Subsidy Control Principles Assessment: Royal Academy of Engineering - Enterprise Fellowship – 24th August 2023

	Assessment Framework Component	Recommended Evidence
Step 1	**Policy objective** (Subsidy Control Principle A)	The policy objective for Enterprise Fellowships is to support the commercialisation of university research, primarily through the creation and growth of spinouts from UK universities (and also startups established by recently graduating doctoral students, which are similar for most purposes, but may not formally be spin-outs depending on IP ownership). As noted in the terms of reference for the Independent Review of University Spinouts (published 9 March 2023 – https://www.gov.uk/government/publications/terms-of-reference-for-the-independent-review-of-university-spin-outs/independent-review-of-university-spin-outs-terms-of-reference) "University spin-outs are critical to the UK innovation ecosystem and have an important role to play in delivering the government's ambitions for the UK to become a science superpower capable of nurturing the world's next Silicon Valley". In particular, the core aims of the Enterprise Fellowships are: • to encourage excellence in engineering and bring engineering innovations to market for wider public benefit • to improve the skills of the awardee, through training and application • to develop role models of entrepreneurship • to develop a wider alumni network to further the aims of the Hub. These all provide positive externalities and significant public goods. The desired outcome of Enterprise Fellowships are excellent engineers with substantially developed skills and capabilities to enable them to lead the formation of commercially successful deep-tech spin-out companies. By helping equip excellent engineering researchers with the skills they will need to create and grow deep-tech spin-out companies, the Enterprise Fellowships address a variety of forms of market failure that might otherwise mean that the rate of spinouts is lower than would be optimal for UK society: 1. Upfront costs: due to their highly innovative nature creating a research based spin out usually involves substantial upfront investment in product or service development before entering the market, to prove efficacy, market need and scalability. This creates a financial barrier to entering the market. Whilst early stage private investment can help the spin-out address these barriers, such investment requires evidence of the potential of the business, which can usually only be provided by the founding engineering entrepreneur developing their business plan and associated skills. The Enterprise Fellowship support helps founders get their propositions investment ready, and thus in a position to be assessed for market investment. 2. Information Asymmetry: Researchers will have a much higher level of knowledge of the particulars of their technology than potential investors, who in turn have a higher level of knowledge of the business world. As part of building relationships with investors the researchers must clearly articulate the distinctive know-how that goes into their product, so that

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		the investor can evaluate the credibility of the spin-out business plan. The lack of certainty on viability of early stage products in turn leads to an ability to raise finance on reasonable market terms. Enterprise Fellowships address this through enhancing the skills of researchers to communicate with potential investors and customers. 3. Uncertainty and risk: With 90% of tech companies failing before they reach 5 years old there is obviously tremendous uncertainty about whether a novel spin-out can thrive. This can discourage talented engineers from committing the next stage of their careers to spin-out formation. The Enterprise Fellowship reduces this risk in two ways; by enabling a university to continue to provide stable employment of the Fellow while they work on building their skills and the business, and also because the skills, networks and guidance provided by the programme gives the potential entrepreneur the confidence to face and manage the risks that might otherwise prevent them entering the market. 4. Externalities: Enterprise Fellowships are also particularly intended to support progressive leadership skills in in founders, such that they develop sustainable and inclusive businesses addressing societal challenges through technology. Such positive social benefits are likely to be undervalued by purely market price investment, hence the support programme to promote them is unlikely to happen without public funding. Similar policy objectives are captured within the Support for SMEs category within the Local Growth Streamlined Route. That route however, provides funding directly to the company and does not have the same focus on developing leadership skills in individual engineers as the focus on the mechanism. However, the objectives of the scheme align with two of those of the local growth streamlined route: - to encourage entrepreneurialism and diversity in the market through support to start-up enterprises - to improve access to finance for small and medium-sized enterprises looking to grow Thus, in the guidance document for the streamlined Local Growth route, analogous points about market failure are made (9.2-9.5): - As the backbone of the economy, SMEs are essential to achieving these goals. There are almost 6 million SMEs in the UK, revealing a deep culture of innovation and entrepreneurialism. The UK's SMEs provide 60% of all employment and can have enormous growth potential as individual companies. Their size and agility can also make them the vehicle for constructive disruption, introducing innovative products and practices that increase the quality and range of products available to the consumer, and eventually increase productivity for other actors in the market. - Despite this, start-ups and SMEs often struggle to realise their full growth potential. Their risk profile, along with their lack of trading history and collateral, can make it hard to access finance at non-prohibitive rates. This means that they are not always able raise sufficient money to develop new products and processes, employ new staff or open new premises. - For those with an idea who are yet to start a business, or new entrepreneurs looking to take their first steps to growth, the difficulties in getting loans or other forms of finance can be more acute. This can

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		have the effect of limiting the establishment and growth of start-ups to those with the personal capital and connections to finance them, rather than those with the best ideas and ability. Thus, the Scheme also has an element of equity objective, as it seeks to broaden the range of people who have the relevant personal capital and connections to start a deep-tech spin-out company.
	Appropriateness (Subsidy Control Principle E)	There is no obvious regulatory or commercial loans approach to addressing the policy objective set out above. Potentially UK universities could be required by regulation to provide every researcher with a skills development programme that would make them better entrepreneurs, but it is implausible that this could provide the depth and quality of development support that a focused programme on the most-talented potential founders offers. Thus, it is not clear that regulation could achieve the outcomes sought. In addition the Academy does not have the power to regulate universities on such matters. Plausibly an entirely non-subsidy grant scheme could be created that would give funds to the university for knowledge-transfer (as explicitly permitted as a non-subsidy in 15.33 and 15.34 of the Statutory Guidance) whilst excluding providing benefit to the spun-out enterprise that can be considered an indirect subsidy. However, the complexity involved in ensuring that the university did not provide an indirect economic advantage to the spin-out would be substantial and create bureaucratic hurdles that would themselves create barriers to the policy objective. Such a mechanism would not achieve the objectives of supporting spin-outs or developing individuals to the same extent. Other means of assistance such as loans would delay the action, compound issues around uncertainty and risk, and not provide the springboard needed to really push for growing entrepreneurship within the UK. By their nature spinouts involve unproven technology, so offer minimal collateral for loans. Loans would also reduce the value and attractiveness of any spinout from the investor perspective. Loans for deep-tech start-ups are either not available in the market or are available only on suboptimal terms. Potentially, a non-grant scheme based on making equity investments could be created. This however would not serve the same range of potentially founders as would only be possible where a company existed in which to invest equity. Duties owed by the individual to the shareholder would complicate and hinder the intended uses of the funding, as well as creating serious challenges in appropriately balancing the charitable objectives of the Academy with the commercial responsibility of an investor. Managing these would require an unduly complex management structure that would again seriously hinder the objectives of the scheme. An alternative model might look at direct provision of the activity by the Academy – taking on the individuals as staff members and looking to develop their products within our organisation. However, we have neither the scope, capacity or knowledge of the spin-outs products to undertake this. In addition, there will almost always be prior ownership of IP by the university where research was undertaken and direct provision would require licencing that on commercial terms, creating an unduly complex portfolio of licencing arrangements to manage. Moreover, such a “spin in” approach would be very unlikely to develop individuals leadership capacity to the same extent as the scheme.

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Step 2	**Baseline no-subsidy scenario** (Subsidy Control Principles C & D)	In the absence of this subsidy fewer deep-tech spin-outs will be created and those that are created will be less likely to flourish and grow. Even those that do grow will have leadership with weaker progressive leadership skills to support the sustainable and inclusive growth of their company and may therefore be more likely to fail in the longer term. It is likely that in the absence of this support universities would not permit them the same freed to focus on their project and would require greater ownership and control of the spin-out business. It is highly unlikely that post-PhD students would undertake spin-out creation to the same extent without the availability of this kind of financial support. This will in turn limit the flow of knowledge from UK universities into societally valuable products and services. The Academy has been providing Enterprise Fellowships since 2013 under similar terms (as eligible state-aid under the previous subsidy regime). Thus, this no subsidy case would be the loss of a beneficial effect in future. So far the scheme has supported hundreds of founders to create thousands of jobs, attracting hundreds of millions in follow-on investment.
	Additionality Assessment (Subsidy Control Principles C & D)	The Enterprise Fellowship programme strongly encourages the economic beneficiaries (the spin-out company, its investors and leaders) to support the progressive leadership skills of the founding engineers. In the absence of the subsidy, it is unlikely that this will happen, because of the market failure issues set out in Step One above. If it does happen it will be in a much smaller and less effective way than with the support of the programme. There is no sense in which leadership development activities at the level supported through the programme could be considered as “business as usual” costs. Indeed, since the business does not usually exist at the point the grant is made, no element of the activity is “business as usual”. The benefit is in principle available to every planned university spinout but is highly competitive as the scheme is highly selective in its operation. Fellows of the Royal Academy of Engineering and investors with substantial experience of engineering entrepreneurship select from numerous applications only those talented engineers with the greatest potential to benefit from the financial and non-financial support. Eligibility conditions require that the spin-out must not have already raised over £500k in equity funding, thereby excluding spin-outs that have already reached a substantial level of investment-readiness and those founders who already have the resources to attract that level of investment to their business.
Step 3	**Proportionality and Minimising Distortion** (Subsidy Control Principle B & F)	The most likely risks of negative effects on competition and investment are listed below: 1. Distortion of the Market: Subsidies can distort the free market by artificially promoting certain types of businesses or industries over others. This can lead to inefficiencies if funds are directed towards startups that wouldn't have been competitive without governmental assistance. Enterprise Fellowships benefits go to very early-stage companies that are pre-competitive. In particular, to be eligible, the business must have raised less than £500,000 in private investment. At the scale of these awards (£75,000 in financial grant, plus non-financial benefits and typically 16 awards per year) it is very unlikely they will distort the market. Moreover, given the highly novel nature of the technologies involved often there is no direct competitor to negatively impact, and spinouts assist in market creation

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		2. Dependency: Startups may become reliant on subsidies and struggle to survive once the subsidies end. This can inhibit the development of self-sustaining business models and lead to market instability. Again, the relatively small scale of Enterprise Fellowships and their one-year duration means that there is very low risk of reliance on this funding. Indeed, the primary goal of the funding is to make sure that the Enterprise Fellows become more capable of making their business thrive from private investment sources. 3. Misallocation of Resources: Not all startups are worthy of support. Subsidies might end up supporting startups with weak business models or ideas, leading to wastage of public resources. The careful selection applied to Enterprise Fellowships means that they only go to recipients that experience experts believe will benefit substantially from the programme and achieve a credible business model around their distinctive technology by the end of the programme. 4. Encouraging Risky Ventures: Subsidies could potentially encourage overly risky ventures. With the promise of government funds, entrepreneurs might undertake projects that they otherwise wouldn't, leading to potential financial instability. Again, whilst the one-year of support does help reduce barriers for entrepreneurs to create startups, it is unlikely to encourage reckless risk-taking. Similarly, the careful selection of awardees makes sure that excessively high-risk ventures are rejected and do not receive any benefits. Thus the design of the Enterprise Fellowship scheme carefully minimises all these risks of negative effects. The nature of the instrument – whilst grants are a more potentially distortive form of subsidy, as reviewed under “Appropriateness” above, there is no alternative instrument that might have the same benefits. The breadth of beneficiaries and selection process – there are a wide number of potential applicants and a rigorous and fair competitive selection process. The availability to recent doctoral students in addition to university employees shows how we are seeking to make availability as wide as possible. The size of the subsidy – this was selected primarily to be suitable to support a single postdoctoral researchers employment costs within a university for a year, thus allowing the most likely founder population to concentrate full-time on developing the business and their leadership skills, as well as for £15k of support costs for continued development of the innovation. The level of support is below the £100k level that the statutory guidance suggests can be considered “very small” and indeed does not require upload to the transparency database. The timespan over which the monetary portion of the subsidy is given – one year – is short and the subsidy is provided on a one-off basis. The nature of the costs covered – the fact that these are start-up costs and remote from the costs of any actual trading (both on the basis that they will occur a significant length of time before any trading occurs and form a very small proportion of any overheads for the products which are ultimately sold) further reduces the potential impact of the subsidy on competition and trade.

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		Performance Criteria – Through the course of the grant the performance criteria are primarily process rather than output focused – ie to devote time and effort such as attending training, receiving mentoring etc rather than producing measurable results. The grant can be terminated and funds recovered if the individual is not participating in the activities or if we conclude there is no intention to create a start-up business. The lack of intent would be expected to become obvious due to the intense interactive nature of the training and the scrutiny of monthly review meetings. In practice, it is unlikely that an individual without appropriate vision and motivation to start a business would make it through the highly competitive selection process. Ringfencing – the recipient university must ensure that all funding is for eligible costs and can be inspected to ensure compliance. Monitoring and Evaluation – Lessons learned from each round of applications and awards are carefully reviewed by the overseeing committee of Academy Fellows and incorporated into future rounds. In addition, about every three years the Academy commissions a full independent evaluation of the scheme, including surveys of beneficiaries and subsequent benefits, and recommendations for further changes and improvements to the scheme. The mechanism of a grant is to kickstart and help catapult a young innovator into realising their start-up's potential. The process is competitive and the size of the subsidy is under £100k which is considered to be a small grant that would substantially help to bolster start-ups within the UK. To be eligible for the scheme: • The applicant must be a researcher working at a UK university, and have a PhD or equivalent experience, at any level of seniority, from PhD students to professor. If they are a PhD student, their viva must be held before the start of the Fellowship or the offer will be withdrawn. • The university must intend to form a spinout in which they will be the CEO or COO, at least in the immediate future. (It is possible for the university to decide not to form the spinout without breaching the terms of the grant.) • The university should not expect to have an equity stake in the company that is greater than 50% unless they can demonstrate some form of additional private investment into the spinout, beyond what is normally expected of a host (i.e., grant funding and performing the standard TTO support function do not count as additional investment). • The business may or may not be already incorporated. If it has, it must have raised less than £500,000 in private investment. As described above the benefit is in principle available to every planned university spinout but is highly competitive as the scheme is highly selective in its operation. Fellows of the Royal Academy of Engineering with substantial experience of engineering entrepreneurship select from numerous applications only those talented engineers with the greatest potential to benefit from the financial and non-financial support. Eligibility conditions require that the spin-out must not have already raised over £500k in equity funding, thereby excluding spinouts that have already reached a substantial level of investment-readiness. The size of the subsidy is well balanced and has been considered appropriate to meet the objective of the programme. £60k is provided to support the salary of the individual while working on the Fellowship. This portion of the Enterprise

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		Fellowship reduces the risk to Entrepreneurs by enabling a university to continue to employ the Fellow while they work on building their skills. Skills and networks that give the potential Entrepreneur the confidence to face and manage the risks that might otherwise prevent them entering the market. For those awardees who are former doctoral students and start up outside of a university, the £60k support for their salary provides stability for them to focus on their start up project. A further £15k is offered to support costs for the continued development of the innovation and associated spin-out. This support helps to ensure that while the Entrepreneur is working on building their skills and network they are also working on getting their propositions investment ready, and thus in a position to be assessed for market investment. This relatively small injection of funds acts to remove the deterrent risk posed to individual Entrepreneurs when having to consider investing their own funds into a novel business idea. The duration of the award is 1 year and a full-time award where awardees are expected to be fully engaged and committed. Awardees are not permitted to hold any other form of employment during the course of the award. Regular reporting is required of all Enterprise Fellows in the form of monthly catch-up calls, quarterly progress reports, six-month panel review and an annual follow up report following completion. This allows the Academy to identify support the individuals will need, and the report will form the basis of an entrepreneur's business plan.
Step 4	**Balancing Exercise** (Subsidy Control Principle G)	The expected benefits are the increased creation and growth of spinouts from UK universities drawing on engineering research and their more effective leadership. This will in turn lead to more technology-based solutions to societal challenges as well as increased employment and economic prosperity. The potential negative effects on competition of very early-stage support to innovative startups are as noted above, primarily: 1. Distortion of the Market 2. Dependency 3. Misallocation of resources 4. Encouraging risky ventures. As highlighted above, the Enterprise Fellowship is carefully designed to minimise all these risks. Moreover, more generally, even without such careful controls, the negative effects of support for innovative startups are widely recognised to be negligible relative to the benefits. Hence, such support is allowed directly for grants to start-ups within the Local Growth streamlined route, and likewise well-established within the aid for start-ups innovation aid for SMEs state aid exemptions of the European Union. The Enterprise Fellowship scheme has a significantly lower risk of negative impact than those approaches because in the majority of cases the direct funding grant is to a not-for-profit entity that will be coinvesting in the project, a university, and the benefiting enterprise (which may or may not legally exist at the time) is a very early stage start-up receiving an indirect benefit. In a minority of cases the grant is to an individual wishing to establish and lead a company. Because of the extremely high levels of uncertainty involved in assessing the value of very early-stage high-tech companies, it is not possible to give useful

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		quantitative values of these benefits and negative effects. No similar valuations are given for any similar subsidy schemes that give grants directly to business, even though those are larger, less targeted and more likely to lead to negative effects. In summary, we conclude that the benefits of the Enterprise Fellowship scheme in achieving the specific policy objective of supporting the increased creation and growth of spinouts from UK universities considerably outweigh the negative effects on competition of the indirect subsidy received by those newly created businesses.