

# **Functional Requirements Specification for the Vote Count using the Optional Preferential System**

Date of issue: 15 July 2014  
Version: 0.4 - signed off

# Authorisation

<b>Organisation name</b>	NSW Electoral Commission
<b>Document title</b>	Functional Requirements Specification for the Vote Count
<b>Project name</b>	PRCC
<b>Version date</b>	15 July 2014
<b>Version number</b>	0.4

## Document history

Version no.	Date	Change details	Author
V0.1 DRAFT	21 May 2014	1 <sup>st</sup> Draft Release (based on "Functional Requirements for Vote Count v3 2.docx")	Michael Ho
V0.2 DRAFT	23 June 2014	Updated after Bai's review	Michael Ho
V0.3 DRAFT	25 June 2014	Minor change for Majority calculation	Bai Li
V0.4	14 July 2014	Fix action queries in 1.3.10.1, 1.3.11.1 #2 & #8 (signed off by GC)	Bai Li

## Distribution

Name(s)	Company
Ian Brightwell	NSW Electoral Commission
Brenda Canning	NSW Electoral Commission
Greg Copson	NSW Electoral Commission
Simon Kwok	NSW Electoral Commission

## Approval

Name	Title / Organisation	Signature	Date
Ian Brightwell	Manager, Information Systems / NSW Electoral Commission		
Brenda Canning	Elections Branch, NSW Electoral Commission		

Copyright © NSWEC 2014.

This document and its contents are confidential and the property of NSWEC. This document is for the sole and exclusive use of NSWEC and may not be made reproduced or transmitted to any other party without the Electoral Commissioner's approval.

## Table Of Contents

<b>1</b>	<b>VOTE COUNT .....</b>	<b>4</b>
1.1	OVERVIEW .....	4
1.2	REFERENCES.....	4
1.3	VOTE COUNT FLOW CHART .....	5
	VOTE COUNTING METHOD .....	6
<b>2</b>	<b>COMPLIANCE MATRIX.....</b>	<b>17</b>
2.1	LA LEGISLATION COMPLIANCE MATRIX.....	17
2.2	LG LEGISLATION COMPLIANCY MATRIX .....	19

# 1 Vote Count

## 1.1 Overview

The main purpose of the vote count module is to fully process an election count in order to determine the candidates elected in accordance with the optional preferential representation counting method for:

- i) a Legislative Assembly Election Count, or
- ii) a Local Government Election Count where only one elected position is being contested

The Counting Algorithm presented below is required to process the Count and Preference Distribution from the keyed Ballot Paper details for both types of Elections. The process includes all the logic necessary for the distribution of preferences.

Essentially the process is the same for both Legislative Assembly and Local Government Election Counts; however at particular steps in the logic, different processing rules apply to each election type. These differences are explicitly identified in the process descriptions below.

The method of counting votes for a Legislative Assembly Elections is as directed by Reference 1.

The method of counting votes for Local Government Election is as directed by Reference 2.

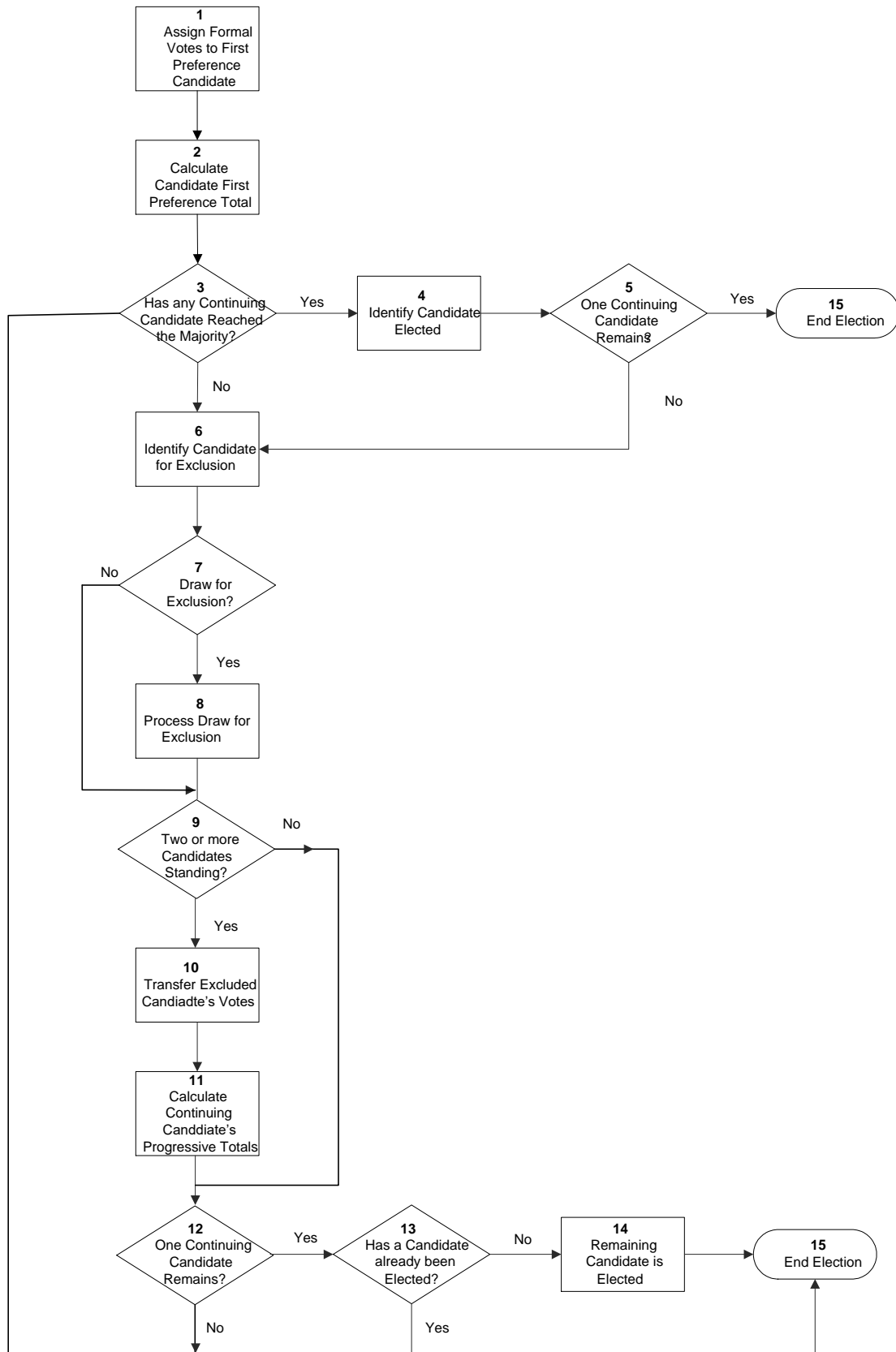
Legislation clauses and subclauses quoted in this document are sourced from the above mentioned Legislation Schedule references.

## 1.2 References

- 1) CONSTITUTION ACT 1902 - SCHEDULE 7 – Conduct of Legislative Assembly elections ([http://www.austlii.edu.au/au/legis/nsw/consol\\_act/ca1902188/sch7.html](http://www.austlii.edu.au/au/legis/nsw/consol_act/ca1902188/sch7.html))
- 2) Local Government (General) Regulation 2005 under the Local Government Act 1993, Schedule 4 Counting of votes under optional preferential system ([http://www.austlii.edu.au/au/legis/nsw/consol\\_reg/lgr2005328/sch4.html](http://www.austlii.edu.au/au/legis/nsw/consol_reg/lgr2005328/sch4.html)).
- 3) PRCC.dp2 – Data Model v4.1, Bai Li, June 2014
- 4) Functional Requirements for Vote Count v3 2.docx (Proportional Count)

### 1.3 Vote Count Flow Chart

The diagram below shows the high level steps of the vote counting method.



**Figure 1.1 First Preference Count, Elected and Exclusion Logic**

## Vote Counting Method

The Vote Count and Preference Distribution Algorithm is described below with reference to the Steps presented in the process flow charts in Figures 1.1.

The algorithm is initiated manually once all data entry and formality checking has been completed for an Election but all Steps described are automated as a single background process.

The process commences with the assignment of First Preference Votes (designated as Count 1) and continues with subsequent Preference Distributions (Subsequent Counts) until a Candidate has been elected.

The following data for each Election to be counted is required by the algorithm:

- a) Candidate details. At the beginning of the Count all Candidates of Local Government elections are “Continuing” unless they have been deemed “Ineligible” (e.g. if they have died after nomination but before election day or have been elected as a Local Government Mayor). With Legislative Assembly elections, no candidates are marked as “Ineligible”
- b) Number of formal votes
- c) Number of informal votes
- d) Valid Preference details for each ballot paper

### 1.3.1 Step 1 - Record First Preference Votes for each Candidate

#### 1.3.1.1 Business Description

For each formal ballot paper, the vote is assigned to the Candidate indicated as the first preference (i.e. marked with a Number 1).

If this candidate is ineligible to receive votes the ballot paper is assigned to the Candidate marked with the next preference (i.e. with the Number 2) until an Eligible Candidate is determined.

#### 1.3.1.2 Database Processing

#	Action	Table Reference
1	Indicate that the count process has started by setting Count_Executing_Flag = “Y”	ElectionArea
2	Create a count record with the following attribute values: ElectionAreaID = election event ID for the contest CountNumber = 1 CountType = “First Preference” CandidateID = 0 TransferredVotes = 0 ExhaustedVotes = 0 CountReportComplete = “N”	OP_Count
3	Select all ballots that have a preference of 1.	OP_Expanded_Preference
4	For each first preference selected, check the eligibility of the candidate prior to assigning the vote to the candidate. Get the eligibility status of the candidate.	Candidate
5	If the CandidateEligibilityFlag = “Y” then assign the first preference vote to that eligible candidate by creating a ballot paper movement record and assigning the following attribute values: ElectionAreaID = election event ID for the contest CountNumber = 1	Ballot_Paper_Movement

	<p>VCBallotPaperID = ballot paper's unique ballot paper ID</p> <p>MovementType = "First Preference"</p> <p>FromCandidateID = 0</p> <p>ToCandidateID = candidate ID marked with 1<sup>st</sup> preference.</p>	
6	<p>If the Candidate.Eligibility Flag = "N" then assign the first preference vote to the eligible candidate next in the order of the voter's available preferences.</p> <p>a. Get the next available preference.</p> <pre>SELECT count (*) FROM OP_Expanded_Preference, Candidate WHERE VCBallotPaperID = the retrieved ballot paper ID AND Preference = 1 + n AND Eligibility = "Y"</pre> <p>Where n is 1 and incremented by 1 until SQL count returns 1 or until n = maximum preference on the vote.</p> <p>If SQL count = 1 then the next preference is valid (i.e. the next preference is for an eligible candidate).</p> <p>If SQL count = 0 then all next preferences have been ignored (i.e. the next preferences were for ineligible candidates) or there were no more preferences which means this is an exhausted vote.</p> <p>b. If a next eligible candidate was found from (a) then assign the first preference vote to that candidate by creating a ballot paper movement record and assigning the following attribute values:</p> <p>ElectionAreaID = election event ID for the contest</p> <p>CountNumber = 1</p> <p>VCBallotPaperID = ballot paper's unique ballot paper ID</p> <p>MovementType = "First Preference"</p> <p>FromCandidateID = 0</p> <p>ToCandidateID = candidate ID marked with next preference.</p> <p>c. If a next eligible candidate was not found from (a) then create a ballot paper movement record and mark this vote as an exhausted vote:</p> <p>ElectionAreaID = election event ID for the contest</p> <p>CountNumber = 1</p> <p>VCBallotPaperID = ballot paper's unique ballot paper ID</p> <p>MovementType = "Exhausted"</p> <p>FromCandidateID = 0</p> <p>ToCandidateID = 0</p>	<p>OP_Expanded_Preference</p> <p>Candidate</p> <p>Ballot_Paper_Movement</p>

### 1.3.2 Step 2 – Calculate Candidate First Preference Total

#### 1.3.2.1 Business Description

Each Candidate's Total of First Preferences (their Progressive Total) is calculated by summing all votes assigned to them.

### 1.3.2.2 Database Processing

#	Action	Table Reference
1	<p>Calculate each candidate's current progressive total.</p> <p>For each eligible candidate (i.e. CandidateEligibilityFlag = "Y"), get the total number of first preference votes by counting the number of ballots where the CountNumber is equal to 1 and FromCandidateID is equal to 0.</p> <p>If no records were returned for the eligible candidate (since they did not receive any votes then their Progressive Total = 0.</p>	<p>Candidate</p> <p>Ballot_Paper_Movement</p>
2	<p>Store each eligible candidate's progressive total by creating a candidate history record with the following attribute values:</p> <p>ElectionAreaID = election event ID for the contest</p> <p>CountNumber = 1</p> <p>CandidateID = candidate ID</p> <p>TransferredVotes = 0</p> <p>ProgressiveTotal = progressive total derived from Action 1</p> <p>CandidateStatus = "Continuing"</p>	<p>OP_Candidate_History</p>

## 1.3.3 Step 3 – Has any Continuing Candidate reached the majority?

### 1.3.3.1 Business Description

Calculate the Majority:

The majority represents the total number of votes sufficient to elect a candidate. The majority is calculated using the following formula:

$$\left( \frac{\text{Total Number of Formal Votes of Standing Candidates}}{2} \right) + 1 = \text{Majority}$$

Any resultant fraction is ignored to obtain an integer value.

Standing candidates include elected and continuing candidates.

Each Continuing Candidate's current Progressive Total is compared to the Majority.

[Note: This is done as a matter of course after the first count.

For all counts after an Exclusion count, each Continuing Candidate's current Progressive Total is compared to the Majority. The Candidate whose current Progressive Total is greater or equal to the Majority is declared elected.]

If a Continuing Candidate has a Progressive Total greater than or equal to the Majority then continue at **Step 4**.

If a candidate has not been elected, the next Count is an Exclusion of the Candidate with the lowest current Progressive Total and the Transfer of their Ballot Papers to the Continuing Candidates. The process continues to **Step 6**.

### 1.3.3.2 Database Processing



#	Action	Table Reference
1	When calculating the majority: Total the number all progressive totals for the current count number. Select sum Progressive_Total From OP_Candidate_History Where Count_Number = current count number	OP_Candidate_History
2	Select each continuing candidates. Continuing candidates are candidates who, in their latest history record, have a CandidateStatus = "Continuing"	OP_Candidate_History ElectionArea

### 1.3.4 Step 4 – Identify Candidates Elected

#### 1.3.4.1 Business Description

1.3.4 A Candidate whose current Progressive Total is greater than or equal to the Majority is declared elected and continue to step 5.

#### 1.3.4.2 Database Processing

#	Action	Table Reference
1	Update the elected candidate's latest history with the following attribute value: CandidateStatus = "Elected"	OP_Candidate_History
2	Update the Candidate Count_number to the current count and set Candidate Position to 1.	Candidate

### 1.3.5 Step 5 – Check if only One Continuing Candidate Remains

#### 1.3.5.1 Business Description

Even if a candidate has been identified as elected in step 4, the system must continue counting until there is only one candidate remaining in order to determine the districts LA Two Candidate Preference Results for the two candidates who have received the greatest number of votes once all other candidate votes have been transferred. If there is more than one continuing candidate, proceed to step 6, otherwise proceed to the finish at step 15.

#### 1.3.5.2 Database Processing

#	Action	Table Reference
1	Count the number of continuing candidates, i.e. candidates who, in their latest history record, have a CandidateStatus = "Continuing"	OP_Candidate_History

### 1.3.6 Exclusion Logic

#### 1.3.7 Step 6 – Identify Candidate for Exclusion

##### 1.3.7.1 Business Description

The Candidate for Exclusion will be the Continuing Candidate with the lowest current Progressive Total.

##### 1.3.7.2 Database Processing

#	Action	Table Reference
1	Indicate that the data for the current count is now available for reporting by updating the current count record as follows: CountReportComplete = "Y" Increment the Count Number by 1, ready for the next count to be processed.	OP_Count

2	<p>Get the candidate with the fewest votes by selecting all continuing candidates from the previous count history record and ordering them by their progressive total.</p> <p>The candidate who has the lowest progressive total from the rows returned below is the candidates to be excluded in this count.</p> <pre>SELECT CandidateID FROM OP_Candidate_History WHERE CountNumber = Current Count - 1 AND CandidateStatus = "Continuing" ORDER BY ProgressiveTotal Ascending</pre>	OP_Candidate_History
---	--	----------------------

### 1.3.8 Step 7 – Draw for Exclusion?

If there are 2 or more Candidates with equal lowest current Progressive Totals, then continue to **Step 8** where the Count process must be reviewed to go back and determine the previous Count at which the Progressive Totals for these 2 or more Candidates were last unequal and Exclude the Candidate with the lowest Progressive Total at that point. If the 2 or more Candidates have had equal Progressive Totals at all preceding Counts (including Count 1), then a draw must be conducted to determine the Candidate to be Excluded.

Otherwise, the process proceeds to **Step 9** below in the Exclusion Logic.

#### 1.3.8.1 Database Processing

#	Action	Table Reference
1	<p>If there are 2 or more continuing candidates who have an equal lowest progressive total, the candidate who had the lowest progressive total at a preceding count will be excluded in this count.</p> <ol style="list-style-type: none"> <li>Select the history records of the tied candidates where the Count ID = current count – 2</li> <li>If (a) above shows that a single candidate had the lowest progressive total at the previous count then that candidate will be excluded in this count</li> <li>However, if (a) above shows that 2 or more candidates were still tied at the previous count then continue through the preceding counts to determine the count at which a single candidate had the lowest progressive total.</li> <li>If 2 or more candidates had equal lowest progressive totals at all preceding counts then the candidate to be excluded at this count will be decided by the exclusion draw. Continue to Step 8.</li> </ol>	OP_Candidate_History
2	<p>If a draw is not required, create a count record with the following attribute values:</p> <p>ElectionAreaID = election event ID for the contest</p> <p>CountNumber = current count</p> <p>Count Type = "Exclusion"</p> <p>TransferredVotes = 0</p> <p>ExhaustedVotes = 0</p> <p>CandidateID = the excluded candidate ID</p> <p>CountReportComplete = "N"</p>	OP_Count
3	<p>Update the excluded candidate's record to indicate the count at which they were excluded</p>	Candidate

	as follows: CountNumber = current count	
4	Create a history record to indicate that the candidate has been excluded as follows: ElectionAreaID = election event ID for the contest CountNumber = current count CandidateID = the excluded candidate ID VotesTransferred = 0 ProgressiveTotal = -1 CandidateStatus = "Excluded"	OP_Candidate_History

### 1.3.9 Step 8 – Process Draw for Exclusion

The system must be capable of supporting Manual Draws and Automatic Draws. If a manual draw is required then the Count process is "paused" and the system is required to present the details of the Candidates with equal lowest current Progressive Totals to allow the manual draw procedure to take place.

In the case of an automatic draw the system will use a random number generator to determine the outcome of the draw.

Once the result of the draw is provided, the Candidate drawn is deemed to have the lowest Progressive Total and is Excluded.

The draw details are required to be recorded within the database so reporting information is available.

#### 1.3.9.1 Database Processing

#	Action	Table Reference
1	For a <b>manual draw</b> pause the count process and: <ol style="list-style-type: none"> <li>Display the tied candidates on the screen with a description of the type of draw</li> <li>For each displayed candidate, prompt for entry of manual lot decisions.</li> <li>Accept each manual entry as a radio button to indicate "Excluded" or "Not excluded"</li> </ol>	N/A
2	The candidate marked with the "Excluded" radio button will be excluded. Create a count record with the following attribute values: ElectionAreaID = election event ID for the contest CountNumber = current count Count Type = "Exclusion" TransferredVotes = 0 ExhaustedVotes = 0 CandidateID = the excluded candidate ID CountReportComplete = "N"  Store the details and result of the draw by creating draw records for each tied candidate as follows: ElectionAreaID = election event ID for the contest CountNumber = current count DrawID = system generated unique number DrawType = "Exclusion" DrawTime = System date and time	OP_Count  Draw

	<p>CandidateID = tied candidate ID</p> <p>DrawResult = "Excluded" for candidate selected for exclusion; "Not Excluded" for candidate(s) not selected for exclusion</p> <p>ManualDrawFlag = "Y"</p>	
3	<p>For an <b>automatic draw</b> the system assigns each tied candidate with a consecutive number starting from 1.</p> <p>Using a seed, generate random numbers ranging from 1 to the number of tied candidates.</p> <p>If the random selection system parameter is configured to be fully random, then use a random seed.</p> <p>If the random selection system parameter is configured to be pseudo-random, then use the same seed.</p>	N/A
4	<p>The candidate with the assigned consecutive number matching the number generated will be excluded.</p> <p>Create a count record with the following attribute values:</p> <p>ElectionAreaID = election event ID for the contest</p> <p>CountNumber = current count</p> <p>Count Type = "Exclusion"</p> <p>TransferredVotes = 0</p> <p>ExhaustedVotes = 0</p> <p>CandidateID = the excluded candidate ID</p> <p>CountReportComplete = "N"</p> <p>Store the details and result of the draw by creating draw records for each tied candidates as follows:</p> <p>ElectionAreaID = election event ID for the contest</p> <p>CountNumber = current count</p> <p>DrawID = system generated unique number (within the contest)</p> <p>DrawType = "Exclusion"</p> <p>DrawTime = System date and time</p> <p>CandidateID = tied candidate ID</p> <p>DrawResult = "Excluded" for candidate selected for exclusion; "Not Excluded" for candidate(s) not selected for exclusion</p> <p>ManualDrawFlag = "N"</p>	<p>OP_Count</p> <p>Draw</p>
5	<p>Store the range and random numbers generated from Action 3 by creating a random number history record with the following attribute values:</p> <p>ElectionAreaID = election event ID for the contest</p> <p>CountNumber = current count</p> <p>Random_Number_History = system generated unique number</p> <p>ReasonType = "Draw"</p> <p>NumberGenerated = numbers generated delimited by a comma</p> <p>Range = number of tied candidates</p> <p>SeedUsed = the seed used</p>	Random_Number_History
6	<p>After the draw results (either manual or automatic) have been determined, update the excluded</p>	Candidate

	candidate's record to indicate the count at which they were excluded: CountNumber = current count	
7	Create a history record to indicate that the candidate has been excluded as follows: ElectionAreaID = election event ID for the contest CountNumber = current count CandidateID = the excluded candidate ID TransferredVotes = 0 ProgressiveTotal = -1 CandidateStatus = "Excluded"	OP_Candidate_History

### 1.3.10 Step 9 – Are there Two or More Candidates Standing?

If there are two or more candidates are standing continue to **Step 10** and transfer the excluded candidate's. This must occur even when the elected candidate has already been determined in order to produce the correct count data for the Two Candidate Preferred count. Otherwise proceed to **Step 12**.

#### 1.3.10.1 Database Processing

#	Action	Table Reference
1	Count the number of continuing candidates, i.e. candidates who, in their latest history record, have a CandidateStatus = "Continuing" or "Elected"	OP_Candidate_History

### 1.3.11 Step 10 – Transfer Ballot Papers

The next preferences are examined for all votes assigned to the Candidate to be Excluded, and transferred to the Continuing Candidates.

If there is no next preference for a Candidate on the Ballot Paper, then the Ballot Paper is **Exhausted**. If the next preference is duplicated or omitted as defined by Formality Rules then the ballot paper is also **Exhausted**.

#### 1.3.11.1 Database Processing

#	Action	Table Reference
1	Get all the votes received by the excluded candidate.  SELECT ballot paper ID FROM Ballot_Paper_Movement WHERE ToCandidateID = the excluded candidate	Ballot_Paper_Movement
2	For each vote retrieved from Action 1, get the next available preference marked for a standing candidate  SELECT next preference record FROM OP_Expanded_Preference, Candidate WHERE VCBallotPaperID = the retrieved ballot paper ID AND Preference = the excluded candidates preference + n AND VElectedOrExcludedAtCountNumber = NULL AND CandidateEligibilityFlag = "Y"  Where n is 1 and incremented by 1 until a record is returned or until n = maximum preference on the vote.  If a record was returned then the vote contains a valid next preference (i.e. the next preference is for a continuing candidate). Continue to Action 3.  If no record was returned then all next	OP_Expanded_Preference

	<p>preferences have been ignored (i.e. the next preferences were for an elected or excluded candidate) or there were no more preferences which means this is an exhausted vote. Continue to Action 4.</p>	
3	<p>For each vote that has a valid next preference from Action 1, assign them to the respective continuing candidate by creating a ballot paper movement record and assign the following attribute values:</p> <p>ElectionAreaID = election event ID for the contest            CountNumber = current count            VCBallotPaperID = unique ballot paper ID from Action 2            MovementType = "Transfer"            FromCandidateID = excluded candidate ID            ToCandidateID = candidate ID marked with next preference</p>	Ballot_Paper_Movement
4	<p>For each exhausted vote identified from Action 2, mark these votes accordingly by creating by a ballot paper movement record with the following attributes:</p> <p>ElectionAreaID = election event ID for the contest            CountNumber = the current count            VCBallotPaperID = unique ballot paper ID from Action 2            MovementType = "Exhausted"            FromCandidateID = excluded Candidate ID            ToCandidateID = 0</p>	Ballot_Paper_Movement
5	<p>Calculate the excluded candidate's transferable votes as follows:</p> <pre>SELECT count(*) FROM Ballot_Paper_Movement WHERE CountNumber = the current count AND FromCandidateID = the excluded Candidate ID</pre>	Ballot_Paper_Movement
6	<p>Calculate the excluded candidate's exhausted votes as follows:</p> <pre>SELECT count(*) FROM Ballot_Paper_Movement WHERE CountNumber = the current count AND FromCandidateID = the excluded Candidate ID AND MovementType = "Exhausted"</pre>	Ballot_Paper_Movement
7	<p>Update the count record with the number of transferred votes and exhausted votes as follows:</p> <p>TransferredVotes = Number of votes from Action 5            ExhaustedVotes = Number of votes from Action 6</p>	OP_Count
8	<p>Store details to record the transfer of the excluded candidate's votes to continuing candidates:</p> <p>a. Get all continuing candidates by selecting candidates that have CandidateEligibilityFlag = "Y" and VCElectedOrExcludedAtCountNumber =</p>	<p>Candidate</p> <p>OP_Candidate_History</p>

	<p>0</p> <p>b. For each continuing candidate from (a), create a history record with the following attribute values:</p> <p>ElectionAreaID = election event ID for the contest</p> <p>CountNumber = the current count</p> <p>CandidateID = continuing candidate ID to whom the transferable votes have been assigned</p> <p>TransferredVotes = the total number of votes transferred to this continuing candidate in Action 3. If no votes were transferred then set to 0</p> <p>CandidateStatus = "Continuing" or "Elected"</p>	
--	---	--

### 1.3.12 Step 11 – Calculate Progressive Total

Each Continuing Candidate's new current Progressive Total is calculated as follows:

Progressive Total = Progressive Total brought forward from previous Counts + Votes Transferred to Candidate

Processing continues from **Step 3** to determine the new majority required and whether any Candidate can be elected.

#### 1.3.12.1 Database Processing

#	Action	Table Reference
1	For each continuing candidate, add the votes transferred to the candidate in this count to the progressive total from the previous count. Progressive Total = VoteTransferred to the continuing candidate in the current count + Progressive Total from the current count - 1	OP_Candidate_History

### 1.3.13 Step 12 – Check if only One Continuing Candidate Remains

#### 1.3.13.1 Business Description

Similar to step 5, the system must continue counting until there is only one candidate remaining in order to determine the districts LA Two Candidate Preference Results for the two candidates who have received the greatest number of votes once all other candidate votes have been transferred. If there is only one continuing candidate proceed to step 13, otherwise return to step 3.

#### 1.3.13.2 Database Processing

#	Action	Table Reference
1	Count the number of continuing candidates, i.e. candidates who, in their latest history record, have a CandidateStatus = "Continuing"	OP_Candidate_History

### 1.3.14 Step 13 – Has a Candidate already been Elected?

#### 1.3.14.1 Business Description

Check if a candidate had already been election by majority vote from step 4. If so, proceed directly to the end of the election in step 15. Otherwise, continue to step 14.

#### 1.3.14.2 Database Processing

#	Action	Table Reference
1	Query for the existence of an elected candidate:	OP_Candidate_History

	CandidateStatus = "Elected"	
--	-----------------------------	--

### 1.3.15 Step 14 – Remaining Candidate is Elected

#### 1.3.15.1 Business Description

When there is only one Continuing Candidate remaining, that candidate is elected and the process advances to end at Step 15.

#### 1.3.15.2 Database Processing

#	Action	Table Reference
1	Update the elected candidate's latest history with the following attribute value: CandidateStatus = "Elected" CountNumber = current count	OP_Candidate_History
2	Update the candidate's record: CountNumber = current count Position = 1	Candidate

### 1.3.16 Step 15 – End Election

End Election Count Process.

Store all Election Results data on the database.

#### 1.3.16.1 Database Processing

#	Action	Table Reference
1	Indicate that the data for the current count is now available for reporting by updating the current count record as follows: CountReportComplete = "Y"	OP_Count
2	Indicate that the count process has completed by setting the following attributes: CountExecutingFlag = "N" CountRunByUserID = current UserID TCP_Candidate_1_ID = Candidate Elected TCP_Candidate_2_ID = Last continuing Candidate or the Last excluded Candidate	ElectionArea

### 1.3.17 Random Processing

#### Using a Random Number Generator

A Random Number Generation Program from a reputable software provider is required for the purposes of performing random operations.

#### Random Selection of Candidates

The random selection of candidates for an Exclusion Draw is as follows:

- a) If X candidates are in the draw, then they are all numbered from 1 to X
- b) The Random Number Generator is used to generate a number between 1 and X
- c) The candidate that matches the number generated is the one to be selected from the draw.



## 2 Compliance Matrix

### 2.1 LA Legislation Compliance Matrix

The table below shows a compliance matrix of the steps described in Section 1 against the LA Legislation.

LA Legislation Clause	Step Ref.
4 At the close of the poll the returning officer shall ascertain the total number of first preference votes recorded for each candidate on all ballot-papers not rejected by him as informal.	Step 1-2
5 If a candidate has a majority of the first preference votes, he shall be elected..	Step 3-4
6 If no candidate is elected under clause 5, the returning officer shall make a second count.	Step 6-11
7	
(1) On the second count, the candidate who has the fewest first preference votes shall be excluded, and each of his ballot-papers that is not exhausted shall be transferred to the candidate next in the order of the voter's preference and counted to him as a vote.	Step 6-11
(2) If, on the second count, a candidate has a majority of the votes remaining in the count, he shall be elected.	Step 3-4
8	
(1) If, on the second count, no candidate has a majority of the votes remaining in the count, the process of excluding the candidate who has the fewest votes, transferring each of his ballot-papers that is not exhausted to the continuing candidate next in the order of the voter's preference and counting it to him as a vote shall be repeated by the returning officer until 1 candidate has a majority of the votes remaining in the count.	Step 3, 6-11
(2) The candidate who, in accordance with subclause (1) of this clause, has a majority of the votes remaining in the count shall be elected.	Step 3-4
9 Notwithstanding clause 7 (1) or 8 (1), the process of transferring to a continuing candidate each of the ballot-papers that is not exhausted and counting it to him as a vote shall not be repeated where there is only 1 continuing candidate, but that 1 continuing candidate shall be elected.	Step 10
10	
(1) Where, on any count at which the candidate with the fewest number of votes has to be excluded, 2 or more candidates have an equal number of votes (that number being fewer than the number of votes that any other candidate has or those candidates being the only continuing candidates):	
(a) such one of those candidates as had the fewest number of votes at the last count at which they did not have an equal number of votes shall be excluded, or	Step 7-8
(b) if they had an equal number of votes at all preceding counts, the candidate whose name is on a slip drawn in accordance with subclause (2) of this clause shall be excluded.	Step 7-8
(2) For the purposes of subclause (1) of this <a href="#">clause</a> , the names of the candidates who have an equal number of votes having been written on similar slips of paper by the returning officer and the slips having been folded by him so as to prevent the names being seen and having been mixed, 1 of those slips shall be drawn at random by him.	Step 8

The table below is a compliance matrix showing the clauses in the LA Legislation which are satisfied by each step.

Step	4	5	6	7(1)	7(2)	8(1)	8(2)	9	10(1)(a)	10(1)(b)	10(2)
1	✓										
2	✓										
3		✓			✓	✓	✓				
4		✓			✓		✓				
5											
6			✓	✓		✓					
7			✓	✓		✓			✓	✓	
8			✓	✓		✓			✓	✓	✓
9			✓	✓		✓					
10			✓	✓		✓		✓			
11			✓	✓		✓					
12											
13											

## 2.2 LG Legislation Compliancy Matrix

The table below shows a compliancy matrix of the steps described in Section 1 against the LG Legislation.

LG Legislation Clause	Step Ref.
<b>3 One candidate to be elected</b> If only one candidate is to be elected, the votes are to be counted and the result of the election ascertained in accordance with the following procedures:	
(a) the unrejected ballot-papers are arranged under the names of the respective candidates by placing in a separate parcel all those on which a first preference is indicated for the same candidate,	Step 1
(b) the total number of first preferences given for each candidate on such ballot-papers are then counted,	Step 2
(c) the candidate who has received the largest number of first preference votes is elected if that number constitutes an absolute majority of votes,	Step 3-4
(d) if no candidate has received an absolute majority of first preference votes, a second count is made,	Step 6-15
(e) on the second count the candidate who has received the fewest first preference votes is excluded, and each unexhausted ballot-paper counted to him or her is counted to the candidate next in the order of the voter's preference,	Step 6-15
(f) if a candidate then has an absolute majority of votes, he or she is elected, but if no candidate then has an absolute majority of votes, the process of excluding the candidate who has the fewest votes and counting each of his or her unexhausted ballot-papers to the continuing candidate next in the order of the voter's preference is repeated until one candidate has received an absolute majority of votes,	Step 3-15
(g) the candidate who has received an absolute majority of votes is elected.	Step 4
<b>4 Two candidates to be elected</b> If 2 candidates are to be elected, the votes are to be counted and the result of the election ascertained in accordance with the following procedures:	Out of Scope for electing a single candidate
(a) one of the candidates is elected in accordance with clause 3 of this Schedule,	
(b) all the unrejected ballot-papers are rearranged under the names of the respective candidates in accordance with the first preferences marked on the ballot-papers, except that each ballot-paper on which a first preference for the elected candidate is indicated is placed in the parcel of the candidate next in the order of the voter's preference,	
(c) the number of ballot-papers in the parcel of each candidate is counted and the total number of votes so counted to each candidate is ascertained,	
(d) if a candidate then has an absolute majority of votes he or she is elected. If not, the count proceeds according to clause 3 (d), (e) and (f) of this Schedule, until one candidate has received an absolute majority of votes,	
(e) clause 3 (d) and (e) of this Schedule is to be read for the purposes of this clause as if a reference in those paragraphs to first preference votes were a reference to all the votes counted to a candidate under this clause,	
(f) the candidate who has received an absolute majority of votes is elected.	
<b>5 Election on first preferences</b> In the process of counting under clause 3 or 4 of this Schedule, exhausted ballot-papers are set aside as finally dealt with and are not taken into account in the election of a candidate under the appropriate clause.	Step 1, 8
<b>6 Equality</b>	
(1) If, on any count at which the candidate with the fewest number of votes has to be excluded, 2 or more candidates have an equal number of votes (that number being fewer than the number of votes that any other candidate has or those candidates being the only continuing candidates):	
(a) the candidate who had the fewest votes at the last count before the equality occurred is excluded, or	Step 6
(b) if they had an equal number of votes at all preceding counts, the candidate whose name is on a slip drawn in accordance with subclause (2) is excluded.	Step 7-8
(2) For the purposes of subclause (1) (b) the returning officer writes the names of the candidates who have an equal number of votes on similar slips of paper. The returning officer then folds the slips so as to prevent the names being seen, mixes them, and draws one slip at random.	Step 8
<b>7 End of counting</b> The process of counting each of the unexhausted ballot-papers of an excluded candidate to the continuing candidate next in the order of the voter's preference is not repeated if there is only one continuing candidate. Instead, that continuing candidate is elected	Step 5,12-15

The table below is a compliance matrix showing the clauses in the LG Legislation which are satisfied by each step.

Step	3	3(a)	3(b)	3(c)	3(d)	3(e)	3(f)	3(g)	4(a)	4(b)	4(c)	4(d)	4(e)	4(f)	5	6(1)(a)	6(1)(b)	6(2)	7
1		✓													✓				
2			✓																
3				✓			✓												
4				✓			✓	✓											
5							✓												✓
6					✓	✓	✓									✓			
7					✓	✓	✓										✓		
8					✓	✓	✓										✓		
9					✓	✓	✓											✓	
10					✓	✓	✓								✓			✓	
11					✓	✓	✓												
12					✓	✓	✓												
13					✓	✓	✓												✓
					✓	✓	✓												✓
					✓	✓	✓												