

Buffalo City Municipality



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BUFFALO CITY ROAD SAFETY PLAN Accident Data Management Protocol

January 2005



Engineering Advice & Services



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1. BACKGROUND

Reliable accident data is essential for safety planning. The Buffalo City Municipality (BCM) Traffic Department is currently using the Accibase system for capturing of data and, by the end of January 2005, will have approximately 2 years worth of historical data for the East London (EL) and King Williams Town (KWT) regions captured on this system.

During these two years, some of the data contained in the standard OAR accident forms has been captured correctly. A number of problems have, however, occurred. These problems include many instances of incorrectly captured location codes (used to link accident data to GIS special elements), duplicate accident data, non-compliance with existing protocols with respect to obtaining additional data and dealing with non-existent location codes.

To remedy this, as part of the Buffalo City Road Safety Plan, a plan was put into place to create and maintain a reasonably reliable accident data set by:

- *Cleansing existing data* through various initiatives such as checking for completeness, elimination of duplicated data, correcting location codes, disposing of the backlog of uncaptured accident reports and importing historical data from previous accident management systems
- *Setting protocols into place to ensure that future data capturing is done correctly*, expressly to ensure that the accident data integrity is maintained and to prevent large data cleansing efforts in the future.
- *Establishing a common GIS dataset* by re-mapping linked data in the Accibase system to cleansed spatial data, obtained as a result of the BCM Pavement Management System project. This will ensure the uniformity and integration of all BCM road-related systems.



2. SUMMARY

The purpose of this document is to document the processes that need to be followed to ensure the maintenance of accurate, reliable and up-to-date accident data at BCM.

This is achieved by firstly identifying the process objectives. By defining the objectives of the process it becomes possible to measure the effectiveness of the documented process in the future and to adapt it if it fails to meet the process objectives.

The first step to identifying process objectives is to identify the problems that need to be solved. In the case of the BCM, the current problems experienced in capturing accident data include issues such as:

- backlogs due to resource issues,
- poor quality of completed accident reports from collecting agents,
- inaccurate mapping of accident location to GIS spatial elements,
- poor identification and elimination of duplicate accident data,
- non-availability of GIS information,
- infrequent merging of E.L. and KWT accident data and
- lack of detail in requests for accident data from members of the public.

Based on these findings, the process objectives are:

- to monitor the capacity of capture clerks to ensure capturing is up to date,
- to monitor the quality of accident report completion,
- to simplify and monitor the locating of accidents,
- to regularly identify, correct and audit duplicate accident reports,
- to identify and correct non-existent location data,
- to regularly perform backups, data merges and exports and
- to standardise public information requests.

To achieve the process objects discussed in the above section, it is necessary to define a detailed process, measure the effectiveness of the process and modify the process if needed.

The outline of the process is set out in the rest of this document and is divided into five broad categories of activity namely data collection, data capture, quality management, system administration and public liaison.



3. PROCESS OBJECTIVES

Simply stated, a process converts inputs into outputs. This conversion process is caused by a series of interrelated tasks, behaviours and resources acting on the inputs.

To ensure that the result achieved by a process is the one that is required, it is important to define the required result through process objectives and then to manage the process effectively.

To identify the required result, it also helps to firstly identify the problem areas in existing processes and then define objectives with the intention to eliminate these problem areas.

3.1. PROBLEMS WITH CURRENT PROCESSES

In the context of the Buffalo City Municipality, the need to perform the accident data-cleansing exercise as part of the Buffalo City Traffic Safety Plan arose due to the culmination of a number of factors or problems. These include:

- Lack of capturing capacity to stay up to date with the capturing of AR forms. This has, at times, resulted in backlogs in excess of 1800 accident forms.
- Poorly completed accident report forms, in particular those received from the South African Police Services (SAPS) in the EL area. These typically have little or no location information making it difficult to assign accidents to the correct locations in Accibase.
- Incorrect selection of GIS locations even when location details are available on the form. This is prevalent in Mdantsane and in parking certain areas in Vincent Park.
- Not checking for duplicate accidents captured in Accibase on a regular basis. Duplicate accidents occur when more than one accident report is filled in for the same accident. This is not uncommon when more than one person is involved in the accident.
- GIS spatial data not being available in the Accibase system as a result of inaccurate data or new developments. For example, no GIS spatial data was previously available for the Kidd's Beach area. This resulted in no accident report capturing being done for this area.
- Two standalone Accibase systems are being run, one for the EL region and one for the KWT region. This data is not merged on a regular basis, making analysis of this data unreliable.



- Letters requesting accident data from the public (for the most part, attorney firms) vary in format and often include little reference information to identify the correct accident.

3.2. PROCESS OBJECTIVES TO OVERCOME PROBLEMS

Based on the problems identified in the above section, the objectives of the accident management process include the following:

- To regularly record and monitor the number of accidents reported and the number of accidents captured. This will allow for better resource allocation and planning.
- To measure the quality of accident report forms received from capturing agents (Traffic Department and SAPS) and to put in place escalation procedures to improve the quality of the information filled-in on accident report forms
- To simplify the locating of accidents (particularly in the Mdantsane area) and to regularly audit accident reports to ensure that correct locations are used.
- To regularly identify and correct duplicate accident reports. This process must be regularly audited by a supervisor.
- To flag accident reports where location data does not exist and to escalate these issues to the GIS technician for correction.
- To regularly merge accident data from BCM traffic departments by means of easy to use system tools.
- To standardise the way in which the public requests accident information.



4. PROCESS OUTLINE

To achieve the process objects discussed in the above section, it is necessary to define a detailed process, measure the effectiveness of the process and modify the process if needed.

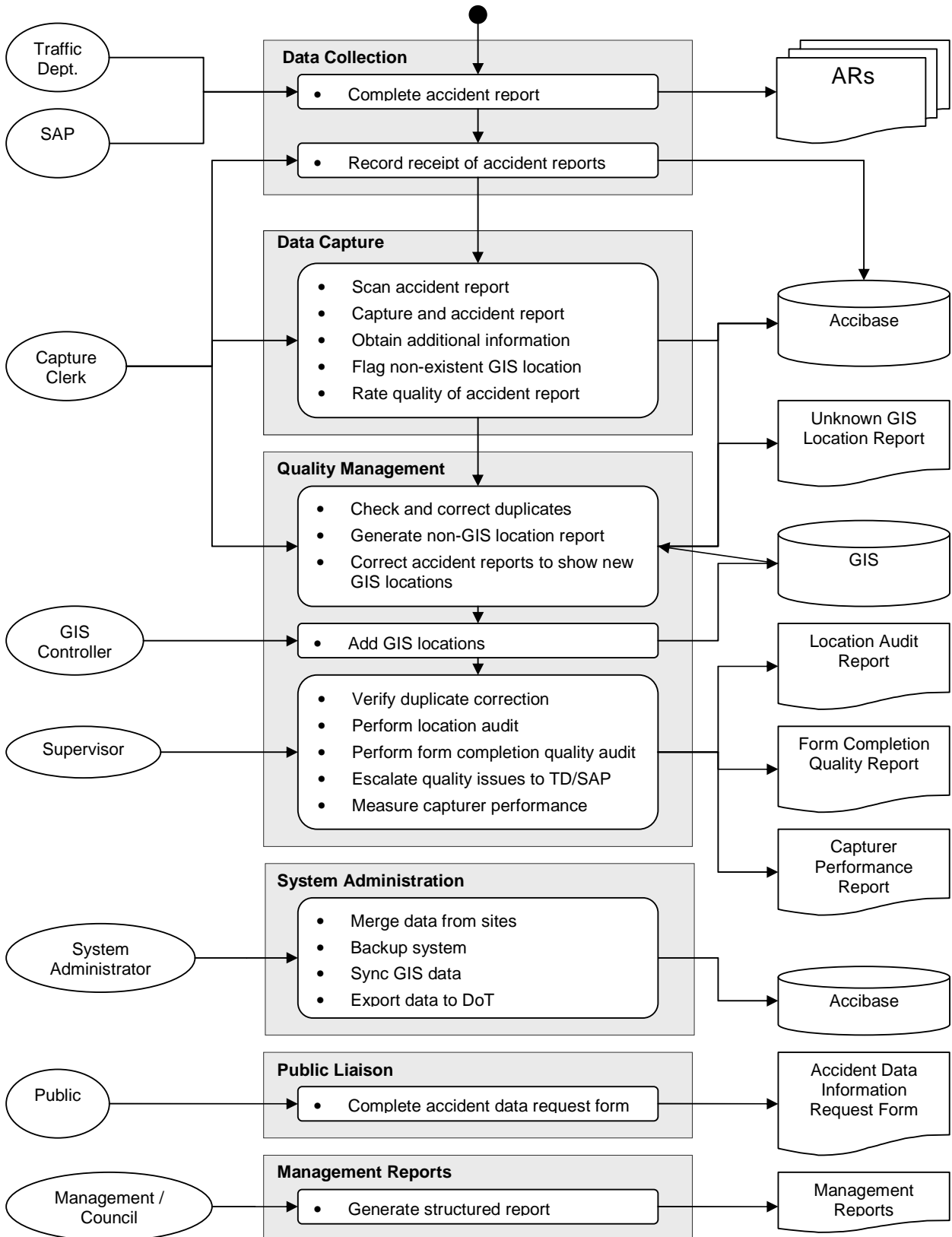
The process for the management of accident data consists of five broad categories of activity. These activities are:

- *Data Collection* – This involves the completion of accident report forms by the BCM Traffic Department and South African Police Services and the recording of the receipt of these reports by the designated capture clerk.
- *Data Capture* – This consists of the capturing of accident reports by the designated capture clerk. In addition to capturing this activity includes flagging poor quality accident reports received by the BCM Traffic Department and South African Police Services, obtaining additional information from the drivers involved in the accident if necessary and the flagging of non-existent GIS locations in Accibase.
- *Quality Management* – This involves checking for duplicates by the capture clerk. Additionally it involves the adding and correcting GIS information by the GIS controller. Finally it also involves performing regular audits on the validity of GIS location selection, form completion quality and the performance of the capture clerk by the process supervisor.
- *System Administration* – This is a technical function which involves the merging, backing-up, synchronisation and exporting of data by the system administrator.
- *Public Liaison* – This involves standardising the way in which the public requests accident information from the BCM.

The relationships between these various activities are shown in Figure 1 (see overleaf). Each process is then discussed in more detail below.



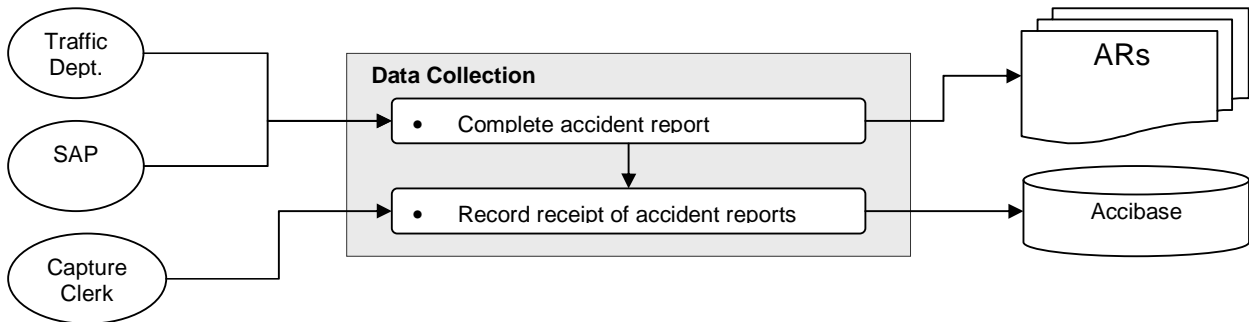
Figure 1 - Process Flow Overview





4.1. DATA COLLECTION

Figure 2 - Data Collection



4.1.1. ROLES AND ROLE-PLAYERS

- | | | |
|--------------------|---|----------------------|
| Traffic Department | - | Various Members |
| SAP | - | Various Members |
| Capture Clerk | - | Rosetta Lewis, Nonke |

4.1.2. PROCESS

Complete accident report – All accidents are reported to either the Traffic Department or SAPS.

The officer who records the accident details is responsible to ensure that the accident report is correct. A correctly completed form contains, at a minimum, full accident location details, full driver details and full vehicle details.

Record receipt of accident reports – When a batch of accident reports arrive at the capture clerk, the receipt is captured in Accibase. This information consists of the date, quantity, and source of the delivery.

The accident reports are then placed in archive storage.

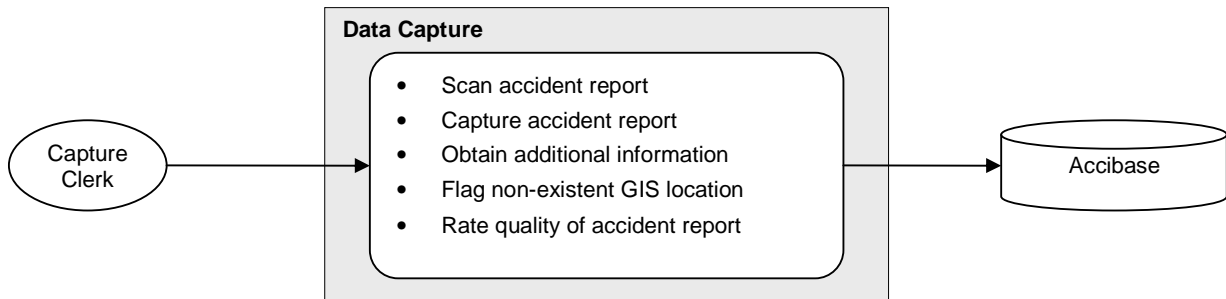
4.1.3. DATA ARTEFACTS

Accident Reports, Accibase



4.2. DATA CAPTURE

Figure 3 - Data Capture



4.2.1. ROLES AND ROLE-PLAYERS

Capture Clerk - Rosetta Lewis, Nokowaba Nkonki

4.2.2. PROCESS

Scan accident report – the capture clerk captures scans the accident report and archives the physical report.

Capture accident report – the capture clerk captures all fields from accident report into Accibase system, ensuring that all the location, driver and vehicle details are present.

Obtain additional information – If information is missing from the accident report, it is the responsibility of the capture clerk to obtain this information.

This can be achieved through various methods including contacting people involved in the accident telephonically, maps, personal knowledge of the BCM area and contacting the person who completed the form.

Flag non-existent GIS location – On the rare occasion where location information is not available, the accident is located to the “non-existent” location in Accibase and a reason is provided for this selection.

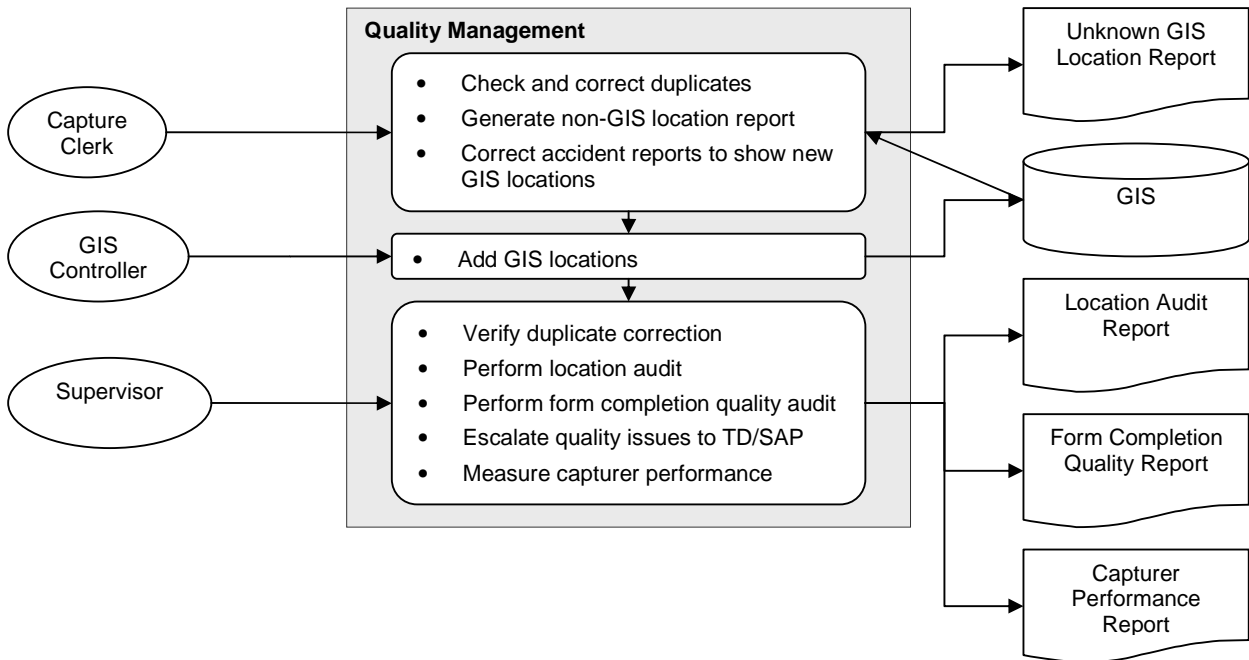
Rate quality of accident report – Based on the information filled in on the accident report by the relevant officer, the clerk, on completion of capturing, indicates using Accibase, which sections were inadequately completed on the accident report.

4.2.3. DATA ARTEFACTS

Accibase



4.3. QUALITY MANAGEMENT



4.3.1. ROLES AND ROLE-PLAYERS

- | | | |
|----------------|---|--------------------------------|
| Capture Clerk | - | Rosetta Lewis, Nokowaba Nkonki |
| GIS Controller | - | Sally Emslie |
| Supervisor | - | Ryan Nell, Justin Murray |

4.3.2. PROCESS

Check and correct duplicates – The check duplicates function in Accibase is run once a month and duplicate accident reports corrected by the capture clerk.

Generate non-GIS location report – The capture clerk generates a non-GIS location report weekly. If items appear on this report, it is sent to the GIS controller via email or fax.

Correct accident reports to show new GIS locations – On receipt of notification of corrections from the GIS Controller (see below), the capture clerk, correctly locates all items appearing on the non-GIS location report

Add GIS locations – The GIS controller identifies the problems with “non-existent” locations and makes the necessary corrections to GIS system. These changes are then replicated to the Accibase system.

The GIS controller then notifies the capture clerk of the changes, either by email or telephonically. The capture clerk updates the location information of the relevant accident reports.



Verify duplicate correction – The supervisor uses the check duplicates function in Accibase on a monthly basis to ensure that capture clerks are correcting duplicates.

If the clearing of duplicates is not taking place, the supervisor raises this as an exception with the capture clerk.

Perform location audit – The supervisor uses Accibase to generate a random sample of accident reports and prints these reports out of Accibase. The actual accident request forms are then obtained and compared to the captured data (accessed as the scanned image on the system).

All incorrectly captured accident reports are identified and the supervisor raises these as exceptions with the capture clerk.

Escalate quality issues to Traffic Department and SAP – The supervisor extracts and analysis the form completion quality report. If a unacceptably high number of poorly completed forms is indicated, the supervisor escalates this matter to the relevant authority (e.g. SAPS Station Commander / Traffic Chief).

Measure capturer performance – The supervisor extracts the capturer performance report to determine with the capturer's performance is adequate and to anticipate and correct a lack of resources.

Capture clerk performance issues are raised by the supervisor with the capture clerk.

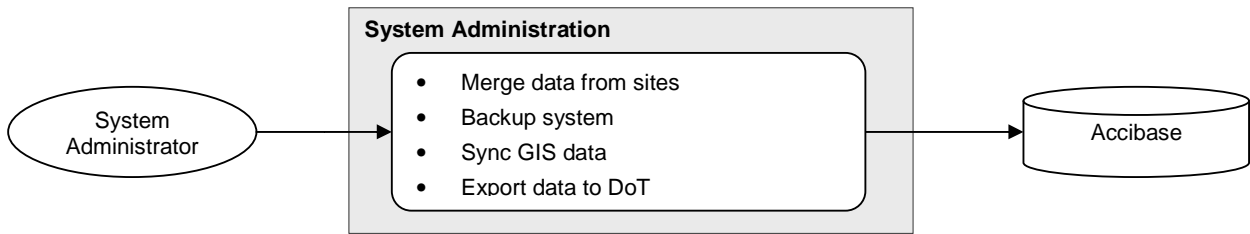
Additional resources should be supplied if needed.

4.3.3. DATA ARTEFACTS

Accibase, Location Audit Report, Form Completion Quality Report, Capturer Performance Report



4.4. SYSTEM ADMINISTRATION



4.4.1. ROLES AND ROLE-PLAYERS

System Administrator - Ryan Nell, André Steyn, BCM IT Dept.

4.4.2. PROCESS

Merge data from sites – On the first day of the month, a data export is performed on the Accibase data in King Williams Town. This data is sent to East London either by email or on disk and is merged into Accibase by the system administrator.

Back-up system – It is the responsibility of the systems administrator to ensure that Accibase data is backed up in accordance to corporate standards.

Sync GIS data – When GIS data is added or corrected by the GIS controller (See 4.3.) the Accibase system needs to be updated with these corrections. Initially this replication will be done manually by the system administrator but this will eventually be achieved through automatic database replication.

Export data to Department of Transport – On a monthly basis, the system administrator extracts data from Accibase for the national accident database.

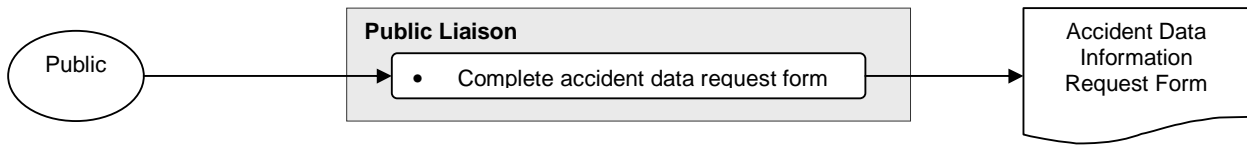
Prior to generating this extract, the system administrator verifies the integrity of the accident data and ensures that duplicates have been removed (see 4.3.). If this needs to be escalated, the system administrator brings this issue to the attention of the supervisor.

4.4.3. DATA ARTEFACTS

Accibase



4.5. PUBLIC LIAISON



4.5.1. ROLES AND ROLE-PLAYERS

Public - Various Members

4.5.2. PROCESS

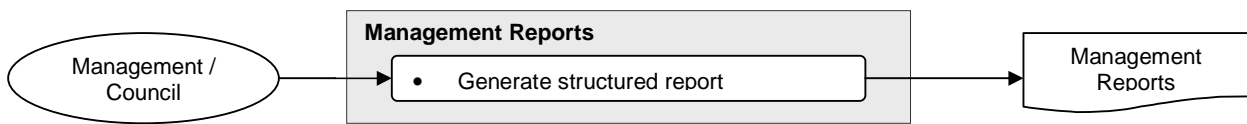
Complete accident data request form – when requesting accident data from the capture clerk, members of the public are required to complete an accident information request form and submit it to the capture clerk. The capture clerks checks the requests and prints the necessary accident reports for the requestee.

4.5.3. DATA ARTEFACTS

Accident Data Information request Form



4.6. MANAGEMENT REPORTS



4.6.1. ROLES AND ROLE-PLAYERS

Supervisor - Ryan Nell, Justin Murray

4.6.2. PROCESS

Generate structured reports – on the 5th day of each month a standard reports are extracted by the supervisor and submitted to Council and other management role-players.

4.6.3. DATA ARTEFACTS

Management Reports



5. CONCLUSION & RECOMMENDATION

This document describes processes which should improve the current quality of accident data and, if the processes are adhered to, prevent any major data cleansing exercises in the future.

It is also recommended that the following steps be taken to implement the processes outlined in this document:

- The process outlined above needs to be made official
- Responsibilities for the roles in this process need to be assigned to individuals to ensure immediate implementation of the processes
- The process needs to be clearly communicated to all affected role-players
- Because process improvement is on-going exercise, this process should be reviewed on a regular basis (e.g. bi-annually) and adapted if necessary