiCad model. This identifies a significant industry uncertainty concerning the way forward. Many have experienced BIM from the geometry side of things, drawing walls with openings rather than vectors and shapes with hatching. But will BIM make NBS redundant? The answer is absolutely not. Specification information is an essential component in the information model, it describes the requirements and outcomes for the project at all levels and this information will always be necessary. It's inevitable that data from different sources will meet. CAD geometries should meet the systems, their characteristics and product types as defined in NBS, and changes in either should be reflected in both. Industry Foundation Classes (IFCs) and Construction Operations Building Information Exchange (COBie) are non-proprietary ways of structuring data for use across different applications and NBS will support this.

Seventy-two percent of respondents agreed that specifications are important, rather than just relying upon the visual information. Construction needs both geometric and technical information.

But will BIM make NBS redundant?  
The answer is absolutely not. Specification information is an essential component in the information model... and will always be necessary.

The survey suggests that future specifications will be an integral part of BIM, which is necessary to streamline information and create effective working tools for every part of the supply chain. Current NBS already permits clause references derived from the appropriate project specification to be imported into the CAD environment and used as annotations. Future NBS information goes way beyond this and will act as an entire information model. This model will describe all of the non-geometric properties of systems, their products and how they are installed and commissioned.

Specification is simply a process – it is the task of describing what is required irrespective of the stage of the project. NBS has provided the up to date technical information to enable this process for many years. This information is critical to the construction industry and it will continue to evolve. For some time now NBS has been making use of sophisticated information modelling techniques to enable its content to be used in many different ways and in varying degrees of detail. This reflects many of the findings of the survey in confirming the need for a mix of specification types. This work has involved an entire re-write and re-structure of NBS and is leading to a brand new version. New NBS will make creating specifications at any point along the project timeline possible. Early stage specifications such as outline reports can be prepared and information documented at that stage will flow into the outputs of subsequent project stages, such as performance and full specifications.

It will also mean that systems selected at outline stage will be part of the information model and will be ready and waiting as you move to the later stages. Future specifications will have a life that suits not just the project timescale but also the building in use timescale. Capturing clients' requirements at inception is the start of this and by accurately documenting everything 'as built' at the finish, a powerful information model will be created. This model then provides a platform for building in-use monitoring and analysis. The continuous improvement approach will help the construction industry deliver the government's construction strategy.

Predicting the future can be tricky, but what is certain is that future specification information created using NBS will be radically different to that produced today. It will be an integral part of the building information model, offering the opportunity for greater collaboration, flexibility and efficiency.

Ian Chapman  
Head of Specification

July 2011

## Opinion piece

### The structure of the specification

In the 1980's a standardised structure for storing and communicating project information was formed. This was CPI – Co-ordinated Project Information which included CAWS – Common Arrangement of Work Sections.

Whilst this provided a comprehensive and standardised approach which was quickly taken up by specification writers (NBS) and Quantity Surveyors (SMM) it has proved less effective for storage of project information in libraries and not at all suitable for the early stages of projects – briefing and outline specifications – which generally take an elemental approach. This has meant that work done at the early stages of the project is not structured for use at later stages and is generally discarded.

Projects are broadly described in terms of the size and location of elements on drawings and the attributes of materials and products in the specification, which taken together give a full account of the building. The advent of electronic drawings opened up the opportunity for drawn objects to hold attributes or be linked to an external relational database like Oracle. To my knowledge in the 1980's / 1990's only GDS fully exploited this potential in their CAD/GIS software. As a consequence this was widely adopted by local authorities both in the UK and USA to manage their assets. Now 30 years later with the widespread adoption of BIM others are beginning to catch up with this concept.

BIM has great potential, but to fully realise its benefits the construction industry needs to radically revise its procurement methods, contracts, insurance and attitudes to liability.

## As the electronic tools develop to allow greater collaboration and sharing of project information it is incumbent on all of us to take advantage of these opportunities

These issues are the subject of much debate elsewhere so I will not cover them here. As the electronic tools develop to allow greater collaboration and sharing of project information it is incumbent on all of us to take advantage of these opportunities, adapting our working practices and contractual relationships as necessary.

The Government recognises the potential efficiency benefits of BIM and is pushing for adoption on all public procurement by 2016. This has implications for the specification process.

### The specification process

The specification process has come a long way from the days of physically getting an old specification document and cutting it up, pasting together the bits you wanted and handing this to a secretary for typing – the origin of the computing term 'cut and paste'.

In NBS Building/NBS Engineering Services/NBS Landscape, NBS have provided us with a suite of products which provide a sophisticated editing tool enabling specifiers to assemble and manage specifications quickly and efficiently.

One of the strengths of the current software is its ability to provide clause specific guidance at the point at which the clause is being edited. This encompasses not only the technical guidance from NBS' expert Technical Authors but also guidance from manufacturers and importantly – user guidance.

We would like to see the specification extend further back up the project timeline to the briefing stage so that information contained in the brief can form the basis of the later construction specification.

At Levitt Bernstein we have used the facility for 'Office Standard Specifications' not only to provide pre-edited templates to speed production but also more importantly, to capture the knowledge and experience of the practice and deliver this to the specifier at the point of need through user guidance. The specifier is presented with the information they need (and often didn't know they needed!) without them having to go and seek it out.

One of the frustrations, currently, is that the 'specification' remains a standalone document produced at a specific point in the procurement process. It is issued at tender, but not looked at by the tenderers if there is a Bill of Materials, is used in construction and then filed for posterity. Also whilst drawings and specifications cross refer to each other, there is no direct link. In general, you cannot interrogate the drawing to extract more detailed information. So what do we want for the future?

#### Future directions

Building Information Modelling (BIM) is gaining ground and is likely to be in widespread use in the next five years. Whilst initially introduced to replace 2D CAD for drawing production its potential goes way beyond creating a 3D model of the building. The ability to retain attributes of the elements within the model now raises the question about how specification information should be handled - whether this should reside inside the building model or in a document linked to it.

We noted above that the current specification format limits its applicability on the timeline of the project. What is now needed is a tool which will allow specifiers to start collating and assembling information from the first day of the project and then allow them to extend and expand this into a full specification as the project develops. We encourage architects to do this now, collating notes and trade literature in a lever arch file or its electronic equivalent. It would be so much better if this early information was captured as part of the on-going specification. Our experience of BIM suggests that the relationship between the model and the specification must begin much earlier. As elements are created within the geometric model so a placeholder (clause) must also be created for these in the specification. This allows the correct annotation of the model, and in the future a direct connection between the geometric model and the information model.

We would like to see the specification extend further back up the project timeline to the briefing stage so that information contained in the brief can form the basis of the later construction specification. Many of our clients have well-structured briefing documents, some prepared by us on their behalf. These could easily be formatted in a way which would feed into the specification. It is clear, future specifications are going to have to work much harder and for much longer. They will need to be active and updated throughout the life of the building providing accurate information not only to the constructors but also to the Facilities Team who have ongoing responsibility for operating and maintaining the building. They will also be used in many more ways, e.g. for costing, for compliance checks, etc.

The clause guidance functionality could be used to provide links to operating manuals, product brochures, maintenance instructions, manufacturers' websites, standards and guidance documents applicable to facilities management (FM).

Ideally, the specification would start life as a briefing document - a set of aspirations and performance targets, develop with the design into an outline specification describing the proposed project in elemental terms, continue on to become a construction phase specification describing products, material and workmanship, finally ending up as the Operating and Maintenance Manual / Health & Safety File for the project.

As with BIM, in this scenario there are difficulties to be overcome in regard to the ownership of the specification at any point in time, determining who is responsible for editing and updating the information, and how this is tracked so that liability is clear should a dispute arise further down the line.

It is hoped that as the opportunities offered by BIM are developed the specification process and the role of the specification will develop in synchrony. All information in a single place, none of it duplicated, but used in many different ways. That has to be the ideal future.

#### Andy Jobling

Technical Manager

Levitt Bernstein Associates Limited