Fishermen's Handbook

Costs and Earnings of the United Kingdom Fishing Vessel Fleet

1996/7

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Foreword

The Sea Fish Industry Authority (Seafish) has gathered data on costs and earnings of the United Kingdom Fishing Vessel Fleet, via annual surveys, since the 1970's. This information was used to examine the economic performance of the fleet as a whole and the results were distributed to fishing vessel owners in the form of a booklet containing summaries broken down into vessel length groupings.

To provide the fishing industry with more information, it was decided to contract-out the collection of the data for the 1996/97 survey to Nautilus CONSULTANTS. The results would be presented to the industry in a format which would be easy to interpret and serve as a compendium to the sector.

A new approach was to divide the fleet into a number of different fishing methods operating in specific regions. So, vessels operating a number of different modes of fishing have been largely excluded from the presentation of the results.

This has culminated in an analysis of the revenues, catch rates/track records/capital values (vessel and insurance, where available) costs, and profitability of vessels. The survey has also identified the key physical characteristics of the various groupings, eg. size, time at sea, type of gear etc. It is intended to expand on these presentations in the forthcoming year so as to increase both their informative and management tool value to fishing vessel owners and fleet managers.

The data derived from the survey represent typical financial returns for the defined groupings. The provision of the ranges in the data illustrates the degree of variation found within the survey. It must be stated however that with the exception of a very few vessels the data gathered showed a strong concentration of results amongst vessels of a similar type and method.

Finally, this Handbook could not have been completed without the heavy reliance on the assistance and guidance received from the fishing industry and its associated service providers. Both this help and all the ongoing comments are very much appreciated.

Mike Duran, Seafish

SEAFISH

Contents

North Sea & West of Scotland Trawlers < 23.99 m

	Average		
Earnings	379,087		
Costs		As % of Sales	As % of Expenses
Fishing			
Commission	17,508	4.6	5.4
Harbour dues	16,649	4.4	5.1
Subscriptions	3,003	0.8	0.9
Shore Labour	7,020	1.9	2.1
Stores	3,003	0.8	0.9
Fuel and Oil	39,660	10.5	12.1
Boxes	5,382	1.4	1.6
Ice	7,133	1.9	2.2
Crew Travel	1,630	0.4	0.5
Food	9,002	2.4	2.8
Other Expenses	5,406	1.4	1.7
Crew Share	116,412	30.7	35.6
Total Fishing Expenses	231,807	61.1	70.9
Vessel Expenses			
Insurance	18,936	5.0	5.8
Repairs	43,688	11.5	13.4
Gear	20,870	5.5	6.4
Hire and Maintenance	6,504	1.7	2.0
Other Vessel Cost	4,969	1.3	1.5
Total vessel costs	94,967	25.1	29.1
Total Expenses	326,774	86.2	100.0
Net Profit	52,313	13.8	

General Introduction

This analysis applies to vessels operating in the North Sea whitefish trawl sector. The data presented in the report reflect vessels of the following key characteristics:

Vessel characteristics	**Average**	**Range**
Vessel length	20.73m	15.44 – 23.47
Average Engine Power (kW)	339	171 – 500
VCUs	285.569	174 – 398
Gross Registered tonnes	52.8	32 – 68
Crew Size	5	4 – 9
Age of vessel	19	10 – 29

Fishing characteristics		
Areas Fished	ICES Area IV & VI	
Days at Sea	220	170 – 265
Fishing days	155	131 – 173
Steaming days (days equivalent)*	65	39 – 103
Distance steamed	100	Up to 250 miles
Time spent steaming (hours / trip)	16	Up to 48
Steaming speed (knots)	9 knots	8 - 11 knots
Towing speed (knots)	3 knots	2.5 –43.5 knots
Towing periods	4 hours	4 - 5 hours
Type of ground	Hard and soft	Mainly hard
Number of tows per day	4	

* steaming days is effective steaming time based on a 24 hour day

Gear characteristics		
Mesh size (mm)	105 mm	100 – 120 mm
Twine size	5 mm	3.5 single light to 6 mm double
Length of warp	Up to 800 m	Generally about 2.5 times the depth of water. *
Square mesh panels	No	
Bridle length	100 m	
Sleeve length	45 meshes (about 60 ft)	40 – 50 meshes
Headline height	4.5 m	
Wing spread	27 m	20 – 40 m

Other characteristics		
Auxilliary engine size (hp)	175	50 – 220**
Type of ice	Flake	
Ice application ratio	10 %	

*Varies according to depth. Warp will be longer comparatively in shallow water than in deeper water.

** Most boats in the sample have two auxiliary engines used mainly for fishing functions, such as driving hydraulics, pumps and electrics. In addition to this, many boats had a separate winch motor and a smaller auxiliary used solely in emergencies.

Capital Costs

Vessel valuations

The most conventional method of determining vessel values is by using the Insurance Value. Most vessel owners presume vessel insurance values to be representative of the replacement costs as opposed to the true market valuation. However, most insurance companies perceive that the starting point for the insurance value is always the price paid for the vessel by the owner. The value is subsequently discounted when comparative sales prices no longer reflect the commercial valuation of the vessel.

Insurance valuations	£	£
Average Insurance value	375,400	120,000 – 800,000
Per VCU	1,272	764 – 2,394
Per kW	1,080	770 – 2,147
Per GRT	7,082	3,600 – 13,000

Licence valuations

Area IV category A trawl licences are currently valued at £ 400 per unit. The track record valuations for each species are shown below:

Licence value without track record	£	£
Average value	114,227	70,000 – 160,000
Per VCU	400	
Licence value with track record included		
Average value	441,243	312,000 – 1.05M
Per VCU	1,529	914 – 3,319
track record as a percentage of total	71.6%	56% – 88%

Licence value without track record	£
Average value	114,227
Per VCU	400
Licence value with track record included	
Average value	441,243
Per VCU	1,529
track record as a percentage of total	71.6%

Revenue and Catch Rates

Track Records	Tonnes	Ranges
Cod	120	33 – 275
Haddock	134	0 – 600
Whiting	89	0 – 300
Plaice	10	0 – 90
Saithe	13.4	0 – 65
Sole	2.5	0 – 65
Nephrops	3	0 – 62
By catch	23	
Total	256	

Catch rates	Average	Range
Catch rate Per VCU (kgs)	1,275.67	454 – 3,051
Catch rate per utilised kW (kgs)	1,250	650 – 2,700
Catch rate per GRT (kgs)	7,424	3,140 – 15,978
Catch rate per day fishing (kgs)	2,383	700 – 6,000
Catch rate per net (kgs)	650	361 – 1,150

Revenues from fishing	Average	Range
Average revenue per vessel (£)	379,087	226,344 – 921,144
Average price / tonne (£)	1,140	654 – 2,276
Revenue per VCU (£)	1,291	852 – 2,313
Revenue per kW (£)	1,097	748 – 1,468
Revenue per GRT (£)	7,338	4,803 – 12,113
Revenue per day at sea (£)	1,699	926 – 3,257
Revenue per crew man (£)	70,428	48,000 – 103,987
Average revenue per tow (£)	606	400 –1,140

Non Fishing Revenue		Range
Average non fishing income (£)	1,670	0 – 32,250
% total revenue	0.43%	

Non fishing revenue is made up from a number of sources. In respect to trawlers, the principal source of alternative revenue is from guard ship duty (protecting pipe-laying exercises from other fishing activities). The standard rates for a trawler are from £ 1,200 to £ 2,300 per day. Only three vessels in the sample obtained additional income in such a way.

Variable Cost Inputs
Fuel & lube oil costs

	Average	Range
Annual average fuel consumption (tonnes per annum)	320	10- 461
Fuel consumption, litres per kW	1,005	365 – 1,431
Fuel consumption per trip (litres)	10,995	4,500 – 21,090
Oil consumption per trip (litres)	91	50 – 250
Fuel consumption per fishing day (litres)	2,000	800 – 3,500
Oil consumption as a % of total fuel costs	7.3	2.7 – 12.9
Fuel consumption whilst steaming (litres / hour)	230	200 – 250
Fuel consumption whilst towing (ltrs / hr)	189	181 – 350
Fuel consumption as % of total revenue	10.5%	3.5% – 16%
Annual fuel consumption per kW (£)	114	70 – 208
Annual fuel consumption per VCU (£)	135	67 – 252
Annual fuel consumption per GRT (£)	781	455 – 1,685
Annual average fuel consumption per day at sea (£)	177	65 – 421

Average Fuel prices recorded in main fishing ports, 1997 / 98 *	
Port	Price per tonne (£)
Scarborough	119.79
Grimsby	133.00
Bridlington	152.04
Ullapool	122.00
Aberdeen	149.00
Whitby	140.67
Peterhead	140.00
Fraserburgh	139.00
Stornoway	115.00
Kinlochbervie	125.00

*These prices should be used as a guide to trends only, they do not reflect the real and daily fluctuations which occur in fuel prices. Also, larger vessels may be in a strong bargaining position in negotiating discount for bulk purchases. In certain ports these prices may be artificially high as many fuel suppliers offer a fuel rebate system, whereby fuel is sold at a higher rate than the daily price and the resultant overspend is given back as a lump sum at the end of the year.

Lube oil costs are £ 1 / litre.

Boxes

All trawlers are subject to box charges. Rental charges range from £0.65 / box to £ 1.60 / box. Most vessels in the sample carried boxes on board and boxed fish at sea.

Ice

Average Ice Prices	
Port	Price per tonne (£)
Aberdeen	26 Flake
Peterhead	26 Flake, chunk or tube
Fraserburgh	26 Flake and chunk
Lerwick	26 Tube
Scrabster	25 Flake
Ullapool	25 Flake
Kinlochbervie	26
Stornoway	25
Scarborough	26
Grimsby	26
Whitby	26

Other Variable Costs

One vessel in the sample had an on board sea water ice maker. The ice application ratio changes significantly when Sea water ice is used instead of fresh water. This is due to the lower temperature of sea water ice, which if applied too heavily can cause frost damage to the fish. The application ratio in this case tends to fall to about 7%.

Other Variable Costs

	Average (% total revenue)	Range (% total revenue)
Ice	1.6	0 – 3.1
Boxes	1.5	0.7 – 2
Commission	4.5	4 – 6.2
Harbour dues	4.4	3.2 – 7.1
Subscriptions and levies	0.8	0.3 – 1
Food & Stores	2.9	1.3 – 8.5
Crew travel	0.4	0 – 1.1
Food & Stores per crew per day (£)	9.44	4.74 - 20.74

Fixed Cost Inputs

Repair costs	Average	Range
Repair costs £ per VCU	57	22 – 103
Repair costs £ per kW	49	34 – 82
Repair costs £ per GRT	326	200 – 542
Repair costs £ per day at sea	75	30 - 152
Gear expenses		
Gear expenses £ per VCU	67	17 – 201
Gear expenses £ per kW	56	14 - 160
Gear expenses £ per GRT	384	101 – 865
Gear expenses £ per day at sea	92	35 – 194

Cost of equipment and frequency of replacement		
Type of gear	Cost	Frequency of replacement
Net	£4,000 to £6,500 per net. Up to £8,000 for a pair trawl net. Add £500 for hoppers.	1 per year for single gear vessels. Pair trawl nets tend to have a slightly longer life span and may last for up to 2 years
Warps		Every 6 months
Bridles		Every 6 months
Doors		Up to 3 to 4 years life

Wheelhouse and other equipment

Most vessels in the sample rent equipment such as radar, sounders and life rafts. Average hire and maintenance costs for these vessels is £ 6,500 per annum.

Type of equipment	Cost of purchase £	Maintenance charge £	Frequency of replacement
Radios		1,000	5 to 6 years
Decca		750	10 years +
Sounders 5 kW – 10 kW	6,400 – 9,000	1,600 – 2,548	4 – 5 years
Radar – 14 '' inch display, 25 kW, 96 nm	7,000	2,000	4 years
Plotter 12 "	2,500	500	
Life rafts		350 - 750 per raft	

Rental	£
Radios	1,000 – 1,700
Decca	2,100
Sounders	1,500
Radar	900 - 1,200
Life raft	535

Labour

	Average	Range
Labour as % Rev	31%	25.8% - 39%
Average crew wage (inc. skipper, mate and engineer) (£)	21,747	13,843 – 28,747
Average rate for skipper	32,620	21,000 – 50,450
Average rate for deck hand	18,500	12,000 – 28,500

The research has identified two methods of crew share payment formula to date:

System 1: For those boats operating predominantly in the middle North Sea the crew share is calculated by taking 30 per cent from the vessel gross sales. Where the boat has four crew, the skipper and the mate are allocated 9.5 shares and the crew are allocated 8.5 shares each, adding up to 30.

System 2: For Scottish vessels operating both in Area IVa and area VI the crew share is calculated by allocating 50 per cent of the residual amount after deducting direct fishing expenses from the gross sales, to the crew and 50 per cent to the vessel. The share is divided by the number of crew and they are allocated 1 share each. The skipper however receives an extra share from the boat in most cases where a skipper / owner is operating.

Insurance

Insurance costs	Average	Range
Insurance as % of insured value	5.31%	3.25% - 7%
Insurance costs £ per VCU	65	36 – 84
Insurance costs £ per kW	55	40 – 86
Insurance costs £ per GRT	367	224 – 606
Insurance costs £ per day at sea	85	39 – 171

North Sea & West of Scotland Trawlers > 24 m

	Average		
Earnings	593,343		
Costs		As % of Sales	As % of Expenses
Fishing			
Commission	26,086	4.4	5.0
Harbour dues	24,619	4.1	4.8
Subscriptions	4,691	0.8	0.9
Stores	2,158	0.4	0.4
Shore Labour	21,306	3.6	4.1
Fuel and Oil	69,752	11.8	13.5
Boxes	7,335	1.2	1.4
Ice	5,640	1.0	1.1
Crew Travel	4,453	0.8	0.9
Food	15,633	2.6	3.0
Other Expenses	9,404	1.6	1.8
Crew Share	194,537	32.8	37.6
Total Fishing Expenses	385,613	65.0	74.5
Vessel Expenses			
Insurance	21,884	3.7	4.2
Repairs	62,938	10.6	12.2
Gear	25,033	4.2	4.8
Hire and Maintenance	9,399	1.6	1.8
Other Vessel Cost	12,426	2.1	2.4
Total vessel costs	131,680	22.2	25.5
Total Expenses	517,293	87.2	100.0
Net Profit	76,050	12.8	

General Introduction

This analysis applies to vessels operating in the North Sea whitefish trawl sector. The data presented in the report reflect vessels of the following key characteristics:

Vessel characteristics	**Average**	**Range**
Vessel length	27.47m	25.53 – 32.31
Average Engine Power (kW)	544	370 – 670
VCUs	451.90	348 – 611
Gross Registered tonnes	122	70 – 212
Crew Size	7	5 – 10
Vessel Age	20	3 – 37

Fishing characteristics		
Areas Fished	ICES Area IV & VI	
Days at Sea	255	220 – 320
Fishing days	200	118 – 240
Steaming days (days equivalent)*	55	35 –118
Distance steamed	135 miles	40 – 250 miles
Time spent steaming (hours / trip)	48	36 – 84
Steaming speed (knots)	10 knots	9 – 11.5 knots
Towing speed (knots)	3.2 knots	2.7 – 4.5 knots
Towing periods	4.5 hours	4 – 5 hours (shorter in summer)
Type of ground	All	
Number of tows per day	4	4 – 6 to 8 in summer

* steaming days is effective steaming time based on a 24 hour day

Gear characteristics		
Mesh size (mm)	110. mm	100 – 125 mm
Twine size	5 mm double	4 mm single to 6mm double
Length of warp*	800 m	Varies according to the depth of water.
Square mesh panels	No	
Bridle length	100 m	Up to 135m
Sleeve length	45 meshes	40 – 50 meshes
Headline height	12ft – 20ft for single net	Up to 40ft – 50ft for a pair trawl net
Wing spread	60 m	Up to 125 m for pair nets

Other characteristics		
Auxilliary engine size (hp)**	210	175 to 275
Type of ice	Flake	
Ice application ratio	10 %	

*generally in deeper water 2.5 x the depth. Below 300 m the ratio of warp to water depth increases up to 3 x the depth.
** Most boats in the sample have two auxiliary engines used mainly for fishing functions, such as driving hydraulics, pumps and electrics. In addition to this many boats had a separate winch motor and a smaller auxiliary used solely in emergencies.

Capital Costs

Vessel valuations

The most conventional way of determining vessel value is by using the Insurance Value. Most vessel owners presume vessel insurance values to be representative of the replacement costs as opposed to the true market valuation. However, most insurance companies perceive that the starting point for the insurance value is always the price paid for the vessel by the owner. The value is subsequently discounted when comparative sales prices no longer reflect the commercial valuation of the vessel.

Insurance valuations	£	£
Average Insurance value	775,000	305,000 – 2 M
Per VCU	1,693	601 – 3,649
Per kW	1,386	855 – 2,685
Per GRT	7,330	2,759 – 13,069

Licence valuations

Area IV category A trawl licences are currently valued at £ 400 per unit. The track record valuations for each species are shown below:

Licence value without track record	£	£
Average value	180,760	140,000 – 212,000
Per VCU	400	
Licence value with track record included		
Average value	791,885	459,200 – 1.03M
Per VCU	1,773	1,305 – 2,780
track record as a % of total	75.7%	69.7% – 86%

Species	£ / tonne
Cod	1,200
Haddock	500
Plaice	1,200
Whiting	500
Nephrops	1,200
Saithe	2,500

Revenue and Catch Rates

Track Records	Tonnes	Ranges
Cod	165.58	85 – 270
Haddock	340	130 – 700
Whiting	277.25	80 – 520
Plaice	16.5	0 – 51
Saithe	12	0 –35
By catch	30	15 – 70
Total	935	

Catch rates	Average	Range
Catch rate Per VCU (kgs)	1,917	1,165 – 3,517
Catch rate per utilised kW (kgs)	19.88	1,195 – 3,635
Catch rate per GRT (kgs)	7,878	3,021 – 13,566
Catch rate per day fishing (kgs)	4,638	2,424 – 7,354
Catch rate per net (kgs)	1,159	707 – 1,838

Revenues from fishing	Average	Range
Average revenue per vessel (£)	593,343	367,706 – 1,158,001
Average price / tonne (£)	727	348 – 1,141
Revenue per VCU (£)	1,305	901 – 1,849
Revenue per kW (£)	1,080	778 – 1,631
Revenue per GRT (£)	5,384	2,248 – 11 598
Revenue per day at sea (£)	2,286	1,624 – 3,860
Revenue per crew man (£)	90,380	56,622 – 149,000
Average revenue per tow (£)	1,462.90	1,00 – 2,573

Non Fishing Revenue		Range
Average non fishing income (£)	2,910	0 – 24,439
% total revenue	0.49%	

Non fishing revenue is made up from a number of sources. In respect to trawlers, the principal source of alternative revenue is from guard ship duty (protecting pipe-laying exercises from other fishing activities). The standard rates for a trawler are from £ 1,200 to £ 2,300 per day. Two vessels in the sample obtained income from sources other than fishing.

Variable Cost Inputs

Fuel & lube oil costs

	Average	Range
Annual average fuel consumption (tonnes per annum)	846	450 – 1,238
Fuel consumption, litres per kW	1,664	749 – 3,349
Fuel consumption per trip (litres)	35,260	18,000 – 47,000
Oil consumption per trip (litres)	179	113 – 408
Fuel consumption per fishing day (litres)	4,339	2,118 – 7,337
Oil consumption as a % of total fuel costs	8.24%	3.8% – 16.65%
Fuel Consumption whilst towing	280	150 – 350
Fuel consumption whilst steaming (litres / hour)	250	150 – 300
Fuel consumption as % of total revenue	11.73%	7.76% – 19.9%
Annual fuel consumption per kW (£)	121.96	63 – 243
Annual fuel consumption per VCU (£)	147	77 – 302
Annual fuel consumption per GRT (£)	581	354 – 1,070
Annual average fuel consumption per day at sea (£)	262.70	159 – 578

Average Fuel prices recorded in main fishing ports, 1997 / 98 *	
Port	Price per tonne (£)
Scarborough	119.79
Grimsby	133.00
Fraserburgh	139.00
Ullapool	122.00
Aberdeen	149.00
Peterhead	140.00
Wick	70.00
Kinlochbervie	125.00
Scrabster	120.00

*These prices should be used as a guide to trends only, they do not reflect the real and daily fluctuations which occur in fuel prices. The larger vessels in this segment are in a strong bargaining position in negotiating discount for bulk purchases.
Lube oil costs are £ 1 / litre.

Boxes
All trawlers are subject to box charges. Rental charges range from £0.65 / box to

Ice

Average Ice Prices	
Port	Price per tonne (£)
Aberdeen	26 Flake
Peterhead	26 Flake, chunk or tube
Fraserburgh	26 Flake and chunk
Lerwick	26 Flake
Scrabster	25 Flake
Ullapool	25 Flake
Kinlochbervie	26
Lochinver	26
Scarborough	26
Grimsby	26

Half of the vessels in the sample had on board Ice - makers, the capacity of these varied from 2 to 5 tons production per day and there was an even spread of those vessels using fresh water and those using sea water ice machines. The most common type of ice used was flake Ice. All boats in the sample have a refrigerated fish room.

Other Variable Costs

	Average (% total revenue)	Range (% total revenue)
Ice	0.96	0 – 2.45
Boxes	1.24	1.0 – 1.54
Commission	4.38	3.26 – 4.99
Harbour dues	4.0	3.2 – 5.6
Subscriptions and levies	0.83	0.1 – 1.56
Food & Stores	2.65	1.66 – 3.09
Crew travel	0.76	0.47 – 1.12
Food & Stores per crew per day (£)	9.34	6.05 – 16.05

Fixed Cost Inputs

Repair costs	Average	Range
Repair costs £ per VCU	141	90 – 265
Repair costs £ per kW	117	74 – 222
Repair costs £ per GRT	589	253 – 958
Repair costs £ per day at sea	246	152 – 467
Gear expenses		
Gear expenses £ per VCU	54.65	39 – 100
Gear expenses £ per kW	45	32 – 74
Gear expenses £ per GRT	223.85	149 – 553
Gear expenses £ per day at sea	96	79 – 184

Cost of equipment and frequency of replacement		
Type of gear	Cost	Frequency of replacement
Net	£4,500 to £6,500 per net. Up to £11,000 for a pair trawl net. Add £500 - £700 for hoppers.	1 per year, life span is slightly longer for vessels fishing predominantly soft ground, also pair trawls last longer, up to 2 years
Warps		Can get up to 1 year life, generally replaced every 6 months
Bridles		Replaced every 4 to 6 months
Doors		1 every 3 to 4 years

Wheelhouse and other equipment

There is a good mixture of vessels that own most of the on board electronics and those that predominantly rent equipment. The average costs for hire and maintenance of equipment is about £ 2,500 to £ 22,650 per annum, of course those paying the least are just paying maintenance charges on owned equipment, those paying the most rent all electronics.

Type of equipment	Cost of purchase £	Maintenance charge £	Frequency of replacement
Radios		1,000	5 to 6 years
Decca		750	10 years +
Sounders 5 kw – 10 kw	6,400 – 9,000	1,600 – 2,548	5 years
Radar – 14 '' inch display, 25 kW, 96 nm	7,000	2,000	5 years
Plotter 12 "	2,500	500	
Life rafts		350 - 750 per raft	

Rental	£
Radios	1,000 – 2,500
Decca	2,500
Sounders	1,500 – 2,000
Radar	1,200 – 5,000
Life raft	1,000

Labour

	Average	Range
Labour as % Rev	33.15%	29 – 45
Average crew wage (inc skipper, mate and engineer) (£)	29,987	16,980 – 53,00
Average rate for skipper	51,514	30,872 – 88,364
Average rate for Mate	38,635	30,600 – 56,000
Average rate for deck hand	25,754	15,500 – 37,000

The research has only identified one method of crew share payment formula to date:

The crew share is calculated after taking the direct fishing expenses from the gross sales. The residual sum is divided 50 / 50 to the boat and crew. The skipper is allocated two shares, mate 1.5 and crew 1 share each. In some cases bonuses apply to the skipper amounting to 2 % of the profit. In one case any rebates received were divided between the crew at the end of the year.

Insurance

Insurance costs	Average	Range
Insurance as % of insured value	3.6%	1.3% – 8.4%
Insurance costs £ per VCU	50.91	16 – 86
Insurance costs £ per kW	43	16 – 71
Insurance costs £ per GRT	218	159 – 408
Insurance costs £ per day at sea	88	40 – 152

Irish Sea Trawlers

	Average	As % of Sales	As % of Expenses
Earnings	219,393		
Costs			
Fishing			
Commission	10,942	5.0	6.2
Harbour dues	7,278	3.3	4.1
Subscriptions	2,328	1.1	1.3
Shore Labour	0	0.0	0.0
Stores	997	0.5	0.6
Fuel and Oil	22,910	10.4	12.9
Boxes	0	0.0	0.0
Ice	2,511	1.1	1.4
Crew Travel	932	0.4	0.5
Food	5,802	2.6	3.3
Other Expenses	3,461	1.6	1.9
Crew Share	75,189	34.3	42.3
Total Fishing Expenses	132,350	60.3	74.5
Vessel Expenses			
Insurance	13,888	6.3	7.8
Repairs	21,497	9.8	12.1
Gear	6,763	3.1	3.8
Hire and Maintenance	2,957	1.3	1.7
Other Vessel Cost	141	0.1	0.1
Total vessel costs	45,245	20.6	25.5
Total Expenses	177,595	80.9	100.0
Net Profit	41,798	19.1	

General Introduction

This analysis applies to vessels operating in the Irish Sea midwater and demersal trawl sector. The data presented in the report reflect vessels of the following key characteristics:

Vessel characteristics	**Average**	**Range**
Vessel length	21.5	19.5 – 26.1
Average Engine Power (kW)	385	260 – 560
VCUs	317.4	246 – 440
Gross Registered tonnes	85	50 – 120
Crew Size	4.5	4- 5
Age	25	19 – 39

Fishing characteristics		
Areas Fished	ICES Area VII a & North Channel and occasional visits to Area VII and VI	
Days at Sea	211	180 – 250
Fishing days	190	162 – 225
Steaming days (days equivalent)*	21	18 – 25
Distance steamed	50	15 – 200 miles (West of Scotland grounds)
Time spent steaming (hours / trip)	24	10 – 60
Steaming speed (knots)	9 knots	6.5 – 12 knots
Towing speed (knots)	3 knots	2.5 – 4 knots
Towing periods	8 hours	6 – 12
Type of ground	All grounds. Many vessels in the sample operate semi - pelagic trawls	
Number of tows per day	2	2 – 4

* steaming days is effective steaming time based on a 24 hour day

Gear characteristics		
Mesh size (mm)	80	80 – 100 mm
Twine size	8 mm	
Length of warp	340 m	317 – 400 m
Square mesh panels	Yes	
Bridle length	53 m	42 – 70 m
Sleeve length	No sleeve	
Headline height	20 m	16 – 22 m
Wing spread	55 m	42 – 90 m

Other characteristics		
Auxilliary engine size (kW)	148	53 – 250
Type of ice	Flake ice	
Ice application ratio	10 %	

Capital Costs

Vessel valuations

The most conventional method of vessel valuation is by using the Insurance Value. Most vessel owners presume vessel insurance values to be representative of the replacement costs as opposed to the true market valuation. However, most insurance companies perceive that the starting point for the insurance value is the price paid for the vessel by the owner. The value is subsequently discounted when comparative sales prices no longer reflect the commercial valuation of the vessel.

Insurance valuations	£	£
Average Insurance value	319,090	200,000 – 500,000
Per VCU	1,008	624 – 1,403
Per kW	844	526 – 1,250
Per GRT	4,132	1,797 – 4,330

Licence valuations

Currently there is very little trade in either licenses or quota in the Irish Sea. Due to this it is very difficult to determine accurately valuations for Irish Sea licences and so this have been left out. However it is probable that in the future trading will take place and licences and fish will appreciate in value.

Revenue and Catch Rates

Track records	Tonnes	Ranges
Cod	36.5	19 – 50
Whiting	40.7	7 – 95
Hake	10.8	0.9 – 30
Haddock	7.1	0.9 – 30
Nephrops	10.2	0 – 44
Plaice	0.9	0 – 3.7
Sole	0.6	0 – 3.5
By catch	60.7	
Total	167.5	

Catch rates	Average	Range
Catch rate Per VCU (kgs)	410	133 – 536
Catch rate per utilised kW (kgs)	357	137 – 485
Catch rate per GRT (kgs)	4,970	2,270 – 6,470
Catch rate per day fishing (kgs)	970	570 – 1,245
Catch rate per net (kgs)	335	152.1 – 540

Revenues from fishing	Average	Range
Average revenue per vessel (£)	219,393	105,000 – 380,000
Average price / tonne (£)	1,440	
Revenue per VCU (£)	691	285 – 861
Revenue per kW (£)	576	218 – 760
Revenue per GRT (£)	2,660	1,226 – 3,056
Revenue per day at sea (£)	1,021	585 - 1,652
Revenue per crew man (£)	47,885	31,050 – 68,300
Average revenue per tow (£)	567	326 – 920

Non Fishing Revenue		Range
Average non fishing income (£)	3,573	46 – 23,340
% total revenue	1.6	0.02 – 11.0

Non fishing revenue is made up from a number of sources. In respect to gill net vessels, the principal source of alternative revenue is from guard ship duty (protecting pipe-laying exercises from other fishing activities). The standard rates for a trawler are £ 1,500 per day. Five vessels in the sample obtained income from sources other than fishing.

Variable Cost Inputs
Fuel & lube oil costs

	Average	Range
Annual average fuel consumption (tonnes per annum)	210	180 – 324
Fuel consumption, litres per kW	545	467 – 841
Fuel consumption per trip (litres)	7,240	3,995 – 12,250
Oil consumption per trip (litres)	23	
Fuel consumption per fishing day (litres)	1,035	570 - 1,750
Oil consumption as a % of total fuel costs	4	2 – 6.3
Fuel consumption whilst steaming (litres / hour)	45	36 – 55
Fuel consumption as % of total revenue	10.4	7.6 – 14.0
Annual fuel consumption per kW (£)	59	32 – 79
Annual fuel consumption per VCU (£)	71	42 – 104
Annual fuel consumption per GRT (£)	274	171 – 346
Annual average fuel consumption per day at sea (£)	107	60 – 193

Average Fuel prices recorded in main fishing ports, 1997 / 98	
Port	Price per tonne (£)
Kilkeel	142.50
Portavogie	136.70
Fleetwood	128.40

Lube oil costs are approximately £ 1 / litre

Boxes

In the sample fish are mainly bulked at sea and boxed on shore upon landing. The box charges in all Northern Irish ports is £0.45 / box, and the cost is included in the fish salesmen's charges.

Ice

Average Ice prices recorded in main fishing ports, 1997 / 98	
Port	Price per tonne (£)
Portavogie	25.00 Flake
Kilkeel	25.00 Flake
Ardglass	25.00 Chunk

One boat in the sample had an on board ice making machine, the remainder of the sample all had refrigerated fish rooms but took ice on board in port. With an average of 10 - 12 tonnes being taken per trip @ £ 25 per tonne.

Other Variable Costs

	Average (% total revenue)	Range (% total revenue)
Ice	1.45	0 - 2.17
Commission	5.0	4.6 - 5.9
Harbour dues	3.4	2.4 - 4.0
Subscriptions and levies	1	1
Food & Stores	3	1.5 - 5.7
Crew travel	0.42	0 - 2.17
Food & Stores per crew per day (£)	7.0	4.5 - 11.0

Fixed Cost Inputs

Repair costs	Average	Range
Repair costs £ per VCU	152	27 - 232
Repair costs £ per kW	170	28 - 300
Repair costs £ per GRT	627	105 - 1,050
Repair costs £ per day at sea	110	20 - 140
Gear expenses		
Gear expenses £ per VCU	140	100 - 185
Gear expenses £ per kW	155	85 - 245
Gear expenses £ per GRT	572	405 - 586
Gear expenses £ per day at sea	102	85 -115

Cost of equipment and frequency of replacement		
Type of gear	Cost	Frequency of replacement
Net	£4,000 to £6,000 Add £500 for hoppers	1 every 2 years, may last up to 3 years with ongoing repairs
Warps		1 per year
Bridles Doors		1 per year 1 every 4 years

Wheelhouse and other equipment

Most electronics are owned. Maintenance and hire costs for vessels owning most equipment are fairly low with an average of £2,900 per annum, the range in the sample was £484 - £8,197.

Type of equipment	Cost of purchase	Cost of Maintenance	Frequency of replacement
Radios		1,000	5 to 6 years
GPS	500 - 750	150	3 to 4 years
Decca		750	10 years +
Sounders 5 kW – 10 kW	6,400 – 9,000	1,600 – 2,548	5 years
Radar – 14 '' inch display, 25 kW, 96 nm	7,000	2,000	5 years
Plotter 12 "	2,500	500	
Life rafts		350 - 750 per raft	

Rental	£
Radios	1,000
Decca	All owned
Sounders	1,500
Radar	900

Labour

	Average	Range
Labour as % Rev	34.2	24 – 43
Average crew wage (inc. skipper, mate and engineer) (£)	17,300	12,500 – 29,300
Average rate for skipper	23,842	15,000 - 39,262
Average rate for deck hand	16,330	10,515 - 29,160

There is one system of crew share in operation:

Following deduction of expenses, the residual is divided 50 / 50 between boat and crew. The skipper gets one share from the crew allocation and an extra share from the boat allocation. Crew receive 1 share.

Insurance

Insurance costs	Average	Range
Insurance as % of insured value (£)	6.0%	3 – 7%
Insurance % of revenue	6.8	5.3 – 12.3
Insurance premiums £ per VCU	43	34 – 55
Insurance premiums £ per kW	36	26 – 46
Insurance premiums £ per GRT	171	119 – 264
Insurance premiums £ per day at sea	66	47 – 90

North Sea and West of Scotland Nephrops Trawl

	Average		
Earnings	153,699		
Costs		As % of Sales	As % of Expenses
Fishing			
Commission	9,090	5.9	7.0
Harbour dues	5,661	3.7	4.3
Subscriptions	1,108	0.7	0.9
Shore Labour	1,530	1.0	1.2
Stores	122	0.1	0.1
Fuel and Oil	13,863	9.0	10.6
Boxes	822	0.5	0.6
Ice	2,038	1.3	1.6
Crew Travel	617	0.4	0.5
Food	4,452	2.9	3.4
Other Expenses	3,972	2.6	3.0
Crew Share	52,294	34.0	40.1
Total Fishing Expenses	95,570	62.2	73.3
Vessel Expenses			
Insurance	9,846	6.4	7.6
Repairs	12,758	8.3	9.8
Gear	8,196	5.3	6.3
Hire and Maintenance	1,917	1.2	1.5
Other Vessel Cost	2,026	1.3	1.6
Total vessel costs	34,742	22.6	26.7
Total Expenses	130,312	84.8	100.0
Net Profit	23,387	15.2	

General Introduction

This analysis applies to vessels operating in the nephrops trawl sector. The data presented in the report reflect vessels of the following key characteristics:

Vessel characteristics	**Average**	**Range**
Vessel length	17.86	14.97 – 21.34
Average Engine Power (kW)	198	111 – 317
VCUs	192.61	135.78 – 272
Gross Registered tonnes	33.51	24 – 53
Crew Size	4	3 – 4
Age	28	20 – 38

Fishing characteristics		
Areas Fished	VI the Minches, Area IV East coast of Scotland, south of Shetland and Central North Sea	
Days at Sea	191	160 – 230
Fishing days	180	137 – 217
Steaming days (days equivalent)*	11	8 – 17
Distance steamed	15 miles	2 – 30 miles
Time spent steaming (hours / trip)	3	2 – 4
Steaming speed (knots)	8.3 knots	8 – 10
Towing speed (knots)	2.8 knots	2.5 – 3.8
Towing periods	3.5 hrs	2 – 6
Type of ground	Mainly soft	
Number of tows per day	4	Up to 6

Gear characteristics		
Mesh size (mm)	80 mm	70 – 90mm
Twine size	3mm single	2.5 single to 5mm Double. Boats fishing the North of Scotland and North Sea tend to use heavier gear.
Length of warp	AV. 400m	320 – 550m
Square mesh panels	Vessels on the west coats of Scotland do. East coast and in the North Sea vessels do not.	
Bridle length	47 m	20 – 120m
Sleeve length	60ft	30 – 70ft
Headline height	12ft	8 – 15ft
Wing spread	25m	20 – 35m

Other characteristics

% main engine use for trawling output	75 %	70 – 80 %
Steaming output (%)	90%	85 – 95
Auxilliary engine size (kW)**		
Type of ice	Flake	
Ice application ratio	10%	0 – 20

*Steaming days is effective steaming time based on a 24-hour day
**Most vessels in the sample did not have auxiliary engines. In the few boats that did they were small 20 – 50 hp and used solely for emergency functions.

Capital Costs

Vessel valuations

The most conventional way to determine vessel value is by using the Insurance Value. Most vessel owners presume vessel insurance values to be representative of the replacement costs as opposed to the true market valuation. However, most insurance companies perceive that the starting point for the insurance value is always the price paid for the vessel by the owner. The value is subsequently discounted when comparative sales prices no longer reflect the commercial valuation of the vessel.

Insurance valuations	£	£
Average Insurance value	130,000	65,000 – 226,000
Per VCU	669	365 – 1,065
Per kW	669	438 – 1,170
Per GRT	4,098	1,700 – 9,080

Licence valuations

Licence value without track record	£	£
Average value	67,413	50,000 – 95,400
Per VCU	350	
Licence value with track record included		
Average value	152,813	89,000 – 184,000
Per VCU	798	595 – 1,370
track record as a percentage of total	51%	26% – 74%

Species	£ / tonne
Plaice	1,200
Cod	1,200
Sole	5,500
Nephrops	1,000
Others	1,000

Revenue and Catch Rates

Track records	Tonnes	Ranges
Nephrops	87.47	36 – 150
Whiting	17.13	0 – 100
Cod	17.23	1 – 50
Haddock	21.16	0.7 – 100
By catch	14.43	5.3 – 40
Total	158.7	77 – 300

Catch rates	Average	Range
Catch rate Per VCU (kgs)	757.84	210 –1,627
Catch rate per utilised kW (kgs)	971	345 –2,000
Catch rate per GRT (kgs)	4,541	2,952 – 8,817
Catch rate per day fishing (kgs)	923	328 – 1,600
Catch rate per tow (kgs)	231	80 – 412

Revenues from fishing	Average	Range
Average revenue per vessel (£)	153,699	94,257 – 245,000
Average price / tonne (£)	1,312	608 – 2,470
Revenue per VCU (£)	838	408 – 1,142
Revenue per kW (£)	870	332 – 1,253
Revenue per GRT (£)	4,977	2,092 – 7,765
Revenue per day at sea (£)	801	521 – 1,150
Gross revenue per crew man (£)	41,493	24,000 – 62,000
Average revenue per tow (£)	211	129 – 304

Non Fishing Revenue		Range
Average non fishing income (£)	1,342	0 – 6,272
% total revenue	0.9%	

Non fishing revenue is made up from a number of sources. In respect to nephrops trawlers operating in the North Sea, the principal source of alternative revenue is from guard ship duty (protecting pipe-laying exercises from other fishing activities). The standard rates for a nephrops trawler range from £ 700 - £ 1,500 per day. 4 vessels in the sample obtained income from sources other than fishing, however none undertook guard duties.

Variable Cost Inputs

Fuel & lube oil costs

	Average	Range
Annual average fuel consumption (tonnes per annum)	109	36 – 211
Fuel consumption, litres per kW	660	130 – 1,578
Fuel consumption per trip (litres)	971	340 – 1,587
Oil consumption per trip (litres)	12	5 – 23
Fuel consumption per fishing day (litres)	618	240 – 1,154
Oil consumption as a % of total fuel costs	9%	3% - 13.85%
Fuel consumption per tow (litres / hour)	150	150 – 225
Fuel consumption whilst steaming (litres / hour)	35	20 – 40
Fuel consumption as % of total revenue	9.78%	6.11% - 13%
Annual fuel consumption per kW (£)	78.51	39 – 119
Annual fuel consumption per VCU (£)	75.75	46 – 105
Annual fuel consumption per GRT (£)	452	237 – 712
Annual average fuel consumption per day at sea (£)	74.43	52 – 111

Average Fuel prices recorded in main fishing ports, 1997 / 98 *	
Port	Price per tonne (£)
Fraserburgh	139.00
Stornoway	115.00
Ullapool	122.00
Wick	70.00
Peterhead	140.00

*In certain ports these fuel prices may be artificially high, this is due to the fuel rebates system that is operated through negotiation in many ports. It is particularly used by small vessels, such as those representative of this segment and gives a lump sum of cash back to the vessel at the year end.

Lube oil costs are approximately £ 1 / litre.

Boxes

Costs of boxes are an integral part of the services offered by the fish selling agents.

Ice

Ice usage varied quite a lot depending upon the quantity of nephrops to white fish. Most boats take about one tonne of ice per day, at an average cost of £25 per tonne.

Average Ice Prices	
Port	Price per tonne (£)
Peterhead	26 Flake, chunk or tube
Fraserburgh	26 Flake and chunk
Lerwick	26 Tube
Scrabster	25 Flake
Stornoway	25 Flake
Kinlochbervie	26
Lochinver	26
Ullapool	25 Flake
Whitby	26

Other Variable Costs

	Average (% total revenue)	Range (% total revenue)
Ice	1.36	0.44 – 2.63
Commission	5.79	3.56 – 8.38
Harbour dues	3.57	2.41 – 5.12
Subscriptions and levies	0.77	0.59 – 1.35
Food & Stores	3.17	2.0 – 6.54
Crew travel	0.49	0 – 2
Food & Stores per crew per day (£)	6.67	4.31 – 12.22

Fixed Cost Inputs

Repair costs	Average	Range
Repair costs £ per VCU	64.90	37 – 113
Repair costs £ per kW	68.52	33 – 135
Repair costs £ per GRT	386.36	193 – 719
Repair costs £ per day at sea	66.45	26 – 112
Gear expenses		
Gear expenses £ per VCU	44.42	21 – 75
Gear expenses £ per kW	46.49	17 – 90.45
Gear expenses £ per GRT	264.73	104 – 501
Gear expenses £ per day at sea	43.89	27 – 78

Cost of equipment and frequency of replacement		
Type of gear	Cost	Frequency of replacement
		Soft ground
Net	£2,600 - £ 4,000 for soft ground	Average of 1 net per year. *
Warps		Set of warps per annum
Bridles		Bridles every 6 months
Doors		set of doors every four years

*However net replacement is up to twice as frequent where the finest twine sizes are used. Those boats using 5 and 6mm double twine can expect a life of 18 months to two years per net, allowing for ongoing repairs to the body.

Wheelhouse and other equipment

Most vessels in the sample own radios, Decca equipment and sounders, however very few own radar. Average hire and maintenance costs for this segment are approximately £ 2,000 per annum, the range is quite broad however and takes into account a few vessels which only own radios £ 300 - £ 9,815.

Type of equipment	Cost of purchase	Cost of Maintenance	Frequency of replacement
Radios	£900	500	Every 5 years
Decca		250	10 years +
Sounders	2,000	450	3 to 4years
Radar 7" 4kW – 10" 4kW	1,850 – 4,250	750	4 to 7 years
Life rafts		350 per raft	

Rental	£
Radios	1,000 – 1,700
Decca	2,100
Sounders	1,500
Radar	900 – 1,200
Life raft	535

Labour

	Average	Range
Labour as a % Rev	34.6%	27.55% – 38.14%
Average crew wage (inc. skipper, mate and engineer)	14,086	7,634 – 19,707
Average rate for skipper	22,807	15,269 – 31,531
Average rate for deck hand	11,066	6,107 – 15,765

There is one basic system used in calculating the share wage in the North and West of Scotland nephrops trawl fisheries. The crew share is calculated after deducting fishing expenses from the gross fish sales. The resultant sum is then allocated evenly to the boat and the crew, with the skipper obtaining two shares and the crew one each.

Insurance

Insurance costs	Average	Range
Insurance as % of insured value	9%	4 – 21%
Insurance costs £ per VCU	51.37	38 – 76
Insurance costs £ per kW	52.74	32 – 91
Insurance costs £ per GRT	303	195 – 362
Insurance costs £ per day at sea	52.56	32 – 92

Irish Sea Nephrops Trawl

	Average		
Earnings	109,416		
Costs		As % of Sales	As % of Expenses
Fishing			
Commission	5,240	4.8	5.8
Harbour dues	2,954	2.7	3.2
Subscriptions	1,118	1.0	1.2
Shore Labour	6	0.0	0.0
Stores	240	0.2	0.3
Fuel and Oil	8,372	7.7	9.2
Boxes	0	0.0	0.0
Ice	966	0.9	1.1
Crew Travel	338	0.3	0.4
Food	2,481	2.3	2.7
Other Expenses	3,074	2.8	3.4
Crew Share	44,351	40.5	48.7
Total Fishing Expense	69,142	63.2	75.9
Vessel Expenses			
Insurance	6,924	6.3	7.6
Repairs	9,737	8.9	10.7
Gear	4,403	4.0	4.8
Hire and Maintenance	446	0.4	0.5
Other Vessel Cost	389	0.4	0.4
Total vessel costs	21,899	20.0	24.1
Total Expenses	91,041	83.2	100.0
Net Profit	18,375	16.8	

General Introduction

This analysis applies to vessels operating in the nephrops trawl sector fishing predominantly in the Irish Sea. The data presented in the report reflect vessels of the following key characteristics:

Vessel characteristics	**Average**	**Range**
Vessel length	17.45	11.7 – 20.14
Average Engine Power (kW)	200	142 – 249
VCUs	188	140 – 228
Gross Registered tonnes	36	16 – 53
Crew Size	3.5	2 – 4
Age of vessel	30	9 – 46

Fishing characteristics		
Areas Fished	ICES Area VII a	
Days at Sea	196	145 – 210
Fishing days	168 (85 %)	124 – 194
Steaming days (days equivalent)*	28 (15 %)	21 – 31
Distance steamed	15miles	2 – 120 miles
Time spent steaming (hours / trip)	8	4 – 20
Steaming speed (knots)	9	
Towing speed (knots)	2.75	2.5 – 3.5
Towing periods	4.5 hours	3 – 6 hours
Type of ground	Soft ground	
Number of tows per day	4	3 – 6

* steaming days is effective steaming time based on a 24 hour day

Gear characteristics		
Mesh size (mm)	70 mm	70 - 85 mm
Twine size	6 mm or 8 mm braided	
Length of warp	Up to 500 metres	
Square mesh panels	85 meshes	
Bridle length	68m	60 – 100
Sleeve length	3.65 m (approx. 50 meshes)	
Headline height	4 m	
Wing spread	13.4 m	

Other characteristics		
% main engine use for trawling output	75 %	60 - 90 %
Steaming output (%)	95	90 - 100
Auxilliary engine size (kW)	23	
Type of ice	Flake	
Ice application ratio	10%	0 - 20

Capital Costs

Vessel valuations

The most conventional way of determining vessel value is by using the Insurance Value. Most vessel owners presume vessel insurance values to be representative of the replacement costs as opposed to the true market valuation. However, most insurance companies perceive that the starting point for the insurance value is always the price paid for the vessel by the owner. The value is subsequently discounted when comparative sales prices no longer reflect the commercial valuation of the vessel.

Insurance valuations	£	£
Average Insurance value	105,000	70,000 – 150,000
Per VCU	568	371 – 715
Per kW	2,507	1,666 – 3,571
Per GRT	3,364	1,712 – 4,813

Licence valuations

Currently there is very little trade in either licenses or quota in the Irish Sea. It is therefore very difficult to determine accurately, valuations for Irish Sea licences and these have been left out. However it is probable that in the future trading will take place and licences and fish will appreciate in value.

Revenue and catch rates

Track records	Tonnes	Ranges
Nephrops	39.2	23 - 75
Whiting	14	3 - 30
Cod	6	0 – 12
Haddock	0.7	0 – 2.5
Hake	1.3	0 – 13
Monkfish	1.1	0 – 1
Plaice	0.2	0 – 8
Herring	1	0 – 17
By catch	5	
Total	63.8	

Catch rates	Average	Range
Catch rate Per VCU (kgs)	347	140 – 507
Catch rate per utilised kW (kgs)	427	230 – 705
Catch rate per GRT (kgs)	2,012	598 – 2,546
Catch rate per day fishing (kgs)	410	248 – 688
Catch rate per tow (kgs)	91	55 – 153

Revenues from fishing	Average	Range
Average revenue per vessel (£)	109,416	63,500 – 150,700
Average price / tonne (£)	1,358	895 –1,767
Revenue per VCU (£)	591	370 – 826
Revenue per kW (£)	548	315 – 863
Revenue per GRT (£)	3,440	1,590 - 8,630
Revenue per day at sea (£)	553	415 – 703
Gross revenue per crew man (£)	32,118	24,880 – 37,000
Average revenue per tow (£)	143	107 – 183

Non Fishing Revenue		Range
Average non fishing income (£)	537	0 - 4,000
% total revenue	0.003	0 – 0.3

Non fishing revenue is made up from a number of sources. In respect to nephrops trawlers, the principal source of alternative revenue is from guard ship duty (protecting pipe-laying exercises from other fishing activities). The standard rates for a nephrop trawler range from £ 700 - £ 1,500 per day. Only one vessel in the sample made other income from guard duties.

Variable Cost Inputs
Fuel & lube oil costs

	Average	Range
Annual average fuel consumption (tonnes per annum)	85	46 – 186
Fuel consumption, litres per kW	432	270 – 1,000
Fuel consumption per trip (litres)	1,580	900 – 4,500
Oil consumption per trip (litres)	36	13 – 68
Fuel consumption per fishing day (litres)	530	300 - 1,500
Oil consumption as a % of total fuel costs	10	4 – 19
Fuel consumption per tow (litres / hour)	135	100 – 350
Fuel consumption whilst steaming (litres / hour)	40	23 – 55
Fuel consumption as % of total revenue	7.75	5 - 11 %
Annual fuel consumption per kW (£)	41	24 – 59
Annual fuel consumption per VCU (£)	44	29 – 63
Annual fuel consumption per GRT (£)	258	128 – 566
Annual average fuel consumption per day at sea (£)	43	24 – 63

Average Fuel prices recorded in main fishing ports, 97 / 98	
Port	Price per tonne (£)
Kilkeel	142.50
Portavogie	136.70
Ardglass	144.0
Whitehaven	134.5

Boxes

Costs of boxes are an integral part of the services offered by the fish selling agents.

Ice

Ice prices recorded in main fishing ports, 1997 / 98	
Port	Price per tonne (£)
Portavogie	25.00 Flake
Kilkeel	25.00 Flake
Ardglass	25.00 Chunk

Ice usage varied quite a lot depending upon the quantity of nephrops to white fish. Most boats carry about one tonne of ice per day, at a cost of £25 per tonne.

Other Variable Costs

	Average (% total revenue)	Range (% total revenue)
Ice	0.9	0.5 - 2.6
Commission	4.8	3.7 – 5.4
Harbour dues	2.7	1.0 - 3.8
Subscriptions and levies	1.0	0.9 - 1.6
Food & Stores	2.3	0.5 – 4.3
Crew travel	0.3	0.0 - 2.3
Food & Stores per crew per day (£)	9.47	2.53 – 14.57

Fixed Cost Inputs

Repair costs	Average	Range
Repair costs £ per VCU	61	20 – 107
Repair costs £ per kW	57	19 – 115
Repair costs £ per GRT	364	88 – 458
Repair costs £ per day at sea	60	19 – 147
Gear expenses		
Gear expenses £ per VCU	23	10 – 35
Gear expenses £ per kW	23	10 – 85
Gear expenses £ per GRT	130	45 – 271
Gear expenses £ per day at sea	23	6.72 – 61

Cost of equipment and frequency of replacement		
Type of gear	Cost	Frequency of replacement
		Soft ground
Net	£3,000 for soft ground £3,450 incl. Hoppers	1 net per 2 years
Warps		set of warps per annum
Bridles Doors		bridles every 6 months set of doors every four years

Wheelhouse and other equipment

Most electronics are owned. Annual maintenance and hire costs of electronics for vessels owning sounders, Decca and radio range from £282 - £3,855.

Type of equipment	Cost of purchase	Maintenance charge	Frequency of replacement
Radios	£900	100	Every 5 years
Decca		250	10 years +
Sounders	2,000	450	3 to 4years
Radar 7" 4kW –10" 4kW	1,850 – 4,250	750	4 to 7 years
Life rafts		350 per raft	

Labour

	Average	Range
Labour as a % Rev	40.5	28 - 48
Average crew wage (inc. skipper, mate and engineer)	14,510	5,346 - 25,850
Average rate for skipper	18,550	7,030 - 33,990
Average rate for deck hand	12,370	4,690 - 22,657

There is one basic system used in calculating the share wage in the Irish Sea nephrops trawl fisheries. This is to deduct the variable expenses from the grossings, divide the remaining shares by 10 and pay 1 share each to the crew and 1.5 shares to the skipper. The remainder would accrue to the vessel to cover other overheads.

Insurance

Insurance costs	Average	Range
Insurance as % of insured value (£)	7.0	3 – 15
Insurance costs £ per VCU	36	14 - 57
Insurance costs £ per kW	34	9.85 – 43
Insurance costs £ per GRT	201	135 - 336
Insurance costs £ per day at sea	35	13 - 68

Irish Sea Nephrops Twin Rig

	Average	As % of Sales	As % of Expenses
Earnings	198,967		
Costs			
Fishing			
Commission	10,099	5.1	6.1
Harbour dues	4,863	2.4	2.9
Subscriptions	2,402	1.2	1.4
Shore Labour	374	0.2	0.2
Stores	2,100	1.1	1.3
Fuel and Oil	19,594	9.8	11.8
Boxes	0	0.0	0.0
Ice	3,330	1.7	2.0
Crew Travel	1,372	0.7	0.8
Food	5,063	2.5	3.0
Other Expenses	5,188	2.6	3.1
Crew Share	67,296	33.8	40.5
Total Fishing Expenses	121,681	61.2	73.3
Vessel Expenses			
Insurance	10,811	5.4	6.5
Repairs	22,427	11.3	13.5
Gear	6,749	3.4	4.1
Hire and Maintenance	3,407	1.7	2.1
Other Vessel Cost	945	0.5	0.6
Total vessel costs	44,339	22.3	26.7
Total Expenses	166,020	83.4	100.0
Net Profit	32,947	16.6	

General Introduction

This analysis applies to vessels operating in the nephrops trawl sector, but operating twin – rig gear. The data presented in the report reflect vessels of the following key characteristics:

Vessel characteristics	**Average**	**Range**
Vessel length	19.42m	17.23 – 23.45
Average Engine Power (kW)	307	171 – 378
VCUs	257	156 – 320
Gross Registered tonnes	65.39	22 – 106
Crew Size	4	3 – 6
Vessel Age	23	12 – 30

Fishing characteristics		
Areas Fished	ICES Area VIIa	
Days at Sea	222	
Fishing days	205	
Steaming days (days equivalent)*	29 (15 %)	21 – 34
Distance steamed	30 miles	6 – 120 miles
Time spent steaming (hours / trip)	12	6 – 20
Steaming speed (knots)	9	8 – 11
Towing speed (knots)	3	2.5 – 3.5
Towing periods	4.5 hours	3 – 5 hours
Type of ground	Mainly Soft ground	
Number of tows per day	4	3 – 5

* steaming days is effective steaming time based on a 24 hour day

Gear characteristics		
Mesh size (mm)	70 mm	70 – 90 mm
Twine size	5 / 6 mm braided	Up to 6 mm double
Length of warp	up to 600 metres	
Square mesh panels	85 meshes	
Bridle length	68m	60 – 100
Sleeve length	3.65 m (approx. 50 meshes)	
Headline height	8ft	6 – 12 ft
Wing spread	44 m	35 – 60 m

Other characteristics		
% main engine use for trawling output	85 %	75 - 90 %
Steaming output (%)	95	90 – 100
Auxilliary engine size (hp)	100	23 – 150 hp
Type of ice	Flake	
Ice application ratio *	10%	10 – 20

* The ice application is very variable depending upon time of year and composition of catch. More ice is used during the summer and for white fish than for prawns.

Capital Costs

Vessel valuations

The most conventional way to determine vessel value is by using the Insurance Value. Most vessel owners presume vessel insurance values to be representative of the replacement costs as opposed to the true market valuation. However, most insurance companies perceive that the starting point for the insurance value is always the price paid for the vessel by the owner. The value is subsequently discounted when comparative sales prices no longer reflect the commercial valuation of the vessel.

Insurance valuations	£	£
Average Insurance value	162,000	100,000 – 250,000
Per VCU	634	436 – 905
Per kW	531	373 – 670
Per GRT	2,895	1,311 – 4,000

Licence valuations

Currently there is very little trade in either licenses or quota in the Irish Sea. It is therefore very difficult to determine accurately, valuations for Irish Sea licences and these have been left out. However it is probable that in the future trading will take place and licences and fish will appreciate in value.

Revenue and Catch Rates

Track records	Tonnes	Ranges
Nephrops	41	32 – 85
Whiting	25	20 – 31
Cod	19	5 – 33
Haddock	6	0 – 15
Hake	4	0 – 12
Monkfish	3	2 – 3.5
By catch	10	8 – 15
Total	112	

Catch rates	Average	Range
Catch rate Per VCU (kgs)	462	230 – 670
Catch rate per utilised kW (kgs)	465	250 – 650
Catch rate per GRT (kgs)	2,245	690 – 4,768
Catch rate per day fishing (kgs)	609	400 – 930
Catch rate per tow (kgs)	152	100 – 240
Catch per net (kgs)	76	50 – 116

Revenues from fishing	Average	Range
Average revenue per vessel (£)	198,966	189,443 – 213,914
Average price / tonne (£)	1,742	1,115 – 2,400
Revenue per VCU (£)	834	608 – 1,223
Revenue per kW (£)	715	505 – 1,120
Revenue per GRT (£)	3,973	1,827 – 8,600
Revenue per day at sea (£)	900	835 – 957
Gross revenue per crew man (£)	55,566	37,900 – 68,300
Average revenue per tow (£)	243	224 – 261

Non Fishing Revenue		Range
Average non fishing income (£)	0	0
% total revenue	/	/

In respect to nephrops trawlers, the principal source of alternative revenue is from guard ship duty (protecting pipe-laying exercises from other fishing activities). The standard rates for a nephrop trawler range from £ 700 - £ 1,500 per day. None of the vessels in the sample obtained alternative income in this manner.

Variable Cost Inputs
Fuel & lube oil costs

	Average	Range
Annual average fuel consumption (tonnes per annum)	99	90 – 113
Fuel consumption, litres per kW	354	243 – 585
Fuel consumption per trip (litres)	5,000	3,100 – 7,000
Oil consumption per trip (litres)	36	10 – 58
Fuel consumption per fishing day (litres)	490	400 – 540
Oil consumption as a % of total fuel costs	8%	3.1% - 19.6%
Fuel consumption per tow (litres / hour)	175	130 – 300
Fuel consumption whilst steaming (litres / hour)	120	100 – 200
Fuel consumption as % of total revenue	9.84%	7% - 12%
Annual fuel consumption per kW (£)	66	50 – 79
Annual fuel consumption per VCU (£)	78	57 – 93
Annual fuel consumption per GRT (£)	358	173 – 613
Annual average fuel consumption per day at sea (£)	88	68 – 107

Average Fuel prices recorded in main fishing ports, 1997 / 98	
Port	Price per tonne (£)
Kilkeel	142.50
Portavogie	136.70
Ardglass	144.0
Whitehaven	134.5

Boxes
Costs of boxes are an integral part of the services offered by the fish selling agents.

Ice

Ice prices recorded in main fishing ports, 1997 / 98	
Port	Price per tonne (£)
Portavogie	25.00 Flake
Kilkeel	25.00 Flake
Ardglass	25.00 Chunk

Other Variable Costs

	Average (% total revenue)	Range (% total revenue)
Ice	1.68	0.75 – 2.5
Commission	5.07	3.73 – 6.7
Harbour dues	2.43	1 – 3.7
Subscriptions and levies	1.21	1 – 1.71
Food & Stores	2.53	0.85 – 3.7
Crew travel	0.71	0 – 2.72
Food & Stores per crew per day (£)	6.46	2.44 – 11.76

Fixed Cost Inputs

Repair costs	Average	Range
Repair costs £ per VCU	97	58 – 254
Repair costs £ per kW	86	50 – 232
Repair costs £ per GRT	211	94 – 282
Repair costs £ per day at sea	96.25	40 – 199
Gear expenses		
Gear expenses £ per VCU	33.51	24 – 45
Gear expenses £ per kW	29.53	21 – 41
Gear expenses £ per GRT	160	72 – 317
Gear expenses £ per day at sea	35	32 – 36

Cost of equipment and frequency of replacement		
Type of gear	Cost	Frequency of replacement
Net	£2,700 to £3,000 per net for soft ground. For hard ground the addition of Hoppers costs between £250 to £500 per net	1 to 2 nets per year Soft ground Occasionally hard
Warps		set of warps per annum
Bridles		bridles every 6 months
Doors		set of doors every four years

Wheelhouse and other equipment

Most of the sample owned radios and Decca equipment, about half of the sample owned other wheelhouse electronics. Maintenance and hire costs for vessels owning most electronics range from £860 – £8,150 per annum.

Type of equipment	Cost of purchase	Maintenance charge	Frequency of replacement
Radios	£900	500	Every 5 years
Decca		250	10 years +
Sounders	2,000	450	3 to 4years
Radar 7" 4kW –10" 4kW	1,850 – 4,250	750	4 to 7 years
Life rafts		350 per raft	

Labour

	Average	Range
Labour as a % Rev	33.53%	24.8% – 42.9%
Average crew wage (inc. skipper, mate and engineer)	18,730	9,400 – 27,900
Average rate for skipper	29,021	16,000 – 42,000
Average rate for deck hand	14,500	8,000 – 20,900

There is one basic system used in calculating the share wage in the Irish Sea nephrops trawl fisheries. This is to deduct the variable expenses from the grossings, divide the remaining shares by 10 and pay 1 share each to the crew and 1.5 shares to the skipper. The remainder would accrue to the vessel to cover other overheads.

Insurance

Insurance costs	Average	Range
Insurance as % of insured value	8%	4% – 16%
Insurance costs £ per VCU	33	32 – 35
Insurance costs £ per kW	28	25 – 30
Insurance costs £ per GRT	128	100 – 139
Insurance costs £ per day at sea	42	29 – 47

North Sea Beam trawl

	Average		
Earnings	690,358		
Costs		As % of Sales	As % of Expenses
Fishing			
Commission	34,389	5.0	5.9
Harbour dues	17,255	2.5	2.9
Subscriptions	2,689	0.4	0.5
Shore Labour	7,770	1.1	1.3
Stores	190	0.0	0.0
Fuel and Oil	149,773	21.7	25.6
Boxes	676	0.1	0.1
Ice	663	0.1	0.1
Crew Travel	4,167	0.6	0.7
Food	12,600	1.8	2.2
Other Expenses	9,232	1.3	1.6
Crew Share	169,203	24.5	28.9
Total Fishing Expenses	408,608	59.2	69.8
Vessel Expenses			
Insurance	26,474	3.8	4.5
Repairs	87,668	12.7	15.0
Gear	41,935	6.1	7.2
Hire and Maintenance	4,394	0.6	0.8
Other Vessel Cost	16,100	2.3	2.8
Total vessel costs	176,569	25.6	30.2
Total Expenses	585,177	84.8	100.0
Net Profit	105,180	15.2	

General Introduction

This analysis applies to vessels operating exclusively in the beam trawl sector. The data presented in the report reflect vessels of the following key characteristics:

Vessel characteristics	**Average**	**Range**
Vessel length	36.11m	32.89 – 40
Average Engine Power (kW)	1,235 kW	857 – 1,790
VCUs	858	667 – 1112
Gross Registered tonnes	267	94 – 428
Crew Size	6	6 –10
Age	18 years	7 – 27

Fishing characteristics		
Areas Fished	ICES IV a IV b and the Norwegian sector, 75 % north of 55°N, 25 % south of 55°N	
Days at Sea	240	160 – 333
Fishing days	186 (77.1 %)	155 – 279
Steaming days	54 (22.8 %)	45 – 62
Distance steamed	Av. 185 miles	50 – 350 miles (Norwegian sector)
Time spent steaming (days)	2.75	1.5 / 2 (local grounds) to 3.5 (Norwegian sector)
Steaming speed (knots)	11.5	10 to 13 knots
Towing speed (knots)	6	
Towing periods	2.5 hours	
Type of ground	Soft ground (occasionally hard)	
Number of tows per day	9	8 –10, usually 10 in the Norwegian sector

Gear characteristics		
Mesh size (mm)	120 mm	100 – 120 mm
Twine size	5 mm double twine	3 ½ mm double – 6 mm double
Length of beam (m)	12 m	9 – 12 m
Length of warp	up to 700 metres	

Other characteristics		
% main engine use for trawling output	100	
Steaming output (%)	100	
Auxiliary engine size (total kW)	270	100 – 150 kW (X 2)
Refrigerated fish rooms	Yes	
Ice making machines	Yes	
Type of ice	Flake	
Ice application ratio	25%	Varies from 10 % - 50 %

Capital Costs

Vessel valuations

The most conventional way of determining vessel value is by using the Insurance Value. Most vessel owners presume vessel insurance values to be representative of the replacement costs as opposed to the true market valuation. However, most insurance companies perceive that the starting point for the insurance value is always the price paid for the vessel by the owner. The value is subsequently discounted when comparative sales prices no longer reflect the commercial valuation of the vessel.

Insurance valuations	£	£
Average Insurance value	988,636	400,000 – 2M
Per VCU	1,120	461 – 2,542
Per kW	793	308 –1,396
Per GRT	3,678	1,660 – 8,224

Licence valuations

North Sea Beam trawl licences are currently valued at £ 450 per unit. The track record valuations for each species are shown below

Species	£ / tonne
Plaice	1,200
Cod	1,200
Sole	5,500
Norway others	1,000

Licence value without track record	£	£
Average value	386,140	300,000 – 500,383
Per VCU	450	450
Licence value with track record included		
Average value	940,921	660,000-1,365,560
Per VCU	1,591	730 - 1,560
track record as a percentage of total	59 %	

Revenue and Catch Rates

Track records	Tonnes	Ranges
Plaice	341.4	120 – 551
Sole	10.2	1 – 22.5
Cod	28.6	10 –118
Norway others	16	0 – 50
By catch (lemon soles, monkfish, dabs)	40	14 – 65
Total	436.2	

Catch rates	Average	Range
Catch rate Per VCU (Kgs)	465.7	229 – 652.7
Catch rate per utilised kW (Kgs)*	328.5	166.9 – 454.8
Catch rate per GRT (Kgs)	1,567.7	1,064 – 2,335
Catch rate per day fishing (tonnes)	1.7	0.6 – 2.0
Catch rate per tow (Kgs)	236	89 – 291

* Beam trawlers tow at full engine capacity.

Revenues from fishing	Average	Range
Average revenue per vessel (£)	690,356	449,334 – 1,016,788
Average price / tonne (£)	1,650	
Revenue per VCU (£)	805	417 – 1,054
Revenue per kW (£)	569	278 – 921
Revenue per GRT (£)	2,799	1,500 – 3,771
Revenue per day at sea (£)	2,864	2,070 – 4,034
Revenue per crew man (£)	114,708	62,226 – 170,000
Average revenue per tow (£)	415	280 – 642

Non Fishing Revenue		Range
Average non fishing income (£)	721	0 – 15,800
% total revenue	0.13	0 – 4

In respect to beam trawlers, the principal source of alternative revenue is from guard ship duty (protecting pipe-laying exercises from other fishing activities). The standard rates for a beam trawler range from £ 2,000 - £ 2,300 per day. Only one vessel in the sample made other income.

Variable Cost Inputs
Fuel & lube oil costs

	Average	Range
Annual average fuel consumption (tonnes per annum)	1,687	1120 – 2310
Fuel consumption, litres per kW	1,409	835 – 1,879
Fuel consumption per trip (litres)	68,435	63,000 – 85,000
Oil consumption per trip (litres)	730	650 – 896
Fuel consumption per fishing day (litres)	6,967	3,381 – 9,000
Oil consumption as a % of total fuel costs	1.2	
Fuel consumption per tow (litres / hour)	514	500 – 800
Fuel consumption whilst steaming (litres / hour)	232	200 – 350
Fuel consumption as % of total revenue	21.7	15 – 30
Annual fuel consumption per kW (£)	122	74 – 150
Annual fuel consumption per VCU (£)	175	114 – 212
Annual fuel consumption per GRT (£)	603	398 – 823
Annual average fuel consumption per day at sea (£)	623	500 – 814

Average Fuel prices recorded in main fishing ports, 1997 / 98	
Port	Price per tonne (£)
Lowestoft	124.26
Aberdeen	149.00
Grimsby	133.00
Urk	107.00
Den Helder	103.54

* Fuel prices at various ports are subject to special discounts for bulk purchase and so the above are used as a guide only. It should also be noted that the figures are annualised averages and do not represent the daily fluctuations that occur.

Boxes

Most Beam trawlers do not use boxes whilst at sea, instead the fish is shelved / bulked on board, being transferred to boxes upon landing. The box charge is included in the salesmen's commission figure quoted by many vessels.

Ice

Almost all North Sea vessels in the sample have their own ice making machines. There were 2 exceptions. Their average expenditure as a percentage of gross revenue for these vessels was 1.25 %.

Other Variable Costs

	Average (% total revenue)	Range (% total revenue)
Commission	5.22	2.2 – 7.5
Harbour dues	2.6	0.93 – 3.4
Subscriptions and levies	0.42	0.15 – 1.0
Food & Stores	1.89	0.75 – 3.3
Crew travel	0.7	0 – 3.5
Food & Stores per crew per day (£)	8.75	9.50 – 19

Fixed Cost Inputs

Repair costs	Average	Range
Repair costs £ per VCU	101	32 – 147
Repair costs £ per kW	70	31 – 107
Repair costs £ per GRT	354	93 – 476
Repair costs £ per day at sea	373	143 – 1032
Gear expenses		
Gear expenses £ per VCU	49	30 – 83
Gear expenses £ per kW	34	8 – 56
Gear expenses £ per GRT	158	78 – 273
Gear expenses £ per day at sea	175	94 – 321

Cost of equipment and frequency of replacement			
Type of gear	Costs	Frequency of replacement	
		Soft ground	Hard ground
Net 10m plaice net	£ 8,500 - £ 9,750	1 per every 2 years	1 per year
Warp 800m coil 26mm diam.	£ 3,000	1 per year	1 per year
Shoes		1 set per trip	2 pairs per trip
Tickler chain Beam complete with shoes 10m	Approx. £ 0.75p per kilo. £ 7,000 - £ 8,500	1 per 3 months 4- 5 years	1 per 3 months 4 – 5 years

Wheelhouse and other equipment

Most electronics are owned. Maintenance costs for vessels owning sounders, Decca and radio range from £ 3,252 - 8,696.

Type of equipment	Cost of purchase £	Maintenance charge £	Frequency of replacement
Radios		1,000	5 to 6 years
Decca		750	10 years +
Sounders 5 kW – 10 kW	6,400 – 9,000	1,600 – 2,548	5 years
Radar – 14 '' inch display, 25 kW, 96 nm	7,000	2,000	5 years
Plotter 12 "	2,500	500	
Life rafts		350 - 750 per raft	

Labour

	Average	Range
Labour as a % Rev	24	17.8 – 28
Average crew wage (inc. skipper, mate and engineer)	27,390	14,150 – 47,650
Average rate for skipper	48,620	24,450 – 82,110
Average rate for mate & engineer	29,175	14,600 – 49,270
Average rate for deck hand	19,450	9,750 – 32,844

There are three crew share systems in operation.

System 1: The crew share is calculated as a percentage of the grossings, the average value taken is 25 %. This is then divided thus: - 1 share to each member of crew, but then premiums applied for more skilled fishermen. Both grade 1 engineers and ships mates receive a premium of a further 0.6 of a share and the skipper receives a premium of a further 1.5 shares, giving him 2.5 shares.

System 2: The crew share is calculated by taking away direct fishing expenses from the gross sales before allocation. The direct costs removed include commission, harbour and landing fees, stores, food, crew travel etc. The resultant sum is then divided 70 % to the vessel and 30% to the crew. The skipper receives 2 shares, engineer and mate 1.5 shares and other crew 1 share.

System 3: The crew share is calculated by taking away direct fishing expenses from the gross sales before allocation. The direct costs removed include commission, harbour and landing fees, stores, food, crew travel etc. The resultant sum is then divided 60 % to the vessel and 40% to the crew. The skipper receives 2 shares, engineer and mate 1.5 shares and other crew 1 share.

Insurance

Insurance costs	Average	Range
Insurance as % of insured value (£)	3%	2% – 6%
Insurance as % of gross	3.95	1.92 – 5.47
Insurance premiums £ per VCU	32	20 – 45
Insurance premiums £ per kW	23	13 – 29
Insurance premiums £ per GRT	103	71 – 161
Insurance premiums £ per day at sea	110	85 – 129

South West / English Channel Beam Trawl

	Average		
Earnings	458,295		
Expenses		As % of Sales	As % of Expenses
Fishing			
Commission	16,175	3.5	3.9
Harbour dues	18,475	4.0	4.5
Subscriptions	3,072	0.7	0.7
Shore Labour	29	0.0	0.0
Stores	0	0.0	0.0
Fuel and Oil	73,919	16.1	17.9
Boxes	0	0.0	0.0
Ice	3,153	0.7	0.8
Crew Travel	3,066	0.7	0.7
Food	9,418	2.1	2.3
Other Expenses	5,234	1.1	1.3
Crew Share	126,526	27.6	30.7
Total Fishing Expenses	259,067	56.5	62.9
Vessel Expenses			
Insurance	16,454	3.6	4.0
Repairs	85,786	18.7	20.8
Gear	41,966	9.2	10.2
Hire and Maintenance	2,445	0.5	0.6
Other Vessel Cost	6,377	1.4	1.5
Total vessel costs	153,028	33.4	37.1
Total Expenses	412,095	89.9	100.0
Net Profit	46,200	10.1	

General Introduction

This analysis applies to vessels operating exclusively in the beam trawl sector. The data presented in the report reflect vessels of the following key characteristics:

Vessel characteristics	**Average**	**Range**
Vessel length	25.8 m	14.45 – 34.95
Average Engine Power (kW)	463 kW	172 – 858 kW
VCUs	383.23	123.15 – 608.177
Gross Registered tonnes	100 Tonnes	39.29 – 176.37
Crew Size	5	4 – 6
Age of Vessel	31 years	7 – 45

Fishing characteristics		
Areas Fished	Mainly fish waters of the western approaches and the English channel	
Days at Sea	225	156 – 310
Fishing days	185 (83 %)	130 – 258
Steaming days	19 (17 %)	
Distance steamed	Average distance 70 miles	50 – 150 miles
Time spent steaming (days)	½ a day at most each way	Up to about 1.5 days per trip
Steaming speed (knots)	10 knots	9 to 11 knots
Towing speed (knots)	4 knots	
Towing periods	Less than 3 hours, usually about 2 to 2.5	
Type of ground	Stony to rough ground	
Number of tows per day	7	About 5 to 10

Gear characteristics		
Mesh size (mm)	90 mm	84 – 100 mm
Twine size	5 mm double twine	3 ½ mm double – 6 mm double
Length of beam (m)	9 m	8 – 10 m
Length of warp	up to 500 metres	Depends very much upon the depth of water and ground type

Other characteristics		
% main engine use for trawling output	100	
Steaming output (%)	100	
Auxiliary engine size (hp)	150	135 – 170 hp
Refrigerated fish rooms	Yes	
Ice making machines	No / yes for a minority	
Type of ice	Flake	
Ice application ratio	10%	Depends upon season, obviously use more ice in

Capital Costs

Vessel valuations

The most conventional way of measuring value is by using the Insurance Value. Most vessel owners presume vessel insurance values to be representative of the replacement costs as opposed to the true market valuation. However, most insurance companies perceive that the starting point for the insurance value is always the price paid for the vessel by the owner. The value is subsequently discounted when comparative sales prices no longer reflect the commercial valuation of the vessel.

Insurance valuations	£	£
Average Insurance value	491,000	150,000 – 900,000
Per VCU	1,350	650 – 3,500
Per kW	1,298	535 – 1,900
Per GRT	6,150	1,460 – 9,165

Licence valuations

North Sea Beam trawl licences are currently valued at £ 450 per unit, South West Beam trawl licences are somewhat less valuable at about £ 350 per unit. The track record valuations for each species are shown below:

Species	£ / tonne
Plaice	1,200
Cod	1,200
Sole	5,500
Others	1,000

	£	£
Licence value without track record	148,000	85,000 – 235,000
Average per VCU	385	350 – 450
Licence value with track record included		
Average Value	450,000	330,000 – 585,000
Average value per VCU	1,250	850 – 2,000
track record as a percentage of total	68	54 – 79

Note: Average licence values reflect the entitlement to fish in both the North Sea and Area VII. North Sea licence exchanges (excluding fish) have been transferred for £ 450 / unit. Area VII licence entitlements trade for less = £ 350 / VCU. Since some vessels fishing in Area VII have North Sea licence entitlements, a weighted average price has been calculated to be £ 385 / VCU.

Revenue and Catch Rates

Track records	Tonnes	Ranges
Plaice	22.25	0 – 57
Megrim	35	0 – 62.5
Monkfish	26.5	0 – 37
Sole	16	8 – 53
Cod	7.5	0 – 28
Others	63.75	
Total	171	

Note: Considerable differences are found in the make up catches from the two South West ports of Brixham and Newlyn. Vessels from Brixham predominantly target sole and plaice (50 per cent each), whilst vessels from Newlyn target monkfish, megrim and other mixed species.

Catch rates	Average	Range
Catch rate Per VCU (Kgs)	626	3,078 – 1,388
Catch rate per utilised kW (Kgs)*	587	208 – 1,368
Catch rate per GRT (Kgs)	2,783	788 – 4,018
Catch rate per day fishing (tonnes)	978	617 – 1,096
Catch rate per tow (Kgs)	185	98 – 200

* Beam trawlers tow at full engine capacity.

Revenues from fishing	Average	Range
Average revenue per vessel (£)	458,000	152,400 – 688,828
Average price / tonne (£)	2,630	1,400 – 3,400
Revenue per VCU (£)	1,230	869 – 2,220
Revenue per kW (£)	1,157	642 – 2,463
Revenue per GRT (£)	5,621	987 – 10,159
Revenue per day at sea (£)	2,040	887 – 3,069
Revenue per crew man (£)	86,521	34,000 – 116,000
Average revenue per tow (£)	350	152 – 526

Variable Cost Inputs
Fuel & lube oil costs

	Average	Range
Annual average fuel consumption (tonnes per annum)	573	317 – 630
Fuel consumption, litres per kW	1,535	486 – 1,940
Fuel consumption per trip (litres)	12,204	8,000 – 14,000
Oil consumption per trip (litres)	180	
Fuel consumption per fishing day (litres)	2,025	200 – 2,400
Oil consumption as a % of total fuel costs	1.45	
Fuel consumption per tow (litres / hour)	289	200 – 350
Fuel consumption whilst steaming (litres / hour)	105	100 – 250
Fuel consumption as % of total revenue	13.3	6.4 – 23.0
Annual fuel consumption per kW (£)	176.5	63 – 601
Annual fuel consumption per VCU (£)	192.8	77 – 350
Annual fuel consumption per GRT (£)	854.8	384 – 2,020
Annual average fuel consumption per day at sea (£)	329	121 – 680

Average Fuel prices recorded in main fishing ports, 1997 / 98	
Port	Price per tonne (£)
Newlyn	130.78
Brixham	132.00
Plymouth	135.00

Boxes

Beam trawlers in Area VII either use boxes whilst at sea (Brixham) or shelve the fish whilst at sea (Newlyn). Vessels from Newlyn box their fish on arrival. Box charges are included in the harbour dues.

Ice

Average Ice prices recorded in main fishing ports, 1996	
Port	Price per tonne (£)
Newlyn	22*
Brixham	25
Plymouth	25

* £ 30 to stranger vessels, including cost of transportation.

Other Variable Costs

	Average (% total revenue)	Range (% total revenue)
Commission	3.6	3 – 6.0
Harbour dues	4.0	2 – 5.5
Subscriptions and levies	0.7	0.5 – 1.2
Food & Stores	2.15	0.89 – 4.11
Crew travel	0.65	0 – 1.53
Food & Stores per crew per day (£)	7.98	5 – 11.0

Fixed Cost Inputs

Repair costs	Average	Range
Repair costs £ per VCU	233.8	137 – 350
Repair costs £ per kW	216	112 – 414
Repair costs £ per GRT	1,060.8	309 – 2,300
Repair costs £ per day at sea	384.6	182 – 551
Gear expenses		
Gear expenses £ per VCU	112.9	46 – 190
Gear expenses £ per kW	105.8	21 – 233
Gear expenses £ per GRT	523.6	59 – 1,091
Gear expenses £ per day at sea	186.7	69 – 335

Cost of equipment and frequency of replacement			
Type of gear	Costs	Frequency of replacement	
		Soft ground	Hard ground
Net 9m multi species net	£ 6,500 - £ 9,000	1 per every 2 years	1 per year
Warp 800m coil 26mm diam.	£ 3,000	1 per year	1 per year
Shoes		1 set per trip	2 pairs per trip
Tickler chain	Approx. £ 0.75p per kilo.	1 per 3 months	1 per 3 months
Beam complete with shoes 10m	£ 7,000 - £ 8,500	4- 5 years	4 – 5 years

Wheelhouse and other equipment

Most electronics are owned by South West beam trawlers, with the exception of Radar. Maintenance costs for vessels owning sounders, Decca and radio range from £ 1,135 - £3,354, with an average expenditure of £ 2,445 per annum.

Type of equipment	Cost of purchase	Maintenance charge	Frequency of replacement
Radios		1,000	5 to 6 years
Decca		750	10 years +
Sounders 5 kW – 10 kW	6,400 – 9,000	1,600 – 2,548	5 years
Radar – 14 '' inch display, 25 kW, 96 nm	7,000	2,000	5 years
Plotter 12 "	2,500	500	
Life rafts		350 - 750 per raft	

Labour

	Average	Range
Labour as a % Rev	28 %	20 – 33
Average crew wage (inc. skipper, mate and engineer)	23,900	11,480 – 32,500
Average rate for skipper	34,175	18,250 – 54,900
Average rate for mate & engineer	22,700	12,300 – 35,00
Average rate for deck hand	21,245	9,875 – 27,000

There are two crew share systems in operation.

System 1: The crew share is calculated as a percentage of the grossings, the average value taken is 25 %. This is then divided thus: - 1 share to each member of crew, but then premiums applied for more skilled fishermen. Both grade 1 engineers and ships mates receive a premium of a further 0.6 of a share and the skipper receives a premium of a further 1.5 shares, giving him 2.5 shares.

System 2: The crew share is calculated by taking away direct fishing expenses from the gross sales before allocation. The direct costs removed include commission, harbour and landing fees, stores, food, crew travel etc. The resultant sum is then divided into two. Forty per cent to the skipper, mate and crew and the remainder to cover the vessel fixed costs and profit. The crew share is then subsequently divided into crew (1 share each), mate (1 share or 1.5) and skipper (1.5 shares to 2 shares).

Insurance

Insurance costs	Average	Range
Insurance as % of insured value (£)	4%	1% – 6%
Insurance premiums £ per VCU	44.31	25 – 60
Insurance premiums £ per kW	41.4	17 – 77
Insurance premiums £ per GRT	200.62	64 – 363
Insurance premiums £ per day at sea	73.16	48 – 109

North Sea Gill Netters

	Average		
Earnings	278,139		
Costs		As % of Sales	As % of Expenses
Fishing			
Commission	12,389	4.5	5.2
Harbour dues	20,654	7.4	8.6
Subscriptions	3,912	1.4	1.6
Shore Labour	2,037	0.7	0.8
Stores	3,052	1.1	1.3
Fuel and Oil	17,000	6.1	7.1
Boxes	0	0.0	0.0
Ice	6,611	2.4	2.8
Crew Travel	2,918	1.0	1.2
Food	6,539	2.4	2.7
Other Expenses	7,443	2.7	3.1
Crew Share	94,064	33.8	39.2
Total Fishing Expenses	176,619	63.5	73.6
Vessel Expenses			
Insurance	11,249	4.0	4.7
Repairs	23,446	8.4	9.8
Gear	19,538	7.0	8.1
Hire and Maintenance	6,814	2.4	2.8
Other Vessel Cost	2,250	0.8	0.9
Total vessel costs	63,297	22.8	26.4
Total Expenses	239,916	86.3	100.0
Net Profit	38,222	13.7	

General Introduction

This analysis applies to vessels operating in the North Sea gill net sector. The data presented in the report reflect vessels of the following key characteristics:

Vessel characteristics	**Average**	**Range**
Vessel length	18.66m	13.9 – 24
Average Engine Power (kW)	185	82 – 309
VCUs	187	105 – 309
Gross Registered tonnes	44.6	21 – 71
Crew Size	4	4 – 5
Age	30 years	21 – 41
Fishing characteristics		
Areas Fished	ICES Area IVa b	
Days at Sea	224	200 – 250
Fishing days	208	191 – 228
Steaming days *	20	18 – 22
Distance steamed	130 miles	50 – 180
Time spent steaming (hours / trip)	10 hours	8 – 12
Steaming speed (knots)	9 knots	Up to 13 knots
Soak time (hours)	10 hours	6 - 12 hours
Type of ground	Wreck fishing	
Nets deployed per day	7 per day	7 – 15
Gear characteristics**		
Mesh size (mm)	170 mm	
Twine type	Multi mono (50 %) / Mono (50 %)	
Depth of nets (m)	4.9 m	
Length of net	183 m (200 yds)	
Fleets	3	

*Steaming days is effective steaming time based on a 24-hour day

** There are very few gear types used by this segment, as the main species prosecuted is cod, with the predominant other fish being caught, dogfish.

Other characteristics		
Auxilliary engine size (kW)	12	7 – 15
Type of ice	Flake	
Ice application ratio	30%	20 – 50

Capital Costs

Vessel valuations

The most conventional way of determining value is through using the Insurance Value. Most vessel owners presume vessel insurance values to be representative of the replacement costs as opposed to the true market valuation. However, most insurance companies perceive that the starting point for the insurance value is always the price paid for the vessel by the owner. The value is subsequently discounted when comparative sales prices no longer reflect the commercial valuation of the vessel.

Insurance valuations	£	£
Average Insurance value	210,000	120,000 – 450,000
Per VCU	1,134	664 – 1,980
Per kW	1,214	810 –1,980
Per GRT	4,660	2,640 - 7,715

Licence valuations

Category A North Sea White fish licenses are currently valued at approximately £ 400 per unit. The track record valuations for each species are shown below:

Species	£ / tonne
Cod	1,200
Plaice	1,200
Sole	5,500
Hake	2,000

Licence value without track record	£	£
Average value	79,234	44,803 – 84,000
Per VCU	425	350- 450
Licence value with track record included		
Average value	293,845	146,000 – 377,000
Per VCU	1,529	720 - 2,240
track record as a percentage of total	72%	

Revenue and Catch Rates

Track records	Tonnes	Ranges
Cod	154	70 – 205
Plaice	4	0 – 20
Sole	2	0 – 8
Hake	3	0 – 20
Saithe	1	0 – 4
Total	164	

Catch rates	Average	Range
Catch rate Per VCU (kgs)	1,210	555 - 1,640
Catch rate per utilised kW (kgs)	1,210	555 - 1,640
Catch rate per GRT (kgs)	4,970	2,270 - 6,470
Catch rate per day fishing (kgs)	970	570 - 1,245
Catch rate per net (kgs)	77.5	63 – 114

Revenues from fishing	Average	Range
Average revenue per vessel (£)	273,967	182,700 – 397,510
Average price / tonne (£)	1,370	573 – 1,939
Revenue per VCU (£)	1,614	930 - 2,693
Revenue per kW (£)	1,809	795 - 3,935
Revenue per GRT (£)	6,124	3,801 – 8,011
Revenue per day at sea (£)	1,235	824 –1,645
Revenue per crew man (£)	67,908	45,675 - 99,380
Average revenue per net (£)	90	61 – 120

Non Fishing Revenue		Range
Average non fishing income (£)	4,172	0 - 13,000
% total revenue	1.5	0 – 7.8

Non fishing revenue is made up from a number of sources. In respect to gill net vessels, the principal source of alternative revenue is from guard ship duty (protecting pipe-laying exercises from other fishing activities). The standard rates for a gill net vessel range from £ 1,200 - £ 1,500 per day. Only one vessel in the sample made other income from guard duties.

Variable Cost Inputs
Fuel & lube oil costs

	Average	Range
Annual average fuel consumption (tonnes per annum)	180	150 – 215
Fuel consumption, litres per kW	1	0.87 - 1.25
Fuel consumption per trip (litres)	5,450	4,560 - 6,515
Oil consumption per trip (litres)	27	23 – 33
Fuel consumption per fishing day (litres)	778	651 – 930
Oil consumption as a % of total fuel costs	1.5	
Fuel consumption whilst steaming (litres / hour)	45	36 – 55
Fuel consumption as % of total revenue	5.2	3 – 6.8
Annual fuel consumption per kW (£)	99.6	55 – 155
Annual fuel consumption per VCU (£)	92.3	65 – 145
Annual fuel consumption per GRT (£)	387.4	260 – 570
Annual average fuel consumption per day at sea (£)	76	58 – 126

Average Fuel prices recorded in main fishing ports, 1997 / 98	
Port	Price per tonne (£)
Grimsby	129.40
Scheveningen	133.00
Esbjerg	148.40
Aberdeen	149.00
Peterhead	140.00
Scrabster	120.00
Ullapool	122.00
Stornoway	115.00

Lube oil costs are currently £ 1 / litre.

Boxes
Fish is bulked at sea and boxed on shore upon landing. The cost of boxing is £0.45 / box.

Ice

10 - 12 tonnes per trip @ £ 25 per tonne.

Average Ice Prices	
Port	Price per tonne (£)
Aberdeen	26 Flake
Peterhead	26 Flake, chunk or tube
Fraserburgh	26 Flake and chunk
Scarborough	26
Grimsby	26
Stornoway	25
Kinlochbervie	26
Lerwick	26 Tube

Other Variable Costs

	Average (% total revenue)	Range (% total revenue)
Ice	2.9	1.8 - 6.6
Commission	4.6	3.3 – 6.1
Harbour dues	6.8	5.3 – 10.3
Subscriptions and levies	0.9	0.2 – 1.5
Food & Stores	2.3	2.3 – 5.1
Crew travel	0.4	0 1.5
Food & Stores per crew per day (£)	7.15	1.89 – 11.07

Fixed Cost Inputs

Repair costs	Average	Range
Repair costs £ per VCU	132	27 – 232
Repair costs £ per kW	145	28 – 300
Repair costs £ per GRT	555	105 - 1,050
Repair costs £ per day at sea	105	20 – 140
Gear expenses		
Gear expenses £ per VCU	115	45 – 185
Gear expenses £ per kW	128	40 – 245
Gear expenses £ per GRT	482	175 – 590
Gear expenses £ per day at sea	90	40 –115

Cost of equipment and frequency of replacement		
Type of gear	Cost	Frequency of replacement
		Wrecks
Nets, lines & ropes	£ 85 - £125 per net fully rigged	At least 25 % of all nets replaced each year
Dhans Floats & flags	£0.10 - £0.3 per ft £3.50 per item	Every 2 years – 3years
Bouys Anchors	£3.50 - £15 depending on size £1 - £2.50 per Kilo depending on material	

Wheelhouse and other equipment

Hire and maintenance costs for vessels operating in this segment range from £ 3,980 to £ 14,300 per annum. This reflects the differences between those vessels owning and renting various electronic equipment.

Type of equipment	Cost of purchase	Maintenance charge	Frequency of replacement
Radios		400	5 years
GPS	480	0	3 years
Sounders1kW – 3kW	2,000	250	5 years
Radar10" – 12" 4 – 6kw up to 48 nautical miles	1,850 – 4,250	630 – 850	5 years
Life rafts		350 per raft	5 years

Labour

	Average	Range
Labour as % Rev	33.4	29 – 39
Average crew wage (inc. skipper, mate and engineer) (£)	23,042	13,500 – 38,550
Average rate for skipper	30,595	18,202 - 43,726
Average rate for deck hand	20,664	11,270 – 36,830

There are two systems applicable in this fishery:

System 1: Most skippers are skipper owners. 30 % is deducted from the gross and the shares are divided into 5 (the skipper obtaining into 1 extra share).

System 2: Some vessels may be company owned. In which case the shares are calculated as follows: Skipper receives 11 % of the gross and the total crew share is 30 % of the gross. The skippers share is then deducted from the 30 %. The skipper will also receive a share of the net profit at the year end.

Insurance Premiums

Insurance premiums	Average	Range
Insurance as % of insured value	0.04	0.025 – 0.064
Insurance costs £ per VCU	62.5	45 – 90
Insurance costs £ per kW	68	37 – 125
Insurance costs £ per GRT	260	180 – 360
Insurance costs £ per day at sea	50	40 – 70

South West Gill Netters

	Average		
Earnings	200,993		
Costs		As % of Sales	As % of Expenses
Fishing			
Commission	6,890	3.4	4.0
Harbour dues	9,641	4.8	5.6
Subscriptions	1,118	0.6	0.7
Shore Labour	1,908	0.9	1.1
Stores	0	0.0	0.0
Fuel and Oil	10,058	5.0	5.9
Boxes	343	0.2	0.2
Ice	4,791	2.4	2.8
Crew Travel	1,927	1.0	1.1
Food	5,458	2.7	3.2
Other Expenses	5,354	2.7	3.1
Crew Share	69,134	34.4	40.3
Total Fishing Expenses	116,622	58.0	68.0
Vessel Expenses			
Insurance	7,524	3.7	4.4
Repairs	19,253	9.6	11.2
Gear	17,562	8.7	10.2
Hire and Maintenance	2,493	1.2	1.5
Other Vessel Cost	8,173	4.1	4.8
Total vessel costs	55,005	27.4	32.0
Total Expenses	171,627	85.4	100.0
Net Profit	29,366	14.6	

General Introduction

This analysis applies to vessels operating in the English Channel and South West gill net sector. The data presented in the report reflect vessels of the following key characteristics:

Vessel characteristics	**Average**	**Range**
Vessel length	17.25m	15.4 – 22.08
Average Engine Power (kW)	248	127 – 373
VCUs	209.8	143.56 – 281.43
Gross Registered tonnes	36.38	13.26 – 49.8
Crew Size	4	3 – 6
Vessel Age (years)	24	9 – 40
Fishing characteristics		
Areas Fished	ICES Area VII e – j	
Days at Sea	182	130 – 240
Fishing days	165	113 – 223
Steaming days (days equivalent)*	17	
Distance steamed	85 miles	20 – 150
Time spent steaming (hours / trip)	20 hrs	14 – 36
Steaming speed (knots)	8.5 knots	8 – 15
Type of ground	Mainly wreck fishing, however tangle nets are set on rough ground also and account for approx. 25 % of fishing effort.	

* Steaming days is effective steaming time based on a 24-hour day

Gear characteristics

Gear Type	Depth of net	Mesh Size	Twine Size	Length of Net	Cost / net **
Hake / Dog net	16 ft	4 – 5 inch	5/6 x 3 mono twine	200 yds / fish 100 – 120	£175
Monk / Crayfish / Turbot	5 – 8ft generally set at 3 – 5 ft	10 – 12 inches	0.57 – 0.7 mono	Av. 300 yds / fish 110 – 125	£50 - £70
Cod	10 – 12 ft	6 inch	0.5 / 0.6 mono – 5/6 x 3 mono twine	150 – 200 yds / fish 75 – 100	£75 - £100
Plaice / Sole	5 – 6 ft	5 – 6.5 inch	0.3 – 0.45 mono	150 – 350 yds / fish 150 – 200	£30 - £65
Crayfish	8ft set at 3ft	12 inch	5 x 3 mono twine	300 – 350 yds / fish 125 – 140	£70
Wreck (Saithe / Ling)	15 to 20 ft	6 inch	0.5 – 0.65 mono	200 yds fish at 100	£125 - £160

Average number of nets set: 120 to 150 on wrecks with an average soak time of 12 to 24 hours. The average number of tangle nets set tends to be lower with an average of 50 at any one time, with a soak time of 16 to 24 hours, although they may be set for up to 36 hours on occasion.

** The prices given here are for fully rigged, ready to fish, nets. The cost of the basic nets themselves is about 20 per cent of this value.

Other characteristics

Auxilliary engine size	Several vessels in the sample do not have aux. Engines. In those boats that did they are small av. 20hp and used solely for emergency pumps and lights and heat.	
Type of ice	Flake	
Ice application ratio	10 – 15%	Use more ice in summer than winter

Capital Costs

Vessel valuations

Vessel values are most commonly calculated according to the current Insurance Value. Most vessel owners presume vessel insurance values to be representative of the replacement costs as opposed to the true market valuation. However, most insurance companies perceive that the starting point for the insurance value is always the price paid for the vessel by the owner. The value is subsequently discounted when comparative sales prices no longer reflect the commercial valuation of the vessel.

Insurance valuations	£	£
Average Insurance value	144,000	70,000 – 250,000
Per VCU	541	327 – 888
Per kW	467	189 – 701
Per GRT	3,449	1,535 – 5,673

Licence valuations

Category A, pressure stock licenses in the English Channel have been valued at £ 350 per unit. The track record valuations for each species are shown below:

Species	**£ / tonne**
Cod	1,200
Plaice	1,200
Saithe	2,500
Hake	2,000

Licence value without track record	£	£
Average value	73,450	44,520 – 106,700
Average value / VCU	350	
Licence value with track record included		
Average value	221,965	113,000 – 293,178
Average value per VCU	1,128	534 – 1,953
track record as a percentage of total	64.7 %	35% - 82%

Revenue and Catch Rates

Track records	Tonnes	Ranges
Cod	8.1	2 – 13.7
Hake	17.57	0 – 34
Saithe / Pollock	13	2 – 31
Monkfish	10.5	0.1 – 33
Others	26	7 – 78.55
Total	87.8	50 – 122

Catch rates	Average	Range
Catch rate Per VCU (kgs)	425	144 – 764
Catch rate per utilised kW (kgs)	391	242 – 626
Catch rate per GRT (kgs)	2,462	1,486 – 5,187
Catch rate per day fishing (kgs)	626	300 – 870

Revenues from fishing	Average	Range
Average revenue per vessel (£, 000's)	200,993	76,175 – 335,000
Average price / tonne (£)	2,044	1,315 – 3,957
Revenue per VCU (£)	926	360 – 1,567
Revenue per kW (£)	828	204 – 1,285
Revenue per GRT (£)	5,583	3,424 – 10,600
Revenue per day at sea (£)	1,105	840 – 1,972
Revenue per crew man (£)	46,937	25,900 – 67,000

Non Fishing Revenue		Range
Average non fishing income (£)	0	0
% total revenue	0	0

Variable Cost Inputs

Fuel & lube oil costs

	Average	Range
Annual average fuel consumption (tonnes per annum)	61.5	20 – 87
Fuel consumption, litres per kW	290	84 – 509
Fuel consumption per trip (litres)	2,230	1,200 – 3,500
Fuel consumption per fishing day (litres)	340	227 – 500
Oil consumption as a % of total fuel costs	1 – 1.5%	
Fuel consumption whilst steaming (litres / hour)	25	15 – 35
Fuel consumption as % of total revenue	5 %	2.7 % - 6.7 %
Annual fuel consumption per kW (£)	43.59	15 – 69
Annual fuel consumption per VCU (£)	49	38 – 75
Annual fuel consumption per GRT (£)	310.90	175 – 473
Annual average fuel consumption per day at sea (£)	57	29 – 100

Average Fuel prices recorded in main fishing ports, 1997 / 98	
Port	Price per tonne (£)
Newlyn	130.78
Plymouth	135.00
Brixham	132.00

Boxes

Vessels from Newlyn use boxes owned by the harbour authorities, box charges are included in the harbour dues. Other vessels in the sample used boxes provided by agents and the cost is included in the sales commission.

Ice

Average Ice prices recorded in main fishing ports, 1997 / 98	
Port	Price per tonne (£)
Newlyn	22*
Brixham	25
Plymouth	25

* £ 30 to stranger vessels, including cost of transportation.

Other Variable Costs

	Average (% total revenue)	Range (% total revenue)
Ice	2.29	1.12 – 3.3
Commission	3.3	2.05 – 4
Harbour dues	4.98	1.5 – 10
Subscriptions and levies	0.6	0.5 – 0.9
Food & Stores	3.2	0 – 4.3
Crew travel	0.97	0 – 3.3
Food & Stores per crew per day (£)	7.74	6.50 - 12.30

Fixed Cost Inputs

Repair costs	Average	Range
Repair costs £ per VCU	89	60 – 214
Repair costs £ per kW	80	55 –165
Repair costs £ per GRT	529	180 – 1,350
Repair costs £ per day at sea	107	20 – 141
Gear expenses		
Gear expenses £ per VCU	88	55 – 124
Gear expenses £ per kW	80	55 – 161
Gear expenses £ per GRT	455	250 – 844
Gear expenses £ per day at sea	97	38 – 155

Cost of equipment and frequency of replacement		
Type of gear	Cost	Frequency of replacement
		Wrecks
Nets, Lines & ropes	See above	20 % of all nets replaced each year
Dhans - Poles Floats & flags	£0.10 - £0.2 per ft £5 per item	Replaced every year or 2
Net Bouys Anchors	£3.50 - £15 depending on size £2 per Kilo	Every 2 years

Wheelhouse and other equipment

All vessels own radios and sounders, hire and maintenance costs for other electronic equipment range from £ 1,250 to £ 6, 000 per annum.

Type of equipment	Cost of purchase £	Maintenance charge £ / annum	Frequency of replacement
Radios	750 – 900	400	5 to 6 years
Decca		/	10 years +
Sounders 1kW – 3kW	2,000	250	5 years
Radar 10" – 12" 4 – 6kw up to 48 nautical miles	2,650 – 4,250	630 – 850	5 years
Life rafts		350 - 600 per raft	

Labour

	Average	Range
Labour as % Rev	34%	28 % – 36 %
Average crew wage (inc. skipper, mate and engineer)	16,256	9,000 – 22,500
Average rate for skipper	26,155	12,000 – 36,000
Average rate for deck hand	13,077	6,000** – 18,000

** This value reflects part time crew earnings. From the sample the lowest identified full time salary for a deck hand is £ 9,500.

Crew Share; there are two systems applicable in this fishery:

System 1: Most skippers are skipper owners. 30 % is deducted from the gross and the shares are divided into 5 (the skipper obtaining 1 extra share).

System 2: Some vessels may be company owned. In which case the shares are calculated as follows: Skipper receives 11 % of the gross and the total crew share is 30 % of the gross. The skippers share is then deducted from the 30 %. The skipper will also receive a share of the net profit at the year end.

Insurance

Insurance costs	Average	Range
Insurance as % of insured value (£)	5.44 %	2.45% – 8.9%
Insurance costs £ per VCU	39	28 – 67
Insurance costs £ per kW	34	20 – 48
Insurance costs £ per GRT	224	114 – 385
Insurance costs £ per day at sea	41	18 – 100

Long Line Vessels

	Average		
Earnings	232,546		
Costs		As % of Sales	As % of Expenses
Fishing			
Commission	12,584	5.4	6.0
Harbour dues	15,209	6.5	7.3
Subscriptions	2,439	1.0	1.2
Shore Labour	3,129	1.3	1.5
Stores	0	0.0	0.0
Fuel and Oil	17,061	7.3	8.2
Boxes	0	0.0	0.0
Ice	4,466	1.9	2.1
Crew Travel	2,032	0.9	1.0
Food	8,367	3.6	4.0
Other Expenses	15,384	6.6	7.4
Crew Share	75,039	32.3	36.1
Total Fishing Expenses	155,710	67.0	74.8
Vessel Expenses			
Insurance	7,119	3.1	3.4
Repairs	18,519	8.0	8.9
Gear	14,928	6.4	7.2
Hire and Maintenance	7,795	3.4	3.7
Other Vessel Cost	4,052	1.7	1.9
Total vessel costs	52,413	22.5	25.2
Total Expenses	208,123	89.5	100.0
Net Profit	24,424	10.5	

General Introduction

This analysis applies to vessels exclusively using long line gear, however the vessels represent a mixture of auto - liners and manual liners. The data presented in the report reflect vessels of the following key characteristics:

Vessel characteristics	**Average**	**Range**
Vessel length	18.96m	15.73 – 24.17
Average Engine Power (kW)	234	128 – 328
VCUs	224.18	139 – 311
Gross Registered tonnes	43.41	21 – 71
Crew Size	5	3 – 8
Vessel Age	19	9 – 31
Fishing characteristics		
Areas Fished	This has been proven to be a highly migratory segment with many vessels in the sample moving between the North Sea and the West of Scotland or English Channel on a seasonal basis. Others remain in the North Sea all year round.	
Days at Sea	217	185 – 235
Fishing days	161	93 – 204
Steaming days	56	40 – 93
Distance steamed	50 miles per trip	20 to 200 miles
Time spent steaming (days)	1 days	0.5 – 2 days
Steaming speed (knots)	9.5 knots	8 – 14
Type of ground	All hooks set on open, usually rough ground	
Number of lines deployed	20 per day	10 – 25
Soak time	4 hours	3 - 6
Hooks per line	600	400 – 1,250
Hooks per day	15,000	10,000 – 30,000
Bait type	For vessels targeting cod the main baits used are mackerel and squid, both of these have equal attraction to other species such as dogfish, skate, ling and conger.	
Bait used (tonnes per trip)	Average 1.5 - 3	At £ 500 per tonne

Other characteristics		
Steaming output (%)	95 – 100	
Auxiliary engine size (hp)*	200	175 – 225 hp
Refrigerated fish rooms	Yes	
Ice making machines	No	
Type of ice	Flake	
Ice application ratio	15%	Varies from 10 % - 25%

* Many of the smaller vessels in the sample operate manual line systems and therefore do not have a requirement for auxiliary engines.

Capital Costs

Vessel valuations

The most conventional of determining vessel value is by using the Insurance Value. Most vessel owners presume vessel insurance values to be representative of the replacement costs as opposed to the true market valuation. However, most insurance companies perceive that the starting point for the insurance value is always the price paid for the vessel by the owner. The value is subsequently discounted when comparative sales prices no longer reflect the commercial valuation of the vessel.

Insurance valuations	£	£
Average Insurance value	245,000	160,000 – 370,000
Per VCU	1,131	805 – 1,630
Per kW	1,102	823 – 1,600
Per GRT	6,146	3,512 – 9,300

Licence valuations

Bare category A North Sea pressure stock licenses are currently valued at £ 400 per unit. The track record valuations for each species are shown below:

Species	£ / tonne
Cod	1,200
Hake	2,000
Others	1,000

Licence value without track record	£	£
Average value Per VCU	89,650 400	55,633 – 124,400
Licence value with track record included		
Average value Per VCU	302,300 1,303	160,990 – 458,000 1,034 – 1,474
track record as a percentage of total	68.77%	61% – 73%

Revenue and Catch Rates

Track records	Tonnes	Ranges
Cod	63.4	20 – 94
Others (incl. Dogfish, skate, ling and conger)	135	0 – 280
Total	199	

Catch rates	Average	Range
Catch rate Per VCU (Kgs)	829	507 – 1,040
Catch rate per utilised kW (Kgs)*	804	460 – 1,035
Catch rate per GRT (Kgs)	4,400	2,300 – 6,000
Catch rate per day fishing (Kgs)	1,193	470 – 2,000

Revenues from fishing	Average	Range
Average revenue per vessel (£ 000)	232,546	156,000 – 322,000
Average price / tonne (£)	1,249	890 – 1,970
Revenue per VCU (£)	1,046	881 – 1,122
Revenue per kW (£)	1,016	866 – 1,218
Revenue per GRT (£)	5,612	4,403 – 7,233
Revenue per day at sea (£)	1,075	800 – 1,600
Gross revenue per crew man (£)	49,680	39,000 – 64,400
Average revenue per tow (£)	1,275	929 – 1,839

Non Fishing Revenue		Range
Average non fishing income (£)	1,240	0 – 3,894
% total revenue	0.53%	

Non fishing revenue is made up from a number of sources. In respect to vessels in this segment principal source of alternative revenue is from guard ship duty (protecting pipe-laying exercises from other fishing activities). The standard rates for a long liner are £ 1,200 - £ 1,500 per day. Only two vessels in the sample made other income, neither from guard duty.

Variable Cost Inputs

Fuel & lube oil costs

	Average	Range
Annual average fuel consumption (tonnes per annum)	47	39 – 54
Fuel consumption, litres per kW	232	138 – 344
Fuel consumption per trip (litres)	1,135	460 – 1,575
Oil consumption per trip (litres)	25	6 – 57
Fuel consumption per fishing day (litres)	224	180 – 250
Oil consumption as a % of total fuel costs	5.9%	2.5 – 10
Fuel consumption whilst steaming (litres / hour)	50	25 – 72
Fuel consumption as % of total revenue	7.48	4.76 – 9.2
Annual fuel consumption per kW (£)	77	41 – 111
Annual fuel consumption per VCU (£)	79	42 – 102
Annual fuel consumption per GRT (£)	424	354 – 662
Annual average fuel consumption per day at sea (£)	80	71 – 125

Average Fuel prices recorded in main fishing ports, 1997 / 98	
Port	Price per tonne (£)
Lowestoft	124.26
Grimsby	133.00
Aberdeen	149.00
Peterhead	140.00
Ullapool	122.00
Stornoway	115.00
Plymouth	135.00

* Fuel prices at various ports are subject to special discounts for bulk purchase and so the above are used as a guide only. It should also be noted that the figures are annualised averages and do not represent the daily fluctuations that occur.

Boxes

All of the vessels in the sample box fish at sea, the boxes are supplied by salesmen and the charge is included in the salesmen's commission figure quoted by many vessels. One vessel in the sample owned its own boxes.

Ice

Average Ice Prices	
Port	Price per tonne (£)
Lowestoft	25
Scarborough	26
Grimsby	26
Aberdeen	26 Flake
Peterhead	26 Flake, chunk or tube
Ullapool	24
Stornoway	25
Plymouth	25

Other Variable Costs

	Average (% total revenue)	Range (% total revenue)
Ice	1.94%	1.8 – 2
Commission	5.5	5 – 7.2
Harbour dues	7.7	6.7 – 8.9
Subscriptions and levies	1	0.5 – 1.5
Food & Stores	3.5	3.1 – 3.8
Crew travel	0.9	0.5 – 1.34
Food & Stores per crew per day (£)	14.85	6.16 – 24

Fixed Cost Inputs

Repair costs	Average	Range
Repair costs £ per VCU	85	50 – 105
Repair costs £ per kW	83	49 – 112
Repair costs £ per GRT	448	281 – 665
Repair costs £ per day at sea	88	50 – 163
Gear expenses		
Gear expenses £ per VCU	75	49 – 131
Gear expenses £ per kW	73	44 – 119
Gear expenses £ per GRT	395	286 – 590
Gear expenses £ per day at sea	70	50 – 95

Cost of equipment and frequency of replacement		
Type of gear	Cost	Frequency of replacement
Hooks	£ 27 to £ 50 per 1,000	Constant replacement, average use 50,000 – 150,000 hooks per annum
Mono (4mm)	£20 per 1,000m	
Bouys	£ 0.15 to £ 0.22 per inch diameter	Every 2 years
Anchors	£ 1.00 to £ 2.50 per kilo	Every 2 to 3 years
Ropes 4mm	£ 5.50 per 100m	2 years
6mm	£ 7.00 per 100m	"
8mm	£ 12.00 per 100m	"

* On average a complete fleet of gear is replaced each year, in addition to the ongoing replacement of hooks.

Wheelhouse and other equipment

The majority of vessels rent part and own part of the on board electronic equipment. Hire and maintenance costs range from £ 3,900 to £ 14,320, with an average cost of £ 7,794 per vessel.

Type of equipment	Cost of purchase	Maintenance charge	Frequency of replacement
Radios		400	5 years
GPS	480	0	3 years
Sounders1kW – 3kW	2,000	250	5 years
Radar10" – 12" 4 – 6kw up to 48 nautical miles	1,850 – 4,250	630 – 850	5 years
Life rafts		350 per raft	5 years

Labour

	Average	Range
Labour as a % Rev	32	30 – 38
Average crew wage (inc. skipper, mate and engineer)	15,324	11,900 – 20,446
Average rate for skipper	25,530	23,868 – 28,762
Average rate for deck hand	14,822	11,935 – 19,175

Two crew share systems have been identified:

System 1: An average of 32 per cent of the gross fish sales is taken and divided evenly between the crew. The skipper receives an extra share and the crew benefit from various bonus schemes at the end of the year. Trainees are paid half a share.

System 2: After direct fishing expenses have been paid the remainder is divided evenly between the boat and the crew. Each crew man receiving 1 share. The Skipper / owner receives an extra percentage from the boat.

Insurance

Insurance costs	Average	Range
Insurance as % of insured value	4 %	2 – 6
Insurance costs £ per VCU	43	36 – 50
Insurance costs £ per kW	42	36 – 46
Insurance costs £ per GRT	223	194 – 260
Insurance costs £ per day at sea	42	30 – 69

Slipway charges

Grimsby Prices at Grimsby reflect the norm in the Central North Sea (Grimsby, Urk).
Hauling charge £ 233.
Basic charge £ 210 for hauling and £ 40 / day - average daily rate is £ 440.

Scarborough From 1 April to 30 September £ 0.64 per metre per day.
1 October to 31 March £ 0.22 per metre per day. A £ 7.00 charge is made for each use of the slipway.

Peterhead £ 115 basic charge + £ 2.20 / metre per 12 hours.

Wick Vessels less than 40 ft, £140.00 for the first 24-hour period and then £30.00 per day or part thereafter. Vessels greater than 40 ft £170.00 for the first 24 hours and £ 30.00 per day thereafter. Slipway electricity is charged at £6.00 minimum and lighting at £ 0.65 per hour.

Scrabster Slipway charge of £ 5.00 per day or part thereof.

Stornoway

Vessels < 40ft	£
First 12 hour period	54.00
Second 12 hour period	26.00
Succeeding 24 hour periods	20.00
Vessels 40 – 60 ft	
First 12 hour period	73.00
Second 12 hour period	36.00
Succeeding 24 hour periods	29.00
Vessels 60 – 70 ft	
First 12 hour period	90.00
Second 12 hour period	46.00
Succeeding 24 hour periods	36.00
Vessels 70 – 80ft	
First 12 hour period	118.00
Second 12 hour period	59.00
Succeeding 24 hour periods	46.00

Newlyn £ 85.00 hauling charge and for the first 48-hour period on the slip. The charge is £ 10.00 per day for the next five days and £ 20.00 per day thereafter. In addition to this there is a charge made by the Shipwright of £ 30.00 to £ 35.00.

Many beam trawlers from the south west of England travel to the North Sea ports for vessel repairs and maintenance, as such the prices charged at Grimsby are representative of the charges that these vessels can expect to incur.

Northern Ireland The cost of use of the slipway is the same in both the ports of Kilkeel and Portavogie. £ 110.00 for the haulage onto and removal from the slip, plus £ 40.00 per day for the first three days of occupancy and then £ 50.00 per day thereafter.

Harbour Dues:

Lowestoft	£ 0.78 / GRT per 3 days. Minimum charge £ 31 and after first 3 days, £ 0.78 / tonne / week. Standing charge of £ 8.92 / tonne of fish landed.
Grimsby Urk / Ijmuiden	£ 3.60 / metre / week dock dues plus wharfage £1.48 ad valorem (6 %including sorting weighing, box charges etc).
Scarborough	Charges made at £ 0.93 per metre overall length. Compound rates apply at £ 4.60 per metre per annum. The landing of fish is charged at 4.5 per cent of the gross sales value. Overlanded fish is charged at 3 per cent of gross sales value.
Whitby	Local keel boats have compounded rates, for vessels > 9m £ 180.53 plus £ 19.90 per metre of overall length. Other fishing boats > 9m £ 153.00 plus £ 16.85 per metre. Visiting boats are charged at £ 11.30 per day, £ 45.30 per week or £ 111. 80 per month. Wharfage rates apply at 4 per cent of gross fish sales. Overlanded fish are charged at 3 per cent.
Aberdeen	£ 0.12 / GRT, plus 2.5 % of gross sales. £ 0.12 covers the first and second 14 day periods. From then £ 0.18 / GRT per week for the next four weeks, From then £ 0.24 / GRT / week, plus £ 5.00 water charge.
Peterhead	
15 - 34m	£ 40.00 per week plus fish levy of 2.5 % (+ VAT) plus water (£ 6.80 / landing). Composition dues (landing + 10 / annum = £ 80. 00, excluding laying up dues which come into effect after 2 weeks.
> 34 m.	£ 0. 35 / GRT / week plus fish levy of 2.5 % (+ VAT) plus water (£ 6.80 / landing). Composition dues (landing + 10 / annum = £ 80. 00, excluding laying up dues which come into effect after 2 weeks.
Fraserburgh	14 –16.99m Berthing dues £ 0.70 per metre. 17 – 19.99m £ 0.85 per metre, 20 – 22.99m £ 1.00 per metre and 23 – 25.99m £ 1.15 per metre. These rates apply per week for the first and second week of berthing. In addition to these charges there is a commission of 2.5% charged on fish landed. For vessels not landing fish the berthing charge is doubled.

Wick

Composition rates apply and are charged half yearl\y and in advance. For other vessels not subject to compound rates a charge will be made for each entrance to the harbour and is charged according to GRT.

	Composition	Other vessels
Vessels < 15 GRT	£40.00	£15.00
Vessels 15 – 50 GRT	£80.00	£20.00
Vessels 50 – 90 GRT	£100.00	£ 24.00
Vessels 90 – 150 GRT	£150.00	£26.00

In addition fish landings are subject to a 2 % charge. Water is charged at £ 0.90 per tonne with a minimum monthly charge of £ 6.00 applicable.

Scrabster

Compounded charges apply to those vessels using the harbour more than 20 times in any one year.

Vessel Size	£ per annum
25 to 50 GRT	179.00
50 – 75 GRT	265.00
75 – 100 GRT	352.00
100 – 150 GRT	519.00
150 – 200 GRT	692.00
200 – 300 GRT	1,032.00
> 300 GRT	1,096.00

For vessel not subject to compound charges, berthing is charged at £ 0.20 per GRT on each occasion of landing.

Local rates apply for those vessels locally owned and registered.

Vessel Size	£ per annum
15m to 18m	272.00
18m to 21m	358.00
21m to 24m	540.00

Additional charges are made for the landing of fish, at 2% of gross sales.
Water is charged at £ 1.03 per tonne.

Mallaig For all demersal and pelagic fish landed there is a charge of 2.5 per cent of the gross value. The payment of these dues is divisible 50 / 50 between the fishermen and the buyer. Berthing charges are also made. Vessels 30 to 60 feet charged at £20 per week and 60 to 80 feet, at £25 per week. Compound rates apply for vessels regularly landing into the port and are; 30 to 60 ft £ 60 per year and 60 to 80 ft at £ 80 per year. In addition to these charges there is a water charge made every landing, compounded to £20 per annum or with a minimum charge of £2.00 per visit / week.

Stornoway Composition rates apply, vessels up to 40 ft £ 124.00 per half year. Vessels greater than 40 ft £ 166.00 per half year. For non-local vessels a charge is made for each entrance to the harbour. For landing fish £ 0.25 per GRT, Using the quay £ 0.25 per GRT, Fuelling £ 0.29 per GRT. The minimum charge for using the harbour is £ 14.35.
Commission is charged at 2.5% on all fish landed.
Compound rates apply to water supply, vessels < 40 ft £20.00 per annum, vessels > 40 ft £ 50.00 per annum. Other vessels are charged £ 1.14 per tonne with a minimum charge of £ 10.00.

Newlyn Local vessels are subject to compound charges. £ 60 / annum for vessels in excess of 20 m. This includes keelage dues, boxes, weighing and selling. There is a 2 % commission charged on fish sales. There is an annual water charge of £ 55 / annum (for vessels over 20 m). For stranger vessels, there is no keelage charge but a standing charge of £ 0.05 per box plus £ 5.00 for use of scales and 2 % commission on sales.

Brixham Local vessels pay £ 4.71 / metre / annum. Stranger vessels are charged £ 0.73 / m / day up to 4 days and then £ 3.14 / m / week. Quayside births: £ 1.21 / m / day. Water is £ 5.33 / tonne. Vessels are charged 2.5 % on sales. There is also a 1.5 % charge for fish over-landed and sold in Brixham.

Plymouth: £ 5.75 / ft / annum. Vessels are charged 2 % commission on sales.

Northern Ireland

Harbour dues are the same in all three of the main ports in Northern Ireland; Kilkeel, Portavogie and Ardglass. There is an annual berthing charge of £ 50.00 for all vessels over 10 metres overall length plus 2.2 per cent commission on sales.