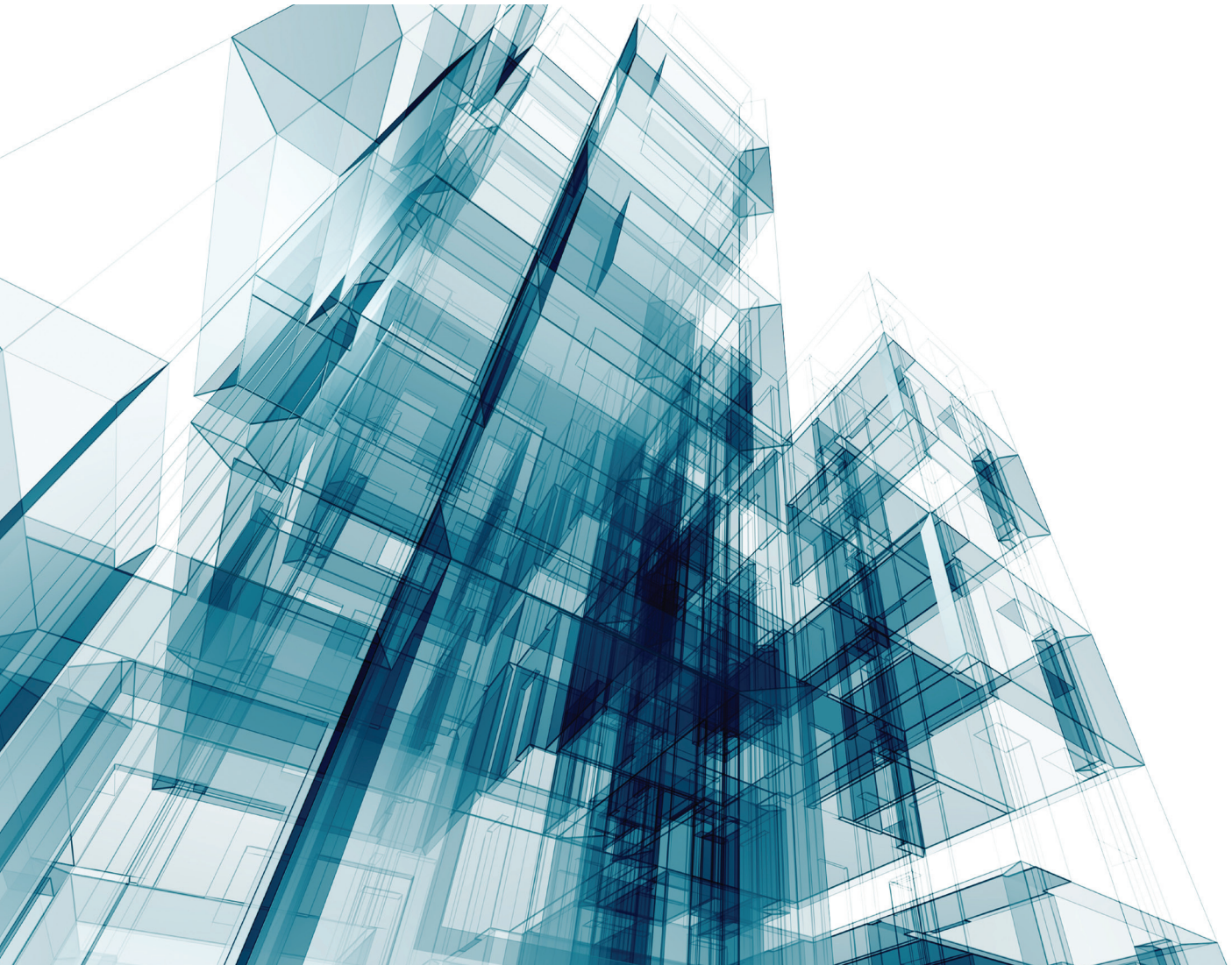




RICS professional guidance, UK

The role of the commercial manager in infrastructure

1st edition, January 2017



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Contents

RICS professional guidance	3
1 Executive summary	4
2 What is infrastructure?	5
3 The global infrastructure market	5
4 The United Kingdom infrastructure market	7
5 What is commercial management?	15
6 The RICS infrastructure pathway	16
7 The role of the commercial manager in infrastructure	19
8 Key commercial management roles	20
8.1 Project initiation.....	19
8.2 Cost planning and benchmarking.....	19
8.3 Procurement.....	19
8.4 Post contract delivery.....	19
9 Summary	21
10 Endnotes	22

RICS professional guidance

International standards

RICS is at the forefront of developing international standards, working in coalitions with organisations around the world, acting in the public interest to raise standards and increase transparency within markets. International Property Measurement Standards (IPMS – ipmsc.org), International Construction Measurement Standards (ICMS), International Ethics Standards (IES) and others will be published and will be mandatory for RICS members. This guidance note links directly to these standards and underpins them. RICS members are advised to make themselves aware of the international standards (see www.rics.org) and the overarching principles with which this guidance note complies. Members of RICS are uniquely placed in the market by being trained, qualified and regulated by working to international standards and complying with this guidance note.

RICS guidance notes

This is a guidance note. Where recommendations are made for specific professional tasks, these are intended to represent 'best practice', i.e. recommendations that in the opinion of RICS meet a high standard of professional competence.

Although members are not required to follow the recommendations contained in the guidance note, they should take into account the following points.

When an allegation of professional negligence is made against a surveyor, a court or tribunal may take account of the contents of any relevant guidance notes published by RICS in deciding whether or not the member acted with reasonable competence.

In the opinion of RICS, a member conforming to the practices recommended in this guidance note should have at least a partial defence to an allegation of negligence if they have followed those practices. However, members have the responsibility of deciding when it is inappropriate to follow the guidance.

It is for each member to decide on the appropriate procedure to follow in any professional task. However, where members do not comply with the practice recommended in this guidance note, they should do so only for good reason. In the event of a legal dispute, a court or tribunal may require them to explain why they decided not to adopt the recommended practice.

Also, if members have not followed this guidance, and their actions are questioned in an RICS disciplinary case, they will be asked to explain the actions they did take and this may be taken into account by the Panel.

In some cases there may be existing national standards which may take precedence over this guidance note. National standards can be defined as professional standards that are either prescribed in law or federal/local legislation, or developed in collaboration with other relevant bodies.

In addition, guidance notes are relevant to professional competence in that each member should be up to date and should have knowledge of guidance notes within a reasonable time of their coming into effect.

This guidance note is believed to reflect case law and legislation applicable at its date of publication. It is the member's responsibility to establish if any changes in case law or legislation after the publication date have an impact on the guidance or information in this document.

Document status defined

RICS produces a range of professional guidance and standards documents. These have been defined in the table below. This document is a guidance note.

Type of document	Definition	Status
Standard		
International standard	An international high-level principle-based standard developed in collaboration with other relevant bodies.	Mandatory
Professional statement		
RICS Professional statement	A document that provides members with mandatory requirements or a rule that a member or firm is expected to adhere to. This term encompasses practice statements, Red Book professional standards, global valuation practice statements, regulatory rules, RICS Rules of Conduct and government codes of practice.	Mandatory
Guidance & information		
RICS Code of practice	Document approved by RICS, and endorsed by another professional body/stakeholder, that provides users with recommendations for accepted good practice as followed by conscientious practitioners.	Mandatory or recommended good practice (will be confirmed in the document itself). Usual principles apply in cases of negligence if best practice is not followed.
RICS Guidance note [GN]	Document that provides users with recommendations or approach for accepted good practice as followed by competent and conscientious practitioners.	Recommended best practice. Usual principles apply in cases of negligence if best practice is not followed.
RICS Information paper [IP]	Practice-based document that provides users with the latest technical information, knowledge or common findings from regulatory reviews.	Information and/or recommended best practice. Usual principles apply in cases of negligence if technical information is known in the market.
RICS Insights	Issues-based input that provide users with the latest information. This term encompasses Thought Leadership papers, market updates, topical items of interest, white papers, futures, reports and news alerts.	Information only.
RICS Economic/market reports	A new document usually based on a survey of members, or a document highlighting economic trends.	Information only.
RICS Consumer guides	A document designed solely for use by consumers, providing some limited technical advice.	Information only.
Research	An independent peer-reviewed arm's-length research document designed to inform members, market professionals, end users and other stakeholders.	Information only.

1 Executive summary

The demand for infrastructure in both the developed and developing worlds has never been greater, although increasingly this demand is now accompanied by the demand for assured delivery against business plan objectives.

In the UK, the government has been developing its role as an effective programme sponsor; publishing its National Infrastructure Plan, promoting best practice through initiatives such as the Project Initiation Routemap and introducing strong gateway and assurance processes at critical points in the decision making and execution process.

This RICS guidance note sets out how the role of the commercial manager is both expanding and deepening in this fast evolving field. With the narrative now firmly around value rather than least cost, and with a strong emphasis on sustainable development, the challenge of effective cost management has never been more important.

It describes how the commercial manager should bring professional skill and influence through the infrastructure project lifecycle and demonstrates the importance of understanding and translating the investment case into disciplined processes; recognising the impact of scale and the uniqueness of engineering not seen elsewhere in general practice, and tailoring the approach to cost, risk and engaging the supply chain.

Commercial management is central to effective decision making and thereafter successful delivery of any infrastructure project. The role of the professional commercial manager is to provide the stewardship at the heart of the investment, and ultimately the benefit realisation processes.

Martin Buck

September 2016

2 What is infrastructure?

Infrastructure is an essential part of every modern, well developed socio-economic system and constitutes the nation's capital assets in the form of environmental defence, roads, ports, railways, airports, power generation, material extraction and the means for people, information and material to travel efficiently. This transportation of people, goods, commodities, water, energy and information relies exclusively on well planned, effectively costed, soundly constructed and properly maintained infrastructure systems.

To remain successful, efficient and competitive, modern societies require well managed infrastructure assets that include:

- integrated transportation systems providing reliable and cost-effective domestic and international connections for both organisations and individuals
- digital networks that offer modern society access to important information and resources, and enable communication across the world from the home, the workplace, and while on the move; and
- sustainable, reliable and affordable energy, water and waste networks that supply constant energy, clean water and, increasingly, protection from the consequences of climate change.

In turn, national investment in infrastructure generates economic growth through increasing productivity, attracting capital investment and providing employment in the construction and related industries. It is well known that capital investment has a 'multiplier effect' upon the nation's current account. Empirical evidence demonstrates that infrastructure investment can increase long-term economic growth, and that, for example, building better transportation links can generate a stronger positive impact on per capita GDP than many other forms of investment.¹

Infrastructure, therefore, is the physical result of investment in economic competitiveness and the construction-led growth that it generates drives societal change, creates sustainable and long-term jobs and supports business, while at the same time improving the environment and quality of life. For the purposes of this guidance note, RICS defines built environment infrastructure as:

- transportation systems: including road, rail, aviation and ports
- energy: utilities, renewable energies, water, etc.
- petrochemicals
- oil and gas; and
- mining and resources.

3 The global infrastructure market

In October 2013 the RICS commissioned report on the effect of the post financial crash on the global infrastructure market (*The Global Infrastructure Challenge: The Role of PPP in a New Financial and Economic Paradigm*), anticipated that around \$57 trillion (£41 trillion) would be spent globally on infrastructure between 2013 and 2030 looking specifically at five key markets:

- Australia
- Canada
- India
- United Kingdom; and
- United States.

The Global Infrastructure Challenge stresses that new regulatory frameworks introduced in the wake of the crisis, combined with ‘a contraction in risk appetite and capacity on the part of banking institutions’ has, effectively, served to constrain the international infrastructure development pipeline for non-government funded portfolios.

While the report sees Public/Private Partnerships (PPP) as an increasingly important business model in terms of securing the immense sums needed globally for infrastructure development, it adds the caveat that ‘Value for Money’ (VfM) will be the prevailing requirement across all major projects over the coming decades.

As the RICS Futures insight paper *Our Changing World* has highlighted, the UN anticipates that the global population will rise to around 9.6 billion by 2050. The UN forecasts that 6.3 billion people, some 66% of the total, will live in cities ranging from 500,000 inhabitants to over 10 million during the same time frame. This increasing global urbanisation will significantly increase infrastructure needs, with seven countries in particular – India, China, Nigeria, Indonesia, the USA, Pakistan and the Democratic Republic of Congo – making up 50% of the world’s total urban population. Between 2015 and 2025 construction output is forecast to rise by around 70%, with just six countries – the United States, China, India, the Russian Federation, Mexico and Indonesia – accounting for 72% of this growth.

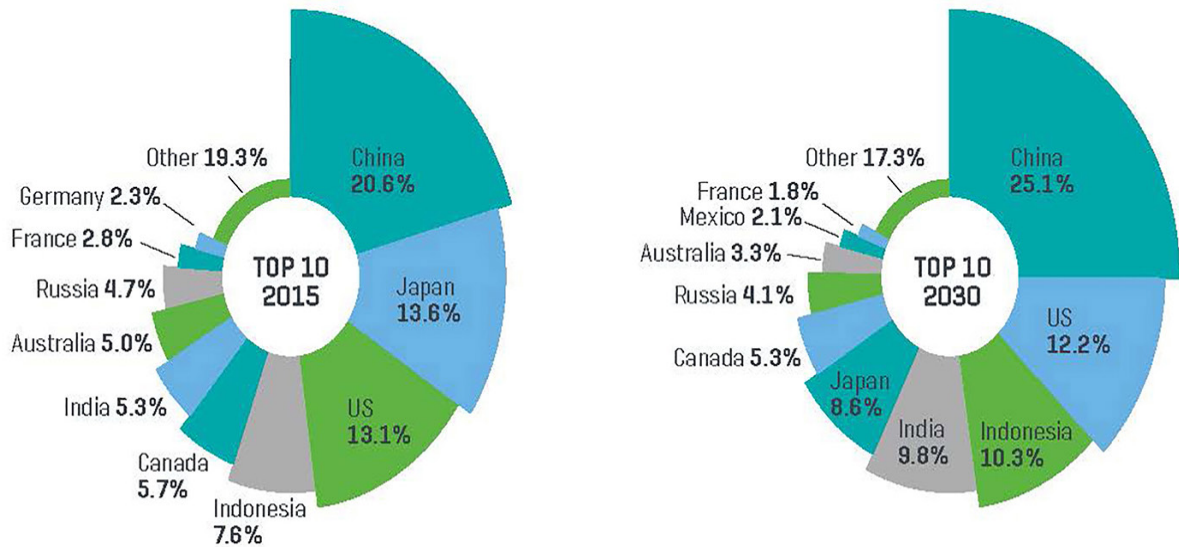


Figure 1. Global infrastructure markets (Source: Global Construction Perspectives and Oxford Economics, www.globalconstruction2030.com)

4 The UK infrastructure market

Following the inaugural launch of its long-term vision for the future of national infrastructure, the *National Infrastructure Plan* (2010), the UK government has made significant progress on both the delivery and long term planning for infrastructure assets. The latest version (2016) of the plan, the *National Infrastructure Delivery Plan (2016-2021)*, sets out this progress in some detail, while also continuing to highlight future projects such as High Speed Rail 2 & 3, the Hinkley Point C nuclear project and Thames Tideway, among many others up to 2020 and beyond.²

In October 2015 the Chancellor of the Exchequer subsequently announced the launch of a new initiative, the National Infrastructure Commission (NIC), chaired by Lord Andrew Adonis and charged with providing a five-yearly assessment of the UK's infrastructure needs across all key sectors of economic infrastructure, including:

- energy
- roads
- rail transportation
- ports
- airports
- water supply
- waste
- flood defences; and
- digital and broadband.

Crucially the NIC, which has been fully supported by RICS, is tasked with promoting 'forward planning and timely investment decisions' and providing 'greater certainty for investors.' RICS is actively engaged with the NIC's recently announced 'consultation into the process and methodology of the National Infrastructure Assessment (NIA)', the publication of which will be scheduled once per Parliament.³

Since 2010, the government has supplemented the NIP with its *National Infrastructure Plan Pipeline* which, at the time of writing, identifies some 565 infrastructure investment projects. Current annual infrastructure spending is projected to be at an average of £48 billion between 2015 and 2020, and a total of £425 billion worth of investment is anticipated up to 2020/21.⁴

As part of this drive to ensure 'timely and cost effective delivery of the government's infrastructure priorities alongside other major government projects and programmes', the UK government has merged the Treasury's infrastructure division, Infrastructure UK (IUK), with its Major Projects Authority to form the Infrastructure and Projects Authority (IPA). The IPA's principal tasks will be to:

'...continue to lead and coordinate the government's collaborative efforts with industry to accelerate delivery and reduce infrastructure construction and whole life costs, getting more for less for the UK's consumers and taxpayers'.⁵

As part of its comprehensive assessment of the nation's future infrastructure needs, the UK government authorised a detailed investigation into the costs of infrastructure provision in 2010. The resulting industry wide *Infrastructure Cost Review*, published in December 2010, concluded that 'the UK is more expensive than its European peer group', while the evidence also strongly suggested that 'there are significant opportunities to reduce costs in the delivery of infrastructure'.⁶

The *Review* concluded that 'higher costs are mainly generated in the early project formulation and pre-construction phases', and highlighted a number of reasons for this. For instance stop-start investment programmes, a lack of clarity and direction over key decisions at the inception of programmes, over-specification, the unnecessary application of standards, and short-term supply chain models were all factors which the investigation confirmed drove costs upwards. Consequently the *Infrastructure Cost Review* recommended that the industry should aim to reduce annual costs by 15%, thus cutting delivery costs by some £2 to £3 billion per annum from the total yearly cost of £15 billion over the course of ten years.⁷

In order to encourage behavioural change and improve working practices across the infrastructure industries IUK published its *Infrastructure Cost Review: Charter Commitments* in June 2011. The *Charter* called for the following recommendations to be implemented across the infrastructure sector in order to reduce delivery costs:

- provide improved transparency and certainty around the infrastructure forward programme
- group projects into more efficient longer-term programmes with clear outcome based objectives
- encourage innovation and allow for earlier and integrated supply chain involvement through improved competition and procurement processes
- seek the best whole life outcome rather than seeking the lowest cost for a given specification
- select supply chain partners on the basis of their ability to deliver innovative solutions set against transparent and affordable cost targets and long-term outcomes

- develop appropriate client technical expertise and intelligent commissioning capability and make better use of infrastructure data to support decision making and the setting of cost targets; and
- create the environment for industry to invest in new technologies.⁸

The latest *Cost Review*, published by the Treasury in July 2014, welcomed the £3.4 billion per year plus cost savings that had been achieved to date, and anticipated that infrastructure clients in both the public and regulated sectors were now 'exhibiting collaborative behaviours that will enable continued and sustained improvements.' Central to achieving these savings were an improving prospect of project initiation and procurement, and 'greater front end loading to ensure that projects are set up to succeed,' as set out in the *Project Initiation Route Map*.⁹

5 What is commercial management?

At its core, commercial management is about value; informing its definition as investment decisions are made and providing 'stewardship' throughout the lifecycle of a programme in realising that value. There are several key facets to providing such stewardship, one of the most crucial being the ability to anticipate, influence and demonstrate to clients what programmes and projects should cost, will cost, did cost and why. Where:

- *should cost*: is the ability to provide credible advice and assessments of outturn cost ranges during business planning and procurement phases
- *will cost*: is the ability to provide incrementally honed assessments and active commercial stewardship to influence and predict the outturn costs during delivery
- *did cost*: is the validation of outturn costs relative to scope, client behaviours, suppliers' performance and entitlement; and
- *why*: is evidenced through informed analysis of data and benchmarking that illustrates cost drivers and value for money opportunities.

Commercial management also entails the effective management of change control, the collating of objective and consistent feedback on project performance from beginning to end and the demonstration of value to the client through cost avoidance, risk management and realising efficiencies.

When effective, good commercial management will promote forecasting accuracy and commercial control in a way that avoids or reduces fiscal surprises for the client. Commercial managers should ensure that programmes and projects are characterised by their integrity, thorough governance and a sense of due process while role modelling ethical, professional and collaborative behaviours.

The ability of commercial managers to bring such commercial stewardship to the UK domestic infrastructure market makes them a vitally important professional asset on any project, anywhere in the world. The RICS infrastructure policy document notes that:

'It is RICS' responsibility to ensure through government and industry endorsed professional standards and our members' expertise that the infrastructure we require in the UK is built in the right place, on time and on budget.'¹⁰

Clearly the skills that enable this are highly transferable and will be in considerable demand internationally over the next few decades.

6 The RICS built infrastructure pathway

In order to qualify a new generation of commercial managers, RICS has developed a built infrastructure pathway (as part of its wider APC programme). The pathway prepares candidates for careers throughout infrastructure and can be accessed at <http://www.rics.org/uk/apc/pathway-guides/construction-pathway-guides/infrastructure/>

Naturally, the pathway's main objective is to prepare future professionals for the delivery of infrastructure projects, and therefore it covers the general project and cost management of the process from start to post-completion.

On achieving chartered status following successful completion of the built infrastructure pathway the commercial manager will have expertise in the following areas:

- infrastructure technology
- systems engineering
- materials science
- cost planning
- cost analysis
- procurement
- tendering
- cost control; and
- time control.

7 The commercial manager in infrastructure

For major infrastructure projects, effective collaboration is increasingly regarded as the principal route to delivering more for less (value for money) through sustainable practices. The commercial manager should be involved at the earliest stage of any programme; be ready to lead and support collaborative working across disciplines and stakeholders, and be experienced and adept in the use of progressive forms of contract that will underpin the delivery of major projects from start through delivery and on to the maintenance phase. Commercial managers should demonstrate a commitment to sustainable supply chain practices (e.g. fair and prompt payment) and, as a consequence, possess or develop the necessary collaborative behaviours.

Commercial managers in the infrastructure sector should also be aware of market sentiment, be adept at early engagement in support of market positioning and employ effective procurement practises in a time constrained environment in order to deliver value for money to clients.

Successful commercial management is as vital to public sector infrastructure projects as it is in the private sector, although it is perhaps easier to measure the contribution in the latter. In the private sector, profitability is one of the most consistent measures of any organisation's commercial performance, and in this context the objectives of the commercial manager could be defined as:

- optimising value creation, business case return and profitability; and
- establishing the correct balance and client exposure to commercial and contractual risk.

Publically funded infrastructure projects have their own, equally important commercial performance indicators. Successful delivery of outcomes in accordance with an agreed business case and value for money (VfM) are now the key measures used to define success on major public infrastructure projects. The defining and testing of VfM is just one example of the global professional space that commercial managers can inhabit in the decades ahead. In general, the role of the commercial manager engaged on public sector infrastructure projects in a variety of locations could be characterised as:

- a trusted adviser
- final business case owner and protector (which in UK will follow the HMT five-case model)
- value for money guardian
- benefit realisation monitor
- promoter of an engaging environment that enables the client, professional advisers, operators and the supply chain to work together to achieve defined common outcomes; and

- an arbiter of entitlements and assessor of current and future supply chain liabilities.

Whether commercial managers are engaged on public or private sector infrastructure projects the industry is evolving rapidly and, together with greater financial control, clients now demand:

- increased predictability of outcome
- improvements in the optimisation of project and programme performance
- a continual assurance of ultimate success; and
- a developed ability to manage change from any given source.

Therefore the commercial manager should also possess key soft skills and attributes, which include:

- management skills and organising ability
- negotiating and relationship management skills
- presentational and communication skills
- efficient time management
- a solid grasp of team working principles, behaviours and dynamics
- technological knowledge and a solid understanding of the systems integration required on major projects
- data management abilities
- conflict avoidance, conflict management and dispute resolution expertise
- commercial acumen
- recognition of the benefits and a disposition towards collaborative working; and
- role modelling ethical, professional and collaborative behaviours.

This requires a level of experience and professionalism that can only be gained via training in and exposure to (ideally with mentoring support) the development issues. Underpinning this set of vital skills and abilities, the commercial manager's commercial acumen, together with the professional training and competencies gained through successful professional qualification and/or completion of the RICS built infrastructure pathway, means that they are ideally placed to embrace the significant challenges now facing governments, industry and infrastructure clients worldwide.

As global demand for these skilled resources increases and competition for them between international infrastructure project stakeholders becomes fiercer, so, too, will the increasing number of opportunities open to the commercial management professional.

7.1 Case study: Staffordshire area improvements programme

The objective of this project was to complete the final stage of a major upgrade to the West Coast Main Line around Stafford that had been left out of the original 2002 programme of works owing to its significantly high estimated costs (£1 billion). The client, Network Rail, wanted the existing bottle neck around Stafford and Norton Bridge to be removed in order to permit:

- a) two extra off peak trains between London Euston and the North West
- b) one extra fast train per hour in each direction between Birmingham and Manchester; and
- c) one extra freight train per hour in each direction through Stafford.

At tender stage Network Rail encouraged bids from a small number of designers, civils and rail contractors, and the result was the Staffordshire Alliance comprised of Atkins, Laing O'Rourke, VolkerRail and Network Rail itself. This team delivered the Staffordshire Area Improvements Programme for £250 million rather than the originally estimated £1 billion; building 11 new bridges, diverting four rivers and moving/reusing one million tons of earth. Six miles of new track were laid along with 180km of cabling and the project transformed the delivery of infrastructure schemes having been completed below budget and 18 months ahead of schedule. The alliancing partnership amply demonstrated the value of effective commercial management on major infrastructure projects.

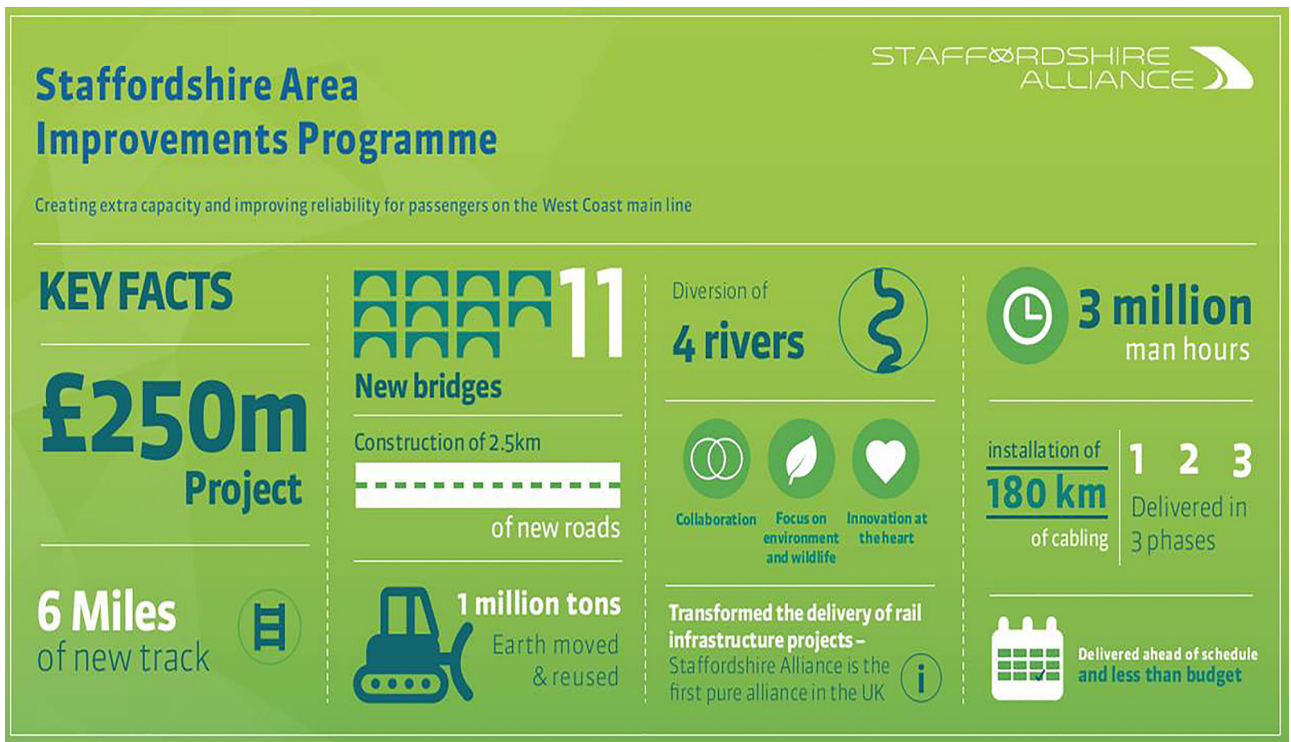


Figure 2. Staffordshire area improvements programme (courtesy of the Staffordshire Alliance)

8 Key aspects of commercial management

The following are key areas where the commercial manager can bring professional skill and influence to the fore during the lifecycle of a programme or project:

8.1 Project initiation

The expanding UK and global infrastructure environments offer significant opportunities for chartered surveyors to make comprehensive use of their commercial management expertise. RICS is well placed to provide a cost management service for all major infrastructure projects from inception through delivery, and onwards throughout the asset's life cycle. Commercial managers should, therefore, form an integral part of any successful infrastructure programme.

In the United Kingdom, the government has placed great emphasis on delivering value for money across all publically funded construction and infrastructure projects.¹¹ The latest Treasury *Infrastructure Plan (2014)* stresses that: 'To ensure value for money for taxpayers and consumers, the government's infrastructure plan must continue to be underpinned by a relentless focus on successful infrastructure delivery and performance.'¹² This requirement demands excellent commercial management skills from concept through to completion, and up to the eventual operation of any major infrastructure project.

A key opportunity for commercial managers to bring influence and support is during the project initiation phase, where early client engagement can allow consideration of value driven client outcomes prior to any market consultation.

In particular the commercial manager should play a major role in project optioneering, in other words helping clients to identify which option is economically best for them and will constitute the optimum solution. Commercial managers are ideally placed to deliver un-biased, objective analysis of different options to enable clients to identify the right project to develop.

Commercial managers are also well placed to match appropriate procurement dynamics to the programme's intended outcomes and prevalent market conditions. Effective consideration at the project initiation phase enables higher value outcomes, and the commercial manager should recognise the linkage between the programme's requirements and the six pillars of procurement as set out in HM Treasury's *Project Initiation Routemap: Procurement Module*:

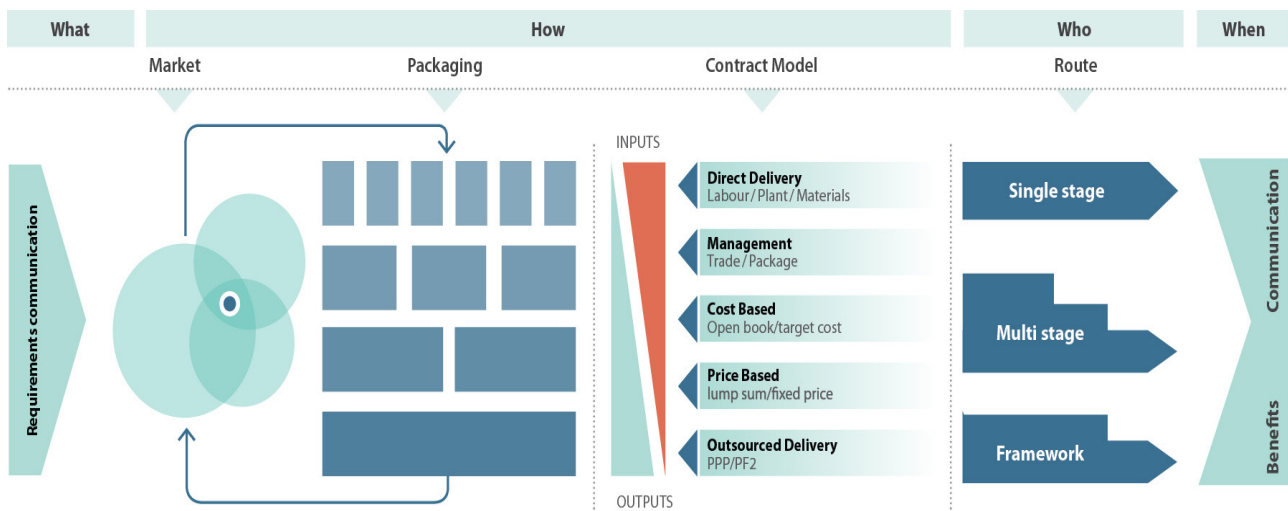


Figure 3. Procurement Model Overview diagram (courtesy of IUK)

At this early stage, the commercial manager can play a central role in advising the client as to potential problems facing the project once they engage with the market. In short, commercial managers should state market realities as well as provide shrewd commercial advice which, while not able to avoid volatility altogether, will prepare the client for the inevitable difficulties that face any major programme. Commercial managers should work closely with the client during the early development stages and actively encourage clients/infrastructure owners to be fully prepared.

A key role of the commercial manager engaged on any major infrastructure project is to secure a full understanding of the client's requirements, and to ensure that the latter has communicated these effectively. HM Treasury's *Project Initiation Routemap: Requirements Module* establishes that the high-level objectives of requirements should ensure that:

- the strategic case for the project is strong; and
- planning, scoping and delivery activities are aligned with the client organisation's own objectives.¹³

Once these objectives have been clearly stated they will provide the quantitative and qualitative measures by which the success of the project will be judged and, importantly, help to counter any over-optimism. One tool often used to clarify and communicate the client organisation's objectives is a balanced scorecard. The commercial manager's task should be much easier if 'informed client' thinking forms part of programme delivery from the very start of a major infrastructure project, as set out in the recently published RICS guidance note *The informed infrastructure client*.¹⁴ A recent study by Constructing Excellence and Pinsent Mason's concludes:

'A model for the intelligent client role focuses on the delivery of key business and organisational outcomes using for that purpose the procurement, delivery and management of key infrastructure assets. Put differently, investment in capital projects and programmes are but instruments to achieve business and organisational objectives. To put this way of thinking in practice, clients need to be involved in the optimisation of asset performance throughout the whole life of the asset and ensure that operational issues inform the discussion around the initial capital cost and the design of the asset.'¹⁵

An acknowledged key contributor to infrastructure project failure is neglecting to form a clear enough link between the project and the client organisation's strategic priorities. Therefore, the commercial manager should ensure that they fully understand the client's requirements in order that they can estimate project price/cost and identify potential risk early. HM Treasury recommends a three way process for planning better requirements that can be adopted for use on all major international infrastructure projects. The approach consists of:

- creating a shared vision of what success looks like that is realistic, easy to comprehend and measurable
- mapping and aligning benefits through project design and planning that demonstrate precisely how outputs

will lead to specific outcomes; and

- measuring success in terms of benefits (delivery of objectives), outcomes (use of outputs) and outputs (what the project will deliver).

In terms of the project requirements themselves the commercial manager should consider the following:

- What is the status of the client's business case?
- Are the client's requirements clear and understood?
- Is the client in a position realistically to deliver the requirements in terms of its structure?
- Has the client undertaken a capability assessment to inform the procurement strategy and scope?
- Has a clear timeline for actions been established?
- Has a policy document been prepared to govern procurement activities?
- Is there a balanced scorecard to enable requirements to be prioritised, evaluated and communicated?
- Have all risks that may affect the delivery of the client's requirements been identified?
- Would an expert panel be useful in an advisory or compliance capacity?
- Are third party obligations (including funders/regulators/assurance bodies) fully understood?
- Is the relationship between asset management and operational strategy understood fully?
- Have the effects of operations been assessed, and if so, what is the responsibility and liability for the supply chain in respect of the continuation of operations?
- Has the corporate risk strategy been understood and how will it influence procurement activity?
- Has consideration been given to the effect of the project funding and financing of the procurement options?

8.2 Cost planning and benchmarking

The importance of credible, early stage project appraisals is clearly set out in HM Treasury's published guidelines *The Green Book: Appraisal and Evaluation in Central Government* which establish that:

'Appraisals should provide an assessment of whether a proposal is worthwhile, and clearly communicate conclusions and recommendations. The essential technique is option appraisal, whereby government intervention is validated, objectives are set, and options are created and reviewed, by analysing their costs and benefits.'¹⁶

The ability to produce reasonable estimates equal to a scheme's maturity and, accordingly, establish a dynamic cost planning process is crucial to illustrating the viability and benefits of the planned investment and the establishment of a budget and baseline from which the

cost planning and management of the entire programme can proceed.

The budget should generally represent the outturn cost, but should also provide a framework within which a designer/constructor should operate to create an effective design that can subsequently be constructed, operated and maintained.

Within such a dynamic and high profile environment a clear, consistent and proportionate programme of governance and an assurance process must be established. A gateway process will be necessary in order to validate that estimates are commensurate with the design and to test whole life cycle cost design decisions.

Within the dynamic cost plan each estimate should be:

- **Appropriate:** Estimates should be prepared at a level of detail that matches the status, depth and quantity of design information that they aim to reflect, representing outturn costs in terms of appropriate ranges or probabilities until more accurate predictions can be made.
- **Credible and in context:** Estimates should be reasonable representations of the likely costs of completing the projected works, and should demonstrate these features with clear evidence of the range of assumption and assurance measures. Accordingly they should draw on contextual and benchmark information, and, during the early development and feasibility stages, be presented in terms of ranges and probabilities to avoid an inferred sense of accuracy.
- **Integrated:** Estimates should be consistent with all of the relevant project assumptions together with their scope, requirements, constraints, specification, risks, key dates, activity durations, construction methodology, policies and procedures. The interdependencies between the physical (the 'what') and the contextual (the 'how'), and the associated risks and mitigations should be explicit.
- **Consistent:** Estimates should be consistent in their structure, quantification, use of rates and allowances, exclusions, definitions, presentation, base dates, location factors, inflation indices and measurement and coverage rules.
- **Clear:** Estimates should be presented in accordance with the agreed cost planning language, nomenclature and cost breakdown structures, drawing on industry accepted standard approaches where available.

Infrastructure schemes are often 'blended' construction programmes that involve a combination of civil engineering and construction work, together with infrastructure specific items (track, water, power, etc.). The complex nature and diversity of the scope involved may lead to the simultaneous use of several recognised industry methods of measurement.

If a major infrastructure project is to deliver and demonstrate value, then recourse to a consistent cost breakdown structure should be a paramount requirement and the key enabler to addressing the questions of what

infrastructure works '*should cost, will cost, did cost and why*'.

Sticking to an appropriate cost breakdown structure will provide the project team with a consistent basis for cost planning, reporting and management. The structure should be maintained throughout the more detailed reviews as a precursor to procurement and post contract cost control and the establishment of value for money analysis and post-delivery validation.

This in turn will support the development of outturn metrics and benchmarking, which will be particularly relevant to major/long term programmes and portfolios where the pursuit of value for money and demonstrable structured continuous improvement are fundamental to demonstrating value and efficiency.

On all major infrastructure schemes operational costs and revenue will form the central project drivers, and therefore the optimisation of operational costs (life cycle/whole life cycle costs) should also be carefully considered throughout the project life cycle.

8.3 Procurement

During the procurement process commercial managers should engage and validate the best value for money solution, which is characterised by the sustainable allocation of risk between the client and the supply chain. The procurement process should explore the various market opportunities available to deliver the programme, and strategies should be adopted by the commercial manager to deliver the best value outcome to the client organisation, its stakeholders and its eventual customers. The commercial manager should manage tendering processes that guarantee scope and value and have the necessary tools to manage these processes effectively. The procurement function should focus solely on ensuring that all the necessary mechanisms are in place for the successful delivery of the project requirements.

Good procurement practice undertaken by commercial managers should include the following:

- supporting and fostering early or strategic ongoing engagement with clients in order to encourage the development of market capabilities
- enabling clients and their supply chains fully to understand any potential risks involved with delivering the requirements
- developing a clear understanding of shared drivers that will enable the client and supply chain to achieve better alignment and thus a fully collaborative working relationship
- recognising that reputation, benefits, reward and risks are to be shared
- adopting and complying with truly transparent processes across the entire life cycle of the programme; and
- supporting the overall execution of the programme strategy and associated client model.

HM Treasury's *Procurement Model Overview*, reproduced on page 13, establishes the 'Six Pillars of Success', or key stages in the development of the procurement strategy. Commercial managers should be aware that within this structure value for money is a function of perspective and not an absolute. However, poor value should be readily identifiable and the procurement process seen as a mechanism for removing it, with what remains being in close proximity to 'value'.

The 'Six Pillars of Success' procurement model' is as follows:

1 Understanding/communicating requirements

Commercial managers should understand and communicate requirements. In other words, the procurement process should be designed clearly to demonstrate the client's required outcomes of a programme.

2 Understanding and engaging markets

Commercial managers should fully understand and engage with the market. Clearly a number of 'markets' will combine to deliver a particular programme. Clients (or procurement entities) must understand that they are located within the market and do not sit on top of it. Commercial managers should make this clear to clients, while also conveying the sense that markets are subject to the ebb and flow of demand. Economic, schedule and resource demands contain in-built tensions between them, and these tensions determine whether a supplier finds a project profile attractive or otherwise. Successful engagement with the market allows the client to understand market capability, and permits suppliers to have an insight of potential future opportunities. Such engagement allows for the supply chain to plan their tender resources in advance. Engagement with the market is not a one-off activity but is an iterative process during the development of the procurement strategy. It allows commercial managers to spot potential risks contained within the 'Packaging' strategy.

3 'Packaging' strategy

Commercial managers should have an acute awareness that the packaging of a programme constitutes one of the most critically important parts of the entire procurement process. Packaging creates deliverable scope containing manageable interfaces. It permits risk to be allocated to a place where it can be best managed. The packaging strategy will drive forward the organisational model for delivery and, in addition, choosing the correct incentive model alongside the packaging strategy is important when establishing the commercial arrangement.

4 Contracting strategy (risk allocation and transaction)

The commercial manager should be aware of the need to have balanced contracting on any programme of works, in order to enable a sustainable transfer of risk to the party best placed to manage such risk. The process of risk transfer should always aim to ensure that a level of

competitive tension exists in order to ensure value for money.

5 The 'route' to market

The determination of the route to market is the final part of the jigsaw in the development of the procurement strategy prior to the transactional process beginning. Commercial managers should be aware that while there are only a limited number of routes to market, it is likely that a major programme will use all of them in some shape or form.

6 Communicating 'benefits'

Any investment of public funds in an infrastructure programme should communicate the ultimate outcome of the project – as well as the lessons learned from it – for the benefit of others. Effectively this entails determining whether or not a service or asset has ultimately delivered the intended outcomes.

8.4 Post contract delivery

It is important to define the context of delivery because it is often confused with just the construction and commissioning of an asset, rather than the delivery of the required outcome in operational terms. With many complex assets it may be a number of years following commissioning before the asset is fulfilling the business case upon which it was founded.

The operational aspects of an infrastructure programme should be considered from the outset since the construction period is often of a very short duration when compared to the whole life of the asset. Decisions made to ease construction delivery can lead to weakening of the business case outcome and less than optimal asset performance.

UK infrastructure programmes have increasingly realised that success is best achieved through collaborative working practices throughout the supply chain. Central to collaboration is a vibrant commercial relationship between contracting parties throughout the life of the asset. The commercial manager is, therefore, an increasingly prominent person in the operation of infrastructure projects and programmes. Successful programmes of work have carefully managed the commercial relationships, agreeing performance and entitlement during the construction works rather than deferring commercial decisions until the end. Changes in working and operational practices and the increasing adoption of progressive forms of contract (e.g. the *Construction Act* and use of NEC contracts) have encouraged this. Commercial managers are at the forefront of encouraging, deciding and implementing intelligent commercial decisions on a day-to-day basis on UK infrastructure programmes, in a way that fosters progressive and long term relationships with the supply chain.

So, in addition to bringing influence through professional expertise, leading commercial managers embody collaborative behaviours; promoting a principle of 'mutual dependency' across the supply chain and instilling a team ethos to drive greater performance.

For the commercial manager, there are a number of key accountabilities that underpin the success of the delivery phase. They are:

- contract administration and communication
- paying suppliers
- managing programmes
- dispute avoidance, resolution and relationship management
- managing change
- forecasting outturn costs
- reporting and programme controls
- performance and value for money

8.4.1 Contract administration and communications

Project managers look to the commercial manager as the expert in understanding the contract and knowing what needs to be done and when. Commercial managers must have a detailed understanding of their project contract and its associated terms, conditions, obligations and mechanisms. Each project and contract will have its particular amendments and variances from industry norms to accommodate for client and project particulars. Infrastructure projects are often complex, with numerous interdependencies, and often high value and large sums can turn on ensuring timely and appropriate communications in keeping with the contract administration framework and associated processes. Working practices usually dictate some form of electronic communication system and data exchange (including BIM), and understanding how contractual, legal and commercial relationships operate in this environment is key.

8.4.2 Managing change

In many respects managing change is perhaps the key component of successful contract management. Increasingly progressive forms such as the NEC form of contract include a large amount of process around managing change. The emphasis is on dealing with change in real time as work proceeds. This approach puts a high degree of pressure on the commercial change activities during the course of the contract. The benefit is, however, that both parties achieve some sense of commercial certainty as work proceeds, rather than having to deal with protracted discussions long after the project has completed.

Commercial managers should also be taking a role in managing change prior to any instructions being issued to contractors. Assessing client requirements, managing designers and specifiers, estimating and assessing the business case for change are all commercial management functions. In the post-contract phase, the ability to challenge potentially unnecessary change while proactively managing necessary change, in order to establish the consequence on time and cost and entitlement to the supply chain, is essential.

8.4.3 Paying suppliers

Cash is the life blood of the construction industry and there remains a need across the sector for an international payment standard as a means of encouraging best practice. Clients are aware that swift and fair payment practices will aid a successful project and that requiring the supply chain to effectively fund large projects is counter-productive. Commercial managers are responsible for establishing the right amount to pay contractors on a monthly basis – being fair to both payers and payees. Depending on the type of contract (cost based or lump sum), this may involve a detailed analysis of a contractor's accounts, or a good understanding of the progress of the works. The increasing prevalence of operational incentive models that influence entitlement and payment will require the commercial manager to take an active role in the interpretation and adjudication of Service Level Agreements or Key Performance Indicator performance and their associated financial effect.

While the format and detail in a contractor's application for payment will be commensurate with the form of contract, wherever possible the commercial manager will bring a level of discipline and good practice to the process, such that applications are structured in accordance with the prevailing measurement language, nomenclature and established work breakdown structure.

8.4.4 Forecasting outturn costs

The ability to forecast the eventual outturn cost of a project is fundamental for a commercial manager, and requires knowledge of productivity and delivery dynamics and a keen understanding of contractual entitlement. As projects progress there should be more data available and through reconciling earned value, cost of work done and timely change control, forecasts should become progressively more certain.

Allied to cost forecasting is risk management. Most major infrastructure programmes engage specialist risk managers and any successful project should assess, manage and account for risks from start to finish. Commercial managers are a key part of the risk management process as they understand the commercial outcomes of risk areas, and are able to assess the value of these and contribute to the risk management and mitigation process.

8.4.5 Managing programmes (time)

Complex infrastructure projects require a vast amount of planning and programming, utilising planning software. Projects will employ many experienced planners who will update and coordinate programmes on a daily basis; this operation will be at the core of any infrastructure programme and will range from high level milestone orientated programmes down to detailed day-to-day (or even hour-to-hour) activity driven programmes of many thousands of activities.

The commercial manager should understand the significance of such a programme in the context of the contractual and commercial relationships that exist between clients, contractors and sub-contractors. A significant proportion of commercial disputes have their roots in the programme effect of change or mitigation. Commercial managers should be able to understand the issues around programmes and contracts, be able to interpret programmes and be open to using this data as works commence; and anticipate and validate progress (e.g. via regular earned value assessments) and associated entitlement.

8.4.6 Reporting and programme controls

In recent years infrastructure programmes have placed an increasing emphasis on establishing robust programme controls. This can be described as managing the organised compilation of accurate data to furnish the programme management team with effective reports on all facets of the programme, and allow the programme to be steered accordingly. Such data invariably includes: health and safety, cost and budget, programme (time), risk and quality data. Good programme controls not only gather this data but also summarise and express it in different ways for different audiences, be it a main board, the public, or an individual project team.

Commercial managers often work in the area of programme controls, especially where cost and budgets are involved. Certainly the skills of cost planning and estimating and the understanding of the commercial drivers operating in the infrastructure sector make the commercial manager a key contributor to this area.

The establishment of effective controls and the allocation of accountabilities should underpin the delivery of any scheme's strategic objectives, and the commercial manager is well placed to ensure the appropriate discipline is brought to this key aspect of any investment in infrastructure.

8.4.7 Dispute avoidance, resolution and relationship management

Competencies in the avoidance and resolution of disputes are a necessary part of a successful infrastructure industry. Given the complexity of such programmes it is unrealistic to expect there to be no differences of professional opinion as to entitlement, especially where the profitability of companies is at stake.

While structured approaches to avoidance are not yet established across the industry (although examples can be found from TfL and Network Rail) the commercial manager should be knowledgeable of the formal techniques that exist, as well as the personal influence they can bring to the avoidance of disagreements as to entitlement. Avoidance practices and a variety of resolution approaches are provided by the RICS Dispute Resolution Service. It is usually detrimental to a programme to let disputes fester and grow. Formal dispute proceedings are expensive and uncertain, so finding an alternative resolution is usually preferable. Active management of

the relationships between the dispute parties is thus an essential commercial skill. Good commercial managers are able to communicate and negotiate with suppliers using 'soft skills', while also being commercially astute. A key arbiter in both the avoidance and resolution of disputes lies in the relationship and behaviours of the parties and the commercial manager should lead by example.

In those instances where avoidance is unsuccessful, commercial managers should expect to be at the centre of dispute management and resolution, which can range from open and pro-active early discussions to formal proceedings. With the introduction of NEC and other progressive/collaborative forms of contract and the evolution of legislation around adjudication, the emphasis is on dealing with disputes early, effectively, and in a way that preserves supply chain relationships.

8.4.8 Performance and value for money

The commercial manager has an important role to play in the successful commissioning of the asset and completion of the infrastructure construction programme. This ranges from the practicalities of clarifying supply chain entitlement, performance and value for money, through lessons learned reviews that provide narrative on better and best practice, to the allocation and assessment of data that illustrates the commercial impact of what was done and how it was delivered.

This impact is represented in terms of risks materialising and costs incurred, and should be incorporated into data sets and cost models to give the commercial manager and stakeholders the ability to address the question of 'Did Cost and Why?' In short, to benchmark at the close of the programme and so support the ability to address the question of 'Should Cost' for future programmes.

8.4.9 Post-delivery: entering use and operations

On completion of the construction phase, the subsequent operation of an asset, be it hard or soft, facilities management or active operation, can bring a different commercial activity to that of construction delivery.

The use of contracts that offer a range of services or maintenance works over a given tenure and at a certain level of performance can lead to complex commercial relationships. The commercial manager needs to be aware of the differing approaches to the delivery of an operational contract that can be driven by a performance model; if these are not well aligned with the performance required of the asset, dysfunctional practices can be encouraged between client and supplier. A particular driver of contractual behaviour for example has been the allocation of asset condition risk.

With the development of digital technology there is an opportunity to better understand the commercial incentives needed to realise the performance required by the business case, and visualisation tools will assist operators to make their requirements tangible.

The commercial manager has a significant part to play to ensure that the delivery of operational excellence over whole life is recognised as a priority from the initiation of any infrastructure scheme.

9 Summary

This guidance note outlines the areas of professional activity undertaken by infrastructure commercial managers operating on modern infrastructure programmes. It establishes a clear RICS definition of 'infrastructure', sets out current and future global and UK infrastructure trends, and provides members with a clear definition of the commercial management role across the various stages of programme delivery.

It establishes that, at its core, the commercial management of infrastructure should be focused on delivering value for the client, and that 'value' should inform every investment decision as these are made. The commercial manager should, therefore, provide commercial stewardship throughout the entire lifecycle of any infrastructure programme and, by operating at the highest level of the project decision making process, ensure that clients are fully aware of how much a project should cost, will cost, did cost and why.

If performed effectively, infrastructure commercial management should promote forecasting accuracy and commercial control so as to avoid fiscal surprises for the client. The commercial manager should equally ensure that infrastructure programmes are characterised by solid levels of probity and good governance, while also being imbued with ethical, professional and collaborative behaviours. Commercial management is central to the successful delivery of any infrastructure programme and all organisations, whether client or contractor, need the highest levels of skill and experience in this area.

10 Endnotes

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