

CSD Bearing corrections and adjustments

Importance of bearing adjustments:

The term bearing adjustment is the same as bearing correction as referred to in Landonline capture.

It is important to record and report on any bearing adjustments applied to adopted vectors in a CSD to provide confidence that the orientation of the adopted work is in terms of the projection selected for the survey. This ensures compliance with CSR 2021 rule 16(3).

The bearing adjustment information recorded in a CSD is often used or referred to by other surveyors when undertaking later surveys and should therefore be correctly evaluated, captured and be unambiguous.

Bearing adjustments in the survey header

Common survey practice is to capture the bearing adjustment applied to adopted bearings against the source survey referenced in the survey header and to report in detail the basis for determining and applying any bearing adjustments as required by rule 72(d) CSR 2021.

It is not necessary to capture a bearing adjustment in the survey header for referenced surveys that have not had bearings adopted from them. In this instance leaving the bearing correction field blank in the survey header is acceptable.

Showing a bearing adjustment of 0°00'00" for a referenced survey in the survey header should be avoided if the referenced survey has not been assessed for orientation and bearing adjustments. This could give the false impression that the orientation of the referenced survey has been considered when it may not have been evaluated. In this instance showing a 'blank' value for the bearing adjustment is preferable.

Bearing adjustments in vector capture

The functionality to capture bearing adjustments applied to individual adopted vectors has always been in the Landonline data schema. However the release of Landonline 3.20 made bearing adjustments to individual vectors more visible. Bearing adjustments applied to individual vectors are now visible in the vector capture window and mark and vector report.

Bearing adjustments and record of survey

It has been noted that some datasets show differing bearing adjustment values in the survey header from what is captured and shown in the mark and vector report.

For a dataset to be acceptable the bearing adjustments captured for individual adopted vectors must agree with the value shown in survey header otherwise ambiguity results. Figure 1 is an example of where ambiguity makes the CSD unacceptable.

Referenced Surveys									
Survey Number			Land District				Bearing Correction		
DP 14583			Southland				0°00'00"		
DP 2505			Southland				-0°03'35"		
SO 7474			Southland				-0°05'55"		
SO 948			Southland				-0°06'40"		

From	To	Code	Bearing	Adpt Surv	Bearing Correction	Distance	Adpt Surv	Class
IT II SO 12336	IT III SO 7474	ob17	328°59'15"	A SO 12336	-0°00'20"	17.01	A SO 12336	
IT III SO 7474	IT II SO 7474	ob19	149°28'35"	A SO 7474	-0°06'00"	47.58	A SO 7474	
IT II SO 7474	IT I SO 7474	ob21	89°53'20"	A SO 7474	-0°06'00"	25.19	A SO 7474	
IT I SO 7474	IT I DP 4132	ob22	89°53'20"	A SO 7474	-0°06'00"	31.87	A SO 7474	

Figure 1 – The bearing adjustment shown in the survey header does not match the adjustment shown in the mark and vector report. Unless otherwise reported these differences are not acceptable as there is ambiguity.

The exception to showing differing bearing adjustment values in the survey header and mark and vector report is when a surveyor has determined that different values are justified and have been applied to separate sets of vectors from the same source CSD. In this rare situation, a value that matches the majority of applied bearing adjustments should be shown in the survey header with any different values shown in the mark and vector report. Full justification for the differing adjustments is required in the survey report. Figure 2 is an example of where differing bearing adjustments for the same source CSD may be acceptable.

Referenced Surveys									
Survey Number			Land District				Bearing Correction		
DP 20097			Wellington				-0°01'30"		
DP 13918			Wellington				0°02'15"		
SO 20208			Wellington				0°00'00"		
DP 536253			Wellington				0°00'00"		

From	To	Code	Bearing	Adpt Surv	Bearing Correction	Distance	Adpt Surv	Class
IR XVII DP 20097	PEG 1 DP 20097	ob0	88°22'00"	A DP 20097	-0°01'30"	6.14	A DP 20097	
PEG 1 DP 20097	PEG 2 DP 300000	ob1	90°38'40"	A DP 20097	-0°01'50"	9.70	A DP 20097	
PEG 2 DP 300000	PEG 3 DP 300000	ob2	90°38'40"	A DP 13918	0°02'15"	10.52	A DP 13918	
PEG 3 DP 300000	PEG 4 DP 300000	ob3	90°38'40"	A DP 536253		5.09	A DP 536253	

Figure 2 – More than one individual bearing adjustment is shown in the mark and vector report for the same source plan. If this is explained in the survey report this is acceptable as there is no ambiguity.

Survey report requirements for bearing adjustments

Where a bearing adjustment has been applied to a CSD the survey report must include a clear description of the basis for determining the bearing adjustment rather than just a statement that a bearing adjustment has been applied. Any differences between the bearing adjustment values shown in the survey header and those shown in the mark and vector report also need to be adequately explained in the survey report.

Where a bearing adjustment is not applied to a CSD that is in terms of a projection different to the current survey, the survey report must include the basis for determining a zero-adjustment in this instance. For example, a survey in terms of a Geodetic 2000 projection must report the basis for determining that adoptions from an Old Cadastral or Geodetic 1949 survey are oriented in terms of the Geodetic 2000 projection used.

Whenever assessing and reporting on the application of bearing adjustments to an existing CSD it is prudent to review any bearing adjustments applied by other CSDs in the area under survey.

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