

3 QUERY CENTRE

The Query Centre is a tool which allows the end-user to construct user-defined queries by combining the available attributes (fields) of registered data components (pre-defined queries), sort and/or aggregate and set criteria on these attributes to control the data that is returned by the query.

3.1 Step-by-step Instructions on using the Query Data Designer

- 1) To create a new query, click on “New Query”.
- 2) Select a ¹Data Joiner. To return data relevant to a site only, select “site-linked data”. To return data relevant to a site visit or to both a site and a site visit, select “site visit-linked data”. Click on “Next” to view all the available components that are linked via the selected data joiner.
- 3) Select one or more components (at least one component should be a General Component) in the list of "Available Components" by first selecting the component and then clicking on the Right Arrow to place your selection in the “Select Components” list box. To unselect any component, highlight that component in the "Select Components" list box and click on the Left Arrow.
- 4) Select the fields that are desired to appear in the query from the "Available Fields" list box. This is achieved by first selecting all the desired fields and then by clicking on the Down Arrow to place the selection in the "Select Fields" list box. To unselect any field, highlight the field in the "Select Fields" list box and click on the Up Arrow.

Note: Data from only one of the specific components can be included in the final query.

- 5) Set the order in which the fields should appear in the query by selecting a field and moving it up or down by clicking on the Up or Down Arrow.
- 6) The data in the query can now be sorted or aggregated. To sort the data, select the field by which the data is to be sorted, click on Down Arrow of the first drop-down box to see the available options, i.e. None, Asc (Ascending), Desc (Descending). It is possible to sort according to more than one field. To aggregate the data, select the field by which to apply an aggregate function and click on the Down Arrow of the second drop-down box to see the available options, i.e. Avg, Count, Sum, etc.
- 7) It is possible to supply different aliases (column headings) for each of the selected fields.

¹ The Data Joiner defines a common link between the different data components that have been defined.

- 8) To set ²criteria for a query, e.g.. “only return records for province of Mpumalanga”, select the appropriate provincial field from the Available Fields list box, and click on “Edit”.
- Choose the field again on the keypad, e.g. [Province]
 - Choose an operator e.g. =
 - Click on “Refresh” under the Values List Box to see the distinct, available data items, and choose a value e.g. Mpumalanga by clicking on “Add”.
 - You should now see “[Province] = ‘Mpumalanga’

If data are being aggregated, the user has the option to filter the returned data based on the value of this aggregation (e.g. to only return sites where the average pH for all collected data >7.5).

The use of different operators and wildcards is described in section 3.2.

- 9) The Query Data Designer will now indicate that all the necessary data required to generate the query has been collected.
- 10) Click on "View Results" to run a spot check on the resulting data. If no data is returned, an error may have occurred during the specification of criteria. The user may return and re-specify criteria in the query.
- 11) Click on “Finish” to view your "Query Result" in a query datasheet within the Microsoft Access Application.
- 12) Go to “File”, then “Office links” to link the query results to either Microsoft Word or Microsoft Excel for further manipulation.

An example of running a query is outlined in Appendix 3.

Query Notes

- 1) Because great care has been taken to ensure that no inadvertent duplication of data occurs during the querying process, certain queries may take a very long time to complete. Such cases should be reported to the technical support.
- 2) Additional query components can then be generated to improve the performance of the query. A good example of this is the difference in performance that can be obtained by querying against the specific component (A) that returns invertebrate data in rows (many taxa per site visit), versus the component (B) that returns one record of invertebrate data per site visit (each taxon cross-tabulated into a column). For example: returning chemistry data per chemistry code, with avg, min, max, and count of value, when setting criteria simultaneously against data from the invertebrate component: i.e. where Taxon =

²The conditions that control which records to display in a query; the words or values used to determine the data that appears in a data list.

"Aeshnidae". The query against component B completes in a fraction of the time that component A does.

3.2 Setting criteria

3.2.1 Operators and wildcards

Below is a short explanation of the different operators that can be used to set criteria:

AND	This key is normally used to test whether two or more conditions are true i.e. [RiverRegion] = 'North West' AND 'North' this will return all records where the requested data can be found in both regions;
BETWEEN	This key will return all fields which have values between those specified for that criteria i.e. [Chem Value] BETWEEN '5' AND '8' and includes both 5 and 8;
OR	This key is normally used to test which conditions are true i.e. [RiverRegion] = 'North West' OR 'North' OR 'East' this will return all records where the river can be found in any one of the regions;
LIKE	This key is normally used to compare two strings i.e. [RiverName] LIKE 'Limpopo' will return all records for Rivers with that name;
NOT	This key can be used with LIKE to exclude certain strings from the search [RiverName] NOT LIKE 'Limpopo' will return records for all rivers with names that are not 'Limpopo';
<>	This key works in the same way as NOT LIKE and means that something IS NOT EQUAL TO something else i.e. [RiverName] <> 'Limpopo' will return all rivers except for those associated with 'Limpopo';
=	This key is used to select one value or item i.e. [RiverName] = 'Limpopo' will return all records for the 'Limpopo River' (compared with the use of "IN");

- IN** This key is used when searching for more than one item. All selected items should be between square brackets using inverted commas, and separated by commas i.e. [RiverName] IN ['Limpopo','Vaal','Orange'] will return all records for the rivers with these names (compare with the use of “=”);
- <, >** These keys are used to return all records where the specified field has values or items either “smaller than” or “greater than” a given value or an item where the records are sorted on a numerical or alphabetical basis respectively. i.e. [RiverName] < 'Limpopo'. This will return all river names starting with any letter below than L in the alphabet.

The use of wildcards to return fields:

Whereas most programmes use the “*” key to indicated a wildcard, Microsoft Access relies on the “%” key to set wildcards. Therefore in order to return all records for river names starting with “A”, set the criteria as follows: [RiverName] LIKE 'A%'.

3.2.2 More about Criteria

Please note that it is possible to set criteria on more than one field and on fields that are not displayed in the query result.

Specifying criteria enables the user to:

- Find records that meet one criteria and/or another criteria for the same or different fields
- Find records containing values between, greater or less than, equal to, or not equal to specified values
- Find records with values that start or end with certain characters or words, or contain certain characters or words
- Find records that do not match a value
- Find records that contain a value, not blanks (Null values)
- Find records that do not contain a value
- Find records that contain one value from a list of possible values
- Limit records involved in a calculation

Feedback, in writing, on technical aspects of the application, use of the Query Centre, and technical documentation of these features will be welcomed by the technical support for the database (see Section 4.4).

Technical information