THE POTENTIAL SOCIO-ECONOMIC IMPLICATIONS OF LICENSING THE SEA 7 AREA

A REPORT
for the
DEPARTMENT OF TRADE AND INDUSTRY
by
MACKAY CONSULTANTS

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Mackay Consultants
Albyn House
Union Street
Inverness
IV1 1QA

Tel: 01463 223200
Fax: 01463 230869
e-mail: info@tonymackay.co.uk

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1.0 INTRODUCTION

1.1 The UK Department of Trade and Industry (DTI) is conducting a Strategic Environmental Assessment (SEA) of licensing parts of the UK Continental Shelf (UKCS) for oil and gas exploration and production. This SEA 7 is the seventh in a series planned by the DTI, which will, in stages, cover the whole of the UKCS.

1.2 The SEA 7 area is shown on the map on the following page. It is a very large area extending from the west coast of Scotland and the Western Isles far out into the Atlantic. Most of the area is generally a deepwater province with relatively unknown hydrocarbon potential.

1.3 Mackay Consultants were asked by Geotek Ltd and Hartley Anderson Ltd on behalf of the DTI to assess the socio-economic implications of licensing the SEA 7 area. In doing that we have produced two separate reports. This

- The Social and Economic Implications of Licensing the SEA 7 Area

is one. The other is

- SEA 7: Economic and Social Baseline Study.

1.4 This report sets out the results of our work, in relation to

- oil and gas production, and reserves
- capital, operating and decommissioning expenditure
- employment
- tax revenues
- social impacts.

1.5 The structure of the report is similar with the previous reports we produced on the SEA 4, 5 and 6 areas.

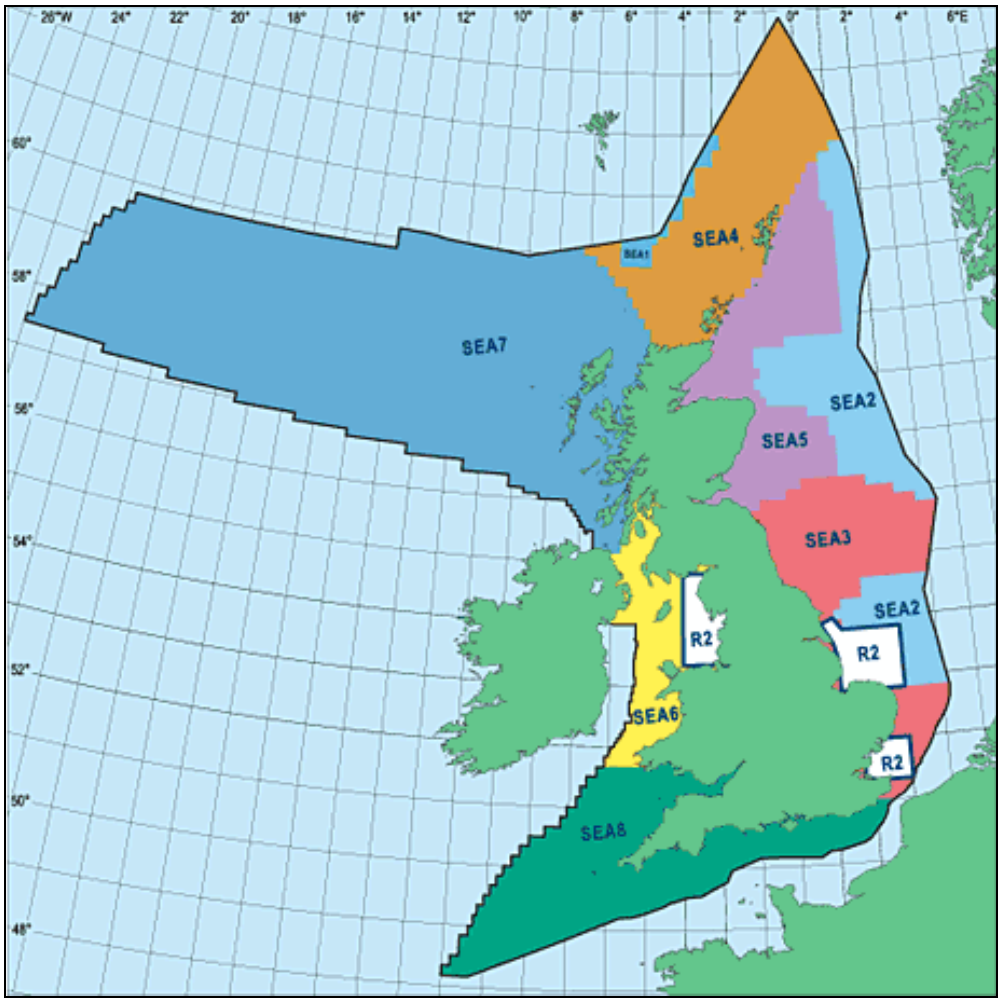
1.6 The DTI provided scenarios of possible exploration and development activity in the SEA 7 area. They are set out in Section 2 of this report.

1.7 Section 3 is a brief description of the society and economy of the area and Section 4 the existing facilities and activity.

1.8 We converted the DTI scenarios into optimistic and pessimistic scenarios, and then used them to produce forecasts of: oil and gas production (see Section 5); oil and gas reserves (Section 5); expenditure (Section 6); employment (Section 8); and tax revenues (Section 9). The implications for existing facilities in the area are discussed in Section 7 and the potential social impacts in Section 10.

1.9 We are very grateful for all the information and help provided in the course of our research. However, the opinions expressed in this report are those of Mackay Consultants, unless clearly indicated otherwise.

SEA 7 area



2.0 DTI SCENARIOS

2.1 Unlike the North Sea and partly the West of Shetland area (SEA1 and 4), most of the SEA 7 area is generally a deepwater province with relatively unknown hydrocarbon potential. Most of the prospectivity would lie in sediments beneath extensive Tertiary basalts that are currently difficult to image using conventional seismic acquisition methods.

2.2 SEA 7 covers a large area but is very lightly explored with just 11 wells drilled. Only the Enterprise 154/1-1 Benbecula South well drilled in 2000 has encountered hydrocarbons west of the Hebrides, although the Agip 164/28-1 well found minor oil shows in a similar aged reservoir. A well to be drilled in 2006 should help clarify the size of the Benbecula gas accumulation and hence the potential for development.

2.3 Regional mapping over previously licensed acreage in the Rockall Trough suggests prospectivity to be generally limited mainly because the combination of geologic ingredients essential to generating and trapping hydrocarbons is missing.

2.4 However, there has been limited exploration to date, with the relatively high cost of exploring for and developing oil and gas in this area a major factor in the lack of activity. In order to establish the potential for success in SEA 7 there is a fundamental need to improve and introduce new technology and evaluation methods for the area.

2.5 The bulk of the traps in SEA 7 could be beneath the basalts which overly a large proportion of the area. Seismic imaging through the volcanics to the sediments, so that drillable prospects can be identified, requires new technology to be proven and implemented.

2.6 Aside from a few blocks with 3D seismic data coverage and several blocks with sparse 2D seismic data, the bulk of SEA 7 is devoid of data to appropriately evaluate the real potential. SEA 7 would require initial investments in acquiring state of the art, purpose designed seismic to realistically unravel any further hydrocarbon potential. New seismic techniques have been attempted over the last few years, some of which are thought to improve imaging in areas of moderate basalt coverage.

2.7 Therefore, although there is some evidence of hydrocarbons and structures which may form traps, the limited data available is a barrier to estimating the full prospectivity, and hence the possible activity, in the area.

2.8 The SEA 7 area generally can be broadly subdivided into 4 ‘geographic regions’. **Area 1** includes the Benbecula discovery and runs south to the most southerly previously licensed acreage in South Rockall. **Area 2** mainly represents previously explored licensed acreage in various locations. **Area 3** runs immediately west of the Hebrides and abuts Area 1, also including the St Kilda exclusion zone (see notes in green attached). Lastly, **Area 4** represents the largest and least known area located predominantly in deep water.

Area 1

2.9 Area 1 can be considered to contain the potential for hydrocarbons. From 11 exploration wells drilled west of the Hebrides, the 154/1-1 well found hydrocarbons. The 154/1-1 well is associated with the Benbecula gas accumulation and there is a strong likelihood there could be more scope for ‘hydrocarbon traps’ on a trend stretching south from Benbecula to the Irish, Dooish, well along a 260 by 30 kms wide corridor. Well 164/28-1 gave an indication of the potential for oil in a similar feature.

2.10 The Benbecula discovery is of a similar age to Foinaven and Schiehallion and was made within the Palaeocene located beneath water depths of 2000 metres. The Dooish well in Irish waters encountered hydrocarbons in older reservoirs of Mesozoic age. Evaluation of existing 2D and 3D seismic data partly over the southern part of Quad 142 and Quad 132 suggests there are 'hydrocarbon plays' that are analogous to the East Solan, 'back basin' Jurassic plays of the west of Shetlands.

2.11 It is predicted that any hydrocarbon potential will most likely coincide with water depths beginning at about 700 metres and extending westwards to water depths of over 2000 metres.

Area 2

2.12 Area 2 has been split into four parts where blocks have been partially previously licensed. Prospectivity here is considered to be limited. The analysis of three key wells (163/6-1, 164/7-1 and 132/6-1) in conjunction with other data shows the areas adjacent the wells to be most likely unprospective.

2.13 The 'Dome well' 164/7-1, drilled in 1997, had no trace of hydrocarbons and no sand from first returns to TD. In essence, the well drilled into a large (400 sq. kms.) intrusive core of an igneous centre (sill complex above a laccolith or pluton). Extensive technical work by the Group who drilled the well suggests that there is an extremely limited chance for an active petroleum system in this part of North Rockall.

2.14 The impact of well 164/7-1 on gravity interpretation indicates the area represents a gravity low over the NE Rockall Basin, which is now interpreted to represent a thick Upper Cretaceous basin. Burial history modelling as a result of the 164/7-1 well suggests the Kimmeridge Clay source rocks that are present beneath the Base Cretaceous Unconformity over Tranche 53 would have been metamorphosed during a severe Early Tertiary heating event. There is therefore minimal source rock potential here.

2.15 The 132/6-1 well was located on a structural closure but a lack of sands points to limited reservoir development in the vicinity. Well 163/6-1 encountered volcanics, failing to reach any potential sedimentary rocks. The area identified as part of Area 2 in Quad 158 and Quad 159 was licensed but not drilled so the potential is unknown but probably restricted.

Area 3

2.16 Covers an area that includes the Hebrides Shelf, the Hebrides Slope, and the Geikie Escarpment and is considered to contain limited hydrocarbon prospectivity. The area also contains the St Kilda '70km radius exclusion zone'. *[See below for the summary of that area, sent for a previous submission. It has been modified slightly so that it can fit into this document if necessary.]* Four wells have been drilled along the shelf margin/slope. All failed to find any trace of hydrocarbons (154/3-1, 164/25-1Z, 164/25-2 and 132/15-1) mainly because there was no trapping mechanism to capture the hydrocarbons.

2.17 This area could have potential if structures are identified.

Area 4

2.18 Area 4 covers an extensive area that has no history of hydrocarbon exploration. Most of the area in question underlies extensive areas of Tertiary, Palaeocene age, basalts. Relatively little 2D seismic has been acquired but what has (for instance over previously licensed blocks 152/1, 2, 6, 7, 11 and 12) demonstrates the very limited imaging beneath the Tertiary Basalts. However, there are some interesting structures above the Tertiary basalts which could contain hydrocarbons, although the sourcing of such structures with hydrocarbons is problematic.

Estimated Scale of New Seismic Data Collection for the first 5 years:

Area 1
2 x 2D seismic surveys (2500 – 5000 km length of 2D seismic data) and 2 to 8 3D seismic surveys (500 - 2000 km^2 of 3D coverage).
Area 2
3 x 2D seismic surveys 10 - 200 km length of 2D seismic data.
Area 3
Limited or no seismic (except tail ends of 2D seismic lines).
Area 4
4 x 2D seismic surveys of 2500 – 5000 km of data.
Total Number of surveys: Between 4 and 8 2D surveys and 2 to 8 3D seismic surveys.

2.19 Estimates below for exploration wells are specifically for the 25th/26th Rounds. Future activity will depend on success resulting from the 25th/26th Rounds and the outcome of the 2006 North Benbecula well.

Estimated Number of Exploration Wells

All Areas to 2011
Between 2 and 5 exploration wells until 2011, and up to 5 appraisal wells.

2.20 It is expected that no firm well obligations will be received mainly because of the lack of existing seismic and other data. All areas are of high to extremely high risk. Part of the acreage has just sparse 2D seismic coverage, and almost certainly the majority of the blocks applied for will be on a Frontier Licence basis with new seismic acquisition as a firm commitment. All wells pledged will be either a drill or drop or contingent on regional/block specific evaluations. For the 25th Round, an estimate of up to 10 drill or drop/contingent wells could be expected, with potentially half making it past the first hurdle. The anticipated timing of these wells is: 1 in 2009, 2 in 2010 and 2 in 2011.

Anticipated major 'near-term 2011/13' infrastructure developments

2.21 The Benbecula North structure is planned to be drilled in 2006. This has the potential to form the first viable commercial development west of the Hebrides. If the North Benbecula exploration well proves successful in proving a commercially viable gas accumulation, then a full appraisal programme of up to 5 wells would be likely before a development plan. The type of development would be a result of weighing up the pros and cons of subsea versus a new build Tension Leg Platform and gas export route.

2.22 If the current oil prices continued for the next 4-5 years an oil discovery of at least 100 million barrels of recoverable reserves would be the minimum case in water depths of less than 1000m that could be developed using FPSO.

2.23 **Subsea tieback:** 1 or 2 developments between 2010-2014 tied to existing infrastructure
FPSO: 1-2
Development wells to 2013: Between 4 and 10

Likely take up of blocks in the SEA7 acreage

2.24 The number of blocks that might be taken up in the SEA7 area could be high, in the region of 50 to 100's; however, these would mostly be Frontier type licences where large areas are taken up initially for seismic and scoping studies.

2.25 As the type of licences to be offered in the area has yet to be clarified, it would not be meaningful to indicate a split between Traditional, Frontier and Promote Licences.

Assessment of hydrocarbon prospectivity in the St Kilda area

2.26 The prominent St Kilda massif lies at the southern end of the Flannan Ridge and is essentially a Tertiary igneous centre some 35 km in diameter that rises from a depth of about 130 m below sea level to over 400 m above sea level.

2.27 The islands of St Kilda comprise a range of intrusive igneous rocks, which were formed in the core of an early Tertiary volcano. No lavas or Tertiary sediments have been discovered on the islands. Geologically, the islands of St Kilda lie near the western limit of the Outer Hebrides Platform area. The platform is mainly composed of Lewisian Metamorphic 'basement rocks' at or near seabed with a thin veneer of recent sediments thickening gradually westwards.

2.28 Approximately 30 kms west of St Kilda is the shallow elongate Flannan Trough, which contains up to a maximum of 2000m of basin fill sedimentary Permo-Triassic redbeds resting on Lewisian Metamorphic Basement.

2.29 Approximately 10 kilometres west of St Kilda and some 50-65 kilometres from the Outer Hebrides there is an area which forms a continuation of the Outer Hebrides Platform. This platform extension has thin Tertiary (Neogene) sediments overlying Lewisian Metamorphic Basement.

2.30 The westerly limit of the 'Lewisian platform area' (relating to the Geikie Escarpment) coincides with the easterly edge of the Rockall Trough. This boundary is partially controlled by major fault referred to as the Hebridian Escarpment.

2.31 Approximately 100 kilometres south of St Kilda is the Barra Trough, which forms an isolated, shallow, fault-bounded basin on the southern part of the Outer Hebrides Platform.

2.32 40 kilometres north of St Kilda is the west Flannan Basin where possibly up to 4000m of Permian and Mesozoic deposits are estimated to be present beneath a large basalt covering.

2.33 The geologic regions briefly described above form areas where there is little chance of finding notable accumulations of hydrocarbons. Apart from the Flannan Basin, most of the area has a relatively thin sedimentary sequence, which rests on Lewisian Metamorphic basement (hydrocarbons extremely unlikely). The Flannan Basin is inferred by the BGS report to have some Jurassic sediment beneath Tertiary and younger Mesozoic strata; however, any Jurassic source rocks would be much too shallow to generate hydrocarbons.

2.34 Four wells have been drilled along the shelf margin/slope and all failed to find any hydrocarbons (154/3-1, 164/25-1Z, 164/25-2 and 132/15-1).

Conclusions

2.35 From the above observations an exclusion zone with a 70 kilometre radius from the largest island of St Kilda (see map) would have very little hydrocarbon prospectivity.

Economic impact scenarios

2.36 We have converted the DTI scenarios into the usual three scenarios

- base case
- optimistic
- pessimistic

for the purposes of the socio-economic impact analysis.

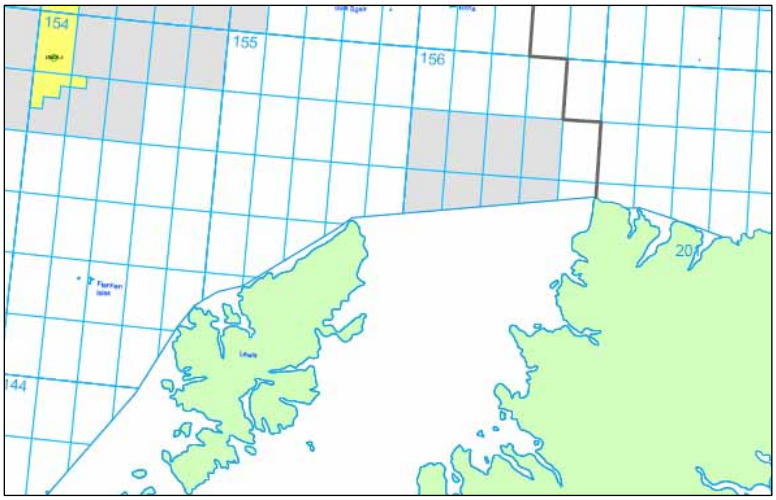
2.37 The base case assumes one gas field. The optimistic case assumes one gas field, one oil field and two subsea developments. The pessimistic case assumes only seismic activity and limited exploration drilling.

2.38 We have assumed that the gas field will produce up to 250 million cubic feet per day (cfd) from recoverable reserves of 100 billion cubic metres (bcm) (3,500 billion cubic feet), with a lifetime of 15 years. The oil field will produce up to 50,000 barrels per day (bpd) from recoverable reserves of 130 million barrels (17.0 million tonnes) with a ten year lifetime.

2.39 The estimated development cost of each of these two fields is £350 million.

2.40 The DTI scenarios suggest that FPSOs will have to be used in the SEA 7 area. The gas field will also require an offshore pipeline to a landfall site on the west coast of Scotland, and then an onshore pipeline to link up with the existing gas grid. The location of the landfall terminal would obviously depend on the location of the gas discovery.

2.41 Shell's Benbecula discovery is in Block 154/01, which is located about 80 kilometres northwest of the Western Isles, in about 1,200 metres of water. The map opposite indicates that the closest landfall for this discovery would be in Sutherland, although a gas pipeline could cross Lewis in the Western Isles.



2.42 Enterprise Oil (subsequently acquired by Shell) found gas with the 154/01-1 well in 2000. There were no significant developments with the discovery during the next few years, which is not surprising given the remote location.

2.43 In summer 2006, however, Shell drilled an appraisal well on the block but no results had been released at the time of writing. Press reports at the time variously referred to the "North Benbecula oil prospect" and "gas on the same trend" as the 2000 discovery. For ease of analysis, we have assumed that Benbecula will be the gas field in the base case and optimistic scenarios.

2.44 The location of the oil field is less important in the context of this report because it would be developed with a FPSO and without an offshore pipeline and onshore terminal.

2.45 The optimistic scenario also includes two smaller fields, one oil and one gas, which would be tied back to the larger discoveries. It is assumed that the oil field will produce up to 5,000 barrels per day (bpd) from recoverable reserves of 1 million tonnes (or 7.5 million barrels). The gas field will produce up to 25 million cubic feet per day (mcfd) from recoverable reserves of 10 billion cubic metres (350 billion cubic feet). In each case we have assumed a five year production life, with three years at peak output and two years at 50% of that level.

2.46 The estimated development cost of each of these two fields is £50 million. Both would be single well subsea tiebacks to existing production facilities.

2.47 Regarding exploration activity, the DTI scenarios suggested 2-5 exploration wells in the period to 2011 and up to 5 appraisal wells. For our base case scenario we assumed a total of 5 wells and for the optimistic scenario 10.

3.0 THE SOCIETY AND ECONOMY OF THE SEA 7 AREA

3.1 The SEA 7 area is a very large area extending from the west coast of Scotland and the Western Isles far out into the Atlantic. The main onshore area involved is

- the Western Isles.

The area also borders on

- the west coast of Highland
- part of Argyll and Bute
- part of Northern Ireland.

3.2 Our separate report on

- SEA 7 : Economic and Social Baseline Study

gives socio-economic profiles of these four areas. The following is a brief summary.

3.3 In general terms the SEA 7 area has experienced population decline in recent years and the population has been ageing because of the outmigration of young people. The area is probably the remotest part of the United Kingdom.

3.4 The economy would normally be described as rural. Agriculture/crofting, fishing and fish farming remain important industries, although most employment is now in the service sector – as elsewhere in the country. Tourism is a key industry in some parts of the area.

3.5 Unemployment used to be significantly higher than the Scottish and UK averages but that has not been the case in the last few years – possibly because of the net outmigration.

3.6 Income levels are generally more than -20% below the UK average and -10% below the Scottish average. That is a consequence of the rural nature of the economy.

Western Isles

3.7 The Western Isles are a group of islands off the north west coast of Scotland. They are also known as the Outer Hebrides or by their Gaelic name Eilean Siar. There are approximately 30 islands in the group, some of which are uninhabited. The main inhabited islands are:

- Lewis and Harris
- North Uist
- Benbecula
- South Uist
- Barra

3.8 Lewis and Harris form the largest and most northerly island, with about 70% of the Western Isles population of 26,400 living in Lewis, where the main town and port of Stornoway is located. North Uist is south of Harris and separated from South Uist by Benbecula, which is linked to both North and South Uist by causeways. Barra is the smallest and most southerly island.

3.9 Table 3.1 below gives a breakdown of the population in the 2001 Census.

Table 3.1: Population of the Western Isles at 2001 Census

Lewis	Harris	North Uist	Benbecula	South Uist	Barra
18,489	1,984	1,657	1,249	1,951	1,172

Source: Western Isles Council, Census 2001

3.10 The SEA 7 Area also includes the archipelago of St Kilda which is the remotest part of the British Isles and lies 40 miles west of Benbecula. St Kilda is a group of volcanic islands with the highest sea cliffs in Britain at 1,400 ft, the most important breeding seabird colonies in Europe and the most extensive group of vernacular buildings in Britain.

3.11 Table 3.2 shows the population changes between 1995 and 2005 for both the Western Isles and Scotland as a whole. The decline in the former's population was by -2,440 or -8.5%, whereas the fall in Scotland's population was just -0.2%. The Western Isles' decline was equivalent to about 27% of the Scottish decline.

Table 3.2: Population change, 1995-2005

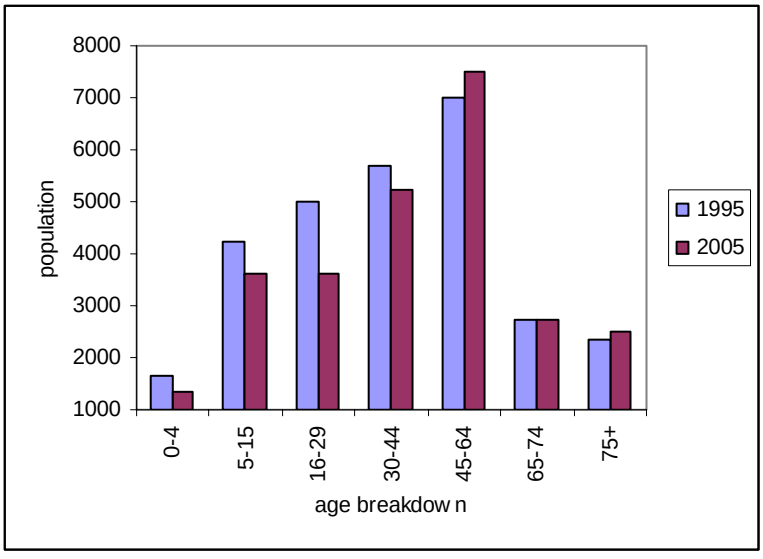
	Estimated Population June 1995	Natural Change	Civilian migration and other changes	Estimated Population June 2005	Population Change Number	Population Change %
Western Isles	28,810	-1,448	-992	26,370	-2,440	-8.5
Scotland	5,103,690	-34,975	+26,085	5,094,800	-8,890	-0.2

Source: General Registrar Office for Scotland

3.12 Our "Economic and Social Baseline Report" shows that the -8.5% decline in the population of the Western Isles was the worst of the 32 local authority areas in Scotland.

3.13 The population of the Western Isles has also aged demographically, with the largest decrease by age group occurring in the 16-29 year olds, from 17% of the population in 1995 to 13% of the population in 2005, and the greatest increase by age group occurring in the 45-65 year olds, from 24% of the population in 1995 to 28% of the population in 2005. These changes are illustrated in Figure 3.1 below.

Figure 3.1: Age structure of the Western Isles, 1995 and 2005



3.14 The Registrar General for Scotland publishes annual projections of the population of Scotland and the 32 local authority areas, as summarised in Table 3.3. They show a small increase in Scotland but continuing decline in the Western Isles. The projected -15% decline between 2004 and 2024 is the second worst of the 32 areas.

Table 3.3: Summary Population Projections, Western Isles and Scotland, 2004–2024

	2004	2010	% change	2014	% change	2024	% change
Western Isles	26,260	25,710	-2	24,894	-3	22,413	-10
Scotland	5,078,400	5,118,250	+0.8	5,123,769	+1	5,118,926	-1

Source: General Register Office for Scotland

3.15 The service sector accounts for approximately 70% of economic output in the Western Isles, with the public sector – education, health, the Western Isles Council etc – accounting for much of that. Other important service industries are retail distribution and transport.

3.16 Fish farming – mainly salmon – is the largest industry outside the service sector. The manufacturing sector is relatively small and is dominated by fish processing, again mainly of farmed salmon.

3.17 Lewis Offshore had an oil fabrication yard at Arnish, just outside Stornoway, which made platforms and modules for the North Sea oil and gas industry, but that closed a few years ago. The yard is now used to manufacture components for wind farms.

3.18 The Western Isles economy has grown at a significantly slower rate than the Scottish economy over the last decade. Recently there have been cutbacks in the fish farming and processing industries. The population decline must also be one of the reasons for the relatively low economic growth.

3.19 The pattern of employment mirrors closely the islands' economic structure. A detailed input-output study was undertaken in 2003 and the employment breakdown from that is shown in Table 3.4 on the following page. There will have been no major changes since 2003.

3.20 The table shows that employment in the Western Isles is dominated by the service sector, particularly the public services.

Table 3.4: Sectoral Contribution to Employment, Western Isles, 2003

Sector	Employment (FTEs)	% Contribution
Agriculture	164	1.7
Sea Fishing	339	3.4
Fish Farming	287	2.9
Electricity, Gas, Water	104	1.1
Extraction (of Ores etc)	123	1.2
Textiles	320	3.2
Pottery & Jewellery	26	0.3
Food & Drink Manufacturing	14	0.1
Fish Processing, Wholesaling, etc	276	2.8
Other Manufacturing	338	3.4
Construction	1,183	11.9
Distribution	1,092	11.0
Hotels	242	2.4
Other Accommodation	36	0.4
Catering	228	2.3
Land Transport	293	3.0
Air Transport	78	0.8
Sea Transport	297	3.0
IT Services & Telecommunications	204	2.1
Banking & Insurance	136	1.4
Media	45	0.5
Education	741	7.5
Health	797	8.0
Other Public Services	689	7.0
Other/Private Services	1,194	12.0
Public Administration	660	6.7
TOTAL	9,908	100

Source: Western Isles Regional Accounts, 2003

3.21 Earnings have traditionally been well below the Scottish average but the latest statistics for 2006 show little difference, as set out in Table 3.5. However, we have doubts over the accuracy of these latest figures and believe that there may have been an unrepresentative sample in the islands.

Table 3.5 Gross Weekly Earnings, 2006

	by place of residence (£)	difference (%)	by place of work (£)	difference (%)
Scotland	412.1		411.9	
Western Isles	400.2	-2.9	415.7	+0.9%

Source: Annual Survey of Hours and Earnings (ASHE)

3.22 Table 3.6 sets out the unemployment statistics for the last twelve months. The percentage figures are a little above the Scottish and Highlands and Islands averages.

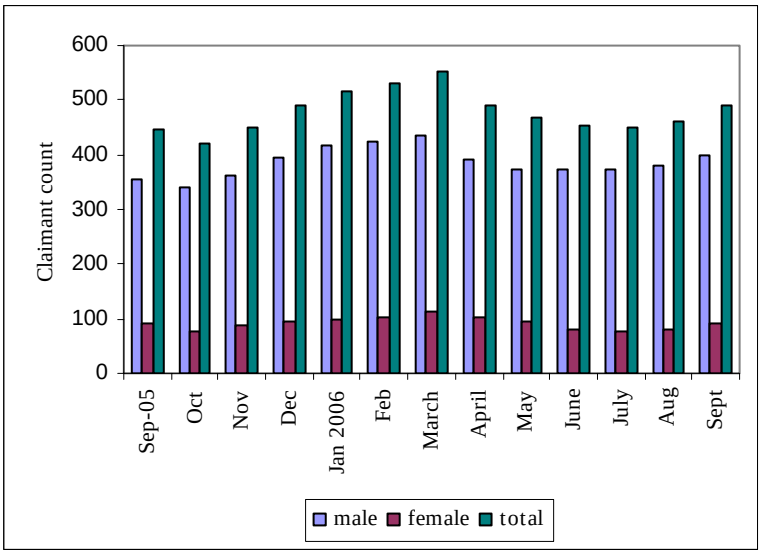
Table 3.6: Unemployment in the Western Isles, 2005-2006
(claimant count)

	numbers			%		
	male	female	total	male	female	total
Sept. 2005	356	92	448	4.3	1.3	2.9
October	342	78	420	4.1	1.1	2.7
November	363	88	451	4.4	1.2	2.9
December	395	96	491	4.8	1.4	3.2
January 2006	418	97	515	5.1	1.4	3.4
February	425	104	529	5.1	1.5	3.4
March	437	114	551	5.3	1.6	3.6
April	390	101	491	4.7	1.4	3.2
May	373	95	468	4.5	1.3	3.1
June	372	82	454	4.5	1.2	3.0
July	373	78	451	4.5	1.1	2.9
August	380	80	460	4.6	1.1	3.0
Sept. 2006	399	90	489	4.8	1.3	3.2

Source: ONS Labour Market Statistics

3.23 Unemployment is usually higher in the winter months than in the summer, as illustrated in Figure 3.2. There are normally bigger fluctuations elsewhere in the region, where tourism is more important than in the Western Isles.

Figure 3.2: Unemployment: Western Isles, 2005-2006
(claimant count)



West Coast of Highland

3.24 The SEA 7 area borders on the west coast of the Highland Council area, also known as the Highlands or Highland. This area includes parts of Sutherland, Ross and Cromarty, Skye and Lochalsh and Lochaber. The geography of the area is similar with that of the Western Isles, although much more mountainous.

3.25 It is difficult to get separate statistics just for the coastal strip. The recent population statistics are summarised in Table 3.7. There was a +2.6% increase in the Highlands between 1995 and 2005, compared with a -0.2% fall in Scotland as a whole.

Table 3.7: Population Change, Highland and Scotland, 1995 -2005

	Estimated Population June 1995	Natural Change	Civilian Migration and Other Changes	Estimated Population June 2005	Population Change Number	Population Change %
Highland	208,220	-1,539	+6,909	213,590	+5,370	+2.6
Scotland	5,103,690	-34,975	+26,085	5,094,800	-8,890	-0.2

Source: General Registrar Office for Scotland

3.26 Most of the population growth has taken place in the Inverness area, however, and not on the west coast. The population of Skye and Lochalsh has increased but those of some of the other parts have fallen.

3.27 Much of the population increase in the Highlands is attributable to people from Poland, and the other Eastern European countries which joined the European Union recently, moving to work in the area. It is difficult to predict if that trend will continue and on what scale.

3.28 In Skye and Lochalsh a significant proportion of the population increase has been people from England retiring to live there, taking advantage of the area's relatively low house prices.

3.29 The economy of the Highlands is dominated by the service sector, as in the Western Isles, but there are some significant differences. The former is also to a large extent dominated by the city of Inverness.

3.30 The economy of the west coast is much more rural and similar with that of the Western Isles. Tourism is significantly more important, however, as is fishing. Kinlochbervie and Lochinver are two of the busiest fishing ports in Scotland.

3.31 It is not possible to get separate statistics on employment structure, earnings and unemployment in the west coast area. Table 3.8 gives the 2006 earnings statistics for the Highlands. By place of work they were -11.5% below the Scottish average and by place of residence -10.2% below. The Scottish averages are also about -10% lower than the UK ones.

Table 3.8: Gross Weekly Earnings, 2006

	by place of residence (£)	difference (%)	by place of work (£)	Difference (%)
Scotland	412.1		411.9	
Highland	364.8	-11.5	369.7	-10.2

Source: Annual Survey of Hours and Earnings (ASHE)

3.32 We believe that average earnings in the west coast area will be lower than the Highland averages because the latter include Inverness. The differences shown in the table are one of the reasons why we are sceptical about the accuracy of the earnings statistics for the Western Isles, given in Table 3.5 above.

3.33 Table 3.9 sets out the unemployment statistics for the Highlands for the last twelve months. The percentages have been significantly lower than the Scottish figures: for example, the annual average for the Highlands is approximately 2.2%, compared with 2.8% for Scotland.

Table 3.9: Unemployment in the Highlands, 2005-2006
(claimant count)

	numbers			%		
	Male	Female	Total	Male	Female	Total
Sept 2005	1,940	662	2,602	2.9	1.1	2.0
October	2,000	645	2,645	3.0	1.1	2.1
November	2,082	763	2,845	3.1	1.3	2.2
December	2,168	870	3,038	3.2	1.4	2.4
January	2,358	952	3,310	3.5	1.6	2.6
February	2,402	991	3,393	3.6	1.6	2.6
March	2,351	908	3,259	3.5	1.5	2.5
April	2,174	768	2,942	3.2	1.3	2.3
May	2,046	729	2,775	3.0	1.2	2.2
June	2,006	711	2,717	3.0	1.2	2.1
July	1,962	715	2,677	2.9	1.2	2.1
August	1,893	734	2,627	2.8	1.2	2.0
Sept 2006	1,899	732	2,631	2.8	1.2	2.1

Source: ONS Labour Market Statistics

Argyll and Bute

3.34 Argyll and Bute, sometimes known as Argyll and the Islands, is the area of the west of Scotland south of Highland. It is the second largest local authority area of Scotland, at around 6,900 sq kilometres or 10% of Scotland's area, stretching over 100 miles from Appin south of Lochaber to Campbeltown on the Mull of Kintyre. It has five main towns, 26 inhabited islands, of which Islay is of most relevance to the SEA 7 area, with over 2,700 miles of coastline. The administrative centre is Lochgilphead and the largest town is Helensburgh.

3.35 There are three fairly distinct areas: the "Atlantic Islands" of Mull, Iona, Gigha, Islay, Jura, Coll, Tiree, Colonsay, Lismore, Erriad, Gometra, Ulva and Lunga; the "Rural Mainland" from Appin through Mid Argyll to Campbeltown; and the "Commuter Belt" including Helensburgh, Dunoon, Lomond and Bute and Cowal.

3.36 The estimated population of Argyll and Bute in 2005 was 90,870 and in the ten years from 1995 to 2005 the population decreased by -1,080 or -1.2%, as shown in Table 3.10. This decreasing trend is of concern for the rural and island communities, with more deaths than births plus a decrease in armed services personnel.

3.37 During this period there was inmigration of 260 people per year but that was insufficient to offset the decline. The decrease in the number of 16-24 year olds was proportionately more in Argyll and Bute, particularly the Atlantic Islands, than in the rest of Scotland, because young people leave for education and/or employment.

Table 3.10: Population Change, 1995-2005

	Estimated Population June 1995	Natural Change	Civilian Migration and Other Changes	Estimated Population June 2005	Population Change Number	Population Change %
Argyll&Bute	91,950	-3,688	2,608	90,870	-1,080	-1.2
Scotland	5,103,690	-34,975	26,085	5,094,800	-8,890	-0.2

Source: General Registrar Office for Scotland

3.38 In 2001 over 45% of the population or 41,158 lived in one of the five largest towns, these being Helensburgh with a population of 14,626, Dunoon 8,251, Oban 8,120, Campbeltown 5,144 and Rothesay 5,017. Another 36% of the population or 32,398 lived in settlements of up to 5,000 people although 70% of all settlements are of less than 100 people, whilst 19% of the population or 17,750 people did not live in a settlement.

3.39 Between 2004 and 2024 the population of Argyll and Bute is projected to increase by almost +3,486 or +3.8%, compared with + 0.8% for Scotland, as shown in Table 3.11. Argyll and Bute is ranked 10th of 32 local authorities areas for projected population increases, with 15 projected to increase and 17 to decrease. However, it should be noted that Argyll and Bute Council is projecting a continuing decrease in the population between 2001 and 2016, with the trend of more deaths than births being less than the net inmigration.

Table 3.11: Population Projections, 2004-2024

	2004	2010	%change	2014	%change	2024	%change
Argyll & Bute	91,190	92,531	+1.5	93,034	+0.5	94,676	+1.8
Scotland	5,078,400	5,118250	+0.8	5,123,769	+1.0	5,118,926	-1.0

Source: General Registrar Office for Scotland

3.40 The Argyll and Bute economy can also be regarded as remote and rural. The service sector accounts for over 70% of output and employment, as elsewhere in the country, with the public services being particularly important. Tourism is also a key industry in much of the area.

3.41 The employment breakdown is given in Table 3.12.

Table 3.12: Sectoral Employment, Argyll and Bute, 2004

Sector	**number**	**%**
Agriculture, Forestry & Fishing	1,400	4
Energy & Water	500	1
Manufacturing	1,700	5
Construction	1,600	5
Distribution, Hotels & Catering	9,300	27
Transport & Communications	1,600	5
Banking, Finance & Insurance	4,700	14
Public Administration, Education , Health}	13,900	40
Other Services}	-	-
Total	**34,600**	**100**

Source: Scottish Executive, Analytical Services Division.

3.42 Gross weekly earnings in 2006 in Argyll and Bute by place of residence and by place of work were £373 and £382 respectively, which were -9.6% and -7.2% less than the Scottish averages, as shown in Table 3.13. If Argyll and Bute is compared with all 32 Scottish local authorities, Argyll and Bute would be ranked 18th by place of work and 27th by place of residence.

Table 3.13: Gross Weekly Earnings, 2006

	by place of residence (£)	difference (%)	by place of work (£)	difference (%)
Scotland	412.1		411.9	
Argyll & Bute	372.7	-9.6	382.4	-7.2

Source: Annual Survey of Hours and Earnings (ASHE)

3.43 Table 3.14 sets out the unemployment statistics for the last twelve months. The percentages have usually been a little below the Scottish averages but a little above the Highlands and Islands averages. The seasonal fluctuations are not as marked as in the region as a whole.

Table 3.14: Unemployment in Argyll and Bute, 2005-2006
(claimant count)

	numbers			%		
	Male	Female	Total	Male	Female	Total
Sept 2005	893	292	1,185	3.1	1.2	2.2
October	910	299	1,209	3.1	1.2	2.2
November	943	322	1,265	3.2	1.3	2.3
December	982	346	1,328	3.4	1.4	2.5
January	1,105	423	1,528	3.8	1.7	2.8
February	1,118	429	1,547	3.8	1.7	2.9
March	1,098	422	1,520	3.8	1.7	2.8
April	1,073	391	1,464	3.7	1.6	2.7
May	1,018	348	1,366	3.5	1.4	2.5
June	996	324	1,320	3.4	1.3	2.4
July	977	354	1,331	3.3	1.4	2.5
August	953	376	1,329	3.3	1.5	2.5
Sept 2006	887	360	1,247	3.0	1.4	2.3

Source: ONS Labour Market Statistics

Northern Ireland

3.44 A small part of the Northern Ireland coast borders on the SEA 7 area. The local authority areas involved are Moyle, Coleraine, Limavady and Derry. Brief notes on the four areas follow. More details are given in the Baseline Report.

Moyle

3.45 Moyle District has a lengthy part of the coastline of Northern Ireland which is sometimes known as the Causeway Coast because of the area's famous Giant's Causeway. The main population centre is Ballycastle and there are various other small villages along the coast.

3.46 Moyle's population increased to 16,500 in 2005 and by 11.4% between 1982 and 2002, which was a little above the country's average of 9.8% for that period. Unemployment in August 2006 was 325 people or 3.3% of the working population compared with 2.8% for Northern Ireland. Gross earnings averaged £197 per week, 52% of the Northern Ireland average.

3.47 There is a ferry service between Ballycastle and Rathlin Island which lies six miles off the coast and is just 12 miles west of the Mull of Kintyre in Scotland. Rathlin Island is Northern Ireland's last remaining inhabited island with a population of around 100 people.

3.48 Tourism is very important to Moyle District. The main visitor attraction is the famous Giant's Causeway, which is an Unesco World Heritage Site and a National Nature Reserve. There are other tourist attractions including the Glens of Antrim and the Bushmills Distillery.

Coleraine

3.49 Coleraine has part of the coastline of Northern Ireland and is also one of the main tourist destinations in the country. The town of Colerane is the main population centre and other towns include the seaside resorts of Portstewart and Portrush.

3.50 Coleraine's population increased to 56,600 in 2005 and by +18.3% between 1982 and 2002 which was double the country's average of +9.8% for that period. Unemployment in August 2006 was 898 people or 2.6% of the working population, compared with 2.8% for Northern Ireland. Gross earnings averaged £361 per week, 95% of the Northern Ireland average.

3.51 Tourism is an important part of the local economy. Portstewart and Portrush are two of the most popular seaside resorts with excellent sandy beaches. The sectoral breakdown shows that the economy is very similar for most sectors with Northern Ireland as a whole, and there is also a successful Science Park with the University of Ulster attracting inward investment.

Limavady

3.52 Limavady lies between Coleraine and Derry with a coastline on Lough Foyle. The main population centres are Limavady, which is a very rural borough, with Dunvigen to the south and Ballykelly to the west.

3.53 Limavady's population increased to 34,100 in 2005 and by +21.4% between 1982 and 2002, which was one of the largest rises in the country. Unemployment in August 2006 was 632 people or 2.9% of the working population, compared with 2.8% for Northern Ireland. Gross earnings averaged £265 per week, 70% of the Northern Ireland average.

3.54 There are no major harbours in Limavady, but there is a car and passenger ferry across Lough Foyle from Magilligan Point to Greencastle in Co. Donegal. There is an environmental and heritage tourism industry. There is also a strong manufacturing sector, including a computer discs manufacturer. Other major companies have been attracted to the area by a young, educated workforce.

Derry

3.55 Derry is in the north west of the country, bordering with the Republic of Ireland, and has a coastline on Lough Foyle. The city is the largest urban centre outside Belfast, and is a regional hub of education, healthcare, administration and a strategic location for business, investment and tourism.

3.56 Derry's population increased to 107,300 in 2005 and by +16.4% between 1982 and 2002 compared with the country's average of +9.8% for that period. Unemployment in August 2006 was 3,532 people or 5.3% of the working population, compared with 2.8% for Northern Ireland. Gross earnings averaged £398 per week, 105% of the Northern Ireland average.

3.57 The City Walls are a well known tourist attraction and Derry City has also positioned itself as a technology centre located in the technology corridor between Coleraine and Donegal. The port of Londonderry handled almost 1.4 million tonnes of freight in 2004, of which 94% was inward and only 6% was outward.

4.0 EXISTING OIL AND GAS-RELATED FACILITIES AND ACTIVITY IN THE AREA

4.1 Unlike in the other SEA areas we have covered in previous reports, there is and has been very little offshore oil and gas-related activity in the SEA 7 area.

4.2 We were informed that twelve exploration wells (plus three sidebacks) have been drilled in the area to date, as listed in Table 4.1. These date back to 1980. There have often been long periods between wells, including four years between the last two.

Table 4.1: Exploration wells in the SEA 7 area

spud date	location	operator	result
1980	16306-1	BP	Dry
1980	163/06-1A	BP	Dry
1988	164/25-1	BP	Dry
1988	164/25-1Z	BP	Dry
1990	164/25-2	BP	Dry
1991	132/15-1	BP	Dry
1991	154/03-1	Conoco	Dry
1997	164/07-1	Conoco	Dry
2000	154/01-1	Enterprise/(Shell)	Gas
2000	153/05-1	Marathon	Dry
2000	164/28-1	Agip	Oil shows
2000	164/28-1A	Agip	Oil
2001	132/06-1	Conoco	Dry
2002	164/27-1	Agip	Dry
2006	154/01-2	Shell	?

Source: DTI

4.3 All the wells were dry, with the exception of 154/01-1, which is known as the Benbecula gas discovery; possibly 154/01-2, for which the results are unknown; and the minor oil shows in Agip's 164/28-1 well. As mentioned earlier, Shell drilled an appraisal well on Benbecula North in the summer of 2006 but no results had been released at the time of writing (November 2006).

4.4 The small number of exploration wells and the poor results have disappointed many people in the area. There have been recurring hopes that it could have turned out to be as prolific as the East Shetland basin, for example, with onshore facilities comparable with those at the Sullom Voe terminal and elsewhere in the Shetland Islands. That has not happened, however.

4.5 The exploration activity in the SEA 7 area has made occasional use of facilities in the area, notably Stornoway harbour for supply boats, seismic vessels etc and Stornoway airport for helicopters. That has also happened, on an even less frequent basis, elsewhere in the area.

4.6 The main oil-related facility in the SEA 7 area was the Lewis Offshore fabrication yard at Arnish. A number of the smaller production platforms, modules and other equipment for UKCS fields were built at Arnish. They included the conversion of the Buchan floating production facility (1980), the Beatrice C platform (1994) and the Erskine platform (1996).

4.7 At one time there were four fabrication yards in the area, manufacturing platform jackets and modules for fields in the North Sea, and employing thousands of people. There was a steel yard at Arnish, on the outskirts of Stornoway in the Western Isles, and three concrete yards at Kishorn in Wester Ross, Ardyne Point in Argyll and Portavadie, also in Argyll. The three concrete yards were located there because of the deep water access.

4.8 All four yards closed years ago. The Portavadie yard never won a single contract and is now used as a fish farm.

4.9 There will be people living in the Western Isles who worked at Arnish and others in the area who worked at the concrete yards.

4.10 Lewis Offshore ran out of work in the late 1990s, as did most of the oil fabrication yards in the UK, and the company closed down. The Arnish yard was mothballed.

4.11 A few years ago it was leased by Highlands and Islands Enterprise (HIE) and some of the facilities were converted to enable the manufacture of components for wind farms. That has not been successful to date, however, and two of the companies who leased the yard from HIE have gone out of business. Discussions were underway at the time of writing with another company.

4.12 Lewis Offshore found it difficult to maintain a steady order book but at times employed up to 1,000 people at Arnish. During those periods there were substantial impacts on the local economy.

4.13 We believe that quite a few people who worked at Arnish still work in the oil and gas industry elsewhere in the UK and overseas. There are also residents of the Western Isles and other parts of the SEA 7 area who work in the industry offshore on the UKCS, in Aberdeen and elsewhere.

4.14 A number of feasibility studies of other oil-related facilities were undertaken in the 1970s and 1980s, including locations for supply bases and onshore terminals similar with Sullom Voe and Flotta. None of these facilities was built, however.

4.15 In 1996 a body known as the Western Isles Oil Group commissioned an "Oil Industry Feasibility Study" from the consultant engineers Babtie Group. Their report concluded that "there is substantial potential for on-shore oil-related development on the Western Isles. That potential is related to the exploitation of reserves in the Rockall area. While the main East coast supply bases have maintained a stranglehold on the market, the Rockall area is excessively distant from Peterhead and Aberdeen. The Western Isles are ideally located to serve the needs of this developing area in terms of supply boats and helicopter services".

4.16 Further, "while the report concludes that development potential does exist, it must be recognised that existing supply base operators will tend to resist the view that new development is needed. Service companies are more open to recognition of the potential, though within this group views are divided. The oil companies arte strongly influenced in these matters by the tenders received from service providers".

4.17 "Realisation of the potential will depend upon the development of a "critical mass" of activity in the Rockall Trough area. Because of this, there is unlikely to be development before the turn of the century – the timescale is likely to be 5-10 years from now. However, exploration activity, including drilling work, is likely to begin within 2 years."

4.18 "Fairly strong potential also exists for helicopter service development. This also requires a critical mass of business but the development could be initiated to serve the exploration activity described earlier."

4.19 These hopes or forecasts proved to be far too optimistic. Nothing has happened to date.

4.20 The Western Isles Oil Group (WIOG) was set up by local businesses and public bodies in order to promote the area to the oil and gas industry. It has a website which includes a list of members and the services they can provide.

4.21 The Group appears dormant at the present time, although it could presumably be quickly re-activated if developments did occur.

5.0 IMPLICATIONS FOR OIL AND GAS PRODUCTION AND RESERVES

5.1 The scenarios provided by the DTI are set out in Section 2 of this report. As mentioned earlier, we have converted the DTI scenarios into three scenarios – "base case", "optimistic" and "pessimistic" – for the purposes of the impact assessment.

5.2 The base case assumes one large gas field development in the SEA 7 area. The optimistic scenario assumes two large developments – one gas, one oil – and two smaller developments – one gas, one oil. There are no field developments under the pessimistic scenario, only seismic activity and a small level of exploration drilling.

5.3 It was suggested earlier that the gas field could be the Benbecula discovery, made in 2000 and the subject of an appraisal well in 2006. The results of the latter well had not been released at the time of writing (November 2006).

Gas production

5.4 Table 5.1 sets out our forecasts of gas production for the two scenarios. It appears that UKCS gas production peaked in 2001 and has been declining since then. The average annual decline in the 2001-05 period was just under -4%.

5.5 It seems likely, however, that there would be a much bigger fall in 2006. Provisional statistics at the time of writing suggested a decline of about -15%, which is much greater than expected. Nevertheless, we have used that figure to estimate UKCS gas production in 2006 at about 82.0 billion cubic metres (bcm).

5.6 It is then necessary to make assumptions about the future decline in UKCS gas production. In our SEA 6 report we assumed an annual average of -3% to 2010 and -5% after that year. In the light of the 2006 experience, we have assumed -5% per year, as set out in Table 5.1.

5.7 SEA 7 gas production would start in 2012 and average 2.5 bcm per year from 2014 onwards. There would be slightly higher production in the five years 2015-19, according to the optimistic scenario.

5.8 The main effect of SEA 7 gas production would be to slow down the rate of decline of UKCS production. One large field and one small field would be insufficient to reverse the decline, as illustrated in Figure 5.1.

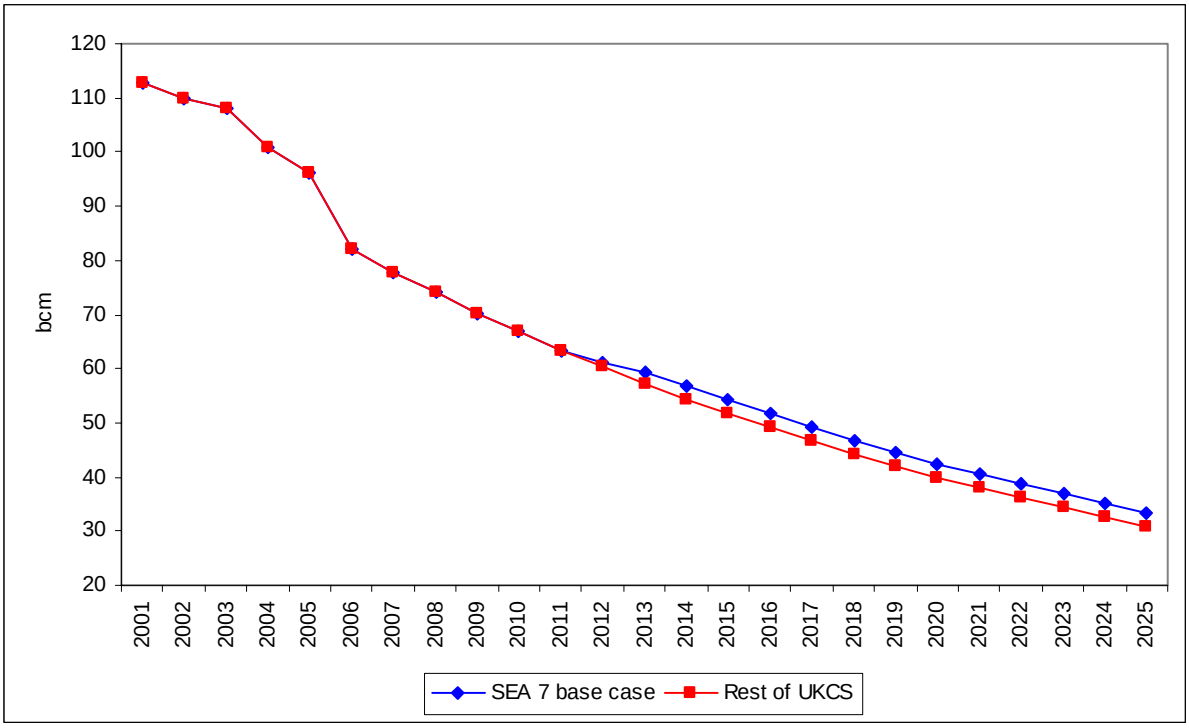
5.9 Table 5.1 shows that production of 56.9 bcm in 2014 would be +4.6% higher than it would otherwise have been. In 2025 it would be +8.1% higher.

Table 5.1: Forecasts of UKCS gas production
(billion cubic metres)

	rest of UKCS	SEA 7 base case	sub-total	SEA 7 optimistic	totals
2001	112.8	-	112.8	-	112.8
2002	109.9	-	109.9	-	109.9
2003	108.1	-	108.1	-	108.1
2004	101.0	-	101.0	-	101.0
2005	96.3	-	96.3	-	96.3
2006	82.0	-	82.0	-	82.0
2007	77.9	-	77.9	-	77.9
2008	74.0	-	74.0	-	74.0
2009	70.3	-	70.3	-	70.3
2010	66.8	-	66.8	-	66.8
2011	63.5	-	63.5	-	63.5
2012	60.3	1.0	61.3	1.0	61.3
2013	57.3	2.0	59.3	2.0	59.3
2014	54.4	2.5	56.9	2.5	56.9
2015	51.7	2.5	54.2	2.75	54.5
2016	49.1	2.5	51.6	2.75	51.9
2017	46.6	2.5	49.1	2.75	49.4
2018	44.3	2.5	46.8	2.75	47.1
2019	42.1	2.5	44.6	2.75	44.9
2020	40.0	2.5	42.5	2.5	42.5
2021	38.0	2.5	40.5	2.5	40.5
2022	36.1	2.5	38.6	2.5	38.6
2023	34.3	2.5	36.8	2.5	36.8
2024	32.6	2.5	35.1	2.5	35.1
2025	30.9	2.5	33.4	2.5	33.4

Source: Mackay Consultants

Figure 5.1: Forecasts of UKCS gas production



Oil production

5.10 There is no oil production from the SEA 7 area under the base case. However, the optimistic scenario includes a large oil field producing up to 50,000 barrels per day (bpd) from recoverable reserves of 130 million barrels (17.0 million tonnes), plus a smaller subsea development producing up to 5,000 bpd from recoverable reserves of 1 million tonnes (7.5 million barrels).

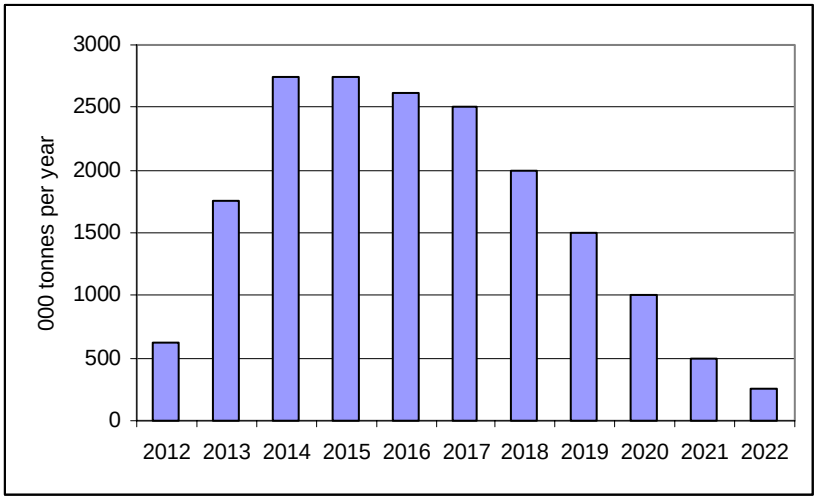
5.11 Table 5.2 sets out the forecast production. Part (a) is in barrels per day and part (b) in thousands of tonnes per year. The forecasts are also illustrated in Figure 5.2.

Table 5.2: Oil production from SEA 7 fields

	barrels per day	000 tonnes per year
2012	12,500	625
2013	35,000	1,750
2014	55,000	2,750
2015	55,000	2,750
2016	52,500	2,625
2017	50,000	2,500
2018	40,000	2,000
2019	30,000	1,500
2020	20,000	1,000
2021	10,000	500
2022	5,000	250
2023	-	-
2024	-	-
2025	-	-

Source: Mackay Consultants

Figure 5.2: Oil production from SEA 7 fields



5.12 UKCS oil production appears to have peaked in 1999 at 124.9 million tonnes, equivalent to 2.6 million barrels per day (bpd). It has declined in every year since then, as shown in Table 5.3. Since 2002 the average rate of decline has been about -10% per year.

5.13 The 2006 statistics were not available at the time of writing (November) but the latest ones suggest an annual decline of about -11%. In the table we have assumed -10%, giving a 2006 estimate of 69.5 million tonnes or just under 1.5 million barrels per day.

5.14 There seems general agreement that the decline will continue, although it is very difficult to forecast the rate. It is hoped that the Buzzard field, which is due to come onstream in January 2007 and produce up to 200,000 bpd, will make a significant contribution to slowing down the rate of decline.

5.15 In Table 5.3 and Figure 5.3 we have made the simple assumption that there will be an average annual decline of -5% from 2006 onwards. In reality there will be fluctuations from year to year but for the purposes of this study we believe it is a reasonable assumption.

5.16 The Rest of UKCS column shows oil production declining from 106.5 million tonnes in 2001 (2.1 million bpd) to 26.2 million tonnes (500,000 bpd) in 2025. The latter figures are about a quarter of the 2001 ones.

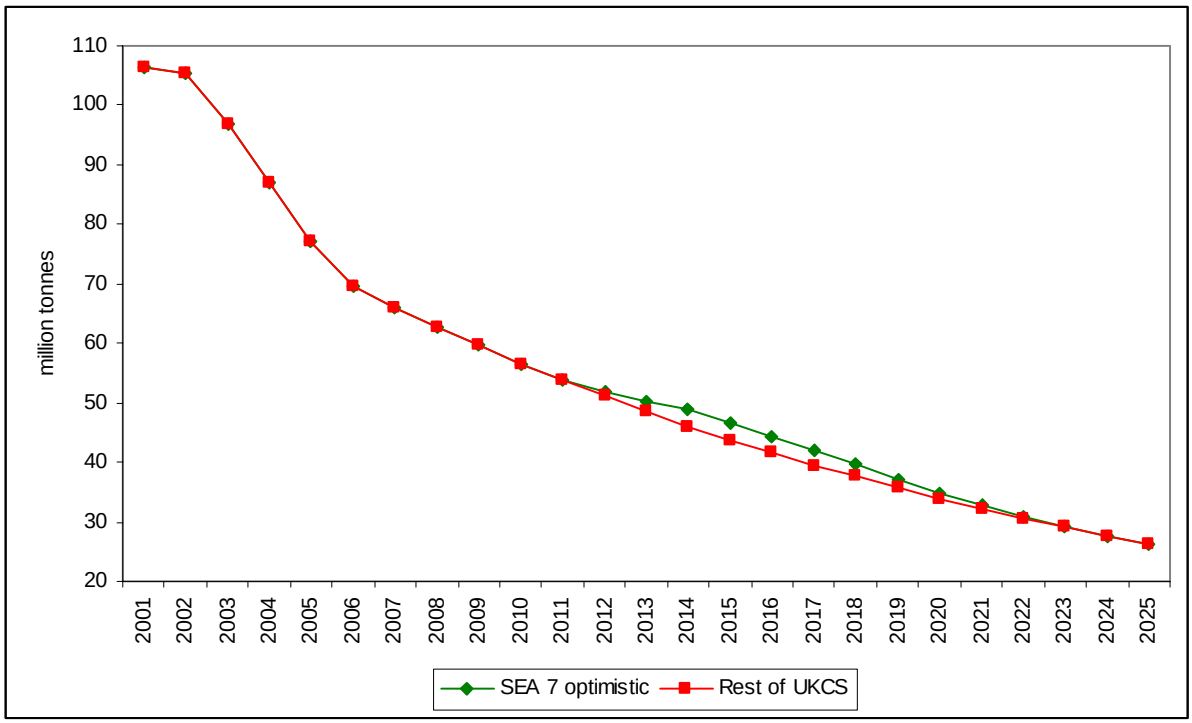
5.17 SEA 7 production is assumed to start in 2012 by which time the Rest of the UKCS production would have fallen to about 50 million tonnes or half the 2001 level. The main effect of the SEA 7 assumptions is to slow down the forecast rate of decline, as shown in Figure 5.3. Output in 2015, for example, would be +6.4% higher than it would otherwise be.

Table 5.3: Forecasts of UKCS oil production
(million tonnes)

	rest of UKCS	SEA 7 optimistic	totals
2001	106.5	-	106.5
2002	105.4	-	105.4
2003	96.9	-	96.9
2004	86.9	-	86.9
2005	77.2	-	77.2
2006	69.5	-	69.5
2007	66.0	-	66.0
2008	62.7	-	62.7
2009	59.6	-	59.6
2010	56.6	-	56.6
2011	53.8	-	53.8
2012	51.1	0.625	51.7
2013	48.5	1.750	50.3
2014	46.1	2.750	48.9
2015	43.8	2.750	46.6
2016	41.6	2.625	44.2
2017	39.5	2.5	42.0
2018	37.6	2.0	39.6
2019	35.7	1.5	37.2
2020	33.9	1.0	34.9
2021	32.2	0.5	32.7
2022	30.6	0.25	30.8
2023	29.1	-	29.1
2024	27.6	-	27.6
2025	26.2	-	26.2

Source: Mackay Consultants

Figure 5.3: Forecasts of UKCS oil production



Gas and oil reserves

5.18 Our reserve assumptions for the two scenarios are:

	gas (bcm)	oil (mt)
base case	100	-
optimistic	110	18

5.19 The DTI's Oil and Gas website gives various statistics on UKCS recoverable reserves. Ranges are given, with lower, central and upper estimates.

5.20 Those for gas are (in billion cubic metres):

	lower	central	upper
discovered	481	728	1,006
potential additional	68	141	282
undiscovered	226	421	1,035
totals	**775**	**1,290**	**2,323**

5.21 The central estimate of 1,290 bcm compares with cumulative gas production to end 2005 of 2,007 bcm. The "discovered" central estimate of 728 bcm is 36% of the latter figure.

5.22 In the context of this study the "undiscovered" gas reserves are the most relevant. The central estimate of those is 421 bcm. Our base case assumption of 100 bcm gas in the SEA 7 area is 24% of that figure and the optimistic assumption of 110 bcm is 26%.

5.23 The DTI's estimates of UKCS recoverable oil reserves are (in million tonnes):

	lower	central	upper
discovered	516	816	1,267
potential additional	68	203	423
undiscovered	346	745	1,581
totals	**930**	**1,764**	**3,271**

5.24 The central estimate of 1,764 million tonnes compares with cumulative oil production to end 2005 of 3,090 million tonnes. The "discovered" central estimate of 816 mt is 26% of the latter figure.

5.25 In the context of this study the "undiscovered" reserves are the most relevant and the central estimate of those is 745 mt. Our optimistic estimate of 18 million tonnes oil in the SEA 7 area is just over 2% of that figure.

6.0 IMPLICATIONS FOR CAPITAL, OPERATING AND DECOMMISSIONING EXPENDITURE

Capital expenditure

6.1 Table 6.1 sets out our estimates of the capital expenditure which would be required to develop the fields in the SEA 7 area, for both the base case and optimistic scenarios. The base case comprises one large gas field and the optimistic scenario the gas field, a medium-sized oil field plus two small subsea developments, one gas and one oil. The estimated development costs of the two larger fields are £350 million each and the smaller ones £50 million each, giving an overall total of £800 million for the optimistic scenario.

Table 6.1: SEA 7 capital expenditure scenarios
(£ million)

	base case	optimistic
2010	100	200
2011	200	400
2012	50	100
2013	-	50
2014	-	50
totals	350	800

Source: Mackay Consultants

6.2 It is difficult to predict future levels of capital expenditure on the UKCS. The DTI's Oil and Gas website gives the following historical estimates:

	£ million	% change
2001	3,570	
2002	3,598	+0.8
2003	3,412	-5.2
2004	3,302	-3.2
2005	4,371	+32.4

6.3 The DTI statistics show capital expenditure, excluding exploration and appraisal work (E&A), peaking at £5.4 billion in 1992. It fell to a low of £2.8 billion in 2000 but has been significantly higher since. There was a very large +32% rise in 2005, presumably mainly attributable to the comparable increases in world oil and gas prices.

6.4 The DTI do not publish forecasts of capital expenditure. However, UKOOA (the United Kingdom Offshore Operators Association) do. Their forecast for 2006 is about £4.5 billion, which is a little above the DTI's 2005 figure. The forecasts for 2007 are £2.7-3.3 billion and for 2008 £1.5-2.5 billion.

6.5 The general trend in the future will almost certainly be downwards. The forecasts in Section 5 show both UKCS oil and gas production declining. Although new fields continue to be discovered and developed, they are generally much smaller than mature fields such as Brent, Forties and Ninian, and usually much cheaper to develop.

6.6 An important factor in that is the extensive existing infrastructure on the UKCS. New fields can often make use of that, eg as subsea completions to existing platforms and pipelines. That can substantially reduce capital expenditure, although it may increase operating expenditure through the payment of tariffs.

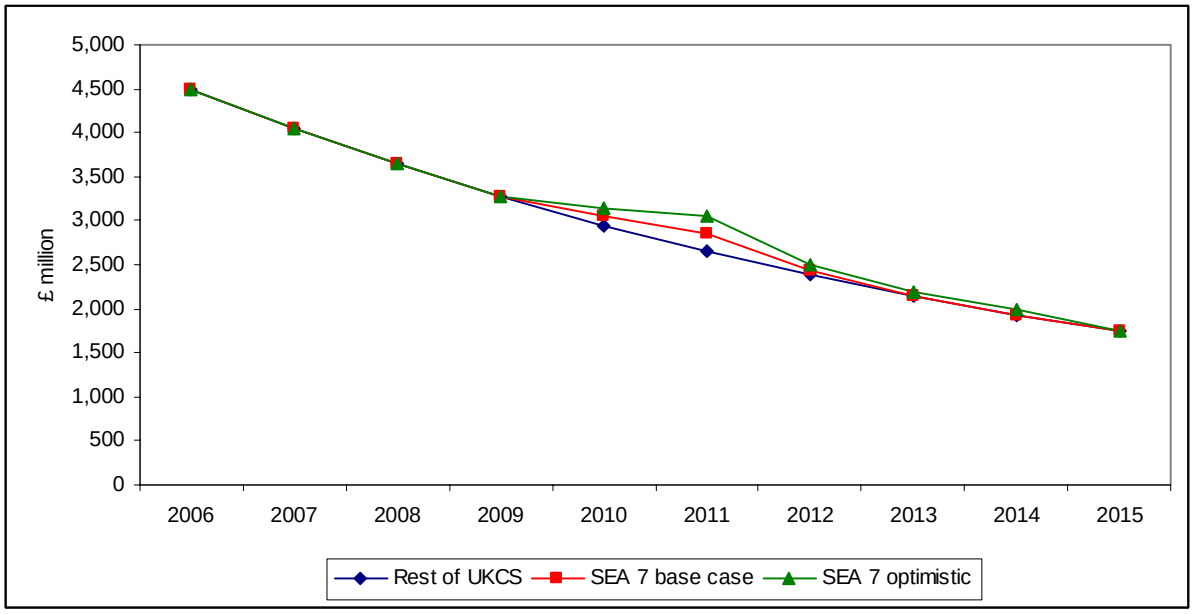
6.7 We believe that a reasonable assumption is that capital expenditure on the Rest of the UKCS will fall at an annual average of -10% in the future. Table 6.2 and Figure 6.1 set out forecasts on that basis.

Table 6.2: Capital expenditure forecasts
(£ million, constant 2006 values)

	Rest of UKCS	SEA 7 base case	% of UKCS	SEA 7 optimistic	% of UKCS
2006	4,500	-	-	-	-
2007	4,050	-	-	-	-
2008	3,645	-	-	-	-
2009	3,280	-	-	-	-
2010	2,950	100	3.4	200	6.8
2011	2,655	200	7.5	400	15.1
2012	2,390	50	2.1	100	4.2
2013	2,150	-	-	50	2.3
2014	1,935	-	-	50	2.6
2015	1,745	-	-	-	-

Source: Mackay Consultants

Figure 6.1: Capital expenditure forecasts



6.8 Expenditure under the base case scenario would account for 7.5% of the Rest of the UKCS forecast in 2011. The comparable figure for the optimistic scenario is 15.1%. The percentages for the other years are much smaller.

6.9 UK-based suppliers of platforms, modules, subsea equipment, installation contractors, supply boat and helicopter operators, etc would all be very keen to win work for the SEA 7 fields, particularly if their other markets were declining and they had spare capacity.

Operating expenditure

6.10 Table 6.3 and Figure 6.2 on the following page give our estimates of annual operating expenditure for the base case and optimistic scenarios. Table 6.3 also gives operating expenditure forecasts for the whole of the UKCS. Those are also difficult to make. The DTI's estimates for the last five years are:

	£ million	% change
2001	4,347	
2002	4,596	+5.7
2003	4,496	-2.2
2004	4,663	+3.7
2005	5,113	+9.7

6.11 UKCS operating expenditure has increased in most years since 2000, despite the falling production. The DTI statistics show a -2.2% fall in 2003 but a large +9.7% rise in 2005. The latter figure is presumably linked with the rises in world oil and gas prices, and the related increases in demand for goods and services in the industry.

6.12 The price and cost pressures have continued during 2006 and will probably do so as long as world oil and gas prices remain high.

6.13 More fields are still being brought onstream on the UKCS than being decommissioned, so the total number of fields in production has increased since 2000. Many of the new fields are relatively small and will have higher-than-average operating costs. Nevertheless, we believe that operating expenditure must fall over time and in Table 6.3 we have assumed an annual fall of -3.0% from 2005 onwards.

6.14 For the SEA 7 forecasts we have assumed an average operating cost of £30 per tonne of oil equivalent. We have simply added together the oil and gas production forecasts for each year and then multiplied the totals by £30 to give the forecasts in Table 6.3 and Figure 6.2.

6.15 On these assumptions, SEA 7 base case operational expenditure would average £75 million per year from 2014 onwards. That would account for about 1.9% of the Rest of the UKCS expenditure in 2014, rising to 2.7% by 2025.

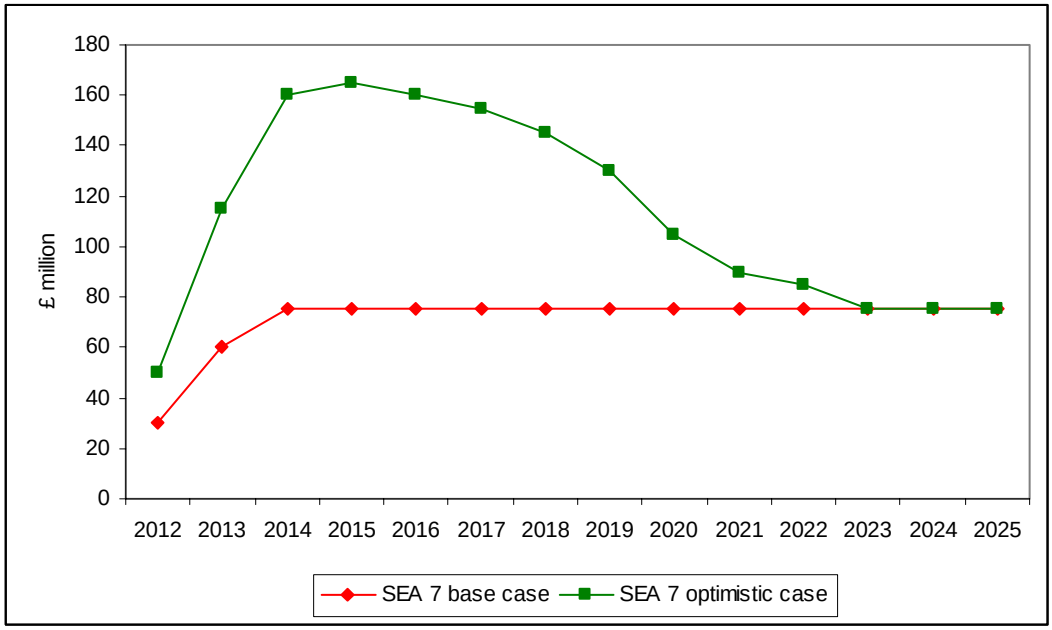
6.16 Under the optimistic scenario, SEA 7 operational expenditure would peak at £165 million in 2015 before falling to £75 million in 2023. The 2015 estimate would be 4.4% of the Rest of the UKCS expenditure.

Table 6.3: Operating expenditure forecasts
(£ million, constant 2006 values)

	Rest of UKCS	SEA 7 base case	% of UKCS	SEA 7 optimistic	% of UKCS
2010	4,390	-	-	-	-
2011	4,259	-	-	-	-
2012	4,131	30	0.7	50	1.2
2013	4,007	60	1.5	115	2.9
2014	3,887	75	1.9	160	4.1
2015	3,770	75	2.0	165	4.4
2016	3,657	75	2.1	160	4.4
2017	3,548	75	2.1	155	4.4
2018	3,441	75	2.2	145	4.2
2019	3,338	75	2.2	130	3.9
2020	3,238	75	2.3	105	3.2
2021	3,141	75	2.4	90	2.9
2022	3,046	75	2.5	85	2.8
2023	2,955	75	2.5	75	2.5
2024	2,866	75	2.6	75	2.6
2025	2,780	75	2.7	75	2.7

Source: Mackay Consultants

6.17 Figure 6.2 illustrates the operating expenditure for the base case and optimistic scenarios.



Exploration expenditure

6.18 There will also be the initial exploration expenditure. Our base case scenario assumes five exploration wells and the optimistic scenario ten exploration and appraisal wells. At an average cost of £15 million per well, the former would involve expenditure of £75 million and the latter £150 million. There would also be expenditure on seismic and other surveys.

Decommissioning expenditure

6.19 Finally, there will be decommissioning expenditure at the ends of the productive lives of the various fields. An approximate "rule of thumb" is that this expenditure will be 10% of the original capital costs.

7.0 IMPLICATIONS FOR EXISTING FACILITIES

7.1 There are no existing oil and gas-related facilities in the SEA 7 area, so unlike in previous studies this section is not particularly relevant. In our SEA 5 report we considered the implications for the existing facilities in the area, notably the Sullom Voe oil terminal. Similarly, in our SEA 6 report we considered the implications for the Morecambe Bay and Liverpool Bay production platforms, pipelines and landfall terminals.

7.2 As mentioned earlier, the industry has made occasional use of Stornoway harbour and airport, and such use could increase if there were developments in the SEA 7 area. There are also other smaller harbours and airports in the area, which could be used depending on the location(s) of any developments.

7.3 There is the former oil fabrication yard at Arnish, just outside Stornoway, which built various platforms and modules for the North Sea oil and gas fields. It is now used to manufacture components for wind farms.

7.4 The Arnish yard could theoretically be used to build equipment for any developments in the SEA 7 area, such as modules for a floating production platform. In reality we believe that would be very unlikely. Lewis Offshore closed down a few years ago and the workforce with the required skills is now dispersed, although some may still live and work in the islands.

7.5 That is also the case with the former concrete platform yards at Kishorn in Wester Ross, Ardyne Point in Argyll and Portavadie, also in Argyll. Any production facilities, including a gas pipeline, could be built elsewhere in the UK but in our opinion it is extremely unlikely that any of the work would be done in the SEA 7 area.

7.6 It is possible that the development and operation of any SEA 7 fields could have adverse impacts on other industries in the area, with fishing and tourism being the obvious examples. Information on these and other relevant industries is given in the Baseline Economic and Social Study.

7.7 The floating production and subsea facilities are unlikely to have significant onshore impacts, unless there was an oil spill and related pollution. The main impact, in our opinion, would likely come from a gas pipeline and landfall terminal, which are assumed in our scenarios.

7.8 The locations of the terminal and pipeline would obviously depend on where the gas field was discovered. The DTI scenarios suggest that it is much more likely in the north of the area rather than elsewhere.

7.9 If the Benbecula discovery proves to be commercial, for example, we suggest that the landfall terminal would probably be on the mainland rather than in the Western Isles, with the Ullapool/Loch Broom area being a possible location. This is a very scenic area – as is much of the SEA 7 area – so there would inevitably be very serious environmental concerns, including any adverse impacts on the local tourist industry.

7.10 The fishing industry has been covered in detail in other SEA 7 reports so we shall only make a few brief comments here. The SEA 7 area has extensive coastlines so there are various ports and harbours involved in fishing and related activities such as fish processing. These ports include Stornoway, Kinlochbervie, Lochinver, Oban and Campbeltown.

7.11 Fish farming/aquaculture is also very important in parts of the area, which produces a large proportion of the farmed salmon in Scotland. There are many fish farms in the islands and on the west coast.

7.12 The main concern of local fishermen would be the threat of oil spills, particularly close to the shore. In our SEA 5 report in 2004 we highlighted the disastrous impact of the Braer oil spill in the Shetland Islands. Other concerns include the "loss of access" to fishing grounds during seismic surveys, exploration drilling and production.

7.13 These are legitimate fears of the fishing and fish farming industries but it should be pointed out they have co-existed with the offshore oil and gas industry elsewhere for many years and there have been very few problems. Shetland, perhaps strangely, is probably the best example of that.

7.14 Any future oil and gas activity will have to take account of the various ferry and other shipping services in the SEA 7 area, as described in the Baseline Study. There is also some defence-related activity, notably a missile testing facility on Benbecula.

8.0 IMPLICATIONS FOR EMPLOYMENT

8.1 The SEA 7 area will generate employment during the

- exploration
- development
- operational/production and
- decommissioning

phases. It is sensible to assess these impacts separately in the first instance and then aggregate them.

8.2 In economic impact studies it is common to distinguish between the

- direct
- indirect and
- induced

impacts. We shall concentrate initially on the direct employment impacts and take account of the others later through the application of multipliers.

Exploration

8.3 The SEA 7 licensees will employ people for the duration of their licences, primarily through the operators. Initially their main task will be to assess the geology, decide on the seismic and other surveys and ultimately decide where to drill. The level of employment will obviously depend on the number of licences taken up and the number of firms involved.

8.4 We believe that a reasonable assumption is that there would be an average of about 10 people employed in the first few years on SEA 7 work, before declining, as shown in Table 8.1. All the figures are in what could be called “job years”.

8.5 There would then be employment created by the seismic surveys and exploration drilling. The DTI scenarios suggested 2-5 exploration wells in the period to 2011 and up to 5 appraisal wells. For our base case scenario we assumed a total of 5 wells and for the optimistic scenario 10.

8.6 In Table 8.1 we have assumed that the five wells will be drilled with one in each of the five years 2009-2013. In the optimistic scenario (Table 8.2) we have assumed two wells in each year.

8.7 On the assumption that the average exploration well will take two months and employ about 100 people, the optimistic scenario would generate an annual average of 30 jobs, and the base case scenario 15 jobs. The jobs would only occur during the actual drilling periods, however. In Tables 8.1 and 8.2 we have added 10 and 5 respectively to take account of the seismic and other survey work.

Development

8.8 The development phase will involve the construction of the production facilities, pipelines and other equipment required. In Section 6 we estimated the capital expenditure of the base case scenario as £350 million and that of the optimistic scenario as £800 million.

8.9 On the assumption that each £500,000 of capital or development expenditure creates one job (full-time equivalent) for one year, Tables 8.1 and 8.2 set out the development employment estimates. Under the base case there would be a total of 700 job years, with a peak of 400 in 2011. Under the optimistic scenario there would be a total of 1,600 job years, with a peak of 800 in 2011.

Production

8.10 Our production/operating employment estimates are based on the actual experience of comparable existing fields. For the base case the peak employment is 120 and for the optimistic scenario 250.

Decommissioning

8.11 Finally, there is the employment which will be generated by the decommissioning work at the end of the lives of the various fields. This will be on a relatively small scale. For ease of presentation we have assumed that all production will cease in 2028 and that the decommissioning work will be done in 2029 and 2030.

Aggregate employment estimates

8.12 The total employment, year by year, is shown in the tables and also in Figure 8.1. For the base case the overall total is 2,735 person years, with a peak of 425 in 2011. For the optimistic scenario the overall total is 6,310 person years, with a peak of 1,030 in 2011.

Figure 8.1: SEA 7 employment scenarios
(job years)

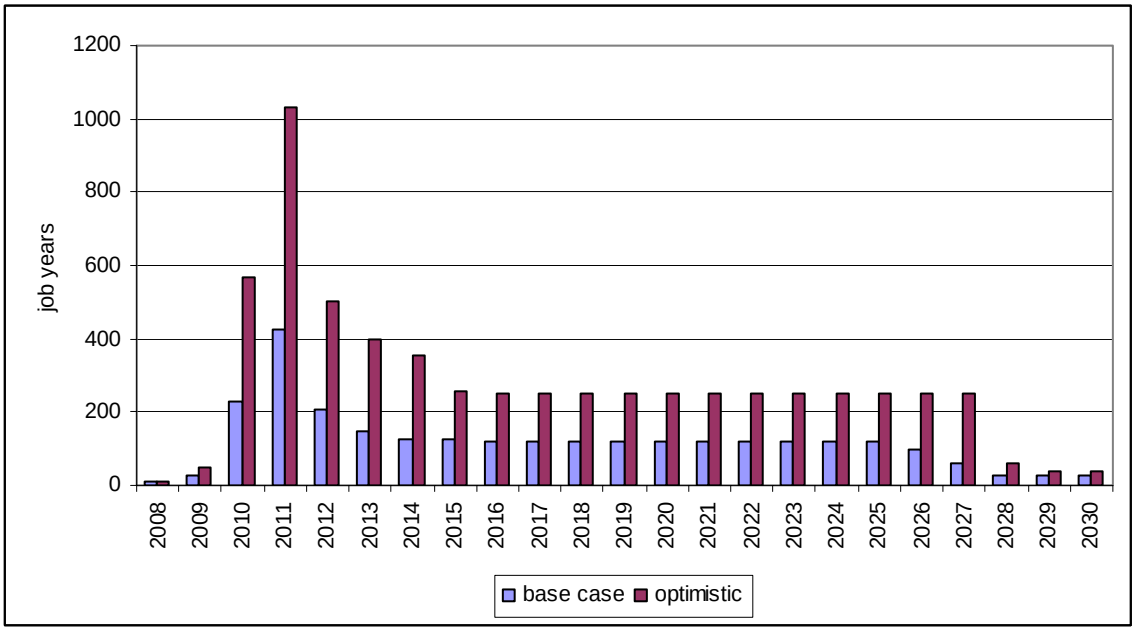


Table 8.1: SEA 7 employment: base case scenario

	Licence operations	Exploration	Development	Production	Decommissioning	Totals
2008	10	-	-	-	-	10
2009	10	20	-	-	-	30
2010	10	20	200	-	-	230
2011	5	20	400	-	-	425
2012	5	20	100	80	-	205
2013	5	20	-	120	-	145
2014	5	-	-	120	-	125
2015	5	-	-	120	-	125
2016	-	-	-	120	-	120
2017	-	-	-	120	-	120
2018	-	-	-	120	-	120
2019	-	-	-	120	-	120
2020	-	-	-	120	-	120
2021	-	-	-	120	-	120
2022	-	-	-	120	-	120
2023	-	-	-	120	-	120
2024	-	-	-	120	-	120
2025	-	-	-	120	-	120
2026	-	-	-	100	-	100
2027	-	-	-	60	-	60
2028	-	-	-	30	-	30
2029	-	-	-	-	25	25
2030	-	-	-	-	25	25

Table 8.2: SEA 7 employment: optimistic scenario

	Licence operations	Exploration	Development	Production	Decommissioning	Totals
2008	10	-	-	-	-	10
2009	10	40	-	-	-	50
2010	10	40	400	120	-	570
2011	10	40	800	180	-	1030
2012	10	40	200	250	-	500
2013	10	40	100	250	-	400
2014	5	-	100	250	-	355
2015	5	-	-	250	-	255
2016	-	-	-	250	-	250
2017	-	-	-	250	-	250
2018	-	-	-	250	-	250
2019	-	-	-	240	-	250
2020	-	-	-	230	-	250
2021	-	-	-	220	-	250
2022	-	-	-	210	-	250
2023	-	-	-	180	-	250
2024	-	-	-	160	-	250
2025	-	-	-	140	-	250
2026	-	-	-	120	-	250
2027	-	-	-	80	-	250
2028	-	-	-	60	-	60
2029	-	-	-	-	40	40
2030	-	-	-	-	40	40

8.13 The DTI website no longer gives information on overall UKCS employment. In our SEA 6 report we quoted the DTI website as follows: "the Office for National Statistics (ONS) give figures for employment classified to the oil and gas extraction sector, which includes not only those engaged in extraction offshore and onshore but also certain classes of services peculiar to the industry. Many oil-related jobs such as construction workers are classified to other industries and are not included in ONS figures".

8.14 "ONS figures show employment rising from 29,300 in 1978 to peak at just over 40,000 in 1991, before falling sharply to below 28,000 in 1994 and 1995, and recovering to remain broadly above 30,000 from 1996 until the end of 2001. Since then oil employment has decline fairly steadily at a rate of some 400 jobs each quarter."

8.15 If that trend had continued, direct UKCS employment would currently be about 23,000 in 2006. However, the rises in world oil and gas prices should have slowed down the rate of decline and possibly reversed it.

8.16 The UK Offshore Operators' Association (UKOOA) now produce an annual Economic Report. The 2004 edition included the results of a survey of employment in the industry. It concluded that the total employment provided by the oil and gas sector in the UK was 340,000, comprising 31,500 people employed in oil and gas companies and major contractors, 223,000 employed in the wider supply chain and 85,000 jobs supported by economic activity induced by oil and gas employees spending throughout the economy.

8.17 UKOOA's 2006 Economic Report states that this employment is estimated to have risen to 365,000 in 2005 and forecast to increase further to 380,000 in 2006, with 290,000 directly employed by oil and gas companies and within the supply chain.

8.18 These estimates seem far too high to us, particularly for the wider supply chain and the induced employment. A more accurate estimate of the current direct employment is probably no more than 100,000, in our opinion.

8.19 Given the earlier forecasts of declining production and expenditure on the UKCS, it would be reasonable to expect employment also to decline in the future. In that context the employment created by SEA 7 activity will help to slow down the rate of decline. Our forecasts in Tables 8.1 and 8.2 can be compared with either the UKOOA estimates or our suggestion of 100,000 direct jobs. Most of the SEA 7 employment will clearly occur during the development/construction phase.

Multiplier employment

8.20 As mentioned above, it is common in economic impact studies to distinguish between the

- direct
- indirect and
- induced

impacts.

8.21 Indirect impacts arise from the oil and gas industry's purchases of goods and services from other industries. Such expenditure creates employment in other industries.

8.22 Induced impacts arise from the expenditure of those people directly employed in the oil and gas industry. They spend their incomes in local shops and on local services, for example, and that creates additional employment.

8.23 A common way of estimating the indirect and induced employment is to apply a multiplier to the direct employment. From other impact studies we have done, we would expect the multiplier for the oil and gas industry to be in the range 1.75 to 2.0.

8.24 Thus if we take the peak production employment of 120 in the base case, the indirect and induced employment is likely to be in the range 90 – 120, giving an overall total of 210 – 240.

8.25 For the optimistic scenario the peak production employment is 250. In this case the overall total would be in the range 440 – 500.

8.26 The multipliers could also be applied to the licence operations and exploration employment, but not to the development phase employment. The latter employment is created by the purchase of goods and services by the oil and gas industry, so it is part of the multiplier impacts.

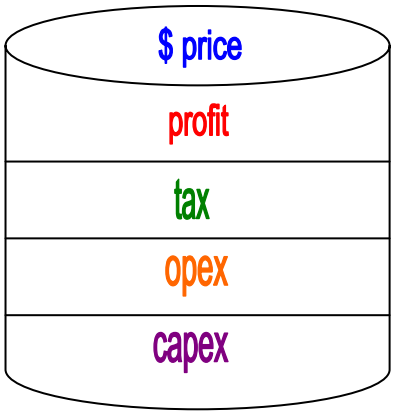
9.0 IMPLICATIONS FOR TAX REVENUES

9.1 The implications for tax revenues are difficult to estimate because they will depend very much on the level of prices during the lifetimes of the various fields. They have fluctuated considerably in recent years and are likely to do so in the future.

9.2 For ease of analysis we shall assume that oil and gas prices are identical, in terms of their energy equivalence. The following comments refer specifically to oil prices but they can be applied to the SEA 7 gas production as well.

9.3 The diagram below breaks down the price of a barrel of oil into its four key components, namely:

- capital expenditure
- operating expenditure
- tax payments
- profits.



9.4 It would be possible to model each of the SEA 7 fields separately but that would be complicated and we do not believe it is necessary. We believe that the following approach is acceptable for this part of the study.

9.5 Let us assume that the capital and operating costs do not vary with the price of oil – in other words, they are constants. We estimate that the capital cost of the SEA 7 fields over their lifetimes will average $4.60 per barrel (in 2006 values) and the operating cost $3.40, giving a total of $8.00 (approximately £4) per barrel of oil produced.

9.6 In the 2006 Budget the Chancellor of the Exchequer increased the corporate tax rate for the oil and gas industry to 50% from 40%, in response to the "windfall profits" arising from the increases in world oil and gas prices. The tax system is complicated but in the context of this report we can assume that 50% of the "economic surplus" will be for the UK Exchequer and 50% for the SEA 7 licensees.

9.7 If the oil price averages $30 per barrel, the costs will account for $8 and there will be an economic surplus of $22, which would be divided $11 (50%) each for both the Exchequer and the SEA 7 licensees.

9.8 If the average oil price were $10 higher at $40 per barrel, the surplus would also rise by $10 because the costs remain the same; and similarly at other price levels.

9.9 Because of the uncertainties surrounding future oil and gas prices, in the SEA 6 report we examined the implications of four price scenarios - $20, $30, $40 and $50. Prices have risen substantially since we wrote that report in 2005. Thus in the present context it is probably more realistic to use the range $30 - $60.

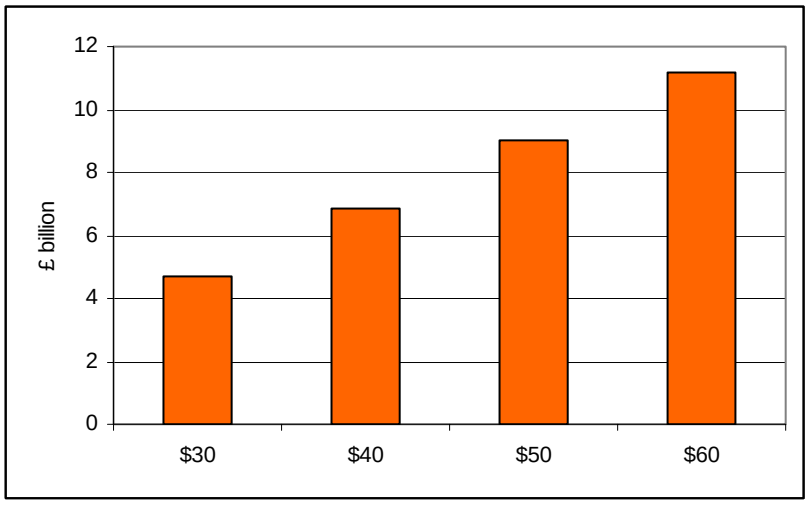
9.10 As set out in Section 5, the base case involves production of 100 billion cubic metres of gas, which we can assume simply is equivalent to 110 million tonnes oil equivalent (mtoe). The optimistic scenario involves production of 120 mtoe. We have also assumed an average of 7.5 barrels per tonne.

9.11 Oil is usually priced in US dollars so we need to convert the revenue into £. In our SEA 4 report in 2003 we used an exchange rate of £1 = $1.50; in the SEA 5 report £1 = $1.60; and in the SEA 6 report £1 = $1.75. Since then the dollar has further weakened against sterling and most other currencies and at times has nearly reached $2 = £1.

9.12 Nevertheless, we are considering the period to 2030 and in that context an exchange rate of £1 = $1.75 may still be appropriate.

9.13 Using the above assumptions the base case would generate tax revenues of:

- at $30 $8.250 billion = £4.715 billion
- at $40 $12.000 billion = £6.860 billion
- at $50 $15.750 billion = £9.000 billion
- at $60 $19.500 billion = £11.145 billion.



9.14 These estimates are the undiscounted totals over the lifetimes of the SEA 7 fields. A more sophisticated analysis could be made but we believe that the above estimates are acceptable in the context of this report.

9.15 They demonstrate the importance of oil and gas prices. The key point to stress is that the tax take increases at a much higher rate than the rise in prices.

9.16 Under the optimistic scenario, production is 20% higher, so the tax revenues would be similarly +20% higher than the above estimates.

9.17 If we make the simple assumption that gas and oil production from the SEA 7 fields will last for an average of 15 years, the average annual tax revenues would range from £315 million at $30 per barrel to £745 million at $60 per barrel.

9.18 According to the DTI website, UK oil and gas production contributed £9.7 billion in taxes and royalties in the 2005-2006 financial year. That was much higher than the £5.3 billion in the previous year, with the difference being explained by the large rises in oil and gas prices.

9.19 Our estimates suggest that any SEA 7 fields could make a very significant contribution to UK government revenues during their lifetimes.

10.0 SOCIAL IMPLICATIONS

10.1 In our previous SEA reports we concluded that both the economic and social impacts would be incremental or marginal, rather than absolute. The main reason for that conclusion was because of the existing oil and gas-related activity in areas such as Shetland, Orkney, Morecambe Bay and Liverpool Bay.

10.2 No such activity exists in the SEA 7 area, so the potential impacts could be relatively greater because of the introduction of new facilities, new employment and new people.

10.3 Most SEA 7 activity will be offshore, however, and could have very small onshore impacts in the area. The oil field in the optimistic scenario, for example, is assumed to be developed with a floating production facility.

10.4 If there were a commercial gas discovery, on the other hand, as assumed in both the base case and optimistic scenarios, it would require a pipeline and a landfall terminal, before linking into the UK gas grid. The location of such a terminal would obviously depend on where the discovery was made in the SEA 7 area. If the Benbecula gas discovery proves commercial, there could be a landfall terminal in the Western Isles or more likely on the west coast of the mainland, say in the Ullapool area.

10.5 Most people would probably welcome small scale gas-related developments in the area, subject to the usual environmental concerns. An onshore terminal would almost inevitably be on a small scale, comparable say with the terminal at Nigg on the Cromarty Firth or the Point of Ayr terminal in North Wales.

10.6 Most of the SEA 7 area is suffering from depopulation, particularly of young people. The official population projections show the decline continuing, at least until 2024. Key priorities of the local authorities and development agencies in the area are to stop the population decline and hopefully reverse it.

10.7 That can best be done by creating new jobs and in that context any employment generated by SEA 7 developments would generally be welcomed. Another negative feature of the area is that earnings and income levels are about -10% below the Scottish averages and -20% below the UK averages. The creation of higher paid jobs by the gas and oil industry could improve that situation.

10.8 On the other hand much of the SEA 7 economy is very rural, with industries such as fishing, fish farming and tourism continuing to be important. Oil and gas-related developments could therefore have very significant social impacts, as they had in the Shetland and Orkney Islands in the 1970s and 1980s.

11.0 CONCLUSIONS

11.1 The purpose of this report has been to assess the potential socio-economic impacts of licensing the SEA 7 area. That has been done in relation to:

- oil and gas production, and reserves
- capital, operating and decommissioning expenditure
- employment
- tax revenues
- social impacts.

11.2 The Department of Trade and Industry (DTI) provided scenarios of possible activity in the area. We converted those into "base case" and "optimistic" scenarios, which have been assessed in each of the sections.

11.3 The SEA 7 area is a very large area extending from the west coast of Scotland and the Western isles far out into the Atlantic. Most of the area is generally a deepwater province with relatively unknown hydrocarbon potential.

11.4 The main onshore area involved is

- the Western Isles.

The area also borders on

- the west coast of the Highland area
- part of Argyll and Bute
- part of Northern Ireland.

11.5 In marked contrast with the reports we have produced on other SEA areas – SEA 4, 5 and 6 – there has been very little oil and gas-related activity in the SEA 7 area and there are no existing facilities for the industry, unlike in Shetland, Orkney, Morecambe Bay and Liverpool Bay, for example.

11.6 Only twelve exploration wells have been drilled to date and with very disappointing results on the whole. An appraisal well was drilled on the Benbecula gas discovery (block 154/01) earlier this year but no results had been released at the time of writing (November 2006).

11.7 Seismic vessels, supply boats and helicopters have made occasional use of harbours and airports in the area, mainly in Stornoway. There has been no other relevant activity, however.

11.8 There were four fabrication yards in the area for the offshore oil and gas industry, which employed thousands of people, but all closed years ago. There was a steel fabrication yard at Arnish just outside Stornoway, and three concrete yards at Kishorn, Ardyne Point and Portavadie, which built platforms and modules for various fields in the North Sea.

11.9 Our base case scenario assumes that one gas field will be developed in the SEA 7 area. It will produce up to 250 million cubic feet per day from recoverable reserves of 100 billion cubic metres (3,500 billion cubic feet), with a lifetime of 15 years.

11.10 Our optimistic scenario assumes that in addition to this gas field a medium-sized oil field will be developed, plus two small subsea developments (one gas, one oil). The oil field will produce up to 50,000 barrels per day, from recoverable reserves of 130 million barrels (17 million tonnes).

11.11 We have also assumed that these two fields will be developed with floating production facilities, because of the water depths. The gas field will require a pipeline to an onshore processing terminal, which would probably be located on the west coast of Scotland rather than in the Western Isles. The optimistic scenario also includes two smaller fields which would be tied back to the larger ones.

11.12 Regarding exploration activity, the DTI scenarios suggested 2-5 exploration wells in the period to 2011 and up to 5 appraisal wells. For our base case we assumed a total of 5 wells and for the optimistic scenario 10.

11.13 Section 5 of the report assesses the implications for oil and gas production, and reserves. It appears that UKCS gas production peaked in 2001 and has been declining since then. That decline is expected to continue but it is very difficult to predict at what rate.

11.14 SEA 7 gas production would start in 2012 and average 2.5 bcm per year from 2014 onwards. There would be slightly higher production in the five years 2015-10, according to the optimistic scenario.

11.15 The main effect of SEA 7 gas production would be to slow down the rate of decline of UKCS production. One large field and one small field would be insufficient to reverse the decline, as illustrated in Figure 5.1. Table 5.1 shows that production of 56.9 bcm in 2014 would be +4.6% higher than it would otherwise have been. In 2025 it would be +8.1% higher.

11.16 Similarly, UKCS oil production appears to have peaked in 1999 and has declined in every year since then. That decline is also expected to continue.

11.17 SEA 7 production is assumed to start in 2012 by which time the Rest of the UKCS production would have fallen to about 50 million tonnes or half the 2001 level. The main effect of the SEA 7 assumptions is to slow down the forecast rate of decline, as shown in Figure 5.3. Output in 2015, for example, would be +6.4% higher than it would otherwise be.

11.18 The discovery of commercial gas and oil reserves in the SEA 7 area would result in a small addition to the remaining UKCS reserves.

11.19 In Section 6 we considered the implications for capital, operating and decommissioning expenditure. The estimated development cost of two larger fields are £350 million each and the smaller ones £50 million each, giving an overall total of £800 million capital expenditure for the optimistic scenario.

11.20 UKCS capital expenditure is also expected to decline in the future. The main impact of the SEA 7 developments would be to slow down the rate of decline.

11.21 Expenditure under the base case scenario would account for 7.5% of the Rest of the UKCS forecast in 2011. The comparable figure for the optimistic scenario is 15.1%. The percentages for the other years are much smaller.

11.22 UK-based suppliers of platforms, modules, subsea equipment, installation contractors, supply boat and helicopter operators, etc would all be very keen to win work for the SEA 7 fields, particularly if their other markets were declining and they had spare capacity.

11.23 In our assumptions the general trend in the future will almost certainly be downwards. The forecasts in Section 5 show both UKCS oil and gas production declining. Although new fields continue to be discovered and developed, they are generally much smaller than mature fields such as Brent, Forties and Ninian, and usually much cheaper to develop.

11.24 Under the optimistic scenario, SEA 7 operational expenditure would peak at £165 million in 2015 before falling to £75 million in 2023. The 2015 estimate would be 4.4% of the Rest of the UKCS expenditure.

11.25 SEA 7 exploration and decommissioning expenditures would be on a much smaller scale.

11.26 There is a brief discussion of possible impacts on existing facilities in Section 7. It is possible that the development and operation of any SEA 7 fields could have adverse impacts on other industries in the area, with fishing and tourism being the obvious examples. Information on these and other relevant industries is given in the Baseline Economic and Social Study.

11.27 The floating production and subsea facilities are unlikely to have significant onshore impacts, unless there was an oil spill and related pollution. The main impacts, in our opinion, would likely come from a gas pipeline and landfall terminal, which are assumed in our optimistic scenario.

11.28 The implications for employment were considered in Section 8. The base case scenario is expected to create 2,375 person years of employment, with a peak of 425 in 2011. For the optimistic scenario the overall total is 6,310 person years, with a peak of 1,030 in 2011.

11.29 Section 9 considered the implications for tax revenues. They will depend to a very large extent on the future levels of oil and gas prices, which are extremely difficult to predict, and also the sterling:dollar (£:$) exchange rate.

11.30 Different prices were used in the analysis. For the base case the tax revenues range from £4.7 billion at $30 per barrel to £11.1 billion at $60 per barrel. For the optimistic scenario the estimates are +20% higher.

11.31 If we make the simple assumption that gas and oil production from the SEA 7 fields will last for an average of 15 years, the average annual tax revenues would range from £315 million at $30 per barrel to £745 million at $60 per barrel.

11.32 Our estimates suggest that any SEA 7 fields could make a very significant contribution to UK government revenues during their lifetimes.

11.33 Finally, we made a few comments on social implications in Section 10. In our previous SEA reports we concluded that both the economic and social impacts would be incremental or marginal, rather than absolute. The main reason for that conclusion was because of the existing oil and gas-related activity in areas such as Shetland, Orkney, Morecambe Bay and Liverpool Bay.

11.34 No such activity exists in the SEA 7 area, so the potential impacts could be relatively greater because of the introduction of new facilities, new employment and new people.

11.35 Most SEA 7 activity will be offshore, however, and could have very small onshore impacts in the area. The oil field in the optimistic scenario, for example, is assumed to be developed with a floating production facility.

11.36 If there were a commercial gas discovery, on the other hand, as assumed in both the base case and optimistic scenarios, it would require a pipeline and a landfall terminal, before linking into the UK gas grid. The location of such a terminal would obviously depend on where the discovery was made in the SEA 7 area. If the Benbecula gas discovery proves commercial there could be a landfall terminal in the Western Isles or more likely on the west coast, say in the Ullapool area.

11.37 Most people would probably welcome small scale oil-related developments in the area, subject to the usual environmental concerns. An onshore terminal would almost inevitably be on a small scale, comparable say with the terminal at Nigg on the Cromarty Firth or the Point of Ayr terminal in North Wales.

11.38 Most of the SEA 7 area is suffering from depopulation, particularly of young people. The official population projections show the decline continuing, at least until 2024. Key priorities of the local authorities and development agencies in the area are to stop the population decline and hopefully reverse it.

11.39 That can best be done by creating new jobs and in that context any employment generated by SEA 7 developments would generally be welcomed. Another negative feature of the area is that earnings and income levels are about -10% below the Scottish averages and -20% below the UK averages. The creation of higher paid jobs by the gas and oil industry could improve that situation.

11.40 On the other hand much of the SEA 7 economy is very rural, with industries such as fishing, fish farming and tourism continuing to be important. Oil and gas-related developments could therefore have very significant social impacts, as they had in the Shetland and Orkney Islands in the 1970s and 1980s.