Appendix 2 – Methodology for calculating the Tree Planting Priority Index (TPPI)

Step 1: Use canopy cover data to assign a Canopy Deficit Score.

The Canopy Deficit Score measures how far each settlement's current tree canopy cover falls below a benchmark of 20%.

The Canopy Deficit Score is calculated as:

$$CDS = \max\left(0,\ 1 - \frac{TCC}{20}\right)$$

Where TCC = Tree Canopy Cover percentage for the settlement

The Canopy Deficit Score produces a value between 0 and 1:

- A score of **0** indicates canopy cover at or above 20%
- A score of **0.5** indicates canopy cover of 10%
- A score close to **1** indicates very low canopy cover

This provides a consistent, evidence-based measure of relative canopy need across all settlements.

Step 2: Population percentage.

To ensure resources are distributed proportionately, each settlement is also assigned a population percentage. Where data was available, population estimates based on census data were used (source: South Kesteven (District, United Kingdom) - Population Statistics, Charts, Map and Location). For villages, where population figures were not available, the population was estimated based on the number of residential addresses.

Step 3: Calculation of the Tree Planting Priority Index

The Tree Planting Priority Index combines canopy deficit and population into a single value using the following formula:

$$TPPI = (CDS^2) \times Pop\%$$

Where:

- CDS = Canopy Deficit Score
- Pop% = Population percentage of the settlement

The Canopy Deficit Score is squared to deliberately increase the influence of severe canopy deficits. Without this adjustment, population size can dominate the calculation, resulting in moderately under-canopied towns ranking above villages with extremely low

canopy cover. Squaring the deficit score ensures that settlements with the greatest canopy shortfalls receive additional strategic emphasis.

Step 4 (optional): TPPI percentage

To enable comparison and practical use in planning and budgeting, each settlement's TPPI value is converted into a TPPI percentage, representing its share of the total TPPI across all assessed settlements.

TPPI percentages provide a clear and transparent benchmark against which the overall distribution of planting activity or expenditure can be assessed.