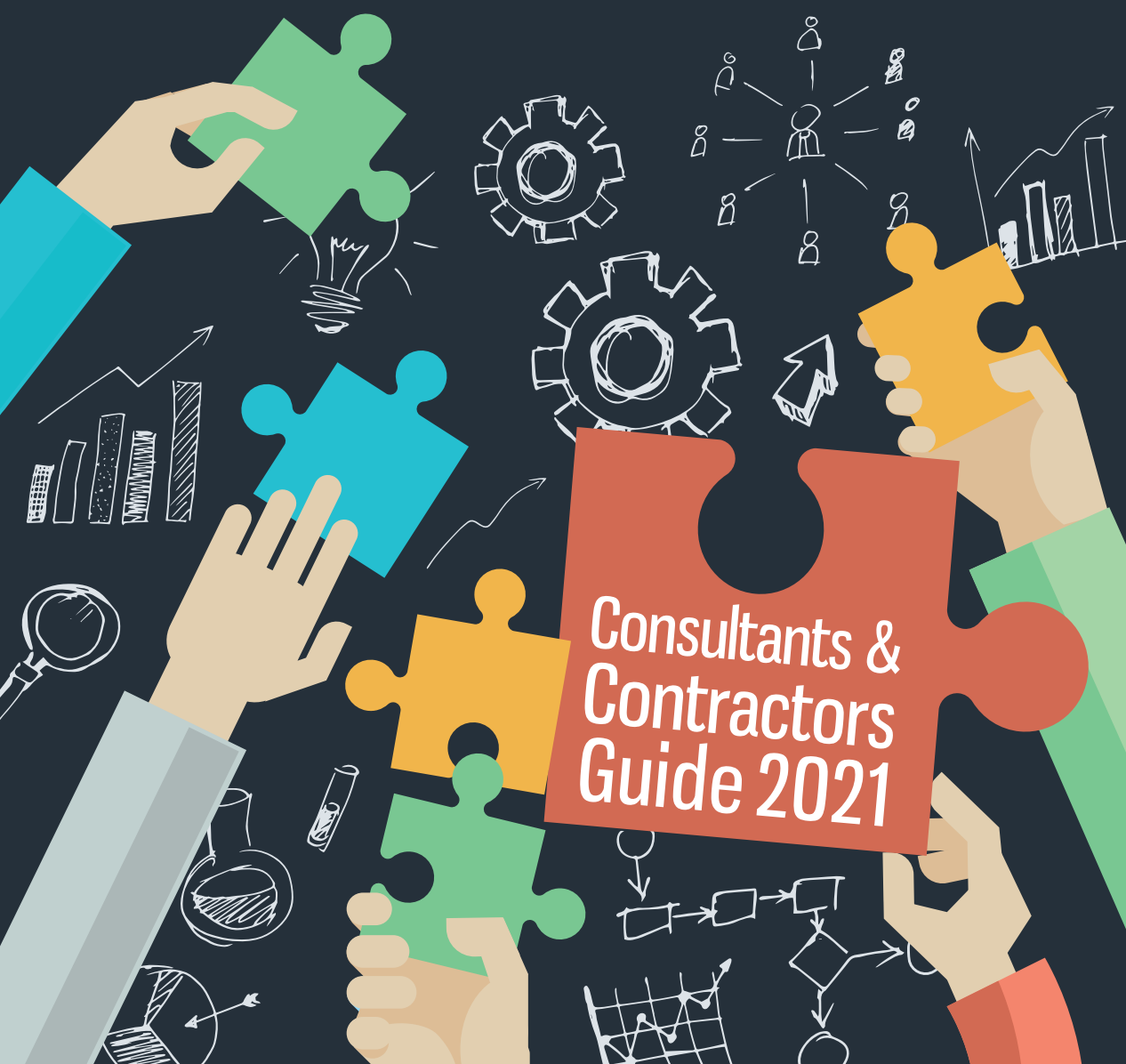
UP FRONT
Adding value to invitations to tender for front-end services

BREXIT: BE PREPARED
Practical advice on what you can do now

EXPERTS INSIDE
Comprehensive listings and profiles of consultants and contractors

The Chemical Engineer



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Adding Value

ADAM DUCKETT welcomes you to this year's Guide

FINDING ways to add value is crucial during these straitened times. Thankfully, this guide includes the profiles of companies that can help bring your projects to life, and editorial on topics to help you get set for the year ahead.

Among the guide's expert advice, we explore the importance of front-end engineering and slower thinking; those important elements you need in your contracts; and readying yourselves for changing tax legislation and Brexit.

As always, huge thanks go to the consultants and contractors who support this guide. Their listings and profiles are detailed throughout. Please do call them. We have also launched an online Consultants & Contractors directory. For the latest listings and to add your own organisation, please do visit: **www.thechemicalengineer.com/consultants-and-contractors**

Front-End Loading: Buyer Beware

TOM BAXTER advises on how best to handle invitations to tender

AS industry recovers from Covid-19, I see much mention of costs. This reminds me of Oscar Wilde's quote "the man who knows the price of everything but the value of nothing".

I feel this quote resonates when applied to organisations offering services for front-end/conceptual engineering. I have spent much of my 40-year career providing such services, an experience that has made me question whether, in some cases, I was dealing with an informed buyer.

> "FRONT-END ENGINEERING IS VITALLY IMPORTANT; IT IS WHERE VALUE IS ADDED OR LOST. THIS IS RECOGNISED BY MOST OPERATORS AND IS INHERENT WITHIN THE CONCEPT OF FRONT-END LOADING (FEL)"

I have been on the receiving end of front-end engineering services invitations to tender (ITT) where I have been asked to provide information that adds nothing to the potential client's ability to make an informed choice about the supplier it is selecting. What these ITTs did was add more work, with associated unnecessary costs. For example, I've been asked to provide details of the lighting arrangement in the company car park and information on company printing capability. Time is required to compile answers to such requests but what bearing they would have on front-end supplier selection is beyond me.

ADDED VALUE

Front-end engineering is vitally important; it is where value is added or lost. This is recognised by most operators and is inherent within the concept of front-end loading (FEL).

FEL is a phased approach to project planning and engineering, carried out early on in the process, at a time when the ability to influence changes to the equipment configuration and design is relatively high and the cost to make those changes is relatively low.

The Oil and Gas Authority (OGA) has much to say about FEL in its publication *Lessons Learned from UKCS Oil and Gas Projects, 2011–2016*, for example: *"Generally speaking, projects with high levels of FEL have more predictable costs, shorter schedules and better production attainment."*

That is pretty unequivocal – if you want to deliver a successful project don't skimp at the front end. The OGA also highlighted that FEL is particularly important for brownfield projects.

A VERY PARTICULAR SET OF SKILLS

A typical brownfield conceptual/front-end engineering project would be modifications to a platform required to receive new fluids from a subsea tieback. FEL here requires a vast range of engineering skills – process, mechanical, production chemistry, structural, electrical, instrumentation, operations, technical safety, technical management, environmental sciences, cost and planning.

It has, though, to be recognised that it is not just disciplined engineers that are required; it is engineers who understand the uncertainties and risks associated with conducting engineering activities on a live platform.

Not all engineers have the required front-end skillset, and it is vital for the ITT issuer to engage with an organisation that can field a team with the required skills and experience – crucially, an organisation that can provide maintainability, constructability and interface management skills.

Hence, if an operator requires to engage an FEL-skilled organisation, the key request in an ITT should be: show me your team, their experience, availability and competencies.

While most ITTs will have this request, the expectation is that the tenderer provides CVs.

CVS: COMPETENT ON PAPER?

What does a CV really tell the buyer? An individual's qualifications and historical record of projects and experiences. Does that demonstrate competency? I have worked with engineers who, on paper, are highly qualified and apparently hugely experienced but I would not class them as particularly competent.

Conversely, I have worked with young engineers who display an engineering understanding far superior to that of engineers with decades' more experience.

To support the CVs, most front-end organisations will have competency statements for specific engineering grades – junior to senior.

It is fairly straightforward to compile competency statements but, like CVs, they may not provide sufficient information for the service buyer to make a fully informed choice.

The buyer has to take the time to assess the skills and competencies being offered. That has to be more than a paper exercise; it requires face-to-face meetings with the key proposed engineers. Of course, to make the correct choice the buyer's face has to be front-end informed.

THE SMALL PRINT

Another aspect of ITTs that has troubled me is indemnities and liabilities. Why is this necessary for front-end work? Surely it should be best endeavours? That keeps the tendering cost down, as a lawyer's time to review the terms and conditions is unnecessary?

In more than 40 years I have never come across a case where a client company initiated liability proceedings against a front-end organisation.

I have experienced many instances of requests for information that made me think the client's understanding of what is important for conceptual work fell short. Probably the most memorable was being asked: "what is your procedure for innovation?"

Of course, there is the option to ask the ITT issuer about why some information is being asked for when it appears to add no value. That though can result in upsetting a potential client. In my experience it is more likely to be countered with: "provide the requested information or your bid may be deemed to be non-compliant."

THE TROUBLE WITH MONEY

Most ITTs will request a work methodology with associated cost time resource (CTR) estimates – a completely reasonable request required for client budgeting and job control purposes.

However, for conceptual studies CTRs can only be an estimate as there are often unknowns that only become apparent as the study progresses. Typically, asset information has not been maintained – as built information is not available – requiring more time to obtain essential engineering data.

I have worked with client teams who view CTRs as a fixed scope and price. This reflects a lack of understanding of the nature of conceptual/front-end engineering and often leads to tensions with client and service provider relationships. Recognising the importance of FEL and its value and the relatively small cost of front-end studies (orders of magnitude less than the overall project cost) – is the study cost really that important?

My advice to buyers of front-end services is: please seek the pertinent information and balance cost and value to make that informed decision.

Tom Baxter CEng FIChemE is retired Technical Director, Genesis Oil and Gas Consultants

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Lessons from Lockdown: Not So Fast!

GRANT WELLWOOD shares hindsight, insight, and foresight around systems thinking

ONE of few upsides of the Covid-19 situation is the luxury of being able to step off the consulting treadmill; away from back-to-back meetings and "don't think, do!" client cultures, to do some reflecting.

On one such occasion I looked out of the window of my home office and watched some native birds playing in my backyard. When they started singing, I thought it would be good to engineer more of this, but how? Simple! Just install a bird-feeding station, and birdsong will relax and inspire me for ever more. As a project manager, risks did cross my mind but only in terms of the cost, schedule and quality of the installation. Anyway, straight after I completed the pre-purchase risk mitigation homework, I was delivering!

Although the execution phase went to plan, I had disturbed a complex system without due consideration, and it was only after "commissioning" the feeder that unforeseen problems started to emerge.

Firstly, the provision of "free feed" attracted more than singing native birds to my humble backyard. Almost immediately, my beautiful view was literally alive with blackbirds, screeching and crowding out the shy native birds, and on occasion even the sunlight. Like all good eateries, there was a long queue to get in, which in this instance saw birds on every possible roost, including our washing line come longdrop toilet. This definitely did not match the Utopian scene of my rose-coloured glasses!

Next issue was the sheer volume and cost of the seed required to feed the flock(s), which was horrendous and blew out my OPEX estimates. CAPEX was not spared either as I needed to install two "buffer bins" to accommodate bulk seed deliveries, and barbed wire to stop the cats climbing up. The bins and wire were ugly and the hand trolley (another unexpected capital purchase) made ruts in the lawn that were even uglier.

Blackbirds fight and flap as they feast, so seed "conversion efficiency" was sacrificed to spill-over. On the ground, seed is apparently unattractive to birds; enter the rodents! With the mice comes the cats (some there already for the birds) who attracted the dogs, and I think I even saw a snake in the mix last week! In

A DOMESTIC MICROCOSM OF AN ENGINEERING PROJECT...

summary, it was a folly that failed every criteria of success and left me more stressed than before.

During the soul-searching project post-mortem, I realised that this episode was actually a domestic microcosm of the way many engineering projects pan out, and that it may have some value as a cautionary tale (a cunning plan?).

SYSTEMS THINKING

In case you did not spot it, the root cause was a phenomenon called System 1 or "fast thinking". Kahneman's *Thinking, Fast and Slow* divides our thinking into two subsystems: System 1 and System 2.

System 1 thinking is fast, intuitive, unconscious thought, and most everyday activities (like driving, talking, cleaning, etc) make heavy use of fast thinking. In contrast, System 2 thinking is slow, calculating, conscious thought. When faced with a difficult maths problem or thinking carefully about a philosophical problem, you're engaging System 2 thinking.

In most instances we are working on processes that meet the definition of being "complex" viz:

- Comprised of a myriad of individual agents/constituents that once aggregated take on collective characteristics that are usually not manifest in, nor could be predicted from, the properties of the individual components themselves. For example, "we" are much more than the totality of our cells. Each agent has its own characteristics and follows its own rules of behaviour and interaction. A city is much more than the sum of its buildings, roads and people.
- The whole (value chain) is greater than the simple linear sum of its parts (unit operations, transfers).
- The whole seems to take on a life of its own dissociated from the specific characteristics of the building blocks (technically known as divergent behaviour).
- Even if we understand the characteristics of the constituents, accurately and consistently predicting the system behaviour is not possible.
- There is no "central control" (technically known as being self-organising).
- The ability to adapt and evolve in response to changing external conditions.
- We can't change one component and be able to predict with accuracy the impact on the whole over time.

> "WE ARE REWARDED FOR THE QUALITY OF OUR DECISIONS, SO WE NEED TO ENSURE THE CRITICAL ONES ARE INFORMED BY SYSTEM 2 THINKING"

Complexity has taught us about the naivety of simply breaking the system down into independently acting component parts. A small perturbation in one part of the system (like free seed) can have major consequences elsewhere, which can be both sudden and unpredictable. One or more trends can reinforce other trends in a positive feedback loop causing the swift spiral out of control, across tipping points where beyond which behaviour changes dramatically.

> "FAST THINKING HAS BEEN ESTIMATED TO INFORM OVER 95% OF ALL DECISIONS MADE, AND IN MY EXPERIENCE IN ENGINEERING AND CHANGE MANAGEMENT, THIS IS PROBABLY AN UNDERESTIMATE!"

As a profession we are hard-wired to solve problems, and quickly. On many occasions the first solution that springs to mind is "the one", and from then on, it's all about our favourite activity, seamless execution. Fast thinking has been estimated to inform over 95% of all decisions made, and in my experience in engineering and change management, this is probably an underestimate!

As process engineers, and especially as consultants, we need to be aware of and fight this natural tendency by being mindful and stepping out of the moment. We are rewarded for the quality of our decisions, so we need to ensure the critical ones are informed by System 2 thinking in order to deliver value to our clients and avoid the proverbial project disaster in our own backyard. I commissioned this cartoon to remind me, and perhaps it will remind you as well? If so, feel free to email me for a copy.

Grant Wellwood CEng FIChemE, Consultant
(grant.wellwood@gmail.com)

Contracts: What Happens When Things Go Wrong?

PAUL WRIGHT discusses what engineers need to know

THE effects of the current Covid-19 pandemic on contracts have a strange similarity to when your washing machine breaks down. You don't look at the warranty when the machine is working, but when it breaks, suddenly it is really important for what happens next. Covid-19 has had a lot of companies suddenly looking to see if their contracts have a Force Majeure clause. And if they do, what does it say?

> "A CONTRACT IS NOT A PILE OF PAPERWORK – THAT IS THE DOCUMENTATION. IT IS THE EXCHANGE OF MUTUAL OBLIGATIONS AND COMMITMENTS"

"Force Majeure" is not the French name for GI Joe, but a phrase used to describe an irresistible force such as the pandemic or a tsunami. An "Act of God" is one way of thinking about it. Something that is not foreseeable. For example, in South East Asia the monsoon season regularly creates problems with flooding and high winds, but this happens regularly and can be anticipated. An erupting volcano cannot be predicted.

Force Majeure clauses and warrantees are terms in contracts that, strangely enough, neither party wants to be applied. With a warranty, both parties expect that the washing machine will work without a problem. Force Majeure events are, by their nature, rare and unpredictable.

But when something does go wrong, we need to know what is in the contract that will protect us and our interests. Can we cancel our order and use an alternative supplier rather than wait for a delayed delivery? Can the supplier cancel the order? Who pays any additional costs?

In our working lives we also tend to hope that things will go (roughly) to plan, and we will not have to burrow deep into a contract to see what it says. Most of us are focussed on getting the job done, and contracts can seem like a lot of paperwork that do not add much to the process. And if things go well, we may not look at them between signing and completion.

Of course, not all problems are as serious as a pandemic (or a flooded kitchen). What happens if a supplier delivers a day late?

What if they do it every time? What if a contractor does not turn up to work? What if it is one of their sub-contractors?

It is when things go wrong that we need to have the protection and safety net that comes from a robust contract. A contract is not a pile of paperwork – that is the documentation. It is the exchange of mutual obligations and commitments, and the time to agree those is before something untoward happens rather than when there is a problem.

Most of us have limited training in commercial and contractual issues as part of our technical training, and yet we might be on the front line when there is a problem. Knowing how contracts work and how they can support our activities is something that is tricky to pick up "on the job" and so we run our *What Engineers Need to Know about Contracts* courses to provide an overview of the essentials and how they will be relevant to your job.

The course is designed to be relevant to engineers and provide information about contracts in a practical setting. And yes it does explain Force Majeure clauses in more detail, how they are included in IChemE standard Terms and Conditions, when they can be used, what they might allow you to do, and what you can do if your contracts do not have a Force Majeure Clause. (Probably the contract will be "frustrated", but like much in law it depends on the precise agreement.)

Like when your washing machine breaks down, it is good to know what your options are when a contract goes wrong. The consequences of not knowing can be expensive.

Now, where did I put that receipt?

Paul Wright is Director at PAWA Consulting, **www.pawa.co.uk**

New Off-Payroll Legislation: No Surprises

DAVE CHAPLIN outlines some of the most hazardous mistakes to avoid to help ensure that IR35 does not apply to you

THE SIXTH of April 2021 will be an important date for contractors working in the private sector in the UK. It is when the new Off-Payroll rules will take effect and any medium or large firm will become responsible for assessing a contractor's IR35 status. Whilst contractors themselves are not responsible for assessing their own status and cannot be held liable, it is important that they avoid some of the classic IR35 pitfalls if they want to continue working "outside IR35" as genuine self-employed contractors with all the flexibility that working for yourself brings.

1. DON'T BE TOLD HOW TO WORK

If you allow your client to instruct you in detail on how to carry out your work, this implies control and is a strong pointer to you being "inside IR35". Your client should just be agreeing project deliverables and outcomes with you, and then just leaving you to get on with it.

2. DON'T BE NAMED IN YOUR CONTRACT AS THE SOLE PROVIDER OF A SERVICE

Being obliged to provide your services personally is another strong pointer to being inside IR35. Any engagement should be between the client or agency and your company, not you, personally. You can be named in the contract as being one of the personnel who will provide the services, but it should not state that only you can provide those services and no-one else. But, be warned, being able to substitute isn't quite the silver bullet everyone might expect it to be. Maybe 20 years ago, but certainly not now, if the right is not exercised.

3. DON'T AGREE TO JUST WORK ON ANYTHING THAT CROPS UP

If you agree to take on work which is outside the scope of your contract this makes you what one judge referred to as a "tail-end Charlie" and is a strong indicator to being controlled by the client. If your contract is role-based, and not project based, perhaps where you have a job title, then you are likely to be providing skills and time and working on whatever

assignments the client gives you. This is how employees work, not genuine contractors. Genuine contractors tend to be project and outcome based.

Similarly, don't allow your client to move you between different projects that were not originally outlined when you agreed to work for them. You must define the scope of what you are working on in the contract and stick to it.

4. DON'T AGREE TO LONG TERMINATION NOTICE CLAUSES

A long termination clause in a contract can be an indicator of deemed employment, because it can imply an obligation by the client to provide you with ongoing work and pay, and an obligation by you to complete it – something called "mutuality of obligation" – or MOO for short. If the project is cancelled or finished and the client has to provide work after giving notice for say four weeks, then this demonstrates that strong MOO is present, which is a pointer to an employment relationship. Contractors working outside IR35 have zero notice, and no obligation for work to be provided.

5. DON'T SPECIFY MINIMUM HOURS

Including a minimum number of hours each week is a firm indicator that mutuality of obligation is present and a pointer towards being inside IR35. Having core hours or a set working pattern is something that employees do. Genuine contractors do what is required and have discretion about how they work those hours, and they only get paid for work done, not just for making themselves available to do some work.

6. DON'T BEAR THE HALLMARKS OF AN EMPLOYEE

Being named on the client's organisation list, having an employee badge bearing your name or attending meetings that are about employee matters are all signs that you have become part-and-parcel of your client's organisation and are therefore deemed an employee. It's a secondary factor but can swing a judgement.

7. DON'T HAVE AN APPRAISAL

Accepting a performance appraisal by a client is hardly something that happens in a genuine business-to-business relationship and suggests that you are not really in business on your own account. Would you provide your builder or plumber with an appraisal? No? Then why would you be getting one?

8. DON'T GET PAID FOR TIME OFF SICK OR HOLIDAYS

Taking on a contract entitling you to holiday pay or sick pay is a very strong indicator that you are firmly inside IR35. Employees get these benefits. Genuine contractors don't.

9. DON'T START CONTRACTING WITH A FORMER EMPLOYER THE DAY AFTER LEAVING WORK

Going contracting for a former employer immediately after leaving your job is likely to mean you would be assessed as inside IR35. Is that really a genuine business-to-business relationship? Maybe, but it has the hallmarks of not being one.

10. DON'T IGNORE YOUR IR35 STATUS

If you are working in the private sector, then do not sit on your hands. There will be many clients who can afford to simply take a risk-averse approach and ban the use of limited company-based contractors. If that presents a threat to you, then you might consider pre-empting that and doing something about it, sooner rather than later.

If you are in a contract that overlaps the April 2021 transition period, then the first step is to understand your current IR35 status. Then talk to your client and see what their plans are moving forward. You can assess your status by visiting IR35 Shield **(https://bit.ly/3liYUxT)**.

Dave Chaplin is CEO and founder of contracting authority **ContractorCalculator** and **IR35 Shield** as well as author of *IR35 & Off-Payroll Explained*.

It's Not Too Late: Are You Ready for Brexit?

GEORGE W SMITH offers some practical tips on getting your business ready for Brexit

IN the November 2018 issue (929) of *The Chemical Engineer* I wrote an article entitled "Deal or No Deal", with the strapline "No deal is now the base case – are you ready for Brexit?". UK Prime Minister Boris Johnson recently declared: "Unless there's a fundamental change of approach, we're going to go to the Australia solution, and we should do it with great confidence". We know from experience that a deadline in the talks with the EU is a flexible concept but whatever happens next, the UK will be treated as a Third Country outside of the EU and you will have to comply with a new set of rules.

The Australia solution is that the UK will revert to trading with the EU on World Trade Organization (WTO) rules:

- tariffs will be levied on most goods and services;
- services from the UK may be restricted if there is no mutual recognition of qualifications and standards;
- border checks and customs controls will take place between the UK and the EU;
- documentation, registration and paperwork for both the EU and the UK will be required;
- regulated industries will be subject to double regulation by the UK and the EU; and
- travel and employment regulations in the UK and the EU will change.

In addition, a "parallel universe" for Northern Ireland may create a bureaucratic nightmare, according to feedback from leading experts in procurement in Ireland.

Businesses and individuals will also need to look at trading arrangements with the rest of the world as today, most of the exports and imports take place under the umbrella of over 700 EU trade agreements. The fallback will be WTO terms unless the UK can quickly agree and implement bilateral agreements such as the UK-Japan Comprehensive Economic Partnership Agreement.

SMEs (small and medium-sized

enterprises) tell us that they are focussing on Covid survival, with little capacity available for Brexit. Larger businesses continue to plan, but remain concerned that there are weak links in supply chains of suppliers and customers.

Planning when there is no clear post-Brexit deal is a challenge for all, but we do know that from 31 December the transition is over. We will all have to change, so if you have not done it already, it is time to build and implement a Brexit Critical Action Plan.

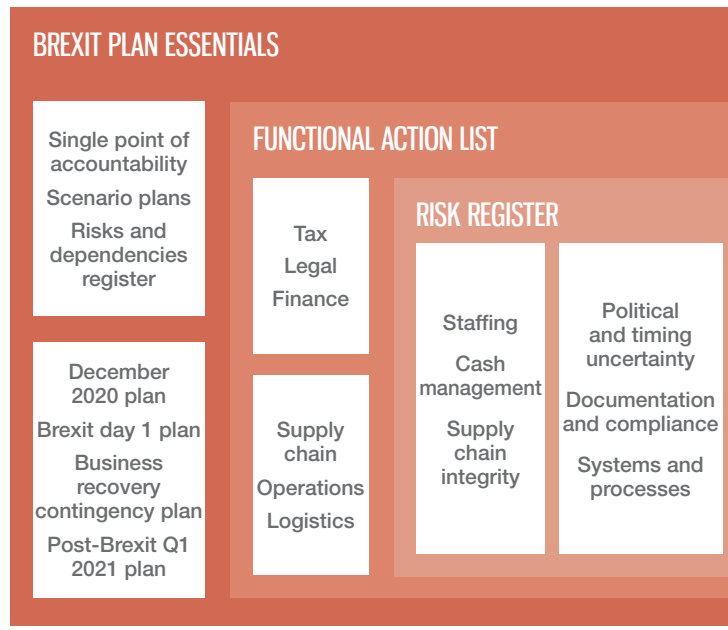
KEY QUESTIONS ARE:

- What is a must-have capability on 31 December/1 January?
- What is the latest date for changes to systems and processes?
- What can I do in the first quarter of 2021 to ensure continuity of business and cash flow?
- Who do I have in my organisation to deliver my Brexit Critical Action Plan?
- How do I get help and extra resources?
- What happens if things go wrong and how do I recover my business?

If you are running a consultancy there are some immediate practical issues to consider.

- How do I ensure that my staff can travel and work freely in the UK and Europe?
  - How do we access Schengen business visas?
  - How will the UK's new immigration system impact my consultancy?

A CALL TO ACTION – PLAN NOW AND ACT IMMEDIATELY



- Do contracts need to be changed and do I have access to EU-qualified lawyers?
- Are there any additional regulatory and tax requirements?
- Is my business, health and travel insurance cover adequate?
- Don't miss the obvious – eg are passports valid for travel in the EU? Do we have appropriate international drivers' licences?

It is never too late to plan, but the precipice is in sight, so we all need to act now – it's time to get ready for Brexit!

George W Smith is Director at Ready for Brexit, **www.readyforbrexit.co.uk**

> "PLANNING WHEN THERE IS NO CLEAR POST-BREXIT DEAL IS A CHALLENGE FOR ALL, BUT WE DO KNOW THAT FROM 31 DECEMBER THE TRANSITION IS OVER"

Consultants listings

From independents to major consultancies, these companies help bring your projects to life

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DEKRA	+44 (0)1224 766713	adam.bell@dekra.com www.dekra-process-safety.co.uk	Adam Bell	500
Engenda Group (t/a Clark Eriksson Associates) UK	+44 (0)1324 611294	info@engenda-group.com www.engenda-group.com	Scott McMartin	62
Genesis London, UK	+44 (0)207 585 5555	enquiries@genesisoilandgas.com genesisenergies.com		858
Gexcon UK UK, Worldwide	+44 (0)1925 202430	gexconuk@gexcon.com www.gexcon.com	Dave Price	30
Haztech Consultants Cheshire, UK	+44 (0)1606 553840	info@haztechconsultants.com www.haztechconsultants.com	Steve Kershaw	9
HSD Safety UK	+44 (0)7540 186628	paul.dewhirst@hsd-safety.co.uk www.hsd-safety.co.uk	Paul Dewhirst	3

Technical expertise	Industry sector												Regions of operation								
	Biotechnology	Energy	Food & drink	Inorganic chemicals	Oil, gas & petroleum	Organic chemicals	Pharmaceuticals	Water treatment	Africa	Asia	Australasia	Central & South America	Europe	Middle East	United Kingdom	North America
Auditing & assessment	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Energy management	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Environmental management	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Expert witness	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Health & safety management	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Legal arbitration & expert witness	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Manpower & recruitment	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Plant commissioning	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Plant construction	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Plant design	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Plant optimisation	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Process development/evaluation	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Project management	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Quality management	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Training	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔

Consultants listings

From independents to major consultancies, these companies help bring your projects to life

Company name & location	Telephone	Email & web address	Contact name	No. of staff
InSite Technical Services Wales, UK	+44 (0)1646 690000	info@insitetechnical.com	Jason O'Malley	62
Manderstam International Group London, UK	+44 (0)207 730 9224	migl@manderstam.com www.manderstam.com	Peter Lumley	15
MES International	+44 (0)1372 227997	giovanni.monaco@mes-international.com www.mes-international.com	Giovanni Monaco	120
MHI Risk Engineers Kwa Zulu Natal, South Africa	+27 (0)716 702114	terrence@mhiriskengineers.com www.mhiriskengineers.com	Terrence Moothusamy	2
Optimus Services (OSL Consulting) Hull, UK	+44 (0)1482 626400	robin.etherington@oslconsulting.com www.oslconsulting.com	Robin Etherington	54
Otto Simon Cheshire, UK	+44 (0)161 491 7440	jking@ottosimon.co.uk www.ottosimon.co.uk	Jennifer King	130
PRISM Technical Advisors Malaysia	+60 321661699	sales@prism-ta.com www.prism-ta.com	Francis Minah	28
RAS Chester, UK	+44 (0)1244 674612	enquiries@ras.ltd.uk www.ras.ltd.uk	Jo Condon	25
RB Plant Kent, UK	+44 (0)1622 858387	genghis-p@rb-plant.co.uk www.rbplant.com	Genghis Perriman	50
REACHwise UK	+44 (0)20 8747 0873	info@reachwise.com www.reachwise.com	Peter Douben	6
Risktec Solutions UK, Europe, Middle East, SE Asia, North America	+44 (0)1925 611200	enquiries@risktec.tuv.com www.risktec.tuv.com	Steve Lewis	300
Sigma-HSE Winchester, UK	+44 (0)1962 840570	info@sigma-hse.com www.sigma-hse.com	Samuel Ayres	11
TNO Process Safety Solutions Chemistry at Extreme Conditions Netherlands	+31 (0)6 1174 9031	prosafe@tno.nl www.tno.nl/prosafe	Davide Mores	100+
WSP Birmingham, Cardiff, Edinburgh, Glasgow, Leeds, London, Manchester, Middlesbrough, Newcastle, UK	+44 (0)207 314 5000	peter.hunt@wsp.com www.wsp.com	Peter Hunt	8,000

Technical expertise	Industry sector												Regions of operation							
	Biotechnology	Energy	Food & drink	Inorganic chemicals	Oil, gas & petroleum	Organic chemicals	Pharmaceuticals	Water treatment	Africa	Asia	Australasia	Central & South America	Europe	Middle East	United Kingdom	North America
Auditing & assessment	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Energy management	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Environmental management	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Expert witness	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Health & safety management	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Legal arbitration & expert witness	✔															
Manpower & recruitment		✔		✔	✔	✔		✔	✔	✔	✔	✔	✔	✔	✔	✔
Plant commissioning	✔		✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Plant construction	✔		✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Plant design	✔		✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Plant optimisation	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Process development/evaluation	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Project management	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Quality management	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Training	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔

Contractors listings

From independents to major contractors, these companies help bring your projects to life

Company name & location	Telephone	Email & web address	Contact name	No. of staff
BPE	+44 (0)1925 607047	andrew.s@bpe-ds.com www.bpe-ds.com	Andrew Stevenson	600
Costain Aberdeen, Manchester, Maidenhead, Solihull, UK	+44 (0)1628 842444	oilandgas@costain.com www.costain.com	Robert Pitman	3,700
DEKRA	+44 (0)1224 766713	adam.bell@dekra.com www.dekra-process-safety.co.uk	Adam Bell	500
Engenda Group (t/a Clark Eriksson Associates)	+44 (0)1324 611294	info@engenda-group.com www.engenda-group.co.uk	Scott McMartin	62
HSD Safety UK	+44 (0)7540 186628	paul.dewhirst@hsd-safety.co.uk www.hsd-safety.co.uk	Paul Dewhirst	3
Morgan Sindall Professional Services Manchester, UK	+44 (0)1618 732500	info.professionalservices@morgansindall.com www.morgansindall.com	Mark Dickson	400+
Optimus Services (OSL Consulting) Hull, UK	+44 (0)1482 626400	robin.etherington@oslconsulting.com www.oslconsulting.com	Robin Etherington	54
Otto Simon Cheshire, UK	+44 (0)161 491 7440	dnevitt@ottosimon.co.uk www.ottosimon.co.uk	Darryl Nevitt	130
RB Plant Kent, UK	+44 (0)1622 858387	genghis-p@rb-plant.co.uk www.rbplant.com	Genghis Perriman	50
Risktec Solutions UK, Europe, Middle East, SE Asia, North America	+44 (0)1925 611200	enquiries@risktec.tuv.com www.risktec.tuv.com	Steve Lewis	270
WSP Birmingham, Cardiff, Edinburgh, Glasgow, Leeds, London, Manchester, Middlesbrough, Newcastle, UK	+44 (0)20 7314 5000	peter.hunt@wsp.com www.wsp.com	Peter Hunt	8,000

Regions of operation									Industry sector								Technical expertise								
Africa	✔	✔	✔	✔	✔	✔	✔	✔	Biotechnology	✔	✔	✔	✔	✔	✔	✔	Conceptual design/process feasibility	✔	✔	✔	✔	✔	✔	✔	✔
Asia	✔	✔	✔	✔	✔	✔	✔	✔	Energy	✔	✔	✔	✔	✔	✔	✔	Engineering services	✔	✔	✔	✔	✔	✔	✔	✔
Australasia	✔	✔	✔	✔	✔	✔	✔	✔	Food & drink	✔	✔	✔	✔	✔	✔	✔	Materials handling	✔	✔	✔	✔	✔	✔	✔	✔
Central & South America	✔	✔	✔	✔	✔	✔	✔	✔	Inorganic chemicals	✔	✔	✔	✔	✔	✔	✔	Modular construction	✔	✔	✔	✔	✔	✔	✔	✔
Europe	✔	✔	✔	✔	✔	✔	✔	✔	Oil, gas & petroleum	✔	✔	✔	✔	✔	✔	✔	Operations services	✔	✔	✔	✔	✔	✔	✔	✔
Middle East	✔	✔	✔	✔	✔	✔	✔	✔	Organic chemicals	✔	✔	✔	✔	✔	✔	✔	Project management/execution	✔	✔	✔	✔	✔	✔	✔	✔
United Kingdom	✔	✔	✔	✔	✔	✔	✔	✔	Pharmaceuticals	✔	✔	✔	✔	✔	✔	✔	Safety	✔	✔	✔	✔	✔	✔	✔	✔
North America	✔	✔	✔	✔	✔	✔	✔	✔	Water treatment	✔	✔	✔	✔	✔	✔	✔	Site supervision/commissioning	✔	✔	✔	✔	✔	✔	✔	✔
																	Specification, bid analysis & procurement	✔	✔	✔	✔	✔	✔	✔	✔