

QUALITY CONTROL CHECK LIST FOR TOPOGRAHICAL PHOTOGRAMMETRIC/LIDAR SURVEYS

SURVEY UNDERTAKEN BY:

DATE:

SURVEY PROJECT DESCRIPTION:

REPORT NO:

JOB NUMBER:

I hereby confirm that this survey was checked against the project specifications and TMH11 survey requirements as stated in the survey instruction/contract documents.

The Items that do not form part of the survey instruction are marked as N/A

	SOME OF THE MOST IMPORANT REQUIREMENTS Note: Not all requirements have been listed	Confirmation by a registered Surveyor
1.	AERIAL PHOTOGRAPHY	
1.1	Was the aerial photography undertaken at the specified scale or GSD?	
1.2	Did the photography effectively cover the area in terms of the specifications?	
1.3	Did the forward overlaps and side laps conform to the requirements? (Max 30% side lap and 60% forward lap)	
1.4	Were the photographs cloudless?	
1.5	Did the photo contact prints conform to the requirements (Not applicable to lidar surveys)?	
1.6	Was the specified information recorded on the photo frame (Not applicable to lidar surveys)?	
1.7	Was a flight plan submitted in terms of the specifications ?	
1.8	Was the film correctly indexed and submitted? (Not applicable to digital aerial photography surveys – Annotation for lidar surveys shall be done on orthophoto prints)	
1.9	Were two sets of contact prints submitted (one clean set and one annotated set) (Not applicable to lidar surveys - Annotation for lidar surveys shall be done on orthophoto prints)?	
1.10	Was a camera calibration certificate supplied?	

1.11	Was the analogue photo scanning done at 21 microns?	
1.12	Were the scanned images supplied in TIFF/JPEG format and indexed correctly	
1.13	Was the scanned output for digital aerial photography supplied as 8-bit for black & white and 24-bit for color photography?	
1.14	Were the sample images at the start, centre and at the end of the project supplied? (Only for digital and lidar photography)	
1.15	General comments on the aerial photography	
2.	PHOTO GROUND CONTROL (If the establishment and/or verification of permanent survey control formed part of the photogrammetric survey requirements then the check list for establishment and verification of permanent survey control in Annexure 24.1, Items 1 and 2, must be added to this list)	
2.1	Was aerial triangulation employed Yes/No	
2.2	Do the following aerial triangulation block adjustment residuals conform to the requirements? (Not applicable to lidar and “push-broom” surveys)	
	Between Models	
	On the Ground Control	
2.3	Were all the permanent survey control points used as photo ground control to reference the photogrammetric model?	
2.4	Was the permanent survey control leveled heights used to model the geoid (applicable to lidar and “push-broom” surveys)?	
2.5	Does the photo ground control configuration conform to the requirements for:	
	• Lidar surveys?	
	• Push Broom technology?	
	• Conventional photogrammetry:	
	– 2 Model bases apart for a single strip?	
	– 4 Points in the corner of each model for full control?	
	– 3 Model bases apart in a block?	
2.6	Were the field annotated aerial photographs/prints of orthophotos supplied on completion?	
2.7	Were the annotations transferred to the CAD drawings?	
2.8	General comments on photo ground control	

3.	DTM SURVEY – PHOTOGRAMMETRIC (All types of survey methods except when otherwise indicated)	
3.1	Was the maximum 20m spotshot interval observed? (Applicable to conventional photogrammetric mapping)	
3.2	Were break lines correctly utilized?	
3.3	Were cut and fills used as break lines?	
3.4	Were the triangles in the culvert and bridges cleaned to give a realistic representation of the culvert?	
3.5	Were the spotshot positions and heights shown on the 3D continuous model? (Not applicable to lidar surveys)	
3.6	Were the decimal points of the spotshots also the positions where the spotshot were taken?	
3.7	Were the spotshot positions and heights shown on two different layers? (Not applicable to lidar surveys)	
3.8	Was the DTM supplied in:	
	DWG-TIN format as per specification (No 3D faces) (Separate CAD file)?	
	DGN-TIN format as per specification (No 3D faces) (Separate CAD file)?	
	Model Maker format as per specification?	
	Civil Designer format as per specification?	
3.9	Could all the above files be opened on the CD, DVD or hard drive that was submitted?	
3.10	Is the DTM survey in accordance with TMH11 and the contract specifications?	
3.11	Was the DTM data set broken up into different workable size files?	
3.12	Did the triangles in the broken up files match with the adjacent triangles when the files were attached?	
3.13	General comments on DTM survey – photogrammetric	
4.	SPlicing OF GROUND SURVEY INTO THE PHOTOGRAMMETRIC SURVEY	
4.1	Were the TIN and detail spliced into the photogrammetric model as requested?	
4.2	Were under and over passes spliced with the emphasis on different levels?	
4.3	Were the final contours generated after splicing?	
4.4	Was all ground survey detail spliced into the photogrammetric mapping?	
4.5	Were the spliced triangles shown in a different color to the photogrammetric triangles?	

4.6	General comments on splicing of ground survey	
5.	CAD WORK	
5.1	Were the following supplied:	
5.1.1	Continuous 2D drawing	
	<ul style="list-style-type: none"> • Continuous 2D CAD drawing in DGN format (MicroStation)? 	
	<ul style="list-style-type: none"> • Continuous 2D CAD drawing in DWG format (AutoCAD)? 	
5.1.2	A0 Drawings	
	<ul style="list-style-type: none"> • A0 drawing in DGN format? 	
	<ul style="list-style-type: none"> • A0 drawing in DWG format? 	
	<ul style="list-style-type: none"> • A0 layout key plan (first sheet of the A0 range of sheets) indicating all cadastral, permanent survey control positions and numbers, road alignment and sheet layouts? 	
5.1.3	Continuous 3D drawing	
	<ul style="list-style-type: none"> • Continuous 3D drawing in DGN format (MicroStation) ? 	
	<ul style="list-style-type: none"> • Continuous 3D drawing in DWG format (AutoCAD) ? 	
	<ul style="list-style-type: none"> • Were the DTM-TIN (triangles) supplied as a separate layer on the 3D continuous CAD drawings? 	
	<ul style="list-style-type: none"> • Was the continuous model broken up into realistic usable sizes to be used in an average computer? 	
	<ul style="list-style-type: none"> • Did the matching between the broken up models form a complete continuous model when attached? 	
	<ul style="list-style-type: none"> • Were the photos of all road signs supplied in hard copy and digital format? 	
	<ul style="list-style-type: none"> • Were the photo positions of the road signs numbered on the plans and on the photos? 	
5.1.4	Survey codes (Applicable to field survey work to support the photogrammetric work)	
	<ul style="list-style-type: none"> • Was a list of survey codes and descriptions supplied? 	
	<ul style="list-style-type: none"> • Did the survey codes conform to the requirements? 	
	<ul style="list-style-type: none"> • Was the survey undertaken using the supplied codes? 	

5.1.5	General CAD work	
	• Has photo annotation been done?	
	• Has the extent been covered by the survey as specified?	
	• Was the culvert detail submitted in terms of the specifications?	
	• Were clearance heights for all overhead services shown on the drawing? (Surveyed by ground method)	
	• Were clearance heights for all overpass bridges shown on the drawings? (Surveyed by ground method)	
	• Were the positions of bridge columns/pillars shown on the drawing? (Surveyed by ground method)	
	• Were Invert levels ,ground levels and grid levels for manholes supplied and shown on the drawing (Invert levels surveyed by ground method)?	
	• Were major access roads and streets surveyed to the required length as specified?	
	• Were access road destinations and street names shown on all the drawings?	
	• Were the positions and numbers of the permanent survey control shown on the drawing as a separate layer?	
	• Was the cadastral data submitted on the final drawings?	
	• Were all features placed on different layers as specified?	
	• Were the layers named correctly?	
	• Did the layers conform to the requirements as specified?	
	• Did the lettering conform to the requirements (size and thickness) ?	
	• Were the triangles and detail of cross-roads on a separate layer or drawing ?	
	• Were the correct symbols used in accordance to TMH11?	
• Were the lane markings correctly represented (Broken, solid, broken & solid lines) ?		
• Was the CAD work in accordance with TMH11 and the project specifications?		
5.1.6	Project File – have the following been included?:	
	• Survey report hard copy	
	• Survey report digital	
	• Final coordinate list for permanent control in hard copy format	
• Final coordinate list signed by a registered surveyor		

	<ul style="list-style-type: none"> • Final coordinate list Excel 	
	<ul style="list-style-type: none"> • Level comparison hard copy 	
	<ul style="list-style-type: none"> • Level comparison Excel 	
	<ul style="list-style-type: none"> • Test results Excel 	
	<ul style="list-style-type: none"> • Verification report on permanent survey control and results 	
	<ul style="list-style-type: none"> • All other deliverables as specified in the specifications 	
5.1.7	General comments on CAD Work	
6.	ORTHO PHOTO PRODUCTION	
	<i>Note: All relevant deliverables applicable to the orthophoto production shall be evaluated under that specific section in this check list</i>	
6.1	Was the following information shown in CAD format to be superimposed on the rectified image?:	
6.1.1	Title block as specified	
6.1.2	Grid lines as specified	
6.1.3	Cadastral information as specified	
6.1.4	Contours, contour values and spotshots as specified	
6.1.5	Permanent survey control points as specified	
6.1.6	Culvert information (size and inverts surveyed by ground methods) as specified	
6.1.7	Manhole and drain data as surveyed in the field as specified	
6.1.8	Destinations of roads shown on the drawing	
6.1.9	Clearance height of structures and overhead services	
6.1.10	All annotated features not clearly visible on the photos	
6.1.11	Underground services	
6.1.12	Fences where not clearly visible on the photos	
6.1.13	Kilometer Markers	
6.1.14	River and stream names	

6.1.15	Canals and boreholes	
6.1.16	Type of crops	
6.1.17	Description of buildings other than residential buildings	
6.1.18	Cemeteries	
6.2	Were the rectified images referenced and cut in sheets to the same layout as for the CAD A0 drawings?	
6.3	Were features that are not clearly visible/identifiable on the images annotated on the orthophoto?	
6.4	General comments on orthophoto production control	
7.	QUALITY CONTROL BY THE CONTRACTOR	
7.1	Were the field and office checked A0 plans/orthophotos submitted with the final data?	
7.2	Were the corrections on the field and office checked plans transferred to all the final CAD drawings/orthophotos?	
7.3	Were test cross-sections data supplied and surveyed independently at 300m intervals?	
7.4	Did the surveyed check points represent the profile of the road?	
7.5	Did the check results conform to the accuracy standards? 0 - 200mm (85%)	
7.6	Was the quality control by the Surveyor in accordance with TMH11 and the project specifications?	
7.7	Was the quality control check list as per Annexure 24.2 submitted and signed by a registered Surveyor? (Only for use by the Client)	
7.8	General comments on Quality Control	
8.	GENERAL COMMENTS	
8.1	Was the project delivered on time?	
8.2	Does the labeling of CD, DVD or hard drive conform to the requirements?	
8.3	Does the naming of files and folders conform to the requirements?	
8.4	Was a delivery note showing all data submitted?	
8.5	Was the version number of CD, DVD or hard drive supplied?	
8.6	Was all the data submitted with the re-submission in order to facilitate deletion of the previous version?	

I, the undersigned, being the representative of the appointed survey company on the above project, hereby certify that:

- 1. All information required in the project specifications is hereby supplied.
- 2. All field and office checks have been carried out in terms of the relevant requirements and specifications.
- 3. All data supplied conforms to the relevant requirements and specifications for this project.
- 4. All corrections as instructed in the previous report have been corrected and the entire survey project is re-submitted.

Signed at.....this.....day of

Signature:

Plato Registration Number:

Name:

For and on behalf of (Survey Company):