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and the ensuing competitive advantage that adoption of this technology would bring.

Facilitators/technical translators are required to be engaged between the knowledge base and companies. At present there is no dedicated resource available to the newly created expertise cluster of NWLEC which means knowledge exchange is sporadic and unfocussed. The knowledge exchange activity that is required and which is proposed in the project will allow industry to actively engage with a continually developing, fertile and internationally recognised science base.

There is a requirement from industry to have facilitation of laser processing at the technology readiness level (TRL) 4-6 where industry can interact and evaluate at industrial scale. This is particularly true in the fledgling micro/nano market (\$9bn in 2006) which includes: micro welding and soldering, drilling and fine cutting; nanoparticle production, functionalisation and use; microalignment and adjustment in microelectronics and MEMS applications; direct writing of next generation optical waveguides and optical integrated circuits; metamaterials for terahertz and optical wavelengths; micro and nano surface texturing for cell control, friction property enhancement. These have substantive application across the RES priority sectors.

The project will add confidence by creating and securing support for an investment strategy by industry. It will assist by investing in demonstration projects, infrastructure and pump priming activities and by assisting the first entrants. Once a number of entrants have invested then other businesses are then more likely to follow due to lower risk

A number of primes in the aerospace sector engage with the University research groups and NWLEC and are willing to actively support the KE proposal here and include their supply chains.

References for this section:

1. Optech Consulting 2008
2. Research and Markets Data 2007
3. Marketresearch.com

*The TRL (Technology Readiness Level) is used widely within industry to define the maturity of specific technologies and their readiness for end-users. TRL 4-6 typically describes "applied development" - the area between the research and development performed within the science base and the point at which a final system demonstration can be exhibited in a relevant working environment - the point at which industry would be ready to adopt a technology.]

15. What evidential demand has been identified for the project. Why is Agency funding required?

There are large sections of the Northwest manufacturing sector that are not utilising the experience base within the Region's HEIs in the field of materials processing using industrial lasers. In other parts of the EU, such as Germany with its effective and institutional linkage between technology generation and industry, this activity level is significantly higher.

SQW have recently completed an evidence base to support the Modern Manufacturing Strategy and Action Plan for the Northwest. In reviewing the economic statistics relating to the NW Region's manufacturing base it concludes that manufacturing is the most productive broad industrial group within the Regional economy, with an average GVA per employee of £45,100 which is nearly three times the overall Regional figure. The mean number of employees per manufacturing enterprise is 43 which, even allowing for the presence of some very large employers in this sector within the aerospace, automotive and chemicals clusters, indicates that most of the relevant activity in the addressable market for the intervention proposed here will occur within the SME population. Within the Northwest's manufacturing sector, 98.7% of enterprises are SMEs and 92% are small businesses with less than 50 employees.

In considering the knowledge disconnect described in the last section, the market itself will not act to close this gap as caution regarding investment in unknown technology and the lack of any other source of unbiased but informed knowledge and experience will prevent this.

In September 2008, BERR, the Department for Business, Enterprise and Regulatory Reform, published an occasional paper outlining five significant dynamics of change in the global economy. Most of these are relevant to this case, notably:

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- **Renewed emphasis on technology exploitation.** This proposal addresses the process efficiencies and productivity improvements that are essential for the global competitiveness of manufacturing and which are critically underpinned by advancing technologies. The ability to effectively perform value adding activities in high technology sectors accounts for 40% of UK manufacturing activity.
- **Investment in intangibles.** Firms in both the UK and other developed economies are increasingly investing in intangible or knowledge assets in order to improve their competitiveness and enable their products to meet the changing needs of consumers. This proposal centres on the acquisition by Northwest manufacturers of knowledge that has previously been wholly or partially inaccessible.
- **The changing nature of skills requirements.** Evidence collected by the BERR team suggests that a transition in manufacturing is taking place with an increasing proportion of employment being in more highly skilled occupations.
- **Growing importance of the low carbon economy.** The use of laser based manufacturing processes is characterised by high thermodynamic efficiency, only applying energy where it is required to bring about material transformations

In a November 2007 report by Birmingham Technology Limited for NWDA ("A Mapping Study of the Northwest Region Photonics Sector"), the following points are made:

"The Northwest Laser Engineering Consortium (NWLEC) is an exciting NWDA funded initiative run jointly by the Universities of Liverpool and Manchester and provides cutting edge research and facilities in advanced laser processing and engineering..... There is strong evidence that the NWLEC project is working well especially in terms of its collaborative nature". (p 48)

"Observation 11: The Northwest Laser Engineering Consortium should be recognised as an exemplar for clustering activities of advanced laser engineering research in the region" (p 48).

"Observation 13: Strong support for NWLEC and other regional Materials Research and Technology Organisations could see Northwest UK play a prominent role in micro-scale and nano-scale processing (i.e. the growing field of nanotechnology.)" (p 51).

In the area of micro laser processing, a dedicated KE activity is now required to support a basis for cluster formation in this technology in the Northwest, since a resource of this kind has to date been absent. Sector champions and business link have been consulted with respect to the type of project and resource required.

The proposed employment on the project of senior KE staff with experience of the particular laser technologies being developed takes into account lessons from previous KE projects, such as the work of the National Museums & Galleries funded by the Office of Science & Technology through the Science Budget (Report JC4429, SQW Ltd, Cambridge, 2005). The team members will interface with industry across a wide range of disciplines, not limited to 'traditional' areas of science, technology & engineering (as recommended in the same report).

To engage industry and identify appropriate businesses, the project will act on the recommendations of a recent NWDA workshop on HEI based KE experience and best practice (Knowledge Exchange - Opportunities for the Region, NWDA Workshop Report, March 2008) by developing and implementing a range of actions to allow multiple ways for SMEs to access the benefits of the project. In the proposed project, the actions will include industry surveys, visits and technology seminars.

Letters of support from industry will be forwarded as an annex

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16 What are the project objectives (these should be Specific, Measurable, Achievable, Realistic & Time-bound (SMART)?

A three year KE project is proposed to exploit further outcomes of the NWSF project with industry. Specifically: the project will employ outreach specialists to work with research staff in developing, applying and disseminating the technology through industry projects; the NW SME sector will be engaged to seek application outlets for the technology developed by NWLEC and also external technology that NWLEC has identified as being of comparable impact; the activity will seek to leverage collaborative R&D funding with the SME companies to develop economically relevant outcomes for these companies in the uptake of the technology.

The specific objectives of the project are as follows:

1) Increasing awareness of laser technologies with industry in the North West

The knowledge exchange team will interface with 150 companies in the North West whose business could potentially benefit from the introduction of laser technology. A systematic approach will be developed which will raise awareness amongst industrialists. This will include company visits and a programme of awareness seminars. Determination of company requirements and benefits will be systematised through a detailed technology audit strategy. The outputs of this activity will be to identify 60 of the companies engaged for further activity within the programme. Of these, 20 will be businesses involved in new collaborations with the knowledge base. This phase will be 40% complete after 12 months, 80% complete after 24 months with final completion at 27 months.

2) Targeting beneficiaries

The requirements of the 60 identified companies will be carefully evaluated from a technical and business perspective to maximise the benefits of the appropriate laser technology for their business. This will involve detailed technical consideration of the specific processes and products involved in their business and a close consideration of economic benefits. As a result, this will provide a high level determination of the economic and technical barriers to entry of the companies. The outputs of this activity will be to identify 30 of the targeted companies as those that will benefit from applications development (demonstration) projects involving the NWLEC facilities and to maximise the remainder who can benefit from interventions that are more immediately available. This phase will be 33% complete after 12 months, 75% complete after 24 months with final completion at 36 months.

3) Demonstrating benefits

Having selected the 30 companies that will benefit from application development (demonstration) projects using NWLEC facilities, implementation of these projects will be carried out. The key concept is that uptake of laser technologies by companies will be enabled in these cases only if the technological and economic benefits have been evaluated in the often unique requirement set of each individual company. This phase will be 20% complete after 12 months, 50% complete after 24 months with final completion at 36 months.

4) Generating generic knowledge

Using NWLEC facilities, collaborative work with companies will be carried out to develop solutions to specific technological laser process applications. Knowledge from this work will be utilised to assist in the brokering of solutions to further companies in the project. This phase will be 25% complete after 12 months, 70% complete after 24 months with final completion at 36 months.

5) Brokering solutions

As the results of the demonstration activity for each company are achieved, barriers to the implementation of the technology for each company will be examined and countered in a more detailed business case identifying route to market, potential partnerships, and the benefit of laser machine purchase versus outsourcing work to specialist job shops. This will involve co-ordination with private and public agencies in order to overcome barriers and analysis of route to market and funding perspectives. The overall goal of this phase will be to implement new laser technologies in 20 companies. Ongoing technical support beyond implementation will be provided by NWLEC.

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This phase will be 5% complete after 12 months, 35% complete after 24 months with final completion at 36 months.

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Logic Chain:

1. Has the Logic Chain been completed adequately?

The logic chain has been completed adequately. The applicant has identified a market failure in relation to the provision of services to industry regarding laser technology and has set out actions, objectives, outputs and outcomes. However, there is a weakness in the logic chain in relation to the information provided on additionality, which does not include displacement. Further discussions will be required should the project proceed concerning the evaluation of this issue.

2. Does the Logic Chain show that the project has been designed based on well thought out assumptions?

The project has been designed based on well thought out assumptions.

Strategic Case:

3. How and to what extent does the project fit with specific programme objectives, Operational Plan/ERDF Investment Frameworks, RES/Corporate plan objectives, sub-regional and local strategies?

The applicant has identified that the project is consistent with RES Action 15, which aims to implement the North West Science Strategy. The Science Strategy will be supported through the project's exploitation of the science base and knowledge transfer activities, both of which are emphasised in the Strategy. The applicant has also identified a range of other RES and ERDF priorities which will be supported by the project.

4. Should the Agency be involved? Is it an appropriate activity for the RDA to support or is there another organisation better placed to support it?

Given the level of consistency with RES and Corporate Plan objectives, the project is appropriate for NWDA support. There is no other organisation better placed to support the project.

5. Have all the appropriate links been made with the NWDA, sub-regional and local strategies and with other Agency initiatives or projects, as appropriate (including national strategy 'Securing the Future')?

The applicant has provided evidence for a number of links with strategies and policies.

"Securing the Future" is the Government's sustainable development strategy. The Programme is consistent with the strategy's objective of sustainable consumption and production. Within this objective there is a commitment to "strengthening measures to improve the environmental performance of products and services" and to "improve resource efficiency and reduce emissions". The project is consistent with these commitments as it will result in energy efficient production methods being developed.

6. Does the project fit the sub-regional priorities and is the support of the SRP confirmed, refer to SRP Review Form for ERDF funding requests.

The project is consistent with the following sub-regional priorities:

- Merseyside - the City Regional Development Plan has a priority area of 'the knowledge economy and innovation';
- Greater Manchester - the City Regional Development Plan identifies knowledge transfer as a fundamental requirement for raising productivity in the sub-region;
- Cheshire and Warrington - the knowledge economy is identified as a key driver in

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the sub-regional economic strategy and the need for links between higher education and business is recognised:

- Central Lancashire City Region - the City Region Development Plan recognises a need for greater alignment between the local economy and business support and an integrated role for Higher Education institutions within the local economy; and
- Cumbria - Cumbria Vision's Action Plan identifies a need to increase knowledge transfer, innovation and R&D.

The project is consistent with all of the above sub-regional priorities.

The applicant has also provided documentary evidence of support for the project from The Mersey Partnership. However, confirmation of support from the other sub-regional partnerships in the region has yet to be provided.

Rationale

7. What is the evidence of market failure/equity objectives and demand for this project? Evidence should be specific and sourced. New studies may be required.

The applicant has identified a market failure in the manufacturing sector resulting from weaknesses in knowledge and confidence in laser technology and recognises that links between business and HEIs in this area is weak.

There is evidence of the need for Northwest manufacturers to improve their productivity. The 'State of the Northwest Economy' report (Northwest Regional Intelligence Unit, May 2008), stated that in May 2005 'productivity in the North West in all (manufacturing) sectors, with the exception of textiles, clothing and leather and transport equipment was below UK levels. Other manufacturing sectors, such as electronics, electrical and instrument engineering, had productivity gaps as large as 20%'.

The report also shows a decline in investment in manufacturing in the region as a percentage of GVA. Between 1998 and 2004 the proportion of GVA invested by businesses in the manufacturing sector fell from 3% to 1.2%.

Demand for the project is evidenced in a number of letters of support from regional businesses supplied by the applicant.

8. Are the aims and objectives of the project clearly identified? Have baselines been identified from which change can be measured?

The applicant has identified the objectives of the project as:

- increasing awareness of laser technologies with industry in the North West;
- targeting beneficiaries;
- demonstrating benefits;
- generating generic knowledge; and
- brokering solutions

The overall aim of the project is to promote the use of laser technology throughout supply chains. Large businesses in the region such as BAe Systems and Rolls Royce are already using this technology, but lower down the supply chain smaller businesses are not using this technology. The project will demonstrate the benefits of laser technology and boost confidence through businesses in relation to the application of laser technology.

Baselines have not been identified.

9. Has evaluation evidence from previous projects been used to support the rationale and design of the projects?

The applicant has not used evaluation evidence but has based output forecasts on

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experience from other projects.

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Section 3 – Options Analysis and Value for Money

17: Set out the alternative options that have been considered	
<p>Option 1: Reference Case (Do nothing). What will happen if the project does not go ahead?</p>	<p>This will represent a huge missed opportunity for the North West as other international regions begin to realise the economic potential of laser materials processing. National, Regional and Sub-Regional objectives for Advanced Engineering would not be achieved.</p> <p>The time to capitalise on the existing expertise and research base is now due to the number of generic technologies starting to emerge. The research programmes at each of the partners will continue, but there will be no commercial exploitation of the work beyond what happens at present and the opportunity for synergy and collaborations will be lost (particularly with SMEs in the region).</p> <p>The loss of scope for leveraged funding will significantly reduce the ability of the region to maintain its position among world leaders and the region will find it much harder to develop as an attractive location for inward investments.</p> <p>Without the NWDA funding the region's expertise will continue to remain in the knowledge base. However, the capabilities would not extend into the NW supply chain. Therefore there would be a high risk that the current manufacturing sector would not respond to new process technologies and suffer severe decline.</p>
<p>Option 2: KE- LAS the preferred option</p>	<p>The preferred option is for the creation of a focussed KE infrastructure for laser materials processing. KE- LAS will act as a focal point for regional laser engineering capabilities, offering facilities and skills for integrated product and process development, project management and delivery, and problem solving.</p> <p>There has been significant investment in the formation of the knowledge cluster by the research councils, technology strategy board and NWDA. This project allows an opportunity to enable that knowledge to be disseminated to industry in a structured manner.</p> <p>NWDA funds are needed to pump prime these KE activities within the region and fund an initial three year phase of dissemination, demonstration and partnership building. Currently the cost of capital investment and demonstration projects often precludes the region's SME's from benefiting from laser technology.</p> <p>This option offers value for money as it draws heavily on support from the region's knowledge base. This significant leverage is only possible with the support of the NWDA.</p>
<p>Option 3: Concentrate on other KE routes TSB, KTP</p>	<p>It is possible to rely on other KE vehicles eg TSB, KTP. However, the calls for these are sporadic, competitive and not necessarily always in the appropriate technology or market area. Resource will be required to develop the proposal.</p> <p>Relying solely on these mechanisms alone would mean an unfocussed</p>

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	and unpredictable attempt to address the market failure. It is much more likely that a focussed dedicated resource using these vehicles as a supplement will have a much higher impact. The unpredictability of this type of funding stream means it is not possible to employ long term dedicated knowledge exchange staff in the field.
Option 4: Invest in a large centre	<p>This option is expensive and high risk. Some of the partners have previously considered a large capital build approach to establish laser materials processing activities within the region. This option would relocate existing resource from universities and industry and place them in a central location.</p> <p>This option would also require the identification of an available site within easy reach of all the partners. This option is not possible due to the time and cost of the new build scheme.</p>
Option 5:	

18 What are the Public Sector costs of the alternative options?

A. Costs	Option 1 £000's	Option 2 £000's	Option 3 £000's	Option 4 £000's	Option 5 £000's
Single Programme	0				
ERDF	0	883	250	2130	
Other Public	0	721	650	2170	
Total	0	1604	900	4300	
B. Benefits	Option 1	Option 2	Option 3	Option 4	Option 5
	Total	Total	Total	Total	Total
Key Output Business assists	0	60	10	80	
C. Cost effective ratio (A/B)	0	27	90	54	

19(a): What are the net additional outputs?

Key output 1 (Jobs created or safeguarded)

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	Option 1	Option 2	Option 3	Option 4	Option 5
Total Gross	N/A				
Less Leakage					
=Gross Local					
Less Displacement					
= Net Local					
+ Multiplier					
= Total Net					
Less Deadweight (Option 1)					
Total Net Additional					

Key output 2 (Business Creation or Business Support?)

	Option 1	Option 2	Option 3	Option 4	Option 5
Total Gross	0	60	10	80	
Less Leakage	0	3	1	4	
=Gross Local	0	57	9	76	
Less Displacement	0	0	0	0	
= Net Local	0	57	9	76	
+ Multiplier	0	3	1	4	
= Total Net	0	60	10	80	
Less Deadweight (Option 1)		0	0	0	
Total Net Additional		60	10	80	

Key output 3 (People:Skills)

	Option 1	Option 2	Option 3	Option 4	Option 5
Total Gross	n/a				
Less Leakage					
=Gross Local					
Less Displacement					
= Net Local					
+ Multiplier					

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= Total Net					
Less Deadweight (Option 1)					
Total Net Additional					

19(b). What is the preferred option?

The preferred option is option 2 which is the KE-LAS project

How does it give best value for money? Please show this as:

Economy (inputs)

Option 2 has a reasonable intervention rate allowing sufficient facilitators to be resourced to make an impact. The other options either do not provide sufficient resource (option 1 and 3) to make a substantive difference or are too capital intensive (option 4) requiring excessive investment

Efficiency (net unit costs/funding ratios):

Option 2 gives by far the lowest cost per key output that of business assists and is twice as efficient as the next best option

Effectiveness (in meeting project objectives):

Option 2 KE-LAS enables sufficient resource to :

Increase awareness of laser materials processing by facilitating networking and dissemination
 Target the likely beneficiaries by focussing on appropriate businesses
 Demonstrate benefits of lasers using the facilities and expertise in the knowledge cluster
 Package generic technologies developed by the knowledge cluster
 Brokerage of real process solutions with business

Option 1 and 3 do not have sufficient resource to meet the objectives, whilst option 4 may have the resource but is very expensive and may duplicate some of the resources available already.

Note: The University of Liverpool has a significant track record of delivering technology based regeneration projects and has drawn on its experiences to date in producing the comparators. Given the nature of the project i.e. focussed technology demonstration and implementation, and the key outputs, i.e. business assists, the additionality parameters have been set as follows:

Leakage: has been set low at 5% since the final agreement to a business assist will be based on a detailed assessment of business need and the choice will be made from a much larger pool of contacts, hence there is relatively low chance of loss or movement of that company as an SME

Displacement: has been set at zero since the technology is a complimentary value adding process and is unlikely to displace other business within the target area

Multiplier: has been set low at 5% which will allow for some increase in business in the area from the supply chain – but is limited since many of the businesses will be working in global markets

Option 1 – No intervention is taken as the baseline and all other outputs are over and above this baseline

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19(c) Over and above the gross to net additionality calculation, how does the SP/ERDF Funding provide additionality (eg. more, better or faster provision)?

The ERDF funding provides additional resource which will allow :

Much better awareness of the technology than currently
More focussed delivery of laser processing to appropriate companies
Faster uptake of the technology utilising appropriate development vehicles
The most appropriate process solutions agreed with business
The knowledge base to work with SMEs to increase competitiveness, performance, GVA and sales

20. What Outcomes will the project deliver?

The project will make a contribution towards increasing the following indicators of innovation in the region, as set out in the North West Competitiveness & Employment ERDF Operational Programme 2007-13:

Outputs: assisting No. of businesses to improve their performance by adoption of laser technology; ensuring that businesses in the region engaged in new collaborations with the UK knowledge base ; leveraging Private sector investment
Results: No. of gross jobs created will increase; No. of businesses with improved performance will be enhanced; there will be a Reduction in annual CO2 emissions from Programme interventions.

Impacts: Net additional GVA overall in region will improve
Performance: Total R&D expenditure increased in region; Business R&D spend increased; percentage of labour force in R&D employment in businesses increased; improved number of Patent applications; Employment in Knowledge based industries increased; more Knowledge based firms.

KE-LAS will add benefit across the Northwest region, in particular all of the sub regions with advanced manufacturing companies (primarily, Lancashire Economic Partnership, Cheshire, Warrington, Manchester and Merseyside) and the UK.

KE-LAS specifically address RES theme 15, 'Implement the NW Science Strategy, through:

- Establishing a world-class laser materials processing infrastructure through access to facilities and capabilities for both the academic and industry base.
- The establishment of an internationally recognised knowledge cluster in laser materials processing that will promote the image of the Northwest as a vibrant hotbed of this knowledge

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cluster).

- Enhancing the creation and exploitation of knowledge through the creation of a unique facilitator based structure

The main aim of the project is the creation of a self sustaining regional and international knowledge cluster in laser materials processing with an ongoing ability to encourage and support businesses take-up and exploit the regions laser capabilities. Benefits of KE-LAS include:

- Reducing the serious risk to the NW manufacturing sector from loss of business by equipping them with skills and technology to adopt the latest technology
- Enhancing the likelihood of new work coming to the region through collaborations between manufacturing companies working within the KE-LAS (potentially generating new job opportunities)
- Increasing the performance of NW manufacturing organisations, making them more competitive in a global marketplace through the use of laser processing techniques.
- Providing the opportunity to 'try before they buy' so that they can become more confident of the business advantages that can accrue from adopting lasers. The knowledge transfer function will also provide best practice demonstration and dissemination.

In summary, the main outcomes of the KE_LAS include:

1. Internationally competitive advanced manufacturing – knowledge based capabilities of 60 NW manufacturing organisations will be enhanced through a programme of tailored business support activities including participation in demonstration projects and other knowledge transfer activities.
2. Increased innovation (Res 12). KE-LAS will develop high added value activity with all of the companies engaging with the project will be introduced an innovation culture.
3. laser research focus (Res 16)- Identification of research projects to ensure long-term support and development of further laser projects for the region, additional industry and grant income of more than £2m over the next five years. This will lead to an increase in the level of expenditure on research and development, led by industry. SMEs will be encouraged to participate in collaborative R&D projects (businesses receiving R&D grants).

21. Do any of the options provide Strategic Added Value (SAV) or other social, economic or environmental benefits?

SAV will occur in the following ways:

1. key partners and stakeholders will work in a co-ordinated fashion
2. through dissemination synergy will develop in the activity of industry, the knowledge base and support organisations.
3. the project will build capacity in all partners and stakeholders
4. the project should kick-start uptake of the technology which should lead to beneficial replication
5. KE-LAS will encourage economic activity from the cluster which would not have taken place
6. the project will enhance the understanding and application of laser materials processing
7. the project will lever in expertise and buy -in from suppliers and end users

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22. Who will benefit from the results of the project and how have they been involved in it's design and development?

SME's Will be the prime beneficiaries by improving their competitiveness and many have been consulted directly, (see letters) through the supply chain organisations and by consulting their customers – the primes

The advanced manufacturing sectors will benefit by having stronger businesses and adopting emerging knowledge centred technology and sector organisations have been consulted as follows

The NW Aerospace Alliance

The NWAA is the longest established cluster management organisation in the region and the largest regional aerospace and defence cluster organisation in the UK. It has extensive knowledge of the regional and national aerospace supply chain with over 300 active members and a contact base of some 800 organisations. KE-LAS will engage with NWAA in order to demonstrate to, disseminate to and interact with its member companies

The NW Automotive Alliance

Discussions have taken place with the Innovation team at NW automotive alliance who are keen to engage KE-LAS to enable dissemination, demonstration and uptake of the technology

Primes

The primes will benefit by having a powerful and technologically advanced supplier base and have been consulted

The knowledge base providers will benefit by seeing an output for the developments and accessing industrially relevant research. The key HEI's are involved in:

Northwest Laser Engineering Consortium: KE-LAS will help Northwest companies predict the impact of new manufacturing technologies being developed at the NWLEC project and demonstrate 'virtually' the potential business benefits from adopting such emerging technology

Northwest Composites Centre: KE-LAS would assist the NWCC researchers in the development of new techniques and processes through better understanding of the processing, joining of composite materials

Business Support organisations have been contacted to ensure fit with process and protocols

Business Link

Business link are already aware of the laser technology technology cluster and are anxious to see the technology adopted by high growth NW companies. KE-LAS will interface with BL advisors.

Manufacturing Advisory Service – KE-LAS staff, in particular, the KE Team, will work with organisations like MAS on joint dissemination and marketing activities

The Innovation Network: Developed and hosted by the University of Liverpool, the Innovation Network brings together a diverse community of businesses, and facilitates the sharing of practical experiences on managing innovation. It aims to enhance the competitiveness of its members by inspiring innovation. There will be interchange in the KE-LAS / Innovation network client base

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Economic Case:

- 1. Have all relevant options been considered? Are there more effective ways of achieving the same benefits and outcomes?**

A number of relevant options have been considered. Option 4 (the larger option) was discussed with the applicant and is viewed as being unfeasible by the applicant due to the cost of moving to a new location and the timescales involved. It should be noted that Option 4 did not relate merely to a new build facility but also to possible relocation to an existing building.

Given the nature of the project, there will be no leakage or multiplier effects. There is also no evidence of similar activities being carried out. Therefore the gross business supports should equal the net figure.

- 2. Is there any available information on a similar project which can be used to benchmark unit costs of key outputs?**

There is no information available on similar projects. However, the ERDF Northwest Operational Programme sets out a number of benchmarks for related types of support. These are:

- a. promotion of collaborative R&D / innovation and associated brokerage - £16,140 per SME assisted;
- b. general business support for SMEs - £13,450 per SME assisted; and
- c. supporting the development of low impact technologies - £13,500 per SME assisted.

- 3. What is the proportion of NWDA to other public/private funding? Is it an acceptable ratio?**

The NWDA will provide 55% of the total public sector funding for the preferred option and 49.8% of the total funding.

- 4. Does the preferred option offer the best VFM?**

In terms of ERDF funding, the preferred option offers greater value for money than the other intervention options.

	Option 1	Option 2	Option 3	Option 4
ERDF funding (£)	0	██████████	██████████	██████████
Business assists	0	██████████	██████████	██████████
Cost per assist (£)	0	██████████	██████████	██████████

In terms of the benchmark figure for the promotion of collaborative R&D / innovation and associated brokerage, the preferred option is within this benchmark. In relation to the benchmark figures for general business support for SMEs and supporting the development of low impact technologies, the project is slightly outside of the boundaries.

In value for money terms, option 4 appears weak. This is because much of the additional funding will be focused on relocating the Universities' facilities rather than on supporting businesses. Option 3 is weak due to the unreliability of available funding sources. The assumptions underlying the figures for these options appear to be acceptable.

The applicant has provided only limited information on the reasonableness of the inputs (economy) and the relationship between these and the individual business assists and expected demand. This issue should be covered further in the project business plan.

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5. Are the additional benefits from the intervention clearly described and realistic?

The applicant has, in discussions, stated the belief that the adoption of laser technology by businesses will improve the manufacturing process and make businesses more competitive, with a consequential positive impact on regional Gross Value Added and employment. This is a reasonable assumption.

The applicant has also stated on the form (page 5) that the project will help the region become a major centre for laser technology.

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Section 4 – Monitoring & Management

23. What Lead Organisation and other Delivery organisations will be involved in the project?

On receipt of the Grant Funding Agreement (GFA), The Lead Partner, the University of Liverpool, will enter into a Collaboration Agreement (CA) with the University of Manchester.

The Collaboration Agreement shall specify the terms and conditions of the GFA which will apply to the University of Manchester. It shall also confirm responsibility for the following:

- the delivery of the Project
- the flow of NWDA funding from the Lead Partner to Manchester University
- the allocation of liabilities and indemnities pursuant to the Project
- the arrangements to preserve confidentiality, where appropriate, in respect of the Project
- the process for protecting and exploiting intellectual property developed during the Project
- the procedures for publishing the results of the Project

24. Set out the project management arrangements you will use to ensure project delivery.

The University of Liverpool is the lead partner in the project.

The University of Liverpool has a strong track record in the delivery of NWDA-funded schemes. In recent years we have successfully developed and delivered the following projects:

- Cockcroft Institute
- Centre for Materials Discovery
- AIMS
- North West Science Grid
- North West Laser Engineering Consortium (NWLEC)
- National Centre for Zoonosis Research

The University of Liverpool also has a long history of effective knowledge transfer. In recent years, knowledge transfer has been embedded as a cornerstone of the University strategy. In response to business demand, the University has invested in resources capable of increasing the rate of knowledge transfer and knowledge-based business creation within the region. In recent years we have successfully developed large scale, regionally focussed knowledge transfer centre projects, such as the Cockcroft Institute (Physics), the Centre for Materials Discovery (Chemistry) and the National Biomanufacturing Centre. These are a feature of the University's contribution to the Merseyside and Regional Economic Strategies. The establishment of the Liverpool Science Park is another major project in which Liverpool has a critical role to play.

The University attracts research income from a wide range of local, national and international organisations - commissions valued at more than £90 million in 2004/2005. A significant proportion of these commissions were undertaken in collaboration with/on behalf of industry and the wider business community. Key partners include BAE Systems, Rolls Royce, AstraZeneca, Microsoft and Unilever. To meet the growing demand from business, the University has appointed a team of experienced business managers & established a bespoke Business Gateway (<http://www.liv.ac.uk/businessgateway>).

Both Liverpool and Manchester have a strong track record in conducting research in Laser Engineering. Examples are the North West Laser Engineering Consortium (NWLEC), the EPSRC/BAE Systems Foresight programme in Next Generation Unmanned Air Vehicles, the EU FP7 FANTASIA programme in direct laser deposition and numerous DTI/TSB collaborative projects with industry in novel laser engineering applications.

Governance and Structure of KE-LAS

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KE-LAS will be part of the existing governance structures in place at the Universities of Liverpool and Manchester. Both universities have considerable experience of running and delivering structurally funded projects. As lead partner, the project will be supported by the University of Liverpool Regional Office, which will provide advice and support to enable project delivery and monitor the project against targets and outcomes. There is also a dedicated Regional Finance team who assist in claim compilation and submission. Additional support will be provided by the Business Gateway team Business Managers and Marketing Executives.

The organisational structure shown below is proposed for KE-LAS in order to coordinate and ensure delivery of all outcomes of the proposed work packages and wider R&D dissemination and knowledge transfer activities.

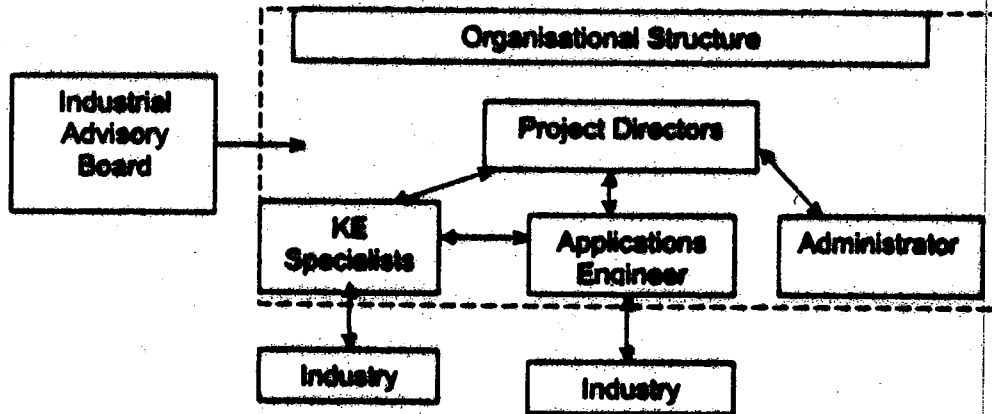


Fig.2 KE-LAS Project Management structure

Industry Advisory Board (IAB)

The KE-LAS activities will be guided by an Industry Advisory Board which will be comprised of industry representation taken from both the large industry and SME sectors. This will be a development of the IAB that has been established for the North West Laser Engineering Consortium (NWLEC) programme which has successfully advised on laser engineering developments in the past three years.

The IAB will receive regular written reports from the Project Directors and will meet periodically (6 monthly) to undertake a review of all project activity, examining progress against milestones. Through documented meeting minutes the IAB will make recommendations on:

1. Forward strategy of the project and long term goals,
2. Alignment with Regional, National and International Strategies,
3. New strategic themes for inclusion in the project forward business plan and strategy.

The IAB will be responsible for ensuring the project activities remain at the cutting edge of technology transfer in this rapidly evolving field.

The Project Management Board

The KE-LAS Management Board will drive forward the vision, mission and values of the project. The board will also:

1. Define strategy and structure.
2. Evaluate threats and risks in the external environment, current and future strengths, weaknesses and risks relating to the project.
3. Delegate to management, monitor and evaluate the implementation of strategy and

Development & Appraisal Form

business plan.

4. Review the project organisational structure and capabilities to ensure they remain appropriate for implementing the strategy.

The Management team shall consist of:

- Professors Ken Watkins (Liverpool) and Lin Li (Manchester) as the joint Project Directors
- Dr Geoff Dearden (Liverpool) as Technical Advisor
- Senior KE specialist

The Operational Team (OT)

The Management Team will be responsible for the day-to-day operation of the project, and will be responsible for submission of reports to the key stakeholders, including NWDA. This operational Management Team will meet regularly; the frequency of the meetings shall be set by the ongoing activities at the project (normally, weekly meetings).

The Team shall consist of:

- The Joint Directors
- Application Engineer
- Knowledge Exchange specialist (s)
- Administrator

The team will prioritise and develop action plans for all new business enquiries. The team will define resource allocations for both new and ongoing projects and drive forward the business and knowledge transfer activities. The management team will constantly review the project risks and develop and action effective mitigation plans where required. The Management Team will prepare an Annual Report, which will be available for the appropriate IAB meeting. This group will also ensure relevant reporting at University monitoring and senior management committees (e.g. Research Committee, Reach out Steering Group, Senior Management Team (SMT)).

The management team will be supported by the University's Regional Office, which will provide advice and support to enable project delivery and monitor the project against targets and outcomes. There is also a dedicated Regional finance team who assist in claim compilation and submission. Any deviations from contracted targets or issues relating to project performance will be raised with the Regional Office who will then alert the Board as appropriate.

R&D dissemination

At the heart of the project is a team which will drive forward both R&D dissemination and knowledge transfer agenda to ensure growing industry contribution and involvement. The team will translate the outputs and techniques developed within the knowledge cluster into industry and ensure that NW companies engage in the project in a structured and collaborative manner.

The team activities are split into two main functions:

1. applications development
- 2 knowledge exchange

These main activities will be carried out by the applications engineer and Knowledge Exchange Specialists respectively. The Team will be supported by an Administrator and will be supported by the Business Managers within the University of Liverpool Business Gateway.

Roles and Responsibilities

A brief overview of the roles and responsibilities are provided below;

