

**Quality Audit of the
Port of North Shields
- August 1997**

Confidential Report No. CR130

September 1997



The Sea Fish Industry Authority

Seafish Technology

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Consultancy Report No. 130

Authors: M. Myers
M. Emberton
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Summary

This report presents the findings of a Quality Audit of the fishing port of North Shields. The audit examined the quality of raw material supplied to the port, standards of physical infrastructure, operating practices and management controls.

Generally the quality of white fish assessed was good but improvements in boxing and icing at sea could be made. The Nephrops scores were also generally good but some allowance has to be made for the use of sodium metabisulphite. Boxing and icing practice fell short of Seafish recommendations.

The new market and management structure provides excellent facilities for the industry. Improvements are recommended on the handling of fish and Nephrops prior to sale and despatch respectively. Recommendations are made for cleaning and waste schedules.

Fly-tipping to the rear of the market must be stopped. Seafish strongly recommends suitable upgrading of the area to the rear of the fishmarket to improve hygiene and the public perception of the fish industry.

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1. Introduction

The increasing demands of the corporate food sector and the requirements of food safety legislation have given impetus to the need to raise quality and operating standards within the fish industry. This was recognised by the Industry Task Force that identified the port sector as a potential weak link in the production and distribution chain.

In response to the recommendations of the Task Force, Seafish introduced an initiative targeted at raising standards by means of port quality audits. The audits examine and report on: the quality of fish supplies to the port, standards of physical infrastructure, operating practices and management controls necessary. Action is then encouraged at local level.

The audit covers the operations from landings at the quayside (or overland deliveries to the market) to the despatch of fish from the market after sale. It does not cover standards on fishing vessels (other than in the quality of raw materials supplied to the market) or within fish factories. The report is confidential to the trade and to the North Shields Fish Quay Development Company and is not for publication.

This report presents the findings of a quality audit of the port of North Shields undertaken in August 1997. It was carried out with the full collaboration and participation of fishermen, salesmen, buyers/merchants, North Shields Fish Quay Development Company and operators of ancillary services.

2. Survey Procedures

The survey took place over a period of three days; 11-13 August inclusive. Sampling was carried out by a small team of Seafish technologists and quality assurance officers. At the time of the survey, landings were predominantly of Nephrops from vessels working a distant fishery on 3.5 to 5 day trips. These same vessels also landed a small by-catch of white fish. The remaining boats fishing 24 hour trips in local waters were landing white fish.

All of the fish examined were landed for sale on the fishmarket. Wherever possible, the assessment was made as the fish were landed. Up to 7 boxes from each vessel were assessed. Fish samples were taken from throughout each box and assessment made of:

- freshness (using the Torry Sensory Assessment system (Appendix I))
- gutting and washing
- temperature and icing practice
- box weights & care in filling

Note was also made of the trip length and any vessel operating practices or equipment which may have affected fish quality (e.g. fishroom insulation/chilling, fish handling systems, washing/gutting machines, etc.).

All Nephrops sampling was undertaken at the time of landing. Again, up to 7 boxes were sampled from each vessel using the methods outlined above.

In all, 8 vessel landings were sampled, including one consignment from Blyth. A total of 47 boxes were examined (15 of Nephrops and 32 of white fish).

3. Raw Material Supplies

3.1 Freshness Quality

White fish

The overall average freshness of landings was 8.5 on the Torry assessment scale (for details of Torry scoring and its relationship with eating quality and EU grades see Appendix I).

Table 1 shows the average and range of freshness of white fish landed by all vessels and that by Nephrops boats and dedicated white fish trawlers.

Table 1 - Freshness quality of white fish

Torry Score (out of 10)	All vessels	Nephrops trawl by-catch	Dedicated white fish trawl
maximum	10.0	9.0	10.0
minimum	6.0	6.0	7.5
average	8.5	8.0	9.0
Average Trip Length (days)	3.7	4.8	1.0

The white fish vessels worked 24 hour trips and freshness scores were relatively high. The lowest score of 7.5 however, shows a lack of care with the catch and potential for improvement.

Given the trip lengths worked by the Nephrops trawlers, the white fish by-catch quality was generally good. There were notable exceptions the fish which scored 6 were only just marketable, being at the lowest limit of palatability.

Nephrops

The survey team were told that metabisulphite treatment had been widely used by tripper vessels to extend the storage life of their Nephrops. When metabisulphite is used, the aim is to retard the rate of external blackening usually indicative of quality loss. However, Seafish studies have shown that metabisulphite has little effect as an overall preservative and internal flesh deterioration continues (see 1994/29/FT in Appendix III). The prawn may therefore look better than it really is.

The Torry Sensory Assessment system is designed to assess freshness by external factors only and metabisulphite may favourably skew the data from this particular test. As there was no valid way to compensate for chemical effects during our on-site assessments, it was decided to score the Nephrops 'as seen' and the results (Table 2) should be interpreted with caution.

Table 2 - Freshness scores for Nephrops

	Torry Scores (out of 5)
maximum	4.5
minimum	3
average	4

The inspection generally returned good scores for the trip lengths involved. However the lowest score of 3 shows a box being landed at the lowest state of palatability. Once again, there is some inconsistency in catch handling which could be improved.

3.2 Gutting & Washing

Spoilage of fish after death is caused by enzymic and bacteriological action, particularly within the gut cavity. By removing the gut contents and washing the fish, the rate of spoilage is reduced. It must however be done efficiently or the bacteria from the gut cavity can be spread to the cut flesh which will promote spoilage.

White fish

Twenty-nine boxes of fish were examined for gutting. The results are shown in Table 3.

Table 3 - Standard of gutting

	%
good	71
satisfactory	29
poor	0

Gut removal was very good and no poorly gutted fish were found. However, 11% of the samples observed had fillet damage from careless knife work. Such 'fillet slash' was mostly found within boxes of flatfish. Careless gutting reduces the yield and value of the product.

Thirty-two boxes of fish were assessed for quality of washing. The results are shown in Table 4.

Table 4 - Standard of washing of white fish

	%
good	62
satisfactory	31
poor	7

Overall, washing was found to be good.

Nephrops

All of the whole Nephrops were found to be very well washed. The two boxes of tails examined contained a lot of seasonal 'green' gonad material and could have benefitted from more thorough washing.

3.3 Temperature Control

Temperature control is by far the most significant factor affecting the rate of deterioration of fish. Typically, white fish remain acceptable for 10-12 days after capture when well iced but this can be reduced to a day or two if left unprotected at summer ambient temperatures. Seafish recommend that both white fish and Nephrops are top, middle and bottom iced at sea (see Appendix III for relevant Seafish publications).

White Fish

All fish had been iced at sea but not in accordance with best practice. Inspection of 32 boxes showed that most of the icing was 'top only', as detailed in Table 5.

Table 5 - Icing of white fish

Layer in box	Number of boxes
top	32
middle	3
bottom	4

The overall average temperature of white fish landings was 5.1°C in a range of -1.5°C to 14.2°C. Table 6 shows the average temperatures and ranges for landings of white fish by nephrops boats and dedicated white fish trawlers.

Table 6 - White fish temperatures

Temp. °C	Nephrops trawl by-catch	Dedicated white fish trawl
maximum	8.2	14.2
minimum	-1.5	1.1
average	2.4	5.4

The lower temperatures measured from the Nephrops by catch are attributed to the longer trip length and a correspondingly longer time for the ice to take effect. Whilst all vessels used ice and all fish had been chilled to varying degrees, the results could be improved significantly by proper use of ice within each box.

Nephrops

All of the Nephrops landed were from tripper vessels (3.5 to 5 days) and all had been iced at sea. However, the boxes had been top iced only.

The average temperature of nephrops on landing (prior to any washing to remove ice) was found to be 6.8°C in a range of 1.1°C to 16.5°C.

The crews were very busy during landing. Sampling was often delayed until an opportunity arose during a suitable lull in activity. By the time temperatures were measured, many boxes had stood in full sunshine for 20-30 minutes. The highest temperatures observed are attributed to this delay. However, it should be noted that Nephrops were exposed for even longer in the sun whilst waiting for despatch to merchants (see Operating Practices, page 11).

3.4 Box filling**White Fish**

All vessels were using 70-75 ltr stack-only boxes. The Seafish recommended net weight for this type of box is 50 kilos. Of the 24 boxes weighed, 16 were found to be overweight. The worst box was overfilled by 36%. Such overfilling does not allow for proper icing, results in poor and uneven chilling, crushing damage and lower quality fish.

Nephrops

The Seafish recommended net weights for this type of box are 19 kilos of whole Nephrops and 22 kilos of tails. Only 7 boxes were weighed and of these 6 were overweight to a maximum of 42%. It should be noted that if proper icing is introduced, recommended weights must be followed to ensure good chilling and no crush damage.

4. Physical Infrastructure

4.1 Background

The Fish Quay Development Company was formed in 1992 as a non-profit making consortium of the North Shields Fisheries Associations, Fishing Agents, Tyne and Wear development Corporation and North Tyneside Council. A feasibility study of the fish quay by Seafish recommended that the company take management control and upgrade the existing fish market to comply with EU Health and Hygiene Directives.

The refurbishment project was completed in May 1996 at a cost of £1.5 million which was funded through a partnership involving the North Shields Fish Quay Development Company, Tyne and Wear Development Corporation, Port of Tyne Authority, North Tyneside Council, the European Regional Development Fund and the Ministry of Agriculture Fisheries and Food. A plan of the refurbished fish quay is shown below in Figure 1.

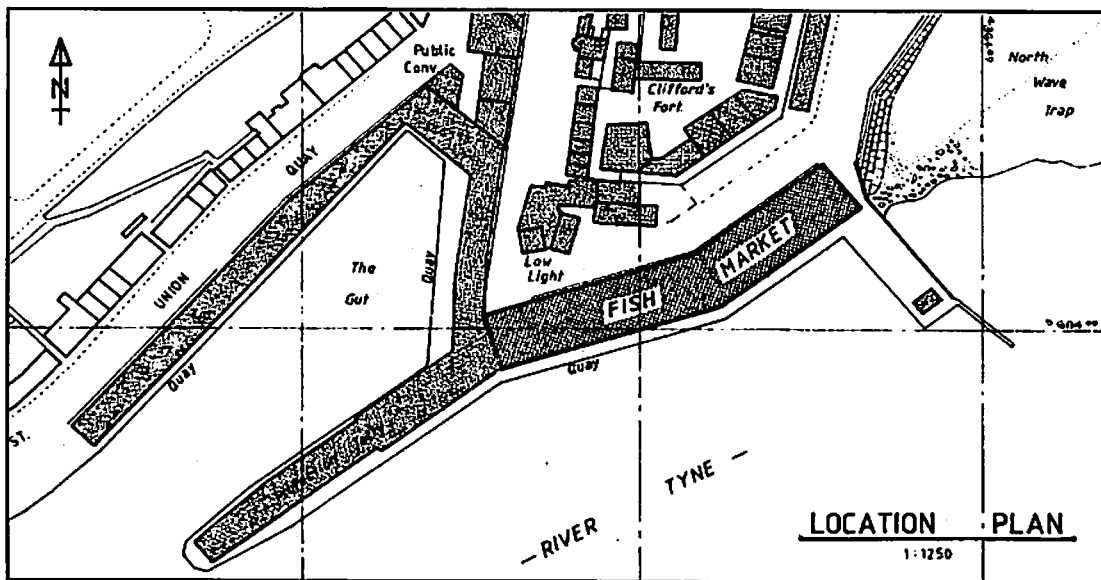


Figure 1 - The new fish market

The new market provides North Shields with the excellent facilities necessary to support the long term future of the port. More detailed comment is made on the improved infrastructure in the following sections.

4.2 Landing Quay and Equipment

The original piled structure has been recently renovated and capped with a new reinforced concrete apron. The new apron is of excellent construction, well lit and allows landings directly into the market. Although the quay is narrow and can become congested, access is available from both ends of the market. (Figure 2). Larger vessels land using their own gear. Smaller vessels are provided with a small davit at the upstream end of the quay.



Figure 2 - The quay apron is blocked by a single vessel landing

4.3 Fish Market and Equipment

The new fish market is well designed and meets the requirements of EU Regulation 91/493. The market hall is spacious, well drained and of hygienic construction (Figure 3). The chill store situated on the auction



Figure 3 - The market hall

agents. Four hand pallet trucks are available for moving boxes.

floor is excellent (Figure 4). Temperatures within the chill are monitored and recorded automatically. The grading tables are made from stainless steel to a good standard. Scales are provided when needed by vessel

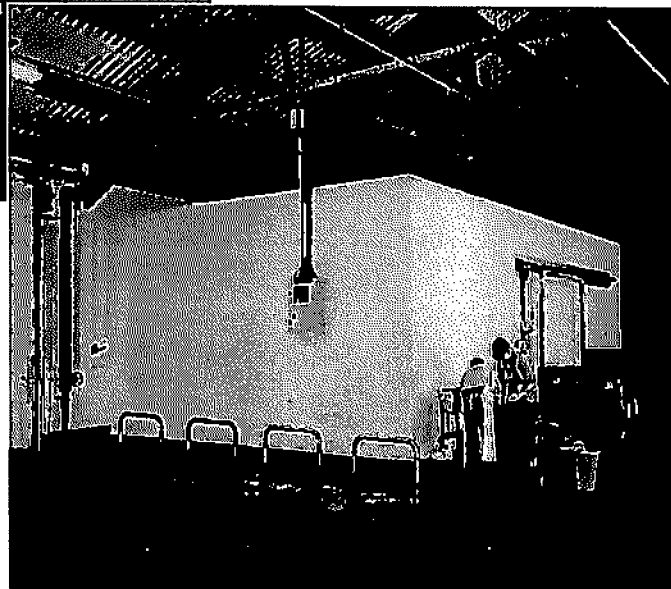


Figure 4 - The chill store

4.4 Cleaning and Waste Facilities



Figure 5 - A quayside skip is provided for rubbish

Cleaning equipment included a portable power hose, 'squeegee', brush and shovel. The equipment and materials were stored properly. Potable water is available at several outlets along the quay and within the market.

Figure 5 shows the skip provided by the Company for general waste. Waste oil disposal is the responsibility of individual vessels.

4.5 Roads, Access and Parking

The old quay surface is poor in places, particularly outside the Quay Master's office.

Access and parking to the rear of the market is limited. The cobbled road is in poor condition and is poorly drained. Access from the market to this road is poor, a step in the ramp prevents access by forklifts.

Many of the buildings to the rear of the market are unoccupied and dilapidated encouraging vandalism, fly-tipping and pest control problems.

4.6 Transport

Transport used in the despatch of fish from the market was either small vans used by hawkers or larger fixed axle vehicles operated by merchants. The only exception was the use of a car and trailer. However, the overall standard of vehicles used was good both with regard to hygienic design and temperature control.

4.7 Ice Supply

An ample supply of flake ice is available from Tynemouth Ice Ltd. The plant (Figure 6) can produce 150 tonnes/day and can store up to 80 tonnes.

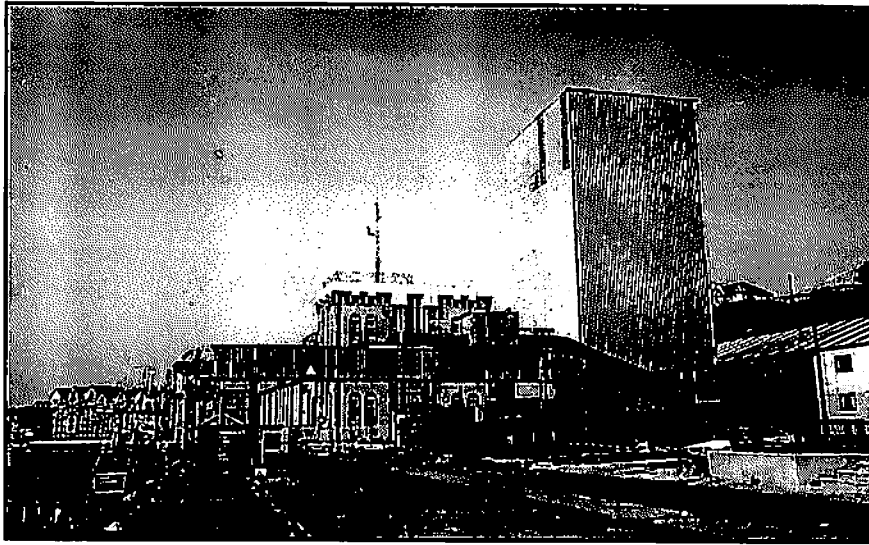


Figure 6 - The ice plant

4.8 Box Washing and Storage

Good box washing services are provided by the agents, Caley and North Shields Fish Selling. NSFS have a pressure washer and Caley have an automatic three stage tunnel washer. Badly soiled boxes sometimes require washing twice. Storage of Caley boxes is within an open and mostly unsurfaced yard.

5. Operating Practices

5.1 Landing, Handling and Preparation for Sale



Figure 7 - Flatfish being graded and repacked

White fish

Discipline in the use of doors was good. Care was taken to ensure that doors on the landing quay were closed when not needed for access, in order to keep the market hall cool.

Fish for the market were transferred using pallets and hand pallet trucks with little delay or exposure to contamination. If landed several hours ahead of the sale, fish were placed in

the chill store. However, it was noticed that fish were removed from the chill and laid out at 0400 hrs, more than three hours ahead of the auction. This was unnecessary and fish could stay in the chill until shortly before 0700 hours. Flatfish were tipped, graded, repacked and weighed prior to the sale (Figure 7). Inspection of the repacked fish showed that they had not been adequately re-iced (Figure 8).

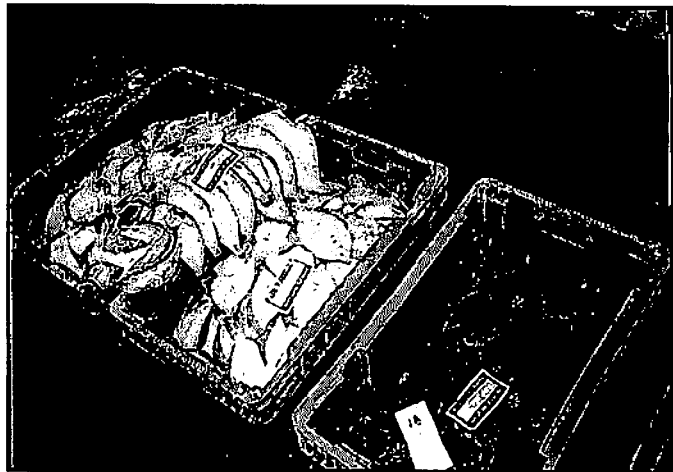


Figure 8 - Un-iced flat fish on auction floor

Nephrops

All of the Nephrops were landed onto the market quay to await road transport to local buyers. Before being loaded onto trucks, the Nephrops were thoroughly hosed down to remove any remaining ice (Figure 9). Where weighing at sea is not practised, this is the only way that buyers and sellers can confidently determine the net weight of chilled Nephrops.

The temperatures measured whilst the Nephrops awaited washing were very high (average 6.8 in a range of 1.1°C to 16.5°C). In addition to this

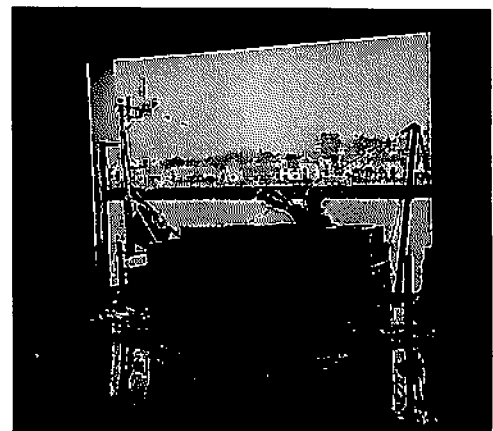


Figure 9 - Iced Nephrops being hosed down prior to weighing

problem, the time delay in shifting pallets to merchants premises also encouraged seagulls and the associated risks of contamination. These were pointed out at the time and the management promptly allowed the Nephrops to be transferred directly into the relatively cool market building to await transport. However, it was also noted that the water used to remove ice was very warm (17°C). Therefore temperatures after washing were found to have risen further.

It was noted that a diesel forklift was repeatedly allowed into the fish market hall to move pallets. Diesel engines do not meet food hygiene legislation requirements and electric trucks are recommended.

5.2 Sale

The auction sale (Figure 10) commenced at 0730 hours. All of the boxes were laid out for sale in a sensible way with adequate walkways left between tiers to discourage walking on the boxes. The fish display was well lit. On the days of the audit the sale was quick and the boxes were promptly removed from the market.

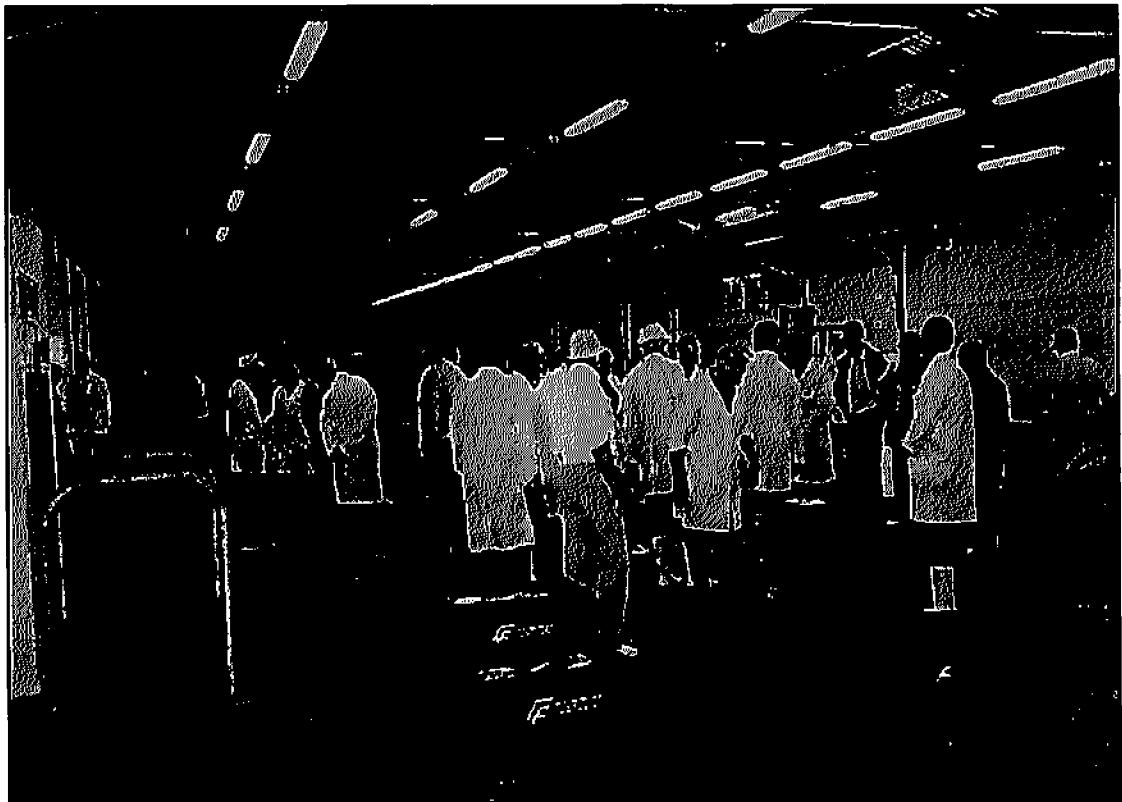


Figure 10 - The auction sale in progress

5.3 Hygiene and Cleaning

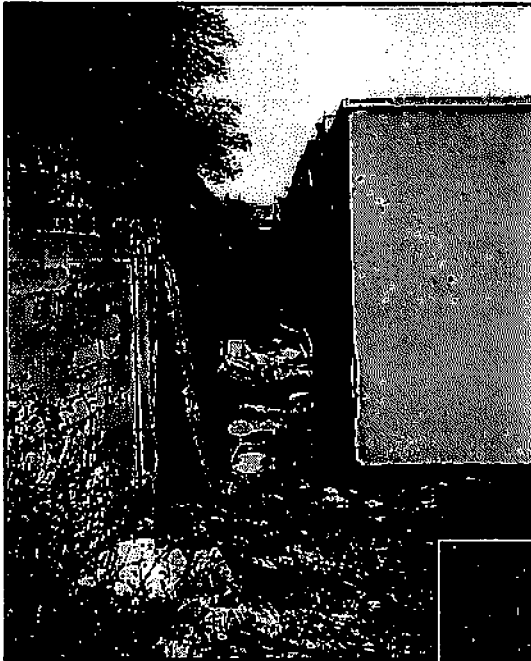


Figure 12 - Rubbish hidden behind commercial units

rats, bad odours and presents a very poor image to the public. Figures 11 and 12 show typical hazards seen at the time of the audit.

The general standards of hygiene and cleaning are excellent. The quays are kept tidy. The interior of the market and chill were very clean. With regard to personal hygiene, standards of dress could be improved. No-one was seen smoking or eating on the market floor.

There is a major problem¹ of fly-tipping in the area immediately behind the Fish Quay (this area is outside the jurisdiction of the Fish Quay Development Company). This tipping, often of fish waste, encourages



Figure 11 - Fish waste casually dumped

¹ Since the time of the audit it is reported that this problem has largely been overcome

6. Organisation and Management

The North Shields fish quay and market complex is owned and managed by The North Shields Fish Quay Development Company.

There is no separate 'port user group'. The Company Board represents all sectoral interests (see Table 7) and communication with all port users is encouraged by an 'open door' policy. The General Manager sits on the Tyne Port Users Association ensuring that the fish industry is represented in the wider port environment. Ancillary services such as ice supply, fuelling, chandlery, fish selling etc. are in private ownership.

Table 7: Membership of NSFQD Company Board

Sector	Membership
North Shields Fishermans Association	2
North Shields Fish Trades Association	2
North Shields Fish Trades Protection	2
Tyne & Wear Development Corporation	1
Local Authority	2
Unaffiliated	1

The port is open for landing 24 hours a day. Daily management is led by the General Manager who supervises two Quay Masters. The Quay Masters provide berthing and market services. Continuity of this supervision is maintained between shifts by a security contractor. Security on the fish market is good. Admittance to the public is restricted to a viewing room and trade access is limited to pass holders.

There is no Waste Management Plan as recommended by the Merchant Shipping Notice M1659/MARPOL 73/78 but a skip is provided for general waste and rubbish. Disposal of waste oil is the responsibility of individual vessels. There is no formal cleaning schedule but cleaning routines are included in the Quay Masters duties. Pest control is contracted out to a local company who make 8 visits per annum.

There is no overall 'Code of Practice' that sets quality standards for the port and its operations. However, the North Shields Fish Quay Development Company have published fish market regulations which aim to improve standards of general hygiene and working practice (see Appendix II). All market users must agree to these rules before being issued with a security pass.

7. Recommendations

- 7.1 That the North Shields Fish Quay Development Company consider this report and agree upon a programme to implement action as they see necessary and appropriate.
- 7.2 That the catching sector should be encouraged to box and ice white fish and Nephrops according to Seafish recommended practise (see Appendix III for details of relevant Seafish publications).
- 7.3 Nephrops should be held and de-iced within the fish market (rather than outdoors) if there is any delay in onward transport.
- 7.4 Fish from the chill should not be laid out until shortly before 0700 hrs, when pre-auction viewing commences.
- 7.5 The use of diesel forklifts within the market should be phased out.
- 7.6 Standards of dress at the auction should be improved.
- 7.7 That the cleaning schedules be formalised in written procedures.
- 7.8 A formal Waste Plan should be devised and introduced.
- 7.9 Fly tipping at the rear of the market must be stopped (see (1) 5.3).
- 7.10 Seafish strongly supports the upgrading of the area to the rear of the fish market to improve hygiene and the public image of the fish industry.

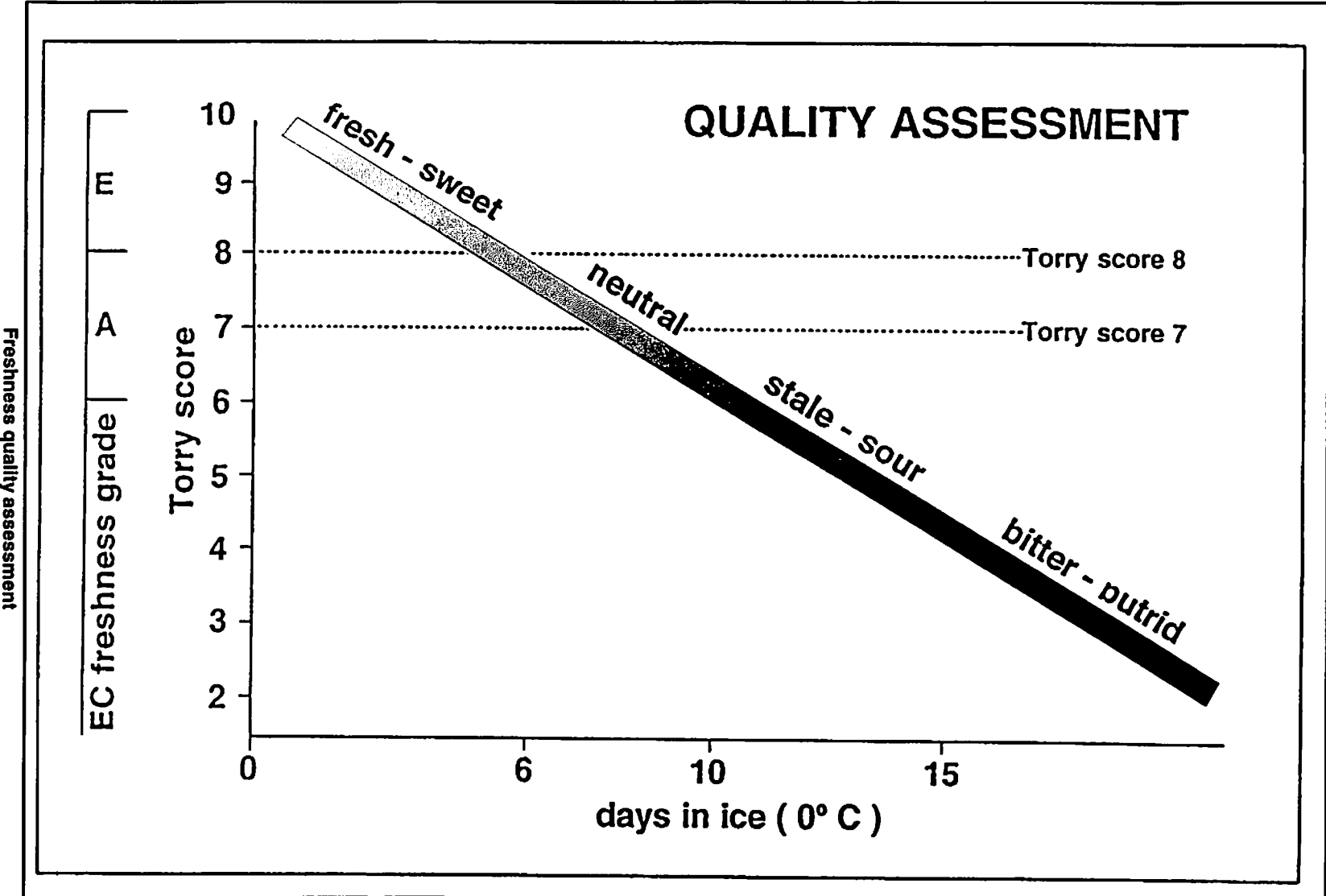
8. Acknowledgements

The assistance of the management and staff of North Shields Fish Quay Development Company, Caley, NSFS Co and the skippers and crews of all participating vessels is greatly acknowledged.

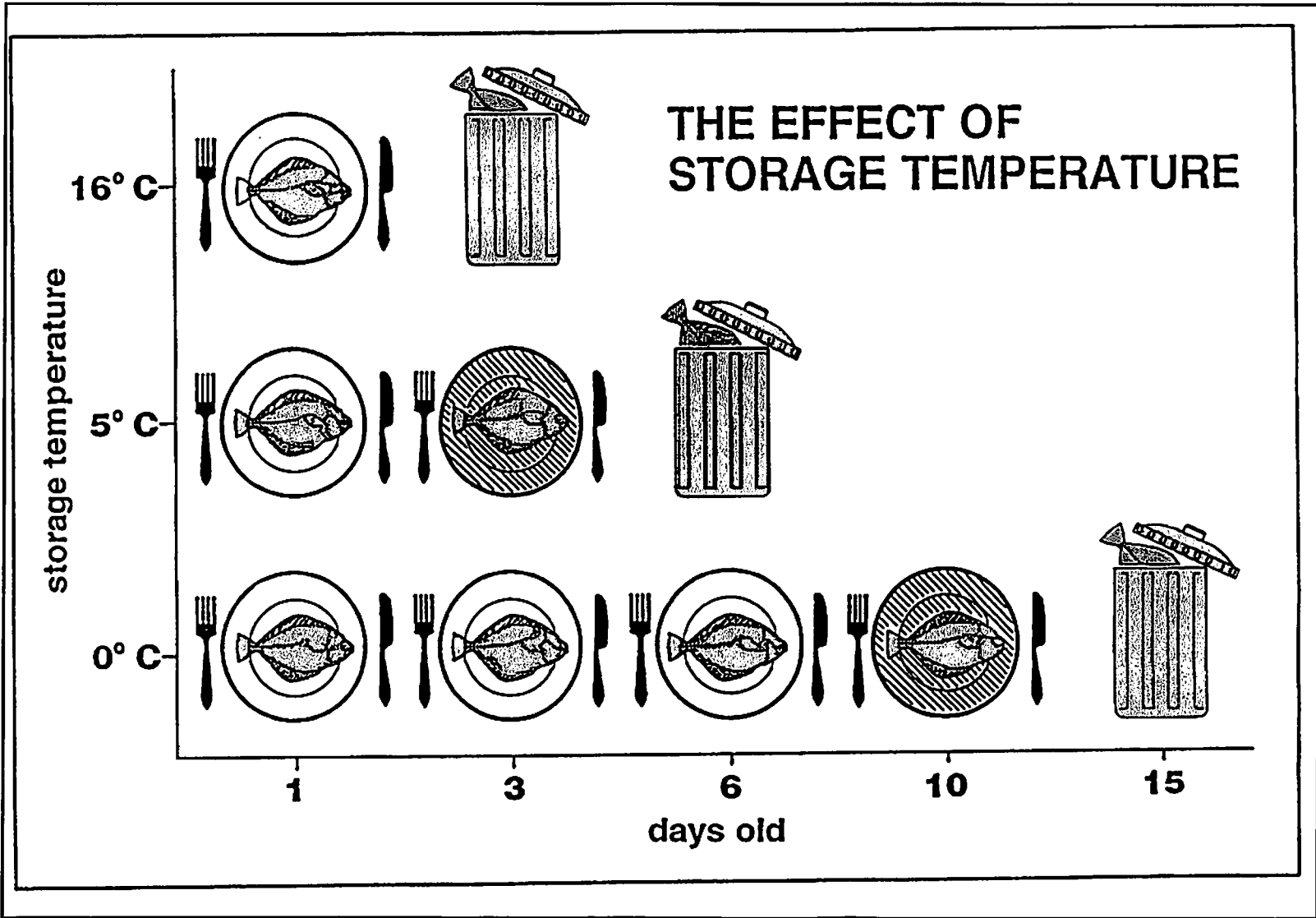


Appendix I

Torry Freshness Assessment Scoring System



The effect of storage temperatures





Appendix II

Fishmarket Regulations



MARKET REGULATIONS.

The new Fish Market Has been designed and built to meet **mandatory** requirements laid down in **EU Regulation 91/493**.

These regulations, which apply to auction halls and wholesale markets where fishery products are displayed for sale, are straightforward and provide for improved standards of general hygiene and work practices.

As the organisation responsible for both the premises and market operations the Development Company accepts that these regulations must be fully complied with; similarly, all market users working on the premises, in whatever capacity, must also accept that an equal and binding responsibility is placed upon them, at individual level, to comply with the regulations.

Acceptance of these fundamental obligations will ensure maximum efficiency and make a valuable contribution to the ultimate aim of the redevelopment: the commercial regeneration of the Fish Quay for the betterment of associated local business.

EU Regulation 91/493 can be summarised as follows:-

The premises must:

- a) be enclosed with walls that are easy to clean,
- b) have free draining floors with waste water disposal system,
- c) be equipped with sanitary facilities: flush lavatories and wash basins,
- d) be well lit,
- e) be lockable,
- f) be cleaned after each sale,
- g) display signs prohibiting smoking, eating, drinking, spitting and walking on boxes,
- h) be vermin proof,
- i) not admit dogs

Market users must:

- j) not smoke, eat, drink, spit or walk on boxes,
- k) wear suitable protective clothing and non slip footwear acceptable for use in the food industry.

In addition to applying the regulations the Development Company has introduced a pass system for the building as a measure to improve security and prevent unauthorised access whilst at the same time allowing pass holders to freely conduct their business.

Permanent Fish Market passes are issued to proven bona fide fish traders, who have a bond deposited, and are registered with, the North Shields Fish Salesmen's Protection Association. A registered member may also nominate 2 employees as pass holders. All passes are issued subject to the applicants signed acceptance to observe the terms and conditions stated in items (j) and (k) - see over

Members of the public are not be permitted to access the market floor whilst sales are in progress but may observe proceedings from the upstairs viewing area.

The premises are open 0700 hrs until close of the daily sale Monday - Friday. They will remain locked outside the sale times.

Sales commence at 0730 hrs with access to the market for those attending via the pedestrian side door located at the west end of the building where toilet and wash facilities are available.

The sale moves down the hall from west to east with the rear doors being opened as the sale progresses for purchased fish to be loaded out onto vans and fork lifts.

The Development Company's acceptance of it's responsibility to implement EU 91/493 will extend, if necessary, to the reporting of persistent offenders flouting these regulations to Environmental Health Officers who possess the statutory powers for enforcement.

The Development Company also reserves the right to withdraw or withhold passes for non-observance of any of the above regulations.

FISH MARKET PASS APPLICATION.

Applicant's Name.....

Address.....

Name of Business.....

Tel No..... Fax.....

I agree to abide by the Market Regulations.

Signature.....

NOMINATED EMPLOYEE

No 1

Employee's Name.....

Employment Status.....

I agree to abide by the Market Regulations.

Signature.....

NOMINATED EMPLOYEE

No 2

Employee's Name.....

Employment Status.....

I agree to abide by the Market Regulations.

Signature.....

Please enclose 2 Passport size photographs (named on reverse side) per application.



Appendix III

Seafish Technical Information Sheets



Ref:

1997/01/FT Fish Handling at Sea: Boxing Practice

1994/29/FT The Effect of Icing on the Quality of Trawled Whole Nephrops

Both technical sheets are available *free of charge* from the Librarian at Seafish. Please remember to quote the appropriate reference numbers.