FROM PRECARIOUS SETTLEMENTS TO DIGNIFIED COMMUNITIES

Informal Settlement Upgrading Support Plan –

Prioritisation Model Guidance Notes

Final Draft
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1 INTRODUCTION

The Western Cape Informal Settlements Prioritisation Model was developed as part of the Informal Settlements Support Plan (ISSP) developed by the Western Cape Department of Human Settlements in 2016. These guidance notes should be read in conjunction with the ISSP, which provides the context and rationale for the tool.

This tool has been developed in Microsoft Excel. It prioritises a list of informal settlements according to a number of criteria using Multi-Criteria Analysis (MCA). The tool is divided into two sections - Upgrading and Relocation:

- Upgrading relates to the prioritisation of Category A, B1 and B2 settlements for in-situ upgrading in relation to impact, risk and readiness criteria.

- Relocation relates to the prioritisation of Category C settlements in relation to risk criteria only.

It is therefore assumed that the categorisation or decision to relocate or upgrade has already been made.

The tool uses a macro (activated by pressing an on-screen button) to sort-and re-sort the informal settlements by score, according to selected categories.

Using Macros is MS Excel

For the Macro buttons to work, you will need:

1. To have the file saved as a macro-enabled workbook (.xlsm)

2. To have macros enabled on your version of Excel.

To enable macros in **MS Excel 2007**:

1. Click on the round Office button in the top left corner

2. Click on the Excel Options button on the bottom right

3. Click on Trust Centre on the bottom left menu

4. Click on Trust Centre Settings on the right hand side

5. Click on Macro Settings on the left menu and enable all macros

6. Click on Active-X Settings on the left menu and enable all controls

7. Click OK twice

To enable macros in **MS Excel 2010/13/16**:

1. Click on the File tab in the top left corner

2. Click on the Options link on the bottom left menu

3. Click on Trust Centre on the bottom left menu

4. Click on Trust Centre Settings on the right hand side

5. Click on Macro Settings on the left menu and enable all macros

6. Click on Active-X Settings on the left menu and enable all controls

7. Click OK twice

2   TECHNICAL OPERATION OF THE PRIORITISATION TOOL

The uses a standard MCA process of scoring any number of settlements against a set of defined criteria, sub-criteria and indicators, structured in a decision tree.
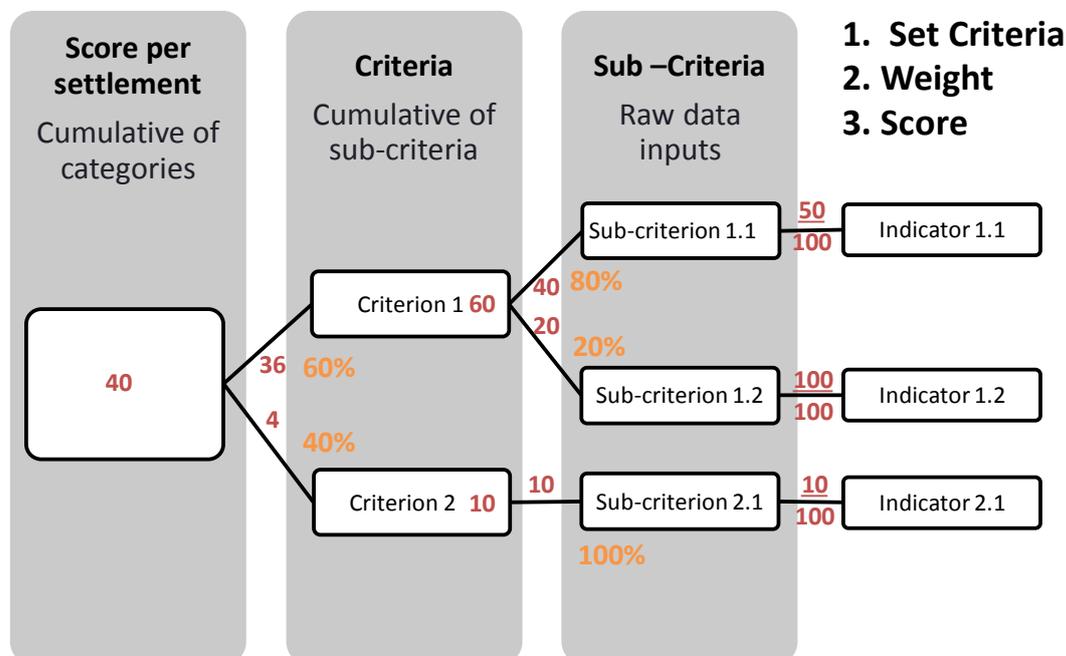

Figure 1:Simplified example of a generic decision tree with scores (red) and weights (orange)

In addition, the scores are normalised on a scale of 0 to 100 and then weighted relative to each other to obtain a single numerical score for each settlement, which is then used to rank the settlements from highest priority (highest score) to lowest priority. The criteria, sub-criteria and indicators developed as part of the ISSP process have been defined in the tool, so this step is not required for the use of the Prioritisation tool.

In the model, sheets names preceded by 'U", (e.g. "U. Scores") refer to sheets calculating the upgrading prioritisation. Sheet names preceded by a 'R' represent the relocation calculation and results sheets.

The two processes however do share a singular database and this master copy needs only be updated once.

Inputs

Required or allowed inputs to the tool are shown by cells in any sheet that have a white background. It is highly recommended that other cells are not altered unless the intention is to change the decision tree structure of the tool. In such a case the instructions below and in the model must be followed.

Input database: Project sheet

The main input to the model is the list of settlements, which need to be inputted into the 'Projects' sheet. This sheet has been pre-populated with the most up to date settlement

data available at the time of the conclusion of the ISSP. The format of the data is as per the Rapid Appraisal Database compiled for the WCDHS. The database should either be only updated row by row or replaced with an updated master database copy. The structure of the database, in terms of columns, must remain the same unless added at the right end of the table as a new data input. New settlements can be added to the bottom of the database and the tool will automatically incorporate the additional data into the prioritisation.

Criteria

The MCA model is based on a decision tree composing of criteria and sub criteria with varying weightings to generate a prioritisation score per settlement.

The respective 'criteria' sheets for upgrading and relocation are where the design of the decision tree is set. In order to alter the names of criteria or sub-criteria drivers, this must be done on this sheet. Similarly, if a criteria or sub-criteria is to be added to the tool. This structure links throughout the tool.

Weights

The weights sheet structure of the decision tree is pulled from the criteria sheet. Alterations within the existing decision tree will automatically update on this sheet. However, if new criteria or sub-criteria are created on the preceding sheet this will need to be replicated on the weights sheet.

The purpose of the weights sheet is to assign weightings to each criteria and sub-criteria of the model. Technically these weightings can be changed freely to reflect the priorities of the municipality. However, the cumulative category, criteria and sub-criteria respectively per branch must equal 100.

> ### *Using Weightings*
>
> If there are 2 sub-criteria branching off 1 criterion and you wish to weight these equally each be weighted 100/2 or if there are three sub-criteria each should be weighted 100/3 if an equal weighting is desired. Unequal weightings, such as 70/30 are permissible, just confirm that cumulatively they equal 100.

The weights sheet further has a table below the decision tree which is linked to the Numerical sheet. The final accumulation scores are calculated in this table. If an existing sub-criteria has been changed following the instructions below, the calculations on this sheet will not need to be changed, but do check they are correctly pulling through.

If a new sub-criteria has been added to the decision tree it will need to be added into the table under the applicable weighted sub-criteria column. This is determined by the criteria and category structure of the addition. If a new criterion has been added, then this will need to be added to the criteria field.

The final score should incorporate these added fields but it should be checked that calculations are including the new criteria and sub-criteria in the table.

Scores

The scores sheet is where the inputs from the database are converted into a numeric interpretation if necessary, or numeric scores are re-scaled. This can range from a binary conversion for yes/no datasets to pulling a numeric dataset, such as settlement population straight in to the sheet as is, as it is already in numeric form.

This is performed for all sub-criteria listed in the criteria sheet.

If an existing sub-criteria has been changed, then find the corresponding name in the scores sheet which will be listed under the respective criteria. Now the data from the projects tab must be pulled into that column:

1. If the data is already in a quantitative from, such as density/population/area etc. just pull the data straight through using an = formula.

2. If the data in the projects sheet for the sub-criteria is qualitative, such as bad/medium/good then a unit conversion must be set up in the units row.

3. The unit conversion can further be utilised in order to assign a specific spread to quantitative or qualitative data.

Numerical

The numerical sheet normalises all the numerical interpretations in the scores sheet into scores for each settlement between 0 and 100. If an existing sub-criteria has been updated in the scores sheet the new calculation should automatically generate.

If a new sub-criteria has been added to the model it must be added to the numerical sheet in both the top and bottom tables. The top table calculates the minimum and maximum scores of the dataset and assigns these scores of 0 and 100 respectively. The bottom table then calculates each score relative to the max and min and assigns it a value between 0 – 100.

Norm

The norm sheet pulls through the values generated in the numerical sheet and spreads them into an increasingly linear distribution of scores between 0 and 100.

Where an existing sub-criteria is changed, the sheet should pull it through and alter the score automatically. Where a new sub-criterion has been added to the decision tree it will have to be added to the table and the formula copied across from the neighbouring column. Remember to check that it is linked to the correct values on the numerical sheet.

Result

The result page pulls the final scores for each settlement from the weights sheet. This table does not need to be altered. However currently the model is set up to allow the choice of running a singular prioritisation for upgrading all settlements or running the parallel prioritisation where A and B settlements are prioritised separately to C settlements. This option is located on the U. Result sheet and can be changed by selecting Yes/No from the yellow dropdown list.

Sort

The sort page is where the results of the tool are viewed. The output of the model is a table listing settlements from the highest to the lowest composite scores as shown in the example below. The settlements can be sorted at a provincial, district, municipal or town scale.

These can further be sorted by category, allowing settlement prioritisation within their respective categories.

The results are automatically sorted by score in a descending order. The buttons to the right of the table can be used to sort by District, Local Municipality, Town or settlement categories. Changes to the decision tree, given the above steps have been followed will automatically be incorporated in to the results sheet however the page will have to be refreshed. It is recommended that the "refresh and sort" function is used every time the tool is run and between changing sorting functions.

Further the results include a list of short term interventions identified in the rapid appraisal.

3   APPROACH TO DATA GAPS

There are three options to deal with instances where a settlement is missing data for an indicator:

1. Weight indicators with data missing to zero

2. Assign the mean value of the set to the indicator

3. Assign zero as the indicator value

It is proposed that zero-weighting indicators with missing data as the most neutral option and has been built into the model.