SECTION 9- GUIDELINES FOR FEATURE SURVEYS AND PLANS

9.1 General

The purpose of the field survey is to produce a plan which will assist in both the design stage and in the final development of a site. The development may involve subdivision of land including the creation of roads and the provision of services. It may be the development or re-development of an existing lot with the erection of new buildings, or perhaps extensions to existing structures.

In all cases the basic principles are the same. The objectives are to represent clearly and accurately on the plan all existing features on the site and on the adjoining land which will influence design and development. Sufficient levels for the purpose should be shown on the plan and where appropriate, contours should be shown. It must be appreciated that features on adjoining properties and roads may well influence future development of the site.

It is for the surveyor to understand the client’s requirements and to produce a plan in a professional and clear format which will adequately satisfy those requirements.

9.2 Existing Data to be Obtained

Apart from obtaining all relevant survey information, the surveyor should visit the Service Authorities and obtain information on the location of existing services such as water, sewerage, gas and electricity. It is preferable that plans of the services be obtained and in cases of difficulty in location, this information can be passed on to the developer.

9.3 Scale

Plan scale will depend on the area of the site and the density of features to be shown. Generally a scale of 1 : 500 is suitable for proposed subdivisions whereas for building development, scales of 1 : 100 or 1 : 200 are considered more appropriate.

9.4 Local Co-ordinates

9.4.1 Construction of Local Grid

Many building or engineering projects require the use of local co-ordinates with the local grid oriented to a major structural feature or a site boundary. Such co-ordinates should be quoted as X and Y rather than E and N in order to avoid confusion with AMG coordinates.

In some instances, base lines for referencing construction have to be selected and marked.

The following should apply in respect of base lines:

- A pair of lines at right angles shall be chosen one of which, preferably, should be parallel to a boundary. On an irregular site a subsidiary pair to a different orientation may be used to match the intended construction, if expedient. Additional parallel base lines may be used where convenience of measurement makes this necessary.
- The lines shall be assigned co-ordinates in X and Y with the X base line closest to North. See Fig. 9.1.
- The origin of local co-ordinates shall be chosen so that the co-ordinates of any point which can be plotted on the plan shall have a positive value.

9.4.2 Accuracy

Both survey and plotting accuracies shall ensure that points of detail are recorded to conform with Classification AA as set out in Schedule 6 of the Survey Co-ordination (Surveys) Regulations 1992.

Where the records of other authorities are used to complete plotting of buried services between visible fittings, a note to this effect should be shown.

9.4.3 North Point and Datum

The preferred datum of bearings for the boundaries is firstly, AMG, and secondly, Title. On the plan, a note should be made near the north point as follows:

“Bearings of the boundaries of the site are to AMG (or Title) Datum”.

The preferred orientation for the North Point is:
- to the top of the drawing sheet
- to the lefthand side of the sheet
- in the arc from the lefthand side to the top right corner; as may be necessary to fit the plan on the sheet size selected.

A diagram should be shown (see Fig. 9.1) which shows the relative orientation of AMG and/or Title North and of the direction of Local Grid North if applicable. The differences (angles) between the respective North Points should be shown.

Fig. 9.1
9.5 Heights

Heights on plans should be shown rounded as follow:

- Bench mark 0.001 m
- Pegs and subsidiary marks 0.005 m
- Constructions such as foundations and concrete surfaces 0.005 m
- Surface heights and inverts of drains obtained by levelling 0.01 m
- Surface heights obtained by tacheometry 0.05 m

Sufficient heights should be taken and shown on the plan to define existing constructions and services and to define the surface so that accurate contours may be drawn at an interval of 200 mm, but in any event surface heights should not be further than 20 m apart in either direction.

On smaller sites, particularly where there is a fair coverage of the site by existing buildings, spot heights alone may be sufficient. Floor heights and heights of other structural features are desirable in such cases.

The likely lines for drainage and sewerage beyond the site should be assessed and investigated and sufficient information obtained to permit the drains to be designed.

On all drawings showing heights, the following information should be supplied:

- Datum for heights
- Reference numbers and value of each permanent mark and bench mark used for height datum
- Date of validity of permanent and/or bench mark values used.

9.6 Location of Title Boundaries

The location of title boundaries on the site may be necessary in some cases. Where marks are placed, they should be described in full and not abbreviated, e.g., New Peg or Survey Peg.

In instances where the site boundaries have not been located by survey, the feature plan should show an appropriate notation.

9.7 Typical Requirements

- Fencing and its relationship to title boundaries
- Timber and vegetation. Types and sizes of trees – height, spread (diameter) and butt (diameter)
- Wet or marshy areas – whether permanently wet or seasonal
- Dams, borrow pits, quarries or eroded areas with depths where applicable
- Evidence of filled areas
- Heights and descriptions of adjoining roads, footpaths and kerbs. The position of crossings, street trees etc.
- All services including the position of poles, fire hydrants, stop valves, pits, manhole covers and other relevant features. Spot heights on all manhole covers, junction boxes, pits etc., and invert heights and pipe sizes of all existing drains, gutters and similar features
- Buildings and other features on site or on adjoining land which may influence development siting
- Any other features or site conditions likely to influence design and development purposes
- The establishment of at least two temporary Bench Marks (more in large areas) with an appropriate reference to the Datum mark and its value. See Section 9.5.

9.8 Example Plan and Plan Symbols

The example Survey and Feature Plan included in Part 1 of this Handbook provides an indication of information to be included on the plan, and also methods of presentation.

Attention is drawn to the large array of symbols presented in Australian Standard — AS 1100, Part 401 — 1984, Engineering Survey and Engineering Survey Design Drawing which post-dates the production of the example plan referred to above.

Users should be aware that symbols shown in Annex A in the Survey Practice Handbook - Part 1 which are called up in the Survey Co-ordination (Surveys) Regulations 1992, take precedence in this State.