



Dowds - An Introduction

Dowds Group is a mechanical and electrical engineering business headquartered in Northern Ireland, with a turnover of approximately £100m and operations across the UK and Ireland. The business delivers complex M&E engineering across energy, infrastructure and building sectors, and has invested in off-site manufacturing, Modern Methods of Construction (MMC) and an expanding in-house design capability. Dowds is responding to this consultation as a business that has already invested in the capability's modular substations require, such as in-house electrical and mechanical design, off-site manufacturing & assembly, alongside the delivery, integration and commissioning of complex M&E packages on live infrastructure.

Dowds does not manufacture primary high-voltage plant and does not operate transmission assets. Where responses to specific questions are dependent on information held by original equipment manufacturers (OEMs) or transmission owners, we note this here rather than repeating the caveat throughout our submission. On matters of design, off-site assembly, integration and delivery, our evidence is first-hand.

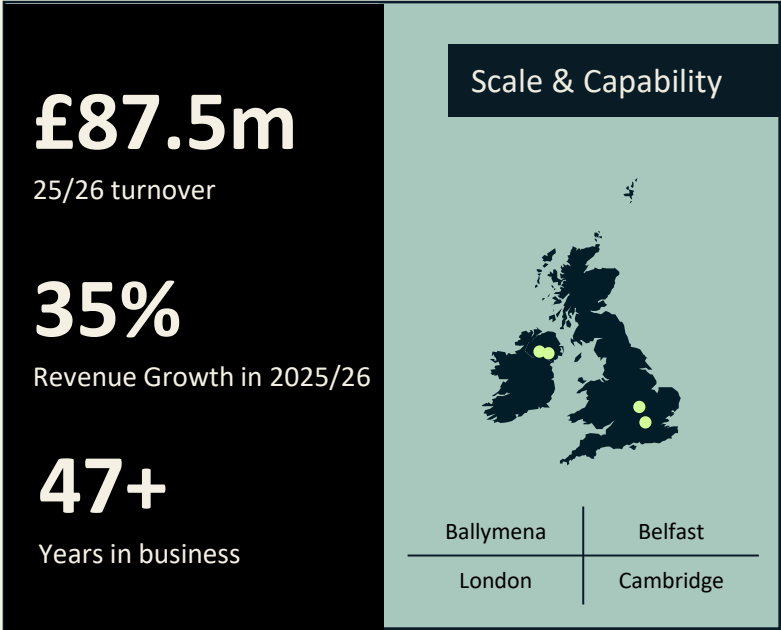
Our central point is this: the supply chain constraint in modular substations sits primarily in primary high-voltage equipment - transformers, switchgear and specialist protection - not in structural fabrication, module assembly, integration or M&E fit-out. The UK and Irish contracting base has capacity in those latter activities today. Modular substations allow that capacity to be brought into the transmission supply chain, expanding the supplier base beyond the traditional OEM channel. The policy design should reflect this: use the APM to secure early OEM manufacturing slots where the constraint is real, while enabling a competitive market in module assembly and integration where no constraint exists. Dowds makes this argument not as a general observation about the contracting sector, but as a business prepared to commit design and assembly capacity to this market now.

Dowds would welcome the opportunity to discuss any part of this response with Ofgem or the licensees.

Section 2

Do you agree with the Draft Determinations to increase APM Bespoke Procurement allowances?

Yes, in principle. Dowds supports increasing Bespoke Procurement allowances where licensees have demonstrated material supply chain constraint, credible project need and adequate mitigation of stranded-procurement risk. We have not had access to the confidential project-specific evidence and so do not comment on individual allowance values.



Do you agree with the reasons for declining APM Bespoke Procurement allowances?

Yes. The three grounds - ineligible cost category, potential double funding, and insufficient mitigation of stranded-procurement risk - are the right tests. We also support the ability to resubmit through a future re-opener where project certainty, design maturity or procurement flexibility improves.

Section 3

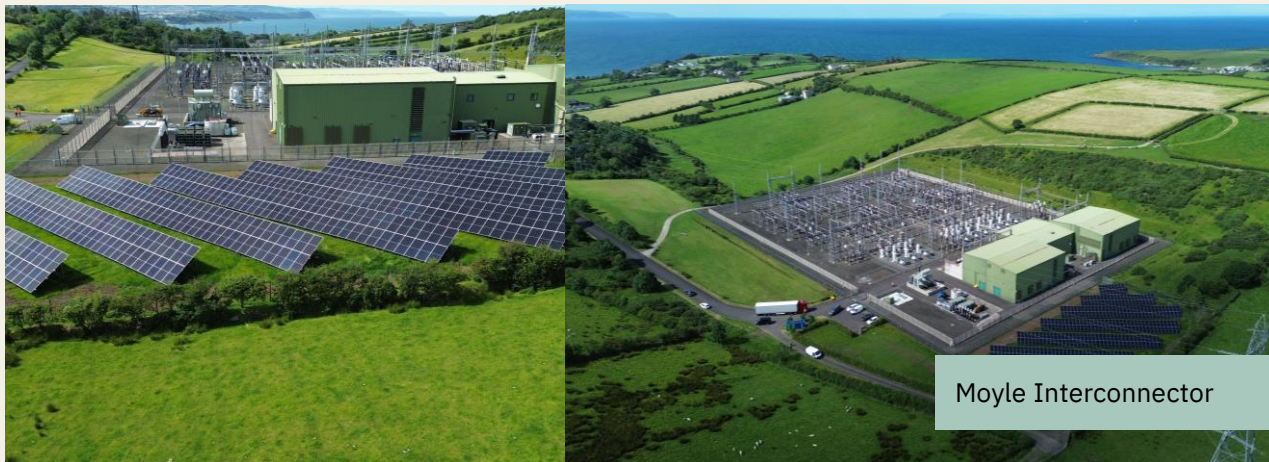
How do the whole-of-life costs of modular substations compare with traditional solutions?

From a design, off-site assembly and installation perspective, the principal financial benefit of modular substations is unlikely to be a lower equipment purchase price. It arises from programme certainty, reduced on-site activity and earlier energisation. Delivery-side savings come from reduced site labour and preliminaries, shorter construction duration, fewer temporary works, factory-quality testing before delivery, reduced rework and weather disruption, and a substantial reduction in repeated project-specific engineering.

Earlier energisation can also create a material consumer benefit. Where a modular substation enables an earlier connection or relieves an identified network constraint, acceleration may reduce constraint-related costs and bring forward the connection of generation or storage. The scale of that benefit should be evidenced project by project by the licensee, using NESO calculations where available.

The scale of these benefits depends directly on the level of standardisation achieved. A modular solution that requires substantial project-specific re-engineering for each location will not deliver them. The benefit case rests on a standard product platform with a controlled range of pre-engineered configurations - a point we return to under Q6.

Dowds does not operate or maintain transmission substations, so long-term maintenance, fault-recovery and asset-replacement costs should be evidenced by the licensees. Our contribution on that point is that maintainability must be engineered into the standard product at the outset - adequate access and working space, replaceable equipment sections, standardised components and interfaces, defined lifting and removal strategies, and complete digital asset information. Retrofitting maintainability into a compact modular design is far more expensive than designing it in.



Moyle Interconnector

To what extent can modular substations provide flexibility for future network needs, including new connections, additional load or redeployment?

Modular substations provide flexibility only where flexibility is deliberately designed into the product. The following features support future adaptation:

- Standard electrical and mechanical interfaces.
- Defined connection points for additional modules, bays or auxiliary systems.
- Modular protection, control and communications rooms.
- Standardised cable-entry and containment arrangements.
- Separation of site-specific elements from repeatable modules.
- Designs covering a defined range of operating and fault-duty envelopes.

A modular substation should be developed as a standard product platform with a controlled range of pre-engineered configurations. Individual projects should select from those configurations, rather than requiring the underlying product to be redesigned. This is the same discipline that underpins successful MMC programmes in other regulated sectors.

The practical level of standardisation and re-deployability is likely to vary by voltage and configuration. It may be more readily demonstrated at 33kV and for some 132kV applications than for highly site-specific 275kV installations.

Redeployment is more practical for control buildings, auxiliary power units, protection and control modules, communications units and some switchgear arrangements than for equipment heavily influenced by site fault levels, busbar configuration, transformer rating, cable routes, ground conditions, planning restrictions or network protection philosophy. Dowds can design and construct units to facilitate extension or relocation; decisions on future network capacity and connection strategy properly remain with the transmission owner.

What are the current supply chain constraints and procurement lead times for modular substations? Are they predicted to worsen?

The constraint is concentrated in primary high-voltage equipment - transformers, high-voltage switchgear, circuit breakers and specialist protection - where lead times are set by global OEM capacity. Detailed component lead-time evidence should come from the OEMs and licensees. The same constraint does not exist in structural steelwork, module fabrication, off-site assembly, integration or M&E fit-out. There is available and expandable capacity in the UK and Irish contracting base for these activities today, and modular substations are the mechanism by which that capacity can be brought into the transmission supply chain. This matters for policy design: it argues for using the APM to secure OEM manufacturing slots early, while relying on a competitive market for assembly and integration.

A consequence Ofgem should anticipate is modularisation does not remove the primary-equipment constraint - it transfers the critical path from site construction to design approval, OEM capacity and factory production slots. Programme benefit is only realised if design standardisation and equipment procurement are brought forward together. Secondary constraints to manage include coordination between multiple OEM equipment packages, availability of components approved to transmission-owner standards, transport restrictions for large completed modules, and specialist commissioning resource.

The modular approach mitigates constraint by enabling earlier design standardisation, earlier procurement of common components, reservation of factory and assembly capacity, parallel manufacture and site preparation, and repeat purchasing across multiple projects.

How flexibly can modular substations be redeployed, and how can stranded-procurement risk be mitigated?

Re-deployability depends on how much of the unit is genuinely standard and how much is project-specific. Stranded-procurement risk can be materially reduced through the following measures.

Standard product boundaries

Clearly define which elements are standard modules - protection and control modules, auxiliary power, battery and UPS units, communications modules, switchgear enclosures, service and welfare modules and which are site-specific.

Standard interfaces

Electrical, structural, mechanical, communications and earthing interfaces should be standardised wherever practical.

Controlled operating envelopes

Each module should have defined limits covering voltage, current rating, fault duty, environmental conditions, physical dimensions, transport limitations, auxiliary loads and communications protocols.

Separation of site-specific design

Foundations, cable routes, external earthing grids, network protection settings and some primary-plant arrangements may remain site-specific. These should be separated from the repeatable module wherever possible.

Configuration records

Each unit should carry a complete configuration record covering installed equipment, interfaces, software, protection systems and design assumptions, so its suitability for another location can be assessed efficiently.

Staged commitment

Procurement can be staged so that common modules and long-lead components are secured before site-specific elements are committed. This aligns naturally with the APM: flexible early commitment on the standard platform, later commitment on project-specific completion.

Dowds can design units for reuse and reconfiguration. Whether a particular asset can be redeployed elsewhere on the network requires system studies and transmission-owner approval.



Where modular substations are proposed for customer connection projects, what proportion of costs would be licensee-funded rather than customer-funded?

Cost allocation between licensees and connecting customers is a matter for the licensees and Ofgem, and we do not offer a view on proportions. We would however make one practical observation relevant to Ofgem's concern (paragraph 2.14) that APM expenditure on customer-funded projects cannot currently be tracked: modular procurement makes clean cost separation easier, not harder. Contract structures can distinguish the standard module supply (a defined, repeatable scope with its own price) from site-specific and customer-funded works. If Ofgem requires that separation as a condition of APM eligibility on connection projects, the licensee-funded portion becomes directly identifiable and auditable.

Should modular substations be included as Flexible Procurement or Bespoke Procurement?

Dowds recommends that modular substations should be included within the APM as a category capable of Flexible Procurement, rather than being designated as Bespoke Procurement-only. Modular construction does not automatically make an asset flexible. A factory-built substation may still be heavily project-specific. However, where a modular substation is based on a standard product platform, uses controlled interfaces and can be allocated to more than one credible project, it should be capable of meeting the Flexible Procurement criteria.

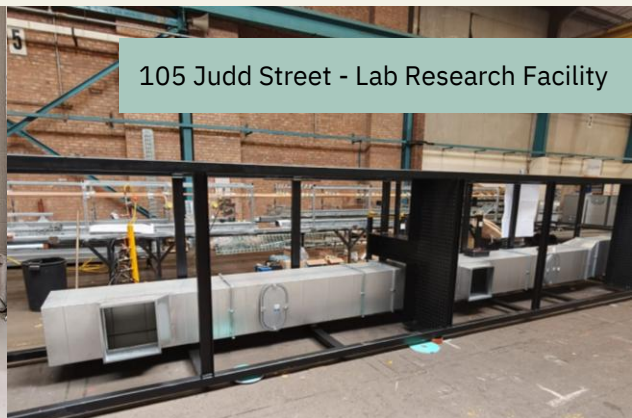
Flexible Procurement would be appropriate where:

- The design uses standard electrical, structural, mechanical, protection, control and communications interfaces
- The substation remains within a defined technical and operating envelope
- It can credibly serve more than one identified project or network location
- Project-specific settings, components or interfaces can be completed later
- The contract permits reassignment to another project or retains sufficient specification optionality
- Site-specific civil works, cable routes, earthing arrangements and network settings are kept separate from the standard modular unit where practical
- The asset can be extended, adapted or redeployed without disproportionate cost or re-engineering

Bespoke Procurement would remain appropriate where an individual modular substation is materially project-specific and cannot satisfy the requirements for transferability or retained design optionality. This may apply where fault duty, primary plant configuration, protection philosophy, physical constraints or project-specific interfaces make realistic reuse unlikely. Dowds therefore recommends that the APM category should permit both approaches: Flexible Procurement for standardised and transferable modular substations; Bespoke Procurement for project-specific units assessed through the existing re-opener process.

Classification should be based on the characteristics of the particular procurement and its contractual flexibility, rather than on the fact that the substation has been manufactured off site.

Ofgem should also clarify how the proposed Modular Substation category will interact with the current treatment of gas-insulated switchgear as Bespoke Procurement. In particular, clarity is needed on whether a modular substation incorporating GIS would be treated wholly as bespoke, or whether the wider modular package could still qualify as Flexible Procurement while the GIS element is treated separately.



DOWDS

If modular substations are included as Flexible Procurement, what checks are needed to justify the trade-off between short-term delivery benefits and long-term network efficiency?

Dowds recommends the following checks and recommends that factory-side verification is carried out through an independent factory acceptance and interface-verification regime that tests the integrated module - not individual components in isolation.

1. Standardisation assessment

The transmission owner identifies which parts of the proposed solution are standard and which remain project-specific

2. Alternative-use assessment

Evidence that the module could be used on more than one credible project or network location

3. Design-envelope verification

A clearly defined operating envelope covering voltage, current, fault duty, environmental conditions and physical interfaces

4. Expansion assessment

Demonstration of whether additional bays, load, connections or auxiliary systems can be incorporated

5. Interface control

Electrical, structural, protection, control, communications and mechanical interfaces formally defined and controlled

6. Transport and installation review

Assessment of practical transportation, lifting, delivery, connection and future relocation

7. Independent factory verification

An agreed inspection and testing process before delivery, verifying the integrated unit against its design envelope and interface specification

8. Configuration management

A complete digital record of the as-built design, installed equipment, software, settings, interfaces and modifications

9. Maintainability review

Confirmation by the asset owner that modularisation does not create unacceptable restrictions on inspection, maintenance, component replacement or post-fault recovery.

Dowds can contribute directly to the design, interface, transport, installation and factory-verification checks. Long-term network optimisation, system planning and operational acceptance properly remain with the transmission owner

Closing Remarks

Modular substations are an opportunity to bring proven MMC disciplines - standard product platforms, factory assembly, controlled interfaces and configuration management - into the transmission network, and to widen the supply chain beyond the traditional OEM channel at a time when delivery capacity is the binding constraint on clean power ambitions. Dowds Group supports their inclusion within the APM on the module-level basis set out above. Dowds has the design, off-site manufacture and delivery capability to serve this market from the outset and would welcome direct engagement with Ofgem and the licensees on any aspect of this response.