

# **Incident Recording System Pilot Impact Assessment for Leicestershire Fire & Rescue Service**

**Version 1.1**

## Revision History

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28/02/07	0.1	Draft Issue	Shauket Desai
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## **1. Introduction**

Leicestershire Fire and Rescue Service (LFRS) volunteered to take part in the pilot to enable it to define and experience the new IRS system. Currently the FRS does not have an MIS system therefore the facility to record incident data was welcomed. Volunteering for the pilot has enabled LFRS to prepare for the actual rollout of the production system.

### **1.1 Executive summary**

The pilot system was rolled out to one whole time and technical rescue station and a retained station. In total 17 Watch and Crew managers and 15 members of Control were trained in the use of IRS. In addition two members of the Strategic Planning and Performance Team were also given training to download incident data from the system.

The IRS system was well received by all personnel who came into contact with it. Due to the usability nature of the system none of the personnel experienced any major difficulties with the system.

A major issue with the IRS is the amount of time it takes to complete each incident. This is of particular concern for some of the busier City stations who were not in the pilot. There has also been a concern about the impact of IRS on the Retained service work patterns. An essential prerequisite for us to move forward is the automatic transfer of incident data from our command and control system (Remsdaq) to IRS.

To enable us to study the impact of IRS we conducted the pilot in two phases. In phase one the operational crews were asked to complete the entire online form and feedback was gathered. The second phase we got assistance from our Control team who part completed the online form with data from the command and control system. The time and motion study conducted during the two phases revealed that phase one process was not a feasible option for rollout.

We did attempt to build a system interface between IRS and Remsdaq for phase two of the pilot but were unsuccessful due to the level of technical skills required for the task. The CLG have agreed to deliver sample interface code which we look forward to utilising.

The system also raised the need for a dedicated resource who would quality assure recorded incidents and publish the final version.

## 2. Current System and Business Processes

### 2.1 Overview of LFRS current business processes

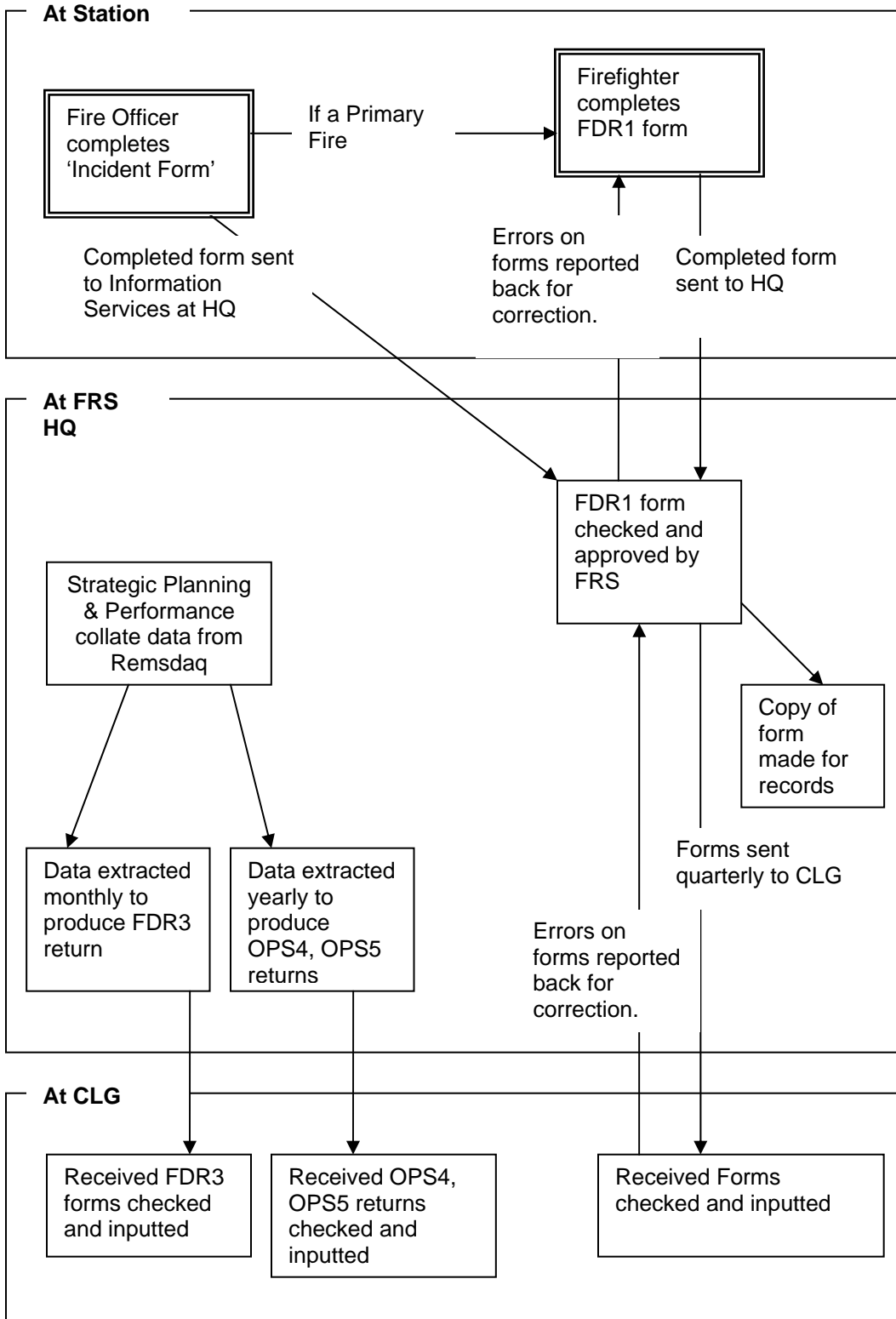
FDR1's and FDR2's are currently submitted from stations to Information Services at HQ. Information Services then carry out quality assurance on them; compare them with the list of incidents which Control believes requires an FDR1; and then submit them to CLG. FDR3 information is collected by our Strategic Planning and Performance department, the information is gathered directly from REMSDAQ mobilising system and sent to CLG electronically, on a monthly basis. This also forms the basis of gathering information of Special Service and False Alarm data.

A quality assurance audit of 10% of FDR1's should be carried out before sending from station, this should ensure that the forms are being completed in line with Service and CLG recommendations and that the forms make 'sense' from an operational context. Information Services will carry out a further audit on all submitted forms, this is a more perfunctory check to ensure that all sections of the form has been completed, it has been signed etc. SPP will also gather closure details on all incidents from REMSDAQ as part of quality assurance and data capture.

All the current data is gathered by SPP and linked into BVPI's as part of the IRMP process.

Table 1 below provides a breakdown of incidents by incident type

Primary Fires	1919
Secondary Fires	2220
Special Service Incidents	2598
False Alarms	5380



LFRS Current Business Process

## **2.2 Description of LFRS current system**

Currently LFRS does not use an electronic system to collect incident data.

The FRS uses a command and control system called Remsdaq (Version 9.1.1) Data is extracted via routine script and run daily. The script appends data to a MS Access database. Queries are then run against the database to allow data to be analysed within MS Excel and Performance Soft Views

No management information system is used at present.

## **2.3 Issues with LFRS current business processes and systems**

Data collection for all incident types is limited. We do not currently collect sufficient data to meet our business needs. We only collect more detailed data from ops managers about FDR1 fires.

Community safety data recorded on FDR1s is difficult to access on paper records and even more difficult to analyse because only essential performance data is recorded on a spreadsheet. The data recorded on FDR1 informs performance management, targeting of resources for community safety initiatives and IRMP planning.

Some of the critical data collected is often based on collection from anecdotal messages from the incident or assumption e.g. control record rescues and injuries from information taken from the incident log messages.

There is a general lack of understanding and application of the importance of spatial data referencing. Electronic systems to record the most accurate location of an incident do not appear to be available to operational crews – the people who are best placed to record their position. The result is that generic geo codes are applied to address locations in the Remsdaq gazetteer and updated on the incident log.

Error rate of completed FDR1 forms are potentially high as there are means at present to present to vet the forms during completion. The consequences of which are the form will take longer to complete if errors exist within it and there is a danger that errors may go unnoticed.

Ensuring all FDR1's are completed within acceptable timeframe is a difficult task.

Every time quarterly and annual statistics on fires are published by the CLG they are different to local figures. It is extremely difficult, time consuming and often impossible to rectify the two sets of figures.

## **Quality of data**

### **Quality of data collected at source is an issue because of :**

Lack of training

Lack of understanding of what the data is used for

Lack of data ownership

Lack of controls over data entry

Dual entry in most cases e.g. the same FDR1 data is entered by Fire Control, fire stations, information services and SPP

Some data is collected from message text from incident commanders, this is clearly open to interpretation and when compared to other data sources does not match

Lack of supervision and guidance – linked to lack of understanding of the required standards

Systems employed to collect the data

### **Data cleansing is an issue because of :**

The inbuilt verification checks in Remsdaq PC Stats software (used by Fire Control staff) do not account for all permutations of possible error.

The inbuilt verification checks in Remsdaq PC Stats software (used by Fire Control staff) only report by exception and incompleteness, therefore they allow some errors to occur e.g. incident types and causes etc

Fire Control staff correct geo-codes using a manual processes of 'search and match from a pick list', this is open to error and has resulted in error rates of around 8.33% (based on 2006/2007 ave per month). Strategic Planning and Performance (SPP) staff carry out secondary cleansing of geo-coded data, this is by building and/or Output Area, this uses time and people resources every week to achieve.

SPP staff carry out secondary cleansing of Remsdaq incident data – on average 4.21% of incidents are corrected (based on 2006/2007). This is a high rate given that the data has already gone through a formal software cleansing process. The result of secondary cleansing is estimated to reduce the tolerance to around 1% though it uses time and people resources every week to achieve.

FDR1 data recorded on paper (by the ops managers) does not always match that recorded on Remsdaq (by Fire Control) e.g. casualty data, cause data etc. No cleansing of this appears to occur.

Problems occur with the numbering allocated to FDR1's by Fire Control, mainly duplication and missing numbers. This is a manual process.

**Quality assurance is an issue because of:**

- Difficult to manage outstanding FDR1 reports, also problems when people transfer or leave/retire.
- Lack of effective performance monitoring and planning.
- Clear procedures detailing what is required by who and when.

**Difficulties in accessing data**

- Direct data access by stations and managers is limited to performance data and LRMP data published on Views. To obtain more detailed data, they must contact SPP. Recently, more detailed data related to those incidents reportable in BVPIs are being made available on Excel spreadsheets via links in Views. The plan is to make geographic maps available on views showing incident locations by type and cause etc.
- Timeliness - Data for the previous month is only made available up to two weeks into the current month – time is compounded by quality factors and data cleansing.
- As stated earlier, community safety data recorded on FDR1s is difficult to access on paper records and even more difficult to analyse because only essential performance data is recorded on a spreadsheet. We purchased the Remsdaq electronic FDR1 package approx 5-6 years ago yet never adopted it, there were a number of issues that prevented its development and implementation i.e. ownership, resources, ICT restrictions, management and quality issues etc
- Some incident data is shared with the Arson Task Force via Blue 8 XD GIS, they also have access to the raw data in the Remsdaq incident tables. Clearly this creates a risk in respect of the direct access and possibilities of changing data that has gone through two separate cleansing processes.
- Published data and maps are sent to District Managers as part of the LRMP process and they are also able to request ad hoc reports through a dedicated mailbox managed by Strategic Planning and Performance team.

### **3. LFRS involvement in the Pilot**

#### **3.1 What LFRS hoped to learn from the pilot**

To trial an Incident Recording System at stations and identify implementation issues.

Assess the quality of data generated via the use of the system and then to integrate this with existing performance data.

To determine the level of IT literacy of operational personnel and identify any skill gaps.

### **Issues expected to resolve or learn more about.**

- How will this be used to support the full roll out in Summer 2007
- Assess the level of IT literacy in particular the ability to use web based applications of both Whole time and Retained personnel. Having completed the assessment formulate a raining strategy
- Suitability of current infrastructure
- The need to offer retained personnel the facility to complete incident reports from home
- Integration with exiting systems in particular Remsdaq fro command and control data and PB Views or MS Access for management reporting.
- Assess the impact of introducing IRS in particular the additional workload that it will create and
- determine its feasibility.
- Resources required to support the system

### **3.2 What LFRS did for the pilot**

LFRS used the Online Forms data entry facility of the system. An attempt was made to build an interface but this was unsuccessful as it required far more technical expertise. Two stations and 32 personnel were involved. The training took the form of hands-on workshops involving various scenarios (Fire, AFA, RTC) and was delivered at the Station. This was followed up by one to one sessions with individuals when they were had to record actual incidents for the first time on the system.

### **3.3 Lessons LFRS learned from the pilot**

#### **Feedback from users**

The users mostly found the system easy to use provided they were given initial training prior to going live. They did however find the system to be too time consuming and in places cumbersome. A particular concern was the adding of appliances and the timings and dates. The crews felt very strongly that it would not be feasible for them to complete the entire form without any pre-population from the command and control system. Furthermore they were concerned how some of our busier city based stations would be able to cope. Therefore, in our view an electronic interface to the command and control system is an essential pre-requisite for the successful implementation of the IRS.

The support provided by CLG through the helpdesk at Garston and the published Guidance document (both online and hard copy) was very effective in supporting the operational personnel.

#### **IT issues (e.g. internet access, e-mail)**

A basic level of IT literacy is required that enables the user to login to the system via an Internet connection and navigate their way through a web based form. Most LFRS personnel have had some experience of using online systems. Consequently, they found the IRS system easy to operate.

The pilot raised the issue of providing the Retained personnel the facility to access IRS from home. This facility would be of a real benefit as it would allow retained personnel to return to their other occupations having returned from a job and then completing the incident report at a more convenient time.

During the pilot there was a frequent occurrence of the IRS system dropping the user half way through completing an incident ( this tended to happen when the 'next' button was selected to move onto the next page). Fortunately, data was lost from the last screen being worked on (this was a great inconvenience if it happened on the Appliance page) and not the entire form. This continued to be an intermittent fault throughout the duration of the pilot. This was raised as an issue post pilot and CLG have agreed to resolve this in the production system.

### **Benefits**

- The recording of detailed incident data
- Inbuilt system validation results in better quality of data and minimization of errors
- Removal of the existing paper based FDR1 system
- Ease of access to large volume of data with minimal effort
- Online nature of system facilitates the sharing of information. It also is the single source of data entry displaying the most up-to-date information
- An easy to use and intuitive system that benefits from minimal familiarization time

### **Training needs**

- Prerequisites – Familiarity with completing web based systems
- Training in the completion of incidents and correctly categorizing data.
- The Quality Assurance(QA) process of vetting completed forms

### **Communication requirements, including Terminology used**

- Clarity on the usage of terminology within the system

### **Areas of concern**

- Time taken to complete an incident from end to end leading to a large amount of backlog
- System reliability - The re-occurring failure experienced during the during the pilot
- DCLG Helpdesk not available from 17:30hrs to 09:00hrs

### **Things to be aware of**

It would be very easy for a backlog to occur that would prove very hard to overcome. This is particularly a concern for the busier stations where the opportunity to catch up would be limited.

### **Financial and Legal implications**

Insurances companies will demand more detailed information on all incidents. CLG are planning to provide a standard report in two report formats. One report will produce all data and a second report will remove personal data.

### **Management information / Business Intelligence that could now be used**

More detailed information will be available to aid performance management and to better target community safety initiatives.

Trends will be easily identified on particular products related in fire incidents.

## **4. Proposed future system and business processes**

### **4.1 What LFRS plan to do to implement incident recording**

#### **Implementation Components**

LFRS intend to implement the Online Forms version of IRS. A prerequisite will be an IRS interface to Remsdaq that will map as much data as possible for the pre-population and to avoid duplicate data entry.

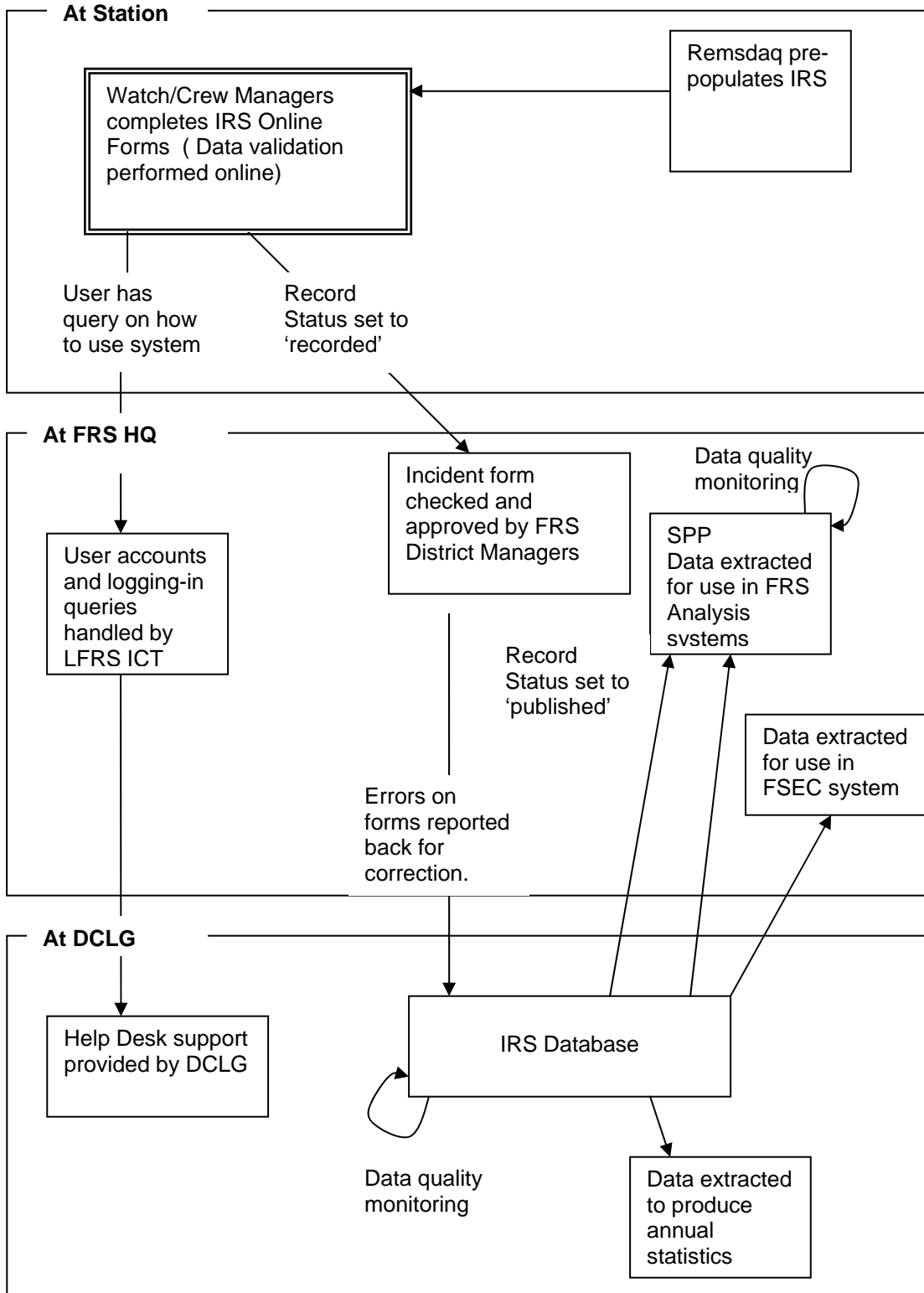
#### **High level timescales**

Establish FRS procedure	May – June 07
Build IRS interface to Remsdaq	May – June 07
Test Interface and IRS	July – August 07
Commence training of stations and cutover to IRS	August
Complete training of all stations	October

### **4.2 Overview of LFRS future business processes**

In particular should detail:

- Data will be input into IRS by station Crew Managers. They will complete the incident data and submit it within the system.
- The incident data will then be QA'd by a District Officer who has responsibility of a number of stations within a district boundary
- Data will be extracted by the Strategic Planning and Performance team and will be analyzed using an application called PerformanceSoft Views.



New Business Process – using Online Forms system

### 4.3 IT impact

As mentioned in the previous section an interface between Remsdaq and IRS will be an **essential** prerequisite.

The existing network has sufficient capacity to deliver IRS.

Each station is equipped with the required number of PC's which meet the minimum specification

A feasibility study is currently underway to explore the possibility of providing access to IRS from home via the installation of an Internet service. Once the Internet is available the Retained Officer can log directly into IRS and complete the incident at a more convenient time. This suggestion was made by the Retained Officers who believed that such a service would ease the admin burden and the time required to complete the incident on the system. This was particularly appealing as it minimized the disruption time a Retained Officer was absent from their main line of work.

### 4.4 Training Requirements

Training will be delivered at each of the whole time stations in turn by members of the project team and a representative from the training department.

The retained personnel will be trained as a collective group centrally.

It is envisaged that in the future IRS training will be provided via Junior Officer induction programmes.

- All Watch and Crew managers will be trained as well as a third person volunteered from each of the crews as a backup for the watch.
- All Junior Officers will be sent the e-learning module as a introduction to IRS. The e-Learning module will be used introduce IRS and the principles of data quality
- This will then be followed by a hands on training workshop. The workshop will scenario based provided the participants an opportunity to record a complete incident from end to end. It is envisaged that the training will last 2-3 hours.
- Junior officers will then be refereed to IRS helpdesk for specific queries when completed the form.

### 4.5 Culture and Change management

Data quality will be the responsibility of District Managers and must be taken seriously or be neglected. This is not only a new responsibility but also a new role that has been created with the FRS.

Station personnel will be responsible for the data entry of incident data. There will be an expectation that incidents will be recorded accurately and in a timely manner avoiding a backlog.

Due to the nature of IRS and the in-depth nature of data being gathered, the process will be more time consuming and has the potential to impact other station duties.

#### 4.6 Estimated costs of implementation in person days

##### IT implementation costs

Build IRS Interface	20 days
Testing of IRS interface	3 days
Creations of IRS accounts	2 days
Embed IRS in existing systems	1 day

##### IT infrastructure costs

None

##### Training costs

Train the trainer sessions	4 days	Four trainers
Station training	18 days	9 whole time station * 4 watches * 0.5d
Retained training	1 day	2 * 0.5d
QA Training	6 days	11 district officers * 0.5d
Telephone support during transition	??	Over 3-4 months period

##### Communication costs

Weekly internal bulletin	2 days
Quarterly internal journal	3 days

##### Staff costs (e.g. project management)

Project management	20 days	Jun – Oct 20% utilisation
Data co-coordinator	6 days	Develop policy & evaluate data

#### 4.7 Benefits LFRS hope to achieve

- Increased data coverage, allowing better risk management planning/ Business Intelligence (other uses of data)
- Improved data quality as data is validated at source at time of entry
- Reduction in time taken to produce data

- Data extraction process is simple and can be done as often as required
- Reduction in number of incidents being queried
- Reduction in effort required to quality assure data and chase missing incidents
- Ability to provide extracts of information quickly and easily.
- Simplification of FSEC data production
- Stations able to make adhoc queries for example equipment utilisation
- IRS encourages data ownership at station level therefore increasing the accuracy of data

#### **4.8 Critical Success Factors for LFRS**

- Availability of PCs and reliable internet connections at station (and possibly at homes for Retained staff)
- External Email/ Email accounts
- Communication with Fire Officers on stations. Benefits of gathering accurate and timely performance data must be accepted by operational personnel.
- Help desk support and local IT support to answer queries and ensure system availability
- Training of Junior Officers. Junior officers must have a basic level of IT literacy so that they are able to use a web based application
- System reliability / usability
- Interface between Remsdaq and IRS that is reliable and transparent to the user. The interface must map a significant proportion of data thereby minimizing the need for dual entry.