



**IRMP YEAR 3 2006/07
PROJECT N° 4**

**A REVIEW OF
LANCASHIRE FIRE & RESCUE SERVICE
RESPONSE TO WATER RELATED INCIDENTS**

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OVERVIEW

The Fire and Rescue Service frequently operates in areas where water can be a hazard and increasingly firefighters are required to work on, in and around water, ice and mud. These incidents can be in extreme conditions of poor light, high wind, driving rain, indeterminate water conditions, and dangerous rates of flow. In order to ensure the Service effectively discharges its responsibility under the Health And Safety at Work Act it is essential that operational personnel are made aware of these hazards and are given satisfactory protection in the form of training, equipment and 'safe systems of work'.

The Service is experiencing an increase in the numbers and types of waterside incidents as water related leisure activities increase and global warming produces a challenging environment where there are more storms, leading to a higher number of flooding incidents. Against this background there is an increasing public expectation for Fire and Rescue Services to provide for operational intervention at this type of incident. If the Service is to provide for this expectation it has a duty of care for operational personnel engaged in this activity. It is paramount therefore, that the Service can confidently state that the operational procedures, training and provision of equipment are adequate to meet these potential needs.

The main findings of this report are that waterside incidents are an operational work stream, which will have an increasing impact on the resources of Fire and Rescue Services nationally. Whilst Integrated Risk Management Planning is about securing local solutions to local risks, clearly there are regional and national resilience issues to be considered and therefore a degree of direction from the centre with respect to standards, equipment specification and training outcomes is required. A National Water Working Group was formed in 2000 following the tragic death of Greater Manchester fire officer Paul Metcalf, with the aim of determining a safer working practice for Fire Service operations near, on or in water and through this forum there has been a sharing of best practice. The constituents of the national group have recently been amended to fully reflect their role as the body providing strategic national guidance for the Fire & Rescue Service on all inland water related incidents. Apart from a change of name to the Inland Water Strategy Group, they have now consolidated, with representation from the Chief Fire Officers Association, the Department for Communities and Local Government (formerly the Office of the Deputy Prime Minister), Her Majesty's Fire Service Inspectorate, Fire Brigades Union, National Water Rescue Forum, New Dimension, Marine Operations Group and FireBuy. Lancashire has never been in a position to influence the national group, despite having a large network of inland watercourses, extensive coastline and a reasonably well developed operational policy. This situation will hopefully be resolved by the formation of the North West Water Working Group. Acting through the Water Rescue Forum, this development should result in clear lines of communication and a resurgence of direction from the centre.

Lancashire's waterside intervention policy was developed over ten years ago and whilst equipment provision has been improved there has not been a recent comprehensive assessment of the current water related capabilities. The current operational strategy provides for two distinct tiers of intervention. Pumping

appliances carry basic water survival equipment such as throw lines lifejackets and inflatable hose, and all firefighters are given an awareness of the potential for immersion in water, mud, slurry, or ice that could occur accidentally during the course of an operational activity. With this equipment and training, rescues can only be attempted without firefighters entering the water using the principles of talk, reach and throw. The Water Rescue Unit at C50 Preston carries an inflatable boat, ancillary equipment and personal protective equipment, which supports entry into water by personnel with enhanced skills in water rescue and survival techniques.

The location of the Water Rescue Unit often means that the response times to some areas of the County are in excess of forty minutes, and appliances mobilised from fire stations local to the incident inevitably arrive well in advance of the Unit. As a consequence there is the potential for personnel to be placed under pressure to take action beyond the capability of their training and equipment and experience has shown that despite being prohibited from doing so by operational policy, firefighters on first line appliances will put themselves at risk and enter water in order to carry out a rescue¹. The potential for injury or a fatality is significant in these circumstances and if it could be reasonably foreseen that, despite instructions to the contrary, a member of the Service would take an action, then the Authority may be considered as culpable as if it had issued no instructions at all.²

In assessing the need for change, it is also necessary to consider public expectation. Because of response times and the constrained functionality of the equipment provided, the title Water Rescue Unit is currently misleading. A waterside incident with the potential for loss of life or injury satisfies the definition of a critical incident, for which the Service has determined an aspirational response time of thirteen minutes. If such an incident requires firefighters to enter the water this can only be currently achieved safely through the attendance of the Water Rescue Unit from Preston, and it is against this benchmark that performance is more appropriately measured. Realistically, whilst the number of such incidents is increasing, they are still relatively low within the context of the total number of critical emergency calls received. If, however, a more effective water rescue capability is an Authority aspiration, the potential exists to deliver improvements.

A number of options are considered and whilst it is unlikely that water rescue in its widest context is a realistic ambition, improvements are possible. A number of recommendations are made to provide a more robust operational capability which may meet public expectations, and better permits legal responsibilities under the Health and Safety at Work Act 1974 to be discharged.

¹ Evidenced from the incidents at Blue Lagoon Bedfordshire, and Simons Lodge GMC

² Investigations into the death of Sub Officer Paul Metcalf, Simons Lodge, Manchester

SECTION 1

PROJECT RESEARCH METHODOLOGY

1.1 Basic requirements

This research report is submitted to meet the requirements of the Integrated Risk Management Plan 'year three action point, project 4' to review the arrangements for response to water related incidents. The project examines empirical evidence on the nature and extent of operational activity and considers whether the existing provision and the current operating policy is appropriate for the risks presented. The fundamental criteria underpinning any recommendations for change are those imposed under the principles of integrated risk management planning which require the maintenance of an appropriate level of operational response and low risk incremental change. The information gained will be used to make informed choices based on professional judgement to establish an appropriate policy for the siting and deployment of waterside incident assets. Within the context of waterside incident activity the following areas are in scope and therefore covered by the provisions of this project.

- Swift, moving and still water
- Ice
- Mud and sand
- Flooding

Conversely the following areas are out of scope because the resource implications are considered to be too onerous and unsustainable.

- Sub Surface incidents
- Category 'D' waters (at sea)

1.2 Data gathering and analysis

Quantitative information has been gathered from incident statistics using the Management Information System (MIS). The data research period is between 1 November 2001 and 31 October 2005, during which time there were 169 mobilisations to waterside incidents. The following information was obtained:

- Time and location of incident
- Main geographical areas of activity
- Type of incident
- Response time
- Equipment used

Whilst confirming that appliances had been mobilised to a waterside incident was relatively straight forward, ascertaining what equipment had been used was not and required interrogation of each incident record. In some cases it was not possible to obtain any detailed information on the equipment used. Difficulties experienced in gathering relevant information have been a feature of the project indicating that work is required on the Service's information stream, although this may be addressed by the introduction of a new incident recording system in 2007.

In order to evaluate the existing provision in relation to the potential strategic movement of the Water Rescue Unit to all areas of the Service, time travel boundaries were calculated using 'Active' computer software.

This data has been supplemented by qualitative information obtained by visiting typical Fire and Rescue Services and approaching individuals regarded as experts in the field at either a strategic or a practitioners level. The Services were selected using the following criteria:

- Proximity to coastal or estuarial waters
- Liability to flooding, especially in recent years
- Experience of a large number of water related incidents over a number of years

In addition, interviews were conducted with other interested parties such as training organisations, equipment providers and organisations affiliated or otherwise loosely connected to the Fire and Rescue Service by reason of their work in water rescue. In order to underpin this more pragmatic evidence, an extensive literature review using both electronic and paper media has been carried out. This hybrid approach was considered essential to adequately research the topic.

1.3 Project rationale

The quantitative and qualitative analysis conducted has facilitated comparison of the existing policy and provision against evolving national guidance and what is generally accepted as best practice, in order to ascertain if there is any current omission or under provision. The justification as to the siting of waterside incident assets, the equipment carried and the skill sets of crews has been based on the identified need to provide a specific functionality in order to satisfy the current risk profile of the Service as indicated by the available incident data. Sustainability has also been a key feature in formulating the recommendations, as the training requirements for personnel are time consuming and expensive in both the acquisition and application phases of development. The relevance of a response time was also considered because waterside incidents involving persons trapped are risk critical, consequently it is necessary to consider the minimum provision with this in mind. The existing Water Rescue Unit is currently an exclusive resource and attendance times to some areas of the Service can be in excess of forty minutes. The adequacy of this has been judged against the evolving rescue role of the Service, an increased public expectation, evidence of climatic change, which indicates a likely increase in this type of operational activity and cost benefit in relation to risk reduction. In these circumstances economy and efficiency cannot be judged purely in terms of a direct financial relationship between expenditure and use

as clearly it is much more complex and therefore cost benefit must be judged within the mandatory context of the Authority failing to discharge its duty of care effectively. Similarly to maximise on the investment of providing these assets the Service must ensure that they are used to their optimum effectiveness, which is best achieved by ensuring crewing arrangements are satisfactory and those personnel are competent to operate them.

The conclusions reached are based on professional judgement informed by objective evidence, so the Authority can be more confident that the proposed arrangements will ensure that when required the Service can respond effectively with appropriate appliances and properly trained personnel to an incident.

SECTION 2

EVALUATION OF EXISTING PROVISION

2.1 Background and context

The operational role of the Fire Service has become increasingly diverse, extending well beyond the role of firefighting and the development of a water rescue capability is testimony to an attempt to maintain an effective operational response to a changing environment. Water related leisure activities and the extreme weather conditions occurring as a result of climate change has increased the number of waterside incidents attended by the Service. In recent years there has been a number of high profile waterside incidents; in particular the Blue Lagoon incident in Bedfordshire in 2001 where firefighters put themselves at significant risk by entering the water in an attempt to rescue three children from a submerged vehicle, and the tragic drowning of Sub Officer Paul Metcalf in Greater Manchester which ultimately led to extensive civil and criminal litigation. These events were the catalyst for the Fire and Rescue Service to look critically at waterside incident policies and procedures triggering the formation of the National Water Working Group and the subsequent publication of the Fire Service Manual, volume 2 'Safe working near, on or in water'.

The response to this guidance has been at best inconsistent across Fire and Rescue Services and not one based on the potential risk, but often driven by the resources that could be made available. In many instances Services invested significant expenditure in training and equipment but later found that the chosen level of commitment was unnecessary and in any event unsustainable. As a consequence there are considerable differences in the operational policies and capability, ranging from Services with little or no provision to well equipped and trained specialist units.

Lancashire's waterside intervention policy was developed over ten years ago and whilst equipment provision has been improved in the intervening period there has not been a recent comprehensive assessment of the current water related capabilities. Whilst the scope and intent of the Fire and Rescue Services Act 2004 does not require the provision of assets to carry out waterside incident rescues, the risk profile of Lancashire is such that waterside incidents involving persons are a likely occurrence and the Service will receive calls for assistance. On this basis, it is necessary to determine what is reasonable in terms of emergency response arrangements when such incidents occur.

2.2 Rationale behind existing provision

In 1996, Lancashire Fire and Rescue Service expanded the capability of its special appliance fleet by provision of a Major Incident Support Unit (MISU) in the form of a demountable pod based at C50 Preston. This appliance included a waterside incident capability consisting of an inflatable boat equipped with outboard engine and

life jackets. The rationale behind this provision and its deployment at Preston is a matter of conjecture as there are a number of possibilities. Evidence of waterside incident activity around this time is anecdotal, however it is a fact that the geography of Lancashire offers the potential for complex rescues from open water and because of its central location Preston offers the best location for Service wide deployment.

Whatever the motivation for this provision it has proved forward thinking and central to the incremental development of a credible waterside incident policy, which in reality has never been too far away from acknowledged best practice. Forty-eight personnel from Preston were trained in boat handling to Royal Yacht Association (RYA) level 2 standard, with four personnel identified for additional training to instructor level in order to carry out refresher and initial boat training. In order to provide more operational resilience, subsequent boat training was carried out for the personnel at C57 Penwortham.

The tragic drowning of Greater Manchester Sub Officer Paul Metcalf in 1999 highlighted the considerable risk posed by waterside incidents, particularly to first responders. As a consequence Lancashire re-evaluated its waterside incident policy and issued revised guidance. The policy, which is still relevant, advocates a hierarchy of options offering the lowest risks to the rescuer and recognises two distinct levels of response to water related incidents. Crews on the first attendance, who have received water awareness training and using equipment carried on front line appliances, can undertake bank-side rescues using the principles of talk, reach and throw without committing themselves to entering the water. To support this level of intervention the following basic water rescue equipment was issued to all pumping appliances:

- Lifejackets
- Throw lines
- Hose inflation kits

The second level where it is necessary to enter on or in the water to effect the rescue involves the crews from Preston and Penwortham who have received specialist training for water entry, rescue and survival techniques to swift water rescue technician level (SRT1) and have the appropriate PPE. Equipment on the MISU was also improved at this time with provision of an improved inflatable boat, inflatable walkways, personal flotation devices and improved PPE.

As time progressed it is apparent that the importance placed against this operational activity receded as other operational pressures came to bear on limited resources. As a consequence the rigour of the operational policy was undermined particularly with respect to the availability of trained personnel. Whilst these shortfalls have recently been addressed it highlights the need to ensure that any provision is sustainable and supported by robust management structures.

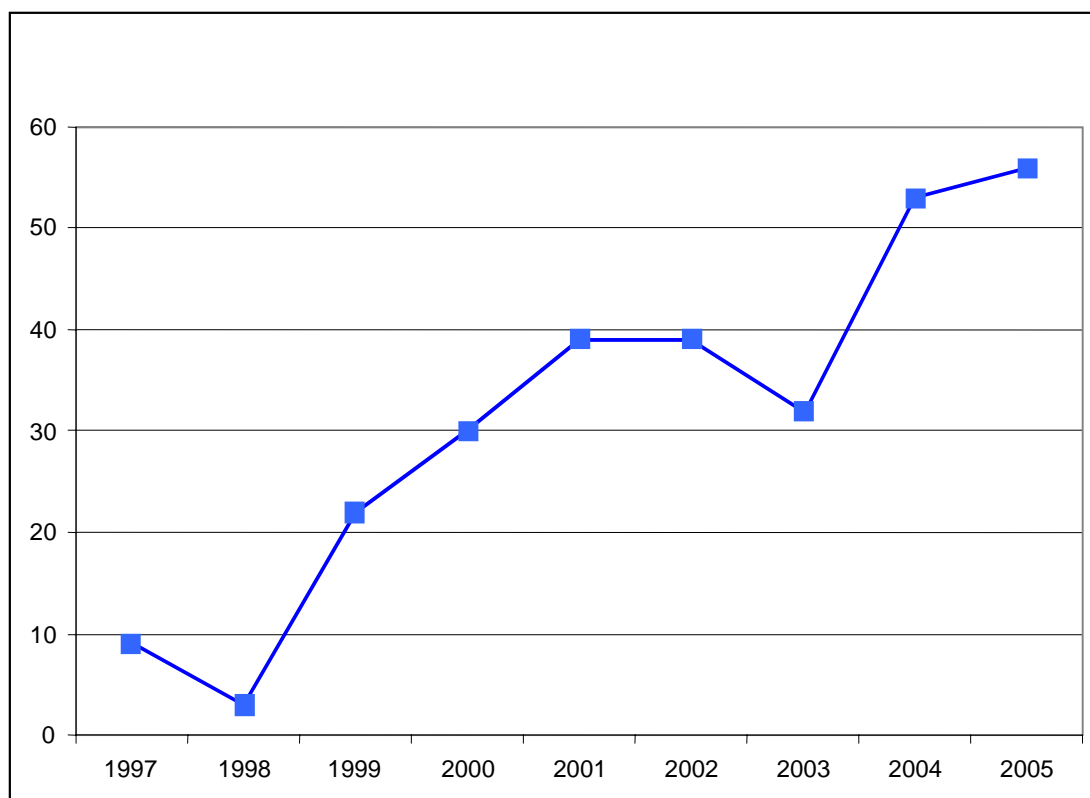
2.3 Activity analysis

Risk profiling by a detailed assessment of the severity of the potential risk against the likelihood of an incident occurring is the key to developing a coherent strategy with respect to water rescue provision and in particular the most appropriate arrangements for the siting and deployment of assets.

Lancashire has 240km of geographically diverse coastline with three main estuaries of the Rivers Lune, Wyre and Ribble. Holiday resorts are located on the Fylde Coast and Morecambe Bay. Morecambe Bay has a long history of waterside incidents, the most significant being the tragic deaths of 23 Chinese cockle-pickers. There are fishing and ferry ports at Fleetwood and Heysham respectively, and leisure marinas at Fleetwood and Preston. As a consequence of Lancashire's industrial heritage there are over 250km of canal waterways coupled with an extensive network of major inland watercourses. The country's newest canal, the Ribble link, was completed in 2002 and connects the Lancaster canal with the Leeds and Liverpool canal via the Ribble estuary and the River Douglas. Lancashire also has upwards of 150 reservoirs with a large number of those having provision for leisure activities.

Lancashire Fire and Rescue Service has experienced an increase in the number and types of waterside incidents. **Chart 1** indicates the number of waterside incidents attended since the provision of a water response capability in 1997.

Chart 1: Number of waterside incidents attended by Lancashire Fire and Rescue Service 1997 - 2005



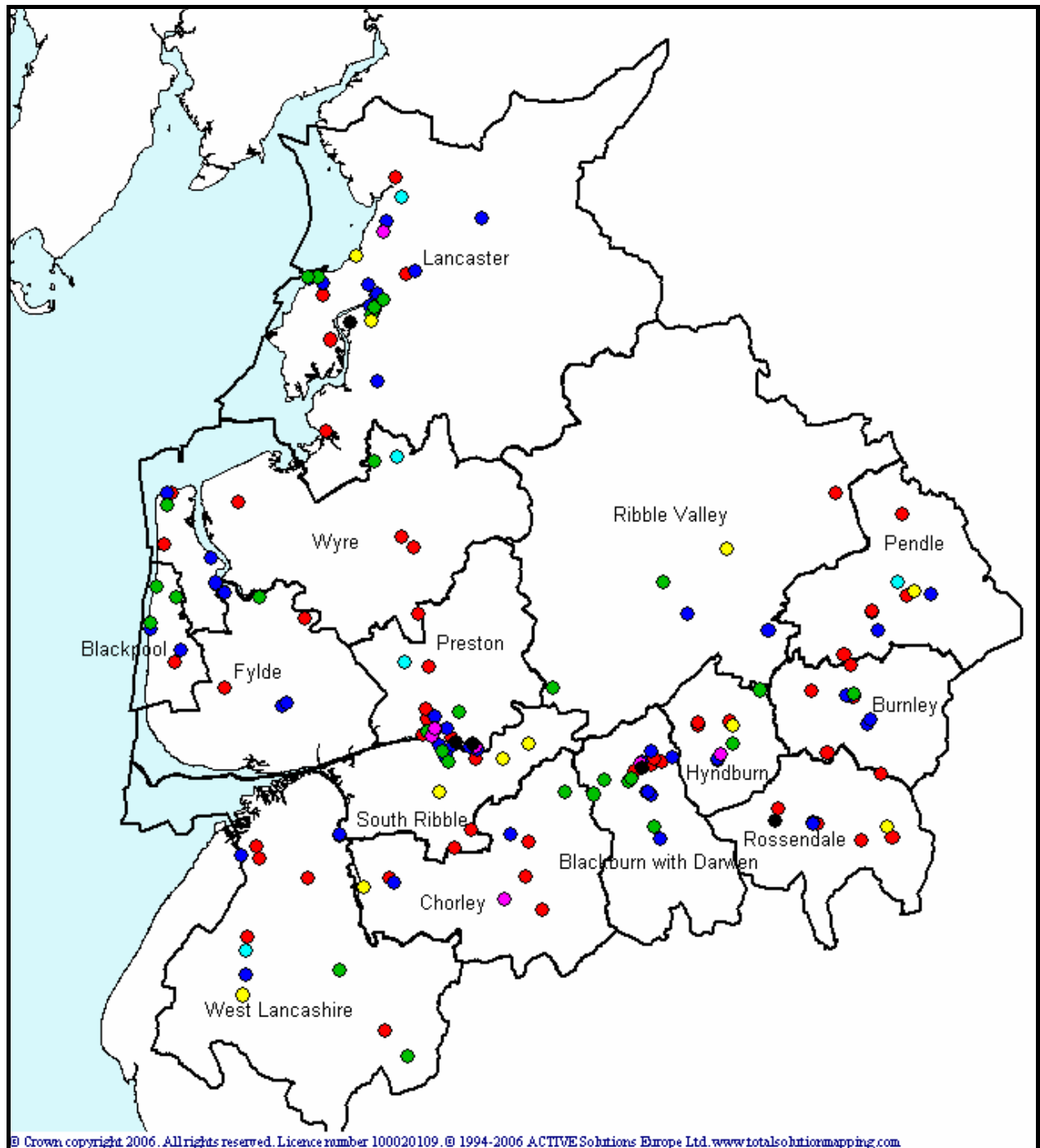
Empirical data gathered from the Management Information System (MIS) was exported into the active mapping system to determine the level of operational activity. Between 1 November 2001 and 31 October 2005 the Service attended 169 waterside incidents of which there were 67 involving persons resulting in a total of 98 casualties. There were 49 persons rescued by LFRS personnel. In eight of these incidents people had entered the water to attempt to rescue their animals. **Table 1** details the breakdown of this data including the number of occasions where firefighters with only basic water awareness training appear to have entered the water during these incidents.

Table 1: Incident Activity Analysis

Number of incidents involving persons	56
Incidents categorised as Animal Rescues and subsequently involving persons (Owners entering water after their animals)	8
Other Incidents incorrectly categorised	3
Total number of incidents involving persons	67
Number of incidents involving casualties	63
Number of casualties (from 63 incidents)	98
Total number of rescues by LFRS personnel	49
Number of incidents where SRT personnel have entered water	26
Number of incidents where Firefighters have entered water	50
Total number of incidents where LFRS personnel have entered water	76

Chart 2 indicates the main geographical areas of activity and the type of incident attended. The incidents are diverse in their nature and frequent enough in their occurrence to justify maintenance of a waterside incident capability if attendance at such incidents is to be sustained. It is also evident that there is a general distribution of incidents throughout the County and predictably many of them are associated with the major watercourses and risks. **Table 2** details the incidents involving persons by time of day. The peak activity period is between 1500 hours and 0300 hours. Incident levels rise progressively from 0900 hours, peak between 1800 and 2100 hours and then decline significantly at 0300 hours.

Chart 2: Waterside Incidents by location and type 1/11/2001 to 31/10/2005



Key	Count	Description
●	59	Animal Rescue
●	56	Person Rescue/Release
●	27	Services not required
●	13	Assistance to Police
●	6	Water Removal/Provision
●	4	Recover/Retrieve Objects
●	4	Suicide/Attempts/Threats
Total	169	

Table 2: Waterside Incidents involving persons by time of day

COUNT	TIME
9	00:00:00-02:59:59
2	03:00:00-05:59:59
2	06:00:00-08:59:59
5	09:00:00-11:59:59
7	12:00:00-14:59:59
9	15:00:00-17:59:59
12	18:00:00-20:59:59
11	21:00:00-23:59:59

2.4 Asset disposition, crewing and mobilising arrangements

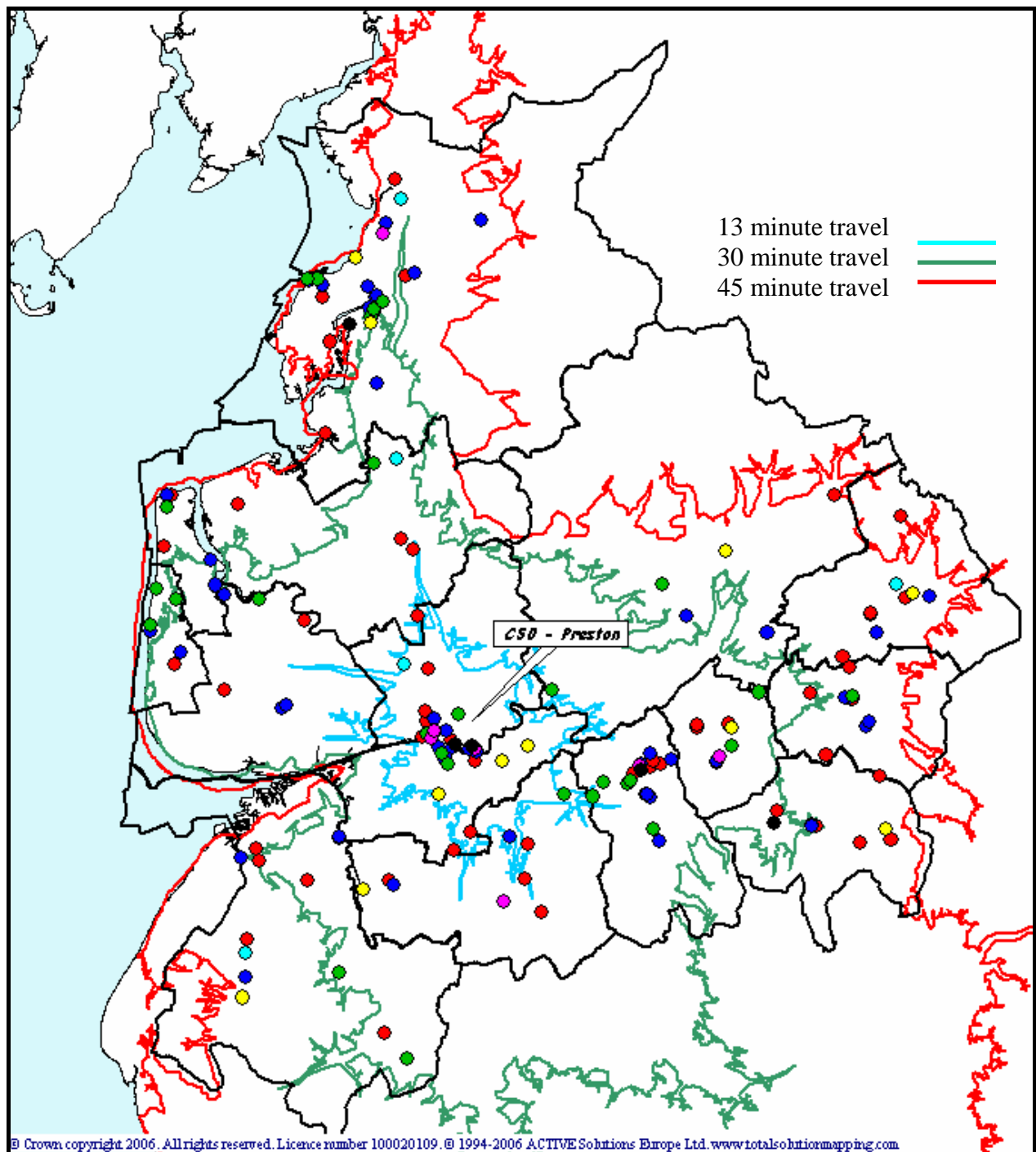
The pre-determined attendance to a waterside incident consists of the nearest two appliances to the incident; the nearest Rescue Pump Unit and the Major Incident Support Unit (MISU) supported by two appliances from Preston or Penwortham. Appliances mobilised from fire stations local to the incident will inevitably arrive well in advance of the Unit and experience has shown that there is the potential for personnel to be placed under considerable pressure to take action beyond the capability of their training and equipment.

Any waterside incident where there is a risk to life is defined as a critical incident special service and accordingly the aspirational response time is thirteen minutes. Whilst the number and disposition of pumping appliances can generally support this response in the majority of instances, should there be a requirement to enter the water to effect a rescue this can only be achieved through the attendance of the Water Rescue Unit hence it is against this benchmark the effective response must be measured.

The availability and response time of any appliance is dictated by its base location and crewing arrangements, which must be operationally robust. Where a special appliance is a unique resource the appropriate crewing arrangements are dependent on the role of the appliance. Special appliances which are exclusively strategic can be crewed optionally i.e. they can form part of a suite of appliances crewed when dictated by operational demand. Appliances with a tactical role should be centrally located and subject to crewing arrangements which can virtually secure their immediate availability. The Integrated Risk Management Plan (IRMP) identifies the Major Incident Support Unit as a tactical appliance and as such any local risk assessment made under the terms of the flexible crewing model should provide for this designation.

Chart 3 overlays travel time boundaries for the Water Rescue Unit based on thirteen, thirty and forty five minutes, onto the waterside incident activity map. Road speeds used in the modelling match those used in the FSEC Modelling Software as supplied by the Office of The Deputy Prime Minister (ODPM). This modelling clearly indicates the limitations of the existing provision, which cannot be regarded as a rescue capability outside the immediate vicinity of Preston.

Chart 3: Water Rescue Unit travel time boundaries



Throughout this report, the following speeds have been used to calculate travel time boundaries:

Motorway - 60 mph, 'A' Roads - 35 mph, 'B' Roads - 25 mph, other roads - 20 mph

SECTION 3

PROPOSALS FOR WATERSIDE INCIDENT RESPONSE

3.1 Options for Change

The evaluation of existing arrangements has exposed the limitations with respect to attendance times and highlighted the potential for firefighters on the first attendance being pressured into taking action beyond the capability of their training and equipment. As the existing provision satisfies the service delivery requirements imposed by the legislative framework, the issue of response times relates directly to the level of service the Authority feels it reasonable to provide in the circumstances; having regard to public risk and expectations, resource implications and other priorities.

In respect of 'duty of care' obligations however, the legal obligations under the Health and Safety at Work Act are clear. Risk must be carefully assessed and appropriate control measures put into place. If current operational procedures expose firefighters to risk, it is imperative that these are as low as reasonably practicable. The risk profile of Lancashire is such that waterside incidents involving persons are a likely occurrence and that the Service will receive calls for assistance. On this basis, it is necessary to determine what is reasonable in terms of the emergency response arrangements when such incidents occur.

Essentially there are five options, each of which will impact on the risk to firefighters and, to greater or lesser extent, impact on service delivery and associated public expectations.

Option 1 – Continue with the existing arrangements

The existing arrangements are such that for incidents requiring entry into water to effect a rescue, the level of provision cannot be regarded as a water rescue capability outside the immediate vicinity of Preston. Whilst in the majority of cases, personnel on the first attendance may be able to take effective action from the bank, they may be placed under pressure to enter into water pending the arrival of specialist support; a course of action for which they are neither trained or equipped. Whilst the number of occasions this has occurred is relatively low, the risk presented is high and the outcome potentially serious. As a continuing option, this must be classed as higher risk.

Option 2 – Reduce the current provision by only deploying the Water Rescue Unit

Adopting this level of service will virtually eliminate the risk of firefighters being pressured into taking inappropriate action beyond their capability. It would, however, represent a significant reduction in the existing level of service provision. The reality of this change would mean that beyond the immediate vicinity of Preston, no credible emergency response to waterside incidents would exist. If a water rescue capability is a public expectation and/or Service aspiration, this is not considered a feasible option.

Option 3 – Equip and train all staff to enable them to carry out a swim rescue
Implementing a provision that trains and equips all firefighters to enable them to enter water safely would eliminate the risks described and provide a model of excellence unrivalled in any other Authority. The resources and training that would be required to adopt this approach however are unsustainable and cannot be justified in terms of the frequency of event. This is not considered a feasible option.

Option 4 – Provision of a two tiered response based on the concept of strategically based Water Rescue Pumps and the Water Rescue Unit

This option would mean that the Service ceases to mobilise the nearest appliances to a waterside incident but maintains a two-tiered response by providing a swift water rescue capability on six strategically based appliances, and the Water Rescue Unit at Preston. Adopting this level of service will virtually eliminate the risk of firefighters on the initial attendance to a waterside incident being pressured into taking action beyond their capability and training in order to carry out a swim rescue. However, ceasing to mobilise the nearest local appliances to the incident will extend the response times currently being achieved and eliminate the potential for rescue from the bank. Furthermore, support for specialist teams would be absent. Whilst initial attendance times would clearly be increased, this approach is a feasible option.

Option 5 - Provision of a three tiered response maintaining the principle of mobilising local Pumps supported by an intermediate response from strategically based Water Rescue Pumps and the Water Rescue Unit

This option proposes to complement the existing two-tiered response by provision of an intermediate water rescue capability on six strategically based appliances. This approach maintains the principle of first attendance and potential bank side rescue, whilst reducing the attendance time for specialist support and water entry capability. Whilst it must be emphasised that a residual risk remains through the non-specialist first attendance, existing levels of risk are reduced and current service delivery is enhanced.

In proposing a way forward, firefighter safety, public expectation and resource implications have all been considered. On this basis, it is recommended that option 5 is adopted as it appears to offer the best solution in terms of risk reduction, public expectation, affordability and sustainability. This option will require an increase in the current waterside incident capability by provision of an intermediate swift water rescue capability on six strategically based appliances located at Lancaster, Fleetwood, Preston, Nelson, Darwen, and Ormskirk. The optimum location for a water rescue capability on the Fylde coast is Blackpool, however, because of the training implications associated with this proposal and the recent redeployment of the Aerial Ladder Platform there, Fleetwood offers a more efficient solution. These locations have been chosen because of their proximity to the areas identified as having the highest waterside incident activity. **Chart 4** indicates the improved level of operational cover provided by this enhancement. The proposal utilises existing rescue pump units where possible, however in order to provide a configuration which can cover all the identified risk areas effectively, additional rescue pump units will be required at Darwen and Ormskirk. To achieve this it is proposed to relocate the existing Rescue Pump Unit from Skelmersdale to Ormskirk and upgrade the existing appliance at Darwen to Rescue Pump Unit status. Rescue pump units already carry

some equipment suitable for use at waterside incidents and their utilisation minimises equipment provision and is consistent with the strategy of improving the functionality of these appliances. **Chart 5** indicates the capability of the Rescue Pump Units and the Water Rescue Unit based on travel time boundaries of thirteen and thirty minutes respectively.

The revised arrangements will provide for the following three levels of response:

- **Level 1**- Firefighters on all appliances with basic training in water awareness, capable of bank side rescues using equipment currently carried on all pumping appliances.
- **Level 2** - An intermediate response on strategically located Rescue Pump Units with personnel trained and equipped to enter water.
- **Level 3** - The Water Rescue Unit.

The three levels are interlinked and collectively provide the required attendance of six water rescue technicians (SRT1), a figure recognised and adopted Nationally as the minimum number of personnel required to effectively set up a safe system of work for water rescue. This standard is also part of a proposed team typing system being advocated for the declaration of UK Fire and Rescue Service waterside incident assets to be used to identify Services capable and willing to deploy assets Regionally and Nationally.

Chart 4: Waterside Incidents Utilising 6 Rescue Pump Units located as shown with a 13 minute response time

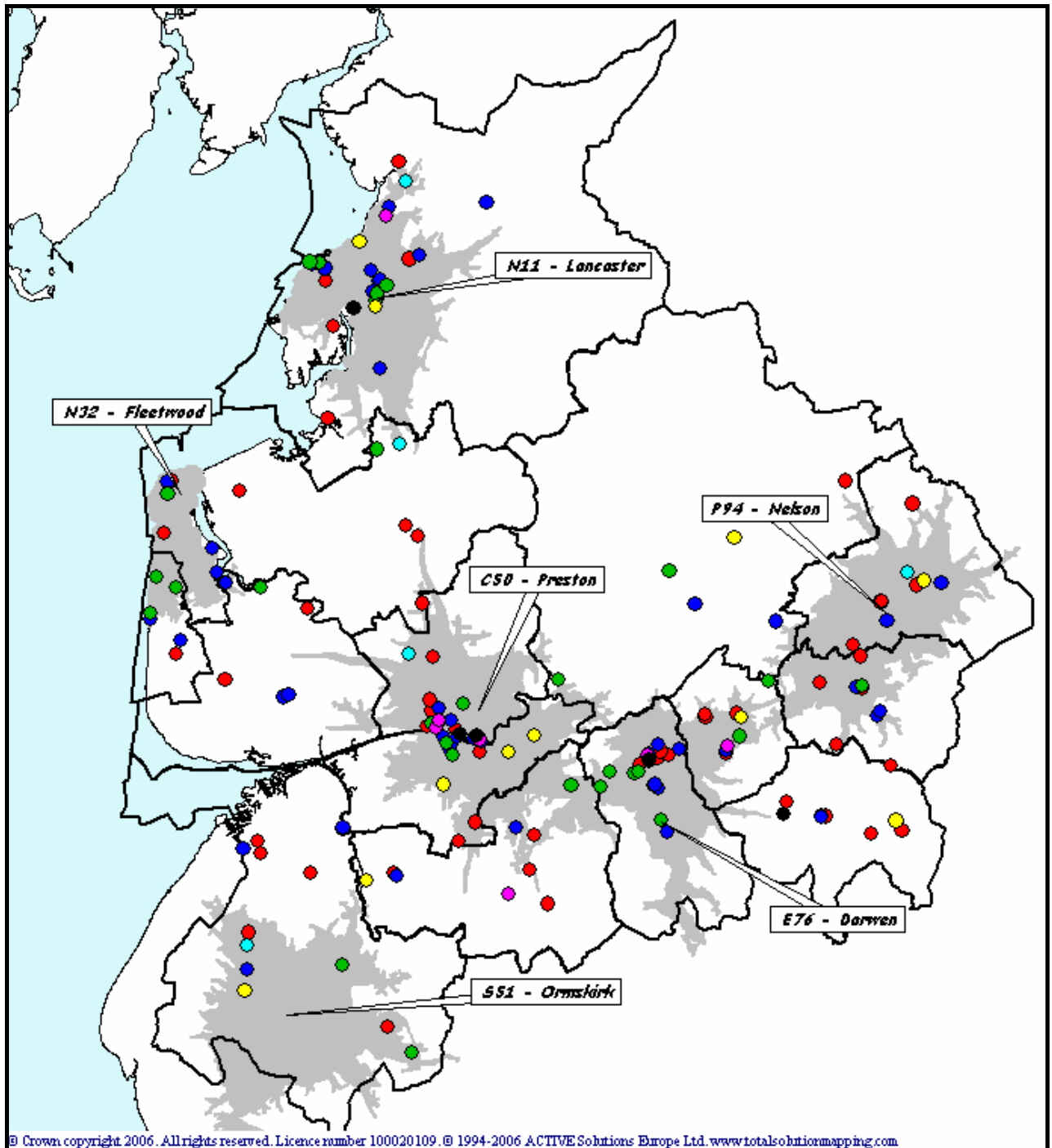
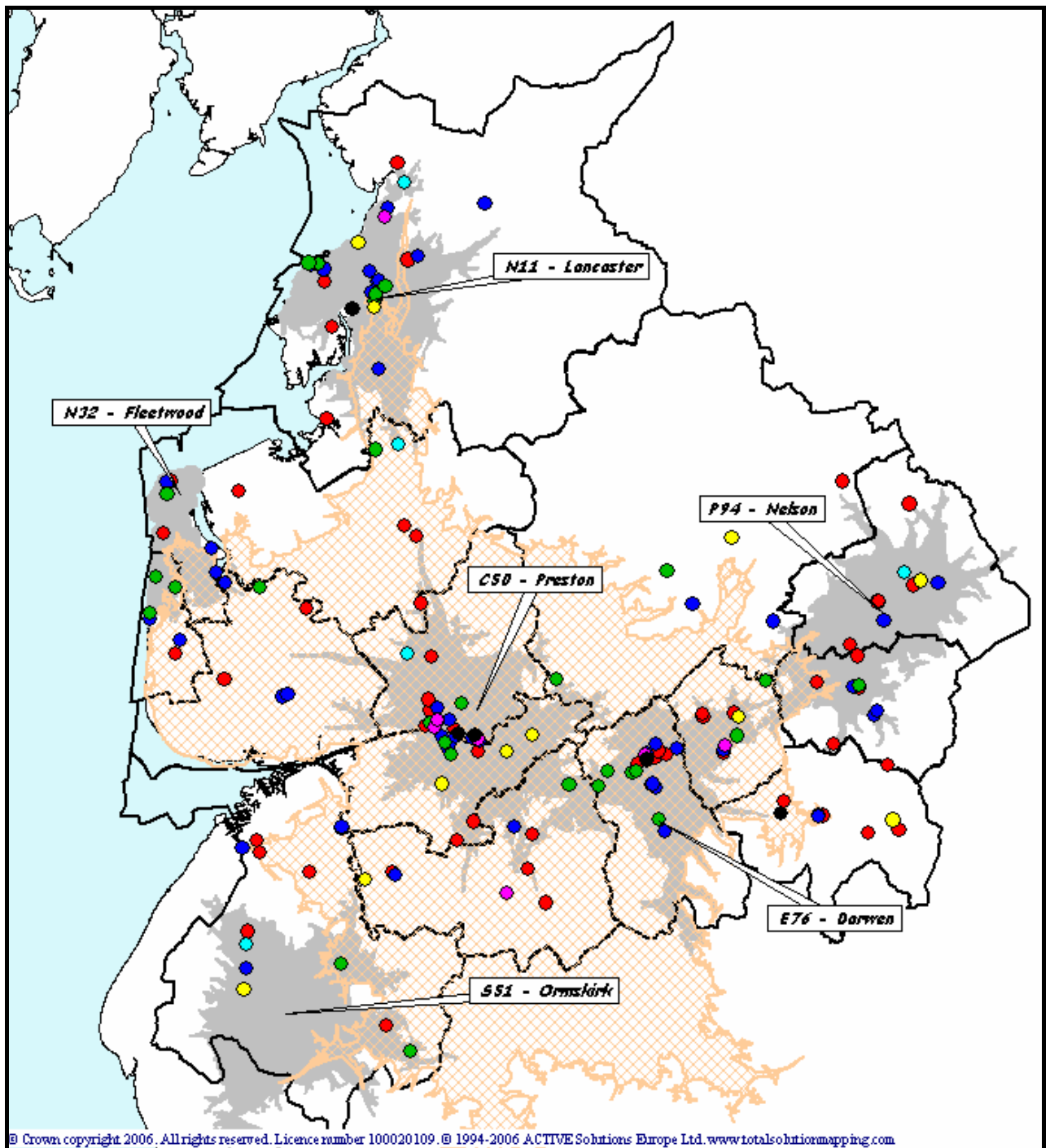


Chart 5: Travel time boundaries of 13 minutes for the proposed intermediate response and 30 minutes for the Water Rescue Unit.



3.2 Training requirements

The Health and Safety at Work Act imposes a requirement on the organisation to ensure that personnel are properly trained. A suite of training inputs and qualifications has been developed nationally to reflect the various levels of risk to which personnel are exposed whilst undertaking activities near on or in water. These training standards have been produced for the Fire Service Manual Volume 2, Safe working near, on or in water and consist of the following levels:-

- **Module 1 – Water Awareness.**
To train personnel who may be expected to work near water as part of their normal role. This level is designed to train personnel to be aware of the dangers and hazards associated with working near water, carry out bank side rescues using the principles of talk, reach and throw or where appropriate prepare the scene for the attendance of specialist crews.
- **Module 2 – First Responder.**
Aimed at selected personnel who respond to water related incidents, to have the underpinning knowledge and skills to carry out bank side rescues or shallow water crossings including equipment handling for still water and unstable ground incidents such as mud and ice.
- **Module 3 – Technician.**
For selected operational personnel whose role includes entry on or into water. This is the only level that allows personnel who possess the necessary knowledge, skills and understanding to operate as a specialist team in a moving or fast flowing water environment to perform rescues.
- **Module 4 – Rescue Boat Operator.**
For operational personnel, trained to Technician and RYA level 2, who are required to operate and/or crew a powered boat in a variety of waters including still, fast moving and floodwater for rescue purposes. The training enables the boat to be used as a rescue platform for casualty or swimming rescues and flooding evacuations.
- **Module 5 – Water Incident Management.**
Designed to give personnel who may be incident or sector commanders at a water related incident the necessary knowledge and understanding of water and flood incident management. In addition the supervisory officer will have a greater awareness of the role of first attendance crews and additional skills and capabilities of the specialist Technicians.

The underpinning principle of Integrated Risk Management Planning is that standards are applicable to local risk and consequently waterside intervention policy and training must cater for the risk profile of the Service. In recognition of the proposed three tiered approach to waterside incidents it is proposed to undertake and consolidate training at the following levels:

- Module 1 – Water Awareness for all Firefighters.
- Module 3 – Technician for all wholetime personnel based at Preston, Penwortham, Lancaster, Fleetwood, Darwen, Nelson and Ormskirk.
- Module 4 – Rescue Boat Operator for personnel at Preston and Penwortham.
- Module 5 – Water Incident Management for all Station Managers.

Training Strategy

Lancashire's SRT training is currently provided by our own instructors at a venue on the River Lune at Halton near Lancaster. Due to conditions imposed by the owner, training can only be carried out in the period 1 November to 28 February. The maximum number of courses that can be delivered during this period is 15, with 10 personnel per course providing a total of 150 personnel per year. The suitability of the venue has been ratified by our training provider, Rescue 3, and has proved successful during the recent requalification of current SRT personnel.

As personnel at Preston and Penwortham are already trained to Technician level for the current arrangements, the proposals outlined for Lancashire's water response capability will involve training an additional five RPU station personnel. Due to the training schedules required, it is proposed to implement the project over a two-year period. Phase 1 commencing with stations at Lancaster and Nelson in 2006/07 with phase 2 for Fleetwood, Darwen and Ormskirk in 2007/08. The initial training course is of four-day duration with refresher training at three days. The training implications for Phase 1 and 2 are indicated in **Tables 3 & 4**.

In order to deliver this training, LFRS have seven personnel who have undergone additional training by Rescue 3 to SRT Instructor level. In order to maintain their instructor qualification, Service SRT instructors are required to instruct on a Rescue 3 accredited course at least once per year which will be accomplished by carrying out the in-house training. The SRT instructors are qualified to train personnel to all levels with the exception of module 4. Once the initial training is completed for each of the new water rescue stations, a member of each station will be identified for additional training to instructor level. This will provide a point of contact for liaison between SRT personnel on each station and an additional pool of instructors to ensure a more balanced distribution of resources throughout the Service.

Table 3: Phase 1 Training Requirements 2006/07

Station	Type	Personnel	Training Days
N11 Lancaster	Initial	52	208
P94 Nelson	Initial	28	112
Total		80	320
C50 Preston	Refresher	20	60
C57 Penwortham	Refresher	9	27
Total		189	407

Table 4: Phase 2 Training Requirements 2007/08

Station	Type	Personnel	Training Days
N32 Fleetwood	Initial	28	112
E76 Darwen	Initial	28	112
S51 Ormskirk	Initial	14	56
Total		70	280
C50 Preston	Refresher	20	60
C57 Penwortham	Refresher	9	27
N11 Lancaster	Refresher	17	51
P94 Nelson	Refresher	9	27
Total		125	445

The ongoing refresher training implications for year 3 onwards are outlined in **Table 5**. This involves training one third of the total number of personnel each year (80 personnel)

Table 5: Refresher Training Requirements 2008 onwards

Station	Type	Personnel	Training Days
N11 Lancaster	Refresher	17	51
N32 Fleetwood	Refresher	9	27
E76 Darwen	Refresher	9	27
P94 Nelson	Refresher	10	30
S51 Ormskirk	Refresher	5	15
C50 Preston	Refresher	20	60
C57 Penwortham	Refresher	10	30
Total		80	240

In addition to SRT training detailed above, all current RYA level 2 boat operators at Preston and Penwortham will require training to Rescue Boat Operator. This is a two day course run by Rescue 3 in North Wales and will result in a maximum number of 88 personnel requiring training, equating to a total of 176 training days. LFRS is an accredited training centre for in-house boat training to RYA level 2 and it is envisaged that this accreditation will be enhanced further to enable rescue boat operator refresher training to be delivered in-house in the future.

3.3 Resource implications of new proposals

The proposed increased provision for Lancashire Fire and Rescue Service's water response capability will necessitate a financial investment both in terms of equipment provision and training although this can be balanced against the improvement in the standard of service delivery. Details of the equipment costs are indicated in **Table 6**. The quantity of PPE for each station is based upon the number of personnel normally expected to crew an RPU multiplied by a figure of 1.5 to allow for different sizes and equipment away for repair. The final allocation will be decided following a size profiling exercise on each station.

Table 6: Project Equipment and Training Costs

Equipment	Allocation	No. per Station	Total	Unit Cost (£)	Cost (£)
Dry Suits	All new water rescue units (5)	8	40	330	13200
Personal Floatation Device (PFD)	All new water rescue units (5)	8	40	85	3400
Thermal Undersuit	All new water rescue units (5)	8	40	45	1800
Safety Helmet	All new water rescue units (5)	6	30	30	900
Gloves	All new water rescue units (5)	8	40	15	600
River Boots	All new water rescue units (5)	8	40	55	2200
Rescue Sled	All new water rescue units plus Preston (6)	1	6	1500	9000
Megaphones	All new water rescue units plus Preston (6)	1	6	50	300
Animal Grasper	All new water rescue units plus Preston (6)	1	6	40	240
Underwater Camera	Preston (MISU)	1	1	1400	1400
Line Deployment apparatus	Preston (MISU)	1	1	3300	3300
Marine Band Handheld Radio	Preston (MISU)	1	1	700	700
Throwline and bag	All Station Managers	35	1	22	770
Total					£37810

Additional training costs are as follows:

Increased use of training venue	£ 2000
Initial training of 88 personnel to Rescue Boat Operator	£35200
Additional Instructor training for RPU stations	£ 3000
Total	£39200

The project also requires the upgrade of one appliance at Darwen to Rescue Pump Unit status.	£ 8000
Total	£ 8000

The direct project cost over the two implementation phases, excluding staff time, is: £86,010

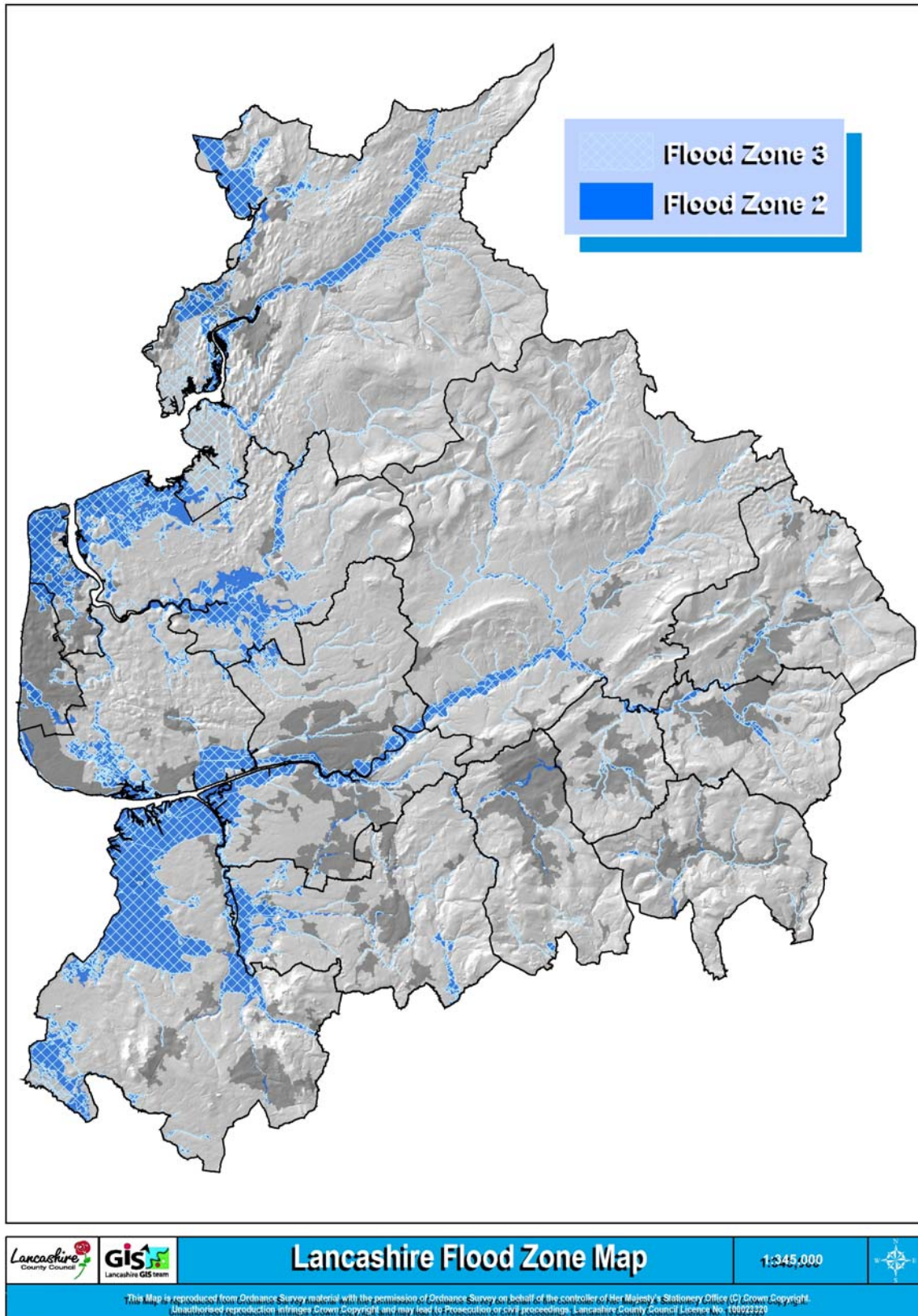
3.4 Impact of the New Dimensions Project

The events of September 11th 2001 marked a turning point in the challenge posed by terrorism, as it prompted Government to review and improve the UK's ability to respond to increased risks. This work has been titled the New Dimensions (ND) programme and has involved a reappraisal of the response capacity and capabilities of the UK's emergency services. To support this development, the Civil Resilience Directorate (CRD) was established in June 2003 to co-ordinate the Office of the Deputy Prime Minister's (ODPM) resilience programmes. By way of definition, resilience means ensuring that the country is equipped to deal with major emergencies, both natural and terrorist. The ODPM contribution is to ensure that the fire and rescue service is equipped and trained for disaster of all kinds, and that locally and regionally all are prepared and equipped for an effective emergency response. From the onset waterside incidents have been a work stream of the New Dimensions programme and accordingly Project Aquarius was commissioned to show, at a snapshot in time, the national preparedness of the Service in water safety awareness and water related rescues. The findings of the project were never officially published and for a time it became unclear as to whether this area of operational activity was to be progressed.

The legislative responsibility of the Fire and Rescue Service's with respect to maintaining a waterside incident capability is now clear and the recent draft Emergency Services Order does confirm the requirement to respond to rescues from major flooding incidents. Flooding presents one of the most significant natural risks to communities in the UK, with major events witnessed in recent years at York, Carlisle and Boscastle, and with climate change issues impacting severe weather events, is likely to do so again. Despite this potential, Fire and Rescue Service's capabilities to respond to the rescue phase of any major flood event is variable and lacks co-ordination at local, regional and national level. The predicted extent of flood zones for Lancashire is shown on **Chart 6**. Whilst High Volume Pumping Units have been deployed across the Service it is difficult to see how this provision caters for flood rescue in the practical context.

Current information from the Fire and Resilience Directorate suggests that there is still an aspiration to achieve commonality of standards across a number of Service's in order to provide National team typed response across any responding agency. Accordingly some funding may be available for the purchase of waterside incident assets to those Service's who have sufficient resources to be self-sustainable after the initial inject of finance. However, the difficulty of making professional judgements against the proposed outcomes of this government initiative cannot be over stated, as at best, it must be described as dynamic and subject to frequent critical change at short notice, consequently there is an element of risk when planning against New Dimension proposals.

Chart 6: Lancashire flood zone map



3.5 Management and review of waterside provision

The procurement of water incident assets and providing the relevant training to allow personnel to use them is only one element of an effective strategy. Experience has shown that unless there are robust management systems in place to sustain the capability and develop it properly so that it remains flexible enough to meet the changing demands of service delivery, it will expose the service to risk. This requirement is best achieved through ownership at all levels of the Service and clear lines of responsibility, which provide a conduit for information and support.

It is proposed that the Service Delivery Managers at the Water Rescue Stations form a practitioners group under the Chair of the Station Manager C50 Preston. This group will be responsible for ensuring effectiveness of service delivery arrangements on stations. The Station Manager from C50 will represent the practitioners on the Service Water Working Group. The membership of this group will be as follows:

- Group Manager Operations (Chair)
- Station Manager Training & Development
- Station Manager Equipment and Breathing Apparatus
- Station Manager Operational Planning
- Station Manager C50 Preston
- SRT Instructor C50 Preston
- Co-opted members as required

In order to ensure the Service is kept fully informed from a strategic perspective the following personnel will attend the Regional Water Working Group and the National Water Rescue Forum.

- Group Manager Operations
- Station Manager C50 Preston

3.6 Collaboration with other Fire Authorities

All North West Fire and Rescue Service's maintain a waterside incident capability, the level of provision depending on the requirements of their Integrated Risk Management Plans. As part of this review, representatives of each Service attended a meeting to identify areas where there is potential for sharing resources and exchanging information in order to provide resilience and enhance service delivery. Whilst it was apparent that there are currently significant differences in approach to the provision of water rescue assets, it was agreed that there is scope for effective collaboration and accordingly it was suggested that the meeting was formalised and work undertaken to achieve the following:

1. Agree a common definition of 'Water Rescue' (WR)
2. Consider issues of common terminology relating to WR.

3. Formulate an agreement to provide waterside incident assets on request to other NW Fire and Rescue Services
4. Determine an appropriate framework to formalise agreement i.e. Sections 13 & 16 Fire and Rescue Services Act 2004, Service Level Agreement, Memorandum of Understanding etc.
5. As part of (4) above, determine an appropriate mechanism for service provision on a no cost basis
6. Develop appropriate mobilising protocols to ensure effective implementation of any agreement.
7. Consider training/awareness requirements of all participants and recommend appropriate arrangements to ensure safe operation.
8. Consider ongoing liaison requirements and recommend appropriate vehicle for future information exchange/review of arrangements.
9. Identify opportunities for joint procurement of training, equipment and personal protective equipment.
10. To provide a for sharing best practice evaluating National guidance and notifying and discussing significant safety events

3.7 Community education and prevention

Nationally, approximately 250 persons per year lose their lives through drowning, the majority of victims being men aged between fifteen and forty five years³. The Service attended a total of 169 incidents between 1 November 2001 and 31 October 2005 during which time there were 33 drowning fatalities, 98 non fatal casualties and 49 rescues in Lancashire. It is an unfortunate consequence of good weather that people lose their lives in local waterways. Young people often misjudge their own swimming ability and fail to appreciate the harmful effects that cold water can have on their stamina and strength. Alcohol related incidents are also prevalent particularly in the summer months. Integrated Risk Management Planning is about deploying resources to those areas where the risk is greatest and clearly by comparison with fire-related deaths and injuries, waterside incidents are less of a priority. Nevertheless there are areas of the county where clusters of these incidents occur and it may be possible in the future for the Service to help prevent such occurrences by engaging in a limited water safety education programme aimed at delivering the water safety message to at risk groups.

³ <http://www.rospa.com/waterandleisuresafety/drownings/2002statistics.htm>

SECTION 4

SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS

4.1 Conclusions

Within the operational environment, Lancashire Fire and Rescue Service personnel frequently operate in areas where water can be a hazard and increasingly firefighters are required to work on, in and around water, ice and mud. These incidents can be in extreme conditions of poor light, high wind, driving rain, indeterminate water conditions, and dangerous rates of flow. The Service is experiencing an increase in the numbers and types of waterside incidents as water related leisure activities increase and global warming produces a challenging environment where there are more storms, leading to a higher number of flooding incidents.

The current waterside intervention policy was developed over ten years ago and over this time LFRS has developed a credible but limited waterside incident capability. However, the evaluation of existing arrangements has exposed the limitations with respect to attendance times and highlighted the potential for firefighters on the first attendance being pressured into taking action beyond the capability of their training and equipment. As the existing provision satisfies the service delivery requirements imposed by the legislative framework, the issue of response times relates directly to the level of service the Authority feels it reasonable to provide in the circumstances; having regard to public risk and expectations, resource implications and other priorities.

In respect of 'duty of care' obligations however, the legal requirements under the Health and Safety at Work Act are clear. Risk must be carefully assessed and appropriate control measures put into place. If current operational procedures expose firefighters to risk, it is imperative that these are as low as reasonably practicable. The risk profile of Lancashire is such that waterside incidents involving persons are a likely occurrence and that the Service will receive calls for assistance. On this basis, it is necessary to determine what is reasonable in terms of the emergency response arrangements when such incidents occur.

Essentially there are a number of options available, each of which will impact on the risk to firefighters and, to greater or lesser extent, impact on service delivery and associated public expectations.

In proposing a way forward, firefighter safety, public expectation and resource implications have all been considered. On this basis, it is recommended that the Service increase the current waterside incident capability by provision of an intermediate swift water rescue capability on six strategically based appliances as this appears to offer the best solution in terms of risk reduction, public expectation, affordability and sustainability.

Whilst implementing these recommendations will require investment, current information from the Fire and Resilience Directorate suggests that there is still an aspiration to achieve commonality of standards across a number of Service's in order to provide National team typed response across any responding agency. Accordingly some funding may be available for the purchase of waterside incident assets, to those Service's who have sufficient resources to be self-sustainable after the initial inject of finance, though no such assumptions can be made

4.2 Summary of Recommendations

Recommendation 1:

The Service should provide an intermediate waterside incident capability by enhancing the functionality of pumping appliances at the following locations

- Lancaster
- Fleetwood
- Preston
- Darwen
- Nelson
- Ormskirk

This expansion of Service capability to be achieved over a period of two years in order to ensure there is sufficient capacity to cope with the training requirements.

Recommendation 2:

In recognition of the enhanced functionality of the identified Rescue Pump Units, the mobilising arrangements to waterside incidents should be amended to:

- One local appliance (plus nearest Station Manager)
- Nearest Rescue Pump Unit
- MISU with one supporting appliance

This provision will provide a better service delivery utilising fewer resources.

Recommendation 3:

The inventory on the Water Rescue Unit based at C50 Preston should be improved and updated by provision of the following equipment: -

- Marine band handheld radio
- Underwater camera
- Line Deployment apparatus

Recommendation 4:

The training provision for LFRS operational personnel should be based on the following national training modules: -

Level 1 - Water Awareness (All operational Personnel)

Level 3 - Technician (All operational personnel at water rescue unit stations)

Level 4 - Rescue Boat Operator (Technician/RYA level 2 personnel at C50 & C57)

Level 5 - Water Incident Management (All Station Managers)

Recommendation 5:

Basic water awareness training should be incorporated into the training syllabus for wholetime and retained personnel and it should be confirmed that all existing personnel have received this input. If this cannot be verified the training should be revisited.

Recommendation 6:

A suite of competencies and Training Notes should be developed for Training Modules 1, 3 and 4 and incorporated into Maintenance of Skills Training (MOST) to prevent skill decay following qualification. Levels 3 and 4 should be subject to a three-year re-qualification.

Recommendation 7:

The local management and maintenance of waterside incident assets should be coordinated by the Station Manager at C50 Preston supported by other Station Managers from the other water rescue stations. Support arrangements being provided from the Operational Risk Management Department under the direction of HORM through the Service Water Working Group.

Recommendation 8:

The Service should seek to collaborate with other Regional Fire and Rescue Services with a view to sharing waterside incident resources.

Recommendation 9:

The Service should support the CFOA National Inland Water Strategy Group through attendance at the Water Rescue Forum and where resources permit complete work on its behalf

Recommendation 10:

The Service may wish to commit resources and seek partnerships in order to engage in a limited water safety education and prevention campaign.