**Report Writing**
(*as a document accompanying all survey work submitted to the Municipality*)
(by SM Ndlovu – June 2017)

**Introduction**

The survey branch undertakes various types of surveys every day, from control surveys, detail surveys, monitoring surveys and cadastral surveys. Some surveys are done internally and other issued out to external (private) surveyors.

Every survey done, needs to be accurately documented and clearly reported on, such that we understand exactly what was done and how all information was gathered in the survey.

Such practice helps create a trail of evidence for surveys conducted, which is helpful in refreshing a surveyor’s memory or even educating them about a particular survey.

Moreover, by informing us of what was done, such practise helps to show and prove the accuracies achieved on the job at hand.

**Example: A Cadastral Survey Report**

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**SURVEY REPORT**

*Road Servitude 3.5m wide over Erf 527 Hipingo and Road Servitude 1.31m wide over Erf 556 Hipingo*

**Purpose of the Survey**

Road Servitude Development for Ally/Iona Road over Erf 527 and Erf 556 as depicted on the following hand plans SA028-1 Revision 1 and SA029-1 Revision 1.

**Statutory Consents**

Not applicable: Road Servitude 3.5m wide over Erf 527 Hipingo and Road Servitude 1.31m wide over Erf 556 Hipingo.

**Survey System**

Survey is based on WG31 where coordinates of previous survey record, diagram data and adjoining. Survey data used was selected from the following survey records: SR 614/2010 and SR 106/2010.

**Survey Method**

GPS Control Points (G777, G778, G779) used on this survey were fixed by post processing from the previous survey done in 2005 through following network of trigs UMgD/WS, UMLAZI and LAMONT.

I used a single base Visual Reference System (VRS) on Trimble R8 to calibrate on GPS Control Points G779 and check on G778 and G777. Due to construction upgrading of roads and sidewalks it was difficult to find control points from previous work within the vicinity of the site Ally/Iona Road. Therefore nine beacons were found P31, C48, F3202, P10, P24, P23, P21, P90, and P113. Comparison of beacon was done and some beacon were in agreement with another. I checked the beacons from a line of best fit. Three beacons were rejected based on the following. C48 was found at 16mm Iron Peg disturbed/erased due to upgrading of sidewalks and roads. P24 was found at 12mm Iron Peg under electricity cable next to wall fence it was challenge to take measurements and seems as if it was moved. P23 found at 12mm Iron Peg on top of wall under palisade fence. It was a challenge to take measurements on this point and I believe it was disturbed when the palisade fence was erected on top of wall.

The mean difference (dy = -0.07 dx = -0.12) between six found beacons was distributed to actual data to calculate the new coordinate beacons to be placed.

**General**

The survey was straightforward.

**Assistant**

Mxoli Richard (Survey Assistant), Khlela Johannes Nikoli (Survey Assistant)

NP Khoza
Professional Land Surveyor

October 2015
Reasons for Reporting

The main reason for all survey reports and their content is such that they piece together a picture about the survey at hand for any other surveyor using that particular survey.

The survey report thus becomes a ‘plan/design’ of the actual survey, from which we can all study and understand how the overall survey was tackled.

A document called the history sheet is used for reporting on engineering surveys at the eThekwini Surveying and Land Information Department and with that we are able to view and use the data supplied effortlessly, even if the surveyor who did the survey originally is not present to explain anything.

It is not the case though with work supplied by external surveyors to the branch. External surveyors supply plans and control point’s information if any extra control points were placed in addition to the ones given.

However, information relating to the survey method used to derive those control points coordinates is never included in the submission.

Without information on how a surveyor arrived at a control point coordinate, we are unable to determine how accurate and trustworthy those coordinates are. This then means;

1. Control points can’t be used for future reference, without necessary independent checks.

2. It also places uncertainty on the accuracy of all survey done under such control.

Some survey companies have their own control network systems and so the use of our control points is not a priority for them, but since their control points are permanent points on the ground, we are able to survey, obtain differences between the systems and adjust accordingly.

For other survey firms, control points are placed as they go along with all new survey work. In their case they combine our existing control with their own new control points, and thus making a survey report really necessary for us to understand how their control was fixed and view any adjustments that were conducted.

Report Suggestions

Below is a list of a few documents which I feel would provide clarity for all survey work submitted to our branch:

1. History – A history sheet, as seen on the attachment below, briefly giving details of the surveyor, survey description, data files submitted, the control used, the survey method used to fix new points and finally the survey technique used to execute the survey itself. Any other general information that maybe useful regarding the survey should appear here as well. For example, it is important to know which control point was spirit levelled as opposed to other survey methods such as trig levelling or GPS heighting.
### Example: A History Sheet

**SURVEYOR**  
MARLENE NAIDOO  
**SURVEY NO.**  
E2017_040

**DESCRIPTION OF WORK**  
DETAIL SURVEY OF 151 CAMEHAVEN DRIVE

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<td></td>
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<td>NEIL MURRAY</td>
<td>031 311 7111</td>
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**DATE OF REQUISITION**  
16 MAY 2017  
**DATE RECEIVED**  
06 JUNE 2017  
**DATE STARTED**  
08 JUNE 2017  
**DATE FINISHED**  
12 JUNE 2017

**RELEVANT PLANS & TC**  
**DOC NO.**  
E2017_049

**CORRESPONDENCE**  
**REFERENCE**

**WO NUMBER**  
282364

**BEACON RECEIPT NO.**  
**NUTED ON VISIONAL INDEX**

**DIGITAL DATA TO BE ADDED TO COMPLETED**

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<tr>
<td>E2017_048.csv</td>
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<td>E2017_048.zip</td>
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**HISTORY**

THE PRIMARY CONTROL POINTS FOR THIS JOB WERE THE GPS CONTROL.  
THE GPS (VRS) INSTRUMENT WAS USED IN THIS SURVEY AS WELL AS THE TRIMBLE 430 TOTAL STATION.  
THERE WERE NO DIFFICULTIES THROUGHOUT THE SURVEY.

**DATA SUPPLIED TO CLIENT**

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2. Coordinate List – Control point name, coordinates and descriptions, should all appear here.

3. Coordinate Comparison – To show differences between the original control and the control that was actually found on site. From such a list we can view the residuals, control points used and the ones disregarded.
4. Field book – not the whole but rather an extract from the original showing Orientation and Fixing Rays to new control points only.

(To support calculations for Traverses, Polars, Resections, etc.)
5. Calculations – A calculation sheet for all Traverse, Double Polars, Resections, etc. Should there have been any of these survey methods of control fixing executed.

**Traverse Calculations**

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**Conclusion**

The survey branch works with Registered Survey Professionals, who understand the required survey standards as issued out for all survey work. It’s a fact that no two surveys are ever similar, however, adjustments can always be applied to reduce the errors present in our work.

With a control point network already established and in use by the eThekwini survey branch, it is upon us to make sure all survey work that is handled by the branch conforms to this system.

This undertaking of a more detailed way of reporting might come at an extra - Cost and Time, but, is a great step in securing all survey work into our control network and putting any doubt regarding accuracies beyond us. The examples given in this article are merely suggestions that can however, with their inclusion as documents accompanying all survey work submitted to the municipality can help with that goal of assured accuracy for every survey job.