Skills Needs of the Marine & Maritime Sector in the South West of England

Final Report

July 2003

Social Research & Regeneration Unit
A University of Plymouth Centre of Expertise

and

Marine Science &Technology
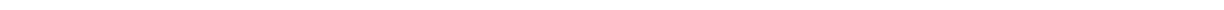*A University of Plymouth Centre of Expertise*

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Commissioned by: **S**outh **W**est of **E**ngland **R**egional **D**evelopment **A**gency and **M**arine **S**outh**W**est	**R**esearched by: **J**ulian **B**eer, **K**evin **M**eethan **& J**ames **G**rant and in collaboration with **A**ndrew **M**air Research **A**ssistants: Lisa-**M**arie **B**rookes, **S**usan **D**arlow, **B**en **S**alt, **H**azel **S**ewell, **M**ary **S**hears **& K**aren **S**umser-**L**upson **S**ocial **R**esearch **& R**egeneration **U**nit and **M**arine **S**cience **& T**echnology **U**niversity of **P**lymouth

South West *of* **England**
Regional Development Agency

Marine
Southwest

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Introduction

❖ The Social Research and Regeneration Unit (SRRU) and Marine Science and Technology (MST), research Centres based at the University of Plymouth, were commissioned by Marine South West (MSW) and the South West of England Regional Development Agency (SWRDA), to examine and assess education and training provision and needs in the Marine and Maritime Sector in the South West of England. And crucially, to identify the skills that employees of the Marine and Maritime Sector require, now and in the future, to aid in '*up-skilling*' the workforce.

Study Rationale

❖ The overall aim was to provide a coherent and actionable plan for the development of Marine and Maritime Sector skills that addressed, from a demand perspective, current and future skills needs. It is in this context that the required outcome from the research was to identify the *'top ten'* Marine and Maritime Sector skills needs and recommend solutions to meet those needs. Within this process, priority has been given to skills identified as having the potential to increase competitiveness, move the Sector up the *'value chain'* and increase the Sector's contribution to the Region's Gross Domestic Product (GDP).

Methodology and Methods

❖ The research strategy was designed to engage with education and training providers, employers (micro, small and medium sized enterprises, and larger enterprises) and employers' representatives (including relevant NTOs and Sector Skills Councils). In order to give a deeper and more detailed insight into local circumstances, needs and potential, and to highlight and accurately map the variations between the sub-regional and regional profile, a representative sample of views from members of these groups has been incorporated into the research process.

❖ The research undertaken for the Marine and Maritime Sector training and skills needs analysis took the form of both secondary (desk based) and primary (telephone survey and face-to-face interviews) research. In the secondary research element Training Needs Analyses (TNAs) held by MSW and the Engineering Employers Federation (EEF) were made available to SRRU for further analyses, and the results of these analyses have been used in this Report.

❖ Furthermore, in the secondary research element, Marine and Maritime Sector contacts data sets held by MSW, MST and the Advanced Composites Manufacturing Centre (ACMC) were made available to SRRU for integration with internally held Marine and Maritime data-sets. This combined data informed the design of the sample frame in the primary research element. This approach had the advantage of enabling the identification of smaller businesses, often sole traders, in the Region which are not recorded elsewhere on official and/or commercial databases. Consequently, SRRU was able, with its data integration model, to map a greater number of those operating in the Region than would have otherwise been possible.

❖ Following stratification and weighting to ensure that a representative sample was drawn from across the sub-regions of the South West, and from across the four sub-sectors of Marine and Maritime Sector activity, the overall business sample was purposively selected from within these categories in the SRRU Marine and Maritime Sector database.

❖ The sample comprised of 325 businesses, which represented 12% of the Marine and Maritime Sector in the Region, and these businesses were surveyed to inform the study. The survey consisted of 220 telephone interviews, and 105 face-to-face interviews conducted on company visits. The telephone interviews were based on a 33-question survey. In addition to these structured interviews, information was also gathered through employing a semi-structured approach, which allowed for flexibility in exploring informants responses. A further series of in-

depth interviews and focus groups took place with employers, stakeholders, Sector champions, training providers and Marine and Maritime Sector organisations, agencies and bodies.

❖ In order to determine any potential demand for the recommended solutions to education and training provision for the Sector, an additional survey and further interviews were undertaken with approximately 100 potential users of such provision. The survey and interviews focussed mainly on larger Marine and Maritime businesses, which employed large numbers of people. However, smaller businesses were also surveyed to try to establish the potential demand for more specialist training, such as sailmaking and rigging.

Sector Definition: Marine and Maritime

❖ The Marine and Maritime Sector has previously been defined in other studies[1] using the current 1992 UK Standard Industrial Classification (SIC) of establishments, or SIC 92. This classification is based on the type of economic activity in which companies are engaged, essentially defined by the nature of the products/services produced.

❖ However, another recent study of the Sector[2] suggests that an essentially restricted view of the Sector is taken when using this classification. This results in the Sector being seen essentially as Advanced Engineering, however, the Marine and Maritime Sector includes a wide range of activities, elements of which are engineering related. Consequently, in this study, a wider operational definition has been adopted that more fully encompasses both the extent and nature of the Sector. The main sub-sectors within the Marine and Maritime Sector are marine resource-based industries, marine system design and construction, marine operations and shipping and marine related equipment and service providers.

❖ The Marine and Maritime Sector includes fisheries and aquaculture, ship design, construction and repair, offshore and coastal engineering, transportation systems, diving operations, dredging, pollution control, waste treatment, renewable energy, coastal development, marine technologies, research, marine tourism and leisure-related service providers and industries.

❖ It is also important to note that aspects of Marine and Maritime Sector activities are undertaken within and support other sectors, for example, advanced engineering, tourism and leisure, construction and defence industries, research and development and new technologies. Therefore, Marine and Maritime related aspects in these and other sectors are encompassed within this Report. What essentially defines marine related industries is the environment in which they operate and includes activities that can be applied to the ocean. The Marine and Maritime Sector for the purposes of this Report has been placed into a four-fold operational framework that encompasses the main sub-sectors as follows:

> ❖ Marine resource-based industries: those industries directly involved in recovery of marine resources such as offshore oil and gas, fisheries, marine-based pharmaceuticals, aquaculture and seabed mining.

> ❖ Marine system design and construction: ship design, construction and repair, offshore engineering and coastal engineering.

> ❖ Marine operations and shipping: marine transportation systems, diving operations, dredging and waste disposal.

> ❖ Marine-related equipment and service providers: manufacturers, engineering consultant firms in marine electronics and instrumentation, machinery, telecommunications, navigation systems, special-purpose software and decision support tools, ocean research and exploration, and environmental monitoring, training and education. This category also includes tourism and leisure related service providers and industries.

❖ Within the framework, wide ranges of different skill-sets are required. The range of skills, for example, needed by those operating in resource-based industries, is very different from the skills required by those operating in the equipment and service provider sub-sector. In addition, within the sub-sectors many of the issues affecting other related sectors also affect skill requirements within the Marine and Maritime Sector. Many of the issues influencing the Advanced Engineering Sector for example, affect the marine engineering sub-sector.

Regional and Sub-Regional Marine and Maritime Profile

❖ A number of general trends in the Sector form the context for the regional and more local situations. In the South West, with the peninsula having both a north and south coast, there is an intimate connection between the sea and land. This, combined with a temperate climate and relatively unspoilt countryside and coastline, has not only fostered a distinctive maritime industry but also made the South West an important tourist destination. This in turn has undoubtedly helped to contribute to the survival, and also to the development, of many marine activities. It is the intimate relationship between marine activities and tourism that gives the South West Marine and Maritime Sector its distinctive flavour, thereby helping to distinguish it from marine sectors in other Regions.

❖ To provide a more detailed profile, some of the key findings for the Marine and Maritime Sector outlined in the SWRDA Priority Report[3] for the Marine Sector are included below. However, in this Report it must be noted that the Sector was defined as a '*marine technologies sector*' and as a result it provides an essentially restricted view of the Sector. Although highlighted as an '*important sector*', its significance is reduced by the nature of the industries covered within the Report. The depiction of the marine industry in the Report as an '*industry in decline*' stems from the Sector being seen as '*essentially an advanced engineering sector*'. Therefore, to provide a more detailed profile of the wider Marine and Maritime Sector operationalised within this Report findings from another report[4] supplement the Sector profile.

> ❖ In employment terms, Marine and Maritime is a declining Sector in the Region, experiencing a 14% fall (1,600 jobs) between 1991 and 1997.
>
> ❖ Most firms in the Sector were small employers - 85% of firms employing less than ten people.
>
> ❖ The largest firms - 200 plus employees - accounted for only 40% of the Sector workforce.
>
> ❖ The sub-region employment concentrations in the Sector were:
>
> > ❖ Devon : 61%
> >
> > ❖ Cornwall : 10%
> >
> > ❖ Gloucestershire : 8%
> >
> > ❖ Somerset : 3%
> >
> > ❖ Bristol area : 1%
> >
> > ❖ Swindon area : 1%
>
> ❖ In employment terms, marine engineering and boat building are the two major sub-sectors in Devon, both employing more than half the number of those employed within the Marine Sector.[5]

❖ In 2001[6] using the wider definition of the Marine and Maritime Sector subsequently adopted in this Report there were approximately 1,400 marine industry businesses identified in the South West Region, employing a workforce estimated at about 20,000. Micro-businesses accounted for approximately 80% of the businesses identified. Businesses employing over 200 people made up only approximately 1% of the total. For the Region, seven sub-regional/local marine industry clusters were also identified. These clusters accounted for approximately 49% of the Region's overall total of marine industry businesses and approximately 65% of the estimated workforce.

❖ However, when utilising the '*SRRU Data Integration Model*' which, combined within the same format, Marine and Maritime Sector contacts data-sets held by MSW, MST and ACMC with internally held Marine and Maritime data-sets, a significantly larger number of Marine and Maritime businesses were recorded.

❖ This approach had the advantage of enabling the identification of smaller businesses, often sole traders, in the Region which are not recorded elsewhere on official and/or commercial databases. Consequently, a greater number of those operating in the Region were mapped than would have otherwise been possible.

❖ When using the '*SRRU Data Integration Model*' 2,685 Marine and Maritime related businesses are recorded. The identification of these additional businesses in the Marine and Maritime Sector alters the previously held perception concerning the overall size of the Sector. This also highlights the fact that its significance regionally has been underestimated in terms of size and overall employment numbers, even when taking into account the previously upwardly revised SRRU 2001 estimate.

❖ Upon closer examination, approximately 20% of these additional businesses consist of new start-ups or subsidiary businesses registered since 2001. Unfortunately, there is no comparable data available which covers the whole data-set for the rate of business failures and closures for the corresponding period. However, in returning to the commercial and/or official databases, which cover the Marine and Maritime Sector, an analysis of this data revealed that the rate of business failures and closures since 2001 is approximately 5%. It is not unreasonable to use this figure as a proxy indicator for the wider data-set in order to determine the rate of business failures and closures for the corresponding period.

❖ On this basis, an analysis of the figures generated by the '*SRRU Data Integration Model*' revealed that there has been a net growth of 15% in terms of business start-ups and registrations in the Sector since 2001, when allowing for a 5% decrease. The large majority of these new business start-ups and registrations have occurred in Marine and Maritime leisure related business activities.

❖ The remaining businesses that have been identified using the '*SRRU Data Integration Model*' are not recorded on commercial and/or official databases and mainly consist of smaller businesses, often sole traders, in the Region that have either come into contact with or have established business support relationships with MSW, MST, ACMC and SRRU over a number of years.

❖ It is also worth noting that some of these businesses may have a low dependency on marine markets, with marine related manufacturing and/or services being a secondary or peripheral activity, for example, a general engineering company which provides some services and/or products to the Marine Sector. In terms of employment for the Sector, there needs to be an upwardly revised figure from the 2001 estimate, given the identification of these businesses.

❖ Using the official and/or commercial databases in the previous 2001 exercise, estimated employment for the Sector was approximately 20,000 people, based on a business count of 1,400. Indeed, when solely utilising official and/or commercial databases a similar picture emerged to the one discovered in 2001, and revealed that although there has been a 5% decrease in the number of businesses in the Sector since 2001, employment had remained stable at approximately 20,000. However, while the utilisation of the '*SRRU Data Integration Model*' has had the advantage identifying more of the Marine and Maritime Sector, the disadvantage is that employment numbers are unknown for the majority of these businesses.

❖ In order to determine employment levels in the Marine and Maritime Sector in 2001, SRRU used employment bands to calculate the estimated employment levels in the Region. In order to ensure consistency, this same approach has been adopted in this Report.

❖ In summary, across the South West there are 31,580 people employed in 2,685 Marine and Maritime related businesses. The majority, 75.31%, of Marine and Maritime businesses in the Region are in the equipment and service providers sub-sector. The operations and shipping sub-sector forms the next largest category with nearly 10% of the total number of businesses recorded, closely followed by the design and construction sub-sector with just over eight percent, 8.31%. The smallest sub-sector relates to the resource based industries with 6.41% of all recorded businesses in this category.

❖ When breaking this information down in more detail, at the sub-regional level the largest concentration of resource based industries, 36.6%, is in the Devon sub-region, the largest concentration of design and construction businesses, 40.4%, are located in Cornwall, closely

followed by Devon, 39.9%. In the operations and shipping sub-sector the majority of activities, 33.6%, are located within the Devon sub-region. Finally, in the equipment and service provider sub-sector, the largest concentration of activities, 32.4%, is also in the sub-region of Devon.

❖ The sub-region of Devon is the regional Marine and Maritime Sector hub and contains 33.4% of all Marine and Maritime businesses, followed by Cornwall, 25.55%, and the Bournemouth, Dorset and Poole sub-region, 18%. The other four sub-regions of the South West contain relatively few Marine and Maritime Sector businesses with only 22.31%, of the total between them.

### Sub-regional Marine and Maritime Businesses by Sub-sector
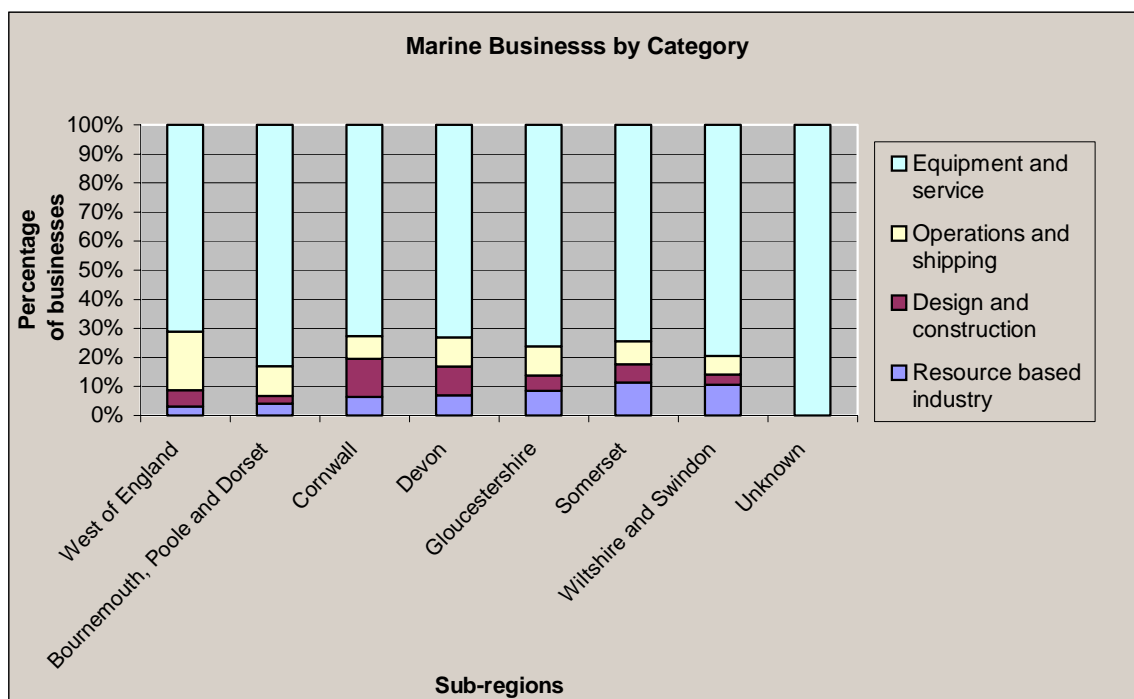
Source: SRRU Data Integration Model 2003

Regional and Sub-Regional Marine and Maritime Clusters

❖ The 2001 Report[7] identified seven clusters and/or concentrations of marine based industries within the Region. A similar exercise was undertaken for this Report, utilising the *'SRRU Data Integration Model'* that allowed the data to be accessed based on postcodes. It was therefore possible to profile various areas, defined by associated postcodes, in the search for clusters and/or concentrations made up from marine related businesses in the South West in a similar manner.

❖ These seven regional clusters constitute approximately 45% of the regional Marine and Maritime Sector, which between them contain 1,205 businesses. These seven clusters are identical in location to those uncovered in 2001, although, through a combination of lapsed time, and the utilisation of a larger data-base, some differences are revealed. Proportionally, these clusters combined contain a slightly smaller percentage of Marine and Maritime Sector in the Region.

❖ Perhaps the most significant difference between the two exercises reflects the change in the size of the data-sets as a whole. The other significant difference is that in 2001, the largest cluster identified in the Region was Bristol (121 businesses). In this exercise, the Plymouth cluster (270) in terms of size has replaced Bristol.

The Location and Size of the Seven Identified Marine and Maritime Clusters
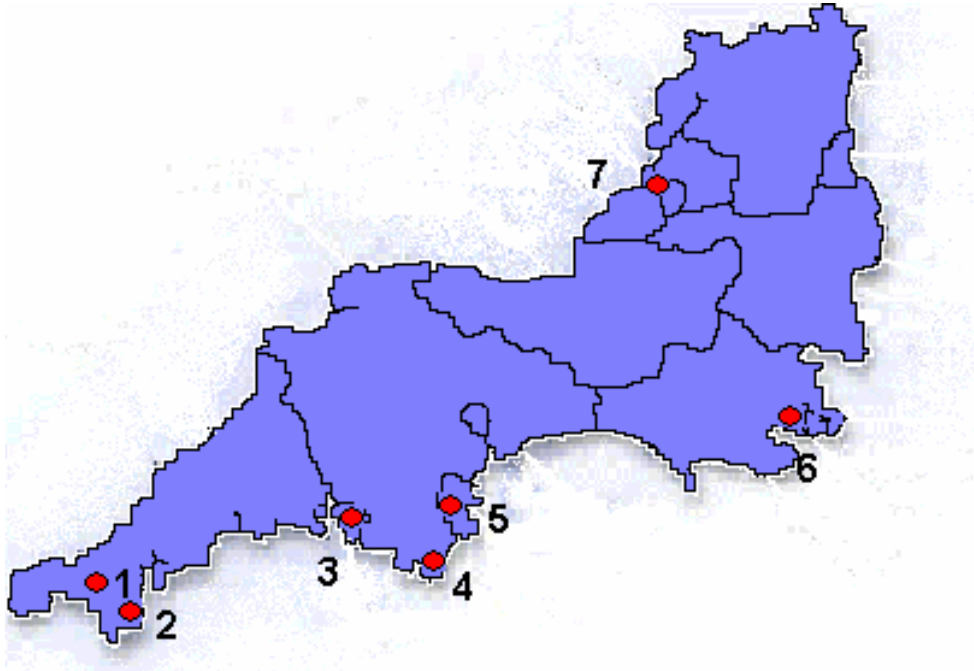
Key: The Map Number and Corresponding Cluster Size

Number	Cluster	Marine Businesses
1	Penzance/Newlyn	71
2	Falmouth/ Penryn	181
3	Plymouth	270
4	South Hams	159
5	Torbay	125
6	Poole	208
7	Bristol	191

The following Table details the results of the business count for these seven clusters broken down into the eight employment bands.

South West Marine Businesses: Distribution by Employment Bands

	unclassified	1 to 5	6 to 10	11 to 19	20 to 49	50 to 99	100 to 200	200 +	Totals
Bristol	90	61	16	14	4	4	1	1	191
Falmouth/ Penryn	90	62	11	6	7	1	2	2	181
Penzance / Newlyn	29	27	9	3	2	1	0	0	71
Plymouth	142	74	18	9	13	6	1	7	270
Poole	96	77	21	4	4	2	2	2	208
South Hams	69	63	19	4	2	2	0	0	159
Torbay	38	62	18	5	2	0	0	0	125
Totals	**554**	**426**	**112**	**45**	**34**	**16**	**6**	**12**	**1,205**
% of total	**45.98**	**35.35**	**9.29**	**3.73**	**2.82**	**1.33**	**0.50**	**0.99**	**100**

Source: SRRU Data Integration Model 2003

The next Table uses an employment band multiplier to calculate estimated employment levels in the seven areas.

South West Marine and Maritime Business: Distribution by Estimated Employment Levels

| Multiplier	5	3	8	15	35	75	150	750	Totals
Bristol	450	183	128	210	140	300	150	750	2,311
Falmouth/ Penryn	450	186	88	90	245	75	300	1,500	2,934
Penzance/ Newlyn	145	81	72	45	70	75	0	0	488
Plymouth	710	222	144	135	455	450	150	5,250	7,516
Poole	480	231	168	60	140	150	300	1,500	3,029
South Hams	345	189	152	60	70	150	0	0	966
Torbay	190	186	144	75	70	0	0	0	665
Totals	**2,770**	**1,278**	**896**	**675**	**1,190**	**1,200**	**900**	**9,000**	**17,909**
% of total	**15.46**	**7.14**	**5.00**	**3.77**	**6.64**	**6.70**	**5.03**	**50.25**	**100**

Source: SRRU Data Integration Model 2003

❖ Therefore, these 1,205 businesses make up 45% of the regional total of 2,685 businesses. The 17,909 estimated workforce makes up 56.7% of the overall estimate of 31,580 employees.

Regional and Sub-Regional Marine and Maritime Education and Training Provision

❖ An investigation of training and education for the Marine and Maritime Sector was conducted for the 2001 Report, and listed 141 courses related to the Sector. After repeating the same exercise for this current study, only 129 Marine and Maritime related courses were identified, which corresponds to an overall loss of 12 (8.5%) courses. This reduction in courses is even more dramatic in light of the University of Plymouth offering a net gain of 22 courses since 2001.

❖ Perhaps what is more serious for the Marine and Maritime Sector, and related education and training in the Region, is the fact that there has been a substantial decline in the 27 providers listed in 2001. The most notable change has been the ending of all marine courses at the City of Bath College. The College has ceased to provide Marine and Maritime related courses because of the reduction in the numbers employed by the Ministry of Defence in the area, and a lack of students enrolling on courses.

❖ The remaining 14 providers from the 2001 survey have been removed from this listing as their previously identified courses in engineering are not related to the Marine and Maritime Sector or the colleges no longer offer marine-related courses. There are only 12 providers now offering Marine and Maritime related education and training in the Region which corresponds to an overall reduction of 15 providers (55.5%) since 2001.

❖ There are however, a small number of private sector providers in the Region, which offer some Marine and Maritime related short-courses, and others that also act as facilitators or managing agents for the Modern Apprenticeship programme, such as ITE in Poole. The British Marine Federation (BMF) also provides Marine and Maritime Sector training for businesses that are members of the organisation in the Region. Larger businesses within the Region, echoing a sector-wide concern over the provision of skills training relevant to their businesses, also provide much of their own training and are active in providing and supporting apprenticeship programmes, either-in-house or through local Group Training Associations.

The Figure below maps the Marine and Maritime education and training providers in the Region.

Marine and Maritime Education and Training Providers in the Region
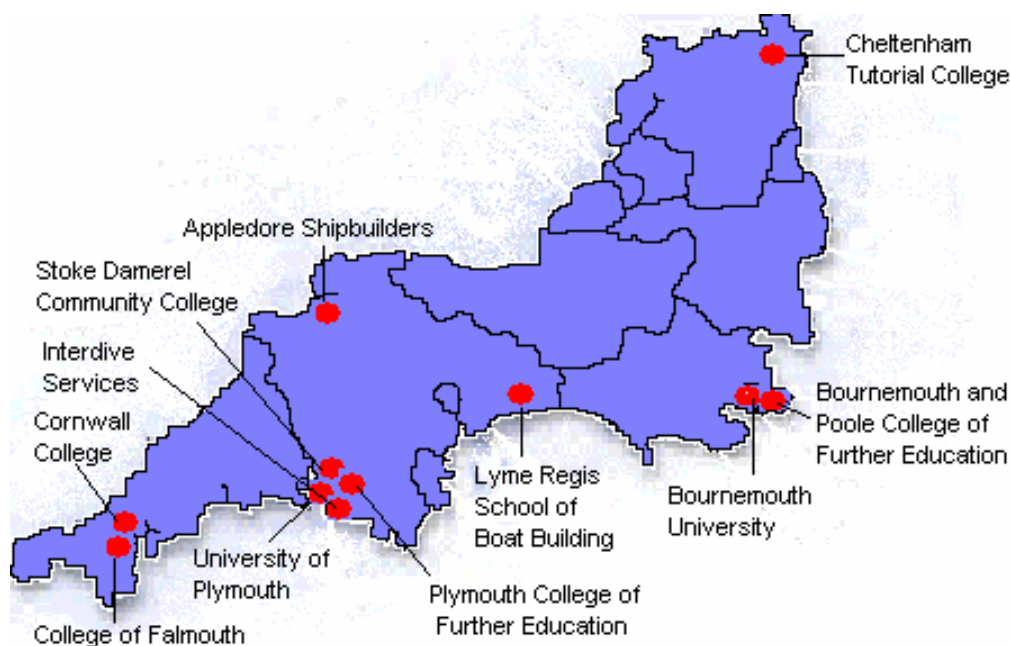
Note: The map shows only 11 providers in the Region, the Open University is the other provider

Marine South West and the Engineering Employers Federation Training Needs Analysis

❖ Marine South West and the Engineering Employers Federation undertake on an ongoing basis training needs analyses of Marine and Maritime related businesses. Utilising the *'SRRU Data Integration Model'*, it has been possible to re-analyse the data to delineate skills, and thus those training needs highlighted to MSW and the EEF by employers. The total database consisted of 290 TNAs.

❖ The most frequently requested training need related to IT, with 75.8% of businesses requesting training in this area. However, the need was more apparent for engineering related businesses than for businesses from the MSW data-set. Generic business and management skills were also a high training priority for 56.4% of businesses within the analysis, again, the need was higher in engineering businesses than in the wider business population. Predictably, given the large number of engineering businesses in the data-set, the acquisition of engineering skills was high on the list of training need, with 37.8% of businesses requesting training in this area. Another generic skills need also came out as a high priority for 29.3% of businesses from the analysis, and related to the acquisition of marketing skills.

❖ The acquisition of higher level technical skills in the workforce was a major concern for over half of those businesses completing TNAs, as was the acquisition of recognised qualifications by the workforce. The other issue that came out of the re-analysis of the MSW and EEF TNAs related to the concerns of recruitment difficulties for 14.3% of all businesses.

The South West Marine and Maritime Sector Skills Survey

❖ The survey sample was designed to ensure that it was representative of the Marine and Maritime Sector in the region. Weighting methods were employed to ensure that the sample reflected the sub-region and sub-sectors. However, given that the aims and objectives of this study relate to the education, training and skills needs in the Marine and Maritime Sector, an over representation of larger businesses, and thus employers in the Region, has been incorporated in order to assess the needs of as many of those employed in the Sector as possible. Therefore, because of this adjustment the sample reflects approximately 47% of the total Marine and Maritime workforce in the Region.

❖ To summarise the statistical element of the survey, of those businesses surveyed, 20.3% operated as sole-traders, the majority, 61.1%, were companies limited by guarantee (Ltd), 12.7% were Partnerships, 1.6% were Public Limited Companies (PLC) and a further 4.4% were Government Departments or agencies. The large majority, 98.6% of businesses, were independent businesses and the remaining 1.4% of businesses were franchised operations. Of those that answered the question on how long their business had been trading, 15.7% indicated that they had been trading for five years or less, while 16.9% of businesses had been trading for between six and ten years. The remaining 67.4% of the businesses surveyed had been trading for more than 11 years; the most notable case claims to have been trading for 346 years.

❖ The most interesting statistic concerned the amount of new start-up businesses in the Region. The level of new start-ups in itself is high within the Sector at 15.7%, but the most revealing statistic is that 75% of new start-ups in the Sector since 2001, have been in the equipment and service providers sub-sector, more specifically, Marine and Maritime retail and leisure related businesses. These new start-ups include marinas, surf equipment and clothing manufacturers and retail outlets, yachting and boating equipment manufacturers and suppliers, retail outlets and services. Many of these new start-ups are also directly related to the provision of the leisure experience, including extreme sports and Marine and Maritime related tourism and pursuits providers. Indeed, many of those surveyed in this sub-sector described their businesses as *'booming'*, which is in sharp contrast to some of those surveyed in the design and construction sub-sector associated with ship and boat building, who commented that they were struggling to survive.

❖ Employment numbers gathered from the survey show that 64.2% of businesses, or the majority of businesses in the sample, are micro-businesses employing ten people or fewer, with a further

21% of small businesses employing between 11 and 49 people. There were a further 8% of businesses surveyed employing between 50 and 99 people, and another 2.8% of businesses that employed 100 to 200 people. Of the larger businesses in the sample, 3.7% employed between 201 and 4,000 people. In total, the 325 businesses surveyed employed approximately 17,000 people.

❖ Further analysis of these employment figures revealed that approximately 12.5% of the workforce surveyed were young people under the age of 21, a further 39.6% of the workforce were aged between 22 and 40 years old and the remaining 47.9% were over 40 years old. These figures for the Region confirm the findings from other research undertaken elsewhere in the Sector, that there is an aging workforce with few younger people coming into the Sector. The majority of employees in the Marine and Maritime Sector are employed on a full-time basis with mainly administrative, financial and other support staff being employed part-time.

❖ Many of the businesses, 51.7%, that responded to the question concerning membership of trade associations or other external organisations were members of such associations and organisations, while the remaining 48.3% were not. The greatest numbers of businesses, 11.7%, were members of the British Marine Federation, while 11.1% were members of the National Federation of Small Businesses. Others were members of Business Links, 7.2%, or their local Chambers of Commerce 5.4%. The membership of other associations and organisations was very specific to the area of business activity and included, for example, the Association of British Sailmakers and the Engineering Employers Federation.

❖ Results from the survey concerning ICT sophistication and e-commerce activity in the Marine and Maritime Sector revealed that a very large number, 83.5%, used e-mail for internal and external communications. Of these, 72.6% of businesses also had a website; this percentage dropped to 32.4% when they where asked if they placed orders and/or paid suppliers on-line. In response to the question on the highest level of ICT use and sophistication, only 14.8% of the businesses had an open ICT system to support its relationship with customers and suppliers. ICT adoption in the Marine and Maritime Sector, at least at the lower levels of sophistication and e-commerce, are high in comparison to many other sectors.

❖ However, in reality although many businesses in the sector used ICT there is a strong demand for training in this area with many businesses commenting that they do not utilise ICT to its full business potential. For example, 72 .6% of businesses surveyed had a website, but on further questioning a number of businesses revealed that their websites had been set up for them by professional IT companies and that they do not know how to update their own sites. Some businesses websites were more than two years out of date at the time of the survey.

❖ Investors in People (IiP) is a national standard which sets a level of good practice for improving organisational performance through developing employees. Monitoring the achievement of IiP or the commitment to IiP for businesses within the Sector provides a good indicator for Sector work force development within the Region. A question on IiP revealed that only 7.7% of those businesses that answered the question had IiP recognition, with 1.3% working towards IiP recognition. A further 0.3% of businesses were either thinking about or intending to apply, while the majority of businesses, 88.1%, were not involved in the programme. Many businesses thought they were too small to be involved in the programme, or alternatively, did not perceive a business benefit from being involved.

❖ A question concerning business approach to training revealed that 22% of businesses planned their training in advance, with training linked to their strategic business goals. A further 11.3% of businesses stated that some training was planned and that sometimes it was linked to their strategic business goals. The majority of businesses, 60.5%, stated that training was not really planned and that they provide training when the need arises. However, a related question revealed that 61% of all of these businesses considered that they had a training policy of some sort for their staff.

❖ When asked if training helps to improve staff retention, 61.9% of businesses responded that training does help to retain staff. The remaining 38.1% of businesses took the opposite view and considered that training staff may actually act as a catalyst for loss of staff by encouraging them to seek better paid employment elsewhere.

❖ When businesses were asked where their training was carried out, 20% trained in-house, 6.9% used external organisations, with 37.7% of businesses, using a mixture of '*in-house*' and external training. The remaining businesses either did not answer this question, or did not think it was applicable to their business because they did not provide staff training. A large number of businesses, 44.2%, had provided some form of training for between one and five employees during the previous 12 months. A further 10.5% of businesses had provided training for between six and ten employees. Of the larger businesses, 2.8% had provided training for over 100 of their employees during the same period, including those that had received training on the Modern Apprenticeship programme.

❖ The type of skills training was diverse, but mainly revolved around Health & Safety, first aid, IT skills, engineering and machinery operations. In several instances, training was provided for customer service, generic business and finance skills. There was also a host of more specialised skills training, such as search and rescue and fisheries enforcement skills. The majority of businesses, 77%, claimed that they were satisfied with the training their employees were currently receiving.

❖ In addition to questions relating to training activity, three key skills elements were also included in the questionnaire: skills shortages, skills gaps and other recruitment difficulties. Skills shortages are considered to exist where there is a genuine lack of adequately skilled individuals available in the accessible labour market. Skills gaps, on the other hand, exist where employers feel that their existing workforce has fewer skills than necessary to meet their business objectives. Alternatively, skills gaps may exist where employers feel that new entrants to the labour market are apparently trained and/or qualified for occupations, but still lack a variety of the skills required, and in some cases, these latent skills gaps may not be visible to the employer.

Skills Shortages

❖ Many businesses reported problems in recruitment to skilled trades. Of those that answered the question on recruitment difficulties, 39.7% confirmed that they had had problems**.** The main reasons given to explain these difficulties were a lack of:

❖ people with the right skills	:	26.5%
❖ suitable applicants in the area	:	20.4%
❖ people with the right experience	:	18.4%
❖ people with the right qualifications	:	16.7 %
❖ applicants interested in the types of positions offered	:	15.6%

❖ The remaining 60.3% of businesses surveyed reported no particular problems in recruiting suitable staff.

❖ Those with recruitment difficulties employed a number of different methods to overcome these problems. The most common approach to overcome recruitment problems taken by 12.7% of businesses involved recruiting less qualified and experienced staff than they had advertised positions for, and just under half of this number, 6.2%, advertised out of the local area while 5.2% of businesses simply turned work away. A small number of businesses, 2.7%, relied on increasing the overtime available to existing staff and slightly more, 3.1% re-advertised the positions with improved pay and conditions. Only 12.6% of those that answered a question on their organisations' ability to retain suitably qualified workers had experienced problems in retaining them, while just over four fifths of businesses, 80.5%, had experienced no particular problems in retaining their staff.

Skills Gaps

❖ The large majority of businesses 84.4%, thought that their workforce had all the skills needed to meet the demands of their organisations. Only 14.6% of businesses thought that that their existing workforce had fewer skills than necessary to meet their business objectives. For those that perceived skills as missing in their workforces a high percentage, 41.5%, noted ICT skills as missing, and 20.4% considered customer care and service skills as missing. The range and types of other skills cited by employers as missing in their staff were wide and varied. There were also differences across the sub-sectors.

❖ The majority of skills gaps occur in the workforces of the equipment and service provider and design and construction sub-sectors. Business and management and engineering skills gaps are particular problems common to both sub-sectors. Seamanship and boat skills are also particular problems to both sub-sectors. While in the operations and shipping sub-sector the introduction of new technology both on board ships and vessels and in port operations has created a skills gap in IT. In resource-based industries, basic skills in Health & Safety and first aid, which are both regulatory requirements, are highlighted as the only skills gaps.

❖ Businesses in the Cornwall sub-region reported the most skills gaps in their workforces with the most surprising gap relating to the literacy and numeracy of some of their staff. Skills gaps were also reported in engineering, IT, painting and finishing, welding and fabrication and business and management skills. Although the Cornwall sub-region reported the widest number of skills gaps, businesses in the West of England sub-region reported more severe skills gaps in particular areas. Skills gaps in their workforces were reported as being especially acute in mechanical engineering and IT. Problems were also noted in rigging, seamanship and boat skills, as well as in the more generic business areas of business and management and customer relations skills.

❖ In the Devon sub-region, while businesses reported a wide range of skills gaps, the problems were less severe with few business reporting gaps in their workforces. The only exception related to engineering skills which was also the only area reported by businesses in the Bournemouth, Poole and Dorset sub-region, although these skills gaps were noted as being particularly severe in the Bournemouth, Poole and Dorset cluster. In the Wiltshire and Swindon sub-region there appears to be an anomaly where a very large number of businesses reported skills gaps relating to fabrication. However, it must be noted that there are few Marine and Maritime businesses in this sub-region and even fewer that reported skills gaps in their workforces. In this case, just one employer noted this skill gap, but it is enough to skew the data in this instance.

❖ When looking at skills gaps reported by different sizes of business, skills gaps reported by businesses with larger workforces obviously affect a large number of employees. There appears to be some acute skills gaps in the workforces of large businesses in the Region. Engineering skills gaps seem to be prevalent across businesses of all sizes. The other skills gaps in larger businesses relate to painting and finishing, welding and fabrication and carpentry and joinery, and these skills gaps affect the competitiveness of the Marine and Maritime Sector in the Region.

❖ When asked about the drivers for training activity, those businesses that responded to this question indicated a similar range of drivers to those in the Marine and Maritime Sector at the national level. Regulatory requirements were noted by 35.3% as the main driver for training in the Sector. The expansion of the range of services provided was noted by 33.2% of businesses, the introduction of new technology was noted as a driver by 31.8%, and new working practices or the development of new products, 30.1%, followed closely behind. Many businesses commented that skills gaps resulted from a combination of all of these factors.

❖ Businesses were also asked to elaborate on any particular courses they felt were relevant that were not provided locally, and few business, 21%, identified training needs that could not be met locally. These needs were varied and ranged from mechanical engineering, electrical engineering, sail making, carpentry, laminating, fabrication and welding, GRP moulding, rigging, paint spraying, Health and Safety, maritime law, business and management skills, ICT skills courses to customer care courses.

❖ Businesses in the equipment and service providers sub-sector reported the most varied and wide-ranging training requirements of all of the sub-sectors. The types of training requested

ranged from generic business and management, customer care, IT and retail skills as well as more specialist skills, such as, sail making, diving, chandlery, waste management and seamanship and boat skills. Businesses in the design and construction sub-sector reported the second most wide-ranging and varied training requirements with strong training demand in all associated ship and boat building skills. The strongest demand for training was in marine related carpentry and joinery, shipwright skills, composites and GRP, engineering, welding and fabricating and painting and finishing. There was also a reported demand for IT skills training in this sub-sector.

❖ In the operations and shipping sub-sector, the most frequently requested training need was for IT skills, business, and management skills. Other training requirements included engineering, seamanship and boat skills and customer care skills. In the resource based industries training requirements mirrored the reported skills gaps in Health & Safety and first aid, which are both regulatory requirements. The only other training requirements related to IT and laminating skills training.

❖ When looking at the demand for training in the sub-region, the most wide-ranging and varied demand for training is in the Devon sub-region which is not unexpected as it is the regional hub for the Sector. Businesses in this sub-region requested training in IT, business and management, retail, customer care skills training, as well as, more specialist training in seamanship and boat skills, engineering, laminating, welding and fabrication, diving, carpentry, composites and GRP skills. Businesses in Bournemouth, Poole and Dorset requested the next most varied range of training, which consisted of similar requirements in IT, business, and management, customer care skills, engineering, and welding and fabrication, and also some particularly cluster specific skills in sail making, waste management, chandlery and fish processing. Few particular training requirements were requested in the other sub-regions with the notable exception of painting and finishing training in the Cornwall sub-region.

❖ However, to assess the potential volume of training requested in the Region looking at the training requested by the number of employees is by far the best gauge for potential demand. Smaller businesses reported a varied and wide-ranging set of training requirements which cover most of the areas of skills needs. Businesses employing between 50 and 99 people also had a variety of training needs, the most frequently requested being business and management training and IT training. The largest business, likewise, reported a strong need for training in these two areas. However, there was a strong demand from larger businesses employing over 100 people in the Region for training in painting and finishing, welding and fabrication, waste management and engineering skills training.

❖ When comparing the training needs of Marine and Maritime businesses identified in the survey against the TNAs undertaken by MSW and the EEF, the information on training needs gathered through the survey included the majority of those previously identified by MSW and the EEF. The two dominant training needs identified in the re-analysis of MSW and the EEF TNAs revealed a strong demand for business and management and IT training, and this demand was confirmed by businesses in the survey. The demand for engineering training across the Sector was also confirmed along with basic regulatory related training in first aid and Health & Safety. The only variance, apart from many other training needs being identified in the survey by businesses which had not been previously established, related to a lesser demand for training in marketing. Although, marketing skills were highlighted in relation to another question concerning future skills needs, in which the acquisition of marketing skills was considered to be important for the future of many businesses.

❖ Returning to the survey, businesses were asked about their preferred form of training and 18.1% wished to train their staff through CPD or short courses, with a very small number, 3.4%, preferring more formalised training leading to NVQs by linking in with further education providers. The largest number of employers, 24.2%, wanted '*in-house*' training for their staff and some, 13.5%, preferred to utilise a mixture of all three forms of delivery.

❖ Businesses were also asked if they currently employ any Modern Apprentices, and a relatively small number, 14%, currently did so, with around half of these businesses, 5.9%, employing more than one Modern Apprentice. When asked if they anticipated taking on any employees under the Modern Apprenticeship programme in the next 12 months, again, a similar number of employers, 13.7%, anticipated doing so.

❖ However, it should be noted that although the Modern Apprenticeship programme is the dominant framework for formalised training in the Marine and Maritime Sector, the majority of employers were critical of the programme and NVQs in general. The value of NVQs was widely questioned by employers, with the research undertaken for this study identifying few businesses that held Modern Apprenticeships or NVQs in high regard.

❖ Just over half, 52% of businesses, were aware of training providers who could meet their needs. Just over one fifth of businesses 21.3% commented that the Further Education Sector was their preferred provider and 4.5% mentioned the Higher Education Sector. Private sector providers were the preferred choice for 15.3% of businesses, other training providers mentioned were RYA, BMF and local authorities. The large majority of the businesses surveyed, 77%, were satisfied with the training their employees were receiving although in general many employers commented that some of their employees were not able to access Marine specific training courses and they had to make do with more general or other Sector related courses for their staff.

❖ When exploring issues that were proving to be an obstacle to businesses providing training for their staff, the cost of training was cited by 44.9% of businesses as the biggest barrier, a further 43.7% commented that providing time during working hours to release staff was also a major barrier to training. Other barriers included a lack of the right type of training being available locally, 16.5%, and 11.9% of businesses thought that the distance employees had to travel to access training was a barrier. Finally, 10.2% of businesses thought that there was too much red tape associated with training.

❖ Other than barriers or obstacles to training, businesses were asked to comment on what would encourage them to provide more training for their staff. Predictably, subsidies to help with the cost of training were identified by 51.2% of businesses, and a further 36.5% asked for additional subsidies to cover the cost of travelling and accommodation. A further 35.8% of businesses asked for more training to be delivered in-house or more locally.

❖ Most surprisingly, unlike many studies conducted in other sectors that examined barriers to training, few employers, 9.4%, in the Marine and Maritime Sector thought that more flexible training times offered by providers, such as at the weekends or evenings, would encourage them to provide more training opportunities for their staff. Only 10.9% of Marine and Maritime Sector businesses thought that the greater availability of on-line training would encourage them to offer more training to their staff.

❖ Lastly, employers were asked if they thought it should be the employers' responsibility to provide training for their staff or if they thought the emphasis should be placed upon individual employees to access their own training. The majority of employers, 59%, thought that it was their responsibility to train their staff, and only 3.2% thought that the emphasis should be placed upon their employees. However, in response to another part of the question, 28.6% of employers, thought that it was the responsibility of both the employer and employee to take advantage of training opportunities.

❖ In the case of the Region, the survey highlighted that there was a large number of firms employing less than ten people and a number of regional patterns emerge, and the national predictions related to occupational changes and skills needs will be broadly reflected in the local area. Variations, such as the greater numbers of smaller businesses do make a difference both to the vulnerability of the business and to the support needed in the provision of training. The next section is concerned with some of the skills, education training and structural issues as perceived by regional employers.

Employers Education, Training and Skills Issues

❖ A total of 105 in-depth interviews were undertaken on company or organisational visits, in addition to focus groups with key stakeholders in the Sector, in order to provide a more grounded approach to the overall analysis, and to identify in more detail the perceived skills gaps and training needs. The examples used in this section are intended to be illustrative of the general trends, and also to identify the thematic concerns that cut across the Sector as a whole.

There are also a number of issues that, although related to the Sector are governed by national legislation and statutory requirements, such as the running of ports, issues of seamanship as well as regulations governing ship building and ship repair. In addition, there is also the need for employers to ensure that adequate provision is made for training in Health & Safety issues, which adds to the overall training burden, and may involve more general workforce development as the Investors in People programme.

❖ It is apparent that the diverse nature of the Sector, in terms of the wide array of activities that are involved, is also reflected in the range of perceived training needs and skills gaps, a situation that corresponds to that in other regions.[8] For purposes of analysis these can be seen as spread across a continuum ranging from the *'traditional'* craft based skills at one end, to the utilisation of new technologies in design, manufacture and general business skills at the other.

Emerging Issues and Themes

❖ It is clear that across the Sector as a whole, and also within the sub sectors, that training provision to fill the identified current and future skills gaps suffers from a number of shortcomings. While the ad hoc, co-operative and '*in-house*' solutions can be seen as pragmatic responses to a changing and diverse set of needs, it is also clear that these solutions were driven by necessity rather than choice.

❖ As a consequence, there was a strong desire to see better and more focussed provision of training that is proactive in its design, in particular so as to keep pace with new technological developments. The issue of flexibility in terms of timing and delivery is also a key issue, and also is the need to ensure that future training is tailored to specific marine related skills. It is also worth noting that only a few skills could be regarded as generic to the Sector as a whole, for example business and management and basic knowledge of IT.

❖ The main issues that arose from this part of the research can be summarised as follows:

    ❖ Increased training opportunities are regarded as an urgent need by virtually all companies contacted in this study.

    ❖ There are different *'training cultures'* in micro, SMEs, and larger companies. Smaller companies are more *'niche'* orientated, meeting needs in an ad hoc manner and less concerned with qualifications.

    ❖ There is a perceived gap between the vocational and higher education training, with insufficient provision at the intermediate level.

    ❖ The current provision of courses and providers are perceived as inadequate to meet the expanding business demand and technological changes.

    ❖ The training provision at colleges is criticised on three main issues:

        ❖ as being out of date.

        ❖ not specific to the Marine and Maritime Sector.

        ❖ of poor quality in general.

    ❖ There is little enthusiasm for NVQs, which are viewed as a relatively inefficient measure of competence.

    ❖ Colleges and other training providers need to improve the relationship with companies to ensure that learners are placed in companies.

    ❖ The traditional, indentured, apprenticeship is seen as superior to the Modern Apprenticeship.

    ❖ The absence of indenture can result in some companies being reluctant to provide training for employees, for fear that they will seek other employment once they finish their apprenticeships.

    ❖ Streamlining and simplifying initiatives such as IiP and other funding regimes would be likely to lead to increased take-up.

❖ Private trainers were seen as more able to address the needs of business, with a demand for short courses with immediately transferable knowledge.

❖ Seasonal fluctuations mean that providers will need to address this issue when planning and promoting their courses.

❖ The establishment of a Trust Fund to help pay for training young people would be welcomed as would the release of government funds to establish adult apprenticeships.

❖ Employers expressed widespread support for the establishment of training clusters, with several willing to be involved in these clusters as training providers.

The 'Top Ten' Skills Needs of the Marine and Maritime Sector in the South West of England

❖ The overall aim of this study was to provide a coherent and actionable plan for the development of Marine and Maritime Sector skills that addresses, from a demand perspective, both current and future skills needs. It is in this context that the required outcome is to identify the *'top ten'* Marine and Maritime Sector skills needs and recommend solutions to meet those needs. Within this process, priority was given to skills identified which have the potential to increase competitiveness, move the Sector up the *'value chain'* and increase the Sector's contribution to the region's GDP.

❖ In more detail, it is important to note that for many perceived skills needs there may not be a coincident increase in GDP in providing training to fill the gaps. These needs would not, therefore, make the *'top ten'* based upon a ranking criteria that merely considered an outcome of positive economic impact, in terms of increased overall GDP. Nevertheless, these skills may be considered important to employers in terms of need, and making recommendations as to possible solutions that addresses these needs may have a different type of positive impact, in terms of business survival, for example, some types of basic skills and legislative compliance, for example, pollution control and monitoring, without actually raising the Sector's overall GDP.

❖ Furthermore, there are at least two factors to consider that limits any assessment of need highlighted solely from the demand side. These factors are latent skills gaps and thus, unrecognised current and future skills needs. Again, addressing these gaps may not have a positive economic impact in terms of increased overall GDP, although, addressing both holds the potential to do so in many instances.

❖ It is, therefore, important not just to base this upon perceived employers needs but also to consider future and latent skills gaps needs if the framework is not going to be just reactive but proactive in meeting skills needs in the Sector. With this in mind, the first step in delineating the *'top ten'* in the Sector is to consider all of the current and future skills identified together before taking the process further.

❖ Clearly, given the earlier argument, it is important to consider future skills as well as current skills needs, and it is also important to consider skills missing in the current workforce. Focussing on both of these skills areas will certainly have an impact upon the Sector in both the short and long-term. However, if the focus of any intervention is targeted at the skills area of training need, there will be a maximum impact upon all three skills areas. In fact, by targeting training needs, missing skills and the majority of future skills would also be addressed in the same manner.

❖ Following a process of elimination largely based on the criteria of positive economic impact, in terms of increased overall GDP and by defining closely related skills and re-grouping them into skills-sets the '*Top Ten*' skills for the Sector were identified. The following Table shows the *'Top Ten'* skills identified by this study.

The Unranked *'top ten'* Marine and Maritime Training and Skill Needs

Generic Skills Needs	Specific Skills Needs
Business & Management	Carpentry
IT	Composites, GRP and Laminating
Sales, Retail (including Chandlers) & Marketing	Import/ Export & Freight
Electronic Engineering	Painting/ Finishing
Mechanical Engineering	Welding & Fabrication

Source: South West Marine and Maritime Survey 2003

❖ Finally, these '*top ten*' skills and skills-sets were ranked according to their potential impact on the overall contribution to GDP.

❖ **In order of priority, the '*Top Ten*' skills needs in the Marine and Maritime Sector for the South West of England are:**

1	**:**	**Business and Management**
2	**:**	**IT**
3	**:**	**Sales, Retail and Marketing**
=4	**:**	**Electronic Engineering**
=4	**:**	**Mechanical Engineering**
6	**:**	**Welding and Fabrication**
7	**:**	**Painting and Finishing**
8	**:**	**Composites, GRP and Laminating**
9	**:**	**Carpentry**
10	**:**	**Import/Export and Freight**

❖ The recommended solutions to address the identified '*Top Ten*' rests within the framework provided in the next section. In terms of the numbers of courses and qualifications attained by developing this framework, is difficult if not impossible, to tell at this stage. The proposed framework is an especially dynamic concept which is difficult at this point to quantify in terms of a final settled level of activity, estimates now would be purely '*finger in the air*' and therefore not particularity valid.

❖ Moreover, during the course of undertaking this research, employers were calling for a variety of solutions to their skills and training needs, very little of which was qualification dependent. If the solutions recommended in this Report are truly to be demand led and reflect the views of employers, it is only when dialogue between employers and training providers is started to address these needs, will the potential numbers of trainees and type and level of qualifications attainment be known. Indeed, the best solution from a demand perspective may be the provision of a short-course to overcome immediate need, rather than linking the training to qualifications.

❖ However, an example of the potential and direct impact in terms of qualifications and trainee numbers has been provided. This example relates to the recommended solution to the skill ranked as number seven in the '*Top Ten'*, for painting and finishing training in the Cornwall sub-region. It is only because, we have been able at this stage to study in detail and identify a potential partnership that we have been able to start to quantify trainee numbers and the possible qualifications that may result from this provision.

❖ Therefore, the recommendations to solving the other identified skills needs in the '*Top Ten*' rest within the proposed Regional solution to the '*Skills Needs of the Marine and Maritime Sector in the South West of England*'.

Meeting the Education and Training Needs of the Marine and Maritime Sector in the South West of England: *'The Way Ahead'*

❖ Following the analysis and identification of the skills needs of the Marine and Maritime Sector the overall aim of the research is to provide a coherent and actionable plan for the development of Marine and Maritime sector skills within a regional framework. Marine South West has been active in the business development of the Marine and Maritime Sector in the South West Region in association with SWRDA for three years.

❖ It is widely recognised that skills and training remains the single most important barrier to growth for all businesses. In addition, SWRDA has a key role as an agent stimulating change in South West businesses, to affect growth and improve competitiveness. Undoubtedly, developing a strategic focus on training can support this, so it is important to identify in what particular terms and actions this stimulation of industry performance can be manifested for the Marine and Maritime Sector. This is especially important given the economic, social and legal drivers highlighted in this Report which appear to underpin many of the skills requirements in the Marine and Maritime Sector today. A key role exists in seeking to underpin major strategic initiatives and ensure that any initiatives implemented meet certain prerequisites. These prerequisites are that:

> ❖ they fill gaps where existing education and training provision does not meet demand.
>
> ❖ they include the active participation of key stakeholders from both the skills supply and demand sides to ensure complementarity with, or improvement of, current provision.
>
> ❖ they stimulate economic growth and sustainability.
>
> ❖ they increase competitiveness, and for the Marine and Maritime Sector to move the Sector up the 'value chain' and increase the Sector's contribution to the Region's GDP.

❖ The research undertaken to assess the *Skills Needs of the Marine and Maritime Sector in the South West of England* has identified that the Marine and Maritime Sector has a number of skills issues to address at different levels, ranging from the specific to the generic, and from the immediate to the strategic. Many of these issues can be clearly recognised within the individual business, skill-set or sub-sector level following the in-depth analysis that has taken place.

❖ Consequently, it remains possible to address these issues at an individual, skill-set, Sector, or sub-sector level. With this in mind, it is clear that there is undoubtedly the potential to adopt a holistic approach to addressing the Marine and Maritime Sector training needs, or alternatively, a more ad hoc approach to meet individual skills needs. Both approaches are possible. If the latter approach is taken, then the Sector will continue to be dogged periodically by skills gaps and shortages since this is essentially a reactive approach rather than a proactive one in meeting skills needs. It is therefore recommended, that the former approach is taken since it offers the most advantageous solution to the short, medium and long-term skills needs of the sector.

❖ The potential to apply an overtly top-down and managed approach exists and evidence from the Sector suggests that this would be welcomed by many businesses in the Marine and Maritime Sector. Indeed, many called for Marine South West and regional partners, for example, Learning and Skills Councils to address major skills challenges in equal measure with industry in the Sector.

❖ This approach could lend itself either to the strengthening of existing training provision, or focus upon and address the gaps in education and training provision. Either way, support for education and training in the sector is becoming more important since training provision in the Region in terms of the number of providers and the number of courses provided has declined since 2001, and equally because current education and training provision does not adequately meet the perceived need of all of those in the Sector.

❖ Addressing training provision gaps seems more appropriate for the approach given that there still remains a reasonable number of education and training providers in the Region, although the level of investment and subsequent risk is higher. However, it is the management of this risk that both current providers who are striving to meet need and businesses are calling for from any such initiative. It has been established during the course of undertaking this research that businesses from within the Sector and many innovative providers of education and training would *'buy into'* and support major changes in the provision of education and training content and delivery that meets the needs of the Sector.

❖ With the focus of this Report concerned, in part, with the identification of the *'top'* skills needs, the introduction of a managed approach to the delivery of the solutions to these needs appears pertinent. It has been established that there is support in the South West within Marine and Maritime and engineering sector bodies, within training organisations, trade associations, clusters and regional/sectoral groups and HE/FE, who could all play an integral role.

❖ Most importantly though, the will and in some cases the infrastructure that exists within a number of the businesses who would benefit, is available too. Indeed, many businesses have offered to work in partnership with Marine South West, the BMF, EEF and other regional partners to establish training provision. Beyond a managed approach, closer relationships between companies, training providers and other sector organisations is required, but without the aid of animators or brokers such as Marine South West and regional partners, ad hoc initiatives and provision will ensue.

❖ The results of the survey established that current education and training provision is perceived by businesses to meet demand only 80% of the time, and whilst this is generally a satisfactory level, and there is generally satisfaction for many courses for existing workers, there is less satisfaction with the training available to new entrants to the Sector, and also in particular areas where there are gaps in provision. The potential for greater collaboration, either to strengthen existing training provision or to introduce new training programmes specifically addressing training gaps must be realised to ensure that businesses get a higher percentage of fit for purpose training.

❖ The research undertaken for this study also exposes a number of distinct cultural issues surrounding training, and they too need to be addressed to change existing internal business barriers and attitudes to training. For example, 60.5% of businesses stated that training was not really planned or linked to their strategic goals and that they only train when the need arises. It may be that outside of specific targeted actions towards meeting skills needs, exercises that raise the awareness of the benefits and opportunities for education and training would serve a good purpose.

❖ Whatever activity Marine South West and regional partners support in the pursuit of strengthening the skills base of the Marine and Maritime Sector in the South West, there is a growing expectation from within Marine and Maritime Sector organisations that it will have sufficient scale and profile to have a serious impact on training provision, company training strategy and skills needs. If training is a matter of choice then businesses seek a choice that clearly addresses their biggest training needs in a comprehensive way.

❖ The potential exists to address skills needs by developing an approach that satisfies a larger number of businesses in a cost-effective manner. Centres of Excellence have already been developed within the Marine and Maritime Sector to support innovation and technology transfer. They are characterised by the fact that they are based at the interface between (in the innovation example) the technology and knowledge provider, and the industry user. However, there is no working example of a Centre of Excellence that supports training and helps to manage the interface between the provision of training and the industry user. In presenting the case for a more holistic approach, it is logical to marry the most important skills requirements as expressed by Marine and Maritime businesses in the South West, with a comprehensive and coordinated approach to the provision of such skills.

❖ There are several factors to consider in trying to establish a Centre of Excellence for Marine and Maritime training in the South West. Not least concerns the location of any proposed Centre and, furthermore, the cost of doing so. The South West is geographically and economically diverse and so is the business base. The research established that there are seven Marine and Maritime related clusters in the Region and the findings of the research also established that

while some skills needs were generic to all of the sub-regions, localised specialisation has generated differing skills needs priorities in each of the sub-regional clusters. For example, painting and finishing training was a priority for the Cornwall sub-region, whereas waste management training was a priority in the Bournemouth, Poole and Dorset sub-regional cluster. While training in each of these skills may be beneficial to businesses in each cluster, current demand for training in each skill has only been identified in one or the other cluster. The costs of providing facilities in order to establish sub-regional cluster located Centres would be prohibitive and the sustainability of so many Centres questionable once cluster related skills had been met.

❖ Furthermore, it must be borne in mind that only 21% of Marine and Maritime businesses identified training needs that could not be met locally. Equally, only 14.6% of businesses identified skills gaps in their workforces. While these skills gaps and training needs are particularly acute in many instance and in the larger businesses these problems affect a large number of employees, the amount of investment required to establish a physical Centre of Excellence to meet this level of need is again likely to be prohibitive. A Centre of Excellence approach requires substantial resources to ensure that appropriate programmes and methodologies can be applied in the delivery of training for skills. At the same time, the training provision must have an element of continuous need to ensure sustainability of the training beyond the short-term. This further weakens the case for the establishment of a mono-centric training facility on the ground of sustainability.

❖ Equally, there are current public and private sector education and training providers well placed geographically to the sub-regional clusters to serve these needs, even if it is perceived that, in some instances, they are unable to do so at present. With over 77% of businesses in the survey stating that they were satisfied with the training provision provided locally, this course of action would also potentially raise questions about utilising the public purse to establish competition to what is perceived by the majority of businesses as suitable provision.

❖ An altogether different and innovative approach to training provision is required, in order to meet the Skills Needs of the Marine and Maritime Sector in the South West of England. In examining different forms that a Centre could take, there are several options which could be explored:

> ❖ A centre can be physical, virtual, or some way in between. There are arguments all ways of course. On the one hand it is possible that being closer to a virtual centre in form means that concerns about sustainability are less because costs are less. On the other hand, a physical centre might be far better at ensuring stakeholder commitment.

> ❖ If a centre is characterised by its being at the interface between supply and demand, then its position, either close to the supply side or the demand side, would help sustainability. There is some argument for basing a centre within a business or close to a network or cluster to ensure that businesses, as stakeholders, are seen as properly making an *'investment'* and seeking '*ownership*' in the Centre approach to training and its continuous success. Coupled with this there are practical reasons for enabling training to take place within companies:

>> ❖ the availability of good in-house facilities which may need little or no upgrading.

>> ❖ the ability of the business to steer the individuals undertaking training.

>> ❖ the desire of businesses to manage their trainees.

❖ After consulting with stakeholders, Sector champions and businesses, what was clearly emphasised was that any solutions recommended had to be considered from a demand-side perspective. For many of the skills needs, businesses preferred to utilise in-house options for the delivery of training and they were generally unconcerned about linking any training to specific qualifications. In many instances, employers highlighted that short-courses would suffice and would *'get them over a particular task orientated problem'* in the short-term. Consequently, businesses preferred training to be delivered, if not '*in-house*', then at the sub-regional level.

❖ In the interviews with businesses in the Region when exploring the topic of training provision and its delivery, a surprisingly large number of businesses with particular skills needs offered to work with both public and private sector training providers to develop training geared to their specific needs. Many of these businesses also offered the use of their facilities and were willing to invest in cash or provide matched funding in-kind in the establishment of such provision. In the main, these tended to be larger businesses or organisations and included shipyards, port operations and engineering businesses. When the question was posed concerning their willingness to open up this hypothetical provision to other businesses locally or regionally with the same skills needs, many were surprisingly happy to do so. The financial benefits of this arrangement seemed to be the motivational driver, nevertheless this would be a very cost effective way of meeting skills training needs for all concerned.

❖ Businesses also suggested that any model developed should not focus on a particular skill because individual businesses that had a skills need in one area were also likely to have further needs in associated areas of closely allied skills. In considering skills requirements and training for paint spraying, for example, there would be no economic case to justify the establishment of a Centre of Excellence focussing on one skill alone, even if this Centre was based within a business. Demand, although high, is not sufficient to sustain numbers of trainees in the medium to long-term. However, it is easier to warrant investment in training in painting if it was grouped together with a requirement for related skills such as boat cleaning and preparation, gel coating and finishing technologies.

❖ Essentially, what has emerged from the research, and following extensive consultation with the Sector, is just the type of different and innovative approach to training provision that is called for to address the skills needs of the Marine and Maritime Sector in the Region. To reiterate, and to start to build on this concept, Marine South West with support from SWRDA, and other regional partners, should act as facilitators or brokers in building partnerships consisting of education and training providers and those in industry, to meet the skills needs identified in this study.

❖ These Partnerships are likely to consist of a public and/or private sector training provider and a lead business within a sub-region or cluster, which may lead to the provision of facilities and/or a cash or in-kind contribution for the establishment of a centre. These individual partnerships within the network may focus on one particular skills need or on a group of closely allied skills needs, which may differ within the centres. The partnerships should be encouraged to engage with the supply chain and/or co-operate with other businesses who may be competitors who have similar needs.

❖ In addition, an element of flexibility may be built into Network provision for peripatetic or roving training to be delivered to those businesses who are unable to send their employees to the centre for any reason, such as, prohibitive travelling time and/or costs. This type of delivery would also be suitable for businesses that do not wish to send their employees to a competitor to be trained. The lead for training delivery of this nature should be taken by the public or private sector training provider.

❖ Provision should not be limited to sub-regional demand. Any provision should be opened up to regional businesses and other centre partnerships and should seek to meet national and international demand to ensure viability, and thus sustainability of the provision. Partnerships should be flexible enough to provide training in some form for any emerging skills need identified. These partnership centres should be linked both physically and virtually with the others in the Region. This will enable others to access provision in a partnership centre with a particular sub-regional or cluster specialism which will in all probability be established as a reaction to need in that area.

❖ Virtual linkage could be provided between the centre with some forms of training broadcast via a networked communications system. It is envisaged that trainers would rove between centres to deliver provision more locally. In effect, what has emerged could be described as a *'Networked Marine Training Centre of Excellence'* with the centre being the sum of the partnerships.

❖ Training, although specifically Marine and Maritime focused, could be widened to include the more generic skills needs in the Sector such as business and management, marketing and IT training as well as Health & Safety and First Aid. The Network should be linked into existing Marine and Maritime initiatives at the sub-regional levels and Marine and engineering organisations nationally such as, BMF, SEMTA and the EEF.

❖ The concept of the *'Networked Marine Training Centre of Excellence'* approach provides a major opportunity to develop an innovative and imaginative solution to meet today's skills needs and provide proactive training to meet the skills of tomorrow. Generally, businesses in the Sector when prompted, recognised the importance of looking at skills needs strategically. The key drivers of skills in the Sector are:

> ❖ introduction of new services and products.
>
> ❖ improving manufacturing and production processes.
>
> ❖ introduction of new technologies, especially within the production process.
>
> ❖ legislative factors.
>
> ❖ the age profile of the workforce in the marine sector.

❖ A cohesive approach to future skills is needed to:

> ❖ raise awareness of specific future skills shortages.
>
> ❖ meet the challenges of an ageing workforce.
>
> ❖ address the needs associated with industry changes as production methods and products continue to improve.

❖ However, the solutions that have been posited to meet the skills needs of the Marine and Maritime Sector in the Region require Marine South West and regional partners to take the lead in making this happen. The recommendations are strategic while focussing on the immediate, and are realistic although difficult to implement, and additionally outcomes are measurable in terms of impact. In the course of undertaking this research there was a real sense of desire or perhaps a resignation on the part of both businesses and Sector representatives and champions, that something bolder was required to solve the skills needs in the Sector. The ad hoc approach has been prevalent for far too long in the Sector, and now there seemed to be willingness and some momentum to try something different.

❖ The final recommendation here calls for Marine South West to take the lead in facilitating or brokering the establishment of the *'Networked Marine Training Centre of Excellenc*e' and to provide the glue in the longer term to keep the Network together. This may require the formation of a separate training company: Marine South West Training.

Main Recommendations

Recommendation 1: Test the 'Networked Marine Training Centre of Excellence' Concept

1.1   It is recommended that the *'Networked Marine Training Centre of Excellenc*e' concept is the best way forward in the South West of England to provide for the unmet training needs of the Sector. This Network should consist of partnerships between public and private sector training providers and businesses from the Marine and Maritime Sector in the Region. These individual partnerships should be linked in a regional framework to provide a networked form of provision. This Network would be cluster reactive and provide for unmet need on a cluster, sub-regional and regional level. For example, Partnerships might consist of a public and/or private sector training provider and a lead business within a sub-region or cluster, which may lead to the provision of facilities and/or a cash or in-kind contribution for the establishment of a centre. These individual Partnerships within the Network may focus on one particular skills need or on a group of closely allied skills needs, which may differ within the Centres. The

Partnerships should be encouraged to engage with the supply chain and/or co-operate with other businesses who may be competitors who have similar needs.

1.2   Marine South West in collaboration with other regional partners should lead this initiative and act as animators or brokers in partnership building. Marine South West could explore the possibility of setting up a separate training section in order to manage the Network or alternatively undertake this role as a part of its current activities.

1.3   The first step in this process should involve piloting the concept by focussing on the previously identified skills needs in painting and finishing. The research undertaken for this study has identified that within the Cornwall sub-region, and specifically, in the Falmouth/Penryn cluster there is a chronic level of shortage in high quality painting and finishing skills. The research also established that there is the potential in the Cornwall sub-region to develop a suitable Partnership between a shipyard with skills needs in this area, and a public sector training provider to pilot the concept. This model of provision will also be extended to meet the short-term needs of other employers in the Falmouth/Penryn cluster and wider sub-region of Cornwall. The shipyard's management have agreed to host trainees from other companies within this provision. In addition, the College may provide peripatetic or roving provision in the sub-region.

1.4   Following an assessment of initial demand for this surface finishing and high quality paint spraying training, both in the cluster and at the sub-regional level, approximately ten other businesses were interested in sending their employees to the shipyard for training in this skills area. The number of potential trainees from each of these businesses was contingent upon staffing levels at the time of the training being provided, but it is not unreasonable to assume that there are at least 20 potential trainees from these sources. This does not take into consideration the potential market for this training at the regional level and again it is not unreasonable to assume, following the level of demand indicated for training in this area, that there exists another 20 potential trainees from businesses in the Region. There is also an indication that demand for the peripatetic training will be high, with several businesses expressing a desire for this form of provision in the sub-region and also at the regional level.

1.5   In collaboration with the shipyard the College has offered to develop bespoke surface finishing and paint spraying training initially based around the already accredited automotive NVQ provided by the College. However, this bespoke training will deliver training to meet the exacting standards of the Marine and Maritime Sector and the College will seek accreditation in its own right for this provision in the medium to longer-term. Provision will also differ from that currently provided by the College, in that delivery will, in the main, take place at the shipyard and will involve closer liaison with businesses than has previously been the case.

Outcome: It is envisaged that this partnership will not only provide a solution to the previously identified skills need in this area but it will also lead to the estimated attainment, once the provision is established, of approximately 50 NVQs at Level 2 over a two year period. In addition, these trainees would move on to NVQ Level 3, leading to the attainment of a further 40 NVQs at Level 3, after allowing for early leavers.

Recommendation 2: Embed Generic Training Provision into the Model

2.1   The Partnership should seek to embed generic training provision within the model. The type of course should not be qualification dependent, but responsive to the needs of businesses. Courses should be either developed or existing providers courses identified in areas such as, business and management, IT, sales, retail and marketing, Health & Safety and first aid all of which have been identified in this research as being generic skills and training needs in the Sector.

Outcome: Generic skills needs in the sub-region will be provided for by the Partnership.

Recommendation 3: Evaluate the Model of Provision

3.1 It is recommended that although, the evaluation process should be embedded and continuous, once the model has been established and has been running for a period of one year, the model of provision should be evaluated to determine its:

- ❖ Cost effectiveness.
- ❖ Whether it meets the needs of employers in the sub-region and Region, if provision had extended that far during the early stages.
- ❖ Quality of the delivery and of the trainee experience.
- ❖ Delivery outcomes in terms of qualifications attained.

Outcome: Assess the effectiveness of the model in order to determine its viability in terms of value for money and training delivery, qualifications attainment of trainees and to transfer best practice to other potential partnerships.

Recommendation 4: Identify Other Potential Partnerships

4.1 It is recommended that whilst the model is being tested, other potential partnerships are sought. This research has established a high level of interest among Marine and Maritime businesses and training organisations in the Region who would like to be involved in the programme. Further dialogue with these and other businesses and organisations should take place to establish additional partnerships during the second year of the initiative. Establishing new partnerships during year two would enable *'best practice'* to be evaluated and transferred from the model to any new partnerships that may be formed. However, this is not to say that there will be only one model, it is envisaged that different forms of partnerships will be formed from a demand perspective to tackle different needs. For example, partnerships could consist of private training providers and a primary business, as well as a mixture of public and private provision.

4.2 New partnerships should be established on the basis of need, this need could be a specific issue affecting the Sector. The Partnerships could focus on a specific skill or the Partnerships could be established where the focus is on a range of skills. It is envisaged that Partnerships will be established in localised areas where the need has been identified in order to respond to cluster demand. For example, the identified need in the Cornwall sub-region for high quality surface finishing and paint spraying, or for identified needs in the Plymouth and Poole clusters where two larger businesses have indicated a desire to enter into Partnership provision with a range of public and private sector training providers. However, because of the networked element in the concept, this provision would be opened up to other businesses in the Region who have similar needs, but may be located in, or nearby, a cluster whose needs are different and thus, Partnerships in their area provide for another skill or skills-set.

Outcome: New Partnerships will have been identified to meet demand led need.

Recommendation 5: Establish New Partnerships

5.1 It should be the aim of the managers or facilitators of the initiative to establish new partnerships during Year Two. This target although tight, would then start to make a contribution to the skills issues facing the Sector.

5.2 Establish new partnerships.

5.3 Ensure that all of the partnerships are networked and have a communications and delivery infrastructure in place to truly be a *'Networked Marine Training Centre of Excellenc*e'.

Recommendation 6: Establish a Marine and Maritime Skills Assessment Mechanism

6.1   Marine South West and regional partners should establish a mechanism whereby the skills needs of the Sector is subjected to an on-going assessment. Thus, areas of needs can be quickly identified and training provision built into existing partnerships or new partnerships established to tackle an identified need.

6.2   Provision should be put into place within the framework for the identified future skills needs, and any further identified needs in the Sector to be proactively provided for by appropriate training measures.

6.3   The Network should establish a Marine and Maritime Employers Skills and Issues Forum in the South West. This forum needs to be created to facilitate in the process of the assessment of demand led need, and to create a feedback loop to ensure that current provision provided by the Network, is truly meeting demand led need.

Outcome: The Network remains relevant and responsive to demand led need in the Marine and Maritime Sector in the South West of England.

Recommendation 7: Assess the Transferability of the *'Networked Marine Training Centre of Excellenc*e' Concept to other Sectors in the South West of England.

SWOT Analysis of the Proposal for the Development of a '*Networked Marine Training Centre of Excellence*'

Strengths	Weaknesses
❖ Training is demand led and employer/cluster responsive.	❖ Provision relies on a co-operative model.
❖ Provision can be proactive and reactive according to need.	❖ Complex relationships need to be managed and held together for the concept to work effectively.
❖ Provides the Marine & Maritime focussed education and training called for by employers.	❖ MSW and regional partners have little control over Centres.
❖ Initial capital investment is low in comparison to providing a purpose built training facility.	❖ Travelling distance to the Region could weaken national demand.
❖ Delivers cost effective provision.	❖ There may not be a suitable primary business in a location to provided facilities for the development of a Centre to meet need for certain skills.
❖ Flexible enough to accommodate newly identified skills needs.	
❖ New Centres can join or leave the Network without compromising the overall framework.	
❖ Training is delivered in a Marine environment rather than just in a classroom.	
❖ The concept utilises existing public and private sector education and training providers.	
❖ The peripatetic or roving training provision built into the concept adds to the flexibility of the delivery. This may overcome some businesses' reluctance to use competitor facilities for training.	
Opportunities	**Threats**
❖ Provides the opportunity to address current and future skills need in the Sector.	❖ If a primary business supporting provision through a Centre withdraws support for any reason, provision in the short-term would cease.
❖ Potential national and international demand.	❖ Businesses do not '*buy-in*' to the concept.
❖ Opportunity to provide training to other related Sectors.	❖ Businesses will not support the co-operative model of provision and will not use competitor facilities for training their own staff.
❖ Generic training can be delivered through the Network, such as, IT and business and management training.	
❖ Associated '*spin offs*' include supply chain strengthening.	❖ Ability of MSW to hold the network together.
❖ New forms of Marine & Maritime qualifications can be developed.	❖ Quality of the provision needs to be high to stimulate demand.
❖ The Network could provide a platform for launching and supporting other Sector based initiatives.	

Assessment of Demand for a 'Networked Marine Training Centre of Excellence'

❖ One of the objectives of the research undertaken for this study was to assess and take into account possible national and international demand for any solutions posited for the provision of education and training in meeting the '*Skills Needs of the Marine and Maritime Sector in the South West of England*'. In order to determine any potential demand for education and training delivered through the '*Networked Marine Training Centre of Excellence*' a survey and further interviews were undertaken with approximately 100 potential users of such provision. The survey and interviews focussed mainly on larger Marine and Maritime businesses which employed large numbers of people. However, smaller businesses were also surveyed to try to establish the potential demand for more specialist training, such as sailmaking and rigging.

❖ In undertaking the survey and interviews a hypothetical question was posed along the following lines:

❖   If a Marine Training Centre of Excellence was established in the South West of England would you in principal use such a facility?

❖   Obviously, interviewees were given more information about the '*Marine Training Centre of Excellence*', such as the overall concept and the potential type and range of training that would potentially be on offer, and through employing a semi-structured approach in the interviews, which allowed for flexibility in exploring informants responses, a number of issues emerged.

❖   The majority of the businesses surveyed currently use their local training providers or have in-house training facilities. However, many businesses, including some of the larger ones, confirmed that in principal that they would consider sending their employees to a '*Marine Training Centre of Excellenc*e' in the South West for training if it was just that, a training centre of excellence focussed on Marine and Maritime training.

❖   Many businesses noted that although they use local training providers for the majority of their needs, some of the provision that they accessed was not Marine and Maritime specific. Indeed, some businesses at the national level mentioned that they were having to send their employees onto, for example, automotive courses for finishing and paint training, and onto general construction courses for marine carpenters and joiners.

❖   The unique selling point for many of the businesses contacted was the proposed Marine and Maritime focus of the training. Even some of those contacted that mentioned they did not wish to send their employees to the South West for training commented that they might reconsider, if, once the Centre was established, they could see that it was really marine focused and met their needs.

❖   However, the decisions of many businesses on whether or not they would send their employees to the Region for training was contingent upon a number of factors:

         ❖   Cost of the training.

         ❖   Specific Marine and Maritime focus.

         ❖   A cost benefit analysis of the travelling distance against the business benefits from the training.

         ❖   A cost benefit analysis of the associated accommodation and down time (staff away from their jobs) costs against the business benefits from the training.

❖   Several of the factors listed above concerned the peripherality of the Region in general, with some businesses perceiving that the travelling distance was too far in terms of costs and time. This was the major factor that was seen by businesses as hindering any likelihood of international demand at the outset. The Centre would have to establish a regional and then national reputation before attracting international demand.

❖   In summary, while regional and national demand was potentially high, international demand was very limited. However, in general terms it was noted by many of the interviewees that once such provision was available and that the '*Networked Marine Training Centre of Excellenc*e' had been established for some time, with the concept proven, wider demand would potentially follow.

Assessing the Economic Impact of the *'Networked Marine Training Centre of Excellence'* Concept

Direct and Broader Economic Impact

❖   Evaluation of economic impact distinguishes between the direct observable impact and the broader impact, which may be less immediately obvious but is frequently more significant in the medium and long term. Direct impact refers to such measures as '*increase in numbers or levels of qualifications achieved*' or '*increase in total training days*' that would be outcomes of the proposed concept. These measures, while direct, are also intermediate in the sense that what

MSW and regional partners seek to achieve is an economic benefit for the Region measured in terms of incomes (e.g. regional GDP) and employment (e.g. jobs created or saved). Our analysis suggests that indirect regional impacts are likely to be significant in the case of the proposed *'Networked Marine Training Centre of Excellence'* concept, the innovative features of which suggest that broader ramifications deserve close attention.

❖ However, the impact of skills and learning activities on broader regional measures is notoriously difficult to assess, as a long chain of other causal variables intervenes ranging from macro-economic conditions to complementary technology and other investments whereby firms actually use and benefit from the skills acquired.

❖ Direct impact measures will require specific figures in terms of numbers of courses and trainees. As the proposed *'Networked Marine Training Centre of Excellence'* is an especially dynamic concept which is difficult at this point to quantify in terms of a settled final level of activity, estimates now would be '*finger in the air*' and therefore not particularly valid.

❖ At this stage we have therefore developed a number of the important factors that will help regional partners and MSW evaluate the likely value of the proposed new skills concept, focusing on assessing the broader regional impact:

The Significance of the Marine and Maritime Sector

Growth

❖ The Marine and Maritime Sector is formally identified by SWRDA as one of the five economically important sectors that the Regional Economic Strategy identifies as being crucial for increasing economic growth in the South West economy. Previous research reveals that Marine and Maritime Sector activity is made up of a number of significant local clusters but is also widely diffused across the Region.

❖ We now believe that previous studies have underestimated the significance of the Marine and Maritime Sector to the South West economy.

❖ In reality, all companies (and therefore sectors) that supply marine markets constitute the Marine and Maritime Sector. '*Bottom up*' firm-by-firm research, a methodology not used or available to the first two studies, permits an analysis that is closer to the '*real*' situation on the ground. This was achieved in part by the third study, which was able to incorporate the more accurate broader definition of the Marine and Maritime Sector. However, this study also depended in part on the quality of existing company databases. Our research for this skills project has permitted a much more fine-grained approach to be taken to developing company databases, enabling us to capture far more of the South West firms that are active in marine markets.

❖ Accordingly, our calculation of the number of jobs created by the Marine and Maritime Sector in the South West economy is now significantly higher than previous research suggested, at 31,580. Moreover, this estimate is broadly comparable with new Marine and Maritime Sector research in the South East region which also calculated employment based on a broad definition of the Marine and Maritime Sector and adopted a firm-by-firm and survey approach to generating statistics. This study estimates employment in the South East Marine and Maritime Sector at 105,000. The significant difference between the South East and the South West is probably accounted for by the location in the South East of a combination of large-scale port activity, oil and gas industry and sub-sea engineering, and a host of maritime services.

Growth Dynamics of Marine Market Segments

❖ Some earlier studies made an assumption that the Marine and Maritime Sector is a mature or even a declining industry. This assumption was closely linked to the relatively narrow Marine and Maritime Sector definitions adopted, which focus attention on the engineering industry parts of the Marine and Maritime Sector, where activities such as ship repair and some marine equipment manufacture have indeed been subject to difficult global competition in recent decades.

❖ However, significant segments of the Marine and Maritime Sector are currently experiencing rapid growth, such as those associated with leisure marine activities and luxury yacht building which are particularly strong in the South West. Indeed while good national data is not currently available to verify and quantify market growth variations across marine segments, there is considerable informal evidence of this. Accordingly, for instance, during our research we sometimes found it difficult even to secure interviews with companies operating in the leisure marine segments because they were *"overwhelmed keeping up with orders".*

❖ Clearly, more research would be useful to substantiate this, possibly based on further survey or interview work with South West companies '*close to the market*', but the fact remains that the broadly defined Marine and Maritime Sector is composed of a range of market segments in different stages of growth. To what extent this offers opportunities for individual companies to diversify, or for capabilities such as skills to be transferred, is an important question.

The Role of Skills Competitiveness and Innovation/Growth

❖ We have not undertaken research directly on the role played by skills in fuelling competitiveness and innovation and growth, but this is clearly a key part of the causal chain leading to economic impact from learning and training activity. There is a wide body of research on the economic role of skills that could be drawn on if required. We note that our research revealed that among the key drivers of skills in the sector are:

> ❖ introduction of new services and products.
>
> ❖ improving manufacturing and production processes.
>
> ❖ introduction of new technologies, especially within the production process.

❖ In this context, key skills are clearly seen to be the human factors in improving competitiveness and innovation.

❖ A vital issue is whether explicit recognition of training and skills gaps by firms can be taken as an accurate guide to the impact of improving training and addressing skills needs. Our research suggested that 21% of businesses identified training needs that could not be met locally, and 14.6% of businesses identified skills gaps. It might be concluded from this that skills issues are not seen as prominent barriers to business competitiveness and growth. However, this would be to adopt a static approach and associate currently recognised problems in addressing current business needs with the potential impact of delivering a more highly trained and skilful workforce into the marine labour market.

❖ In other words, it is more than possible that a significant improvement to the supply of skilled labour into the Marine and Maritime Sector would serve to alter the business outlook in the Region, with skills seen less as a challenge and constraint on current activity and more of an opportunity and basis on which to develop more ambitious business strategies. From this perspective, the provision of an improved skills infrastructure may be a vital ingredient in moving Marine and Maritime Sector companies up the '*value chain*' into higher value added activities, and thereby increase the sector's contribution to the South West GDP.

Top Ten Skills for Marine

❖ The *'top ten'* skills identified by our research fall into two basic categories: skills unique to or associated specifically with the Marine and Maritime Sector, and more generic skills associated with the management of successful businesses, including management and IT skills, for instance. In increasingly competitive marine markets, the latter group of skills will take on a growing significance. It also appears that opportunities for improvement are greatest in this area, as the management techniques and tools are well-known, indeed tried and trusted, yet may not have penetrated far into at least some segments of the more traditional marine firms, restricting competitiveness and therefore putting jobs at risk. The introduction of skills associated with modernisation, including lean techniques, in traditional firms, may have similar impacts to those

observed in other industry sectors, being associated with both job losses in the interest of efficiency, and retention of competitive organisations – a case of keeping '*half a loaf*'. Skills associated with responsive entrepreneurial behaviours including sophisticated IT and customer relations business processes can boost the capability to manage (and therefore build) larger organisations and therefore take advantage of growth opportunities.

Supporting Marine and Maritime as a Leading Sector in Local Economies

❖ Addressing skills needs in leading economic sectors – which is the role that the Marine and Maritime Sector plays in some of the South West marine clusters - is likely to have a broader impact in related sectors in addition to its spin-off impact through improving competitiveness and innovation in the Sector itself.

❖ The process of addressing the requirements of leading sectors can function as beacons of best practice, and more pragmatically, can help achieve the thresholds and economies of scale required to justify investments in new capital equipment, new courses, and new organisational infrastructures. This is particularly the case in terms of the more generically applicable business management and IT skills where provision primarily targeted at a lead sector or cluster can also be utilised by other industries and clients for which it is appropriate, such as other engineering-related or craft-related sectors.

❖ Moreover, we believe that the innovative proposed model of provision offers prospects for innovation in other sectors once the model is established, much as our interviews suggest that companies see promise in it for further expansion within the Sector – once the concept is up, running and tested.

'*Re-clustering*' - The Significance of the Delivery Vehicle

❖ Beyond the direct delivery of training and enhanced skills, the organisational mode of delivery can have a significant regional impact in its own right. The proposed *'Networked Marine Training Centre of Excellence'* is innovative from a *cluster* perspective in a way that deserves recognition.

❖ From an historical viewpoint, the post-war UK training infrastructure model can be characterised as a supply-driven model in which government subsidised large firms and education institutions to train for the benefit of the wider economy, small firms in turn benefiting through the constant labour migration of skilled employees later in their careers. In this clustered model, not only large firms, but organisations such as the Royal Navy were significant providers of skills to the economy as a whole.

❖ Over the last twenty years this model has been progressively dismantled, a process that continues, supported by the theory that market processes can provide not only better, demand-led signals of need, but also the organisations to deliver the required skills. While the market has been successful in many areas, many of the problems currently associated with skills shortages result from the failure of the market to address a number of key issues.

❖ In this context, the proposed *'Networked Marine Training Centre of Excellence'* is imaginative and timely, as it promises a new way for firms and training providers to cluster to address skills issues. The new model re-integrates larger firms, training providers, and smaller firms, in new ways that can once more generate both specialised provision that is effective and economies of scale that permit efficiency. The promise of the model is clearly understood by the many companies and organisations that responded positively to the model in our research. If the model proves successful, it may be possible to adapt and adopt it in other South West sectors.

Contributing to SWRDA and Other Regional Objectives

❖ At this stage in the development of the concept for the *'Networked Marine Training Centre of Excellence'* we cannot quantify how implementation of the proposal might support the attainment of formal SWRDA and other regional partners objectives, such as, the LSCs. A fuller analysis of fit with SWRDA strategic objectives for the South West Region as developed in the

Regional Economic Strategy and supported through the Corporate Plan should be carried out as the proposal moves forward.

❖ There is a clear direct fit with Strategic Objective 1 (Raise Business Productivity) and Theme 2 (Skills and Learning) in this identified key economic sector, and this can also be drawn out further to ensure explicit links and synergies with other, overlapping, Strategic Objectives and Themes. Moreover, a constant theme of the FRESA – employer led initiatives – is also addressed directly by the proposed concept. The *'Networked Marine Training Centre of Excellence'* concept also addresses six of the eleven Tier 2 target areas, and again this analysis could be further developed once the concept is accepted and its business plan and case is fully developed.

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Skills Needs of the Marine & Maritime Sector in the South West of England
Final Report

1. Section One

1.1 Introduction

The Social Research and Regeneration Unit (SRRU) and Marine Science and Technology (MST), research Centres based at the University of Plymouth, were commissioned by Marine South West (MSW) and the South West of England Regional Development Agency (SWRDA), to examine and assess education and training provision and needs in the Marine and Maritime Sector in the South West of England. And crucially, to identify the skills that employees of the Marine and Maritime Sector require, now and in the future, to aid in '*up-skilling*' the workforce.

The overall aim was to provide a coherent and actionable plan for the development of Marine and Maritime Sector skills that addressed, from a demand perspective, current and future skills needs. It is in this context that the required outcome from the research was to identify the *'top ten'* Marine and Maritime Sector skills needs and recommend solutions to meet those needs. Within this process, priority has been given to skills identified as having the potential to increase competitiveness, move the Sector up the *'value chain'* and increase the Sector's contribution to the Region's Gross Domestic Product (GDP).

The main objective of the research was to undertake an analysis and review of both current and future regional and sub-regional Marine and Maritime Sector education, training, qualifications and skills, including supply and demand issues.

1.2 The South West of England Study Area

The '*Skills Needs of the Marine & Maritime Sector in the South West of England Report'* focuses on the Region as a whole. However, in doing so, consideration has also been given to sub-regional education, training, qualifications and skills needs. The Sub-regions of the South West are defined as consisting of the seven following areas:

- ❖ West of England
- ❖ Bournemouth, Dorset & Poole
- ❖ Cornwall
- ❖ Devon
- ❖ Gloucestershire
- ❖ Somerset
- ❖ Wiltshire & Swindon.

1.3   Methodology and Methods

The research design strategy utilised a structured and layered analytical approach. The national framework was used to provide an overall context within which an increasingly focussed regional and then more local analysis could take place. The contextualisation and anchoring of more localised data within a wider regional and national framework is crucial for both the accurate description and the analysis of dynamics within and across the Sector.

The research strategy was designed to engage with education and training providers, employers (micro, small and medium sized enterprises, and larger enterprises) and employers' representatives (including relevant NTOs and Sector Skills Councils). In order to give a deeper and more detailed insight into local circumstances, needs and potential, and to highlight and accurately map the variations between the sub-regional and regional profile, a representative sample of views from members of these groups has been incorporated into the research process.

The research undertaken for the Marine and Maritime Sector training and skills needs analysis took the form of both secondary (desk based) and primary (telephone survey and face-to-face interviews) research. In the secondary research element Training Needs Analyses (TNAs) held by MSW and the Engineering Employers Federation (EEF) were made available to SRRU for further analyses, and the results of these analyses have been used in this Report. Furthermore, in the secondary research element, Marine and Maritime Sector contacts data sets held by MSW, MST and the Advanced Composites Manufacturing Centre (ACMC) were made available to SRRU for integration with internally held Marine and Maritime data-sets. This combined data informed the design of the sample frame in the primary research element. This approach had the advantage of enabling the identification of smaller businesses, often sole traders, in the Region which are not recorded elsewhere on official and/or commercial databases. Consequently, SRRU was able, with its data integration model, to map a greater number of those operating in the Region than would have otherwise been possible.

Following stratification and weighting to ensure that a representative sample was drawn from across the sub-regions of the South West, and from across the four sub-sectors of Marine and Maritime Sector activity, the overall business sample was purposively selected from within these categories in the SRRU Marine and Maritime Sector database. The sample comprised of 325 businesses, which represented 12% of the Marine and Maritime Sector in the Region, and these businesses were surveyed to inform the study. The survey consisted of 220 telephone interviews, and 105 face-to-face interviews conducted on company visits. The telephone interviews were based on a 33-question survey. In addition to these structured interviews, information was also gathered through employing a semi-structured approach, which allowed for flexibility in exploring informants responses. A further series of in-depth interviews and focus groups took place with employers, stakeholders, Sector champions, training providers and Marine and Maritime Sector organisations, agencies and bodies.

1.4 The Structure of the Report

1.4.1 Section Two:

The *'Skills Needs of the Marine & Maritime Sector in the South West of England Report'* is arranged under the following main headings:

- ❖ Sector Definition: Marine and Maritime

- ❖ Regional and sub-regional Marine and Maritime Sector Profile

- ❖ Regional and sub-regional Marine and Maritime Sector Clusters

- ❖ Regional and sub-regional Marine and Maritime Sector Education and Training provision

- ❖ Marine South West and the Engineering Employers Federation Training Needs Analyses

- ❖ The South West Marine and Maritime Sector Skills Survey

- ❖ Employers Education, Training and Skills Issues

- ❖ Future Skills: The Marine and Maritime Future Skills Grid Model

- ❖ The '*top ten*' Skills Needs of the Marine and Maritime Sector in the South West of England

- ❖ Meeting the Education and Training Needs of the Marine and Maritime Sector in the South West of England

- ❖ Assessing the Economic Impact of the *'Networked Marine Training Centre of Excellence'* Concept.

1.4.2 Section Three:

- ❖ Sector Trends: The Marine and Maritime Sector – The National Skills Context

- ❖ Sources and References

2. Section Two

2.1 Sector Definition: Marine and Maritime

The Marine and Maritime Sector has previously been defined in other studies[9] using the current 1992 UK Standard Industrial Classification (SIC) of establishments, or SIC 92. This classification is based on the type of economic activity in which companies are engaged, essentially defined by the nature of the products/services produced. The Marine and Maritime Sector has previously been defined on this basis as consisting of companies engaged in the following activities:

Standard Industrial Classification	SIC Code
❖ Manufacture of parts and accessories for motor vehicles and engines	343
❖ Building and repair of ships and boats	351
❖ Sea and coastal water transport	611
❖ Inland water transport	612
❖ Other supporting transport activities	632

However, another recent study of the Sector[10] suggests that an essentially restricted view of the Sector is taken when using this classification. This results in the Sector being seen essentially as Advanced Engineering, however, the Marine and Maritime Sector includes a wide range of activities, elements of which are engineering related. Consequently, in this study, a wider operational definition has been adopted that more fully encompasses both the extent and nature of the Sector. The main sub-sectors within the Marine and Maritime Sector are marine resource-based industries, marine system design and construction, marine operations and shipping and marine related equipment and service providers.

The Marine and Maritime Sector includes fisheries and aquaculture, ship design, construction and repair, offshore and coastal engineering, transportation systems, diving operations, dredging, pollution control, waste treatment, renewable energy, coastal development, marine technologies, research, marine tourism and leisure-related service providers and industries.

It is also important to note that aspects of Marine and Maritime Sector activities are undertaken within and support other sectors, for example, advanced engineering, tourism and leisure, construction and defence industries, research and development and new technologies. Therefore, Marine and Maritime related aspects in these and other sectors are encompassed within this report. What essentially defines marine related industries is the environment in which they operate and includes activities that can be applied to the ocean. The Marine and Maritime Sector for the purposes of this Report has been placed into a four-fold operational framework that encompasses the main sub-sectors as follows:

- ❖ Marine resource-based industries: those industries directly involved in recovery of marine resources such as offshore oil and gas, fisheries, marine-based pharmaceuticals, aquaculture and seabed mining.

- ❖ Marine system design and construction: ship design, construction and repair, offshore engineering and coastal engineering.

❖ Marine operations and shipping: marine transportation systems, diving operations, dredging and waste disposal.

❖ Marine-related equipment and service providers: manufacturers, engineering consultant firms in marine electronics and instrumentation, machinery, telecommunications, navigation systems, special-purpose software and decision support tools, ocean research and exploration, and environmental monitoring, training and education. This category also includes tourism and leisure related service providers and industries.

Table One shows the framework for the four-fold definition adopted within this report.

Table One: Framework of Categories for the Marine and Maritime Sector Analysis

Resource Based Industries	Design & Construction	Operations & Shipping	Equipment & Service
Fisheries/Aquaculture Biotechnology Offshore Oil and Gas Renewable Energy Minerals and Aggregates	Coastal Zone Protection and Development Ship/Boat Building	Port Operations Waste Disposal at Sea Shipping/Inter-modal Marine Transport Systems Navigational Dredging	Ocean Science and Technology (including ICT) Tourism and Leisure Equipment and Service Providers

Source: SRRU 2001

Within the framework, wide ranges of different skill-sets are required. The range of skills, for example, needed by those operating in resource-based industries, is very different from the skills required by those operating in the equipment and service provider sub-sector. In addition, within the sub-sectors many of the issues affecting other related sectors also affect skill requirements within the Marine and Maritime Sector. Many of the issues influencing the Advanced Engineering Sector for example, affect the marine engineering sub-sector.

In order to profile the number of businesses in the Marine and Maritime Sector in the South West Region and its sub-regions and, in an attempt '*to try and get below SIC codes'*, and place Marine and Maritime activities within the four-fold framework adopted in this Report, a wider operational definition has been adopted that more fully encompasses both the extent and nature of the Sector. This has been achieved by utilising the Equifax *'Yellow Pages'* businesses classifications. This classification system was selected for the following reason:

❖ Businesses are classified not only under their relevant SIC code but also under a self-chosen and more compartmentalised '*Yellow Pages*' classification.

In order to generate a sector profile for the South West and its Sub-region, 48 of the '*Yellow Pages*' classifications were chosen for their direct relevance to the activities covered in the operational framework.

Table Two places these classifications within the framework of the four-fold operational definition which defines the Marine and Maritime activities covered in this Report.

Table Two: Marine Business classifications grouped under the four-fold framework

Resource based industries	Design & Construction	Operations & Shipping	Equipment & Service
Fish farms	Boat builders and repairs	Cross channel services	Boat delivery
Fishermen	Naval architects	Divers	Boat hire
Shellfish	Ship builders and repairs	Dredging	Boat moorings
	Yacht designers	Ferry services	Boats and small craft
		Marinas	Diving equipment
		Port, harbour and dock authorities	Fish merchants – wholesale
		Wharfingers	Fisheries – sport
			Marine consultants
			Marine electronics
			Marine engine manufacturers
			Marine engine repairs
			Marine engineers
			Nautical instruments
			Propeller manufacturers
			Pump and pumping equipment manufacturers
			Radio navigation equipment
			Sail makers
			Sailing equipment
			Sailing instruction
			Ship chandlers
			Ship towing
			Shipbrokers
			Shipping and forwarding agents
			Shipping companies and agents
			Ships' fittings
			Ships' stores
			Smokeries
			Surveyors – marine
			Underwater engineers
			Water sports
			Yacht brokers
			Yacht chandlers
			Yacht charterers
			Yacht equipment

2.2   Regional and Sub-Regional Marine and Maritime Profile

A number of general trends in the Sector form the context for the regional and more local situations. In the South West, with the peninsula having both a north and south coast, there is an intimate connection between the sea and land. This, combined with a temperate climate and relatively unspoilt countryside and coastline, has not only fostered a distinctive maritime industry but also made the South West an important tourist destination. This in turn has undoubtedly helped to contribute to the survival, and also to the development, of many marine activities. It is the intimate relationship between marine activities and tourism that gives the South West Marine and Maritime Sector its distinctive flavour, thereby helping to distinguish it from marine sectors in other regions.

To provide a more detailed profile, some of the key findings for the Marine and Maritime Sector outlined in the SWRDA Priority Report[11] for the Marine Sector are included below. However, in this Report it must be noted that the Sector was defined as a '*marine technologies sector*' and as a result it provides an essentially restricted view of the Sector. Although highlighted as an '*important sector*', its significance is reduced by the nature of the industries covered within the Report. The depiction of the marine industry in the Report as an '*industry in decline*' stems from the Sector being seen as '*essentially an advanced engineering sector*'. Therefore, to provide a more detailed profile of the wider Marine and Maritime Sector operationalised within this Report findings from another report[12] supplement the Sector profile.

Table Three shows that in 1997 the Sector was smaller in comparison to other industries within the South West in employment terms and gross value added (GVA).

Table Three: Employment in Priority Sectors : South West Region

Priority Sectors	Employment	GVA Output (£m)
Food and Drink	91,200	3,144
Leisure and Tourism	87,500	2,439
Financial Services	76,300	3,071
Advanced Engineering	61,000	2,290
ICT	60,900	2,458
Printing and Packaging	26,300	765
Environmental Technology	21,000	656
Marine Technology	9,900	297
Customer Marketing	6,000	168
Biotechnology	7,000	217

Source: Table adapted from SWRDA Priority Working Paper 3, p. 2

- ❖ In employment terms, Marine and Maritime is a declining Sector in the Region, experiencing a 14% fall (1,600 jobs) between 1991 and 1997.

- ❖ Most firms in the Sector were small employers - 85% of firms employing less than ten people.

- ❖ The largest firms - 200 plus employees - accounted for only 40% of the Sector workforce.

❖   The Sub-region employment concentrations in the Sector were:

       ❖   Devon   :   61%

       ❖   Cornwall   :   10%

       ❖   Gloucestershire   :   8%

       ❖   Somerset   :   3%

       ❖   Bristol area   :   1%

       ❖   Swindon area   :   1%

❖   In employment terms, marine engineering and boat building are the two major sub-sectors in Devon, both employing more than half the number of those employed within the Marine Sector.[13]

In 2001[14] using the wider definition of the Marine and Maritime Sector subsequently adopted in this Report there were approximately 1,400 marine industry businesses identified in the South West Region, employing a workforce estimated at about 20,000. Micro-businesses accounted for approximately 80% of the businesses identified. Businesses employing over 200 people made up only approximately 1% of the total. For the Region, seven sub-regional/local marine industry clusters were also identified. These clusters accounted for approximately 49% of the Region's overall total of marine industry businesses and approximately 65% of the estimated workforce.

However, when utilising the '*SRRU Data Integration Model*' which, combined within the same format, Marine and Maritime Sector contacts data-sets held by MSW, MST and ACMC with internally held Marine and Maritime data-sets, a significantly larger number of Marine and Maritime businesses were recorded. This approach had the advantage of enabling the identification of smaller businesses, often sole traders, in the Region which are not recorded elsewhere on official and/or commercial databases. Consequently, a greater number of those operating in the Region were mapped than would have otherwise been possible. Table Four shows the number of Marine and Maritime Sector businesses recorded in the South West Region as a whole and in the sub-regions.

Table Four: Marine and Maritime Businesses in the Region and Sub-regions

Sub-Region	No	%
West of England	228	8.49
Bournemouth Dorset & Poole	483	17.99
Cornwall	686	25.55
Devon	897	33.41
Gloucestershire	117	4.36
Somerset	113	4.21
Wiltshire & Swindon	141	5.25
Unknown	20	0.74
South West Total	**2,685**	**100**

Source: SRRU Data Integration Model 2003

Table Four shows that when using the '*SRRU Data Integration Model*' 2,685 Marine and Maritime related businesses are recorded. In undertaking a similar exercise in 2001, the SRRU estimated that there were approximately 1,400 businesses in the Sector. The identification of these additional businesses in the Marine and Maritime Sector alters the previously held perception concerning the overall size of the Sector. This also highlights the fact that its significance regionally has been underestimated in terms of size and overall employment numbers, even when taking into account the previously upwardly revised SRRU 2001 estimate.

Upon closer examination, approximately 20% of these additional businesses consist of new start-ups or subsidiary businesses registered since 2001. Unfortunately, there is no comparable data available which covers the whole data-set for the rate of business failures and closures for the corresponding period. However, in returning to the commercial and/or official databases, which cover the Marine and Maritime Sector, an analysis of this data revealed that the rate of business failures and closures since 2001 is approximately 5%. It is not unreasonable to use this figure as a proxy indicator for the wider data-set in order to determine the rate of business failures and closures for the corresponding period. On this basis, an analysis of the figures generated by the '*SRRU Data Integration Model*' revealed that there has been a net growth of 15% in terms of business start-ups and registrations in the Sector since 2001, when allowing for a 5% decrease. The large majority of these new business start-ups and registrations have occurred in Marine and Maritime leisure related business activities.

The remaining businesses that have been identified using the '*SRRU Data Integration Model*' are not recorded on commercial and/or official databases and mainly consist of smaller businesses, often sole traders, in the Region that have either come into contact with or have established business support relationships with MSW, MST, ACMC and SRRU over a number of years. It is also worth noting that some of these businesses may have a low dependency on marine markets, with marine related manufacturing and/or services being a secondary or peripheral activity, for example, a general engineering company which provides some services and/or products to the marine Sector. In terms of employment for the Sector, there needs to be an upwardly revised figure from the 2001 estimate, given the identification of these businesses.

Using the official and/or commercial databases in the previous 2001 exercise, estimated employment for the Sector was approximately 20,000 people, based on a business count of 1,400. Indeed, when solely utilising official and/or commercial databases a similar picture emerged to the one discovered in 2001, and revealed that although there has been a 5% decrease in the number of businesses in the Sector since 2001, employment had remained stable at approximately 20,000. However, while the utilisation of the '*SRRU Data Integration Model*' has had the advantage identifying more of the Marine and Maritime Sector, the disadvantage is that employment numbers are unknown for the majority of these businesses. This situation can be clearly seen in Table Five, where the employment numbers for approximately 45% of the sector are classified as unknown. Table Five details the number of South West businesses that are in each employment band within the framework of the operational definition.

Table Five: South West Marine and Maritime Sector Employee Numbers by Sub-sector

Employee Band	Resource based industry	Design & Construction	Operations & Shipping	Equipment & Service	Totals
Unknown	33	94	91	998	1,216
1 - 5	116	87	110	715	1,028
6 - 10	14	20	28	160	222
11 - 19	5	6	17	62	90
20 - 49	3	8	14	44	69
50 - 99	0	2	4	25	31
100 - 200	1	1	2	8	12
200+	0	5	2	10	17
South West Total	**172**	**223**	**268**	**2,022**	**2,685**

Source: SRRU Data Integration Model 2003

In order to determine employment levels in the Marine and Maritime sector in 2001, SRRU used employment bands to calculate the estimated employment levels in the Region. This was achieved by using the employment band median as a multiplier for the six bands with the 200+ band being given a multiplier of 750. For the unknown set, a multiplier of five was used. In order to ensure consistency, this same approach has been adopted in this Report. This approach is also particularly appropriate in this instance, given the large number of businesses where the employment numbers are unknown. Based on the premise that the majority of businesses identified using the '*SRRU Data Integration Model*' mainly consist of smaller businesses, often sole traders, or micro business employing less than five people, this approach allowed a smaller multiplier to be used to reflect the estimated lower levels of employment in these businesses. Table Six shows the estimated employment levels in each of the Marine and Maritime sub-sectors and also details the sub-sectors share of employment on a percentage basis.

In summary, Tables Five and Six supply the following estimation: across the South West there are 31,580 people employed in 2,685 Marine and Maritime related businesses.

Table Six: South West Marine and Maritime Sector Employment Levels by Sub-sector

Employee Band	Multiplier	Resource based industry	Design & Construction	Operations & Shipping	Equipment & Service	Totals
Unknown	5	165	470	455	4,990	6,080
1 - 5	3	348	261	330	2,145	3,084
6 - 10	8	112	160	224	1,280	1,776
11 - 19	15	75	90	255	930	1,350
20 - 49	35	105	280	490	1,540	2,415
50 - 99	75	0	150	300	1,875	2,325
100 - 200	150	150	150	300	1,200	1,800
200+	750	0	3,750	1,500	7,500	12,750
Totals		**955**	**5,311**	**3,854**	**21,460**	**31,580**
% of total		**3.02**	**16.82**	**12.2**	**67.95**	**100**

Source: SRRU Data Integration Model 2003

Table Seven shows all of the 2,685, Marine and Maritime Sector businesses identified in the Region placed into their respective activity related categories. It can be seen from Table Seven, that the majority, 75.31%, of Marine and Maritime businesses in the Region are in the equipment and service providers sub-sector. The operations and shipping sub-sector forms the next largest category with nearly 10% of the total number of businesses recorded, closely followed by the design and construction sub-sector with just over eight percent, 8.31%. The smallest sub-sector relates to the resource based industries with 6.41% of all recorded businesses in this category. This information is also depicted in the form of a chart in percentage terms of the regional total by sub-sector, and shown in Chart One.

Table Seven: Marine and Maritime Sub-sectors in the Region

Sub-Sector	No	%
Resource Based Industries	172	6.41
Design & Construction	223	8.31
Operations & Shipping	268	9.98
Equipment & Service	2,022	75.31
Total	**2,685**	**100**

Source: SRRU Data Integration Model 2003

Chart One: Marine and Maritime Business in the Region by Sub-sector

Number of businesses

6%   8%   10%

76%

- Resource Based Industries
- Design and Construction
- Operations and Shipping
- Equipment and Service
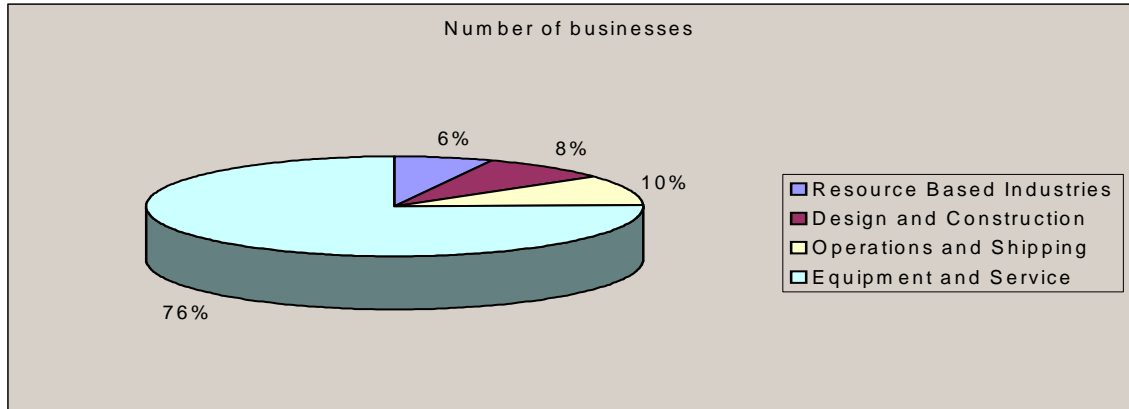
Source: SRRU Data Integration Model 2003

When breaking this information down in more detail, for the sub-regions, it can be seen from Table Eight that at the sub-regional level the largest concentration of resource based industries, 36.6%, is in the Devon sub-region, the largest concentration of design and construction businesses, 40.4%, are located in Cornwall, closely followed by Devon, 39.9%. In the operations and shipping sub-sector the majority of activities, 33.6%, are located within the Devon sub-region. Finally, in the equipment and service provider sub-sector, the largest concentration of activities, 32.4%, are also in the sub-region of Devon.

Table Eight: The Marine and Maritime Sub-Sectors within the Sub-Regions of the South West

Sub-regions	Resource Based Industries	Design & Construction	Operations & Shipping	Equipment & Service
West of England	7	13	46	162
%	4.07	5.83	17.16	8.01
Bournemouth Dorset & Poole	20	13	49	401
%	11.63	5.83	18.28	19.83
Cornwall	44	90	53	499
%	25.58	40.36	19.78	24.68
Devon	63	89	90	655
%	36.63	39.91	33.58	32.39
Gloucestershire	10	6	12	89
%	5.81	2.69	4.48	4.40
Somerset	13	7	9	84
%	7.56	3.14	3.36	4.15
Wiltshire and Swindon	15	5	9	112
%	8.72	2.24	3.36	5.54
Unknown	0	0	0	20
%	0	0	0	0.99
Total	**172**	**223**	**268**	**2,022**
%	**100**	**100**	**100**	**100**

Source: SRRU Data Integration Model 2003

Table Nine shows the total of all sub-sector businesses within the sub-regions and clearly highlights that the sub-region of Devon is the regional Marine and Maritime Sector hub and contains 33.4% of all Marine and Maritime businesses, followed by Cornwall, 25.55%, and the Bournemouth, Dorset and Poole sub-region, 18%. The other four sub-regions of the South West contain relatively few Marine and Maritime Sector businesses with only 22.31%, of the total between them. This is also depicted in Chart Two, which clearly shows the significance of three main sub-regions and the sub-sector activities within them.

Table Nine: Sub-regional Marine and Maritime Businesses by Sub-sector

Sub-regions	Resource based industries	Design & Construction	Operations & Shipping	Equipment & Service	Totals	Percentage of total by area
West of England	7	13	46	162	228	8.49%
Bournemouth, Poole & Dorset	20	13	49	401	483	17.99%
Cornwall	44	90	53	499	686	25.55%
Devon	63	89	90	655	897	33.41%
Gloucestershire	10	6	12	89	117	4.36%
Somerset	13	7	9	84	113	4.21%
Wiltshire and Swindon	15	5	9	112	141	5.25%
Unknown	0	0	0	20	20	0.74%
South West	**172**	**223**	**268**	**2,022**	**2,685**	**100.00%**

Source: SRRU Data Integration Model 2003

Chart Two: Sub-regional Marine and Maritime Businesses by Sub-sector
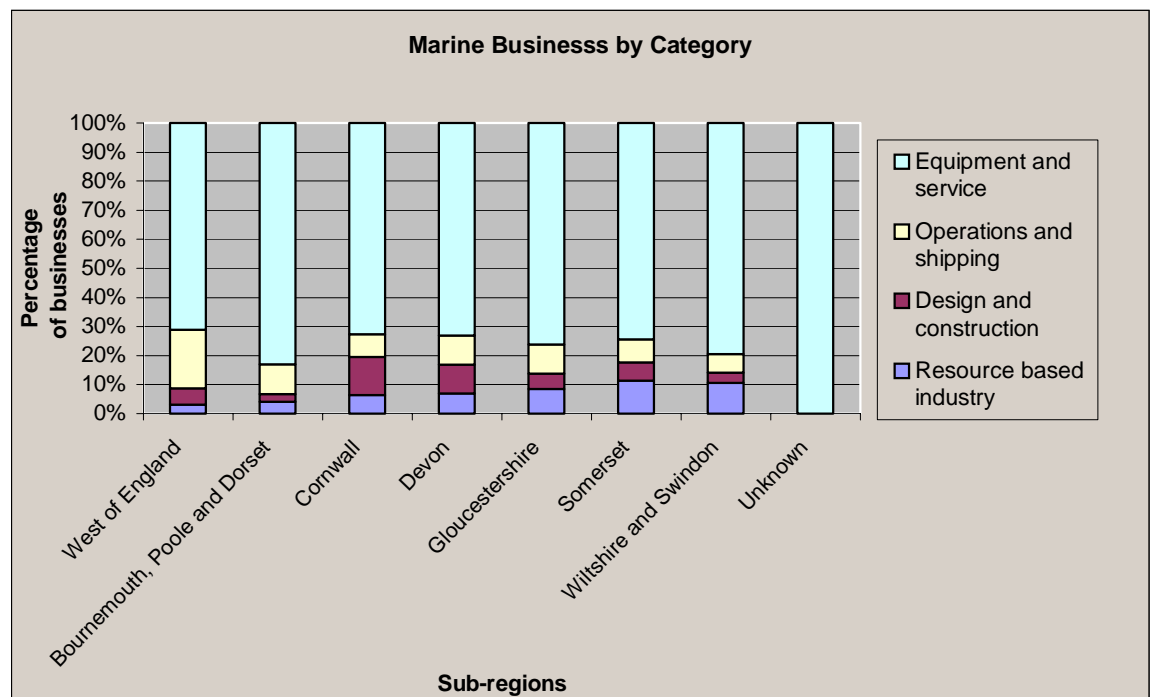
Source: SRRU Data Integration Model 2003

2.3   Regional and Sub-Regional Marine and Maritime Clusters

The SRRU 2001 Report[15] identified seven clusters and/or concentrations of marine based industries within the Region. A similar exercise was undertaken for this Report, utilising the *'SRRU Data Integration Model'* which allowed the data to be accessed on the basis of postcodes. It was therefore possible to profile various areas, defined by associated postcodes, in the search for clusters and/or concentrations made up from marine related businesses in the South West in a similar manner. Table Ten shows the areas, with associated postcodes, that registered the highest business counts. Chart Three and Figure One both show the locations and the respective sizes of the Marine and Maritime clusters identified within the Region.

These seven regional clusters constitute approximately 45% of the regional Marine and Maritime Sector which between them contain 1,205 businesses. These seven clusters are identical in location to those uncovered in 2001, although, through a combination of lapsed time, and the utilisation of a larger data-base, some differences are revealed. Proportionally, these clusters combined contain a slightly smaller percentage of Marine and Maritime Sector in the Region. Perhaps the most significant difference between the two exercises reflects the change in the size of the data-sets as a whole. The other significant difference is that in 2001, the largest cluster identified in the Region was Bristol (121 businesses). In this exercise, Bristol has been replaced by the Plymouth cluster (270) in terms of size.

Table Ten: Marine Sector Business Clusters: South West Region

Area	Postcodes	Number of Businesses	% of total number of Businesses
Bristol	BS1-BS49 (except BS10, BS13, BS22, BS25, BS27, BS28, BS30, BS39)	191	7.11%
Falmouth/Penryn	TR10, TR11, TR15	181	6.74%
Penzance/Newlyn	TR18-TR20, TR25	71	2.64%
Plymouth	PL1-PL9	270	10.06%
Poole	BH12-BH18	208	7.75%
South Hams	PL21,TQ6-TQ9	159	5.85%
Torbay	TQ1-TQ5	125	4.66%
Clusters Total		**1,205**	**44.88**
Total South West		**2,685**	**100.00%**

Source: SRRU Data Integration Model 2003

Table Eleven details the results of the business count for these seven clusters broken down into the eight employment bands.

Table Eleven: South West Marine Businesses: Distribution by Employment Bands

	unclassified	1 to 5	6 to 10	11 to 19	20 to 49	50 to 99	100 to 200	200 +	Totals
Bristol	90	61	16	14	4	4	1	1	191
Falmouth/ Penryn	90	62	11	6	7	1	2	2	181
Penzance / Newlyn	29	27	9	3	2	1	0	0	71
Plymouth	142	74	18	9	13	6	1	7	270
Poole	96	77	21	4	4	2	2	2	208
South Hams	69	63	19	4	2	2	0	0	159
Torbay	38	62	18	5	2	0	0	0	125
Totals	**554**	**426**	**112**	**45**	**34**	**16**	**6**	**12**	**1,205**
% of total	**45.98**	**35.35**	**9.29**	**3.73**	**2.82**	**1.33**	**0.50**	**0.99**	**100**

Source: SRRU Data Integration Model 2003

Table Twelve once again uses the employment band multiplier to calculate estimated employment levels in the seven areas.

Table Twelve: South West Marine Business: Distribution by Estimated Employment Levels

Multiplier	5	3	8	15	35	75	150	750	Totals
Bristol	450	183	128	210	140	300	150	750	2,311
Falmouth/ Penryn	450	186	88	90	245	75	300	1,500	2,934
Penzance/ Newlyn	145	81	72	45	70	75	0	0	488
Plymouth	710	222	144	135	455	450	150	5,250	7,516
Poole	480	231	168	60	140	150	300	1,500	3,029
South Hams	345	189	152	60	70	150	0	0	966
Torbay	190	186	144	75	70	0	0	0	665
Totals	**2,770**	**1,278**	**896**	**675**	**1,190**	**1,200**	**900**	**9,000**	**17,909**
% of total	**15.46**	**7.14**	**5.00**	**3.77**	**6.64**	**6.70**	**5.03**	**50.25**	**100**

Source: SRRU Data Integration Model 2003

Therefore, these 1,205 businesses make up 45% of the regional total of 2,685 businesses. The 17,909 estimated workforce makes up 56.7% of the overall estimate of 31,580 employees.

Chart Three: South West Marine and Maritime Clusters

Number of businesses within Marine Sector Clusters
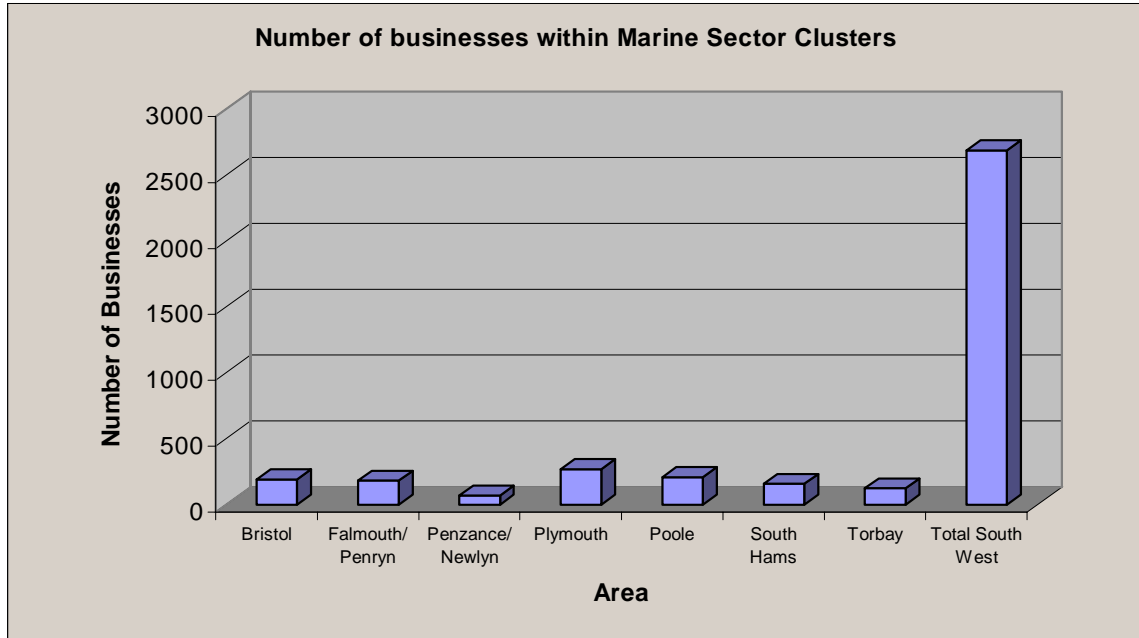
Source: SRRU Data Integration Model 2003

Figure One: The Location and Size of the Seven Identified Marine and Maritime Clusters
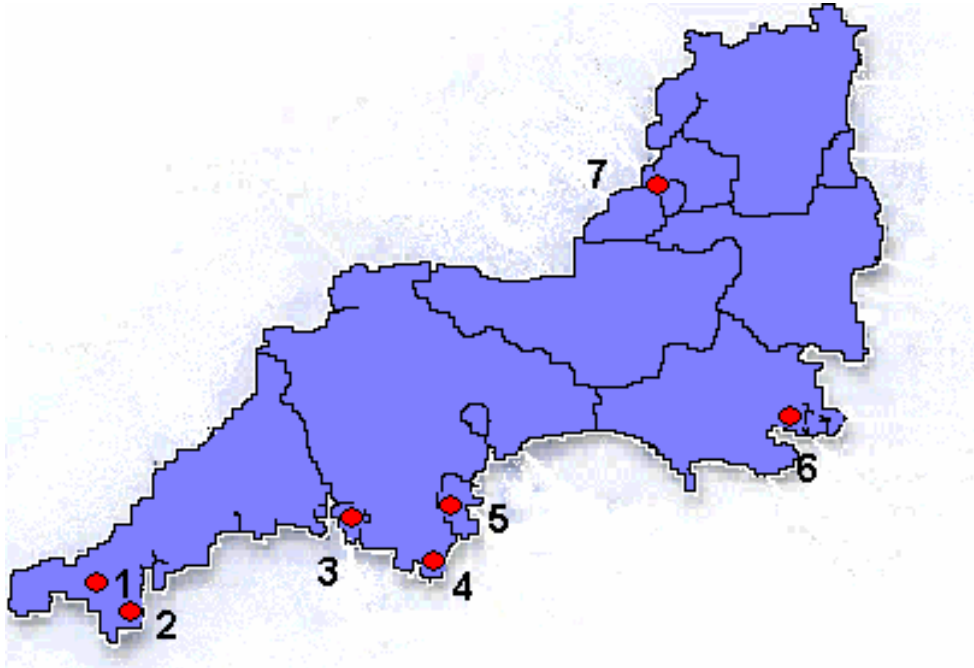
Key to Figure One: Map Number and Corresponding Cluster Size

Number	Cluster	Marine Businesses
1	Penzance/Newlyn	71
2	Falmouth/ Penryn	181
3	Plymouth	270
4	South Hams	159
5	Torbay	125
6	Poole	208
7	Bristol	191

2.4 Regional and Sub-Regional Marine and Maritime Education and Training Provision

An investigation of training and education for the Marine and Maritime Sector was conducted for the 2001 Report, and listed a total of 141 courses related to the Sector. After repeating the same exercise for this current study, only 129 Marine and Maritime related courses were identified, which corresponds to an overall loss of 12 (8.5%) courses. This reduction in courses is even more dramatic in light of the University of Plymouth offering a net gain of 22 courses since 2001. Perhaps what is more serious for the Marine and Maritime Sector, and related education and training in the Region, is the fact that there has been a substantial decline in the 27 providers listed in 2001. The most notable change has been the ending of all marine courses at the City of Bath

College. The College has ceased to provide Marine and Maritime related courses because of the reduction in the numbers employed by the Ministry of Defence in the area, and a lack of students enrolling on courses.

The remaining 14 providers from the 2001 survey have been removed from this listing as their previously identified courses in engineering are not related to the Marine and Maritime Sector or the colleges no longer offer marine-related courses. There are only 12 providers now offering Marine and Maritime related education and training in the Region which corresponds to an overall reduction of 15 providers (55.5%) since 2001. There are however, a small number of private sector providers in the Region, which offer some Marine and Maritime related short-courses, for example in Plymouth, and others that also act as facilitators or managing agents for the Modern Apprenticeship programme, such as ITE in Poole. The British Marine Federation (BMF) also provides Marine and Maritime Sector training for businesses that are members of the organisation in the Region. Larger businesses within the Region, echoing a sector-wide concern over the provision of skills training relevant to their businesses, also provide much of their own training and are active in providing and supporting apprenticeship programmes, either-in-house or through local Group Training Associations.

The current listing for Marine and Maritime education and training provision is detailed as follows.

Appledore Shipbuilders, Bideford, Devon:

Course	Type	Duration	Qualification
Shipbuilding Skills	Full time on site	Variable	NVQ 2/3

Bournemouth and Poole College of Further Education:

Course	Type	Duration	Qualification
Geography and Coastal Conservation	Full time	7 term	BTEC HND

Bournemouth University:

Course	Type	Duration	Qualification
Coastal Zone Management	Full time	1 year	MSc
Geography and Coastal Conservation	Full time	2 years	BTEC HND
International Maritime Management	Full time	1 year	MSc
Environmental and Coastal Management	Full time	3 year	BSc

Cheltenham Tutorial College:

Course	Type	Duration	Qualification
Maritime Management	Learn at home course	Variable	MA/MBA awarded by Leicester University

Cornwall College:

Course	Type	Duration	Qualification
Yacht & Boat Building and Ship Joinery	Full time	2 years in Falmouth	C&G 2450
Marine Craft Technology	Full time	2 years	BTEC HND
Marine Leisure Management	Full time	2 years	BTEC HND
Boat Design	Full time or Part time	2 years in Falmouth	BTEC C&G 2450
Boat Restoration	Full time	2 years in Falmouth	NVQ Level 2
Maritime Studies	Full time	2 years in Falmouth	BTEC HND
Marine Engineering	Full time	2 years in Falmouth	BTEC
Marine Leisure Studies	Full time	2 years in Falmouth	BTEC
Marine Science	Full time	2 years in Falmouth	BTEC
Environmental Management	Full time	2 years in Falmouth	BTEC HND
Marine and Freshwater Biology	Full time	2 years at Camborne Community Centre	BTEC HND
Marine Craft Fitting	Part time	1 year in Falmouth	C&G 2440 Part 2
Outdoor Education	Full time	2 years	BTEC HND

College of Falmouth, Cornwall:

Course	Type	Duration	Qualification
Boat Restoration	Part time	2 year	NVQ Level 2
Boat Restoration and Conservation	Full time	1 year	College Certificate
Watersports Instructor Studies	Part time	1-2 year	NVQ Level 2
Traditional Boat Building	Full time	1 year	C&G Level 3
Watersports Instructor	Full time or part time	2 years	National Certificate
Marine Engineering and Design	Flexible full time or part time	2 years	BTEC HND
Marine Biology and Ecology	Full time	2 years	BTEC HND
Yacht and Boat Design	Full time	1 year	C&G 2450
Boat Building and Boat Reinstatement	Modern Apprenticeship	Up to 4 year	NVQ Level 3

College of Falmouth, Cornwall:/continued…..

Course	Type	Duration	Qualification
Light Marine Engineering	Full time	1 year	C&G 2440 and SEMTA NVQ Level 1
Boat Design	Full time or Part time	2 years	BTEC HND
Marine Leisure Management	Full time or Part time	2 years or 4 years	DipHE/HND/HNC
Marine Science	Full time	2 years	BTEC HND

Interdive Services, Plymouth, Devon:

Course	Type	Duration	Qualification
ROV Pilot and Basic Electronics	Full time	4 weeks	IMCA Certificate
ROV Pilot	Full time	2 weeks	IMCA Certificate
ROV Electrical and Electronic Systems Servicing	Full time	2 weeks	IMCA Certificate
ROV Electronic Engineering and Servicing	Full time	2 weeks	IMCA Certificate

Lyme Regis International School of Boatbuilding:

Course	Type	Duration	Qualification
Yacht and Boat Building – ship joinery craft studies	Full time	38 weeks	C&G Technical Certificate
Boatbuilding – spar and oar making	Full time	3 days	
Boatbuilding – tool setting and sharpening	Full time	2 days	
Boatbuilding – lofting	Full time	2 days	
Boatbuilding & Repair – basic clinker	Full time	3 days	
Boatbuilding & Repair – modern wooden	Full time	3 days	
Boatbuilding – Cold Moulding Techniques	Full time	2 days	
Boatbuilding – Build a Dinghy	Full time	5 days	
Boatbuilding – General Reinforced Plastics	Full time	5 days	
Boat Fit Out	Full time	12 weeks	LRISB Certificate

Open University:

Course	Type	Duration	Qualification
Earth Sciences	Self study	Variable	OU Diploma
S180 Life in the Oceans: Exploring our Blue Planet	Self study	Up to 5 months	10 points towards a degree (360 total)
Oceanography	Self study	9 months	30 points towards a dregee

Plymouth College of Further Education, Devon:

Course	Type	Duration	Qualification
Ship Construction & Naval Architecture	Part time 1 day and evening per week	2 years	BTEC
Long Range Certificate	Flexible course	Variable	
Restricted Operators Certificate	Full time	3 days	AMREC Certificate radio operator (GMDSS)
Short Range Certificate	Full time	3 days	AMREC Certificate radio operator (GMDSS)
Ship Construction & Naval Architecture	Part time 1 day and evening per week	2 years	BTEC HND
Efficient Deck Hand	Full time	1 week	Part NVQ
Stability 1,2,3	Full time	1 week	Part NVQ
Basic Safety	Full time	1 day	Part NVQ
Cargo	Full time	1 week	Part NVQ
Navigation and Radar	Full time	2 weeks	Part NVQ
Management	Full time	1 week	Part NVQ
Medical Care	Full time	1 week	Part NVQ
Vessel Operations 1, 2	Part time	1 week	Part NVQ
Basic Fire Fighting	Part time	3 Day	Part NVQ

Stoke Damerel Community College, Plymouth, Devon:

Course	Type	Duration	Qualification
Leisure Studies	Full time	2 years	BTEC

University of Plymouth, Devon:

Course	Type	Duration	Qualification
Marine Biology	Full time	3 years	BSc Hons
Marine Navigation	Full time	3 years	BSc Hons
Marine Systems Technology	Full time	3 or 4 years	BEng Hons MEng
Surf Science and Technology	Full time	3 years or 4 years with placement	BSc Hons
Marine Biology and Coastal Ecology	Full time	3 years	BSc Hons
Marine Biology with Ocean Science	Full time	3 years or 4 years with placement	BSc Hons
Marine Sports Technology	Full time	3 years or 4 years with placement	BSc Hons
Maritime Business	Full time	3 years	BSc Hons
Applied Marine Science	Full or part time	10 months – year or 2 years –18 months	MSc or Postgraduate Diploma
International Shipping/Logistics	Full time	1 year	MSc or Postgraduate Diploma
Maritime History	Full time or Part time	2 – 3 years or 4– 6 years	Mphil or PhD
Navigation	Full time or Part time	2 – 3 years or 4 – 6 years	Mphil or PhD
Shipping Marketing	Full time or Part time	2 – 3 years or 4 – 6 years	Mphil or PhD
Environmental Biology	Full time	3 years	BSc Hons
Plant Discovery and Exploitation	Full time	3 years	BSc Hons
Marine Technology	Full time	3 years	BSc Hons
International Shipping& Logistics Management	Full time	9 months	Postgraduate Diploma
European Shipping& Logistics Management	Full time	9 months	Postgraduate Diploma
Hydrography	Full time	9 months or 1 year	PgDip/MSc
Hydrographic Surveying	Full time	10 months	PgDip
Manufacture of Advanced Composites	Full time or Part time	2 or 3 years or 4 or 6 years	MPhil/PhD
Marine Technology	Full time or Part time	2 or 3 years or 4 or 6 years	MPhil/PhD
Maritime Business with Maritime Law	Full time	3 years	BSc Hons
Maritime Business with Logistics	Full time	3 years	BSc Hons
European and Overseas Maritime and Transport Policy and Operations	Full time or Part time	2 or 3 years or 4 or 6 years	MPhil or PhD
Civil and Coastal Engineering	Full time	3 years or 4 years with placement	BEng Hons or BSc Hons
Coastal Engineering	Full time	2 or 3 years or 4 or 6 years	MPhil/PhD
Civil and Coastal Engineering	Full time	4 years or 5 years with placement	MEng
Ocean Science	Full time	3 years	BSc Hons

University of Plymouth, Devon: continued/…..

Course	Type	Duration	Qualification
Ocean Exploration	Full time	3 years	BSc Hons
Chemistry with Ocean Science	Full time	3 years	BSc Hons
Geography with Ocean Science	Full time	3 years	BSc Hons
Geology with Ocean Science	Full time	3 years	BSc Hons
Ocean Science with Computing	Full time	3 years	BSc Hons
Ocean Science with Mathematics	Full time	3 years	BSc Hons
Marine Sediment Dynamics	Full time or Part time	2 or 3 years or 4 or 6 years	MPhil or PhD
Physical Oceanography	Full time or Part time	2 or 3 years or 4 or 6 years	MPhil or PhD
Ocean Science with Geography	Full time	3 years	BSc
Rheology	Full time or Part time	2 or 3 years or 4 or 6 years	MPhil or PhD
Ocean Science with Geology	Full time	3 years	MSc Hons
Environmental Modelling	Full time or Part time	2 or 3 years or 4 or 6 years	PhD or Mphil
Meteorology	Full time or Part time	2 or 3 years or 4 or 6 years	MPhil or PhD
Science and the Media	Full time	3 years	BSc Hons
Marine Bio Science	Full time	3 years	BSc Hons
Applied Marine Sports Science	Full time	3 years	BSc Hons
Environmental Science and Biodiversity and Conservation	Full time	3 years	BSc Hons
Environmental Science and Environmental Health	Full time	3 years	BSc Hons
Environmental Science and Environmental Sustainability	Full time	3 years	BSc Hons
Environmental Science and Environmental Change	Full time	3 years	BSc Hons
Environmental Science and Marine Conservation	Full time	3 years	BSc Hons
Port Management	Full time	1 year	MSc
Applied Marine Science	Full time	1 year	MSc
Coastal Ocean Policy	Full time	1 year	MSc and MRes
Geomatics	Full time	1 year	MSc and MRes
Sustainable Environmental Management	Full time	1 year	MSc and Mres
Applied Fish Biology	Full time	1 year	MRes
Aquatic Ecotoxology	Full time	1 year	MRes
Biological Diversity	Full time	1 year	MSc
Biological Conservation	Full time	1 year	MSc

University of Plymouth, Devon:/continued

Course	Type	Duration	Qualification
Marine Biology	Full time	1 year	MRes
Global Change	Full time	1 year	MSc and MRes
Micro Palaeontology	Full time	1 year	MRes
Environmental Analysis	Full time	1 year	MRes
Environmental Monitoring and Management	Full time	1 year	MSc

Figure Two maps the Marine and Maritime education and training providers in the Region.

Figure Two: Marine and Maritime Education and Training Providers in the Region
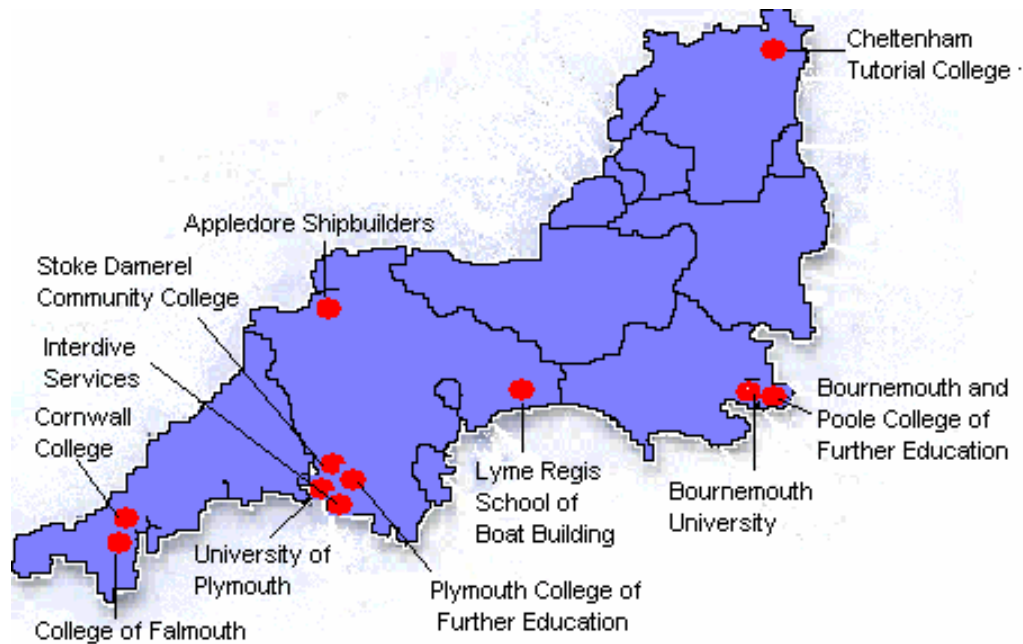
Note: The map shows only 11 providers in the Region, the Open University is the other provider

2.5 Marine South West and the Engineering Employers Federation Training Needs Analysis

Marine South West and the Engineering Employers Federation undertake on an ongoing basis training needs analyses of Marine and Maritime related businesses. Utilising the *'SRRU Data Integration Model'*, it has been possible to re-analyse the data to delineate skills, and thus those training needs highlighted to MSW and the EEF by employers. The total database consisted of 290 TNAs and the results of the analysis are shown in Tables Thirteen and Fourteen.

Table Thirteen: Re-analysis of the MSW and EEF: TNAs for the Marine and Maritime Sector

Skills: Training Needs	MSW	EEF	Totals
Business & Management	17%	39.4%	56.4%
Composites	4.6%	1.4%	6%
Customer Handling Skills	1.9%	*	1.9%
Gas & Electrical Skills	2.8%	8.8%	11.6%
IT	20.2%	55.6%	75.8%
Legal & legislative	1.9%	*	1.9%
Marketing	6.5%	22.8%	29.3%
Mechanical Engineering	5.1%	32.7%	37.8%
Painting & Finishing	2.8%	1.4%	4.2%
Radar, Navigation & Communications	7%	*	7%
Health & Safety, First Aid, Survival and Fire Fighting	6.1%	7.4%	13.5%

Source: MSW and EEF TNAs, 2003

It can be seen from Table Thirteen that the most frequently requested training need related to IT, with 75.8% of businesses requesting training in this area. However, the need was more apparent for engineering related businesses than for businesses from the MSW data-set. Generic business and management skills were also a high training priority for 56.4% of businesses within the analysis, again, the need was higher in engineering businesses than in the wider business population. Predictably, given the large number of engineering businesses in the data-set, the acquisition of engineering skills was high on the list of training need, with 37.8% of businesses requesting training in this area. Another generic skills need also came out as a high priority for 29.3% of businesses from the analysis, and related to the acquisition of marketing skills.

Furthermore, the analysis revealed three other areas not directly related to a specific skill need but more to related areas or themes. Table Fourteen shows these three topics noted as areas of need or concern by businesses who undertook TNAs with MSW and the EEF.

Table Fourteen: Re-analysis of the MSW and EEF: TNAs for the Marine and Maritime Sector

	MSW	EEF	Totals
High Level Technical Skills	7.4%	44.7%	52.1%
Recognised Qualifications	27.1%	17.9%	45.0%
Recruitment Difficulties	8.7%	5.6%	14.3%

Source: MSW and EEF TNAs, 2003

The acquisition of higher level technical skills in the workforce was a major concern for over half of those businesses completing TNAs, as was the acquisition of recognised qualifications by the workforce. The other issue that came out of the re-analysis of the MSW and EEF TNAs related to the concerns of recruitment difficulties for 14.3% of all businesses. All of the training needs identified through this re-analysis of MSW and the EEF TNAs will be considered with the primary data gathered from the survey regarding training needs in the next section.

2.6   The South West Marine and Maritime Sector Skills Survey

The survey sample was designed to ensure that it was representative of the Marine and Maritime Sector in the region. Weighting methods were employed to ensure that the sample reflected the sub-regions and sub-sectors. However, given that the aims and objectives of this study relate to the education, training and skills needs in the Marine and Maritime Sector, an over representation of larger businesses, and thus employers in the Region, was incorporated in order to assess the needs of as many of those employed in the Sector as possible. Therefore, because of this adjustment the sample reflects approximately 47% of the total Marine and Maritime workforce in the Region.

To summarise the statistical element of the survey, of those businesses surveyed, 20.3% operated as sole-traders, the majority, 61.1%, were companies limited by guarantee (Ltd), 12.7% were Partnerships, 1.6% were Public Limited Companies (PLC) and a further 4.4% were Government Departments or agencies. The large majority, 98.6% of businesses, were independent businesses and the remaining 1.4% of businesses were franchised operations. Of those that answered the question on how long their business had been trading, 15.7% indicated that they had been trading for five years or less, while 16.9% of businesses had been trading for between six and ten years. The remaining 67.4% of the businesses surveyed had been trading for more than 11 years; the most notable case claims to have been trading for 346 years.

The most interesting statistic concerned the amount of new start-up businesses in the Region. The level of new start-ups in itself is high within the Sector at 15.7%, but the most revealing statistic is that 75% of new start-ups in the Sector since 2001, have been in the equipment and service provider sub-sector, more specifically, Marine and Maritime retail and leisure related businesses. These new start-ups include marinas, surf equipment and clothing manufacturers and retail outlets, yachting and boating equipment manufacturers and suppliers, retail outlets and services. Many of these new start-ups are also directly related to the provision of the leisure experience, including extreme sports and Marine and Maritime related tourism and pursuits providers. Indeed, many of those surveyed in this sub-sector described their businesses as *'booming'*, which is in sharp contrast to some of those surveyed in the design and

construction sub-sector associated with ship and boat building, who commented that they were struggling to survive.

Employment numbers gathered from the survey show that 64.2% of businesses, or the majority of businesses in the sample, are micro-businesses employing ten people or fewer, with a further 21% of small businesses employing between 11 and 49 people. There were a further 8% of businesses surveyed employing between 50 and 99 people, and another 2.8% of businesses that employed 100 to 200 people. Of the larger businesses in the sample, 3.7% employed between 201 and 4,000 people. In total, the 325 businesses surveyed employed approximately 17,000 people.

Further analysis of these employment figures revealed that approximately 12.5% of the workforce surveyed were young people under the age of 21, a further 39.6% of the workforce were aged between 22 and 40 years old and the remaining 47.9% were over 40 years old. These figures for the Region confirm the findings from other research undertaken elsewhere in the Sector, that there is an aging workforce with few younger people coming into the Sector. The majority of employees in the Marine and Maritime Sector are employed on a full-time basis with mainly administrative, financial and other support staff being employed part-time.

Many of the businesses, 51.7%, that responded to the question concerning membership of trade associations or other external organisations were members of such associations and organisations, while the remaining 48.3% were not. The greatest number of businesses, 11.7%, were members of the British Marine Federation, while 11.1% were members of the National Federation of Small Businesses. Others were members of Business Links, 7.2%, or their local Chambers of Commerce 5.4%. The membership of other associations and organisations was very specific to the area of business activity and included, for example, the Association of British Sailmakers and the Engineering Employers Federation.

Results from the survey concerning ICT sophistication and e-commerce activity in the Marine and Maritime Sector revealed that a very large number, 83.5%, used e-mail for internal and external communications. Of these, 72.6% of businesses also had a website; this percentage dropped to 32.4% when they where asked if they placed orders and/or paid suppliers on-line.   In response to the question on the highest level of ICT use and sophistication, only 14.8% of the businesses had an open ICT system to support its relationship with customers and suppliers. ICT adoption in the Marine and Maritime Sector, at least at the lower levels of sophistication and e-commerce, are high in comparison to many other sectors. However, in reality although many businesses in the sector used ICT there is a strong demand for training in this area with many businesses commenting that they do not utilise ICT to its full business potential. For example, 72.6% of businesses surveyed had a website, but on further questioning a number of businesses revealed that their websites had been set up for them by professional ICT companies and that they do not know how to update their own sites. Some businesses websites were more than two years out of date at the time of the survey.

Investors in People (IiP) is a national standard which sets a level of good practice for improving organisational performance through developing employees.   Monitoring the achievement of IiP or the commitment to IiP for businesses within the Sector provides a good indicator for Sector work force development within the Region. A question on IiP revealed that only 7.7% of those businesses that answered the question had IiP recognition, with 1.3% working towards IiP recognition. A further 0.3% of businesses were either thinking about or intending to apply, while the majority of businesses, 88.1%, were not involved in the programme. Many businesses thought they were too

small to be involved in the programme, or alternatively, did not perceive a business benefit from being involved.

A question concerning businesses approach to training revealed that 22% of businesses planned their training in advance, with training linked to their strategic business goals. A further 11.3% of businesses stated that some training was planned and that sometimes it was linked to their strategic business goals. The majority of businesses, 60.5%, stated that training was not really planned and that they provide training when the need arises. However, a related question revealed that 61% of all of these businesses considered that they had a training policy of some sort for their staff. When asked if training helps to improve staff retention, 61.9% of businesses responded that training does help to retain staff. The remaining 38.1% of businesses took the opposite view and considered that training staff may actually act as a catalyst for loss of staff by encouraging them to seek better paid employment elsewhere.

When businesses were asked where their training was carried out, 20% trained in-house, 6.9% used external organisations, with 37.7% of businesses, using a mixture of in-house and external training. The remaining businesses either did not answer this question, or did not think it was applicable to their business because they did not provide staff training. A large number of businesses, 44.2%, had provided some form of training for between one and five employees during the previous 12 months. A further 10.5% of businesses had provided training for between six and ten employees. Of the larger businesses, 2.8% had provided training for over 100 of their employees during the same period, including those that had received training on the Modern Apprenticeship programme. The type of skills training was diverse, but mainly revolved around Health & Safety, first aid, IT skills, engineering and machinery operations. In several instances, training was provided for customer service, generic business and finance skills. There was also a host of more specialised skills training, such as search and rescue and fisheries enforcement skills. The majority of businesses, 77%, claimed that they were satisfied with the training their employees were currently receiving.

In addition to questions relating to training activity, three key skills elements were also included in the questionnaire: skills shortages, skills gaps and other recruitment difficulties. Skills shortages are considered to exist where there is a genuine lack of adequately skilled individuals available in the accessible labour market. Skills gaps, on the other hand, exist where employers feel that their existing workforce has fewer skills than necessary to meet their business objectives. Alternatively, skills gaps may exist where employers feel that new entrants to the labour market are apparently trained and/or qualified for occupations, but still lack a variety of the skills required, and in some cases, these latent skills gaps may not be visible to the employer.

Apart from skills gaps and shortages, the work of the Skills Task Force has provided another 'tool' to help in labour market analysis when assessing the current position, needs and future requirements of employers, and this is a third category of 'other recruitment difficulties'. This is an umbrella term incorporating all other forms of employer recruitment problems, except for the other gaps and shortages categories. Problems can be caused by poor recruitment practices, poor terms and conditions of employment, and can occur even when there are sufficiently skilled individuals available and accessible for work. To sum up:

- ❖ Skill shortages are produced by shortcomings, external to the organisation.

- ❖ Skill gaps are produced by shortcomings, which can be external, but can also be internal to the organisation.

❖ Other recruitment difficulties are normally produced by shortcomings internal to the organisation.

Skills Shortages

Many businesses reported problems in recruitment to skilled trades. Of those that answered the question on recruitment difficulties, 39.7% confirmed that they had had problems. The main reasons given to explain these difficulties were a lack of:

❖	people with the right skills	:	26.5%
❖	suitable applicants in the area	:	20.4%
❖	people with the right experience	:	18.4%
❖	people with the right qualifications	:	16.7%
❖	applicants interested in the types of positions offered	:	15.6%

The remaining 60.3% of businesses surveyed reported no particular problems in recruiting suitable staff.

Those with recruitment difficulties employed a number of different methods to overcome these problems. The most common approach to overcome recruitment problems taken by 12.7% of businesses involved recruiting less qualified and experienced staff than they had advertised positions for, and just under half of this number, 6.2%, advertised out of the local area while 5.2% of businesses simply turned work away. A small number of businesses, 2.7%, relied on increasing the overtime available to existing staff and slightly more, 3.1% re-advertised the positions with improved pay and conditions. Only 12.6% of those that answered a question on their organisations' ability to retain suitably qualified workers had experienced problems in retaining them, while just over four fifths of businesses, 80.5%, had experienced no particular problems in retaining their staff.

Skills Gaps

The large majority of businesses 84.4%, thought that their workforce had all the skills needed to meet the demands of their organisations. Only 14.6% of businesses thought that that their existing workforce had fewer skills than necessary to meet their business objectives. For those that perceived skills as missing in their workforces a high percentage, 41.5%, noted ICT skills as missing, and 20.4% considered customer care and service skills as missing. The range and types of other skills cited by employers as missing in their staff were wide and varied. There were also differences across the sub-sectors. Table Fifteen details the skills noted as missing for the sub-sectors. However, it must be emphasised that these figures only represent 14.6% of the overall sample.

Table Fifteen: Marine and Maritime Skills Gaps in the sub-sectors

Missing Skills	Resourced Based Industries	Design & Construction	Operations & Shipping	Equipment & Service
Business & Management skills	*	6%	*	10%*
Carpenters	*	4%	*	*
Customer Relations	*	2%	*	5%
Electronic Engineering	*	2%	*	10%
First Aid	4.3%	*	*	*
Health & Safety	4.3%	*	*	*
IT	*	*	4.6%	1%
Laminators	*	*	*	15%
Mechanical Engineering	*	6%	*	20%
Numeracy / literacy	*	*	*	1.9%
Painting/ Finishing	*	4%	*	*
Rigging	*	2%	*	*
Seamanship & Boat Skills	*	4%	*	15%
Welding & Fabrication	*	4%	*	*

* denotes No figures recorded
Source: South West Marine and Maritime Survey 2003

It can be clearly seen in Table Fifteen that the majority of skills gaps occur in the workforces of the equipment and service provider and design and construction sub-sectors. Business and management and engineering skills gaps are particular problems common to both sub-sectors. Seamanship and boat skills are also particular problems to both sub-sectors. While in the operations and shipping sub-sector the introduction of new technology both on board ships and vessels and in port operations has created a skills gap in IT. In resource-based industries, basic skills in Health & Safety and first aid, which are both linked to regulatory requirements, are highlighted as the only skills gaps.

Table Sixteen details the skills gaps by sub-region.

Table Sixteen: Marine and Maritime Skills Gaps in the Sub-regions

Missing Skills	WoE	B'mth. Poole & Dorset	Cornwall	Devon	Gloucestershire	Somerset	Wiltshire & Swindon
Business & Management Skills	2.8%	*	1%	1%	*	*	*
Carpenters	*	*	*	1%	*	*	*
Customer Relations	2.8%	*	*	*	*	*	*
Electronics Engineering	*	3.4%	1%	*	*	*	*
Mechanical Engineering	5.6%	5.1%	2%	3%	*	*	*
IT	5.6%	*	2%	1%	*	*	*
Laminators	*	*	*	*	*	*	33%
Numeracy/ literacy	*	*	4%	*	*	*	*
Painting/ Finishing	*	*	2%	*	*	*	*
Rigging	2.8%	*	*	*	*	*	*
Seamanship & Boat Skills	2.8%	*	*	1%	*	*	*
Welding & Fabrication	*	*	2%	1%		*	*

* denotes No figures recorded
Source: South West Marine and Maritime Survey 2003

Businesses in the Cornwall sub-region reported the most skills gaps in their workforces with the most surprising gap relating to the literacy and numeracy of some of their staff. Skills gaps were also reported in engineering, IT, painting and finishing, welding and fabrication and business and management skills. Although the Cornwall sub-region reported the widest number of skills gaps, businesses in the West of England sub-region reported more severe skills gaps in particular areas. Skills gaps in their workforces were reported as being especially acute in mechanical engineering and IT. Problems were also noted in rigging, seamanship and boat skills, as well as in the more generic business areas of business and management and customer relations skills.

In the Devon sub-region, while businesses reported a wide range of skills gaps, the problems were less severe with few business reporting gaps in their workforces. The only exception related to engineering skills which was also the only area reported by businesses in the Bournemouth, Poole and Dorset sub-region, although these skills gaps were noted as being particularly severe in the Poole cluster. In the Wiltshire and Swindon sub-region there appears to be an anomaly where a very large number of businesses reported skills gaps relating to fabrication. However, it must be noted that there are few Marine and Maritime businesses in this sub-region and even fewer that reported skills gaps in their workforces. In this case, just one employer noted this skill gap, but it is enough to skew the data in this instance.

When looking at skills gaps reported by different sizes of business, skills gaps reported by businesses with larger workforces obviously affect a large number of employees. Table Seventeen reveals that there appears to be some acute skills gaps in the workforces of large businesses in the Region. Engineering skills gaps seem to be

prevalent across businesses of all sizes. The other skills gaps in larger businesses relate to painting and finishing, welding and fabrication and carpentry and joinery, and these skills gaps affect the competitiveness of the Marine and Maritime Sector in the Region.

Table Seventeen: Marine and Maritime Skills Gaps by Employment Bands

Missing Skills	1-5	6-10	11-19	20-49	50-99	100-200	201-4000
Business & Management Skills	7%	1.6%	3.1%	*	*	*	*
Carpenters	*	*	*	*	*	11.1%	*
Customer Relations	*	*	*	2.8%	*	*	*
Electronic Engineering	*	*	3.1%	*	*	*	*
IT	15.4%	*	*	2.8%	*	*	*
Laminators	*	*	*	*	3.7%	*	*
Mechanical Engineering	*	1.6%	6.2%	5.6%	*	11.1%	8.3%
Numeracy/Literacy	2%	1.6%	*	*	*	*	*
Painting/Finishing	*	*	*	3.7%	7.4%	11.1%	*
Rigging	7%	*	*	*	*	*	*
Seamanship & Boat Skills	14%	1.6%	3.1%	*	3.7%	*	*
Welding & Fabrication	7%	*	*	*	3.7%	11.1%	

* denotes No figures recorded
Source: South West Marine and Maritime Survey 2003

When asked about the drivers for training activity, those businesses that responded to this question indicated a similar range of drivers to those in the Marine and Maritime Sector at the national level. Regulatory requirements was noted by 35.3% as the main driver for training in the sector. The expansion of the range of services provided was noted by 33.2% of businesses, the introduction of new technology was noted as a driver by 31.8%, and new working practices or the development of new products, 30.1%, followed closely behind. Many businesses commented that skills gaps resulted from a combination of all of these factors.

Businesses were also asked to elaborate on any particular courses they felt were relevant that were not provided locally, and few business, 21%, identified training needs that could not be met locally. These needs were varied and ranged from mechanical engineering, electrical engineering, sail making, carpentry, laminating, fabrication and welding, glass reinforced plastic (GRP) moulding, rigging, paint spraying, Health & Safety, maritime law, business and management skills, ICT skills courses to customer care courses. The training requirements of businesses in the Marine and Maritime sector derived from the survey are detailed in Table Eighteen.

Table Eighteen: The Training Requirements of the Marine and Maritime Sub-sectors

Training Requirements	Resourced Based Industries	Design & Construction	Operations & Shipping	Equipment & Service
Business & Management Skills	*	2.0%	6.9%	2.5%
Carpentry	*	6.0%	*	*
Chandlery	*	*	*	0.5%
Composites & GRP	*	6.0%	*	*
Customer Care	*	*	2.3%	1.5%
Diving	*	*	*	1.0%
Electronic Engineering	*	*	*	1.0%
First Aid	4.3%	*	*	*
Fish processing	*	*	*	0.5%
Health & Safety	4.3%	*	*	*
IT	4.3%	4.0%	12.8%	5.4%
Laminators	4.3%	*	*	*
Mechanical Engineering	*	4.0%	4.6%	3.5%
Painting/Finishing	*	2.0%	*	*
Sales & Retail	*	*	*	1.5%
Sail Making	*	*	*	1.0%
Seamanship & Boat Skills	*	*	4.5%	2.0%
Shipwright	*	2.0%	*	*
Waste Management	*	*	*	1.0%
Welding & Fabricators	*	4.0%	*	1.0%

* denotes No figures recorded
Source: South West Marine and Maritime Survey 2003

Businesses in the equipment and service provider sub-sector reported the most varied and wide-ranging training requirements of all of the sub-sectors. The types of training requested ranged from generic business and management, customer care, IT and retail skills as well as more specialist skills, such as, sail making, diving, chandlery, waste management and seamanship and boat skills. Businesses in the design and construction sub-sector reported the second most wide-ranging and varied training requirements with strong training demand in all associated ship and boat building skills. The strongest demand for training was in marine related carpentry and joinery, shipwright skills, composites and GRP, engineering, welding and fabricating and painting and finishing. There was also a reported demand for IT skills training in this sub-sector.

In the operations and shipping sub-sector, the most frequently requested training need was for IT skills, business, and management skills. Other training requirements included engineering, seamanship and boat skills and customer care skills. In the resource based industries training requirements mirrored the reported skills gaps in

Health & Safety and first aid, which are both linked to regulatory requirements. The only other training requirements related to IT and laminating skills training.

When looking at the demand for training in the Sub-region, Table Nineteen shows that the most wide-ranging and varied demand for training is in the Devon sub-region which is not unexpected as it is the regional hub for the sector. Businesses in this sub-region requested training in IT, business and management, retail, customer care skills training, as well as, more specialist training in seamanship and boat skills, engineering, laminating, welding and fabrication, diving, carpentry, composites and GRP skills. The Bournemouth, Poole and Dorset sub-region requested the next most varied range of training which consisted of similar requirements in IT, business and management, customer care skills, engineering, and welding and fabrication, and also some particularly cluster specific skills in sail making, waste management, chandlery and fish processing. Few particular training requirements were requested in the other sub-regions with the notable exception of painting and finishing training in the Cornwall sub-region.

Table Nineteen: The Training Requirements of the Marine and Maritime Businesses in the Sub-regions

Training Requirements	WoE	B'mth, Poole & Dorset	Cornwall	Devon	Gloucestershire	Somerset	Wiltshire & Swindon
Business & Management Skills	5.6%	1.7%	3%	4%	12.5%	*	*
Carpentry	*	*	1%	1%	*	*	*
Chandlery	*	1.7%	*	*	*	*	*
Composites & GRP	*	*	*	2%	*	*	*
Customer Care	*	1.7%	1%	2%	*	*	*
Diving	*	*	*	2%	*	*	*
Electronic Engineering	*	1.7%	*	*	*	*	*
First Aid	*	*	*	*	12.5%	*	*
Fish Processing	*	1.7%	*	*	*	*	*
Health & Safety	*	*	*	2%	*	*	*
IT	8.3%	6.8%	*	10.8%	12.5%	*	*
Laminators	*	*	*	2%	*	*	*
Mechanical Engineering	5.6%	*	*	2.9%	12.5%	7.7%	*
Painting/Finishing	*	*	1%	*	*	*	*
Sales & Retail	*	*	*	1%	*	*	*
Sail Making	*	3.4%	*	*	*	*	*
Seamanship &Boat Skills	8.4%	*	*	3%	*	*	*
Shipwright	*	1.7%	*	*	*	*	*
Waste management	*	1.7%	*	*	*	*	*
Welding & Fabricators	*	1.7%	*	2%	*	*	*

* denotes No figures recorded
Source: South West Marine and Maritime Survey 2003

However, to assess the potential volume of training requested in the Region looking at the training requested by the number of employees is by far the best gauge for potential demand. Table Twenty shows the training requested by Marine and Maritime businesses in the Region by employment bands.

Table Twenty: Training Requirements of the Sector by Employment Bands

Training Requirements	1-5	6-10	11-19	20-49	50-99	100-200	201-4,000
Business & Management Skills	.7%	.6%	6.2%	*	22.2%	*	16.6%
Carpentry	.7%	*	*	*	*	*	*
Chandlery	*	1.6%	*	*	*	*	*
Composites & GRP	*	1.6%	*	*	3.7%	*	*
Customer Care	2.1%	3.2%	6.2	*	*	*	*
Diving	*	3.2%	*	*	*	*	*
Electronic Engineering	*	*	*	2.8%	*	*	*
First Aid	*	*	*	2.8%	3.7%	*	*
Fish Processing	*	1.6%	*	*	*	*	*
Health & Safety	*	*	3.1%	2.8%	7.4%	*	*
IT	3.4%	3.2%	15.1%	*	19.5%	*	16.6%
Laminators	*	*	*	2.8%	*	*	*
Mechanical Engineering	2.1%	3.2%	3.1%	5.6%	7.4%	*	8.3%
Painting/Finishing	*	*	*	*	*	11.1%	*
Sales & Retail	*	1.6%	*	*	7.4%	*	*
Sail Making	.7%	1.6%	*	*	*	*	*
Seamanship & Boat Skills	2.1%	4%	*	*	*	*	*
Shipwright	*	*	*	*	3.7%	*	*
Waste Management	.7%	*	*	*	*	11.1%	*
Welding & Fabricators	1.4%	*	*	*	4.7%	*	8.3%

* denotes No figures recorded
Source: South West Marine and Maritime Survey 2003

Smaller businesses reported a varied and wide-ranging set of training requirements which cover most of the areas of skills needs. Businesses employing between 50 and 99 people also had a variety of training needs, the most frequently requested being business and management training and IT training. The largest business, likewise, reported a strong need for training in these two areas. However, there was a strong demand from larger businesses employing over 100 people in the Region for training in painting and finishing, welding and fabrication, waste management and engineering skills training.

When comparing the training needs of Marine and Maritime businesses identified in the survey against the TNAs undertaken by MSW and the EEF, the information on training needs gathered through the survey included the majority of those previously identified by MSW and the EEF. The two dominant training needs identified in the re-analysis of MSW and the EEF TNAs revealed a strong demand for business and management and IT training, and this demand was confirmed by businesses in the survey. The demand

for engineering training across the Sector was also confirmed along with basic regulatory related training in first aid and Health & Safety. The only variance, apart from many other training needs being identified in the survey by businesses which had not been previously established, related to a lesser demand for training in marketing. Although, marketing skills were highlighted in relation to another question concerning future skills needs, in which the acquisition of marketing skills was considered to be important for the future of many businesses.

Returning to the survey, businesses were asked about their preferred form of training and 18.1% wished to train their staff through CPD or short courses, with a very small number, 3.4%, preferring more formalised training leading to NVQs by linking in with further education providers. The largest number of employers, 24.2%, wanted '*in-house*' training for their staff and some, 13.5%, preferred to utilise a mixture of all three forms of delivery.

Businesses were also asked if they currently employ any Modern Apprentices, and a relatively small number, 14.0%, currently did so, with around half of these businesses, 5.9%, employing more than one Modern Apprentice. When asked if they anticipated taking on any employees under the Modern Apprenticeship programme in the next 12 months, again, a similar number of employers, 13.7%, anticipated doing so. However, it should be noted that although the Modern Apprenticeship programme is the dominant framework for formalised training in the Marine and Maritime Sector, the majority of employers were critical of the programme and NVQs in general. The value of NVQs were widely questioned by employers, with the research undertaken for this study identifying few businesses that held Modern Apprenticeships or NVQs in high regard.

Just over half, 52% of businesses, were aware of training providers who could meet their needs. Just over one fifth of businesses 21.3% commented that the Further Education Sector was their preferred provider and 4.5% mentioned the Higher Education Sector. Private sector providers were the preferred choice for 15.3% of businesses, other training providers mentioned were RYA, BMF and local authorities. The large majority of the businesses surveyed, 77%, were satisfied with the training their employees were receiving although in general many employers commented that some of their employees were not able to access Marine specific training courses and they had to make do with more general or other Sector related courses for their staff.

When exploring issues that were proving to be an obstacle to businesses providing training for their staff, the cost of training was cited by 44.9% of businesses as the biggest barrier, a further 43.7% commented that providing time during working hours to release staff was also a major barrier to training. Other barriers included a lack of the right type of training being available locally, 16.5%, and 11.9% of businesses thought that the distance employees had to travel to access training was a barrier. Finally, 10.2% of businesses thought that there was too much red tape associated with training.

Other than barriers or obstacles to training, businesses were asked to comment on what would encourage them to provide more training for their staff. Predictably, subsidies to help with the cost of training were identified by 51.2% of businesses, and a further 36.5% asked for additional subsidies to cover the cost of travelling and accommodation. A further 35.8% of businesses asked for more training to be delivered '*in-house*' or more locally.

Most surprisingly, unlike many studies conducted in other sectors which examined barriers to training, few employers, 9.4%, in the Marine and Maritime Sector thought that more flexible training times offered by providers, such as at the weekends or evenings, would encourage them to provide more training opportunities for their staff.

Only 10.9% of Marine and Maritime Sector businesses thought that the greater availability of on-line training would encourage them to offer more training to their staff.

Lastly, employers were asked if they thought it should be the employers' responsibility to provide training for their staff or if they thought the emphasis should be placed upon individual employees to access their own training. The majority of employers, 59%, thought that it was their responsibility to train their staff, and only 3.2% thought that the emphasis should be placed upon their employees. However, in response to another part of the question, 28.6% of employers, thought that it was the responsibility of both the employer and employee to take advantage of training opportunities.

In the case of the Region, the survey highlighted that there was a large number of firms employing less than ten people and a number of regional patterns emerge, and the national predictions related to occupational changes and skills needs will be broadly reflected in the local area. Variations, such as the greater numbers of smaller businesses do make a difference both to the vulnerability of the business and to the support needed in the provision of training. The next section is concerned with some of the skills, education training and structural issues as perceived by regional employers.

2.7   Employers Education, Training and Skills Issues

A total of 105 in-depth interviews were undertaken on company or organisational visits, and focus groups with key stakeholders in the Sector, in order to provide a more grounded approach to the overall analysis, and to identify in more detail the perceived skills gaps and training needs. The examples used in this section are intended to be illustrative of the general trends, and also to identify the thematic concerns that cut across the Sector as a whole. There are also a number of issues that, although related to the Sector are governed by national legislation and statutory requirements, such as the running of ports, issues of seamanship as well as regulations governing ship building and ship repair. In addition, there is also the need for employers to ensure that adequate provision is made for training in Health & Safety issues, which adds to the overall training burden, and may involve more general workforce development as the Investors in People programme.

It is apparent that the diverse nature of the Sector, in terms of the wide array of activities that are involved, is also reflected in the range of perceived training needs and skills gaps, a situation that corresponds to that in other regions.[16] For purposes of analysis these can be seen as spread across a continuum ranging from the *'traditional'* craft based skills at one end, to the utilisation of new technologies in design, manufacture and general business skills at the other.

For those at the craft based end of the continuum, there was a clear perception concerning the inadequacies of the Modern Apprenticeship scheme and the NVQ system. The case of the riggers and traditional boat builders are indicative of the more general problems faced here. Rigging is a highly specialised and traditional skill with growth potential in Marine and Maritime leisure. All the rigging companies indicated that because of the specific nature of skills that are required, finding staff was extremely difficult. As there are no training courses, and rigging is a craft, it must be taught in-house, which in turn has consequences for both the recruitment and retention of riggers. The situation is similar in relation to small boat building, as one informant stated forthrightly, *'How can a shipwright be a shipwright with only six months training when it takes at least five years to develop the necessary skills?'*

However, criticism of the Modern Apprentice system and NVQs was not solely confined to the craft end of the continuum. Those involved in shipbuilding and engineering also

complained that the NVQs were regarded as inadequate when compared to the traditional methods of training, and placed great emphasis on the perceived virtues of the apprentice system that had served the industry very well in the past. One employer who had a major disregard for the NVQ system perceived it as a waste of time as there was no way for employers to link the awards with actual skills. Overall, the hands-on approach of apprenticeships was contrasted to the current system, in which qualifications tended to be seen as *'too academic'*. Although an element of nostalgia in relation to the traditional system of apprenticeships is apparent, it is also important to bear in mind that the new system does not allow for a period of indenture. As a result, there is a real concern across the sector as a whole that the costs of training someone to a required level will be wasted if they can then simply walk out and into another job. This is also indicative of a wider problem in relation to the provision of training: there are few core skills that can bridge both ends of the continuum. This is most apparent when the influence of new and emerging technologies are taken into account.

Advances in boat and ship building associated with new technologies used provides a significant opportunity for businesses in the Region. However, it was also noted that employers, especially the larger ones, need to take advantage of this change, such as instituting new cost effective, '*lean*' manufacturing processes, as well as utilising the newest technologies in order to remain competitive, and consequently be in a position to profit from any increasing demand.

As an example, one manufacturer pointed out that a current project had nine touch screen computer systems on board, which were capable of piloting the vessel alone. Whereas this indicates that some companies have moved into innovative areas, much of the Sector is still highly reliant on more traditional craft based skills as well as engineering skills which are ubiquitous across the Sector.

Training clearly needs to keep pace here, as in all engineering related activities, national forecasts identify electronic, electrical and precision engineering as likely to experience growth, so there is a consequent need to adapt products and working practices to such changes. An issue for companies is that whole areas of production can become obsolete, and new products dependent upon new technologies developed rapidly, so that either continuous adaptation and/or a step change has to occur if a firm is to remain in business. Equally, they face other threats as manufacturing can be moved overseas to areas of cheaper labour and, in some areas, a relatively skilled local labour force as well.

For technical and engineering skills, the larger firms had formal training programmes in place, which were decided locally, even when the organisations were part of a wider commercial group. Other firms stated that they provided *'on the job'* training, as and when required, and some had entered into arrangements with training providers through membership of a trade organisation. Most of the interviewees identified local colleges as the next form of potential training provider, yet one of the key problems identified here was that most of the colleges or training bodies are using antiquated equipment to teach students, and that this is having a detrimental effect on the industry.

In relation to boat building, one informant pointed out that the propulsion systems used in modern vessels are far more advanced than their older counterparts, but students are still being shown technology that was surpassed years ago. It was emphasised that modern technology is driving the industry so it is critical that courses encompass these technologies if students leaving courses are to be of any use. In a small number of cases, the product supplier offered training. These examples aside, it was evident that very little value is placed on the college providers because in general marine

engineering is not '*a syllabus'* and car related engineering courses are the main resource for potential employees.

It is clear then that many companies who needed those with engineering skills were taking '*nearest equivalent*' training as a pragmatic means of dealing with the skills gap, or using other ad hoc arrangements. The developments of such arrangements were not confined to those dealing primarily in engineering, similar problems but with different solutions were also found elsewhere.

An example of a different approach is provided by one boatyard visited whose approach can be described as being towards the traditional and craft end of the skills continuum, but is located and established alongside several other boat building businesses. Thus, all the businesses are able to join and share their skills on larger projects when the need arises. One owner noted that this co-operative approach functioned very well for the industry, highlighting that the lack of skilled persons had also contribute to the development of strong industry partnerships, and that he found it impossible to recruit skilled workers. Due to increased demand, one employer noted that they would be expanding services and that this would place emphasis on future skills development, but currently they would not know where to look for training provision.

There are obvious barriers to training with this cooperative approach, which is a matter of necessity rather than choice. As noted by many employers across all the sub-sectors, down time for training and the subsequent costs, especially for a smaller employer, were considerable disincentives. Commenting on this dilemma one owner suggested that a way to address this issue would be the provision of short evening and weekend courses.

It was not only down time but distance that acts as a disincentive. The particular geographical nature of the region, which in many places is characterised by poor transport infrastructure in general, and very poor public transport in particular, remain serious barriers to the development of training for the Sector. One owner stated that although he did have an apprentice who was on a day release, he was extremely unhappy with course availability and the problems associated with arranging travel for his trainee.

When asked who would be the best providers, Cornwall College was mentioned but he mentioned them with the qualification that in terms of engineering, the land based courses had to be adapted to the marine industry and that this was not really acceptable. Lyme Regis and Falmouth Marine College were also suggested as course providers, but the employers stated that there was little provision of short courses by these establishments. One owner stated that Falmouth had a very high reputation in the marine industry for boat building but that he had not heard much about them in the recent months.

The BMF was also used for some training, as well as independent bodies for the training of crane and forklift operations. The distance and cost of these courses was viewed as astronomical and coupled with the time away from the working environment they often did nothing to assist business in the short term.

Seasonality was also another perceived issue with the current provision of many training courses, which in some cases were offered during the busiest times of the year. In addition to these factors, many employers also noted that training is restricted due to uncertainty in the market, so that when work is scarce, no money is available for advanced training. Similar problems were also reported by a number of other companies, who noted that they often struggled to fill order books, so day to day survival often took precedence over planning for future needs.

It is also worth noting that what this indicates is the existence of a diverse range of '*training cultures*' that relate to the size of the business involved rather than its position on the skills continuum. The SMEs and micro businesses are those most likely to be more concerned with short term ad hoc solutions to skills shortages as they arise, while the larger employers usually have the capacity to take a more strategic view. Overall, the greatest gaps identified were at the intermediate level, rather than at a higher or vocational level.

To this we need to add the fact that specialisation and *'niching'*, which is common within many other Sectors, is likely to increase rather than diminish across the Marine and Maritime Sector. This then calls for a range of training that not only reflects this trend, but is also responsive and proactive to the situation rather than being reactive. However, in certain cases, there is also a clearly identifiable requirement for multi-skilling in some sub sectors, which was most evident in the marine leisure sub sector.

Two marina operators perceived that skill requirements for the future would embrace marina management, IT, seamanship, marine Health & Safety, marine first aid and sea survival, in addition to fundamental marine business management skills such as customer services and marketing. Obviously there will be specialisms and specific roles within such an organisation, but nonetheless the marine leisure sector generally showed a greater need for developing a workforce with the skills suitable to perform multiple tasks. Another marina representative placed great emphasis on many of the generic skills associated with a boatyard. This may suggest that this marina is working towards a complete *'leisure product'*, a model that may be replicated by alternative marina operators. Furthermore, this latter marina has three apprentices and anticipates taking on more in the near future.

The lack of fundamental marine management skills associated with incoming staff was evident across the whole skills continuum, some reported that new employees were seen to be lacking in confidence, leadership and communication skills and therefore unable to work with customers at the desired level. Whereas use of the IiP initiative could be seen as a means to develop the overall quality of a workforce, attitudes towards it were mixed, but the findings indicate that the main barrier here was its perceived bureaucratic nature.

2.7.1 Emerging Issues and Themes

It is clear that across the Sector as a whole, and also within the sub sectors, that training provision to fill the identified current and future skills gaps suffers from a number of shortcomings. While the ad hoc, co-operative and '*in-house*' solutions can be seen as pragmatic responses to a changing and diverse set of needs, it is also clear that these solutions were driven by necessity rather than choice. As a consequence, there was a strong desire to see better and more focussed provision of training that is proactive in its design, in particular so as to keep pace with new technological developments. The issue of flexibility in terms of timing and delivery is also a key issue, and also is the need to ensure that future training is tailored to specific marine related skills. It is also worth noting that only a few skills could be regarded as generic to the Sector as a whole, for example business and management and basic knowledge of IT.

The main issues that arose from this part of the research can be summarised as follows:

❖ Increased training opportunities are regarded as an urgent need by virtually all companies contacted in this study.

❖ There are different *'training cultures'* in micro, SMEs, and larger companies. Smaller companies are more *'niche'* orientated, meeting needs in an ad hoc manner and less concerned with qualifications.

❖ There is a perceived gap between the vocational and higher education training, with insufficient provision at the intermediate level.

❖ The current provision of courses and providers are perceived as inadequate to meet the expanding business demand and technological changes.

❖ The training provision at colleges is criticised on three main issues:

   ❖ as being out of date.

   ❖ not specific to the Marine and Maritime Sector.

   ❖ of poor quality in general.

❖ There is little enthusiasm for NVQs, which are viewed as a relatively inefficient measure of competence.

❖ Colleges and other training providers need to improve the relationship with companies to ensure that learners are placed in companies.

❖ The traditional, indentured, apprenticeship is seen as superior to the Modern Apprenticeship.

❖ The absence of indenture can result in some companies being reluctant to provide training for employees, for fear that they will seek other employment once they finish their apprenticeships.

❖ Streamlining and simplifying initiatives such as IiP and other funding regimes would be likely to lead to increased take-up.

❖ Private trainers were seen as more able to address the needs of business, with a demand for short courses with immediately transferable knowledge.

❖ Seasonal fluctuations mean that providers will need to address this issue when planning and promoting their courses.

❖ The establishment of a Trust Fund to help pay for training young people would be welcomed as would the release of government funds to establish adult apprenticeships.

❖ Employers expressed widespread support for the establishment of training clusters, with several willing to be involved in these clusters as training providers.

2.8   Future Skills: Marine and Maritime Future Skills Grid Model

2.8.1   Skills Needs of the Marine and Maritime Sector in the South West of England: Short to Medium Term

The examination of general trends, education, qualifications and training within the Sector has identified short to medium-term skills needs for the Region and its sub-regions. In the short-term there are skills shortages, skills gaps, recruitment difficulties and other training requirements to be addressed in order to ensure support for local businesses and to prevent short-term issues from impacting on the long-term future of the Sector. Most occupations within the Sector require long training periods, complemented by experience, the development of which needs to be supported by an adequate framework of education and training facilities. However, while detailed knowledge of current circumstances and short-term needs are essential to underpin longer term forecasting, the focus of this section of the Report is upon the medium and longer term skills needs of the Sector.

2.8.2   Skills Needs of the Marine and Maritime Sector in the South West of England: Medium to Long Term

The national trends within the Sector are largely reflected within the Region and its sub-regions. Many of these trends have also been highlighted by the businesses in the survey and in the interviews conducted with a range of employers, industry educators, trainers and representatives. There is also an acknowledgement that the traditional skills (for example, ship/boat building and repair skills at the craft level) that have underpinned the Sector for decades are crucial to the long-term health of the Sector.

Recent in-depth research[17] conducted in the Sector that focussed on education, training, current and future skills issues and workforce development generally, led to the development of a Future Skills Grid Model for the Sector. The Future Skills Grid Model for the Marine and Maritime Sector was derived from previous research undertaken by SRRU relating to the Advanced Engineering Sector in which an initial model, the Puttick Grid, see Appendix Two, was used to provide an analytical framework for the complex relationship between product market strategy, performance and skills.

This model took into account current trends and drivers of change impacting on the Sector. The development of this model is particularly relevant to assessing the future skills needs of the Marine and Maritime Sector in the South West of England. Before going into more detail about the utilisation of the model in this Report, it is perhaps worth detailing the major findings of the previous research that led to its development.

The Marine and Maritime Sector includes a wide and diverse range of activities. Consequently, future skills needs in the Sector will be equally wide ranging and diverse. Within the Region many Marine and Maritime businesses are affected by the same issues as those facing the Advanced Engineering Sector[18]. Marine engineering and manufacturing businesses operating across the categories of resource based industries, design and construction and equipment and service providers will thus require many of the future skills envisaged for the Advanced Engineering Sector.

Within marine engineering and manufacturing businesses the trend is towards new organisational patterns, which demand increased flexibility, multi skilling and increased efficiency with a shift in production to more value added products and processes, all of which impact on future skills needs.

In the Advanced Engineering Sector globally, manufacturing cost competitiveness is having an effect on the Manufacturing Sector, where the emphasis on efficiency is resulting in *'cost down'* lean manufacturing and the need to reduce lead-times in what could be described as lean and agile manufacturing. This trend was also emphasised by many businesses in the Marine and Maritime Sector, with businesses noting that the *'cost down'* pressures felt by large, high volume manufacturers in the Sector would be passed down the supply chain to the small suppliers of these companies.

Within these trends a range of situations face organisations of different sizes, in different positions in the supply chain, and in different sub-sectors. These trends are being met by equally different strategies in response to market developments. Some businesses are focusing on core activities, moving up to the quality end of the volume market, or occupying lower volume, higher margin market niches. Each of these strategies has an impact on skills and workforce development needs and approaches within the Sector.

Similar to the Advanced Engineering Sector the pattern of training incidence in the Region was skewed towards the production end of the business in the Marine and Maritime Sector. However, for future skills needs within the Sector and its sub-sectors, there will need to be a redressing of the balance in order for businesses to compete in lean manufacturing. Implementing *'cost down'* lean manufacturing activities has a direct impact on the skills required at a supervisor and team leader level, as well as, on the production side.

The 1999 Employers Skills Survey[19] provided some evidence about the skills required by firms seeking to implement new, higher quality product areas or to improve the quality of their existing operations. In the survey a large number of engineering employers reported plans to move to higher quality product areas.

Tables Twenty-one and Twenty-two list the new or additional skills that engineering firms considered they most required in order to be able to achieve this adjustment.

Table Twenty-one: New or Additional Skills Needed to Move to Higher Quality

	(%)
Technical and practical skills (non-IT)	71
Team working skills	64
Management skills	56
Problem-solving	54
Customer handling	54
Communication skills	50
Basic computer literacy	43
Advanced IT or software skills	36
Numeracy skills	34
Literacy skills	33
Other	3

Source: ESS1999

Table Twenty-two: New or Additional Skills Needed to Achieve Higher Efficiency

	(%)
Technical and practical skills (non-IT)	80
Team working skills	53
Management skills	40
Problem-solving	49
Customer handling	42
Communication skills	36
Basic computer literacy	33
Advanced IT or software skills	25
Numeracy skills	28
Foreign language skills	10
Literacy skills	25
Other	3

Source: ESS1999

The ESS Survey highlighted the importance of communication, customer handling, and team working skills as the most important for establishments attempting to improve either value-added or production efficiency. The key skill areas across sectors related to:

❖ Technical knowledge that went beyond traditional functional boundaries.

❖ Technical knowledge combined with general management skills (e.g. team leading).

❖ Ability to manage sometimes complex strategic relationships and alliances.

❖ Managing customer relations.

❖ Knowledge of product markets to enable new opportunities to be identified.

The currency of the future in terms of skills for marine engineering and manufacturing businesses is similar to that of those in the Advanced Engineering Sector as a whole, with future skills needs pointing towards flexibility, multi-skilling and problem solving, all underpinned with a high level of technical understanding, generic and personal skills.

In non-engineering and manufacturing related activities the diversity of the Marine and Maritime Sector means that a wide range of other skills will also be needed in the future. Many of the skill requirements are linked to the development of new and emerging technologies, along with changes in fashion. In relation to the former, many of the current skills shortages and skills gaps in the Sector are as a direct result of the development and application of new technologies, and this will heavily influence future skills requirements in the Sector. Within marine tourism and leisure, as well as in other Marine and Maritime activities, fashion, will in the future, also influence skills requirements through trends in the utilisation of leisure time with a rising demand for products such as super yachts.

In resource based industries, current and future skills needs as well as pointing towards flexibility, multi-skilling and problem solving, all underpinned with a high level of technical understanding, will require additional skills that go beyond traditional boundaries. In fishing, aquaculture, biotechnology, oil and gas, renewable energy and minerals and aggregate extraction, there is an increasing demand for information and communication technology (ICT) skills. These resource based industries, to remain competitive, are increasingly relying on the application and development of new technologies. Individuals will then require, as well as technical, craft production and delivery skills, other skills such as ICT, project management, product or service design, marketing and logistics skills.

Many of the trends in marine system design and construction are similar to those impacting on the Advanced Engineering Sector. However, in the category of operations and shipping, as in resource based industries, there is an increasing reliance upon the application and development of new and emerging technologies. The area of operations and shipping has been subjected to fundamental change in recent years through the utilisation of ICT. In operations and shipping, specialist skills will also be required in areas such as civil engineering and planning. In the area of waste disposal at sea, skills in environmental impact assessments will need more specialised personnel. Developments and trends within the categories of resource based industries and operations and shipping all point to increasing skills specialisation, as well as, paradoxically, a high degree of flexibility and multi-skilling, including skills outside of traditional occupational boundaries.

In the equipment and service provider category, there are many engineering and manufacturing related businesses. The future skills requirements of these businesses are likely to mirror those required in the Advanced Engineering Sector. However, there are many other non–engineering and manufacturing related activities within this category. These include Marine and Maritime tourism and leisure, marine education, science, research and development, marine insurance and finance, freight forwarding agencies and chandlers.

For businesses involved in Marine and Maritime tourism and leisure related activities, along with other primarily customer facing activities, high-level customer orientated interactive skills are increasingly essential. Customer relations, client management and communication skills will be crucial to businesses undertaking these activities. A high degree of knowledge of the marine environment and/or specialisation consisting of craft and technical skills will have to underpin these customer facing skills. Project management skills will also be required in some Marine and Maritime leisure pursuits, as *'new types of tourism'* are becoming more popular.

The Region is ideally placed, given its Marine and Maritime heritage and facilities, to take advantage of the *'new tourists'* who take short, activity breaks throughout the year, as well as taking their main holidays (usually abroad and longer). In order to capitalise on these types of tourists, as well as the more traditional longer stay tourists who want to include some marine leisure activities in their holiday, for example, boating, the type of project management skill that will come to the fore is the ability to manage the *'leisure experience'* from the time when they book their activity/holiday until the time they leave.

Further skills will also be required, including knowledge of product markets to enable new opportunities to be identified and the ability to manage sometimes

complex strategic relationships and alliances with other equipment and service providers to add value to the *'leisure experience'* (for example, relationships and alliances with marinas, diving equipment and wet suit hirers). In other non–engineering and manufacturing related activities within this category, such as marine science education and Marine and Maritime finance, many of these *'softer'* skills will also be needed. Again, though, trends point towards an increase in specialisation.

Figure Three depicts future skills for the Sector in the different categories or sub-sectors for Marine and Maritime, including skills for Marine and Maritime engineering and manufacturing related activities. In this category however, the specific skills required largely depend on the market position in the Puttick Grid at which the business operates.

The Future Skills Grid shows the skills characteristics relating to the four-fold framework developed and utilised in this Report for the Marine and Maritime Sector, and shows the types of skills that are currently, and will be required in the future by businesses and/or individuals, operating in each of the four categories. The Grid also shows skills characteristics for Marine and Maritime engineering and manufacturing related activities. Engineering and manufacturing activities are undertaken in all four categories and therefore these skills will take the place of, or alternatively, augment those detailed in any category if an individual or a business is engaged in engineering or manufacturing related activities.

Figure Three: Future Skills Grid : Marine and Maritime Sector

Engineering and Manufacturing Related Flexibility, multi-skilling, problem solving, communication, customer handling, team working, design, marketing, project management, logistics and high level technical skills	
Resource Based Industries Flexibility, specialisation, multi-skilling, ICT skills, problem solving, marketing, project management, logistics and high level technical skills	**Design & Construction** Flexibility, multi-skilling, ICT skills (in coastal zone protection and development activities), problem solving, communication, customer handling, team working, design, marketing, project management, logistics and high level technical skills
Operations & Shipping Flexibility, specialisation, multi-skilling, ICT skills, problem solving, marketing, project management, logistics and high level technical skills	**Equipment & Service Provider** Flexibility, specialisation, multi-skilling, customer relations, strategic relationship management, communication skills, problem solving, marketing, knowledge of product markets, project management, logistics and high level technical skills

Source: SRRU 2002

The SRRU Grid Model can now be used as a framework for which specific current and future skills, can be delineated and a *'top ten'* Grid Model developed for each of the Marine and Maritime sub-sectors. This approach will

lead to an overall *'top ten'* Current and Future Skills Grid for the Marine and Maritime Sector.

This framework currently provides in each category meta level future skills needs for the Sector identified by previous research, and in the Grids developed for this research specific future skills identified by businesses include a mixture of meta and micro level or particular skills. For example, in the design and construction sub-sector the SRRU Future Skills Grid highlights high level technical skills. The Grid now needs to be developed for the sub-sector taking into account future skills highlighted by businesses in the survey and needs to go beyond this and detail micro level skills needs as well, such as the already identified surface finishing skills needs, and this has to be done for each of the sub-sectors so a regional pattern of future need can be established.

This would then enable current training provision to be mapped against regional demand and enable any gaps in provision to be plugged through the enhancement of current provision or development of new provision. It is important to note that, although it is proposed to use the meta level skills needs for the Sector currently identified by SRRU in previous research as a starting point, the secondary and primary research undertaken for this study would in fact check, refine, add and/or replace those previously determined. However, it is important at this stage not to remove the meta level skills from the Grid and purely supplant them with micro level skills, as this will occur when establishing the *'top ten'* future skills needs. The meta level future skills for the Marine and Maritime Sector have been derived over time from a very wide ranging examination of current and future trends and high level consultation with the Sector. Moreover, some of the meta level skills already identified have also been highlighted in the survey so will remain in any case.

Each skill within the Grid can then be linked to recommendations for solutions to any need identified. This approach also has the advantage of the adaptation of a robust model that could be undertaken on a longitudinal basis.

The combination of current and future skills needs would also allow Marine South West and regional partners to be proactive in developing strategy to accommodate future need as well as being merely reactive to current need. Furthermore, this model takes into consideration latent need as well as those that are clearly currently seen by employers. Both of these elements contained in the model add not just to the overall competitiveness and contribution of the Sector in terms of adding to the overall GDP in the Region but also fundamentally potentially aids to the survival of many businesses within the Sector.

Returning now to the results of the survey, businesses were asked to consider what skills they thought would be important to their businesses in the future. They were asked to forecast skills needs for at least five years into the future and the results for the sub-sectors are shown in Table Twenty-three.

Table Twenty-three: Future Skills Identified by Businesses in the Marine and Maritime Sector

Future Skills	Resourced Based Industries	Design & Construction	Operations & Shipping	Equipment & Service
Aquarist / Biologist	*	*	*	2.0%
Business & Management Skills	*	4.0%	2.3%	1.5%
Carpentry	*	16.3%	*	*
Craft Skills	4.3%	6.0%	*	1.5%
Crane	*	*	4.6%	*
Diving	*	*	11.3%	2.0%
Electronic Engineering	*	4.0%	2.3%	4.5%
First Aid	4.3%	*	*	*
Health & Safety	4.3%	*	2.3%	*
Import/Export & Freight	*	*	*	.5%
IT	4.3%	12.2%	2.3%	*
Laminators	4.3%	2.0%	*	*
Marketing	*	2.0%	2.3%	.5%
Mechanical Engineering	4.3%	20.3%	4.6%	11.7%
Painting & Finishing	*	2.3%	*	*
Rigging	*	2.0%	*	1%
Sales & Retail	*	*	*	2.5%
Seamanship	4.3%	2.0%	2.3%	.5%
Welding & Fabrication	*	6.0%	*	1.0%

* denotes No figures recorded
Source: South West Marine and Maritime Survey 2003

It can be seen from Table Twenty-three that many businesses focussed on micro level specific skills, rather than on higher-level meta skills, and this was also a common feature in previous research of this nature. However, the information provided in Table Twenty-three now enables an adjustment of the Future Skills Grid to include these future skills identified by businesses in the survey and thus refine the Grid in light of the research undertaken for this study. Figure Four shows the Future Skills Grid for the Marine and Maritime Sector in the Region.

Figure Four: Future Skills Grid : Marine and Maritime Sector in the South West of England

Engineering and Manufacturing Related
Flexibility, multi-skilling, problem solving, communication, customer handling, team working, design, marketing, project management, logistics and high level technical skills.

Mechanical and Electronic Engineering Skills.

Resource Based Industries
Flexibility, specialisation, multi-skilling, ICT skills, problem solving, marketing, project management, logistics and high level technical skills.

Craft skills, First Aid, Health & Safety, Laminating and Seamanship Skills.

Design & Construction
Flexibility, multi-skilling, ICT skills (in coastal zone protection and development activities), problem solving, communication, customer handling, team working, design, marketing, project management, logistics and high level technical skills.

Business & Management, Craft skills, Carpentry, Laminating, Painting & Finishing, Rigging, Welding, Fabrication and Seamanship Skills.

Operations & Shipping
Flexibility, specialisation, multi-skilling, ICT skills, problem solving, marketing, project management, logistics and high level technical skills.

Business & Management, Crane Operating, Diving, Health & Safety and Seamanship Skills.

Equipment & Service Provider
Flexibility, specialisation, multi-skilling, customer relations, strategic relationship management, communication skills, problem solving, marketing, knowledge of product markets, project management, logistics and high level technical skills.

Business & Management, Aquarist/Biologist, Craft Skills, Diving, Import/Export & Freight, Rigging, Welding, Fabrication, and Seamanship Skills.

Source: SRRU 2002 and South West Marine and Maritime Survey 2003

At this point, it is worth noting that many of the skills identified as future skills are also skills that have been identified by businesses as areas that they would like to currently train their staff in. Solutions to these skills needs will be posited within this Report, so there seems little point in delineating these skills any further, as some of these future skills needs will be addressed in the solutions posited for the present. When these skills are taken out of the Grid few specific skills remain, in fact not actually enough to form an overall *'top ten'*. The Grid does, however, also include latent need as well as those that are clearly currently seen by employers so this adds to the justification of presenting the Grid in its current form.

Therefore the above Grid will serve as the Future Skills Grid for the Sector, and as it includes a number of meta skills areas such as, multi-skilling, flexibility and high level technical skills, it can ideally serve as a sign post for the development of content in current or proposed provision. This is the overall objective of the Future Skills Grid, ensuring that future demand is met within current provision, which proactively alleviates the skills gaps and shortages of tomorrow through providing training today. This approach also has the originally envisaged advantage of the adaptation of a robust model that could be undertaken on a

longitudinal basis. This would enable Marine South West and regional partners to produce updated Grids over time, which would then highlight those needs which had been met during the lifetime of any policy directed at particular areas of need, and would be flexible enough to add newly identified priorities in skills need.

2.9   The '*Top Ten*' Skills Needs of the Marine and Maritime Sector in the South West of England

The overall aim of this study is to provide a coherent and actionable plan for the development of Marine and Maritime Sector skills that addresses, from a demand perspective, both current and future skills needs.   It is in this context that the required outcome is to identify the *'top ten'* Marine and Maritime Sector skills needs and recommend solutions to meet those needs. Within this process, priority is being given to skills identified which have the potential to increase competitiveness, move the Sector up the *'value chain'* and increase the Sector's contribution to the region's GDP.

In more detail, it is important to note that for many perceived skills needs there may not be a coincident increase in GDP in providing training to fill the gaps. These needs would not, therefore, make the *'top ten'* based upon a ranking criteria that merely considered an outcome of positive economic impact, in terms of increased overall GDP. Nevertheless, these skills may be considered important to employers in terms of need, and making recommendations as to possible solutions that addresses these needs may have a different type of positive impact, in terms of business survival, for example, some types of basic skills and legislative compliance, for example, pollution control and monitoring, without actually raising the Sector's overall GDP.

Furthermore, there are at least two factors to consider that limits any assessment of need highlighted solely from the demand side. These factors are latent skills gaps and thus, unrecognised current and future skills needs. Again, addressing these gaps may not have a positive economic impact in terms of increased overall GDP, although, addressing both holds the potential to do so in many instances.

Previous SRRU[20] research provides an example of such future needs. This highlighted that there is a potential legislative driver of a likely EU Directive in 2005/06 concerning the toxicology designation of styrene, the maximum permissible exposure levels in the workplace, and permissible emission levels. The potential impact on Marine and Maritime industry composites users could lead to the introduction of modern closed-moulding processes, introduction of low styrene resins, or investment in enhanced extraction and scrubbing. However, only 42% of those employers surveyed, composites users, recognised styrene's emissions and the future skills needs associated with legislative changes as being important to their businesses. It is, therefore, important not just to base this upon perceived employers needs but also to consider future and latent skills gaps needs if the framework is not going to be just reactive but proactive in meeting skills needs in the Sector. With this in mind, the first step in delineating the *'top ten'* in the Sector is to consider all of the current and future skills identified together before taking the process further. Table Twenty-four shows all of the skills identified, in the course of undertaking this research.

Table Twenty-four: Missing Skills, Current Training Needs and Future Skill Needs

Missing Skills	Training needs	Future skills
*	*	Aquarist/ Biologist
Business & Management	Business & Management	Business & Management
Carpentry	Carpentry	Carpentry
*	Chandlery	*
*	Composites & GRP	*
*	*	Craft Skills
*	*	Crane Skills
Customer Care	Customer Care	*
*	Diving Skills	Diving Skills
Electronic Engineering	Electronic Engineering	Electronic Engineering
First Aid	First Aid	First Aid
*	Fish Processing	*
Health & Safety	Health & Safety	Health & Safety
*	*	Import/ Export & Freight
IT	IT	IT
Laminators	Laminators	Laminators
*	*	Marketing
Mechanical Engineering	Mechanical Engineering	Mechanical Engineering
Numeracy/ Literacy	*	*
Painting/ Finishing	Painting/ Finishing	Painting/ Finishing
Rigging	*	Rigging
*	Sail Making	*
*	*	Sales & Retail
Seamanship & Boat Skills	Seamanship & Boat Skills	Seamanship & Boat Skills
*	Shipwright	*
*	Waste Management	*
Welding & Fabrication	Welding & Fabrication	Welding & Fabrication

Source: South West Marine and Maritime Survey 2003

Table Twenty-four shows that in total 27 separate skills have been identified as needs in the Marine and Maritime Sector. These include missing skills or gaps in the workforce, gaps where employers have identified a need to train their employees and future skills, that employers have highlighted which will be important to their business over the next five years. In trying to determine which of these 27 skills have the potential to increase competitiveness, move the Sector up the *'value chain'* and increase the Sector's contribution to the region's GDP, the next step in delineating the '*top ten*' needs is to decide on which skills area to focus upon: missing skills, training needs or future skills.

Clearly, given the earlier argument, it is important to consider future skills as well as current skills needs, and it is also important to consider skills missing in the current

workforce. Focussing on both of these skills areas will certainly have an impact upon the Sector in both the short and long-term. However, it can be seen from Table Twenty-four that if the focus of any intervention is targeted at the skills area of training need, there will be a maximum impact upon all three skills areas. In fact, by targeting training needs, if one was to look horizontally along the columns in Table Twenty-four, it can be seen that, with the exceptions of numeracy and literacy and rigging, all of the skills employers perceived as being the missing skills in their workforces would be addressed by intervention in this area. Correspondingly, the majority of future skills would also be addressed in the same manner. This still leaves a total of 27 skills to focus on, if you include the two missing skills and the seven future skills that are not covered by the area of current training needs identified by employers.

However, this list can be easily delineated further. The skills needs of aquarists and biologists are perceived by employers as skills that will be important in the next five years. A direct interventionist policy of the nature planned by this initiative by Marine South West and regional partners in this skill area is unwarranted. There are currently six or more courses offered in at least two Further and Higher Education institutions in the Region covering these skills areas. This is an area that is not yet highlighted as a current skills need but a future one, so it is reasonable to assume that supply is currently meeting demand for this skill. It may, however, be worth highlighting this issue with educational institutions in the Region, to assess whether the current numbers of students will meet any anticipated demand in the future.

Numeracy and literacy skills have been highlighted as skills missing in the workforce, specifically in the Cornwall sub-region. Again, this is an area that can adequately be dealt with by current national initiatives that focus on adult numeracy and literacy. Marine South West could circulate details of these initiatives to employers in the Sector. Rigging curiously is perceived to be both a skill missing in the current workforce and a future skill, but rigging has not been highlighted as an area where there is a training need. However, because it has been highlighted in both of these skills areas, and described as a missing skill, it needs to be considered as such. Craft skills have been highlighted as a future skills need, while it is difficult to argue with this, it is a generic term that covers many of those described as current training needs, such as, carpentry and sail making. It is, therefore, difficult to direct interventionist policy in this area, other than for Marine South West and regional partners to support existing and proposed craft based training centres, for example, Lyme Regis, as well as ensuring that other skills highlighted in this study are provided for.

If the remaining skills needs are then merged, there are 24 skills needs left to focus on. However, this list can be further refined based on the criteria of positive economic impact, in terms of increased overall GDP. These skills are first aid and Health & Safety. Nevertheless, it has already been argued that these skills may be considered important to employers in terms of need, and that making recommendations as to possible solutions that addresses these skills needs may have a different type of positive impact, in terms of business survival and legislative compliance, without actually raising the Sector's overall GDP. Indeed, both of these skills have been highlighted by employers as skills missing in their workforce, areas of training need and skills that will be important in the future. Regulation is the driver for these skills needs and although they are being removed from the list, any solutions to skills needs in the Marine and Maritime Sector recommended here will still consider these needs, regardless of their impact on overall GDP.

The remaining 22 skills needs are shown in Table Twenty-five, and each of these will be considered in terms of their impact on GDP.

Table Twenty-five: Marine and Maritime Training and Skills Needs

Number	Training & Skills Needs
1	Business & Management
2	Carpentry
3	Chandlery
4	Composites & GRP
5	Crane Skills
6	Customer Care
7	Diving Skills
8	Electronic Engineering
9	Fish Processing
10	Import/ Export & Freight
11	IT
12	Laminators
13	Marketing
14	Mechanical Engineering
15	Painting/ Finishing
16	Rigging
17	Sail Making
18	Sales & Retail
19	Seamanship & Boat Skills
20	Shipwright
21	Waste Management
22	Welding & Fabrication

Source: South West Marine and Maritime Survey 2003

The remaining training and skills needs can be grouped and consist of the generic and the specific. The generic skills are business and management, marketing, sales and retail and customer care skills. Chandlery skills has a base in retail and sales skills, although the merchandise is mainly Marine and Maritime specific. Therefore, this skills need can be loosely encompassed within sales and retail and will be considered as such. Import/export and freight, it could also be argued, is closely related in part to business, sales and retail skills, however, with the specialist freight element and also considering the context in which it was cited, it will be grouped with the Marine and Maritime specific skills. IT skills, in a similar way to business and management skills, are ubiquitous and essential for running a modern day business and are thus generic across the sub-sectors, however, there are specific IT skills to the Sector such as, installations and navigation user packages. Thus, IT skills need to be separated into the generic and specific for training provision, but will be treated as one category here.

Engineering skills are also in the Sector and have been cited as missing, clearly an area where there is training need, as well as a future skill need. Electronic and mechanical engineering are not specific to the Sector. They are generic terms with some of the remaining skills such as welding and fabrication being engineering sub-sets. Carpentry,

painting/finishing, crane skills and waste management are also common to other Sectors, but with employers in the Sector highlighting the need for Marine and Maritime focussed training in these areas, they will be treated as specific skills needs that have the advantage of being transferable to other sectors. This is also true of engineering skills. There is also another group of specific, but yet generic skills within the Marine and Maritime Sector, that are very closely related and could be combined into a skills-set, these are composites, GRP and laminating, although there are differences. Table Twenty-six groups the generic and specific skills needs in the Sector.

Table Twenty-six: Generic and Specific Marine and Maritime Training and Skill Needs

Generic Skills Needs	Specific Skills Needs
Business & Management	Carpentry
Customer Care	Composites, GRP and Laminating
Marketing	Crane Skills
Sales & Retail (including Chandlers)	Diving Skills
General IT	Fish Processing
Electronic Engineering	Import/ Export & Freight
Mechanical Engineering	Laminators
	Painting/ Finishing
	Rigging
	Sail Making
	Seamanship & Boat Skills
	Shipwright
	Waste Management
	Welding & Fabrication

Source: South West Marine and Maritime Survey 2003

In terms of training provision, there is a argument for taking the generic skills of business and management, customer care, sales and retail, marketing and some aspects of IT, and packaging them up together as one area. However, in doing so, training in these areas should have a strong Marine and Maritime focus, so those undertaking training can see the relevance in the context of their businesses. A suggestion here would be to market this package along the lines of: Marine and Maritime '*Managing the business*'. A very successful example of combining generic business and management skills and an area with a marine focus is the Surf Science and Technology course offered by the University of Plymouth.

Returning to the consideration of these generic skills, sales, retail and marketing skills are closely linked and could be grouped together. In considering, the remaining 19 skills and now skills-sets with the addition of the general sales, retail and marketing and composites, GRP and laminating groups, potential impact on GDP needs to be assessed. Table Twenty-seven, shows the 19 skills and skills-sets under consideration for the '*top ten*' in the Sector.

Table Twenty-seven: Contenders for the Marine and Maritime '*top ten*' Skill Needs

Generic Skills Needs	Specific Skills Needs
Business & Management	Carpentry
IT	Composites, GRP and Laminating
Customer Relations	Crane Skills
Sales, Retail (including Chandlers) & Marketing	Diving Skills
Electronic Engineering	Fish Processing
Mechanical Engineering	Import/ Export & Freight
	Painting/ Finishing
	Rigging
	Sail Making
	Seamanship & Boat Skills
	Shipwright
	Waste Management
	Welding & Fabrication

Source: South West Marine and Maritime Survey 2003

Within this grouping there are a number of specific Marine and Maritime skills that, while are clearly important to the Sector, offer minimum impact on the overall GDP. These skills are important on the micro-level to a small number of individual businesses, for example, sail making and rigging, which offer opportunities to increase or, given the lack of skills currently present in the workforce, maintain business turnover and profitability. Further skills in this grouping include, crane skills, diving skills, shipwright, fish processing, waste management and seamanship and boat skills. These are skills highlighted by businesses as being important to the Sector or their specific sub-sectors, and all of these skills support other Marine and Maritime activities and add to the whole of the Sector. Therefore, in a similar way to skills dismissed earlier on the GDP criteria, such as Health & Safety and first aid, provision of training in these areas is important and recommendations for their coverage will be included in this Study.

This process of elimination now leaves only 11 skills remaining. One of these skills areas, customer relations, despite offering opportunities in terms of the criteria offers less potential impact upon GDP than the others. This process of elimination leaves only the '*top ten*' skills needs in the Sector remaining. Table Twenty-eight shows the remaining 10 skills or skills-sets.

Table Twenty-eight: The Unranked *'top ten'* Marine and Maritime Training and Skill Needs

Generic Skills Needs	Specific Skills Needs
Business & Management	Carpentry
IT	Composites, GRP and Laminating
Sales, Retail (including Chandlers) & Marketing	Import/ Export & Freight
Electronic Engineering	Painting/ Finishing
Mechanical Engineering	Welding & Fabrication

Source: South West Marine and Maritime Survey 2003

Finally, these '*top ten*' skills and skills-sets need to be ranked according to their potential impact on the overall contribution to GDP. In increasingly competitive Marine markets, and in terms of the overall contribution to GDP, three skills-sets stand out above all the rest and these will take on growing significance in the future. These skills-sets relates to business and management, IT, sales, retail and marketing and these hold the biggest potential for increasing the Marine and Maritime Sector's contribution to GDP, and therefore constitute the '*Top Three Skills Needs* ' for the Sector in the Region.

This statement may appear to be *'putting the cart before the horse'* in that without the other range of skills there would not be a Marine and Maritime Sector in which to apply these skills-sets, and this is acknowledged, but it is also true for all other Sectors in the economy. However, in the Marine and Maritime Sector the results of the survey demonstrate that skills issues, although important, do not appear to affect the whole of the Sector. There are skills gaps and training needs in the Sector, but only 14.6% of businesses identified skills gaps and only 21% identified training needs. Some of these needs were acute in specific areas, but in terms of increasing GDP tackling any of the other identified skills need in the *'top ten'* would not have anywhere near the same level of impact. Regardless of whether or not individual businesses in the Sector suffer from specific skills gaps and shortages, intervention in these areas holds the biggest potential to increase the competitiveness and increase the Sector's contribution to GDP and applies to every business in the Sector.

The business and management techniques and tools are well known, tried and trusted, yet may not have penetrated far into much of the sector. Indeed, business and management skills were highlighted as an issue right across the sub-sectors and sub-regions, and in organisations of all sizes, from micro-businesses to the largest businesses in the Sector. Increasing profitability in Marine and Maritime businesses hold significant potential for gains in the contribution to GDP. The other skills of IT, sales, retail and marketing are equally important, and hold the potential of again increasing profitability, improving efficiency, increasing market share and eventually increasing organisational size.

From the remaining group, two other obvious skills are common across the Sector. These skills are related to electronic and mechanical engineering and are fundamentally important to large swathes of the Sector. The same issues as those facing the Advanced Engineering Sector affect many Marine and Maritime businesses. Marine engineering and manufacturing related organisations operating across the categories of resource based industries, design and construction and equipment and service providers utilise electronic and mechanical engineering skills. Skills gaps, shortages and training needs have been identified by many businesses operating within the

Sector. Interventions in these areas, therefore, hold the potential to support and underpin a great deal of Marine and Maritime enterprise. The greatest potential to increase the Sector's GDP lies in maintaining the skills base, and developing new and additional skills. In particular, those skills relating to achieving greater efficiency in *'cost down'* lean manufacturing and reducing lead times in agile manufacturing. These skills are also transferable and interventions in training would benefit other Sectors.

In terms of priority, national forecasts identify electronic, electrical and precision engineering as all likely to experience growth, while some of the more traditional forms of engineering face stagnation and decline. However, the Marine and Maritime Sector is heavily dependent on both mechanical and electronic engineering and often many of the products produced are reliant on a combination of the two, for example, super-yachts. Therefore, interventions in both forms of engineering training hold the potential to increase GDP and these skills should be given equal priority.

Separating the other skills is difficult, they are all important in one way or another. However, given the importance placed upon engineering skills, allied skills such as welding and fabrication, and painting and finishing on a similar criteria to that used for engineering as a whole, again underpin many activities in the Sector. It is difficult to determine between the two areas. However, priority skills shortages, gaps and training needs, in the largest businesses when looking at employment numbers and turnover, highlight welding and fabrication followed by painting and finishing. Skills gaps and training needs in composites, GRP and laminating and carpentry, similarly affect the larger and smaller employers. Finally, the other skills need highlighted by businesses, which holds a significant potential impact in the future, is import/export and freight.

In order of priority, the '*Top Ten*' skills needs in the Marine and Maritime Sector for the South West of England are:

1	**:**	**Business and Management**
2	**:**	**IT**
3	**:**	**Sales, Retail and Marketing**
=4	**:**	**Electronic Engineering**
=4	**:**	**Mechanical Engineering**
6	**:**	**Welding and Fabrication**
7	**:**	**Painting and Finishing**
8	**:**	**Composites, GRP and Laminating**
9	**:**	**Carpentry**
10	**:**	**Import/Export and Freight**

The recommended solutions to address the identified '*Top Ten*' rests within the framework provided in the next section. In terms of the numbers of courses and qualifications attained by developing this framework, is difficult if not impossible, to tell at this stage. The proposed framework is an especially dynamic concept which is difficult at this point to quantify in terms of a final settled level of activity, estimates now would be purely '*finger in the air*' and therefore not particulary valid. Moreover, during the course of undertaking this research, employers were calling for a variety of solutions to their skills and training needs, very little of which was qualification dependent. If the solutions recommended in this Report are truly to be demand led and reflect the views of employers, it is only when dialogue between employers and training providers is started to address these needs, will the potential numbers of trainees and type and level of qualifications attainment be known. Indeed, the best solution from a demand

perspective may be the provision of a short-course to overcome immediate need, rather than linking the training to qualifications.

However, an example of the potential and direct impact in terms of qualifications and trainee numbers has been provided in the next section. This example relates to the recommended solution to the skill ranked as number seven in the '*Top Ten'*, for painting and finishing training in the Cornwall sub-region. It is only because, we have been able at this stage to study in detail and identify a potential partnership that we have been able to start to quantify trainee numbers and the possible qualifications that may result from this provision.

Therefore, the recommendations to solving the other identified skills needs in the '*Top Ten*' rests within the proposed Regional solution to the '*Skills Needs of the Marine and Maritime Sector in the South West of England*' which is outlined in the following section.

2.10 Meeting the Education and Training Needs of the Marine and Maritime Sector in the South West of England *'The Way Ahead'*

Following the analysis and identification of the skills needs of the Marine and Maritime Sector the overall aim of the research is to provide a coherent and actionable plan for the development of Marine and Maritime sector skills within a regional framework. Marine South West has been active in the business development of the Marine and Maritime Sector in the South West Region in association with SWRDA for three years. It is widely recognised that skills and training remains the single most important barrier to growth for all businesses. In addition, SWRDA has a key role as an agent stimulating change in South West businesses, to affect growth and improve competitiveness. Undoubtedly, developing a strategic focus on training can support this, so it is important to identify in what particular terms and actions this stimulation of industry performance can be manifested for the Marine and Maritime Sector. This is especially important given the economic, social and legal drivers highlighted in this Report which appear to underpin many of the skills requirements in the Marine and Maritime Sector today. A key role exists in seeking to underpin major strategic initiatives and ensure that any initiatives implemented meet certain prerequisites. These prerequisites are that:

- ❖ they fill gaps where existing education and training provision does not meet demand.

- ❖ they include the active participation of key stakeholders from both the skills supply and demand sides to ensure complementarity with, or improvement of, current provision.

- ❖ they stimulate economic growth and sustainability.

- ❖ they increase competitiveness, and for the Marine and Maritime Sector to move the Sector up the *'value chain'* and increase the Sector's contribution to the Region's GDP.

The research undertaken to assess the *Skills Needs of the Marine and Maritime Sector in the South West of England* has identified that the Marine and Maritime Sector has a number of skills issues to address at different levels, ranging from the specific to the generic, and from the immediate to the strategic. Many of these issues can be clearly recognised within the individual business, skill-set or sub-sector level following the in-depth analysis that has taken place.

Consequently, it remains possible to address these issues at an individual, skill-set, Sector, or sub-sector level. With this in mind, it is clear that there is undoubtedly the potential to adopt a holistic approach to addressing the Marine and Maritime Sector training needs, or alternatively, a more ad hoc approach to meet individual skills needs. Both approaches are possible. If the latter approach is taken, then the Sector will continue to be dogged periodically by skills gaps and shortages since this is essentially a reactive approach rather than a proactive one in meeting skills needs. It is therefore recommended, that the former approach is taken since it offers the most advantageous solution to the short, medium and long-term skills needs of the sector.

The potential to apply an overtly top-down and managed approach exists and evidence from the Sector suggests that this would be welcomed by many businesses in the Marine and Maritime Sector. Indeed, many called for Marine South West and regional partners, for example, Learning and Skills Councils to address major skills challenges in equal measure with industry in the Sector. This approach could lend itself either to the strengthening of existing training provision, or focus upon and address the gaps in education and training provision. Either way, support for education and training in the sector is becoming more important since training provision in the Region in terms of the number of providers and the number of courses provided has declined since 2001, and equally because current education and training provision does not adequately meet the perceived need of all of those in the Sector.

Addressing training provision gaps seems more appropriate for the approach given that there still remains a reasonable number of education and training providers in the Region, although the level of investment and subsequent risk is higher. However, it is the management of this risk that both current providers who are striving to meet need and businesses are calling for from any such initiative. It has been established during the course of undertaking this research that businesses from within the Sector and many innovative providers of education and training would *'buy into'* and support major changes in the provision of education and training content and delivery that meets the needs of the Sector.

With the focus of this Report concerned, in part, with the identification of the *'top'* skills needs, the introduction of a managed approach to the delivery of the solutions to these needs appears pertinent. It has been established that there is support in the South West within Marine and Maritime and engineering sector bodies, within training organisations, trade associations, clusters and regional/sectoral groups and HE/FE, who could all play an integral role. Most importantly though, the will and in some cases the infrastructure that exists within a number of the businesses who would benefit, is available too. Indeed, many businesses have offered to work in partnership with Marine South West, the BMF, EEF and other regional partners to establish training provision. Beyond a managed approach, closer relationships between companies, training providers and other sector organisations is required, but without the aid of animators or brokers such as Marine South West and regional partners, ad hoc initiatives and provision will ensue.

The results of the survey established that current education and training provision is perceived by businesses to meet demand only 80% of the time, and whilst this is generally a satisfactory level, and there is generally satisfaction for many courses for existing workers, there is less satisfaction with the training available to new entrants to the Sector, and also in particular areas where there are gaps in provision. The potential for greater collaboration, either to strengthen existing training provision or to introduce new training programmes specifically addressing training gaps must be realised to ensure that businesses get a higher percentage of fit for purpose training.

The research undertaken for this study also exposes a number of distinct cultural issues surrounding training, and they too need to be addressed to change existing internal business barriers and attitudes to training. For example, 60.5% of businesses stated that training was not really planned or linked to their strategic goals and that they only train when the need arises. It may be that outside of specific targeted actions towards meeting skills needs, exercises that raise the awareness of the benefits and opportunities for education and training would serve a good purpose.

Whatever activity Marine South West and regional partners support in the pursuit of strengthening the skills base of the Marine and Maritime Sector in the South West, there is a growing expectation from within Marine and Maritime Sector organisations that it will have sufficient scale and profile to have a serious impact on training provision, company training strategy and skills needs. If training is a matter of choice then businesses seek a choice that clearly addresses their biggest training needs in a comprehensive way.

The potential exists to address skills needs by developing an approach that satisfies a larger number of businesses in a cost-effective manner. Centres of Excellence have already been developed within the Marine and Maritime Sector to support innovation and technology transfer. They are characterised by the fact that they are based at the interface between (in the innovation example) the technology and knowledge provider, and the industry user. However, there is no working example of a Centre of Excellence that supports training and helps to manage the interface between the provision of training and the industry user. In presenting the case for a more holistic approach, it is logical to marry the most important skills requirements as expressed by Marine and Maritime businesses in the South West, with a comprehensive and coordinated approach to the provision of such skills.

There are several factors to consider in trying to establish a Centre of Excellence for Marine and Maritime training in the South West. Not least concerns the location of any proposed Centre and, furthermore, the cost of doing so. The South West is geographically and economically diverse and so is the business base. The research established that there are seven Marine and Maritime related clusters in the Region and the findings of the research also established that while some skills needs were generic to all of the sub-regions, localised specialisation has generated differing skills needs priorities in each of the sub-regional clusters. For example, painting and finishing training was a priority for the Cornwall sub-region, whereas waste management training was a priority in the Bournemouth, Poole and Dorset sub-regional cluster. While training in each of these skills may be beneficial to businesses in each cluster, current demand for training in each skill has only been identified in one or the other cluster. The costs of providing facilities in order to establish sub-regional cluster located Centres would be prohibitive and the sustainability of so many Centres questionable once cluster related skills had been met.

Furthermore, it must be borne in mind that only 21% of Marine and Maritime businesses identified training needs that could not be met locally. Equally, only 14.6% of businesses identified skills gaps in their workforces. While these skills gaps and training needs are particularly acute in many instance and in the larger businesses these problems affect a large number of employees, the amount of investment required to establish a physical Centre of Excellence to meet this level of need is again likely to be prohibitive. A Centre of Excellence approach requires substantial resources to ensure that appropriate programmes and methodologies can be applied in the delivery of training for skills. At the same time, the training provision must have an element of continuous need to ensure sustainability of the training beyond the short-term. This

further weakens the case for the establishment of a mono-centric training facility on the ground of sustainability.

Equally, there are current public and private sector education and training providers well placed geographically to the sub-regional clusters to serve these needs, even if it is perceived that, in some instances, they are unable to do so at present. With over 77% of businesses in the survey stating that they were satisfied with the training provision provided locally, this course of action would also potentially raise questions about utilising the public purse to establish competition to what is perceived by the majority of businesses as suitable provision.

An altogether different and innovative approach to training provision is required, in order to meet the Skills Needs of the Marine and Maritime Sector in the South West of England. In examining different forms that a Centre could take, there are several options which could be explored:

- A centre can be physical, virtual, or some way in between. There are arguments all ways of course. On the one hand it is possible that being closer to a virtual centre in form means that concerns about sustainability are less because costs are less. On the other hand, a physical centre might be far better at ensuring stakeholder commitment.

- If a centre is characterised by its being at the interface between supply and demand, then its position, either close to the supply side or the demand side, would help sustainability. There is some argument for basing a centre within a business or close to a network or cluster to ensure that businesses, as stakeholders, are seen as properly making an *'investment'* and seeking '*ownership*' in the Centre approach to training and its continuous success. Coupled with this there are practical reasons for enabling training to take place within companies:

  - the availability of good in-house facilities which may need little or no upgrading.

  - the ability of the business to steer the individuals undertaking training.

  - the desire of businesses to manage their trainees.

After consulting with stakeholders, Sector champions and businesses, what was clearly emphasised was that any solutions recommended had to be considered from a demand-side perspective. For many of the skills needs, businesses preferred to utilise in-house options for the delivery of training and they were generally unconcerned about linking any training to specific qualifications. In many instances, employers highlighted that short-courses would suffice and would *'get them over a particular task orientated problem'* in the short-term. Consequently, businesses preferred training to be delivered, if not '*in-house*', then at the sub-regional level.

In the interviews with businesses in the Region when exploring the topic of training provision and its delivery, a surprisingly large number of businesses with particular skills needs offered to work with both public and private sector training providers to develop training geared to their specific needs. Many of these businesses also offered the use of their facilities and were willing to invest in cash or provide matched funding in-kind in the establishment of such provision. In the main, these tended to be larger businesses or organisations and included shipyards, port operations and engineering businesses. When the question was posed concerning their willingness to open up this hypothetical

provision to other businesses locally or regionally with the same skills needs, many were surprisingly happy to do so. The financial benefits of this arrangement seemed to be the motivational driver, nevertheless this would be a very cost effective way of meeting skills training needs for all concerned.

Businesses also suggested that any model developed should not focus on a particular skill because individual businesses that had a skills need in one area were also likely to have further needs in associated areas of closely allied skills. In considering skills requirements and training for paint spraying, for example, there would be no economic case to justify the establishment of a Centre of Excellence focussing on one skill alone, even if this Centre was based within a business. Demand, although high, is not sufficient to sustain numbers of trainees in the medium to long-term. However, it is easier to warrant investment in training in painting if it was grouped together with a requirement for related skills such as boat cleaning and preparation, gel coating and finishing technologies.

Essentially, what has emerged from the research, and following extensive consultation with the Sector, is just the type of different and innovative approach to training provision that is called for to address the skills needs of the Marine and Maritime Sector in the Region. To reiterate, and to start to build on this concept, Marine South West with support from SWRDA, and other regional partners, should act as facilitators or brokers in building partnerships consisting of education and training providers and those in industry, to meet the skills needs identified in this study.

These Partnerships are likely to consist of a public and/or private sector training provider and a lead business within a sub-region or cluster, which may lead to the provision of facilities and/or a cash or in-kind contribution for the establishment of a centre. These individual partnerships within the network may focus on one particular skills need or on a group of closely allied skills needs, which may differ within the centres. The partnerships should be encouraged to engage with the supply chain and/or co-operate with other businesses who may be competitors who have similar needs.

In addition, an element of flexibility may be built into Network provision for peripatetic or roving training to be delivered to those businesses who are unable to send their employees to the centre for any reason, such as, prohibitive travelling time and/or costs. This type of delivery would also be suitable for businesses that do not wish to send their employees to a competitor to be trained. The lead for training delivery of this nature should be taken by the public or private sector training provider.

Provision should not be limited to sub-regional demand. Any provision should be opened up to regional businesses and other centre partnerships and should seek to meet national and international demand to ensure viability, and thus sustainability of the provision. Partnerships should be flexible enough to provide training in some form for any emerging skills need identified. These partnership centres should be linked both physically and virtually with the others in the Region. This will enable others to access provision in a partnership centre with a particular sub-regional or cluster specialism which will in all probability be established as a reaction to need in that area. Virtual linkage could be provided between the centre with some forms of training broadcast via a networked communications system. It is envisaged that trainers would rove between centres to deliver provision more locally. In effect, what has emerged could be described as a *'Networked Marine Training Centre of Excellence'* with the centre being the sum of the partnerships.

Training, although specifically Marine and Maritime focused, could be widened to include the more generic skills needs in the Sector such as business and management,

marketing and IT training as well as Health & Safety and first aid. The Network should be linked into existing Marine and Maritime initiatives at the sub-regional levels and marine and engineering organisations nationally such as, BMF, SEMTA and the EEF.

The concept of the *'Networked Marine Training Centre of Excellence'* approach provides a major opportunity to develop an innovative and imaginative solution to meet today's skills needs and provide proactive training to meet the skills of tomorrow. Generally, businesses in the Sector when prompted, recognised the importance of looking at skills needs strategically. The key drivers of skills in the Sector are:

- ❖ introduction of new services and products.

- ❖ improving manufacturing and production processes.

- ❖ introduction of new technologies, especially within the production process.

- ❖ legislative factors.

- ❖ the age profile of the workforce in the marine sector.

A cohesive approach to future skills is needed to:

- ❖ raise awareness of specific future skills shortages.

- ❖ meet the challenges of an ageing workforce.

- ❖ address the needs associated with industry changes as production methods and products continue to improve.

However, the solutions that have been posited to meet the skills needs of the Marine and Maritime Sector in the Region require Marine South West and regional partners to take the lead in making this happen. The recommendations are strategic while focussing on the immediate, and are realistic although difficult to implement, and additionally outcomes are measurable in terms of impact. In the course of undertaking this research there was a real sense of desire or perhaps a resignation on the part of both businesses and Sector representatives and champions, that something bolder was required to solve the skills needs in the Sector. The ad hoc approach has been prevalent for far too long in the Sector, and now there seemed to be willingness and some momentum to try something different. The final recommendation here calls for Marine South West to take the lead in facilitating or brokering the establishment of the *'Networked Marine Training Centre of Excellenc*e' and to provide the glue in the longer term to keep the Network together. This may require the formation of a separate training company: Marine South West Training.

2.10.1 Main Recommendations

Recommendation 1: Test the *'Networked Marine Training Centre of Excellence'* Concept

1.1   It is recommended that the *'Networked Marine Training Centre of Excellenc*e' concept is the best way forward in the South West of England to provide for the unmet training needs of the Sector. This Network should consist of partnerships between public and private sector training providers and businesses from the Marine and Maritime Sector in the Region. These individual partnerships should be linked in

a regional framework to provide a networked form of provision. This Network would be cluster reactive and provide for unmet need on a cluster, sub-regional and regional level. For example, Partnerships might consist of a public and/or private sector training provider and a lead business within a sub-region or cluster, which may lead to the provision of facilities and/or a cash or in-kind contribution for the establishment of a centre. These individual Partnerships within the Network may focus on one particular skills need or on a group of closely allied skills needs, which may differ within the Centres. The Partnerships should be encouraged to engage with the supply chain and/or co-operate with other businesses who may be competitors who have similar needs.

1.2   Marine South West in collaboration with other regional partners should lead this initiative and act as animators or brokers in partnership building. Marine South West could explore the possibility of setting up a separate training section in order to manage the Network or alternatively undertake this role as a part of its current activities.

1.3   The first step in this process should involve piloting the concept by focussing on the previously identified skills needs in painting and finishing. The research undertaken for this study has identified that within the Cornwall sub-region, and specifically, in the Falmouth/Penryn cluster there is a chronic level of shortage in high quality painting and finishing skills. The research also established that there is the potential in the Cornwall sub-region to develop a suitable Partnership between a shipyard with skills needs in this area, and a public sector training provider to pilot the concept. This model of provision will also be extended to meet the short-term needs of other employers in the Falmouth/Penryn cluster and wider sub-region of Cornwall. The shipyard's management have agreed to host trainees from other companies within this provision. In addition, the College may provide peripatetic or roving provision in the sub-region.

1.4   Following an assessment of initial demand for this surface finishing and high quality paint spraying training, both in the cluster and at the sub-regional level, approximately ten other businesses were interested in sending their employees to the shipyard for training in this skills area. The number of potential trainees from each of these businesses was contingent upon staffing levels at the time of the training being provided, but it is not unreasonable to assume that there are at least 20 potential trainees from these sources. This does not take into consideration the potential market for this training at the regional level and again it is not unreasonable to assume, following the level of demand indicated for training in this area, that there exists another 20 potential trainees from businesses in the Region. There is also an indication that demand for the peripatetic training will be high, with several businesses expressing a desire for this form of provision in the sub-region and also at the regional level.

1.5   In collaboration with the shipyard the College has offered to develop bespoke surface finishing and paint spraying training initially based around the already accredited automotive NVQ provided by the

College. However, this bespoke training will deliver training to meet the exacting standards of the Marine and Maritime Sector and the College will seek accreditation in its own right for this provision in the medium to longer-term. Provision will also differ from that currently provided by the College, in that delivery will, in the main, take place at the shipyard and will involve closer liaison with businesses than has previously been the case.

Outcome: It is envisaged that this partnership will not only provide a solution to the previously identified skills need in this area but it will also lead to the estimated attainment, once the provision is established, of approximately 50 NVQs at Level 2 over a two year period. In addition, these trainees would move on to NVQ Level 3, leading to the attainment of a further 40 NVQs at Level 3, after allowing for early leavers.

Recommendation 2: Embed Generic Training Provision into the Model

2.1   The Partnership should seek to embed generic training provision within the model. The type of course should not be qualification dependent, but responsive to the needs of businesses. Courses should be either developed or existing providers courses identified in areas such as, business and management, IT, sales, retail and marketing, Health & Safety and first aid all of which have been identified in this research as being generic skills and training needs in the Sector.

Outcome: Generic skills needs in the sub-region will be provided for by the Partnership.

Recommendation 3: Evaluate the Model of Provision

3.1   It is recommended that although, the evaluation process should be embedded and continuous, once the model has been established and has been running for a period of one year, the model of provision should be evaluated to determine its:

- ❖ Cost effectiveness.
- ❖ Whether it meets the needs of employers in the sub-region and Region, if provision had extended that far during the early stages.
- ❖ Quality of the delivery and of the trainee experience.
- ❖ Delivery outcomes in terms of qualifications attained.

Outcome: Assess the effectiveness of the model in order to determine its viability in terms of value for money and training delivery, qualifications attainment of trainees and to transfer best practice to other potential partnerships.

Recommendation 4: Identify Other Potential Partnerships

4.1   It is recommended that whilst the model is being tested, other potential partnerships are sought. This research has established a high level of interest among Marine and Maritime businesses and training organisations in the Region who would like to be involved in the

programme. Further dialogue with these and other businesses and organisations should take place to establish additional partnerships during the second year of the initiative. Establishing new partnerships during year two would enable *'best practice'* to be evaluated and transferred from the model to any new partnerships that may be formed. However, this is not to say that there will be only one model, it is envisaged that different forms of partnerships will be formed from a demand perspective to tackle different needs. For example, partnerships could consist of private training providers and a primary business, as well as a mixture of public and private provision.

4.2 New partnerships should be established on the basis of need, this need could be a specific issue affecting the Sector. The Partnerships could focus on a specific skill or the Partnerships could be established where the focus is on a range of skills. It is envisaged that Partnerships will be established in localised areas where the need has been identified in order to respond to cluster demand. For example, the identified need in the Cornwall sub-region for high quality surface finishing and paint spraying, or for identified needs in the Plymouth and Poole clusters where two larger businesses have indicated a desire to enter into Partnership provision with a range of public and private sector training providers. However, because of the networked element in the concept, this provision would be opened up to other businesses in the Region who have similar needs, but may be located in, or nearby, a cluster whose needs are different and thus, Partnerships in their area provide for another skill or skills-set.

Outcome: New Partnerships will have been identified to meet demand led need.

Recommendation 5: Establish New Partnerships

5.1 It should be the aim of the managers or facilitators of the initiative to establish new partnerships during Year Two. This target although tight, would then start to make a contribution to the skills issues facing the Sector.

5.2 Establish new partnerships.

5.3 Ensure that all of the partnerships are networked and have a communications and delivery infrastructure in place to truly be a *'Networked Marine Training Centre of Excellenc*e'.

Recommendation 6: Establish a Marine and Maritime Skills Assessment Mechanism

6.1 Marine South West and regional partners should establish a mechanism whereby the skills needs of the Sector is subjected to an on-going assessment. Thus, areas of needs can be quickly identified and training provision built into existing partnerships or new partnerships established to tackle an identified need.

6.2   Provision should be put into place within the framework for the identified future skills needs, and any further identified needs in the Sector to be proactively provided for by appropriate training measures.

6.3   The Network should establish a Marine and Maritime Employers Skills and Issues Forum in the South West. This forum needs to be created to facilitate in the process of the assessment of demand led need, and to create a feedback loop to ensure that current provision provided by the Network, is truly meeting demand led need.

Outcome: The Network remains relevant and responsive to demand led need in the Marine and Maritime Sector in the South West of England.

Recommendation 7: Assess the Transferability of the *'Networked Marine Training Centre of Excellenc*e' Concept to other Sectors in the South West of England.

Figure Five : SWOT Analysis of the Proposal for the Development of a '*Networked Marine Training Centre of Excellence*'

Strengths	Weaknesses
❖ Training is demand led and employer/cluster responsive.	❖ Provision relies on a co-operative model.
❖ Provision can be proactive and reactive according to need.	❖ Complex relationships need to be managed and held together for the concept to work effectively.
❖ Provides the Marine & Maritime focussed education and training called for by employers.	❖ MSW and regional partners have little control over Centres.
❖ Initial capital investment is low in comparison to providing a purpose built training facility.	❖ Travelling distance to the Region could weaken national demand.
❖ Delivers cost effective provision.	❖ There may not be a suitable primary business in a location to provided facilities for the development of a Centre to meet need for certain skills.
❖ Flexible enough to accommodate newly identified skills needs.	
❖ New Centres can join or leave the Network without compromising the overall framework.	
❖ Training is delivered in a Marine environment rather than just in a classroom.	
❖ The concept utilises existing public and private sector education and training providers.	
❖ The peripatetic or roving training provision built into the concept adds to the flexibility of the delivery. This may overcome some businesses' reluctance to use competitor facilities for training.	
Opportunities	**Threats**
❖ Provides the opportunity to address current and future skills need in the Sector.	❖ If a primary business supporting provision through a Centre withdraws support for any reason, provision in the short-term would cease.
❖ Potential national and international demand.	❖ Businesses do not '*buy-in*' to the concept.
❖ Opportunity to provide training to other related Sectors.	❖ Businesses will not support the co-operative model of provision and will not use competitor facilities for training their own staff.
❖ Generic training can be delivered through the Network, such as, IT and business and management training.	❖ Ability of MSW to hold the network together.
❖ Associated '*spin offs*' include supply chain strengthening.	❖ Quality of the provision needs to be high to stimulate demand.
❖ New forms of Marine & Maritime qualifications can be developed.	
❖ The Network could provide a platform for launching and supporting other Sector based initiatives.	

2.10.2 The Recommendation to the Solution to the Previously Identified Need for Surface Finishing and Paint Training

Although the overall aim of the research is to provide a coherent and actionable plan for the development of Marine and Maritime sector skills within a regional framework, a secondary objective was to recommend a solution for the

previously identified skills need for high quality surface finishing training. While the overall solution for the medium to long-term should rest within a regional framework, due to the chronic level of shortage in high quality finishing skills in the Cornwall sub-region, and specifically, in the Falmouth/Penryn cluster, a short-term solution is called for.

However, this short-term solution should not be developed in isolation from the strategic one recommended to meet the need over the medium to longer-term. It is essential that this short-term solution fits within the regional framework and is one that can be built upon and developed in order to meet medium and longer-term needs.

Following an exploration of potential short-term solutions, the recommendation is for high quality surface finishing training to form part of the wider proposal for a *'Networked Marine Training Centre of Excellence'.* This Network would be cluster reactive and would be based upon partnerships between training providers and employers. This would enable the provision and partnership to rest within the overall framework in the medium to longer-term.

After extensive consultation with a public sector training provider in Cornwall and a major shipyard in Cornwall within its vicinity, it is recommended as an interim solution that bespoke surface finishing and high quality paint spraying training should be delivered by this public/private partnership. Indicative costs for this provision is estimated to be in the region of £100,000 and will enable a minimum of ten individuals from shipyard's own staff to be trained in accordance to their specific needs. This model of provision will also be extended to meet the short-term needs of other employers in the Falmouth/Penryn cluster and wider sub-region of Cornwall. The shipyard's management have agreed to host trainees from other companies within this provision. In addition, peripatetic or roving provision may be provided by the College in the sub-region.

Following an assessment of initial demand for this surface finishing and high quality paint spraying training, both in the cluster and at the sub-regional level, approximately ten other businesses were interested in sending their employees to the shipyard for training in this skill. The number of potential trainees from each of these businesses was contingent upon staffing levels at the time of the training being provided but it is not unreasonable to assume that there are at least 20 potential trainees from these sources. This does not take into consideration the potential market for this training at the regional level and again it is not unreasonable to assume, following the level of demand indicated for training in this area that there exists another 20 potential trainees from businesses in the Region. There is also an indication that demand for the peripatetic training will be high, with several businesses expressing a desire for this form of provision in the Sub-region and also at the regional level.

In collaboration with the shipyard the local College have offered to develop bespoke surface finishing and paint spraying training, initially based around the already accredited automotive NVQ provided by the College. However, this bespoke training will deliver training to meet the exacting standards of the Marine and Maritime Sector and the College will seek accreditation in its own right for this provision in the medium to longer-term. Provision will also differ from that currently provided by the College, in that delivery will, in the main, take place at the shipyard and will involve closer liaison with businesses than has previously been the case.

The indicative cost of this provision is based upon estimates provided by the College for capital expenditure of £80,000 and revenue support of £20,000. The estimate for revenue support has been made on the assumption that not all of the training delivered to individuals will qualify for other sources of FE funding which is largely age reliant. This figure may therefore be substantially less than the estimate if the College can secure revenue support from other sources and it will be seeking funding of this nature from the Learning and Skills Council. Both the College and the shipyard will also make a contribution in cash and/or in-kind to the training provision. In-kind contributions will include the development costs of the training and the accreditation of the training, premises and materials.

The short-term solution has many advantages in that any capital expenditure at this stage will also benefit the medium and longer-term solution. This model would also act as a pilot for other forms of regional provision and can be extended to meet other identified skills training requirements at the sub-regional level. This also provides an example of the potential effectiveness of the model, in that training provision is cost effective, and will initially cost in the region of £2,000 per individual trained, with costs falling after the initial capital expenditure has been made. This figure is based on an estimated demand of 50 people undergoing training at the regional level.

This investment in training holds the potential to help this particular shipyard secure a greater percentage of the refit market, which is estimated to be worth in the region of £375 million. Other businesses would also benefit from receiving this training and this would present similar opportunities to them. This would also have major knock on benefits for the supply chain in the Region. This approach is thus not just cost effective in terms of the cost of training provision, it would also offer the opportunity for increased competitiveness in the Marine and Maritime Sector, move the industry up the *'value chain'* and increase the contribution to the Region's GDP.

The overall number of individuals trained and the urgency of provision in this area is somewhat contingent upon another factor the outcome of which is out of the control of the shipyard, Marine South West and regional partners. If the shipyard is successful in securing support for their plans this will effectively result in their strategic re-orientation into the refit market, and they will then require a larger number of individuals trained to a high standard and quickly. The management at the shipyard indicated that both recruitment of new staff and the training of new and existing staff would have to commence in the summer of 2003 to enable them to be in a position to take maximum advantage of any support given to their expansion plans.

Even if the required outside support is not forthcoming, the recommended solution will still enable the shipyard to train their existing ten employees in surface finishing and paint spraying. It will enable other businesses in the sub-region and Region to take advantage of this short-term solution to their skills needs and will provide a significant start in addressing previously identified needs in this area. It will also provide a developmental model for the *'Networked Marine Training Centre of Excellenc*e' in the Region which would have the advantage of fitting into the overall strategic framework.

2.10.3 Assessment of Demand for a *'Networked Marine Training Centre of Excellence'*

One of the objectives of the research undertaken for this study was to assess and take into account possible national and international demand for any solutions posited for the provision of education and training in meeting the '*Skills Needs of the Marine and Maritime Sector in the South West of England*'. In order to determine any potential demand for education and training delivered through the '*Networked Marine Training Centre of Excellence*' a survey and further interviews were undertaken with approximately 100 potential users of such provision. The survey and interviews focussed mainly on larger Marine and Maritime businesses which employed large numbers of people. However, smaller businesses were also surveyed to try to establish the potential demand for more specialist training, such as sailmaking and rigging.

In undertaking the survey and interviews a hypothetical question was posed along the following lines:

❖ If a Marine Training Centre of Excellence was established in the South West of England would you in principal use such a facility?

Obviously, interviewees were given more information about the '*Marine Training Centre of Excellence*', such as the overall concept and the potential type and range of training that would potentially be on offer, and through employing a semi-structured approach in the interviews, which allowed for flexibility in exploring informants responses, a number of issues emerged.

The majority of the businesses surveyed currently use their local training providers or have in-house training facilities. However, many businesses, including some of the larger ones, confirmed that in principal that they would consider sending their employees to a *'Marine Training Centre of Excellenc*e' in the South West for training if it was just that, a training centre of excellence focussed on Marine and Maritime training.

Many businesses noted that although they use local training providers for the majority of their needs, some of the provision that they accessed was not Marine and Maritime specific. Indeed, some businesses at the national level mentioned that they were having to send their employees onto, for example, automotive courses for finishing and paint training, and onto general construction courses for marine carpenters and joiners. The unique selling point for many of the businesses contacted was the proposed Marine and Maritime focus of the training. Even some of those contacted that mentioned they did not wish to send their employees to the South West for training commented that they might reconsider, if, once the Centre was established, they could see that it was really marine focused and met their needs.

However, the decisions of many businesses on whether or not they would send their employees to the Region for training was contingent upon a number of factors:

❖ Cost of the training.

❖ Specific Marine and Maritime focus.

❖ A cost benefit analysis of the travelling distance against the business benefits from the training.

❖ A cost benefit analysis of the associated accommodation and down time (staff away from their jobs) costs against the business benefits from the training.

Several of the factors listed above concerned the peripherality of the Region in general, with some businesses perceiving that the travelling distance was too far in terms of costs and time. This was the major factor that was seen by businesses as hindering any likelihood of international demand at the outset. The Centre would have to establish a regional and then national reputation before attracting international demand.

In summary, while regional and national demand was potentially high, international demand was very limited. However, in general terms it was noted by many of the interviewees that once such provision was available and that the *'Networked Marine Training Centre of Excellenc*e' had been established for some time, with the concept proven, wider demand would potentially follow.

2.11   Assessing the Economic Impact of the 'Networked Marine Training Centre of Excellence' Concept

2.11.1 Direct Impact and Broader Regional Impact

Evaluation of economic impact distinguishes between the direct observable impact and the broader impact, which may be less immediately obvious but is frequently more significant in the medium and long term. Direct impact refers to such measures as '*increase in numbers or levels of qualifications achieved*' or '*increase in total training days*' that would be outcomes of the proposed concept. These measures, while direct, are also intermediate in the sense that what MSW and regional partners seek to achieve is an economic benefit for the Region measured in terms of incomes (e.g. regional GDP) and employment (e.g. jobs created or saved). Our analysis suggests that indirect regional impacts are likely to be significant in the case of the proposed *'Networked Marine Training Centre of Excellence'* concept, the innovative features of which suggest that broader ramifications deserve close attention.

However, the impact of skills and learning activities on broader regional measures is notoriously difficult to assess, as a long chain of other causal variables intervenes ranging from macro-economic conditions to complementary technology and other investments whereby firms actually use and benefit from the skills acquired.

Direct impact measures will require specific figures in terms of numbers of courses and trainees. As the proposed *'Networked Marine Training Centre of Excellence'* is an especially dynamic concept which is difficult at this point to quantify in terms of a settled final level of activity, estimates now would be '*finger in the air*' and therefore not particularly valid.

At this stage we have therefore developed a number of the important factors that will help regional partners and MSW evaluate the likely value of the proposed new skills concept, focusing on assessing the broader regional impact:

2.11.1.1 The Significance of the Marine and Maritime Sector

Growth

The Marine and Maritime Sector is formally identified by SWRDA as one of the five economically important sectors that the Regional Economic Strategy identifies as being crucial for increasing economic growth in the South West economy. Previous research reveals that Marine and Maritime Sector activity is made up of a number of significant local clusters but is also widely diffused across the Region.

We now believe that previous studies have underestimated the significance of the Marine and Maritime Sector to the South West economy. Table Twenty-nine sets out a comparison of three previous studies which have estimated the size of the sector (using employment statistics for direct comparability), together with our own new estimate based on the in-depth empirical research we have undertaken for this skills research project.

Table Twenty-nine: Marine and Maritime Research Comparison Based on Estimated Employment Numbers

Study	Marine and Maritime Sector definition	Estimated size of Marine and Maritime Sector (employment)
DTZ Pieda (2000)	Based on SIC codes: restricted to advanced engineering (and not all is identifiably marine) 343 Manufacture of parts and accessories for motor vehicles and engines 351 Building and repair of ships and boats 611 Sea and coastal water transport 612 Inland water transport 632 Other supporting transport activities	9,900
DTI cluster mapping study (2001)	Based on identified and probable relevant SIC codes: limited to ship and boat making 35110 Building/repairing of ships 35120 Building and repair of Pleasure/Sporting Boats 17520 Manufacture of rope etc. 29122 Manufacture of compressors 25130 Manufacture of other rubber products 29110 Manufacture of engines and turbines 17402 Manufacture of canvas goods	17,000
SRRU, University of Plymouth (2001)	Broad definition based on four categories of industries associated with the ocean. Company survey data used to estimate significance (employment). Marine resource-based industries: those industries directly involved in recovery of marine resources such as offshore oil and gas, fisheries, marine based pharmaceuticals, aquaculture and seabed mining. Marine system design and construction: ship design, construction and repair, offshore engineering and coastal engineering. Marine operations and shipping: marine transportation systems, diving operations, dredging and waste disposal. Marine-related equipment and service providers: manufacturers, engineering consultant firms in marine electronics and instrumentation, machinery, telecommunications, navigation systems, special-purpose software and decision support tools, ocean research and exploration, and environmental monitoring, training and education. This category also includes tourism and leisure related service providers and industries.	20,000
SRRU, University of Plymouth (2003)	As above, with new (2003) in-depth South West marine company-by-company survey statistics used to measure significance	31,580

Earlier research by DTZ Pieda and Business Trends Research (DTI cluster mapping study) suggests that the Marine and Maritime Sector is significantly smaller in the South West than we now believe to be the case. These underestimates result from two causes. First, the earlier studies define the Marine and Maritime Sector narrowly, in both cases in terms of marine technologies or manufacture with the focus on boat and ship building. In reality, the Marine and Maritime Sector is very much wider than this, as recognised by our earlier research (SRRU, University of Plymouth, 2001). Second, inappropriate official statistics are used for want of better comparative sources, and as can be seen from the lists of SIC codes believed to constitute the Marine and Maritime Sector in the first two studies, a number of questionable assumptions have to be made.

In reality, all companies (and therefore sectors) that supply marine markets constitute the Marine and Maritime Sector. '*Bottom up*' firm-by-firm research, a methodology not used or available to the first two studies, permits an analysis that is closer to the '*real*' situation on the ground. This was achieved in part by the third study, which was able to incorporate the more accurate broader definition of the Marine and Maritime Sector. However, this study also depended in part on the quality of existing company databases. Our research for this skills project has permitted a much more fine-grained approach to be taken to developing company databases, enabling us to capture far more of the South West firms that are active in marine markets. Accordingly, our calculation of the number of jobs created by the Marine and Maritime Sector in the South West economy is now significantly higher than previous research suggested, at 31,580. Moreover, this estimate is broadly comparable with new Marine and Maritime Sector research in the South East region which also calculated employment based on a broad definition of the Marine and Maritime Sector and adopted a firm-by-firm and survey approach to generating statistics. This study estimates employment in the South East Marine and Maritime Sector at 105,000. The significant difference between the South East and the South West is probably accounted for by the location in the South East of a combination of large-scale port activity, oil and gas industry and sub-sea engineering, and a host of maritime services.

2.11.1.2 Growth Dynamics of Marine Market Segments

Some earlier studies made an assumption that the Marine and Maritime Sector is a mature or even a declining industry. This assumption was closely linked to the relatively narrow Marine and Maritime Sector definitions adopted, which focus attention on the engineering industry parts of the Marine and Maritime Sector, where activities such as ship repair and some marine equipment manufacture have indeed been subject to difficult global competition in recent decades. However, significant segments of the Marine and Maritime Sector are currently experiencing rapid growth, such as those associated with leisure marine activities and luxury yacht building which are particularly strong in the South West. Indeed while good national data is not currently available to verify and quantify market growth variations across marine segments, there is considerable informal evidence of this. Accordingly, for instance, during our research we sometimes found it difficult even to secure interviews with companies operating in the leisure marine segments because they were *"overwhelmed keeping up with orders".*

Clearly, more research would be useful to substantiate this, possibly based on further survey or interview work with South West companies '*close to the market*', but the fact remains that the broadly defined Marine and Maritime Sector is composed of a range of market segments in different stages of growth. To what extent this offers opportunities for individual companies to diversify, or for capabilities such as skills to be transferred, is an important question.

2.11.1.3 The Role of Skills in Competitiveness and Innovation/Growth

We have not undertaken research directly on the role played by skills in fuelling competitiveness and innovation and growth, but this is clearly a key part of the causal chain leading to economic impact from learning and training activity. There is a wide body of research on the economic role of skills that could be drawn on if required. We note that our research revealed that among the key drivers of skills in the sector are:

❖ introduction of new services and products.

❖ improving manufacturing and production processes.

❖ introduction of new technologies, especially within the production process.

In this context, key skills are clearly seen to be the human factors in improving competitiveness and innovation.

A vital issue is whether explicit recognition of training and skills gaps by firms can be taken as an accurate guide to the impact of improving training and addressing skills needs. Our research suggested that 21% of businesses identified training needs that could not be met locally, and 14.6% of businesses identified skills gaps. It might be concluded from this that skills issues are not seen as prominent barriers to business competitiveness and growth. However, this would be to adopt a static approach and associate currently recognised problems in addressing current business needs with the potential impact of delivering a more highly trained and skilful workforce into the marine labour market. In other words, it is more than possible that a significant improvement to the supply of skilled labour into the Marine and Maritime Sector would serve to alter the business outlook in the Region, with skills seen less as a challenge and constraint on current activity and more of an opportunity and basis on which to develop more ambitious business strategies. From this perspective, the provision of an improved skills infrastructure may be a vital ingredient in moving Marine and Maritime Sector companies up the '*value chain*' into higher value added activities, and thereby increase the sector's contribution to the South West GDP.

2.11.1.4 Top Ten Skills for Marine

The *'top ten'* skills identified by our research fall into two basic categories: skills unique to or associated specifically with the Marine and Maritime Sector, and more generic skills associated with the management of successful businesses, including management and IT skills, for instance. In increasingly competitive

marine markets, the latter group of skills will take on a growing significance. It also appears that opportunities for improvement are greatest in this area, as the management techniques and tools are well-known, indeed tried and trusted, yet may not have penetrated far into at least some segments of the more traditional marine firms, restricting competitiveness and therefore putting jobs at risk. The introduction of skills associated with modernisation, including lean techniques, in traditional firms, may have similar impacts to those observed in other industry sectors, being associated with both job losses in the interest of efficiency, and retention of competitive organisations – a case of keeping '*half a loaf*'. Skills associated with responsive entrepreneurial behaviours including sophisticated IT and customer relations business processes can boost the capability to manage (and therefore build) larger organisations and therefore take advantage of growth opportunities.

2.11.1.5 Supporting Marine as a Leading Sector in Local Economies

Addressing skills needs in leading economic sectors – which is the role that the Marine and Maritime Sector plays in some of the South West marine clusters - is likely to have a broader impact in related sectors in addition to its spin-off impact through improving competitiveness and innovation in the Sector itself. The process of addressing the requirements of leading sectors can function as beacons of best practice, and more pragmatically, can help achieve the thresholds and economies of scale required to justify investments in new capital equipment, new courses, and new organisational infrastructures. This is particularly the case in terms of the more generically applicable business management and IT skills where provision primarily targeted at a lead sector or cluster can also be utilised by other industries and clients for which it is appropriate, such as other engineering-related or craft-related sectors. Moreover, we believe that the innovative proposed model of provision offers prospects for innovation in other sectors once the model is established, much as our interviews suggest that companies see promise in it for further expansion within the Sector – once the concept is up, running and tested.

2.11.1.6 '*Re-clustering*' - The Significance of the Delivery Vehicle

Beyond the direct delivery of training and enhanced skills, the organisational mode of delivery can have a significant regional impact in its own right. The proposed '*Networked Marine Training Centre of Excellence'* is innovative from a *cluster* perspective in a way that deserves recognition.

From an historical viewpoint, the post-war UK training infrastructure model can be characterised as a supply-driven model in which government subsidised large firms and education institutions to train for the benefit of the wider economy, small firms in turn benefiting through the constant labour migration of skilled employees later in their careers. In this clustered model, not only large firms, but organisations such as the Royal Navy were significant providers of skills to the economy as a whole. Over the last twenty years this model has been progressively dismantled, a process that continues, supported by the theory that market processes can provide not only better, demand-led signals of need, but also the organisations to deliver the required skills. While the market has been successful in many areas, many of the problems currently associated

with skills shortages result from the failure of the market to address a number of key issues.

In this context, the proposed *'Networked Marine Training Centre of Excellence'* is imaginative and timely, as it promises a new way for firms and training providers to cluster to address skills issues. The new model re-integrates larger firms, training providers, and smaller firms, in new ways that can once more generate both specialised provision that is effective and economies of scale that permit efficiency. The promise of the model is clearly understood by the many companies and organisations that responded positively to the model in our research. If the model proves successful, it may be possible to adapt and adopt it in other South West sectors.

2.11.1.7 Contributing to SWRDA and Other Regional Objectives

At this stage in the development of the concept for the *'Networked Marine Training Centre of Excellence'* we cannot quantify how implementation of the proposal might support the attainment of formal SWRDA and other regional partners objectives, such as, the LSCs. A fuller analysis of fit with SWRDA strategic objectives for the South West Region as developed in the Regional Economic Strategy and supported through the Corporate Plan should be carried out as the proposal moves forward.

There is a clear direct fit with Strategic Objective 1 (Raise Business Productivity) and Theme 2 (Skills and Learning) in this identified key economic sector, and this can also be drawn out further to ensure explicit links and synergies with other, overlapping, Strategic Objectives and Themes. Moreover, a constant theme of the FRESA – employer led initiatives – is also addressed directly by the proposed concept. Table Thirty shows that the *'Networked Marine Training Centre of Excellence'* concept also addresses six of the eleven Tier 2 target areas, and again this analysis could be further developed once the concept is accepted and its business plan and case is fully developed.

Table Thirty: The Likely Impact of the 'Networked Marine Training Centre of Excellence' Upon Regional Objectives

	Tier 2 Target	How the proposed skills activity would contribute
1	Sustainable Economic Performance	By contributing to raising gross productivity hence per capita GVA through a relative shift towards high value adding Marine and Maritime Sectors
4	Rural	By networking skills provision and productivity opportunities from larger marine centres into smaller communities
6	Employment	By protecting threatened employment and removing barriers to growth opportunities in a key regional sector
7	Skills	By raising the overall level of skills and qualifications provision associated with the Marine and Maritime Sector
8	Productivity	By improving the business human resource required to raise productivity at company level
11	Innovation	By improving the underlying capability of marine companies, increasing the likelihood of innovative behaviours

Source: South West RDA Corporate Plan 2003-6, April 2003

3.   Section Three

3.1   National Sector Profile and Forecasts

The UK is a maritime nation and most of its external trade is carried by ship. Marine and Maritime activities have been conservatively estimated as contributing to 4.8% of GDP in the UK, corresponding to a turnover of 51 billion pounds and an added value of 28 billion pounds. It has also been estimated that there are over 800,000 people employed in the Sector. The UK Marine and Maritime Sector includes a wide range of activities, providing products and services to global markets. The markets for Marine and Maritime industries demand a wide range of technologies and a suitably skilled and qualified workforce. Many national reports highlight the relationship between the future success of the Sector and the application and development of new technologies to the marine environment and other Marine and Maritime related activities.

The Marine and Maritime Sector in the UK is highly fragmented, encompassing a wide variety of activities. Consequently, much of the previous research undertaken in the Sector tends to focus on specific aspects of Marine and Maritime rather than taking a holistic Sector approach. Most frequently, national, as well as, regional studies of the Sector concentrate on marine technologies in specific areas, marine engineering, marine leisure or other readily identifiable marine activities. However, for the purposes of this report a four-fold operational framework has been adopted that more fully encompasses both the nature and extent of the UK Marine and Maritime Sector. The operational framework consists of the following four fold definition:

- ❖ Marine resource-based industries: those industries directly involved in recovery of marine resources such as offshore oil and gas, fisheries, marine-based pharmaceuticals, aquaculture and seabed mining.

- ❖ Marine system design and construction: ship design, construction and repair, offshore engineering and coastal engineering.

- ❖ Marine operations and shipping: marine transportation systems, diving operations, dredging and waste disposal.

- ❖ Marine related equipment and service providers: manufacturers, engineering consultant firms in marine electronics and instrumentation, machinery, telecommunications, navigational systems, special-purpose software and decision support tools, ocean research and exploration, and environmental monitoring, training and education. This category also includes tourism and leisure related service providers and industries.

Future skills requirements within the Sector will continue to be inextricably bound to the development and application of new and emerging technologies or existing business processes and technologies applied to the marine environment adapted from other sectors. Therefore, this section focuses heavily on new and emerging technologies and the resulting skills implications across the whole Sector.

To summarise national trends and the development of new technologies in the Sector within the context of the four-fold framework[21] national forecasts identify the importance of marine resource-based industries. Marine fisheries have a noticeable importance for the economy, but fish stocks for many species have been depleted and fish catches

have tended, since 1990, to level off or decline. As a result, there has been an international rise in the development of aquaculture as a new means of both increasing depleted fish stocks and providing for a globally increasing demand for food.

In the United Kingdom as a whole, aquaculture is predicted to expand over the next few years with the introduction of new species, stricter quality and environmental standards, product and market development and larger companies and producer groups forcing prices down.   Within the UK, Scotland is a significant producer of farmed fish. However, the importance of high quality marine engineering has not been adequately utilised, resulting in problems with escaping salmon and fish disease. The need to move fish farming further offshore will therefore generate demand for more sophisticated equipment.

New technologies are being sought in the application of biotechnology to the exploitation of chemicals and additives for industrial processes and for pharmaceutical uses. Opportunities exist in applying biotechnologies to the development of aquaculture and pollution control, anti-cancer agents and waste treatment using marine organisms. Marine biodiversity greatly exceeds terrestrial biodiversity, so the scope for the development is vast.

Oil and gas extraction from beneath the sea bed provides significant industry internationally, but with environmental considerations driving the development of new marine related technologies, the search for methods of producing renewable energy is now being actively pursued. A number of companies in the UK are active in the design, development and application of these technologies.

Offshore wind energy is identified as one of the key future renewable energy resources. Offshore structures and rotor and turbine manufacture will be needed to meet the growing demand for renewable energy, which has an estimated world market value of £20 billion by 2010.   Wave, tidal and ocean thermal energy are equally viable prospects, but over a longer time scale. In the United Kingdom, the Office of Science and Technology reported in 1997 that renewable energy technologies had been developed to the stage where they need demonstrator projects. An experimental wave energy project, 'Sperboy', has been under development in Plymouth Sound since 1999, assisted by European funding and involving five small companies and three universities from across Europe. Although still at the research stage, it is envisaged that the device would be able to supply power to remote islands and offshore installations.   In the longer term the objective is for the device to contribute to the Government's renewable energy target of 10% by 2010.

As land sources of aggregates such as sand and gravel no longer meet demand for end uses in concrete production and beach replenishment and protection, the seabed is increasingly providing an important alternative resource. The UK offshore aggregates dredging industry is worth some £150 million per annum. The Office of Science and Technology reported that offshore aggregate extraction of sand and gravel in 1994 totalled 11.33m tonnes. It is also noted, however, that costs of transport are a high proportion of the final costs and so export to distant markets is unprofitable.

National trends within the framework also point to the development of new or enhanced skill sets, developments in the management of coastal zones offer important opportunities to engineers, designers and consultants, and valuable export opportunities for market leaders.   The Office of Science and Technology Report[22] highlights the need for research and development into coastal zone modelling. The report quotes the Ministry of Agriculture Food and Fisheries as estimating that 300 million pounds is spent each year on coastal defences around the UK. The necessary

research areas include, environmental forecasting, data acquisition and its management and assimilation into models and improved climate forecasting models.

The globalisation of industry has resulted in an increase in demand for shipping in international trade, and as existing large fleets age and the demand for new designs in fast freight increases, the shipping industry continues to grow. Nationally, shipbuilding however, has been in decline, losing out to the more competitive markets. Among the ten major shipping companies in the world eight belong to Asian countries. Potential areas of innovation include optimisation for ship speed; safety and stability; least-cost cargo transportation; cost-effective ship construction and conversion; minimum environmental impact for ports and shipping and rapid development of new craft.

In relation to operations and shipping within the framework, firstly, port operations have become far more efficient with the introduction of increasingly advanced innovations in technological communications, surveillance and positioning systems, for example hydrographical systems for measuring depth have increased port efficiency greatly. These systems function in real time and integrate with data base systems. Transponder technology is allowing a network system to evolve from ship-to-ship and ship-to-shore. The Port of Bristol, for example, can identify and position vessels navigating the channel and those that are approaching the port.

Secondly, waste products and effluents reach the sea by a variety of means. Sewage, agricultural run-off and trade effluents are discharged through outfalls into rivers or directly into the sea. Industrial pollutants can reach the marine environment by licence or accident. Concerns for the protection of the marine environment have given rise to a number of national and European initiatives to manage the disposal of waste into the sea safely.

In the United Kingdom in 1988 all licensed disposal of liquid industrial waste at sea ceased. All significant sewage discharges to coastal waters where outfalls serve populations of more than 10,000, and to estuaries where they serve more than 2,000 require at least secondary treatment. An assessment classification scheme for estuaries and coastal areas has been introduced to check water quality. Schemes also exist for assessing the quality of beaches and their waters in relation to waste disposal such as the Bathing Water Directive (76/161/EEC) and the European Blue Flag Award Scheme which tests for standards of beach and water quality.

The impacts of the European Habitat and Water Directives have, in fact, been cited as containing the main drivers for marine related emerging technologies. Legislation is seen as creating the climate for more holistic marine management initiatives to emerge. All marine pollutants will eventually require pre-treatments. Specialist skills will be needed in areas such as civil engineering and planning. Environmental impact assessments will need more specialised personnel to identify the individual strands of potential maritime impact related mechanisms. Waste diffusion is expected to become an important element of future coastal management.

In relation to shipping, ships carry 95% of inter-coastal trade and there has been an increasing demand for efficient inter-modal and shipping transport systems. A prime challenge of a ship-owner is to combine greater efficiency and profitability with internationally agreed safety and environmental standards and a number of areas of opportunity have been highlighted in this respect. These include the optimisation of ship speed, safety and stability; least-cost cargo transportation; cost-effective ship construction and conversion; minimum environmental impact of ports and shipping and the rapid development of new craft. Areas of focus for research and development thus include improved management and business practices; automated ship control and

systems for cargo handling and the development of inter-modal transport facilities offering cost-effective transport solutions.

European Union transport policies are aimed at producing more economically efficient transport networks, fostering greater use of more environmentally sustainable modes, including short sea shipping, and a multi-modal network is being developed via the Trans-European Transport Network (TEN-T). Although EU policies are unlikely to have a significant impact in the short to medium-term, in the longer term they could provide a significant boost to coastal shipping. Regional and local policy documents are in support of the development of individual ports where economic benefits can be produced, and where it is not detrimental to the environment. Planning policies are likely to support projects which encourage rail freight and coastal and short sea shipping, exploit mineral waste material resources and maintain maritime industry and marine leisure activities at port and harbour sites.

With environmental sustainability underpinning research and the development of technology, international attention has turned to the effects of human exploitation of the sea and coastlines. Predicting weather patterns, global temperatures and earthquakes, forecasting coastal damage and undertaking coastal zone management are among the topics that are a focal point for research and development. The key new technologies are seen as those that offer access to information, information sharing and the rapid transfer of information and data.

In the UK the aim of The Greenwich Project (1999) was to develop a strategy for the development of the country's (UK) marine information industry. Included in the strategy are:

1. An improved monitoring and forecasting capability. Key recommendations include the implementation of a new R & D programme specifically targeted at ocean monitoring and forecasting, and the establishment of a centre for operational ocean monitoring and forecasting.

2. The formation of a UK commercial oceanographic association. The lack of a representative body to promote the interests or the marine information industry is cited as a particular concern as the majority of companies are small to medium-sized enterprises (SMEs) who often lack the critical mass and infrastructure necessary to fully exploit their innovations, products and services. As a result, the formation of the UK Commercial Oceanographic Association has been initiated.

3. Improved access to publicly-funded data. UK private Sector companies in the marine information industry are required to pay fees to access publicly funded data.

4. Re-focusing education and training. Key recommendations include the promotion of increased awareness of employers' requirements at secondary school level; and the creation of incentives to attract students to courses and research activities which match employers' requirements.

One of the difficulties would appear to be that there are 250 Government agencies, local coastal authorities, universities, research institutes, port and harbour authorities, consulting engineers and environmental scientists all collecting relevant data. However, data collection is necessarily structured to meet specific needs and may not be

transferable to other formats and uses. A number of *'communication enabling'* technical solutions are being developed which will assist in the consolidation of marine information transfer arrangements, and this is clearly an important area of development.

The growth of generic information technologies will affect information exchange and transactions. Emerging technologies will eventually encapsulate those such as LIDAR technology, otherwise known as Laser Scanning Remote Sensing. The Environment Agency is using aircraft technology and LIDAR to provide detailed information about the land's surface, mapping and assessment of land changes.

These technologies will require a skill base in Digital Terrain Modelling, GIS, hydrographical surveying and mapping skills. This type of technology also requires specialist software, and will have impacts on insurance and liability options; defence; sediment transport; sites of special scientific interest and special areas of conservation.

The following is a summary of areas, specific to the marine industry, that are being altered or influenced by ICT innovation driven by the constant growth in computing power:

Industrial R & D:

❖ In relation to shipbuilding and ship operations, the large and multi-functional systems that are now required depend on highly efficient digital based information acquisition, processing, presentation and management systems.

❖ Simulation based design in general, and the deployment of virtual reality tools in particular, are increasingly allowing the development and testing of complex systems, especially in relation to emergency situations, within a virtual environment that would be impossible to create experimentally in the real world.

❖ Standardisation of safety and risk management through the application of ICT.

❖ Simultaneous use of automation and simulation techniques has now become the basis for a total Computer Integrated Manufacturing (CIM) architecture for implementation in both the shipbuilding and ship repair industries.

Intermodality and Logistics:

❖ Conceptual modelling of telematics applications aimed at operational efficiency.

❖ Development of standardised data functions/standard electronic data interchange (EDI).

Operations and Maintenance:

❖ Standardisation of storage, exchange and presentation of information within existing networks of suppliers class societies and authorities. While a standard already exists for shipboard control systems, no such standards have been set to date for ship owners' administrative systems.

❖ As maintenance and repair represent a major part of the overall operational cost for a ship, the growth in computer based maintenance systems offer

> potential for developing interactive electronic manuals documentation and attendant training.

❖ Continuing exploitation of the latest innovations in computer technology, fast satellite communications and GIS systems to realise potential for improvements in marine craft operation and maintenance.

There is a wide range of equipment and service providers to the Sector. In relation to management and business practices within the Sector, across the whole range of manufacturing and supply, standardisation, automation and integration are seen as the keys to greater efficiency. The production process is steadily becoming more absorbed into the wider business process. There is the opportunity for advanced quality assurance and control systems to become fully integrated into product model information cycles. In general terms, production planning and control, production logistics and work organisation have always played a fundamental role in reducing wastage and increasing productivity. The possibilities opening up through the (accelerating) move towards standardisation and integration based on affordable ICT systems will increasingly allow even small marine businesses to adopt sophisticated and information rich business processes.

In the United Kingdom, leisure and recreation is a growing market Sector with a strong marine component and high levels of employment. It is estimated that around 4,000 companies in the United Kingdom supply equipment and services to the Sector.

Boat building, design innovation, specialist equipment and materials, professional and legal services, distribution, finance and waterfront enterprises, as well as indirect enterprises, result from the marine environment. However, demand in tourism needs to be balanced against concerns for the protection of the undeveloped coast, and recognition of coastal recreation management is increasing.

Changes in the demographic structure of the population and in labour market activity mean that there are larger numbers of people in the early-retired and retired groups. Equally many of the younger groups in the population are enjoying more leisure time. One report[23] suggested that this could mean an increase in the demand for marinas, boating and water-related activities and, perhaps, that marinas could eventually embrace the *'caravan park'* model.

Artificial reefs are reported as potentially playing an important role in the future development of the coast and regeneration of resorts in the UK. These types of developments may be multi-purpose, and will require specialist engineers.

National forecasts identify key drivers that serve to shape the characteristics of the marine industry Sector. These drivers are dynamic, impacting not only each upon the other, but also upon future skill requirements within the Sector as the development of new and emerging technologies, management and businesses practices present opportunities for the Marine and Maritime Sector within the Region. The key drivers identified are as follows[24]:

❖ Legislation and treaty obligations

❖ Management of marine resources and the related environment

❖ Training and education

❖ Research and development

❖ Defence.

Engineering and manufacturing related activities support many of the sub-sectors within the Marine and Maritime Sector[25]. Within the framework engineering activities are prominent within all four categories. Engineering and manufacturing within the UK will be subject to massive change, and by the end of this decade will look significantly different than it does today, new technology, the growth of e-business, the rising importance of environmental regulation and increasing competition from lower waged (but increasingly skilled) overseas workforces will all be major forces of change. A number of studies conducted within the Sector,[26] including those conducted by the SEMTA,[27] provide details of the changes impacting upon the Sector. A brief summary of some of the major sources or drivers of change is listed below:

❖ New working practices, such as cell and team working and *'just in time'* manufacturing.

❖ Structural changes in the Sector, such as the growth of out-sourcing and the devolution of responsibilities down the supply chain.

❖ The need for innovation as a result of shorter product life cycles and design cycles, meaning that companies need to continually innovate new products, methods of production and working.

❖ Technological change - new technology constantly initiates changes in working practices and design scopes, aiding innovation and product development, production cycle times and quality assurance.

❖ Developments in information and communications technology (ICT) have the capacity to revolutionise the way businesses are organised, for example stock control systems and interaction with suppliers. While e-commerce has the capacity to change the nature of businesses interaction with end users or customers.

❖ The cyclical nature of some of the sub-sectors e.g. electronic engineering.

❖ Businesses within the Sector are operating in an increasingly competitive market place, with customers being more demanding leading to an increased emphasis upon customer service.

❖ Structural changes such as globalisation, including mergers and alliances, access to worldwide supply chains and labour markets.

❖ Flatter organisational structures, to increase efficiency and a declining average size of business.

❖ An increase in environmental concerns and safety awareness.

The Engineering Sector has undergone and will continue to undergo extensive structural change and the examples above cover some of the main drivers of change and other elements impacting upon the Sector. This situation subsequently leads to changes in the demand for occupations and the skills needed to operate within the Sector.

In terms of trends within the Engineering Sector previous studies point to continued diversity across the Advanced Engineering Sub-sectors driven by the types of change already discussed. The Engineering Skills Dialogue[28] and Case Study Reports[29] provide a comprehensive review of the implications of change upon the Sector, and a summary of the main findings is given below:

❖ Overall employment levels will continue to go downwards in the engineering manufacturing Sector as a whole.

❖ From 1998 through to 2009 there is a net fall forecast of 315,000 jobs: a drop of 17% (13% to take place by 2004).

❖ The Engineering Sub-sectors bearing the brunt of this forecast reduction are likely to be in the traditional areas of mechanical engineering and basic metals.

❖ There continues to be, however, strong demand for engineering skills in the UK economy.

❖ Also this forecast reduction in employment levels does not mean that there will be fewer job opportunities in engineering in the future. This is because the overall age profile of the workforce is relatively old, therefore replacement through retirement will keep up demand.

❖ The total replacement demand forecast outweighs the negative expansion demand thus leading to a positive net requirement overall. It is estimated, therefore, that around 370,000 new job openings will arise over the next decade in the engineering manufacturing sector.

❖ Little overall change is expected in the patterns of engineering employment in terms of employment status. The industry will remain predominantly male (70%) and employ mostly full time workers (94%) with relatively few self-employed (7%).

❖ The trend towards smaller firms, in workforce terms, will continue.

❖ The occupational balance in engineering is expected to continue to shift towards higher-level occupations.

❖ Employment of engineering professionals is forecast to grow by over 2% per annum to 2009.

❖ An annual reduction is forecast at 2% in the employment of engineering craft and metal working skilled trades.

❖ The main skill gaps are in specific technical and practical skills areas but personal and generic skills are also in short supply.

3.2   Sector Occupational Trends

SEMTA and other organisations and agencies have indicated that different Sectors and occupational groups will be differentially affected by structural change. Demand in some marine occupations has been growing faster than others and that the occupational balance within the Sector in the future will continue to shift towards higher-level occupations in terms of skills and educational levels. It is expected that the change in demand towards higher-level occupations will be reflected in an increase in professionals over the next decade.   And, while the demand for traditional craft/operators will decrease, there will be a continuing need for skilled craftsmen and women, who might be better described as *'crafticians'*.

3.3 Sector Trends: Qualifications and Training

3.3.1 Education and Qualifications

Nationally, the diversity and quality of Marine Science and Technology (MST) education and training provides excellent opportunities which at various levels are strongly sought after by students from the UK and others from Europe and world-wide. MST education and training is seen not only as a means of educating and training the workforce but also as a major growth Sector in the UK, with good export potential. Education and Training in Marine Science and Technology (MST), in consultation with industry, academia, government departments, professional bodies and learned societies has produced recommendations relating to the industry in its *'Report of the Education and Training Working Group'* (2000). The work resulted in the following conclusions:

❖ Potential employers question the *'relevance of excessive modularisation leading to "pick and mix" courses'*.

❖ The quality of science and engineering training is recognised, but there is a need also for wider skills of numeracy, IT, communication and team working.

❖ Although Quality Assurance Accreditation (QAA) procedures in Universities and Colleges validate standards, industry had a poor awareness of teaching quality ratings.

❖ University and College based skills in numeracy, IT and communication should not erode discipline-related skills. It has been suggested that a move towards four-year degree courses in some areas may address this. Equally, there is an increased emphasis on skills in the new post-16 qualifications framework.

❖ Further liaison between professional institutions and industry can contribute towards Continuing Professional Development.

❖ With greater moves towards private funding in higher education, the influence of student demands on course planning may not always coincide with those of industry.

❖ The report identifies a doubling of demand for trained apprentices in seafaring, naval architecture, and ship construction. *'Demand is also increasing in all sectors for short course provision, particularly at the Masters level, in the area of Continuing Professional Development, offering new opportunities for education and training establishments in liaison with industry'*.

The above points would suggest that the marine industry has a number of issues to address. With moves towards private funding in education, training can be seen as an investment, both for employee and employer that will require a return in terms of both career development and increased outputs. In order for appropriate training choices to be made, information both on available courses and future prospects will be demanded. The extent of training and courses for Continuing Professional Development within the Marine and Maritime Sector is extremely large and cannot be comprehensively tabulated. However it is apparent that many such courses are already being presented as

modules within taught MSc programmes and wider, partial access to such modules should be encouraged. In relation to the opportunities available within the marine industry, basic skills in numeracy, IT, communication and team working skills that are taught at school age level cannot be seen as relevant unless the options available within the industry, and those basic skills required are recognised prior to embarking on marine related training courses.

Bournemouth University Business School[30] and Mason[31] consider training from the perspective of the Marine and Maritime industry. Businesses covered include ship and boat construction and equipment, repair and maintenance; marine electronics and engineering; communications; ship management; agency and freight forwarding, port operations and administration; marine management and service suppliers. Mason considers training and education issues with regard to engineering. The reports highlight the following points:

❖ A lack of suitable employees is seen as a significant barrier to business development. Most of the skills gaps identified are technical or craft related. Specific areas of need are traditional boatbuilding; riggers; marine engineers; laminators and plasticians; sailmakers and fibreglass workers. A need for employees to be multi-skilled is noted.

❖ There are insufficient numbers of young workers entering the industry.

❖ Modern apprenticeships are in demand. *'The mix of competencies required are most likely to be provided by courses of education and training which combine work experience and employment-based training with classroom study in an integrated way'.* (Mason, p. 27, 1999).

❖ The availability of apprenticeships is either not sufficiently well promoted, or businesses are not making themselves aware of them. Formal apprenticeship schemes were operated by less than 10% (48) of the companies and organisations within the survey.

❖ This is seen as contributing to the under representation of young people in the Marine and Maritime Sector.

❖ Some training courses are organised by BMIF, but many businesses are not members.

❖ NVQs are not well respected within the marine industry.

❖ Many employees are trained on-the-job to suit the specific requirements of that job. Recruitment of staff is often on an informal basis, so the profile of the industry is undermined through lack of advertising of positions.

❖ The cyclical nature of the boatbuilding industry impedes employers' willingness to invest in formal training. During slumps, the cost of training for micro businesses presents a problem; during booms, the need for all employees to be fully engaged in the business takes priority. Short duration training is subject to the opportunity costs of releasing staff for training and the cost of training itself.

❖ Training needs also exist in areas such as management, marketing, computer literacy, communication skills, problem solving skills, numeracy and *'personal skills'*. It is argued that some of these skills should have been acquired at school age level.

Both reports suggest that employers and employees require access to comprehensive information on the availability of training. For employers, this training needs to be both flexible and affordable in order for it to be seen as an attractive investment. On the part of employees, opportunities, prospects and the basic requirements of industry in terms of numeracy and IT skills provide a focus for training and education choices to be made. With this in mind, it will be necessary for the Marine and Maritime Sector to raise its profile as an attractive prospect to young people in order for current skills gaps to be plugged. This will require two things. Firstly, that would-be employees can recognise the opportunities available within the industry, and secondly that they have access to an understanding of the needs of industry, and of the training available.

3.3.2 Appropriate Standards Qualifications and Training Programmes

The promotion of Modern Apprenticeships and Graduate Apprenticeships is seen as being a means of widening the basis of recruitment as well as providing appropriate training for specific industry needs within the Sector. In terms of educational trends within Further Education, a recent report by the Further Education Funding Council[32] identified the following trends and issues relevant to the Sector:

- ❖ SEMTA is centrally involved in the development of the engineering vocational GCSE, to ensure that it meets the needs of industry and provides appropriate progression into Modern Apprenticeships.

- ❖ The qualifications framework for engineering NVQs and SVQs, Levels One to Five, will be more occupationally specific than current qualifications. It is hoped that this will encourage more employers and candidates to take them up.

- ❖ SEMTA will support the development of engineering foundation degrees, ensuring that the work-based component is well structured with appropriate outputs, for example Key Skills NVQ units.

- ❖ SEMTA aims to secure the network of Group Training Associations relevant to the Marine and Maritime Sector and to work to ensure that while there is no loss of provision, all provision is of an appropriate standard.

3.3.3 Developing the Adult Workforce

- ❖ In order to encourage workforce development SEMTA will especially support SMEs in responding to drivers such as the need for new products, the availability of new technologies, new processes and new work organisation structures.

- ❖ Support will be given through accessing European funding, promoting the IiP standard and helping with immediate training needs.

- ❖ Other partners will be involved, including the Small Business Service and its franchises, Trade Associations and Trades Unions.

- ❖ SEMTA will also work to support the new Modern Skills Diploma for Adults.

Growth in the demand for professional and higher technical skills is seen by SEMTA as being supported through foundation degrees and graduate apprenticeships as well as by current provision in Higher and Further Education. Fast changing technology, which was recognised as a driver of training needs by many local firms, may put particular strains upon the resources of SMEs.

Specific areas of development in the Marine and Maritime workforce have been identified in many areas. There is a perceived growing need in the UK for trained personnel at all levels in the following areas:

❖ Marine transport design and construction.

❖ Offshore oil and gas exploration.

❖ Molecular biology and biotechnology.

❖ Environmental quality assurance and resource management, including modelling and forecasting.

❖ Analysis of large databases.

3.4 Sector Trends in Skill Requirements

The SEMTA Report highlights that in the Marine and Maritime, as well as, the Advanced Engineering Sector the over riding problem, for all occupations, was a lack of technical and practical skills. However, in line with other studies this was more evident in professional, technical, craft and operative jobs. The Report also outlines other skills, which are in short supply:

❖ Communication, problem solving and management skills for managers.

❖ Advanced IT and software skills for technician jobs.

❖ Basic literacy and communication skills for clerical work and communication, customer handling, basic literacy and management skills for sales staff.

❖ Team leadership skills including communication and motivational skills, and the ability to think ahead and strategically at an intermediate/technician level.

❖ A combination of technical and non-technical skills, including project management, people management, and a well-rounded commercial awareness at a professional level.

❖ Leadership and the ability to *'drive the business forward'* and *'transform business systems for competitive advantage'* at a senior management level.

In addition to the groups of needs and training elements outlined by SEMTA, the Skills Dialogue Report reiterates and adds to these issues and places them in the context of skills trends and these are directly relevant to the Marine and Maritime Sector:

❖ There is an overall trend towards jobs becoming more demanding and towards skill intensification. However, it is still important to recognise some areas of continuity. Toolmakers and welders, for example, still need many of the skills they have always needed to operate effectively.

- ❖ Although there has been an overall decline in the demand for craft employees, craft skills are still very important in a number of Marine and Maritime Sub-sectors.

- ❖ An increasing level of computer literacy is required for most occupations, although the level of ICT skills required varies for occupations.

- ❖ Multi-skilling and greater flexibility is increasingly required, again the degree to which the required level of multi-skilling and flexibility varies.

- ❖ An ability to deal with change, for example, adoption of new technologies and working practices is needed.

- ❖ Employers within the Sector are increasingly looking for employees with an ability to continue learning and re-skilling.

- ❖ Employers are also placing a greater importance on personal and generic skills, for example communication skills, team working, problem solving and diagnosis, and at professional levels, greater abilities for forward thinking and *'whole system'* thinking.

- ❖ An ability to understand the business is required, although this again varies at different levels.

- ❖ An increasing emphasis is being placed on customer service awareness as businesses in line with many other sectors have become much more customer focussed.

- ❖ Other emerging issues are the increasing importance of legislation affecting the Sector and environmental concerns.

The drivers of change operating within the Marine and Maritime Sector are acting together upon the skills requirements of the Sector generally. A number of other reports concur with the SEMTA and Skills Dialogue Reports and these drivers are impacting on the skills that will be increasingly needed by those operating within the Sector. These drivers are increasingly impacting on those operating within the Sector leading to multi-skilling and the need for greater flexibility. The Sector is subjected to task-intensive and task-extensive technical change[33], requiring an increase in the skills content of specific tasks and requiring workers to multi-task and perform more than one occupational role.

The Employers Skills Survey[34] provided some evidence about the skills required by firms seeking to implement new higher quality product areas or improve the quality of their existing operations. In the survey just over 25% of engineering employers reported plans to move to higher quality product areas.

Table Twenty-five lists the new or additional skills that engineering firms considered they most required in order to be able to achieve this adjustment.

Table Twenty-five: New or Additional Skills

	(%)
Technical and practical skills (non-IT)	71
Team working skills	64
Management skills	56
Problem-solving	54
Customer handling	54
Communication skills	50
Basic computer literacy	43
Advanced IT or software skills	36
Numeracy skills	34
Literacy skills	33
Other	3

Source: ESS1999

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APPENDICES

Appendix One:
Benchmark skills data from South East marine study

Appendix Two:
The Puttick Grid

Appendix Three:
Questionnaire and Interview Schedule

Appendix One:

benchmark skills data
from South East marine study

South East Marine Sector:
Business Issues,
Prospects for Clustering

The Research Report

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for

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South East England Development Agency

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Introduction

The South East Marine Business and Cluster Research Project undertaken for SEEDA and the South East Marine Task Force during 2002-3 created foundational knowledge about the size and extent of the marine sector in the South East as well as more focused knowledge about prospects for developing enhanced clustering activities. The methodology was based on four strands.

1. Marine sector company database preparation
2. Business conditions and cluster survey of 200 database firms
3. Four local focus groups, incorporating forty marine businesses
4. Thirty five in-depth interviews

Within this research, a key focus was on skills issues: as potential barriers to competitiveness and growth, and as opportunities for new forms of clustering.

This summary report excerpts key data relating to skills from the final report for SEEDA as a basis for benchmarking with the South West region. While the methods used were not precisely the same, much of the data generated is directly comparable. Moreover, it will be important to address potential linkages based on common skills agendas in this adjacent and significant marine sector region, and the South East report may form a useful basis for taking this forward.

Key data is drawn principally from Research Strand 2 above. Detailed methodology is not described here (see full SEEDA report).

Breadth of the South East marine sector

Marine markets in the South East encompass a broad variety of segments. These include the small boat building of the leisure marine segment as well as ship building and repair. Importantly, they also encompass all the equipment installed in boats and ships, ports and shipping, the cruise industry and marinas which use ships and boats operationally, a host of specialist marine services, and a variety of underwater technology segments often related to marine and submarine resource management including a significant portion of the oil and gas sector. The South East survey permitted respondents to identify any marine market segments which their firm served. The data suggest that in terms of raw numbers of firms participating, the leisure segments, marine equipment, and maritime services are the most significant in the South East.

South East marine firms: sector
(n = 200: self-defined, >1 answer possible)

Sector	Number of firms
Marine biotechnology	11
Desalination	11
Aquaculture	12
Minerals	5
Unmanned underwater vehicle	11
Submarine cables	8
Ocean survey	18
Oil & gas	33
Cruise industry	20
Maritime services	68
Shipping	34
Port management & development	25
Marine IT	26
Marine equipment	87
Marina and other marine leisure	106
Boat building (leisure)	55
Ship repair	42
Shipbuilding	30

Mair/Synovate

Number of employees

The raw average number of employees at the South East marine firm sites is exactly 100. However, this number reflects the weight of a small group of very large firms. The vast majority of firms employ many fewer than 100, half having five or fewer employees. Moreover, at the larger firms that bring the average up to 100, a significantly smaller proportion of business turnover is due to marine sector business.

South East marine firms: jobs on site
(n=200)

Category	Proportion of firms
1	10.5%
2	12%
3	9%
4	10%
5	10%
6 . 10	22%
11 . 20	11%
21 . 50	7.5%
51 . 100	1%
> 100	7%

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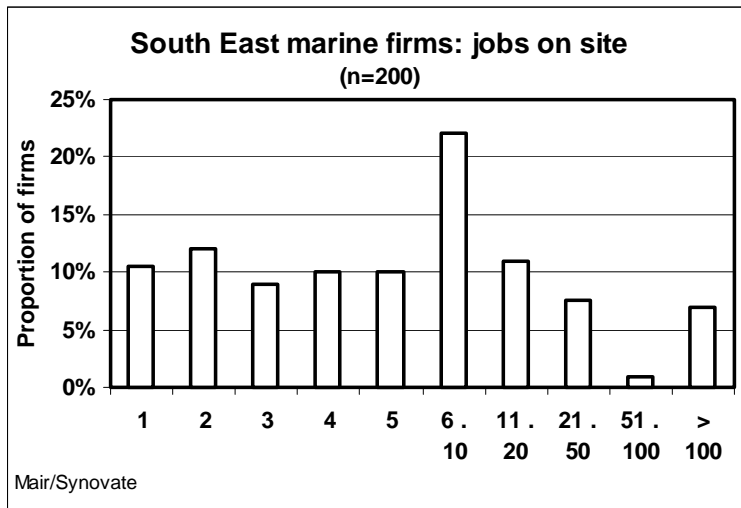
In the context of broader business issues

What issues are perceived by marine businesses in the South East to affect their competitiveness? How do these vary by marine segment? The survey permits us to weigh the relative perceived importance of a number of business issues that may be susceptible to policy intervention.

A wide range of issues is perceived to be significant by a substantial proportion of South East marine firms. One third or more of firms consider market issues (declining markets, foreign competition), regulatory issues, more regional/local issues (site and skills problems) and the image of the sector to be significant.

South East marine firms: business issues
(n = 200)

Proportion of firms vs Business issue bar chart:

Business issue	Proportion of firms
Markets in decline	46.0
Foreign compet.	37.0
Govt. regulations	60.0
Site problems	33.0
Skills problems	43.0
Image of sector	40.0
None of these	12.0

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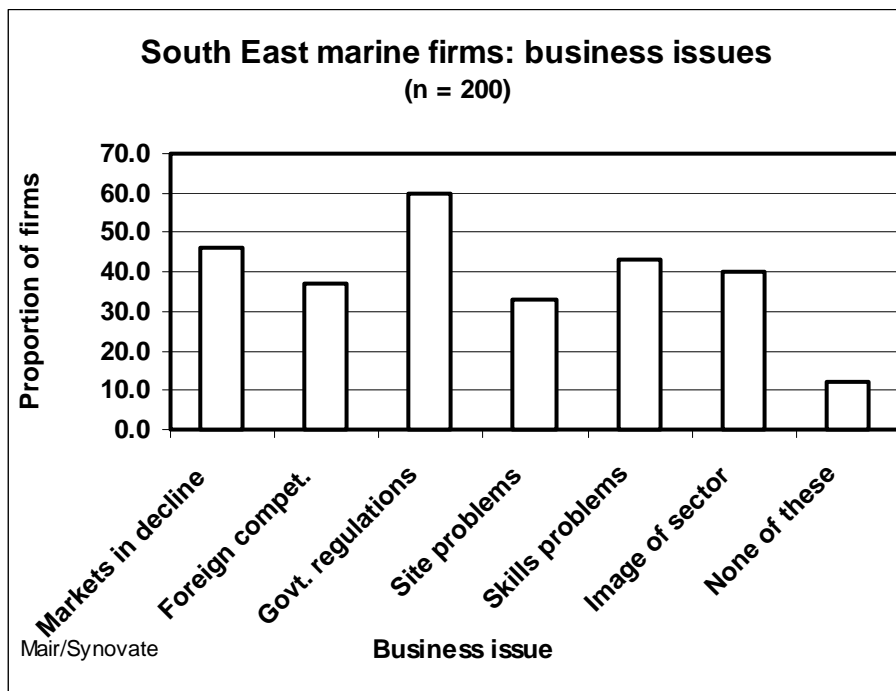
Firms that reported an issue to be one of their 'top three issues' were asked to explain their concerns in greater detail. *Skills was the second most mentioned 'top three issue' (by one in three firms).* Closer analysis suggests that firms perceive that the skilled or qualified potential employees they require are simply unavailable.

Skills	% of firms (n=71)
Shortage/lack of skilled staff/people with the skills we require	43.7
Shortage/lack of trained/qualified staff/people	19.7
Lack of young people coming into our industry/young people are not attracted to our industry/ageing workforce	18.3
Difficulty recruiting staff/lack of applicants/difficulty finding the right staff	14.1
Shortage/lack of experienced staff/people	11.3
We have to take on inexperienced staff/train in house	8.5
Difficulty filling certain positions/vacancies/replacing certain staff	8.5
Lack of training programmes/apprenticeships available	7.0
Poor quality/calibre of staff/applicants	5.6
Low wages/difficulty attracting people to work for the wages we offer	4.2
Legislation/regulations mean the need for additional training	4.2
Lack of government funding	4.2
Shortage of graduates in our industry	2.8
Our industry/sector has a poor/negative image	1.4

The verbatim responses on which the above table is based further illustrate the nature of skills problems in the South East marine sector.

❖ A lack of suitable skilled people with craft skills.

❖ Appears to be not enough people prepared to take up the necessary training and education to go into the maritime industry, especially in sales, administration, and engineering.

❖ Availability of technically qualified young people

❖ Availability of young people with the required skills.

❖ Can't find a properly trained boatman.

❖ Civil engineering industry since there is a big dip in number of people going into civil engineering and studying it at University. There is a graduate shortage and a shortage in the skills of the contractors and skilled operatives. There hasn't been employment and recruitment and thus a lack of skill in industry.

❖ Difficulty with recruiting the right people.

❖ Don't know.

❖ Future skills as we don't seem to be attracting the young. There is no training apart for the new apprenticeship programme.

❖ Getting people adequately qualified for jobs we need.

❖ Getting people who have necessary experience and skill to do it. Staff lack people skills. Staff need to be able to work efficiently since they don't want to hold a ship from setting sail just because of our faults.

❖   Getting the right people.

❖   Greater efficiency of individuals.

❖   Having problems finding anyone for the money we can pay.

❖   I suppose it's regulations leading to more qualifications required for staff which has decreased the number of applicants into this industry.

❖   In the future we will need to improve our marketing skills.

❖   Insufficient people are being trained in the skills necessary for us to run our business efficiently.

❖   Insufficient training at every level from colleges.

❖   Insufficient training of youngsters. In terms of school leavers.

❖   It is a real effort to find candidates with the correct skills. This is why we provide so much in-house training.

❖   Its only a small issue. It doesn't affect us too much but to get skilled people is difficult. Not a lot of competent people who can do installations well.

❖   Just lack of any available harbour masters.

❖   Lack of skilled staff.

❖   Lack of recognition for the need for management skills generally. Lack of government funding or encouragement. The funding schemes that are available are difficult to access.

❖   Lack of skilled people willing to go into this industry because of poor pay.

❖   Lack of skilled people.

❖   Lack of the required skills.

❖   Lack of them.

❖   Lack of young people being attracted into the industry and therefore lack of a sufficient pool of qualified staff.

❖   Lots of people can repair but you have to have a really good knowledge of how the marina works to be able to work efficiently. There's not many people who have the all round ability to advise customers on products they need.

❖   No apprenticeships. No incentives, no initiatives, no funding to take on apprenticeships.

❖   No reasonably priced training courses.

❖   No skilled people being trained properly these days.

❖   No skilled, experienced people.

❖   Not enough funding for training from companies or the government.

❖   Not enough professional engineers.

❖   Not enough trained people.

❖   Not enough young people applying to the industry. They don't see it as being glamorous enough.

❖   Not many people that are skilled in the boating industry. There are skilled carpenters but not boat builders.

- On the Isle of Wight there is an old attitude. There is lack of commitment from the workers and we try paying more. But it makes no difference.

- Only keeping up to date with the new government regulations as you have to keep updating staff skills.

- People who say that they are managers. But after starting work we discover that they have very little managerial acumen.

- Recruiting good graduates, as they have a lot of options these days.

- Shortage of qualified labour.

- Shortage of qualified staff.

- Shortage of skilled workers.

- Skills shortage and lack of skills training in engineering and yard hand painting.

- Staffing. Training staff and finding staff that are qualified.

- The decline in the number of watermen means we can't replace our crew. Skilled people are getting harder and harder to replace as there aren't skilled young people coming through.

- The difficulty is finding experienced steam boat engineers.

- The image of the industry has lost it's glam and charm. Younger people are being employed that are not necessarily trained fully. Staff are made redundant when the industry experiences accidents. These I feel are key members to the business but due to money they are let go. So the industry has young inexperienced staff or older ones that won't take on new ideas.

- The lack of basic education of young people. We have to employ a basic skills tutor to help them with basic English and Maths.

- The problem is, simply, that there is a severe skills shortage in our industry. The wages in our industry are too low to attract new people and we are constantly seeing an exodus of staff.

- The quality of labour in both my company and our client companies in all levels is below par.

- There is a difficulty in finding skilled manual workers. There is a shortage in this sector.

- There is a lack of marine engineers. Ship wrights and boat repairers.

- There is a lack of people skilled in customs clearance work.

- There is a shortage of skills.

- There's a large quantity of excellently trained and skilled staff being unused both at this site and globally.

- There's a severe shortage of trained young people, so that we have an ageing workforce.

- Training. Volume of legislation coming through, so it requires new training. In turn IT staff need to be constantly updated and to do this we need money.

- Very limited skills available in this area.

- We have major problems recruiting young skilled staff with the correct qualifications and the aptitude and desire to learn.

❖   We just cannot get the right people.

The fact that the skills issue is generally defined as sheer perceived shortage suggests a market-based perspective towards procuring skilled employees. This is consistent with a set of companies that have not actively participated in developing skilled employees in the past and now confront the fact that - however employees were developed in the past – the processes are no longer functioning adequately. Many firms may not traditionally have done more than seek skilled employees on the open market, and this suggests that some significant changes in perception may be required if they are to become more responsible for defining and developing the skills they require.

Recruitment and training

Is there a skills shortage?

Whether there is an identifiable 'skills shortage' in South East marine is not entirely clear. In-depth interviews did not indicate that South East marine firms generally face a significant problem in recruiting the appropriate calibre of staff. Even turnover for high-calibre staff was reported as not particularly high. The quality of applicants is generally viewed as good. The South East as a whole was said to generate a vast pool of relevant and accessible management talent, for instance, many of whom become available through the constant churn of redundancy and reorganisation in a high-growth region of the UK economy.

However, the company survey suggested that a broad base of firms does experience skills difficulties. Two in five firms rated skills a significant problem, and that one in three rated it as a top-three concern. Moreover, the in-depth interviews certainly revealed a number of specific skills shortages – from marine designers to project planners to operator apprentices.

Asked specifically about recruitment problems, one in three firms reported that they already had, or anticipated, difficulties recruiting staff.

South East marine firms: recruitment problems? (n=200)

Yes, expecting difficulties 8%

Yes, already having difficulties 26%

No 66%

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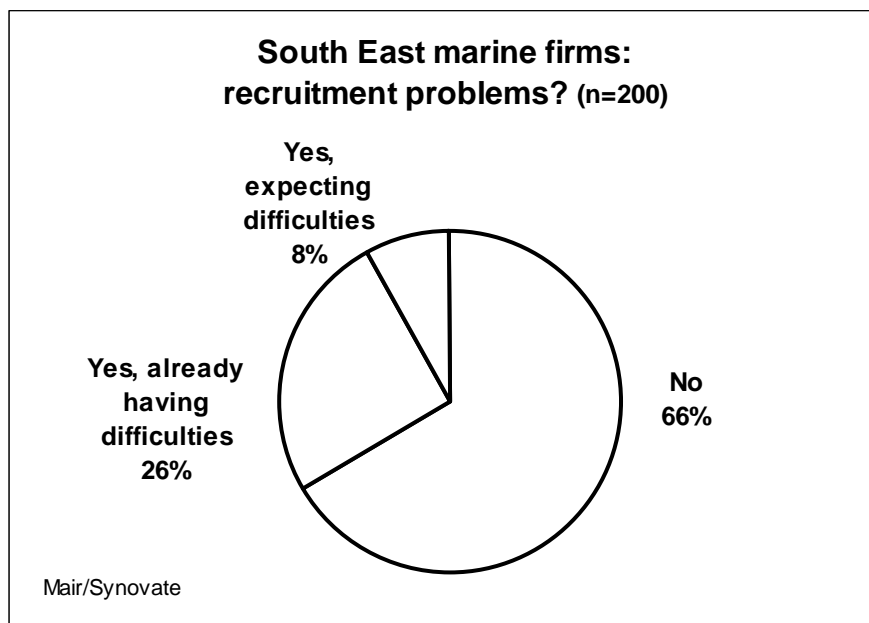
Skills in short supply

The survey suggests that for firms that face significant recruitment problems, the key areas of concern are skilled manual and professional, technical and scientific skills.

South East marine firms: recruitment difficulties (n=66)

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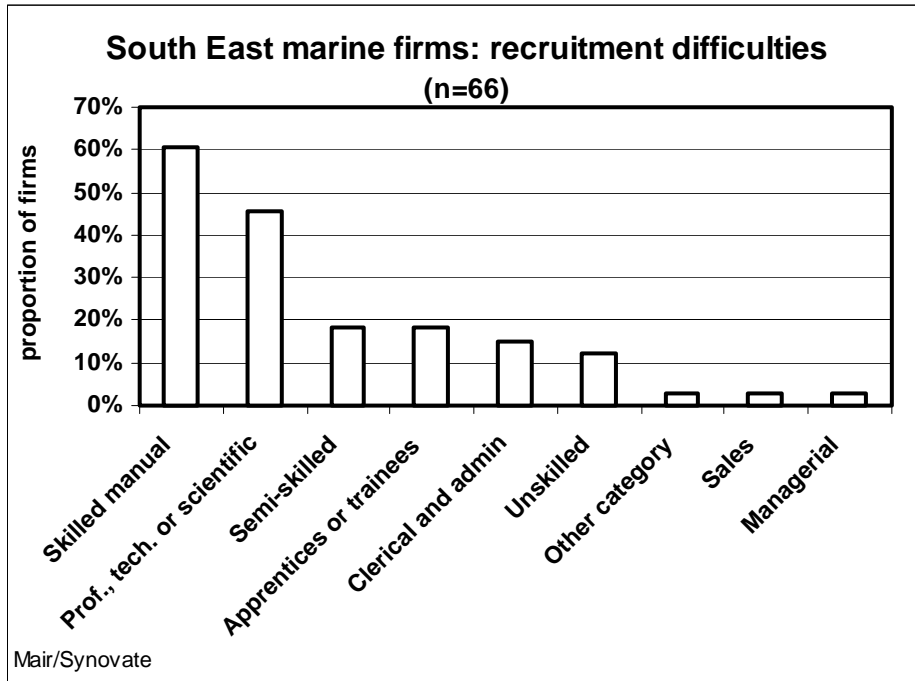
Specific recruitment problems

Drilling down further into these two skills areas, firms with significant recruitment difficulties report the specific problems illustrated below. Sheer lack of applicants, lack of qualifications, and lack of experience figure most highly.

South East marine firms: specific recruitment problems
(n = 200)

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■ Skilled manual □ Prof., Tech., Science
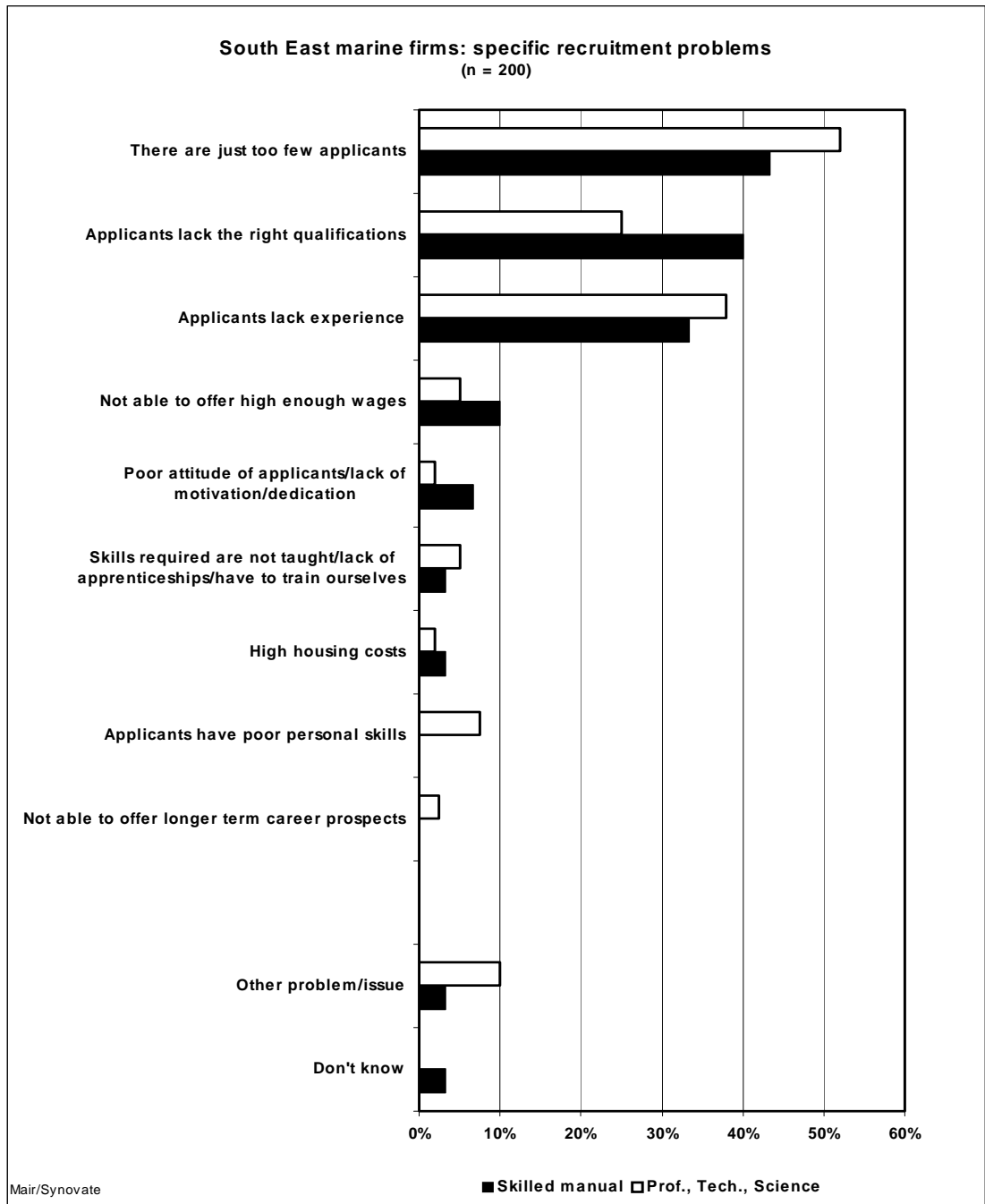
Variations by segment

There appear to be significant variations by segment in the extent to which firms are experiencing recruitment problems, with some of the 'higher technology' marine segments experiencing the most problems – though the patterns are not entirely clear.

South East marine firms: current or anticipated, recruitment problems
(n = 200)

Segment	Proportion of firms
Marine biotechnology	~55
Desalination	~36
Aquaculture	~50
Minerals	~60
Unmanned underwater vehicle	~63
Submarine cables	~50
Ocean survey	~44
Oil & gas	~33
Cruise industry	~45
Maritime services	~37
Shipping	~38
Port management & development	~40
Marine IT	~46
Marine equipment	~33
Marina and other marine leisure	~32
Boat building (leisure)	~40
Ship repair	~37
Shipbuilding	~34

Mair/Synovate

Training programmes

Two in five companies report that they undertake some structured training of their workforces.

**South East marine firms with
structured training programmes (n=200)**

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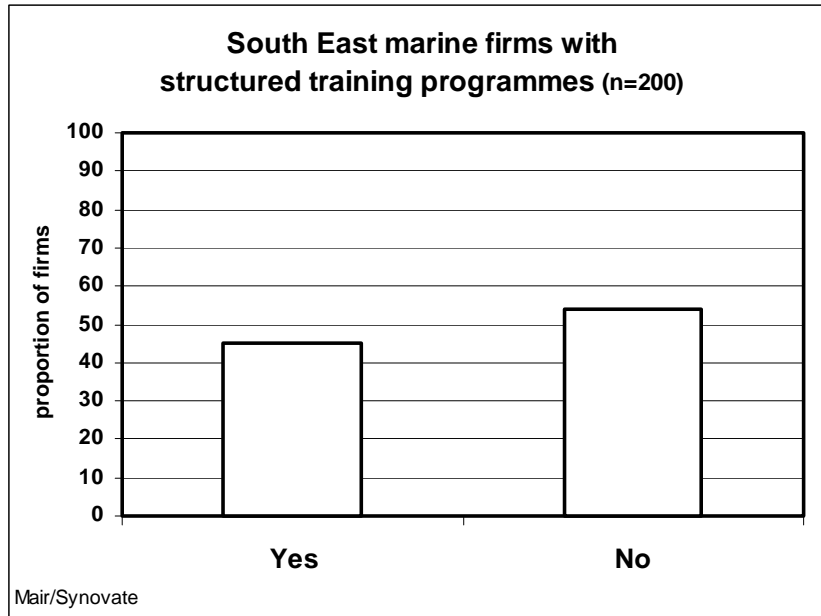
However, analysis of the type of training given suggests that much of it is training for new recruits rather than more intensive activity.

**South East marine firms: training programmes
(n=90)**

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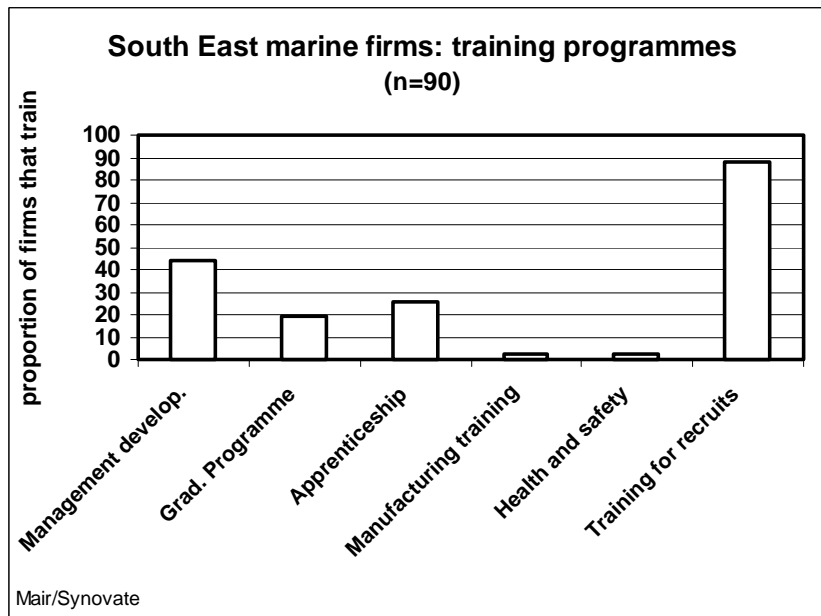
Links to training providers

Of the firms that report undertaking structured training, the following training providers are reported to offer support.

Training provider	% of firms (n=90)
Southampton Institute	6.7
University of Southampton	5.6
Southampton City College	4.4
University of Portsmouth	3.3
Highbury College	3.3
British Marine Federation	3.3
VT training	2.2
University of Greenwich	2.2
South Downs College	2.2
Royal Yacht Association	2.2
Crawley College	2.2
Chichester College Arts, Science and Technology	2.2
Don't know	10.0
Other	35.3
None	40.0

The 'other' category included the following (verbatim) reported training organisations.

- ❖ A local chemical firm.
- ❖ A local trade course.
- ❖ Abingdon College
- ❖ Andover college.
- ❖ Association of Brokers and Yacht Salesmen - ABYS.
- ❖ BIFA
- ❖ Blackpool and Fylde College.
- ❖ Brockenhurst College
- ❖ Brunel University
- ❖ City College.
- ❖ East Grinstead College in Crawley.
- ❖ Employers Engineering Federation.
- ❖ Havant College
- ❖ Isle of Wight Training Group.
- ❖ ITE corporate training and recruitment.
- ❖ Leicester training centre - our company's own national training centre for staff training.
- ❖ Lyme Regis boat building college and training, arranged through the British Marine Federation.
- ❖ Marine exportation partners.
- ❖ Maritime College Warsash.
- ❖ National Sea Training College.
- ❖ North West Kent College
- ❖ Plymouth College and University.
- ❖ Portsmouth College

- ❖ Salisbury College.
- ❖ South Bank University
- ❖ South Tyneside College.
- ❖ Southampton Technical College.
- ❖ Thanet College
- ❖ The Southampton Training Centre at Calshot.
- ❖ Tidworth college.
- ❖ Totton Sixth Form College
- ❖ Tyneside Maritime.
- ❖ University College Chichester
- ❖ University of Brighton
- ❖ University of Reading
- ❖ YBDSA - Yacht Brokers, Designers and Surveyors Association.

Skills in the context of the South East as a location

Notwithstanding a widely held view of the South East as an attractive location for marine businesses, the survey revealed that one in four companies believed that issues related to their South East regional location created barriers to competitiveness.

South East marine firms that view a South East location as a barrier to competitiveness (n=200)

Proportion of firms

Yes — 25%
No — 71%

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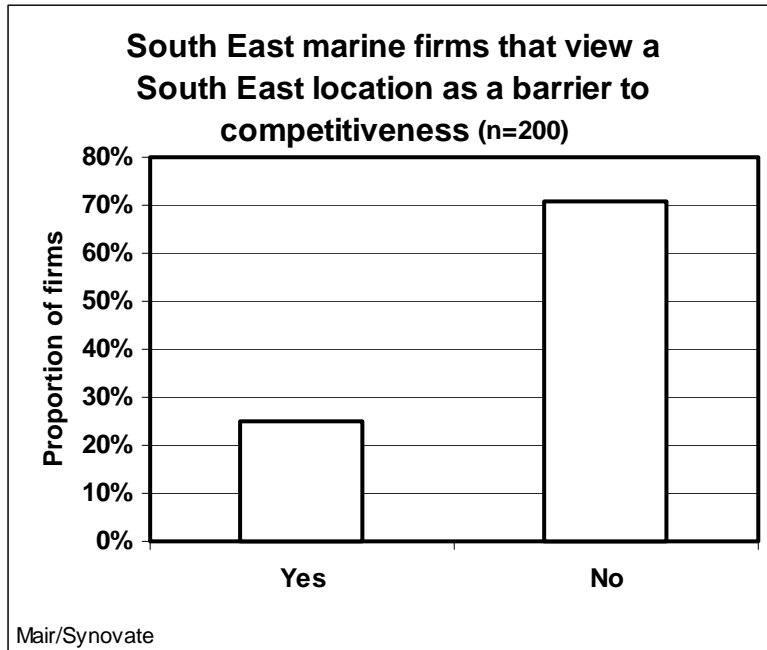
Business problems in the South East

The barriers identified fell into a number of specific categories. Principal among these are problems related to costs and to staff (cost is also the key factor in the latter issue).

Business problems due to South East location	% of the firms for which SE location is problem (n=50)
Costs	
The cost of housing/property/land/rent/office space	36.0
High costs/overheads/expensive area	28.0
Staff	
High staff costs/wages	18.0
Difficult to recruit staff/lack of applicants	8.0
High living costs	4.0
Transport	
Transport/congestion/traffic	14.0
Poor infrastructure/road network	6.0
Competition	
Competition/too many companies operating in the area	6.0
Other	
Weather conditions/flooding	4.0
We are not eligible for handouts/advice services available in other areas	4.0
Lack of other companies/suppliers in the area/others in our industry are based in other regions	4.0
Lack of land/space	4.0
Difficult to get planning permission	4.0
Other	22.0

High growth areas versus geographical isolation

Strong regional growth pressures affect the competitiveness of companies in some areas of the South East. These pressures are not related to the marine sector as such but to the general growth of the economy in the region. They are reflected in house prices, in increased commuting distances as employees seek out pockets of less expensive housing, and in pressure on salaries. Thus while the region has a high concentration of skilled people, there is little spare capacity. Location is therefore inexorably becoming a weakness. Although there is a high standard of living, quality of life suffers because of congestion and travel time. The region is gradually becoming less attractive to younger people, with no local social life after work because most staff travel long distances to and from work. Moreover, it is increasingly difficult to attract people from other parts of the UK, other than London and the Thames Valley, because of housing costs.

On the other hand, there are distinct areas of the region where geographical isolation is keenly felt. The Isle of Wight is viewed as distinct from the rest of the region, which causes business

travel and some recruitment difficulties. It can be difficult to attract the 'right' employees because of the 'lifestyle' culture which is said to diminish productivity and entrepreneurship.

Prospects for networking and clustering in skills

Local linkages

Over half of the firms surveyed believe that there is business value in being located near to complementary marine sector firms. Some segments, such as marine IT and ocean survey, appear to value these links more than others. There is no clear pattern by type of firm.
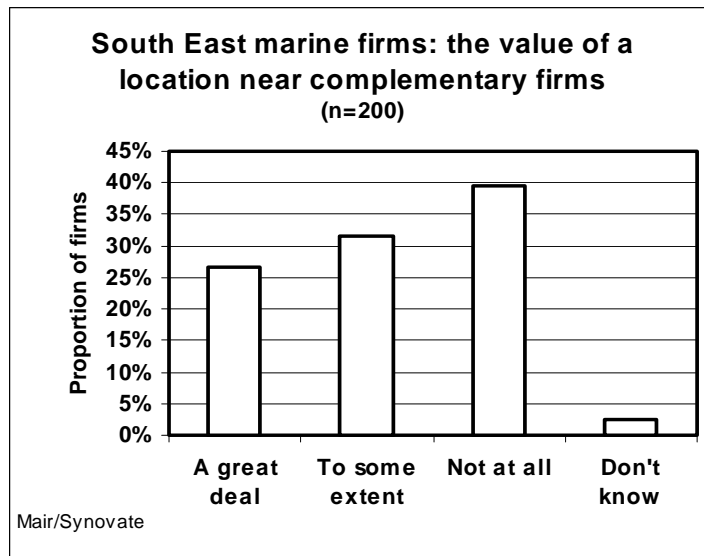
For firms that do have local linkages, trading and information exchange are the most common connections. Some links also relate to employee and skills issues.

Reported links with other local firms	% of the firms with local links (n=73)
Business	
We sell trade with each other/sell goods/provide services to each other	11.0
We refer/recommend customers to each other/pass work on between companies	6.8
We act as agents/brokers for each other/take bookings	5.5
Joint ventures/joint tenders	4.1
Information	
Information/knowledge sharing	16.4
Networking/social contact/gossip	12.3
We have regular contact/communication with each other	12.3
We share customer information	4.1
Organisational	
Link(s) with industry associations/professional bodies	13.7
Employees	
Shared labour/staff/use each others staff	8.2
We do joint training/use each others training services	5.5
Link(s) with training providers	4.1
Other	
Link(s) with engineering companies	5.5
Link(s) with marinas	4.1
We share equipment/use each others equipment	1.4
Refused	2.7
Other	21.9

Clustering around skills in two South East locations

Skills issues were seen as prominent as an opportunities for local networking and clustering in the two of the smaller and relatively isolated South East locations where business led focus groups were held: Medway, and Chichester.

In Medway, boat handling skills is one problem shared by the different marine segments present in the region. Technical people are required to maintain and operate river craft operated by many users. There are increasing concerns that the pool of technical skills is disappearing with an ageing workforce. In trying to recruit one apprentice marine engineer, a company discovered that there is now no training in Eastern Kent (notwithstanding the strong presence of port and shipping activity). It is difficult to recruit required hydrographic engineers even nationally. An important root of current problems is the decline of careers in the Merchant Navy and Royal Navy. Many marine businesses benefited in the past from employing trained former servicemen with strong marine interests. Moreover, with the closure of the Chatham dockyards in 1984 with the loss of 9,000 jobs, for some years there was a pool of labour, which has now dried up. There are now severe problems of age distribution, with many skilled men only having a few years until retirement and no replacement younger people 'in the pipeline'.

There is seen to be continuing legislative pressure and requirement to ensure companies are operating with competent people, and high skill levels are required in often dangerous environments. Yet it is increasingly difficult to find the right people. "Poaching" of key skills can result from the shortages. There are glaring gaps, and these need to be shown collectively through joint action, study, awareness raising, etc.

In Chichester, the ageing workforce at many marine companies reflects the paucity of training for young people. Specific skills requirements which are currently difficult to fill include high quality joinery, ship wrighting, and marine engineering - at NVQ 2 and 3 levels. Skills issues are so important to local marine firms across the region that it is believed that they need to be taken up at SEEDA level. This is a bigger issue than can be addressed solely locally, as it appears that many students are following courses in subjects where there is little prospect of employment, yet there is insufficient training for sectors like marine with good employment prospects. The organisation of training may be 'demand led' in one sense, but the students themselves may not be in the best positions to determine real demand for skills in the economy.

The local college, which is recognised to be well organised and good at marketing itself, is nonetheless reluctant to look at courses that do not immediately fill. To address this problem, it is believed that one solution could be to set up trial new courses locally, which could helpfully be kick-started by SEEDA, to break the impasse caused by education funding mechanisms being so slow to respond to need, and risk averse. This resource could be used to design and market new courses of likely relevance to local businesses which, after a trial period, might 'sink or swim'. Inter-sector links on training may usefully develop through collaboration with, and investment by, Rolls-Royce, which requires woodworking (coach building, high quality finishing) skills for its new car factory.

Appendix Two:
The Puttick Grid

The Future Skills Grid Model for the Marine and Maritime Sector was derived from previous research undertaken by SRRU relating to the Advanced Engineering Sector in which an initial model, the Puttick Grid, see Figure One, was used to provide an analytical framework for the complex relationship between product market strategy, performance and skills. This model, developed by the Warwick Manufacturing Group in 1998, and named after John Puttick, one of the Group's members, allows product market position to be defined and the skills related to that position to be identified, by using product/service complexity and the degree of market demand to categorise product market position. This model is directly relevant to Marine and Maritime businesses involved in manufacturing and marine engineering.

The original thinking, and the grid illustrating it, was concerned purely with the interplay of manufacturing strategies and competitive performance. However, since inception its value as an aid to strategic thinking across nearly all product/service sectors has become recognised.

Business enterprises can broadly be categorised as being in four basic types of product market situation with quite different characteristics and requirements from their production systems if they are to be more competitive than their rivals. These are (clockwise from top left in the grid):

- ❖ Super value goods and services typified by products and/or services that consist of a large number of components, probably carrying a relatively high value but in an uncertain market of small size (by numeric volume). Fitness for purpose and functional superiority is critical to success here and relies on higher level skills and competencies.

- ❖ Fashion/fast response typified by relatively simple products and/or services by number of components because they are products in markets that are fickle with short product life cycles.

- ❖ Commodity products and services are usually set up for high volumes from dedicated process lines at minimum cost. They tend to be simple products or services and warrant the high capital investment required for the relatively dedicated production systems. Low cost per unit is vital to gaining, and not losing, an exceedingly tight profit margin.

- ❖ Consumer durables include many products and/or services that are of moderate complexity but are in much high volume markets of lower uncertainty. Balanced processes are the key to success and optimisation of production techniques are often important.

Figure One: The Puttick Grid
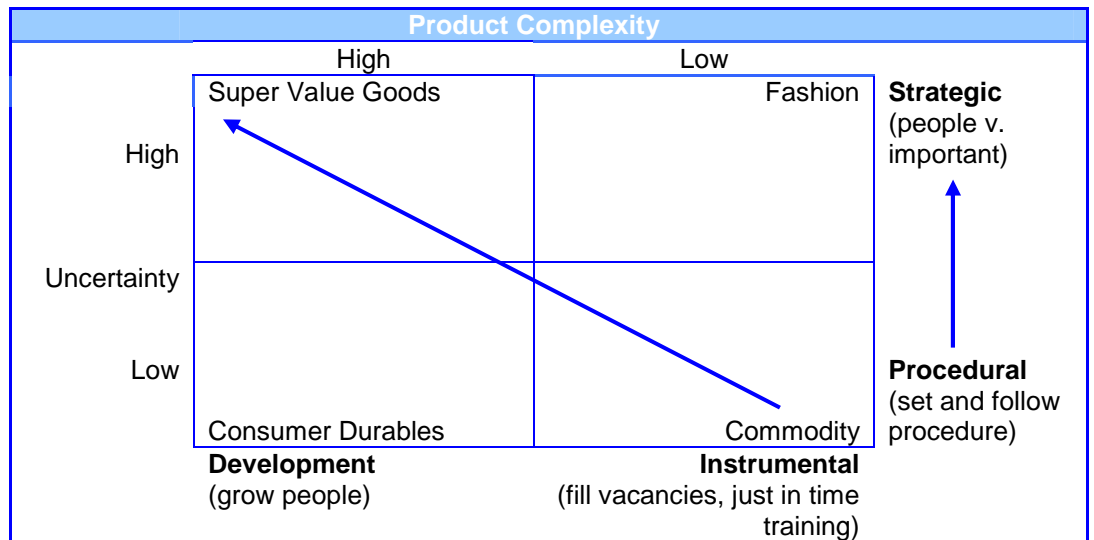
Source: Skills Matter

The skill implications of each quadrant vary in importance between different styles of production system and the customer expectations that they must be able to meet.

Taking the four quadrants in turn, the key skill related profiles characteristics are:

❖ Top left - *'super value goods and services'* - requires good project managers trained in complex risk assessment and able to consider and assess conflicting information and potential outcomes. Ideally the enterprise will have a research and development programme and an organisational regime that allows freedom for innovation and creating novel solutions. Also with growing product *'customisation'* the need to have very high-level customer orientated interactive skills is increasingly essential.

❖ Top right - *'fast response'* - management needs to be flexible in order to be very responsive to fluid market change. Advanced marketing, logistics and customer delivery skills are required to underpin the success of this production mode.

❖ Bottom right - *'commodity'* - standardised cost driven production is achieved through highly automated processes requiring only low skill operatives. However, production mode needs a technically high skill cadre capable of keeping *'down-time'* to the minimum.

❖ Bottom left - *'consumer durables'* - the production skills required are focused on technician skills, product changeover, re-setting, and re-programming as opposed to new product development. Skills that reinforce *'right first time'* production are crucial.

Figure Two: The Puttick Grid: Skill Needs

	Complexity	
	High	**Low**
High **"Agile"** **Uncertainty**	Project Management Research & Development Product or service design skills Craft Production or delivery skills	Marketing Logistics Craft Production or delivery skills
Low **"Lean"**	Team working System design Cell manufacturing Communication skills	Cost control System design Plant maintenance Logistics Unskilled minders/Operatives

Source: Skills Matter, p. 50

The Puttick Grid's usefulness can therefore be seen to be twofold:

- ❖ At the Sector level it provides a typology that not only delineates the different skill requirements within sectors but also draws out similarities of skill requirements across various sectors.

- ❖ At the company level it provides a tool for enterprises to start the process of discovering and then exploring any latent (existing or potential) skill gaps.

Obviously, businesses can move around the grid in a change of strategy, and strategies and products can be adapted. For example, as the product life cycle changes, a product may well begin by commanding high margins from low volume, in the top left quadrant. But as the market matures and changes the product may move or be driven by market forces into a consumer durable position before becoming a commodity. Whichever quadrant businesses operate in, for individual employers and for training providers the grid provides a valuable tool to position businesses and to analyse current and future skills needs as a result of quadrant positioning. It can act as a tool to aid strategic planning, benchmarking or in skills audits.

Evidence from the Advanced Engineering Sector and also from Marine and Maritime engineering and manufacturers within the Sector indicate that nationally, and at the regional and sub-regional level, the trend is towards super value goods, fashion/fast response, and consumer durables. That is not to say that there are not any firms operating in the bottom right of the Puttick Grid, commodity products, but these businesses are finding the global marketplace to be very competitive.

At the other extreme in the grid (super value goods and services) the manufacturing industry may follow the trends in Japan in relation to the location of manufacturing plants. Japanese firms tend to base their research and development sectors within Japan, while placing the physical location of production in other countries. The UK may in the future see this type of shift. If this does occur, the skills required will be very different than where firms are operating in other areas represented in the grid. Project management, research and development, product or service design and craft production or delivery skills will be needed.

Appendix Three:
Questionnaire and Interview Schedule

Marine Sector Training and Skills Survey

COMPANY DETAILS:
Date:..
Time:..
Company Name:...
Address:..
....
....
Tel:...
Contact Name:..

Introduction:

The Social Research & Regeneration Unit and Marine Science & Technology from the University of Plymouth have been commissioned by Marine SouthWest and The South West Regional Development Agency to undertake a review of Marine and Maritime sector education, training and skills issues.

This exercise has as a crucial objective to identify the top marine sector skills shortages and needs, as identified by you, the employers, and to then recommend training solutions to those needs. It is therefore, very important that we get your views on these issues, and this also gives you the opportunity to input into the decision making process to ensure that your needs are met.

Survey Questions

1)   How is your Company constituted, is your Company Status:
        a)   Sole Trader
        b)   Limited Company
        c)   Partnership
        d)   PLC

2)   How long has your company been trading?

3)   How many employees do you have?...
        Of these how many are:
        Full time...
        Part time...
4)   Are you able to comment on approximately how many of your current employees are:
        a)   Young People (under 21yrs)...
        b)   22yrs - 40yrs...
        c)   Over 40yrs..

5)   Does your company have any links with trade associations and/or are you members of any other external organisations?   **If yes**, **which ones**:
        a)   Business Link
        b)   Business Networks
        c)   Chambers of Commerce
        d)   National Federation of Small Business
        e)   Professional Bodies - Which Bodies?...
             ....

     f)   Trade Associations - Which Associations?.................................

....

     g)   Trade Unions - Which Unions?..

....

6)   Does Your Company use e-mail for internal & external communications? **Yes/ No**

7)   Does your company have a web-site? **Yes/ No**

8)   Does your company place orders and/ or pay suppliers on-line? **Yes/ No**

9)   Does your company have an open IT system to support its relationship with customers and suppliers? For example, providing after sales support on-line and allowing customers to track their orders on-line? **Yes/ No**

10)   Does your company have Investors in People recognition?
       a)   Yes
       b)   Working towards
       c)   Intend to apply
       d)   No - ***if no, why not?***...

....
....
....

11)   How would you best describe your company's approach to training?
       a)   Training is planned some times in advance and is linked to our company's strategic goals.
       b)   Some training is planned in advance and is sometimes linked to our strategic goals.
       c)   Training is not really planned and we provide training when the need arises.
       d)   Other: Please Specify..

12 A)   Do you have a training policy? **Yes/ No**
       If yes, is training carried out:
       a) In-house
       b) Provided by external organisations
       c) Mixture of in-house and externally provided

12 B)   If in-house, does the training lead to nationally recognised qualifications, e.g. NVQ's?..
....

12 C)   If externally provided who provides your training, and does this lead to any nationally recognised qualifications, e.g. NVQ's?.....................
....

12 D)   If a mixture what is the split, e.g. 50/ 50 ?...
....

13)   How many people have received training over the past 12 months?..

14)   What types of skills were trained?..
          ....
          ....
          ....

15)   Have you had any problems recruiting people for your business? **Yes/ No. If yes:**
          a) A Lack of Skills
          b) A lack of qualifications
          c) A lack of experience
          d) A lack of interest in the type of work
          e) A lack of suitable applicants in the local area
          f) Other, Please specify,
          (e.g.: Unsociable hours/ Shift work/ Travel time/ Expense & Lack of public transport/ Wages & Conditions)
          ....
          ....

16)   What types of posts have proved difficult to fill?

          a) Clerical
          b) Managerial
          c) Other, Please specify..

17)   How have you got round this recruitment problem?
          a) Altered Job Specification
          b) Promoted internally/ retained existing staff
          c) Recruited less qualified/ experienced staff
          d) Improved pay and conditions
          e) Increased overtime
          f) Subcontracted
          g) Turned work away
          h) Used agency temps
          i) Advertised out of local area
          j) Other, Please Specify...

18)   Do you have problems retaining suitably qualified workers?
          If No go to Question 20
          If Yes:
          a) Are there any particular skills shortages?....................................
          b) Are there any other reasons for this, e.g. location, working
              hours?..

19)   How is your business coping with this retention problem?

        a) Subcontracting
        b) Turning work away
        c) Using agencies/ temps
        d) Other, Please specify..

20)   Do you have any Modern Apprenticeships? **Yes/ No**
        a) If yes, how many?..
        b) If no, why is that?...
        ....

21 A)   Do you anticipate taking on any employees under the Modern Apprenticeship
        Programme in the next 12 months?   **Yes/ No**

21 B)   If Yes, how many?........................

22)   Have you found that training your staff helps to retain them?
        Yes/ No

23)   Can you identify any particular barriers to training?
        a) Release time
        b) Cost
        c) Distance
        d) Not the right type of training
        e) Too much red tape
        f) Other, Please specify..

24)   What is currently driving demand for skills within your company?

        a) Introduction of new technology
        b) New working practices or development of new products
        c) Expansion of the range of services
        d) Regulatory requirements
        e) Other, Please specify..

25)   Does your workforce have all the skills needed to meet business demand? **Yes/ No**
        If No, which skills in your workforce do you think are missing, Please
        specify...
        ....
        ....

26)   What types of skills do you think will be important in your business in the future (e.g. the
        next 5 years)?
        ITC skills, Customer services skills
         Which Skills?...

27) Are there any particular areas that you would like to train your staff in? **Yes/ No**
If there are, what are they and to what level would you like your staff trained e.g. NVQ Level 1-3 or does it not really matter if the training is liked to qualifications?..
....
....

28) How can these needs be best met?
Through continuing Professional Development or short courses.
a) Through more formalised training, for example, staff members working towards NVQ's through a local education & training provider.
b) Through in-house training.
c) A mixture of these forms of training.

29) Are you aware of any training providers who can meet your needs?
If yes, who are they?..
....
....

30) Are you satisfied with the courses your employees are receiving?
Yes/ No
If No, what changes would you like to see in course provision that would meet more closely with your needs as an employer?
a) More courses delivered in the evenings and weekends
b) Courses should be more practically based
c) Trainees should be shown how to use more of the latest technology affecting the industry
d) Other, Please specify..
....
....

31) Are there any particular courses relevant to your business that are not provided locally, that you feel should be? **Yes/ No**
If there are, what are they?..
....

32) What would encourage you as an employer to provide more training for your staff?
a) Subsidies to help with the cost of the training course?
b) Subsidies to help with the cost of travel and other indirect expenditure associated with training?
c) Training delivered in-house or more locally
d) Greater availability of on-line training?
e) Greater availability of training delivered in the evenings and at weekends?

     f)   Other, Please specify..

....

....

33)   Do you think it should be the employers' responsibility to provide training for their staff? **Yes/ No**

     If No, do you think the emphasis for training should be upon individual employees, if not who?..

....

....

Any other comments on any of these issues that you would like to make please use the space below to do so.

Thank you for your important contribution.

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